Growth, Accumulation, Crisis

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Growth, Accumulation, Crisis

With New Macroeconomic Data for Sweden 1800-2000

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The oldest and youngest on the shop-floor (Asea). The photography can be found in *50-års jubiléet, minnesalbum*, part II, 1933, serial number: H:B4 04-014, Elanders Novum Document Archives (former ABB Support), Västerås.

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Stockholm, January 2005
Rodney Edvinsson

Abbreviations in the present study

Abbreviations of statistical categories:[i]

AA: Agriculture and ancillaries

A: Technical level

b: Base year

BC: Building and construction

c: Constant capital

c: Correction factor to take into account change in the share of value added in gross output

C: Private final consumption

CC: Circulation

CF: Consumption of fixed assets

c.i.f.: Costs, insurance, freight (prices)

corr.: corrected for the change in the share of value added in gross output

D: The ratio of the depreciated volume value of a fixed asset after a period when it was bought to the (undepreciated) volume value at the time when it was bought

δ: Depreciation of capital

e: Rate of exploitation

EM: Employment

f.o.b.: Free on board (prices)

G: Government final consumption

GDO: Gross Domestic Output

GDP: Gross Domestic Product

GO: Gross Output

GS: Government services

GS: Gross Surplus

GVA: Gross Value Added

HW: "Housewives"

I: Investment or capital formation

i: item or activity

IC: Intermediate Consumption

IM: Import

[i] It should be noticed that some of these abbreviations refer to different variables or categories in different contexts. The same abbreviation can, henceforth, be listed twice. See also TABLE 3.1 for further codes of various types of economic activities as defined in the present study.

IR: Ratio of the total inventory stock to the value added of manufacturing, handicrafts and trade

K: Capital stock

L: Labour input

L: The (undepreciated) volume proportion of assets that still exist after a period when they were bought

LI: Labour income

l.o.o.p.: Letting of other premises

MH: Manufacturing and handicrafts

MHT: Manufacturing, handicrafts and (wholesale and retail) trade

MI: Mixed income

NCE: Non-consumptive expenditures

NDP: Net Domestic Product

NPISHs: Non-Profit Institutions Serving Households

NS: Net surplus

NSPA: Net Stock of Produced Assets

NVA: Net Value Added

NX: Net export

OS: Operating surplus

p: Price

p: Profit rate

P^F: Fisher price index

P^L: Laspeyre price index

P^P: Paasche price index

PIM: Perpetual Inventory Method

PR: Private reproductive services

q: Quantity

r: Ratio between the purchasers' and basic values of the gross value added of the private sector

RE: Real estate

s: Surplus value

s: Share of gross value added in gross output

S: Stock (of produced assets)

SEK: Swedish "kronor"

Sur: Surplus (either net or gross)

t: Comparison year

T: Turnover time

TC: Transport and communication

TFP: Total Factor Productivity

uncorr.: uncorrected for the change in the share of value added in gross output
v: Variable capital
V^F: Fisher volume index
V^L: Laspeyre volume index
V^P: Paasche volume index
VA: Value added (either net or gross)
VCC: Value Composition of Capital
VR: Volume relative
W: Wages and salaries (including social benefits)
X: Export
Y: Output (either net or gross)

Other abbreviations:

BiSOS: Bidrag till Sveriges Offentliga Statistik (a publication series)
ESA: European system of accounts
K-N: Krantz and Nilsson
NBER: National Bureau of Economic Research
NI: National Income of Sweden (a publication)
OK: Olle Krantz
PS: Present Study
SCB: Swedish abbreviation for Statistics Sweden (Statistiska Centralbyrån)
SHNA: Swedish Historical National Accounts (a publication series)
SNA: System of National Accounts
SNI: Svensk standard för näringsgrensindelning [Swedish Standard Industrial Classification]
SNR: Svenska nationalräkenskaper [Swedish National Accounts]
SOS: Sveriges Offentliga Statistik [Sweden's Official Statistics]
SOU: Statens Offentliga Utredningar [Swedish Official Reports]
TRPF: Tendency for the Rate of Profit to Fall
ÖJ: Östen Johansson

1 Introduction

1.1 Growth, accumulation and crisis from a historical perspective

Economic growth implies increase in an economic variable, which is normally persistent over successive periods.[1] Accumulation involves the growth of assets.[2]

Capitalism has a "growth imperative". This makes capitalism fundamentally different from pre-capitalist societies, even though the latter experienced modest growth of production and means for production.[3] It is competition in the market that drives capitalists to accumulate;[4] i.e. to invest part of their profits to expand the existing capital, labour force and production. As Schumpeter puts it, a "stabilized capitalism is a contradiction in terms".[5]

Economic crisis entails a breakdown or interruption of some of the operating principles of the economic system for a certain period. The term is here used in its broadest sense. Economic crises can be of different magnitudes and time scales. Since the basic operating principle of capitalism is steady accumulation and growth, not only outright fall in production, but also stagnation and slowed down growth over a certain time period, can be considered as a crisis situation for the system.[6]

At the end of the 20th century, a discussion ensued around whether a so-called "new economy" had made its historical entry entailing accelerated economic growth. Some scholars went so far as to argue that the business cycle was over for good. The burst of the ICT-bubble in the early 21st century showed that the "old economy", "old methods of valuation" and the "old economic laws" had not been superseded.[7] Stock exchange bubbles induced by rapid technological development are not something new, historically speaking. The dot com crash exposes the relevance of the need for studies with a longer historical perspective also when analysing the present world. It is not that the past accounts of great significance repeat mechanically in the present. However, without understanding the past properly we may fall into the trap of confusing the present reality.

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[1] Black, 1997: p. 205.
[2] See section 8.2.2.
[3] See, for example, Brenner, 1989 and Gordon and Rosenthal, 2003.
[4] See Fine, 1991: pp. 2-4.
[5] Schumpeter, 1939: p. 1033.
[6] See Held, 1991: p. 118, O'Connor, 1987: pp. 54-59 and Harvey, 1989: p. 180.
[7] See, for instance, Brenner, 2002: pp. 218-264.

1.2 Objectives, limitations and disposition

This study has two main objectives related to the Swedish economic performance in the period 1800-2000, with special focus on the period 1850 onward:

1) The first objective is strictly empirical. It is to construct annual macroeconomic data series that are consistent for the whole period under investigation, and which rely on modern methods of national accounting. This involves both recalculation and linking of previously constructed series (as for GDP), and for some variables and for some periods construction of completely new series (as for stocks of produced assets). The main variables for which data series are presented are as follows: GDP and its division into activities (i.e. types of production), GDP and its division into expenditures (investment, consumption and foreign trade), Net Domestic Product, wages and salaries (including social benefits), imputed labour income of self-employed, surplus, employment, hours worked, stocks of produced assets, and consumption of fixed assets. Both nominal and volume values are computed.
2) The second objective is to investigate patterns of economic growth, accumulation and crisis in Sweden based on the constructed macroeconomic data series. A holistic picture is sought for, where different theories, models and conceptual frameworks are discussed and confronted with the empirical data. More specifically, this enquiry attempts to i) describe and explain long-term tendencies and trends like the processes of industrialisation and accumulation, ii) construct and discuss periodisations based on different variables and depict and explain long-term fluctuations, and iii) develop empirical typologies of economic crises and chronologise short-term fluctuations.

These two objectives partly amount to two separate investigations. The construction of empirical data is based on the principles of national accounting, intended for the use by researchers with different theoretical backgrounds. The second objective is guided more by the theoretical underpinning of this study.

Nevertheless, both objectives are closely linked to each other. The construction of macroeconomic data series has been a precondition for writing the analytical parts of the thesis, but it has also, to a certain extent, restrained what issues could be looked into. The theoretical and analytical considerations have played an important role in improving the construction of the data series.

Because of the broad character of the objectives of the present study (PS) certain delimitations are necessary.

Monetary and financial conditions, economic policy, class struggle and the international context are not considered. There are certain theoretical considerations behind such delimitations, as this study strives to find the endogenous driving forces within the material process of accumulation and production, and see the latter (in the last instance) as more fundamental for economic change than other ontological levels of the social fabric.

This study focuses on one country only, which might appear a weakness, especially considering the international character of the capitalist economy. Sweden is, however, highly integrated into the international markets. Given that Sweden has not been involved in any war since the early 19th century, it constitutes a suitable study object from the perspective of investigating capitalist development and short-term economic fluctuations under relatively peaceful conditions.[8]

The dissertation is divided into ten chapters.

The first two chapters provide a background.

This chapter continues by dealing with earlier research and the theoretical and methodological perspective adopted in the thesis.

Chapter 2 discusses various theories of economic growth and business cycle fluctuations that are relevant for this study. It also deals with how different models of the long-term capitalist development can be classified.

Chapters 3, 4, 5 and 6 address the first objective of the study: the construction of macroeconomic data series. They discuss the main weaknesses with the earlier historical macroeconomic data series, and suggest how these series can be ameliorated and supplemented.

Chapter 3 critically examines different aspects of national accounting and presents the general method applied in this study to construct annual data series. The purpose is also to put national accounting in a theoretical perspective.

Chapters 4, 5 and 6 provide a more detailed account of how the macroeconomic data series of the present study has been constructed. Chapter 4 deals with the construction of data series of GDP by activity, chapter 5 with GDP by expenditure and produced assets, and chapter 6 with employment, hours worked, labour income and surplus (i.e. the factor side of national accounting).

Chapters 7, 8 and 9 address the second objective of the study: the analysis of growth, accumulation and crisis in Sweden during the investigated period.

Chapters 7 and 8 look into whether it is possible to discern specific long-term patterns in the economic development in Sweden during the preceding two centuries. These two chapters examine long-term trends and tendencies, and

[8] For an account of modern Swedish economic history, see Larsson, 1991, Schön, 2000a, Magnusson, 2002, and Andersson-Skog and Krantz (ed.), 2002.

discuss how periodisations can be made and long-term fluctuations depicted and explained (which is related to points i and ii of the second objective). While chapter 7 focuses on aggregate production and employment and their composition, chapter 8 deals with variables connected to the process of accumulation (i.e. produced assets, investment, export, import, labour income and surplus).

Chapter 7 discusses long-term patterns of aggregate growth and compares the present study estimates of aggregate growth with earlier estimates. A periodisation based on the concepts of "long upswings" and "long downswings" in GDP per capita is suggested. The chapter also investigates how the composition of aggregate production and employment has changed over time. Furthermore, the claim that a transformation from an industrial to a post-industrial society occurred in the second half of the 20th century is confronted with the empirical material.

Chapter 8 investigates the connections between accumulation, growth of produced assets and profitability. A periodisation is suggested based on the behaviour of investment and foreign trade. A major emphasis is given to the Marxist theory of a Tendency for the Rate of Profit to Fall (TRPF) and how it holds empirically when applied on Swedish macroeconomic data.

Chapter 9 attempts to develop typologies of economic crises and chronologise short-term fluctuations in modern Swedish history (which is related to point iii of the second objective). To find different crisis typologies, the deepest crises or depressions are compared with each other. One question is how general economic crises of a modern, industrial type differed from general economic crises of a pre-capitalist, agrarian type, and when the transition from the one type to the other occurred.

The last chapter draws some general conclusions of the investigation and relates the results of the different chapters to each other.

A glossary explaining the various economic and statistical terms and summary tables of the main aggregate variables are provided at the end of the dissertation. However, the macroeconomic data is too large to be published at the most disaggregated level in this volume. The intent is to make this data available online.

1.3 Previous research and main sources

The focus in this section is on previous research and sources that are most relevant to this study. Some of the works omitted are considered elsewhere in the thesis.

1.3.1 Previous attempts to construct historical macroeconomic series

The history of constructing historical national accounts for Sweden is in itself an interesting story.[9] Later studies base themselves on previous ones, and also tend to partly reproduce some of the earlier methods and flaws. The present enquiry is no exception to this pattern.

Statistics Sweden (Statistiska Centralbyrån, SCB) has published different time series from 1950 onward, but they consist of various series for shorter periods that have not been linked to each other. In the first half of the 1990s, Statistics Sweden changed its methods and classification system when it went over to the standards of *System of National Accounts 1993* (1993 SNA) and Swedish Standard Industrial Classification 1992 (SNI 92). Statistics Sweden does not link its newer series to the older ones at a more disaggregated level.[10] The data from Statistics Sweden is the main source for construction of the data series of the present study for the period after 1950. Much work has been spent to link the series of Statistics Sweden to each other.

National Income of Sweden 1861-1930 (NI), written by Erik Lindahl, Einar Dahlgren and Karin Kock, is the earliest work on constructing historical national accounts in Sweden.[11] The classification into different activities is also used in later studies. However, NI does not use the concept of Gross Domestic Product but that of national income at market prices. The deduction NI makes from gross output to calculate national income is not only of intermediate consumption, but also of depreciation of capital. NI includes services of durable consumer goods in national income, which is excluded in modern estimations of national income. To deflate national income, NI employs a cost-of-living-index, which is problematic because "this is based on prices more in conformity with the prices of finished products than other indices",[12] as the authors admit. The products included in the cost-of-living-index are weighted differently from the components of GDP, which also includes investment, government final consumption and foreign trade.

In 1956 Olof Lindahl presented a series of the Swedish national product for the period up to 1951.[13] This series is based on NI, supplemented with data for the period after 1930.

Östen Johansson in *Gross domestic product of Sweden and its composition 1861-1955* operates with the more modern concept of GDP.[14] For the period

[9] For an account of this history see Krantz, 2001: pp. 1-7 and Bohlin, 2003.
[10] See chapters 3, 4, 5 and 6 for a further discussion of the methods of Statistics Sweden.
[11] Lindahl, Dahlgren and Kock, 1937.
[12] Lindahl, Dahlgren and Kock, 1937: part one, p. 251.
[13] Lindahl, 1956.
[14] Johansson, 1967.

1930-1950, he uses materials collected by Konjunkturinstitutet (National Institute of Economic Research) and Einar Dahlgren. The striking difference with earlier studies is that he estimates separate price deflators for different types of activities, and presents an extended series for building and construction. But when it comes to aggregate GDP, he deflates it with the cost-of-living-index, and reproduces the same error as in NI. In the present study, Östen Johansson's series are primarily used for backward projection of foreign trade and investment in buildings and structures to the period before 1950.

In *Swedish National Product 1861-1970*, Olle Krantz and Carl-Axel Nilsson use almost the same nominal data as Östen Johansson.[15] The largest difference is that they construct a Laspeyre price index to arrive at a Paasche volume index of GDP,[16] and thereby avoid the usage of the cost-of-living-index as deflator. In order to proceed with their new method of deflation, Krantz and Nilsson divide the studied period into deflation periods of 15 to 25 years, with the base period at the beginning of each deflation period.

During the last two decades, important progress has been made in constructing historical national accounts for Sweden. It has mainly been conducted by researchers from the departments of economic history at Lund and Umeå University.

A project initiated by Olle Krantz, who shared the leadership with Lennart Schön, resulted in a published series named *Swedish Historical National Accounts* (SHNA).[17] SHNA was supposed to contain nine volumes with annual statistics over production of different activities between 1800 and 1980. The volumes covering different types of activities have been published, but not the last volume dealing with foreign trade. The main aggregated series and an analysis of Swedish economic growth and structural change were planned to be published separately, but these plans have yet to be materialised since the work on the basic material was not completed. In his unpublished paper, *Swedish Historical National Accounts 1800-1998 – Aggregated output series*, Olle Krantz presents a preliminary version of the aggregate series.[18]

In the SHNA project, the data are based on older classifications and methods. Figures from Statistics Sweden after 1950 are used to extrapolate the estimates of SHNA prior to 1950 *forward*. In the present study, the opposite method is applied and the estimations of SHNA are used to extrapolate the data on GDP and its division into activities and expenditures of the linked series based on

[15] Krantz and Nilsson, 1975.

[16] For an explanation of those indices, see section 3.4.

[17] Krantz, 1986, 1987a, 1987b and 1991, Schön 1988 and 1995, Ljungberg, 1988, and Pettersson, 1987.

[18] Krantz, 2001.

Statistics Sweden *backward*. The SHNA publication series use the technique of deflator periods, while the present enquiry uses an annual Fisher chain index.[19] Up to 1994, Statistics Sweden also used deflator periods but went over to an annual chain index when it switched to the 1993 SNA. The annual chain index is a more suitable technique when annual changes are analysed. Henceforth, the linked series of this study have the advantage of being in tune with the modern national account estimates, while the SHNA figures could be more reliable for the period before 1950.

In his doctoral dissertation, Karl Jungenfelt presents series of employment, wages and wage shares for Sweden for the period 1870 to 1950.[20] Jungenfelt's series of employment have (to my knowledge) never been linked to the series of Statistics Sweden at a more disaggregated level. There are also clear gaps in Jungenfelt's series. For building and construction, he only presents data for the period 1930-1950. For trade, banking, hotels and restaurants and other private services, he only presents data for the period 1910-1950.

In another doctoral dissertation, Peter Vikström expands the historical national accounts (including Jungenfelt's estimations of wage shares) with accounts for the process involving the horizontal distribution of income, for instance, tax and interest rate payments. Peter Vikström also estimates the saving rate for the corporate, household and government sectors, and makes some corrections to Jungenfelt's data series of the wage share.[21]

A Nordic project exists where economic historians and statisticians from the Nordic countries try to establish common definitions and deflating methods to make the series of the different countries comparable with each other.[22] With regard to international comparisons, Angus Maddison at the University of Groningen, Netherlands, has in several publications presented comparative figures of economic development for the last centuries among the OECD countries (which also include Sweden).[23] Nevertheless, in terms of historical national accounts, co-ordination among researchers and comparisons between various countries are yet to be fully developed.[24]

In chapters 3, 4, 5 and 6, a more detailed account is given concerning the methods and sources behind the construction of the macroeconomic data series in the present study.

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[19] See section 3.4 for a further explanation.

[20] Jungenfelt, 1966.

[21] Vikström, 2002.

[22] See, for instance, Christensen, Hjerppe, Krantz, and Nilsson, 1995, and Lindmark and Vikström (ed.), 2001.

[23] Maddison, 1991, 1995, 2001, and 2003. For a list of studies of historical national accounts at international and country level, see Maddison, 2003.

[24] For a discussion of European Historical National Accounts, see van Ark, 1995.

1.3.2 Some examples of studies on economic development and fluctuations

In his doctoral thesis, Erik Dahmén analyses the economic development in Sweden during the inter-war-years. Dahmén is, in the spirit of Schumpeter, critical to the traditional Keynesian-inspired business cycle studies that are primarily based on aggregate concepts. In contrast to such research, he investigates industrial transformation and entrepreneurial activity, especially the struggle between old and new. He argues for the necessity to relate the business cycle to the general economic development. Dahmén writes that the whole inter-war period experienced a rapid industrial transformation.[25]

In another doctoral thesis, Lennart Jörberg focuses on the growth and fluctuations of Swedish manufacturing for the period 1869-1912, i.e. the classical period of industrialisation.[26] Jörberg divides the investigated time span into cycles based on Burns and Mitchell's and NBER's model of reference cycles.[27] Jörberg also draws the conclusion that the cyclical downswings were relatively mild during the investigated period, at least in comparison to the inter-war years.[28]

Krantz and Nilsson in *Swedish National Product 1861-1970*, also deal with the question of long-term structural change.[29] By analysing the investment ratio, changes in the price indices and the relation between domestic product and domestic supply, they draw the conclusion that it is possible to find a periodisation pattern of the Swedish economic development consisting of the deflation periods of 15 to 25 years duration. Krantz and Nilsson admit that their periodisation based on deflation periods resembles a long-cycle pattern, but at the same time suggest that it may be that "the 20th century has not such a distinct long-cycle pattern as the 19th century".[30]

Within the project of SHNA different interpretation emerged between Schön and Krantz concerning the periodisation of modern Swedish economic history. This is discussed in more detail in section 2.4.5.

In their 1994 publication, *The Swedish Business Cycle: Stylized Facts over 130 Years*, John Hassler, Petter Lundvik, Torsten Persson and Paul Söderlind attempt to give a statistical description of the Swedish business cycle using annual data from 1860s to 1990 over both real and nominal variables (presented in Krantz

[25] Dahmén, 1950: pp. 412-413.
[26] Jörberg, 1961.
[27] Jörberg, 1961: pp. 217-221.
[28] Jörberg, 1961: pp. 361-363.
[29] Krantz and Nilsson, 1975: pp. 181-209.
[30] Krantz and Nilsson, 1975: p. 208. For a discussion of long cycle theories, see section 2.4.1.

and Nilsson's 1975 study).[31] They also compare the Swedish business cycle with some other countries in the Western world.

Many of the studies on the business cycle by Swedish economists have a common denominator of being highly technical, difficult to interpret and at the same time rather uncritical of the source material they use. Most often, these studies are based on the GDP-series of Östen Johansson (1967) or Krantz and Nilsson (1975), but neither of these series is well suited for analysing short-term fluctuations. These series are often linked to the series of Statistics Sweden after 1950 that is built on a quite different methodology, making it problematic to compare the period before and after 1950.[32] In contrast, in this study, an effort is made to construct series that are based on the same methodology for the whole period 1800-2000 and that are suited for an analysis of annual fluctuations as well.

1.4 Theoretical perspective and methodology

Interpreting history is never a neutral act (and neither is the critique of such interpretation). In my view, to clearly state the subjective underpinnings of a research does not render it less objective, but to the opposite facilitates for the reader to make an independent judgement of its results.

The present study adopts a Marxist perspective. This perspective is chosen because I consider Marxism to be the most adequate one in understanding capitalism as a totality of social relations, as historically transient and as rooted in the material conditions of human life.[33]

Having stated this, I do not want to devaluate the contributions of other perspectives in explaining capitalist growth, accumulation and crisis. Mainstream neoclassical economists have constructed, from a technical-mathematical point of view, more advanced growth models and taken up aspects of capitalist accumulation not dealt much by Marxist economists. Schumpeterian inspired studies have made important contributions by emphasising the role of innovation. Many other examples could be given.

Neither is Marxist economics monolithic. Many of the controversies in mainstream economics are similar to some of the tensions between different Marxist schools.[34]

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[31] Hassler, Lundvik, Persson and Söderlind, 1994: p. 5.

[32] For a discussion of this problem, see Krantz, 1993c.

[33] See especially Marx and Engels, 1965 [written 1845-1846]: pp. 23-95 and Cohen, 1991 [first published 1978].

[34] For an account of Marxist economics after Marx, see Howard and King, 1989 and 1992.

In this thesis, various theories, models, measures and concepts are pitted against one another, partly in a polemical and critical style. This holistic method of investigation could be described as dialectical (from the Greek *dialektike techne* – "art of discussion"), a tradition going back to Socrates and Plato, and later influencing Hegel and Marx. It implies that something positive is achieved by means of negation, by pitting opposite views against one another.[35] It also challenges the absolute identity between concepts and phenomena. For example, in this study it is argued that any single periodisation of economic history will be one-sided and even partially flawed. Therefore, several periodisations based on different criteria are used to a gain a more comprehensive understanding.

Some of the conceptual frameworks applied in this thesis could be viewed as attempts toward constructing theoretical syntheses. For example, in chapters 2 and 8, Marx's theory of a Tendency for the Rate of Profit to Fall is related to some aspects of neoclassical growth theory. Albeit the standpoint in the present study is that seemingly opposed propositions can be synthesised, it strives to avoid an eclectic method of taking bits from mutually exclusive perspectives in an incoherent way.[36]

Social power is central to Marxist economics. Social power is often missing in mainstream economic models, hidden behind the price of the commodity or reduced to the meeting of atomised individuals in the market.[37]

As a Marxist, I do not believe that the capitalist system is the highest form of society that humanity can achieve. As a researcher, this standpoint is also reflected in a critical attitude towards economic categories (as capital, profit and price) associated with this system; categories which I do not consider as timelessly given, but as historically determined. This can be contrasted to much of the mainstream thinking that implicitly assumes capitalist relations to exist in all societies. For example, Schumpeter argues that the "entrepreneurial function itself is not confined to capitalist society",[38] while the present-day national

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[35] See, for example, Hegel, 1975 [first published 1817]: pp. 116-119, and Rees, 1998: pp. 3-10.

[36] There is, in this sense, no absolute barrier between Marxist and non-Marxist economic categories. As explained by Massimo De Angelis (2000: p. 84):

"The primary role of social relations of production in Marx leads to the interpretation of economic categories that arise from everyday practice and their integration in economic theory, not as wrong categories, but as fetishized representations of these social relations of production. This insight of Marx… enables us to move beyond the often sterile Marxist criticism of orthodox economic theory, which labels it simply as wrong and ideologically biased. If there is a correspondence between fetishized categories and social relations of production, the task is to investigate *how* the correspondence is played out."

Such approach has also guided this thesis.

[37] See Holton, 1992: pp. 54-69 and 108-130.

[38] Schumpeter, 1939: p. 223.

accounting is bound to measure all kinds of production, even outside the market, in price terms.

Where neoclassical economics is strongest, in relation to the construction of mathematical models that uncover interesting aspects of economic life under capitalism, it is also the weakest because of its lack of a social and historical interpretation of the concepts used and the quantitative relations it deduces; which is precisely the strongest attribute of Marxist economics.

One important aspect of Marxism is the notion of inner contradictions; whereas a system is undermined endogenously by tendencies that are part of the system and, at the same time, operate against the system.[39] An example that is central to this study is the constant drive towards accumulation within capitalism, which results both in a dynamism of the capitalist system and in recurrent crises of overaccumulation of capital.

In this dissertation, it is strived to use concepts as precisely as possible and to distinguish between the terminology of national accounts and the terminology of different theoretical models. For example, the term "stock of produced assets" is preferred to the term "produced capital", when it refers to both capital (owned by capitalists) and to assets that are owned by non-profit institutions.

However, in a world that does not behave in a deterministic and atomistic way, conceptual fixity can become counterproductive if it is drawn too far. Even seemingly unequivocal concepts like GDP can be interpreted in different ways that give different empirical results.[40] While mathematics and statistics, or formal logic in general, demand conceptual fixity, the understanding of historical reality requires certain conceptual fluidity. This is also a cornerstone of the dialectical method, applied by, for example, Marx.[41] As argued by Orzech and Groll:

> Being strongly influenced by Hegel's method, Marx's concepts have a dynamic meaning in their appearances and transformations. His categories rarely have the straightforward, unequivocal meanings so familiar to, and expected by, the modern economist. On the contrary, they usually have multiple, sometimes complementary and sometimes contradictory, meanings. [42]

In this thesis, some concepts are more undifferentiated, where a too rigid definition would fail to catch the complexity and the manifold manifestations these concepts relate to. Other concepts are defined more specifically for the

[39] For a discussion of the role of the concept of contradiction in Marx's writings, see Wilde, 1989.

[40] See chapter 3, and sections 7.5 and 9.6.2.

[41] As Andrew Sayer (1992: p. 190) puts it:

"In neoclassical economics, the dominant strategy has been to sacrifice explanatory plausibility in order to retain closed systems and hence calculability… Marx's strategy was to abandon calculability for the sake of explanation."

[42] Orzech and Groll, 1989: p. 57.

purpose of statistical operationalisation or exemplification, the price of which inevitably is a certain loss of complexity. For example, the term "economic crisis" refers to a complexity of phenomena, while in chapter 9, the terms "depression" and "recession" are specified more narrowly in terms of the behaviour of GDP.

The conceptualisations and classifications of macroeconomic statistics are constantly changing and vary between countries and even between different statistical departments. In order to construct consistent series over the period of 200 years, a conceptual compromise between modern standards and earlier accounts is unavoidable. Every linked series automatically becomes partially flawed and based on certain assumptions that cannot be empirically verified for all periods.

In order to make theoretical generalisations of the empirical material, it has also been necessary to identify indicators in the national accounts for the theoretical concepts, even though there is only a relative, often quite distant, affinity between those.

The construction of historical macroeconomic data series partly consists in filling up gaps by making guesstimates.[43] Modern national accounts also make certain assumptions that are not based on direct sources; for instance, an addition is made to the value added to take into account the part of production that is not officially registered because of tax evasions.[44] Such guesstimates are more probable models of the empirical reality than direct representations of it. This must be taken into account when statistical analysis is made of the different data series. For instance, the annual movements of some variables of the present study are based on the movements of other variables; the correlation found between these two types of variables must, therefore, be seen as assumed rather than empirically verified. However, as I have noted myself when working with quantitative data, sometimes well-thought and empirically grounded guesstimates can be more reliable than uncritical calculations from primary sources, as the

[43] In relation to the Swedish project of SHNA, Christensen, Hjerppe, Krantz and Nilsson (1995: p. 44) writes as follows:

"In general, for the 19th century, many constructions and 'guesstimates' had to be made… The agricultural statistics, for example, are extremely unreliable up to the eve of WWI, and must be complemented in various ways. This is also true for important parts of manufacturing industry and – particularly – handicrafts. For building and construction, there had to be some ingenious guesswork…

For service production, the supply of data varies from being very good for central government to next to nothing for some branches."

In the present study, some of the constructed series (for example, of the stock of produced assets and wages) are based on even less reliable methods and sources.

[44] SOU 2002:118, bilaga 3, p. 31.

these sources are not always consistent with each other and could themselves be based on less reliable methods.

Since this study deals with quite a large quantitative material, it almost inevitably (by the laws of probability) contains calculation and other errors. Such errors can be found in most studies dealing with a large amount of quantitative material. In this research, a lot of time has been spent on double-checking and calculating series in different ways (to see if the same result would be obtained) in order to minimise the number of errors.

Some of the empirical results presented in this dissertation are (if considered in isolation to other parts of the dissertation) not specifically "Marxist", and could have been analysed from another theoretical perspective. While the importance to see the construction of empirical variables and the analysis of empirical relations in a broader theoretical perspective is emphasised in this thesis, it is also central not to overstretch this point. Many empirical results can be accepted by various theoretical currents that otherwise stand against each other, although the interpretations of such results usually diverge. Some important dividing lines – like how to periodise capitalist development – can traverse the dividing lines between Marxist and non-Marxist economics.

1.5 Summary

This chapter gives a general overview of the present study, focusing on the objectives, previous research and theoretical and methodological perspective.

This enquiry has two main objectives. The first one is to construct historical macroeconomic series for Sweden using a consistent method throughout the relevant periods. The second objective is to investigate patterns of economic growth, accumulation and crisis in Sweden, based on the constructed data series. For this purpose, different theories, models and concepts are discussed and related to each other.

Since the thesis deals with quite a broad topic, the previous studies dealing with similar themes are quite numerous. In this chapter, the focus is on previous constructions of historical macroeconomic series and on broader analyses of the process of growth, accumulation and crisis in Sweden during the 19th and 20th centuries. Previous studies are also discussed in the other chapters.

This study adopts a Marxist perspective. Some parts of the thesis could have been written, and some computations could have been made, when considered in isolation to other parts of the dissertation, by researchers adopting another theoretical perspective. But the overall reinterpretation of modern Swedish macroeconomic history is distinctly Marxist one.

2 Perspectives on growth and crisis

2.1 Introduction

This chapter deals with different theories and models of capitalist growth and fluctuations relevant for the present study.

Section 2.2 reflects on Marxist theories, and section 2.3 on neoclassical theories. Section 2.4 presents four conceptualisations of long-term growth: long cycles, phases or segments, steady growth and historical tendencies. Section 2.5 considers the application in this thesis of the theories and models discussed.

2.2 Marxist theories of capitalist development and crisis

2.2.1 Basic concepts

Marx's labour theory of value[45] is the foundation that all other Marxist analyses rely on (concerning exploitation, accumulation of capital, crisis, long-term decline of capitalism, etc.).[46]

In *Capital*, Marx begins the analysis by explaining the distinction between use value and exchange value[47], which he partly borrows from the classical economists.[48] The use value is connected to the physical properties of a product, making it useful to someone, and is only additive for a single homogenous type of product (i.e. for single qualities).[49] The exchange value is the power to exchange a product for other products.

According to Marx, the exchange value of a commodity is a function of the socially necessary labour time it takes to produce it, including used up materials and the wear and tear of fixed capital.[50]

One problem that Marx's theory of exploitation attempts to solve is how labour can be paid according to its labour value at the same time as the capitalist can sell commodities at their labour value and still make profit.[51] According to Marx, the workers are paid the full labour value of the commodity they sell, the use of their own labour power, which must not be confused with what they produce once

[45] See, for example, Marx, 1965a [first published 1867]: pp. 35-83.

[46] For a general discussion of the basic conceptual framework of Marx, see Howard and King, 1975, Carchedi, 1991, Harvey, 1999, and Saad-Filho, 2002.

[47] Marx, 1965a [first published 1867]: pp. 35-41.

[48] See, for instance, Smith, 1986 [first published 1776]: pp. 131-132. See also Foley, 2000: pp. 3-8.

[49] See also section 3.4.1.

[50] Marx, 1965a [first published 1867]: p. 317.

[51] Marx, 1965a [first published 1867]: p. 80.

they have been employed (i.e. the net value added in modern national accounting[52]). The extraordinary attribute of labour power, in contrast to other commodities, is that the use value of labour power – when the capitalist consumes it (i.e. puts it in the production process, which creates value added) – is generally higher than its exchange value (the wage). Marx illustrates this by showing that one part of the day the worker works for himself/herself (the necessary labour time) and the other part works for the capitalist (the surplus labour time).[53]

Marx further distinguishes between constant capital (c), variable capital (v) and surplus value (s).[54] The invested capital can be divided between constant capital (raw materials, the wear and tear of machines and buildings, etc) and variable capital (the expenses on wages). The constant capital does not contribute to any new labour value, but only transfers its old labour value to the new product. The variable capital not only transfers its old value but also creates new value, i.e. surplus value.

The rate of surplus value, or rate of exploitation, (e) is a relation between variable capital and surplus value, algebraically: $e = s/v$. The rate of profit (p) is a relation between surplus value and total invested capital, algebraically: $p = s/(c+v)$.[55] These two relations imply that the rate of profit is always lower than (or, in the exceptional case when no constant capital is used, equal to) the rate of exploitation.

Marx also introduces the concepts of value, technical and organic composition of capital, which are related to each other.[56] The *value composition of capital* (VCC) is the value relation between constant and variable capital, algebraically: $VCC = c/v$. In labour value terms, the value composition of capital can be seen as a relation between dead labour and living labour. "Dead labour" is the labour performed earlier in time, while "living labour" is the labour performed in the present[57] – a social relation in production between labour in different periods.[58] The *technical composition of capital* is the physical relation between the mass of material input and living labour, which cannot be measured directly since it is composed of different types of items that are not additive. The *organic*

[52] See section 3.2.2.
[53] Marx, 1965a [first published 1867]: pp. 212-220.
[54] Marx, 1965a [first published 1867]: pp. 199-211.
[55] Marx, 1965a [first published 1867]: p. 524.
[56] For a further discussion of these concepts, see Orzech and Groll, 1989, Saad-Filho, 1993, and Saad-Filho, 2002: pp. 71-80.
[57] Or, as formulated more drastically by Marx (1965a [first published 1867]: p. 233):
"Capital is dead labour, that, vampire-like, only lives by sucking living labour, and lives the more, the more labour it sucks."
[58] See Lipietz, 1986: p. 14.

composition of capital is, in Marx's words, the "value-composition of capital, inasmuch as it is determined by, and reflects, its technical composition",[59] which could be interpreted as a constant price measure.

The profit rate (p) can be seen as a function of both the value composition of capital (VCC) and the rate of exploitation (e), algebraically:

$$p = s/(c+v) = (s/v)/((c+v)/v) = e/(VCC+1) \quad (2.1)$$

Formula (2.1) implies that the profit rate always increases, holding the value composition of capital constant, when the rate of exploitation increases.[60] It also implies that the profit rate always decreases, holding the rate of exploitation constant, when the value composition of capital increases.[61]

The capital stock (K) can be calculated as capital consumed during one year (c+v) multiplied by the average turnover-time (T) of this capital expressed in years, i.e. K= (c+v)T. K is the accumulated constant and variable capital. The turnover-time includes both the average time that capital is used in the production process and the average time that capital exists in the form of commodities and money capital.[62] The profit rate calculated as s/(c+v) is thus different from the profit rate calculated as s/K.[63] If the turnover-time would decrease, assuming a constant s/(c+v), then the profit rate expressed as s/K would in fact increase. This is especially interesting when considering the introduction of lean production methods and the sharp decline of the inventory stock in relation to value added in the last decades of the 20th century as a consequence of a shortening turnover-time.[64]

In volume II of *Capital*, Marx distinguishes between simple reproduction, when the capitalists do not expand the production process, and extended reproduction, when part of the profit/surplus value is accumulated, in new constant and variable capital.[65] Marx also shows that for extended reproduction to work smoothly, the relations between wages and surplus and between production of capital and consumption goods, must grow in certain proportions; which creates the danger of disproportionalities and great crashes.[66]

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[59] Marx, 1966 [first published 1894]: pp. 145-146. See also Marx, 1965a [first published 1867]: p. 612.

[60] Partial differentiation of formula (2.1) yields: $\partial p/\partial e = 1/(VCC+1) > 0$.

[61] Partial differentiation of formula (2.1) yields: $\partial p/\partial VCC = -e/(VCC+1)^2 < 0$.

[62] Marx, 1967 [first published 1884]: pp. 156-354.

[63] See also Standford, 2002: pp. 12-14 for a presentation of different measures of profitability in modern business accounts.

[64] This is discussed further in chapter 8. See also Harvey, 1989: p. 156.

[65] Marx, 1967 [first published 1884]: pp. 328-527.

[66] Marx, 1967 [first published 1884]: pp. 524-525.

Like many classical economists, Marx makes a distinction between productive and unproductive labour.[67] Marx has in fact two concepts of productive labour: labour that is materially necessary (i.e., creates use value in general), and labour that creates surplus value for capitalists (i.e. augments capital).[68] Commercial workers are unproductive in both senses, as they neither contribute to production nor to surplus value. They only circulate existing products. They do not produce any surplus value for the capitalist class as a whole, although they create profit for the individual capitalist. This profit is just part of the surplus value created in the productive sector that is transferred to the commercial sector. The self-employed and workers in government services can be productive of use value in general though they are not productive for capital as they do not create any profits for capitalists. Productive labour for capital includes not only physical production, but also the so-called "productive services" – i.e. services that create a use value that can be sold for profit.[69]

The issue concerning what constitutes productive and unproductive labour, respectively, is quite complicated and is the source for an ongoing debate among Marxists.[70] Some Marxists argue that the distinction between productive and unproductive labour should be abandoned, which would clearly simplify the different calculations of, for example, surplus value and profit.[71] How we consider labour has repercussions on the empirical conclusions drawn, which is further discussed in section 8.2.

There are many strong arguments in support for both of these views. I would rather prefer to relativise the distinction between productive and unproductive labour. Where to put the "production boundary", the term used in present-day official national accounting,[72] is not just a technical issue but also depends on social factors, as Marx also recognises when he distinguishes between what is productive for capital and what is productive of use value in general. It is clear that capitalism behaves as if all paid labour would be productive, even though materially it is not productive. In my opinion, it should be allowed to draw the "production boundary" differently in different circumstances depending on the purpose of the study and the availability of empirical data. Furthermore, it is difficult to distinguish between productive and unproductive activities

[67] Marx, 1969 [written 1861-63]: pp. 152-304.
[68] See Cohen, 1991 [first published 1978]: p. 33.
[69] Marx, 1993 [written 1857-1858]: pp. 305-306, and Marx, 1967 [first published 1884]: pp 134-155.
[70] See Carchedi, 1991: pp. 28-31, Laibman, 1992: pp. 71-87, Shaikh and Tonak, 1994, Mohun, 1996, Houston, 1997, Marginson, 1998, Savran and Tonak, 1999, Laibman, 1999, Cronin, 2001, and Mohun, 2002.
[71] See Laibman, 1999: p. 62, and Hardt and Negri, 2000: p. 402.
[72] *System of National Accounts 1993*, 1993: pp. 123-127. See also section 3.2.3.

empirically, since unproductive type of work is also performed in productive activities (for example, commercial work in manufacturing enterprises), and vice versa.[73]

In the present study, Marx's distinction between productive and unproductive labour is not applied in the construction of national accounts and volume indicators for economic growth. However, the disaggregation of GDP growth into the contribution of different types of activities shows how large the contribution was of, for example, real estate and circulation, which are considered as unproductive activities by most Marxists.

In volume II and III of *Capital*, Marx further elaborates his theory of labour value. In reality, there is no mechanical relationship between price and labour value; the determination is of a mediated nature. The analysis becomes ever more complicated when the model is made to approach closer to the reality in a series of approximations. Later writers show that the relation between the labour value and price is more complicated than Marx imagines, and that some of the assumptions that Marx makes does not hold. This is the so-called "transformation problem".[74]

Nevertheless, the labour theory of value should be seen as (but not reduced to) a heuristic model that tries to grasp the essence of capitalism.[75] And as every other model, it is not a perfect representation of reality. Nor are even such simple economic concepts as price unproblematic. Prices never exist unequivocally, as prices vary between different regions and sellers, are distorted by taxes and market imperfections, etc.[76] The most important aspect of the labour theory of value is that the economy is seen as a structure to organise labour at the

[73] Sungur Savran and Ahmet Tonak (1999: p. 142) make the following point in this respect:

"It is true that at the *empirical* level some difficulty may arise when calculating the ratio of production activities to circulation activities in commercial enterprises, but at a *conceptual* level the distinction is crystal clear."

[74] For instance, Marx's claim that in aggregate prices and labour values are equal has later been shown to be problematic as well, and generally can only be true (by construction) of one of the aggregate variables (total production, total net production or total surplus value). See Sweezy, 1970 [first published 1942]: pp. 109-130, Carchedi, 1991: pp. 125-152, and Howard and King, 1992: pp. 227-303, for a further overview of the discussion around the so-called "transformation problem". For contributions to the debate in the recent period, see Freeman, 1995, Carchedi and de Haan, 1995, Saad-Filho, 1997, Sinha, 1998, Foley, 2000, Mosley, 2000, Fine, 2001, Fleetwood, 2001, Laibman, 2002, Campbell, 2002, Fine, Lapavitsas and Saad-Filho, 2004, Loranger, 2004, and Mohun, 2004. See also *The new value controversy and the foundations of economics* (2004) edited by Freeman, Kliman and Wells, which contains different essays on the issue.

The so-called "new interpretation" or the "new solution" to the transformation problem reinterprets Marx's aggregate price-value equality in net terms rather than in gross terms (Mosley, 2000: p. 284) and purports that money is the immediate, direct and exclusive expression of abstract labour (Fine, Lapavitsas and Saad-Filho, 2004: p. 4).

[75] Foley, 2001: p. 35.

[76] A similar point is made in Bladh, 1993: p. 167.

disposition of society, as a relation between people beneath and explaining the relation between prices, which makes it so fundamental to Marxist economic theory. It partly represents an attempt to understand capitalism and the market from a standpoint outside the concepts of capitalism and the market, such as prices.[77]

The different Marxist categories like constant and variable capital, can be expressed both in labour time (labour values) and current price terms. This can be seen as two levels of analysis, which partly deviate from each other. A Marxist perspective does not preclude an analysis mainly based on prices, but such an analysis must be taken critically. The present enquiry focuses on the price relations, not least because the empirical material itself poses certain restrictions. The transformation problem is, therefore, not an issue for this study other than the theoretical context it provides. To fully investigate the labour values of the different Marxist categories, the analysis must be based on so-called input-output tables.[78]

2.2.2 Tendency for the Rate of Profit to Fall[79]

The mechanisms of accumulation are the basis for Marx's theory of a Tendency for the Rate of Profit to Fall (TRPF).[80] Competition drives the capitalists to increase expenses on constant capital in relation to the expenses on variable capital. However, if the value composition of capital increases, and if the rate of exploitation is constant, the rate of profit falls.[81]

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[77] Empirically, the labour theory of value has been shown to hold quite well. A number of empirical studies concerning the relation between labour values and prices find correlations well above +0.9. The deviation between the labour value and money rates of surplus value is, according to several of those studies, less than 10 percent. This suggests that different ratios in labour value terms can be investigated using equivalent ratios expressed in money terms as indicators. See, for instance, Shaikh, 1984, Cockshott, Cottrell and Michaelson, 1993, Shaikh and Tonak, 1994 (pp. 141-144), and Tsoulfidis and Maniatis, 2002. A recent investigation (Zachariah, 2004) using input-output tables from Statistic Sweden confirms "that labor value is an attractor to market price" also in Sweden. For a criticism of such empirical testing, see Laibman, 2002: p. 164 and Kliman, 2002.

The discussion concerning the relation between labour value and price must, however, be separated from the distinction between productive and unproductive labour, which poses some greater empirical problems.

[78] Shaikh and Tonak, 1994: pp. 38-88.

[79] For an overview of the Marxist debate on this issue, see Moseley, 1991, and Cullenberg, 1994. Cullenberg also discusses (pp. 51-84) the debate that followed the micro-founded challenge to Marx's theory of a falling rate of profit, centred on the so-called Okishio Theorem, which is beyond the scope of this study.

For recent contributions to the subject, see Moseley, 1999, Marquetti, 2003, and Reuten, 2004.

[80] Marx, 1966 [first published 1894]: pp 211-266.

[81] See footnote 61 on page 16.

Theories of a fall in the rate of profit are not only the domain of Marxist discourse. Many of the classical economists were also concerned with this issue and have partly influenced Marx's ideas in this respect.[82] However, Marx's theory is clearly of a different nature than the earlier theories of a falling rate of profit. For example, Marx criticises Ricardo's view that the fall in the rate of profit is caused by the decreasing labour productivity of agricultural labour, arguing that Ricardo "flees from economics to seek refuge in organic chemistry".[83] Marx claims that the rate of profit falls not because labour becomes less productive, but rather because it becomes more productive – an example where the development of the productive forces conflicts with the existing relations of production.

Marx does not claim that the profit rate falls mechanically as capitalism develops; it does so in a mediated and contradictory way. He calls this fall a law of a tendency,[84] and argues that "it is only under certain circumstances and only after long periods that its effects become strikingly pronounced".[85] The tendency is constantly contradicted by a set of counteracting influences that partly emanates from the main tendency itself.[86] The two most important counteracting influences are the following:

- A falling rate of profit forces the capitalists to try to increase the rate of exploitation, and thus increase the profit rate. This is also helped by an increasing productivity, which means that wage goods could be cheapened and hence the wages lowered in labour value terms without being lowered in the amount of goods they can buy. There is, however, a limit for this counteracting tendency, which is the total amount of surplus labour that can be extracted out from the workers.
- An increase in the productivity, due to increased constant capital per employed, also leads to the cheapening of commodities that constitute constant capital. This implies that while the technical composition of capital increases, it is not necessary so that the (current) value composition of capital must increase, or at least not necessarily increase to the same extent. Marx thinks that in the long run, the (current) value composition of capital also increases, but it is unclear for exactly what reasons.

Geert Reuten argues that there is a certain ambiguity in Marx's writing and that there is a discrepancy between Engels' edited version of *Capital* III and the original manuscript written by Marx. According to Reuten, there are, in fact, two

[82] See, for instance, Cullenberg, 1994.
[83] Marx, 1993 [written 1857-1858]: p. 754.
[84] Marx, 1966 [first published 1894]: p. 211. See also Burkett, 2000.
[85] Marx, 1966 [first published 1894]: p. 239.
[86] Marx, 1966 [first published 1894]: pp. 232-240.

different interpretations that can be made of Marx's theory: either that "the profit rate will vary (cyclically) around a *falling trend*", or that "the profit rate will vary *cyclically* but not necessarily around a falling trend".[87] The second interpretation implies that the theory of a falling rate of profit is rather reduced to a business cycle theory, which is not the most common interpretation.

Tugan-Baranovsky claims that the rise in the rate of exploitation can be theoretically sufficient to offset any putative increase in the value composition of capital.[88] This is partly a consequence of how Marx expresses the value composition of capital mathematically, which is problematic for several reasons. In my view, a better expression would be the capital/output ratio, or K/(s+v), where the numerator consists of the value of the whole net product (instead of only the wages of workers). The inverse of the capital/output ratio, (s+v)/K, is the maximum rate of profit (or capital productivity); i.e. what the profit rate would be if the wages would be zero and the workers would live on air. If the capital/output ratio approaches infinity, the maximum rate of profit approaches zero, and this cannot be offset by any increase in the rate of exploitation.[89]

The capital/output ratio is preferable for other reasons as well. If, for example, wages fall by half, holding everything else constant, this would mean that the value composition doubles,[90] but the capital/output ratio would be the same as before. The increase in the value composition of capital in this case reflects an increase in the rate of exploitation, but the capital/output ratio is unaffected by changes in the rate of exploitation. Therefore, the capital/output ratio reflects the relations within production clearer than the ratio of constant to variable capital.[91]

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[87] Reuten, 2004: p. 164.

[88] See Howard and King, 1989: pp. 188-189 for a discussion of this.

If the value composition of capital increases by ΔVCC, it is enough for the rate of exploitation to increase $\left(1+\frac{\Delta VCC}{VCC_t+1}\right)$ times to offset any decrease in the profit rate, or algebraically, after also using formula (2.1):

$$p_{t+\Delta t} = e_{t+\Delta t}/(VCC_{t+\Delta t}+1) = e_t\left(1+\frac{\Delta VCC}{VCC_t+1}\right)\Big/(VCC_t+\Delta VCC+1) =$$

$$= e_t\left(\frac{VCC_t+1+\Delta VCC}{VCC_t+1}\right)\Big/(VCC_t+\Delta VCC+1) = e_t/(VCC_t+1) = p_t$$

[89] See Lipietz, 1986: p. 14 and Cullenberg, 1994: p. 46.

[90] Algebraically: c/(v/2) = 2c/v.

[91] A similar point is made in Lipietz, 1986: pp. 14-15.

2.2.3 Marxist theories of crisis

Marxist economics points to the contradictory nature of capitalism to explain its recurrent crises. This can be contrasted to neoclassical economics, which considers the market as fundamentally harmonious.

Marx does not develop any clear and coherent crisis theory,[92] albeit he makes several suggestions about the causes of capitalist crises reflecting the fundamental idea of a contraction between the development of the productive forces and the dominant capitalist relations. Many of Marx's suggestions are dissimilar, which also form the basis for competing Marxist schools concerning capitalist crisis.[93]

The role of money in economic crises has a connection to the discussion on Say's law that states that the supply of commodities generates an equal demand.[94] Marx opposes this law, asserting that in a monetary economy the separation of sale and purchase implies the possibility of a crisis, because the seller is not automatically a buyer and can choose to save the money for later-days.[95] This is a clear example of the dynamic character of Marx's theory, as opposed to the static assumptions of mainstream economics.

Within the Marxist tradition two types or models of capitalist crises could be identified: (1) crises emanating from the difficulties of realising surplus value (i.e. of selling the produced goods at their full values), and (2) crises resulting from a fall in the rate of profit. The first types of crises are associated with disequilibria, while the latter are fully compatible with equilibrium in the economy.[96] Each of these two types of crises, in turn, contains two distinct types of crises, making four models of crises in all. Underconsumptionism and disproportionality constitute the basis for crises arising from realisation problems. The fall in the rate of profit can be the result of either a declining rate of exploitation according to the labour shortage theory or of an increase in the value composition of capital according to the theory of a Tendency for the Rate of Profit to Fall.[97] In the Marxist tradition, other causes (as for example credit squeeze) have generally been subordinated to one of these four types or models.

The underconsumtionists claim that the crisis of capitalism is caused by the situation that workers underconsume in society, which implies that the capitalists cannot sell all the goods that are produced. A realisation crisis takes place (i.e.

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[92] O'Connor, 1987: pp. 59-60.

[93] See Sweezy, 1979 [first published 1942]: pp. 133-146 and Carchedi, 1991: pp. 153-216.

[94] See Itoh and Lapavitsas, 1999, for an analysis of the view of Marxist theories on the role of money and credit in a capitalist economy.

[95] Marx, 1965a [first published 1867]: pp. 103-124.

[96] See Sweezy, 1970 [first published 1942]: pp. 145-146 and Itoh and Lapavitsas, 1999: pp. 123-127.

[97] Sweezy, 1970, [first published 1942]: pp. 147-186 and Itoh and Lapavitsas, 1999: p. 126.

the surplus value produced as commodity is not realised as money). The crisis is solved by the destruction of overproduced goods and the upswing can begin again, or is not solved and the system collapses.[98]

The underconsumptionist theory is criticised from a number of different approaches, both Marxist and non-Marxist. For example, Jim Kincaid asks rhetorically, if underconsumption is persistent in the economy, why cannot the competitive mechanisms eliminate the excess capacity?[99]

The disproportionality theory suggests that capitalist crisis is caused by the anarchistic and unplanned nature of capitalism, by the lack of coordination between capitalists. Sometimes too much is produced of machines, and sometimes too little is produced of other goods. Those disequilibria generate a crisis, but in the end a new equilibrium is established.[100]

Tugan-Baranovsky is one of the better-known earlier representatives of the disproportionality theory. He describes the root problem of the malfunction of capitalism as the lack of institutions that ensure proportionality. He sees underconsumption as an example of disproportionality, but does not point out underconsumption as the main cause of disproportionality. According to him, underconsumption has no privileged role in the operation of capitalism.[101]

Crisis stemming from a decrease in the rate of exploitation, in accordance with the labour shortage theory, is a consequence of rising wage rates in value terms. It follows a period of intense accumulation of capital that exhaust the reserve army of labour (i.e. it can also be interpreted as an overaccumulation of variable capital). A fierce competition between the capitalists develops. The capitalists are forced to bid against each other to employ workers. The bargaining position of the workers is strengthened, and wages increase as a consequence. The lower profit rate makes the capitalists less eager to produce and invest, and a crisis develops.[102] A similar theory was already formulated by Adam Smith.[103]

The fall in the profit rate due to an increase in the value composition of capital (which can be interpreted as overaccumulation of constant capital) does, however, not depend on the rate of exploitation, and implies that the profit rate in the long run falls regardless of the level of the rate of exploitation. Thus, the two types of causes or models of a falling rate of profit are of qualitatively different nature.

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[98] See Luxemburg, 1963 [first published 1913] and Baran and Sweezy, 1968. For a general overview of underconsumptionist theories, see Sherman, 1991: pp. 191-207 and Nowell, 2002-2003.

[99] Kincaid, 2003: p. 165.

[100] Sweezy, 1970, [first published 1942]: pp. 156-162.

[101] Based on Howard and King, 1989: pp. 168-171.

[102] Sweezy, 1970, [first published 1942]: pp. 147-155.

[103] Smith, 1986 [first published 1776]: p. 190.

There are also Marxist economists who points to the multi-causal character of capitalist crises. For example, Ernest Mandel criticises the four Marxist crisis models for being one-sided. He emphasises "that the explanation of the phenomenon of periodic crises must *combine* the problems resulting from the fall of the rate of profit with those of the realization of surplus value".[104]

The focus of this study is to explore factors behind crises connected to the fall in the rate of profit. This is done in chapters 8 and 9. The empirical material does not allow a full investigation of the causes behind crises connected with problems of realisation.

2.3 Neoclassical models

2.3.1 Introduction

The mainstream growth models are mostly neoclassical in their construction. They mostly assume perfect competition, perfect information, no externalities, etc. These are quite unrealistic assumptions and not even the most laissez-fair economy will conform to them entirely. The main differences between various mainstream growth models concern which variables (mainly technological progress) behind the output level are to be explained from within the model (endogenously) and which variables are to be explained from outside the model (exogenously).

2.3.2 Exogenous growth models

The Solow, or the Solow-Swan, growth model is the simplest model, which is therefore the basic reference point for the other (neoclassical) growth models.[105] The main variables that it takes into account in determining output (Y(t)), are: capital (K(t)), labour (L(t)), technical level (A(t)) and (gross) saving rate (s(t)). Output (Y(t)) includes depreciation of capital ($\delta(t)K(t)$, where $\delta(t)$ is the rate of depreciation). The model also assumes that only one type of commodity is produced.

The Solow model takes technical level and the saving rate[106] as exogenously determined. Only capital and labour are determined endogenously. That is why the Solow model is labelled as an exogenous growth model, while endogenous

[104] Mandel, 1978 [first published 1977]: p. 165.

[105] See Romer, D., 1996, pp. 7-12.

[106] In neoclassical growth models, the distribution of income between labour and capital usually does not affect saving, since workers and capitalists are assumed to have the same propensity to save (see Cesaratto, 1999). Both Keynesians and Marxists question this assumption. In the Marxist theory, accumulation comes from the surplus value, although the existence of the credit system enables investment projects to be drawn from savings from the whole population (see Fine, 1991).

growth models[107] take the saving rate and/or technical level as determined endogenously within the model.[108]

The aggregate production function[109] usually takes the form:

$$Y(t) = F(K(t), A(t)L(t)) \quad (2.2)$$

AL is referred to as effective labour. Most authors read A as knowledge or technical level, and formula (2.2) implies that A affects output by augmenting labour, referred to as Harrod neutrality.[110] The growth rate of capital productivity (output per capital unit) is assumed to be zero in the long run. For the growth rate of labour productivity (output per labour unit) to equal the growth rate of technological change, the growth rate of the capital/labour ratio must be the same as the growth rate of labour productivity.

An alternative formula of the aggregate production function is (also suggested by Solow[111]):

$$Y(t) = A(t)F(K(t), L(t)) \quad (2.3)$$

Formula (2.3) presupposes that technical change is neutral – referred to as Hicks-neutrality[112] – implying that for labour productivity to grow in proportion to technological change, no increase in the capital/labour ratio is required as in formula (2.2). "A" is then interpreted as total factor productivity (output divided by all types of inputs),[113] and also labelled as the Solow residual (R), which is why formula (2.3) is used for the so-called "growth accounting".[114]

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[107] See Romer, P., 1994: p. 3.

[108] The modern accounts of the Solow model, which is also what is presented in this thesis, diverge somewhat from the original formulation of Robert Solow and T. W. Swan (in Solow, 1956 and Swan, 1956). For instance, in the original formulation of the model, Solow and Swan do not take into account technological change.

[109] A number of economists (foremost, Joan Robinson) point to the problem of deriving a well-behaved aggregate production function from micro-founded production functions. For a review of this discussion, see Felipe and Fisher, 2003.

[110] See, for instance, Stiglitz and Uzawa, 1969: pp. 119-122 and Robinson, 1938.

[111] Solow, 1957: p. 312.

[112] See footnote 110.

[113] See, for instance, Abramovitz, 1956, Solow, 1957, and Romer, D., 1996: p. 26. For a review of different views on the concept of "total factor productivity", see Mahadevan, 2003. According to Mahadevan (2003: p. 366), TFP-growth can be measured in different ways.

[114] See Rymes, 1971: pp. 89-131 and Rymes, 1983 for a critique of the Hicks neutral measure of technological change. In Marxist analysis, the increase of capital per labour is in itself a manifestation of technical change, which is associated with the tendency for the rate of profit to fall due to increased value composition of capital (Marquetti, 2003: p. 192).

One problem with the neoclassical growth accounting is the attempt to analytically separate the contribution of different production factors. In Marxist analysis it is, on the other hand,

One example of formula (2.2), which is the most commonly used, is the Cobb-Douglas-function, which can be written as (in its labour augmenting form):[115]

$$Y = K^{\alpha}(AL)^{1-\alpha} \; ; \; 0 < \alpha < 1 \qquad (2.4)$$

According to the Solow model, the economy follows a "balanced growth path" in the long run, with output and capital stock growing at a constant and equal rate. This, however, only occurs in the usual growth models if technological change is labour augmenting and the production function can be written in the form of formula (2.2).[116] In this situation, the total investment (sY) equals break-even investment, i.e. the amount of investment that keeps the capital/output ratio (K/Y) at a constant level and thus only keeps up with the growth in labour, technical development and depreciation of capital.[117] When K/Y is constant, Y and K must grow at the same rate.[118]

Temporarily, an increased saving rate ($s + \Delta s$) can speed up the growth rate of output and capital stock. However, as the capital/output ratio rises, an increasing proportion of output needs to be invested to equip the increasing labour force, to keep up with technical development and to compensate for depreciation, to the point where the additional saving is devoted entirely to maintaining the higher capital/output ratio. In the opposite case, a decreased saving rate ($s - \Delta s$) slows down the growth rate of output and capital stock. But as the capital/output ratio decreases a decreasing proportion of output is invested to keep up with increasing labour force, technical development and depreciation of capital, which further slows down the decreases in capital/output ratio until this ratio attains an unchanging but lower level. In both cases, the economy returns to the balanced growth path in the long run but on different capital/output-levels.[119]

This can be related to Marx's theory of a falling rate of profit due to increasing value composition of capital discussed in section 2.2.2.

Since the inverse of the capital/output ratio is the maximum rate of profit, the Solow model (under Harrod neutral technological change) shows that the

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emphasised that (produced) capital is a product of labour itself. For example (assuming a multi-sector model), if the output of the number of pages written by an author per unit of computer processing power decreases, it means that "capital productivity" falls, which also gives a negative contribution to total factor productivity. However, if the labour time to produce a unit of computer processing power decreases as well, then the number of pages written by an author per unit of labour involved in producing the computer power provided to the author could actually increase at the same time.

[115] See Romer, D., 1996: p. 9.

[116] Stiglitz and Uzawa, 1969: p. 120.

[117] See Romer, D., 1996: p. 13.

[118] Solow, 1956: pp. 68-73, and Swan, 1956: pp. 334-339.

[119] See Romer, D., 1996: pp. 15-16.

economy, once it follows a balanced growth path, also reaches a stable maximum rate of profit. However, if the economy moves from one balanced growth path to another with a higher capital/output ratio, it also implies a decreased maximum rate of profit.

As the change in the capital stock or net investment (ΔK) is equal to gross investment (sY) less depreciation of capital (δK), the growth rate of capital can be expressed as follows:

$$\frac{\Delta K}{K} = \frac{sY - \delta K}{K} = \frac{sY}{K} - \delta = \frac{s}{K/Y} - \delta \qquad (2.5)$$

Equation (2.5) shows that there is an upper limit on the capital/output ratio, at least in the long-term. If the capital/output ratio is sufficiently high (i.e. if it is larger than s/δ), the growth rate of the capital stock becomes negative, which, in turn, will bring down the capital/output ratio.

However, even though the capital/output ratio does not increase indefinitely,[120] a secular increase depresses the rate of profit. Also, it is possible that the fluctuations in the capital/output ratio play an important role in explaining capitalist crises, since an increased capital/output ratio depresses the rate of profit, and hence gives rise to a period of disinvestment, which, in turn, leads to a decreased capital/output ratio and a restored rate of profit. This is further discussed in chapters 8 and 9.

2.3.3 Endogenous growth models

During the last two decades, the importance of knowledge and education has been underlined by different theories and models,[121] which also reflect broad changes within the economy.[122] These are called endogenous or new growth theories.

A distinction should be made between abstract knowledge, which is a non-rival good, and so-called human capital, which consists of the abilities, skills and knowledge of particular workers and that, as conventional economic goods, is

[120] Theoretically, such an indefinite increase cannot be ruled out. If the share of depreciation in gross value added continuously increases towards 1, and hence the share of net value added in gross value added continuously decreases towards zero, then the ratio of capital to *net* value added could increase indefinitely. If the rate of depreciation continuously decreases towards zero, then the ratio of capital to *gross* value added could increase indefinitely as well. However, neither of the two latter cases are very probable.

[121] See, for instance, Romer, D., 1996: pp. 95-140 and Foray, 2004: pp. 49-112. For a critical assessment of endogenous growth theory from a radical perspective, see Fine, 2000.

[122] See Foray, 2004: p. xi.

rival and excludable (though knowledge could also be excludable, but is less likely to be so).

A problematic aspect of the new growth theories is that neither knowledge nor human capabilities can easily be capitalised.

Under capitalism, what is sold on the labour market is not the labourers, which would imply slavery, but the use of the labour power for a temporary period of time. "Human capital" is thus not capital but a capability of labour.[123] "Human capital" as such cannot be traded freely in a market, only rented out with the person that possesses it. It is a rival, excludable and owned item, but it is not owned as capital.[124] This is also shown by the fact that the money a company spends in educating its employees does not imply it can stop the employees from leaving the company if they choose to do that, although an increasing number of labour contracts are written restricting the form of knowledge that an employee can consider as his or her own to use in some future employment.[125]

Free competition presupposes free flows of information, and this in itself restricts the transformation of specific knowledge into capital.[126] What companies can do is to monopolise knowledge, i.e. to transform knowledge into a commodity.[127] Such commodification of knowledge is limited and insecure, precisely because of the non-rival and social nature of knowledge.

Furthermore, the operationalisation of the new growth theory is problematic. In company and national accounts, only a very small part of capital could be described in terms of "knowledge capital".[128] Nor is it easy to put a fictitious price tag on these types of "capital". An empirical testing of these models could require that another measure than price would be used, which is beyond the scope of the present study.[129]

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[123] For a discussion of how to measure individual capabilities, see Hartog, 2001.

[124] As argued in *System of National Accounts 1993*, 1993: p. 10, for not considering education as capital formation:

"…while knowledge, skills and qualifications are clearly assets in a broad sense of the term, they cannot be equated with fixed assets as understood in the System… Education assets are embodied in individuals as persons. They cannot be transferred to others and cannot be shown in the balance sheets of the enterprises in which the individuals work (except in rare cases when certain highly skilled individuals are under contract to work for particular employers for specified periods). Education assets could possibly be shown in balance sheets for individuals in which they are embodied, but individuals are not enterprises."

[125] May, 2002: p. 323.

[126] "A firm finds it far more difficult to control its knowledge than its machines, for numerous opportunities for leaks and spillovers arise." (Foray, 2004: p. 91).

[127] See May, 2002: pp. 322-326.

[128] See *System of National Accounts 1993*, 1993: pp. 9-10.

[129] For attempts to valuate human capital empirically, see, for example, Maddison, 1995: p. 37, and Gustavsson, Krantz and Lindmark, 2001: pp. 238-240.

2.4 Competing patterns of long-term economic development

When discussing different periodisations, it is important to consider that the causal mechanism can vary with the time span of economic changes and fluctuations.

In his book *The Business Cycle*, Howard Sherman distinguishes between seven different types of movements in time:[130]

(1) In the very long run, there is the evolution of economic systems from one mode of production to another. An example is the evolution from feudalism to capitalism.

(2) Various stages through which each economic system evolves. For example, the first stage of capitalism in the USA was characterised by very small economic units, while later giant corporations dominated the economy.

(3) Long run trends such as the increasing percentage of women in the labour force.

(4) The alleged long cycle.

(5) The ordinary business cycle.

(6) Seasonal variations.

(7) Erratic movement of each economic variable not directly connected to any of the other systemic movements.

According to Schumpeter, a Kondratieff cycle of 60 years consists of a number of shorter cycles, most importantly the 10-year Juglar cycle and the 40-month long Kitchin cycle (this is Schumpeter's famous "three-cycle-model").[131] Such a division between different cycles is criticised by modern researchers, who argue that fluctuations do not exhibit this regular pattern.[132] According to Burns and Mitchell, a business cycle is recurrent, but not periodic, with a lower limit of duration of "more than one year" and an upper limit of "ten or twelve years".[133]

It is also important to distinguish between crises of different intensities. In this thesis, a distinction is made between general crises, which affect the whole economy, and partial crises, which affect only a part of the economy.

Concepts related to the usual business cycle are further dealt with in chapter 9.

What follows in this section is an attempt to classify patterns of long-term capitalist development into four different conceptualisations that are not necessarily mutually excluding.[134] The classification is a way to sort out different views. It must not be confused with, for example, how various authors would

[130] Sherman, 1991, pp. 8-9.
[131] Schumpeter, 1939, Vol. I, pp. 161-174.
[132] Romer, D., 1996: p 146.
[133] Burns and Mitchell, 1946: pp. 6-7. See also section 9.2.
[134] See also Edvinsson, 1999: pp. 10-12.

label their model in relation to other models. This classification abstracts from the causes behind the specific patterns and the issue concerning what is the best measure of capitalist development. Hence, each conceptualisation can include dissimilar theories that nevertheless agree on the general pattern. For example, both Marxists and Schumpeterians have formulated long wave theories. The fundamental difference between Marxists and Schumpeterians remains since these two describe the causal mechanism behind the observed patterns differently.

None of the four discussed conceptualisations of long-term growth are applied in a rigid form. Rather these four are taken as reference points that partly exclude and partly complement each other. Other classifications could be made as well.

2.4.1 Long cycles and long waves

According to long-cycle or long wave theory, cycles of 40 to 60 year duration can be observed in the economy, similar to the shorter business cycle, with phases of upswings and downswings.

The Soviet economist Kondratieff formulated such a theory in the early 1920s[135] that later inspired Joseph Schumpeter.[136] But there were also earlier contributions. The Marxist, van Gelderen, formulated a long-wave theory before Kondratieff did so.[137] The two most visible schools of long wave theory are the Schumpeterian and Marxist ones, which probably also have the best empirical backing.[138] Ernst Mandel is the most prominent Marxist representative of this tradition.[139] However, there are also Marxists and Schumpeterians that are critical to long wave theory.

In Schumpeter´s theory, entrepreneurs and innovations come in swarms, which explains why different cycles can be observed in the economic development. The Kontradieff-cycle of 60-year duration is differentiated from the shorter cycles in that it does not involve merely specific innovations, but the whole industrial and commercial structure.[140]

Ernst Mandel distinguishes between theories of “long cycles” and theories of “long waves”.[141] According to him, theories of long waves are less mechanical and less deterministic. The difference between a cycle and a wave motion is that a cycle automatically repeats itself and causes a new cycle, while a wave-like

[135] Kondratieff, 1996 [first published 1926].
[136] Schumpeter, 1939: p. 164.
[137] van Gelderen (1996 [first published 1913].
[138] See Freeman, 1996: p. xxxiii and Kleinknecht, 1992: p. 9.
[139] Mandel, 1995 [first published 1980] and Mandel, 1996.
[140] See footnote 131 on page 29.
[141] Mandel, 1995 [first published 1980]: p. 16.

movement can consist of one singular wave and does not automatically lead over to new waves. While the cycle always is a wave-like-movement, the wave-motion is not necessary a cycle. The transition between the long upswing and the long downswing is, according to Mandel, similar to the one for the shorter business cycle, and is caused by endogenous economic factors. The overaccumulation of capital permeates the economy, the rate of exploitation decreases because of the growing strength of the workers, etc. But for a long upswing to take place several factors have to be combined. The working class has to be defeated and thus the rate of exploitation increased, new markets have to be found, etc. These are clearly non-economic exogenous factors that have to operate in the right direction.

Whether there are any qualitative differences between long-cycle and long-wave theory is of course an open question. Furthermore, in this thesis, the term cycle is used in a broader sense that does not necessitate a deterministic relation possessing predictive properties.[142]

The long-wave/cycle-theory is criticised both by Marxists and non-Marxists. The main criticism is the deterministic element of this theory and its weak empirical underpinning.[143]

2.4.2 Segments or phases in the capitalist development

One type of models attempts to identify specific phases or segments within the capitalist development.[144] According to such models there are distinct periods of low, average or above average growth in the economic development or of some qualitative characteristics. In contrast to the general assumptions of long-cycle theories, the length of the different phases or segments could be different and there is no necessary reoccurrence of events.

Some examples of such models can be given.

Kondratieff's theory was criticised in the early 1920s by Trotsky[145] and several Soviet economists. Trotsky maintains that Kondratieff mixes up the presence of periodic cycles with distinct "historic segments". The nature and length of these segments are determined by exogenous conditions in which capitalism develops.

[142] See chapters 7 and 9.

[143] See, for instance, Trotsky, 1973 [first published 1923], Eklund, 1979, Maddison, 1991: pp. 89-111, Krantz, 1993b, Rosenberg, 1994: pp. 62-84, Edvinsson, 1999, and Lindmark and Vikström, 2004.

[144] A number of authors use the term "stages" (see, for example, Rostow, 1960: pp. 4-16 and Kuznets, 1964: pp. 22-25), which point to an ordinal hierarchy and a more or less ineluctable movement between successive stages. Angus Maddison (among others) prefers the term "phases of growth" (Maddison, 1991, pp. 111-124), which does not presuppose such a movement. Trotsky (1973 [first published 1923]: pp. 276-277) uses the term "large segments of the capitalist curve of development".

[145] Trotsky, 1973 [first published 1923].

But these conditions, precisely because they are exogenous, cannot be fitted into a mechanistic model.

Angus Maddison also criticises the long wave theories for being too deterministic, and in their place suggests an analysis of separate phases in the capitalist development identified "by inductive analysis and iterative inspection of empirically measured characteristics".[146]

The so-called Regulation School advances the idea that the history of capitalism can be periodised according to different modes of accumulations, i.e. how the social system reproduces itself through its contradictions.[147] These periods differ from each other in a qualitative sense.

2.4.3 Steady-growth

What could be termed as "steady-growth" models assume that in the long-term capitalism follows a seemingly unlimited, stable and smooth trend line. This is the dominant model of neoclassical growth research.[148]

In the exogenous growth models,[149] the economy converges to a "balanced growth path" with aggregate output and capital stock growing at a constant and equal rate.[150] According to different Real Business Cycle Models,[151] it is only unpredictable exogenous shocks – the intervention of states, strong unions, sudden technological shifts, etc. – that upset this smooth rhythm. The business cycle is defined as the co-movement of deviations from trend in macroeconomic variables, a notion that is criticised in section 9.2. The endogenous growth models[152] partly open up for the possibility of change in long-term economic growth within a neoclassical framework; yet in many such models there is a convergence towards a balanced steady growth path similarly as in exogenous growth models.

Steady growth is also compatible with traditions outside the neoclassical framework. In fact, Rosa Luxemburg criticises Tugan-Baranovsky and other so-called "legalist Marxists" for using Marx's model of expanded reproduction in

[146] Maddison, 1991: p. 112.
[147] Lipietz, 1991.
[148] See section 2.3. For a Marxist critique of steady growth models, se the contributions in Halevi, Laibman and Nell (ed.), 1992.
[149] See section 2.3.2.
[150] See for instance Romer, D., 1996, pp. 5 onward, and Delbeke, 1984: p. 2.
[151] For a general account of real business cycle theory, see Wickens, 1995, Romer, D., 1996: pp. 146-190, and Hartley, Hoover and Salyer (ed.), 1998. For a critique of real business cycle theory, see Mankiw, 1989, and Yoshikawa, 2003..
[152] See section 2.3.3.

volume II of *Capital* that shows the possibility of capital accumulation to argue that capitalist production can create unlimited markets for itself.[153]

2.4.4 Historical tendencies

Many theories hold a notion of certain historical tendencies in the development of capitalism or the economy in general, which in the long run poses a barrier to the established operating principles of the system, as, for instance, steady growth. Historical tendencies are changes in key economic variables that operate secularly. Such tendencies exist by virtue of the logic of the economic system.[154] There are also counter-tendencies, which during certain time spans can open up new possibilities for established operating principles. The main historical tendencies tend to overturn these counter-tendencies, although there is no guarantee for that. New unforeseeable factors can modify society considerably.[155] In contrast to those who want to impose a rigid periodisation (be that in the form of long waves or distinct phases), the notion of historical tendencies implies that an attempt is made to see continuity in the discontinuities of capitalist development.[156]

According to Duménil and Lévy[157] in "Marx's terminology, structural change refers primarily to historical tendencies, such as the famous tendency for the rate of profit to fall."[158] This theory also holds the notion of counteracting tendencies that can raise the profit rate again. Although a lower profit rate does not automatically lead to a collapse of capitalism, such lowering is a disincentive to capital accumulation and makes the system unstable.

Outside of the Marxist tradition, several other theories could also be classified as models of historical tendencies. Many classical economists held the view of a long-term limit to growth, and that the economy eventually will attain a stationary state.[159] From an environmental perspective, it has been argued that the limited natural resources are posing a barrier to unlimited economic growth in the long-term.[160]

2.4.5 The debate within the Swedish structural analytical school

Many Schumpeterians tend to describe economic development as the alteration between phases of relatively stable conditions and phases of large structural

[153] Luxemburg, 1963 [first published 1913]: p. 325.
[154] Sayer, 1992: p. 106.
[155] Bell, 1973: p. 14.
[156] Duménil and Lévy, 1999a: p. 17.
[157] Duménil and Lévy, 1999b: p. 2.
[158] See also section 2.2.2.
[159] See, for example, Mill, 1985 [first published 1848]: pp. 94 and 111-117.
[160] Maddison, 1991: p. 18 and Lindmark, 1998: pp. 4-5.

changes in the economy. The Swedish structural-analytical school – represented by, for example, Johan Åkerman, Erik Dahmén, Olle Krantz and Lennart Schön – is partly influenced by Schumpeterian thought on long-term economic development.[161]

Johan Åkerman defines a structure as a relatively unchanging economic mechanism, which is limited in time by the structural borders.[162] He examines such unchanging structures by analysing the behaviour of various variables during the business cycle upswings and downswings. He comes to the conclusion that 1904 and 1932 were structural borders, which correspond to the later formulated periodisation of Krantz, Nilsson and Schön. However, according to Åkerman, the structural borders for USA and England were different and also more numerous than in Sweden.

The periodisation of modern Swedish economic history formulated by Krantz and Nilsson in 1975[163] and mentioned in section 1.3.2 is further developed and refined by Olle Krantz and Lennart Schön in a 1983 article.[164] Krantz and Schön identify three structural periods of certain structural uniformity demarcated in time by the supposed structural crises in 1840s, 1890s, 1930s and 1970s, respectively. Each structural period (40-50 years of length) consists of two phases, a phase of transformation followed by a phase of rationalization. The phase of *transformation* is characterized by the spread of innovations and new branches, formation of new companies and large changes in the economic and social institutions. The phase of *rationalization* is characterized by stability and the concentration of resources to established units, which can lead to significant increases in productivity.[165]

As the work of SHNA progressed, diverging interpretations emerged between Krantz and Schön over structural change in the Swedish economy.[166]

Lennart Schön maintains that alterations between phases of transformation and rationalization continue to be relevant for the Swedish economy. A structural crisis occurred in 1975/80, which was followed by a phase of transformation up to 1990/95, when a new phase of rationalization commenced.[167]

In a 1993 article, Olle Krantz argues that the pattern identified by him and Lennart Schön in the 1983 article cannot be applied to the period beginning in the 1970s. Olle Krantz criticises Schön for developing a long cycle, Kondratieff

[161] For a historical account of this tradition, see Pålsson Syll, 1997, and Vikström, 2002: pp. 13-25.
[162] Åkerman, 1949.
[163] Krantz and Nilsson, 1975: pp. 181-209.
[164] Krantz and Schön, 1983. See also section 8.3.
[165] See also Schön, 2000b: p. 184.
[166] See Krantz, 1993b, and Schön, 1993b.
[167] Schön, 1993a, pp. 264-291 and Schön, 2000a: pp. 30-34.

type theory with predictive properties. The empirical generalisations of structural analysis are only valid for distinct periods and countries, and cannot be generalized beyond their object of investigation. The identification of patterns in the economic development cannot, for example, be the basis for making deterministic predictions of the future.[168]

Lennart Schön could be seen as a Swedish representative of the long wave theory.[169] Olle Krantz's arguments against Lennart Schön point to a model of phases in the economic development (see section 2.4.2), although the periodisation pattern developed by Krantz and Nilsson in *Swedish National Product 1861-1970* contains an element of long-cycle-theory.

Schön emphasises that structural cycles are about alternations in the "behaviour behind growth" rather than fluctuations in the growth figures themselves. "Upturns" or phases of transformation are characterised by renewal with larger long-term investments, while "downturns" or phases of rationalization are characterised by a shift from renewal towards short-sight perspective and increases in efficiency. This means that phases of rationalization, which from a structural-analytical point of view implies a downturn with less renewal, can have an above average growth rate. A phase of rationalization ends with a structural crisis, which starts a new structural cycle. A phase of transformation is ended by a transformation crisis that is followed by a phase of rationalization.[170] TABLE 2.1 gives an overview of Schön's periodisation for Sweden.

In my view, this is a somewhat problematic conception of economic history. In this dissertation, it is argued that there are reasons to question the periodisation into phases of transformation and rationalization not only for the last decades of the 20th century but also for the earlier period. Schön's periodisation would, for instance, entail that the "golden years" of the 1960s, experiencing large shifts in the Swedish economy and society, would be located in the middle of a "structural downturn". In fact, several crises in Schön's scheme have never occurred in Sweden or were quite weakly felt. The "transformation crisis" of 1950/1955 or the "structural crises" of 1845/1850 and 1890/1895 never developed into severe economic downturns. On the other hand, the two deepest depressions in Sweden occurred during the two World Wars, but they are excluded in Schön's scheme.

[168] See Krantz, 1993b, 2001: p. 6 and Krantz, 2002b: pp. 72-74.
[169] For a comparison of Swedish and international long cycle theories, see Pålsson Syll and Lingärde, 2000.
[170] Schön, 2000a: pp. 30-34.

Schön defends himself against charges of determinism with the argument that cycles only describe a way of movement, but these movements can have different goals and directions and leaves the actor with much influence.[171]

The question still remains: why would the economy move in cycles of 40 to 50 years, of alternating phases of transformation of 20-25 years and rationalization of 15-20 years? What prevents an economy from going through a longer phase of transformation of 40-50 years or a shorter phase of transformation of say 10 years? There remains certain determinism in Schön's hypothesis even if he allows for some complexity.

Furthermore, what is transformation from one perspective could be viewed as rationalization from another perspective.[172] The question must be asked whether it is possible at all to separate transformation from rationalization more than at an analytical level, and whether not these two phenomena in the real economic life are so interwoven with each other that any periodisation based on them becomes problematic.[173]

TABLE 2.1: *Structural cycles in the Swedish economic development according to Lennart Schön.*

Structural crisis	Phase of transformation	Transfor-mation crisis	Phase of rationalization	Structural crisis
1845/1850	1845/1850-1865/1870	1865/1870	1865/1870-1890/1895	1890/1895
1890/1895	1890/1895-1905/1910	1905/1910	1905/1910-1930/1935	1930/1935
1930/1935	1930/1935-1950/1955	1950/1955	1950/1955-1975/1980	1975/1980
1975/1980	1975/1980-1990/1995	1990/1995	1990/1995-	

Source: Schön, 2000a: pp. 32-33.

2.5 The relation of the different models to the present study

This section briefly discusses how the concepts of periodisation, crisis and accumulation are related to each other in the present study. The section ends with the question of how to operationalise various theoretical variables.

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[171] Schön, 1994: p. 63 and 2000a: p. 31.

[172] Also Lennart Schön (2000b: p. 184) recognises:

"Rationalisation and transformation are certainly processes that to a large extent take place simultaneously in an economy."

However, he maintains that it is possible to make distinct periodisations based on the analytical separation of rationalisation from transformation.

[173] For instance, Erik Dahmén (1950: p. 362) writes that during the First World War and its aftermath method innovations (like Taylorism) gave a strong push for the rationalization of production.

See also Lindmark and Vikström, 2004: pp. 566-569.

2.5.1 Periodisation, crisis and accumulation in the present study

The central feature emphasised in this thesis is the endogenous contradictions created by capitalist development, with special focus on the relation between accumulation and production. The periodisation of capitalist development can, for example, be understood by the concepts of upswings and downswings in accumulation. This is also connected to shorter or longer phases of upswings and downswings in the growth of aggregate production.

In Marxist theory, accumulation is central to capitalism, and is the driving endogenous force behind technological change.[174]

The accumulation of capital can take both an extensive form, when more labour is drawn into capitalist production, and an intensive form, when the capital per labour unit is increased.[175]

When capitalism finds new areas of expansion, accumulation and growth in production accelerate. New possibilities breed optimism that leads to a situation of too rapid accumulation, which destroys the new possibilities in the long run. Competition between capitalists also contributes to the upswing in accumulation tending to generate overaccumulation; every individual company will try to grow faster than it is possible for the economy as a whole. Labour shortage, which signifies an overaccumulation of variable capital, tends to lower the rate of exploitation. Fast accumulation of constant capital tends to increase the capital/output ratio, and hence lower the maximum rate of profit. Both these mechanisms lower the rate of profit even under equilibrium conditions. Those factors together create a situation of generalised overaccumulation and crisis.

However, crisis is a necessary component in the life of capitalism, as it solves the problem of overaccumulation and other inner contradictions of the system (as disproportionalities).[176] The function of capitalist crisis lies in restoring profitability by means of new constellations in the profitability constitution. Overaccumulation can be solved by outright capital destruction or devaluation (both of constant and variable capital[177]), finding new areas for capitalist expansion and/or raising the rate of exploitation, and thereby allow a new upswing in accumulation again. Crisis cannot be avoided, for instance, by government intervention as argued by Keynesians. If capital is not destroyed, the problems of capitalism are only prolonged, and in the future can even lead to

[174] Marx, 1965a [first published 1867]: p. 592. Gordon and Rosenthal (2003: p. 32) write that to their knowledge "Marx was the first person to state that capitalists were subject to a growth imperative".

[175] These terms are used by the so-called Regulation School (see Lipietz, 1986: p. 15 and Duménil and Lévy, 1999b [first published 1990]: pp. 7-8) and by Marx (1967 [first published 1884]: p. 324), although somewhat differently from the present study.

[176] See, for example Smith, 2000: p. 129.

[177] See Harvey, 1999: p. 192.

deeper depressive tendencies than otherwise.[178] If overaccumulation is particularly pervasive it could usher in a longer downswing in accumulation.

The alternation between upswings and downswings in accumulation and growth of production, and the inescapability of overaccumulation crises, does not necessarily imply that this process takes a neat periodic cyclical form, either of short-term or long-term character. Nor is it necessary for periods to be unequivocally classified either as phases of upswing or downswing in economic growth. Periods could possess contradictory characteristics, without us being able to say which feature is the predominant one. While the concepts of upswing and downswing depend on quantification, other criteria of a more qualitative nature could be used to identify periods. Periods could also overlap each other, making it difficult to decide when one period ends and another begins. I rather consider the concepts of upswing and downswing in accumulation and growth as two "poles" between which the capitalist line of development oscillates, and not as a rigid schema.[179]

The empirical material of this study shows that there exist various patterns of the economic development, but it also gives a somewhat chaotic picture. In this thesis, it has been strived to avoid pressurize data into a framework that maybe does not fit the data very well. The conclusion is that the periodisation of economic development can be made in different ways depending on what variables are emphasised and the criteria used to identify a pattern. Such diversity of approaches is understandable if we consider that capitalism is a complex system whose analysis demands a combination of various competing criteria to understand its long-term development.[180] Some types of periodisations are easier to apply and have a clearer connection to a conceptual framework. Other types of periodisations are inevitably more "messy".

This approach could be labelled as a "multi-segmental" one.

Of course, various periodisations based on different criteria are correlated with each other, and could in some instances coincide. But it is this correlation that should be investigated rather than taken for granted.

Such approach is more open and flexible than, especially, the various variants of the long cycle theory. If we rid the long cycle theory of the assumption that the long cycles must be of certain length, for example 40 to 60 years, and that only one such division into cycle periods are to be strived for, then the concepts such as "long upswings" and "long downswings" have, in my opinion, certain value as

[178] Compare this reasoning with, for example, Krantz's (1993b) description of the 1970s economic crisis in Sweden as an "unreleased structural crisis", which was fully released first during the 1990s depression. See also section 9.3.

[179] This issue is further discussed in chapter 7.

[180] Duménil and Lévy, 2001: p. 141.

analytical tools. In chapter 7, an attempt is made to apply these concepts to the growth of GDP per capita.

The present study also investigates different historical tendencies in the development of the capitalist system. In chapter 7, the conception of continual processes of industrialisation taking place during the whole history of capitalism is suggested. In chapter 8, the theory of a Tendency for the Rate of Profit to Fall is confronted with the empirical material.

2.5.2 Operationalisation of the theoretical concepts

The empirical material of the present study is not very well suited for the operationalisation of the theoretical-conceptual framework discussed in this chapter, not least because the different statistical definitions of national accounting tend to be eclectically derived and inconsistent over time. The quality of the direct sources on which both the present and earlier studies of historical national accounts are based is often poor, especially for the earlier periods.

A problem of operationalisation faced is that the concepts of profit and capital presuppose capitalist relations,[181] at least at the theoretical level. But the empirical material of this study relates to the aggregate economy, including, for instance, small-scale production and government services.[182]

This is connected to a general problem that permeates official national accounting. It is based on calculating all economic relations into market price. When no prices exist for some products, then fictitious prices are set. [183] As in neoclassical theory, official national accounts consider all means of production as capital, including those belonging to non-capitalist institutions, etc.

When applying capitalist or market categories on non-capitalist or non-market economic relations, for example, in setting fictitious prices, it can be interpreted as how these relations would appear if they would be commodified or turned into capital; for instance, if a residential building previously used by the owner would be rented out, if a company only employing the owner would be bought by a larger company and the owner would become a wage-earner, or if state property would be privatised. The concept of produced capital or assets in official national accounts can rather be seen as encompassing both actual and potential capital, in the latter case of means of production that are not capital in themselves but which could be transformed into such under certain conditions (at least in a historic stage when capitalism exists as an expansive social form). Such a perspective

[181] See Shaikh and Tonak, 1994: pp. 29-30 and Cronin, 2001: p. 315-316.

[182] In most Marxist studies, many non-capitalist institutions are, in fact, included in the analysis and treated as capitalist because of the difficulty to separate out those institutions in the data of national accounts (Maniatis, 1996: pp. 45-46 and Cronin, 2001: p. 316).

[183] *System of National Accounts 1993*, 1993: p. 162.

from the point of view of capitalism on non-capitalist relations is not irrelevant, since capitalist expansion also proceeds through the integration of non-capitalist relations into the system. In the developed stage of capitalism, the borderline between capitalist and non-capitalist (and between market and non-market) relations is blurred further more.[184]

Studying a pre-capitalist economy using capitalist categories could also be interesting from the standpoint of investigating the transition to capitalism, for instance, how the ratio of investment to surplus has changed.

If the concepts of national accounts are not entirely suitable for a Marxist analysis, this is also the case for any theoretical model (for example, a neoclassical one[185]), since the national accounts are not based on any single theoretical principle. As pointed out in *System of National Accounts 1993* (1993 SNA);

> The System is inevitably a compromise intended to yield maximum benefits to different kinds of users and may not therefore be optimal for any one purpose taken in isolation. [186]

And furthermore;

> the System is sufficiently flexible to accommodate the requirements of different economic theories and models, provided only that they accept the basic concepts of production, consumption, income, etc. on which the System is based. [187]

Clearly, it would be very hard to argue that Marxist economic models do not fulfil such a basic requirement.

The neoclassical growth accounting method assumes that it is possible to account for the increase in output per labour by separating the contribution of an increase in capital per unit of labour from the contribution of an increase in total factor productivity.[188] There are many problems with this method,[189] and it is not applied in the present study. Instead, economic growth is decomposed into the

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[184] As argued by Marx (1993 [written 1857-1858]: p. 105):

"Bourgeois society is the most developed and the most complex historic organization of production. The categories which express its relations, the comprehension of its structure, thereby also allows insights into the structure and relations of production of all the vanished social formations out of whose ruins and elements it build itself up… The bourgeois economy thus supplies the key to the ancient, etc. But not at all in the manner of those economists who smudge over all historical differences and see bourgeois relations in all forms of society. One can understand tribute, tithe, etc., if one is acquainted with ground rent. But one must not identify them."

[185] See Frits Bos, 1997: p. 187.

[186] *System of National Accounts 1993*, 1993: p. 15.

[187] *System of National Accounts 1993*, 1993: p. 7.

For a discussion of the uses and misuses of national accounts when testing different theories and models, see Richter, 1994.

[188] See section 2.3.2.

[189] See footnote 114 on page 25.

contribution of different types of activities and expenditures, which is more directly connected to how the data is constructed.[190] Such an investigation of the disproportional growth of different economic sectors, and of which activities are driving aggregate growth, can also partly be linked to structural analysis and different disproportionality theories. It further serves the purpose to examine broad changes in the economic structure, for instance, how economic crises have changed in nature with the transition from an agrarian economy to industrial capitalism. Such analysis has the advantage of not distancing itself too much from the empirical material, at the same time as it can give interesting information on the factors producing economic change.

2.6 Summary

This chapter discusses theories and models of economic growth, accumulation and crisis relevant for this thesis.

Marxists point to the fact that capitalism has a growth imperative, which demarcates capitalism from earlier modes of production. The system is based on the exploitation of the labour power. Competition drives the capitalists to accumulate a large part of the surplus value that is extracted from the workers. This dynamic character of capitalism is also the basis for capitalist crisis. But here various Marxists models are constructed that partly stand against each other. Underconsumptionists argue that it is the restricted consumption of the masses that is the major cause of capitalist crisis. Disproportionality theory purports it is the anarchic nature of capitalism. Other theories emphasize the falling rate of profit.

There are two different types of Marxist theories of a falling rate of profit. According to the labour shortage theory, the fall is caused by a decreased rate of exploitation (the ratio of profit or surplus value to wages). According to the theory of a Tendency for the Rate of Profit to Fall (TRPF), it is caused by an increased value composition of capital (the ratio of expenses on raw materials, depreciation of capital, etc. to wages). Both of these explanations are investigated empirically in chapters 8 and 9, although the TRPF-theory is reformulated in terms of the effect on profitability of an increased capital/output-ratio (the inverse being the maximum rate of profit).

Neoclassical models are based on the assumptions of perfect competition. Neoclassical growth models can be divided into exogenous and endogenous ones. While exogenous or old growth theories take the technological change as

[190] See chapters 7 and 9.

determined outside the model, endogenous or new growth theories try to explain this change within the model.

The exogenous growth models give some insights in relation to the Marxist theory of a Tendency for the Rate of Profit to Fall. An increased capital/output-ratio implies a lower maximum rate of profit. But according to the exogenous growth models, there is normally a limit how much the capital/output-ratio can rise, which shows that there is a limit how much the profit rate can fall due to an increased capital/output-ratio.

Four conceptualisations describing the patterns of long-term growth of the economy are also discussed in this chapter.

According to long cycle or long wave theories, the modern capitalist economy exhibits long cycles, similar to the shorter business cycles, but of 40 to 60 year duration, consisting of upswings and downswings. A Swedish representative is Lennart Schön, according to whom it is possible to periodise modern Swedish economy history into 20-25 year long phases of transformation, of large structural shifts, and 15-20 year long phases of rationalization, of more stable structural conditions.

According to models of segments or phases in capitalist development, it is possible to periodise the history of capitalism, but each period can be of quite different length and there is no necessary sequence in the alternation between periods.

Steady growth models assume that the short-term fluctuations of the economy follow a stable long-term trend line.

Theories of historical tendencies emphasise the continuity in the economic development. These tendencies are bounded historically.

At the end of this chapter the question of the application of theory on the empirical material is discussed. The theoretical perspective clearly also affects the empirical part of the study, especially how to interpret its results. The present study adopts what could be termed a “multi-segmental” perspective, implying that different periodisations of the modern economic history are allowed for, depending on the purpose of such periodisation. The empirical material does, however, not allow the full operationalisation of Marxist categories. The construction of macroeconomic series is based on established national accounting methods, although analysed from a critical perspective.

3 Principles of national accounting

3.1 Introduction

This chapter deals with the general principles of national accounting and how they are applied in the present enquiry. The basic concepts are discussed, problematised and related to the different theories examined in the preceding chapter. The most central economic variable in national accounting is the Gross Domestic Product (GDP). Section 3.3 discusses the different methods to calculate nominal GDP. There is also a difference between the nominal and volume values, and there are different techniques to deflate (i.e. eliminate the inflation component) nominal values to arrive at constant price estimates. The deflation methods of this study are also presented in section 3.4, while the more technical account is provided in an appendix. Finally, section 3.5 deals with the classification into types of activities and the problem of linking different time series of aggregate variables to each other.

This chapter also serves as an introduction to chapters 4, 5 and 6 that describe in more detail the construction of the empirical data of the present study.

3.2 The conceptual framework of national accounts

3.2.1 National accounts

Ingvar Ohlsson, in his classic work *On national accounting*, describes national accounting as "the rendering of systematic, statistical statements about the economic activity of a nation (on the basis of certain working hypotheses)".[191] National accounting is about production, as well as distribution, consumption and asset formation.

The "current accounts" consist of the "production account" (which records the activity of producing goods and services) and the "distribution and use of income accounts". The latter constitute a set of accounts showing how income is generated by production, further redistributed (mainly by claims of institutional units on the value added created by production, and by government units through taxations and social benefits), and eventually used for purposes of final consumption and saving. The "accumulation accounts" record the acquisition and disposal of financial and non-financial assets and liabilities. The "balance sheets"

[191] Ohlsson, 1961 [first published 1953]: p. 8.

display the values of assets and liabilities at the beginning and end of an accounting period (normally one year).[192]

Principles of national accounts and different classifications have changed over time. There have also been efforts towards international standards, although large national differences still persist.[193] *System of National Accounts 1993* (1993 SNA) is the most recent international systematisation,[194] following the 1953 SNA[195] and the 1968 SNA.[196] *European system of accounts: ESA 1995* (1995 ESA) is the European Union application of the 1993 SNA. Until 1990, the former Eastern block used the Material Product System (MPS)[197] while the West used the SNA. Today, however, the 1993 SNA has no real competition.

In the mid-1990s, Statistics Sweden switched over to the 1993 SNA and the 1995 ESA, but does not follow all their recommendations.[198] Since Statistics Sweden has not applied the new methods and calculations for earlier time periods at a more disaggregated level, and since earlier historical accounts also are based on a somewhat different methodology, the present investigation applies a mixing of methods (of both the 1993 SNA and earlier principles) in order to arrive at consistent long-term time series.

3.2.2 Aggregate production

In national accounts, gross output is the total value of goods and services produced without deducting intermediate consumption. Intermediate consumption consists of the goods and services used up in the production process, except for consumption of fixed capital that represents the reduction in the value of fixed assets used in production. When intermediate consumption is deducted from gross output we are left with gross value added. Gross value added includes consumption of fixed capital, while it is deducted in net value added. In the 1993 SNA, the term "consumption of fixed capital" is distinguished

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[192] *System of National Accounts 1993*, 1993: p. 2.

[193] See Kenessey, 1994, Harrison, 1994 and Bos, 1994.

[194] *System of National Accounts 1993*, 1993: pp. xxxvii-xliv, and SOU 2002: 118, bilaga 3: pp. 9-16.

[195] *A system of national accounts and supporting tables*, 1953.

[196] *A System of National Accounts,* 1968.

[197] *Basic Principles of the System of Balances of the National Economy*, 1971. See also Árvay, 1994 for a historical overview.

At the heart of the MPS is the concept of National Material Product, which consists of physical goods. This "physicalist" notion has been claimed to be derived from Marx. But its roots can rather be traced back to Adam Smith and was explicitly rejected by Marx (see Shaikh and Tonak, 1994: p. 4 and section 2.2.1).

[198] For a discussion of the methodology behind construction of national accounts in Sweden, see Meddelanden i samordningsfrågor, 1979:11 before the switch to the 1993 SNA, and SOU:118, bilaga 3, 2003 after the switch to the 1993 SNA.

from the term "depreciation" as measured in business accounts.[199] In this dissertation, the term "consumption of fixed assets" is preferred, since it also relates to assets that are not "capital" from a strict theoretical point of view (i.e. if they are owned by non-profit institutions).

The Gross Domestic Product is the sum of all gross values added. Net Domestic Product is the sum of all net values added.

Net Domestic Product[200] is, for theoretical reasons, a more appropriate measure of the actual value created in the production process because consumption of fixed capital is deducted. Since it is problematic to make reasonable and reliable estimations of consumption of fixed capital, and to distinguish it from intermediate consumption, GDP is generally preferred as a measure of aggregate production.[201]

GDP is a problematic and controversial measure from many points of view. There are also different methods to calculate GDP that can give quite different results.

GDP per capita is not a direct measure of welfare, and GDP per capita volume growth is not a direct measure of progress. This measure does not take into account the distribution of income, environmental consequences or quality of life, but on the other hand include, for instance, spending on defence. As noted in the 1993 SNA, production is measured in physical units, which is "quite independent of any utility that the households may, or may not, derive from consuming it".[202]

There are other indices that are better measures of welfare than GDP, which also take into account the health situation, average life span, infant mortality, etc. For instance, while Sweden has a lower GDP per capita than the United States, it outperforms the latter when it comes to different welfare indicators.[203]

Attempts have also been made to construct Environmentally Adjusted Net Domestic Product, where an eco-margin (environmental depletion and degradation costs) is deducted from the Net Domestic Product.[204]

Intermediate consumption and consumption of fixed capital can, in Marxist terms, be interpreted as constant capital, while the net value added can be interpreted as the sum of variable capital and the surplus value.[205] Such

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[199] *System of National Accounts 1993*, 1993: pp. 11 and 153.
[200] See *System of National Accounts 1993*, 1993: p. 41.
[201] Duncan Foley (2000: p. 21) argues that also from a Marxist point of view NDP is preferable to GDP, but GDP "will not distort the time profile of measurement very much as long as the share of depreciation in GDP is changing slowly".
[202] *System of National Accounts 1993*, 1993: p. 14.
[203] See, for instance, Vogel and Wolf, 2004.
[204] See Lindmark, 1998: p. 29.
[205] See section 2.2.1

interpretation, however, does not take into account the effect of taxation, the differentiation between productive and unproductive labour, and that GDP also includes non-capitalist parts of the economy.[206]

3.2.3 "Production boundaries"

According to the 1995 ESA:

> An activity can be said to take place when resources such as equipment, labour, manufacturing techniques, information networks or products are combined, leading to the creation of specific goods or services. [207]

An industry consists of a group of local kind-of-activities and the 1995 ESA divides industries into three types; 1) market industries and industries producing goods and services for own final use, 2) non-market industries of general government, and 3) non-market industries of non-profit institutions serving households.[208] This is quite a broad definition of "industry", which encompasses the whole economy, and is not the one that is commonly used.[209] To avoid confusion, in this study, the term "industry" is not used in the sense of 1995 ESA. Instead, the term "type of activities" is preferred.

One issue concerns which activities to include in aggregate production – i.e. where to put the "production boundaries". In the 1993 SNA, a distinction is made between activities that are "productive in an economic sense" and those that are not,[210] although a larger number of activities (such as trade, defence, real estate, financial services and advertisement) are classified as productive than according to Marx's definition.[211] In the 1993 SNA, production is defined as follows:

> In the System, production is understood to be a physical process, carried out under the responsibility, control and management of an institutional unit, in which labour and assets are used to transform inputs of goods and services into outputs of other goods and services. All goods and services produced as outputs must be such that they can be sold on markets or at least be capable of being provided by one unit to another, with or without charge. [212]

There are many inconsistencies in this respect, when it comes to official national accounts. Many economic activities, mostly outside the market

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[206] Bruce Cronin (2001: p.313) notes that this equality holds under the assumption that all activities of firms are productive (of surplus value).

[207] *European system of accounts: ESA 1995*, 1996: p. 33.

[208] *European system of accounts: ESA 1995*, 1996: p. 34.

[209] See section 7.3.

[210] *System of National Accounts 1993*, 1993: 4 and 13.

[211] See section 2.2.1.

[212] *System of National Accounts 1993*, 1993: p. 4.

economy, are not included in GDP[213] – for instance, unpaid domestic or voluntary work – while construction of dwellings for own final use is included. Although the 1993 SNA recognises that unpaid household services are "productive in an economic sense", it is argued that the "inclusion of large non-monetary flows of this kind in the accounts together with monetary flows can obscure what is happening on markets and reduce the analytic usefulness of the data",[214] and that "there are typically no suitable market prices that can be used to value such services".[215] GDP also includes the use of owner-occupied dwellings (where its "service" is set equal to a fictitious rent), which is rather a consumption than a production even according to the quoted definition of the 1993 SNA, while the consumption of durable goods (as cars and household machinery) is excluded and considered as pure "consumption activity".[216]

In the 1993 SNA, the payment of interest in itself does not add anything to GDP, although the difference between the receipt and payment of interest in the banking sector is classified as a "service" and is included in GDP.[217] The 1993 SNA considers illegal activities such as prostitution and the manufacture and distribution of narcotics as productive in an economic sense, but not so when it comes to theft, even if theft does provide an income to the thief.[218]

Wholesale and retail trade is included in the GDP and described as a productive activity, since:

> Wholesalers and retailers are treated as supplying services rather than goods to their customers by storing and displaying a selection of goods in convenient locations and making them easily available for customers to buy. [219]

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[213] A definition of productive activities avoiding the reliance on tradability in the market, but similar to the one used by SNA, is the so-called "third person criterion". As Luisella Goldschmidt-Clermont (1993: p. 420) puts it:

"Non-market productive time is distinguishable from personal time by means of the 'third person criterion'. According to this criterion, an activity is deemed productive if it might be performed by some one other than the person benefiting from it; or, in other words, if its performance can be delegated to some one else while achieving the desired result. I can delegate the preparation of my meal (a productive activity); nobody can eat it for me (a personal activity)."

This criterion still excludes, for example, the work spent by pupils and students on studying.

[214] *System of National Accounts 1993*, 1993: p. 5.

[215] *System of National Accounts 1993*, 1993: p. 124.

According to Gudmundur Jonsson (1997: p. 49), historical national accounts serve a somewhat different purpose, where the measurement of welfare is of primary concern, and, therefore, should include unpaid household services.

[216] *System of National Accounts 1993*, 1993: p. 126 and 134.

[217] See *System of National Accounts 1993*, 1993: pp. 139-140.

[218] *System of National Accounts 1993*, 1993: p. 126.

[219] *System of National Accounts 1993*, 1993: p. 137.

The gross output of this "service" is set equal to the trade margin; i.e. the price at which a good is sold less the price that would have to be paid by the distributor to replace the good.

Nevertheless, even according to the quoted definition of the 1993 SNA, trade as such does not transform a good in a physical sense but only the ownership right to it, in contrast to, for instance, goods transport or storage, which at least changes the location in space or time of a product. Especially during the transition from a self-subsistent to a market economy, the relative size of trade grows, which overstate the GDP growth in comparison to a measure that would define the trade margin as a transfer rather than a production.

3.2.4 The dependence on price

A key issue is how to value production. There is a long debate among economists – physiocrats, classical economists, Marxists, neoclassical economists, etc. – about what constitutes value. All measuring of value is, consciously or unconsciously, based on assumptions of what constitutes value.[220]

A major weakness with national accounts is that they are bound to measure production in price, which is even reflected in the quoted definition of production in section 3.2.3. This becomes problematic when dealing with products and services that are not priced, i.e. that are performed outside the market economy. In the national accounts, these products and services are either excluded or assigned a fictitious price tag. Historical accounts are dealing with economies where market relations only affected a small part of production; but modern economies also consist of large parts that are not priced, mostly production and services for own final use as unpaid household services. Furthermore, the value added of government services is undervalued, since it does not include any (net) operating surplus[221] (which it would if the same service would be provided by a capitalist firm) and is set equal to intermediate consumption, wages and salaries (including social benefits), and consumption of fixed capital.[222]

The problem of price valuation can be illustrated by the treatment of unpaid household work. Different methodologies have been developed to measure the value of unpaid household work, by putting a price tag on it. [223] One method is to

[220] See Shaikh and Tonak, 1994: pp. 1-5. See also section 2.2.1.
[221] See section 3.3.1.3.
[222] See *System of National Accounts 1993*, 1993: pp. 134-135 and 402-403.
[223] See Chadeau, 1985, Fitzgerald, 1990, Folbre and Wagman, 1993, Goldschmidt-Clermont, 1993, Fitzgerald, Swenson and Wicks, 1996, Jonsson, 1997, Goldschmidt-Clermont and Pagnossin-Aligisakis, 1999, and Landfeld and McCulla, 2000.
For the Swedish contribution to the subject, see Lindahl, Dahlgren and Kock, 1937: part one, pp. 213-215 and 238-239, and part two, pp. 527-532, Tengblad, 1981, Krantz, 1987, Nyberg, 1995, and Bergman, 2003.

equal the value of these services to the labour input, utilizing the wage of paid domestic labour as an indicator. This method is operationalised in *The National Income of Sweden*,[224] and later in SHNA.[225] However, this conduct runs the risk of underestimating the actual work performed. Another method is to estimate the market output of these services.[226] But this also gives different results, depending on the indicators used. A solution could be to equal the value added per unpaid household hour worked to the average value added per hour worked within the market sector.[227] This is problematic as well, since such a measure has little to do with how such services would actually be valued at the market, and it does not add any new information than already provided by the estimates of unpaid household work in terms of hours worked. The question of the labour productivity of unpaid household work in relation to market activities needs also to be empirically investigated and not be taken as given.[228]

In my opinion, the labour theory of value, in contrast to the neoclassical reliance on price, is better equipped to uncover the relations that exist prior to the price. For example, to compare the work of unpaid household labour with other types of work by looking at the level of labour value or labour time and not the price is preferable. This is because the price of unpaid household work does not exist, and would only exist if the unpaid labourer would work on the same conditions as the paid one.[229]

For a Marxist analysis of household work, see Kotz, 1994, Vogel, 2000, Davis, 2004, and Quick, 2004.

[224] Lindahl, Dahlgren and Kock, 1937: part one, pp. 213-215.

[225] Krantz, 1987b: p. 17.

[226] See Nyberg, 1995: pp. 22-28.

[227] Folbre and Wagman, 1993: p. 285.

[228] According to Anita Nyberg (1995: pp. 25 and 27), the monetary estimates of the value of unpaid household work in different industrialised countries vary between 30 and 60 percent of GDP. Calculations for Sweden by Åke Tengblad (1981), using the wage rate of employees of local government within health and welfare services as an indicator, estimates the value of unpaid household work in 1965 and 1980 to have been between 24 and 35 percent of the value of GDP. Still, the number of hours spent as unpaid housework are mostly equal to the number of hours spent in paid work. In a study on Sweden by Märta Bergman (2003: p. 65), where unpaid services are valued by using the price lists of professional home service companies, the value of unpaid household work is put at the same level as GDP. This place the value per hour worked in the unpaid sector on par with the value per hour worked in the paid sector.

[229] As explained by Paddy Quick (2004: p. 22):

"[W]age goods serve as inputs into household production and are transformed by household labor into use values that can indeed sustain (and reproduce) life. The grains and root vegetables are cooked and the dishes washed in preparation for the next meal; clothes that have been worn and become dirty are washed and further processed (mended, folded/ironed, and put away) so that they can be worn again. Household production is thus analogous to the process of commodity production, although it appears (as yet) to lack the finality of capitalist production in the use values produced to not have the form of exchange values. The analogy carries further, in that there are alternative combinations of commodity inputs and labor ('alternative organic compositions', in Marxist terminology) that can produce the same outputs."

The effect of inflation must be eliminated when volume growth is measured. In national accounts, this is achieved by making a comparison of the production at two different points in time in constant prices (for instance, in a base year's prices). However, the problem does not end there since the question that still remains is what constant prices to use.[230]

An example can illustrate this problem. Take an economy that in one period produces 10 bananas and 10 apples, and in the next year produces 15 bananas and 5 apples. Has the economy experienced a positive, negative or zero growth rate in constant prices? This depends on how bananas are valued in comparison to apples, i.e. on the relative prices. If bananas, in constant prices, are valued more than apples, then the economy has experienced positive growth. If bananas are valued less than apples, then the economy has experienced negative growth. Finally, if apples and bananas are valued equally, the economy has experienced zero growth. Different constant price or volume indices can, therefore, be constructed that give different results (which is further discussed in section 3.4.1). A similar problem also arises when the economies of different countries having different price levels and relative prices are compared with each other.[231]

But how do we measure changes in the level of production if we are dealing with an economy that does not know of any prices, for instance, a self-subsistence economy? Surely, it should be possible to construct volume indices over economic growth for such an economy as well. The problem with national accounts is that it is bound by price calculations. One solution is to use the relative prices of a modern economy, but the problem is that such relative prices could be completely different from the actual relations of the economy under study.

Not all economies or activities are priced, but labour is the foundation of all human production. An alternative to relative price could be to relate how much labour time it takes to produce a banana in comparison to an apple in the example given above, i.e. to use relative labour times or labour values instead of relative prices to construct a volume index (corrected for the different productivity levels of different types of labour).[232] Such a volume index is, in contrast to the usual one applied in national account, completely independent of price relations. If

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[230] See *System of National Accounts 1993*, 1993: pp. 379-403.

[231] See *Prices and Purchasing Power Parities (PPP), PPP Frequently Asked Questions*, online at: http://www.oecd.org/faq/0,2583,en_2649_34357_1799281_119678_1_1_1,00.html (040428), for a discussion of the use of Purchasing Power Parities in international comparisons. See also Varjonen, 2001, and Edvinsson, 2003a.

[232] In studies on hunting and gathering societies, where there is neither money nor prices, anthropologists often use the number of hours worked per week spent on different activities to describe the economic structure of these societies. See, for example, Cashdan, 1989: p. 23 and Bossen, 1989: p. 327.

prices are proportional to labour values, such volume index gives exactly the same result as the volume index based on relative prices. But when prices and labour values diverge, the labour value volume index gives a higher weight to activities that have a low value added per hour worked (if assumed that labour productivity is the same as in other types of activities), as for instance government and household services.[233] Such labour value or labour time based volume index may be constructed, though is not presented in this thesis, since not all relevant data are available.

3.3 Nominal GDP

3.3.1 GDP by activity, expenditure and income

GDP can be calculated in three different ways: by economic activity (or from the production side), by expenditure and by income.[234]

3.3.1.1 GDP by activity

GDP by activity (or from the production side) is (as explained in section 3.2.2) directly computed as the sum of gross values added of all economic activities (within the production boundary). The gross value added of each activity is, in turn, computed as the gross output (GO) less intermediate consumption (IC). In equation form:

$$\text{GDP by economic activity} = \sum(\text{GO} - \text{IC}) \tag{3.1}$$

3.3.1.2 GDP by expenditure

GDP by expenditure is calculated as the sum of different uses: private final consumption (C), government final consumption (G), investment (I) and net export (NX, export, X, less import, IM), in equation form as:[235]

$$\text{GDP by expenditure} = C + G + I + X - IM \tag{3.2}$$

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[233] Marx (1965a [first published 1867]: p. 44) also considers the productivity differences between labourers:

"Skilled labour counts only as simple labour intensified, or rather, as multiplied simple labour, a given quantity of skilled being considered equal to a greater quantity of simple labour."

However, without the information of price such comparison can only be made if similar type of products are produced.

[234] See, for example, Grytten, O. H., 2001: pp. 25-28.

[235] See, for example, Hall and Taylor, 1994: p. 33.

In the 1968 SNA, the 1993 SNA and the 1995 ESA the term "investment" is replaced by the term "gross capital formation".[236] In this thesis, the term "investment" is preferred, since investment also consists of formation of produced assets destined for activities outside of capitalist relations (such assets are not "capital" from a strictly theoretical point). Export and import consist both of goods and services.

GDP calculated by activity and by expenditure, respectively, are identical for any measure of value, provided that the true and not the approximated measures are used.[237]

3.3.1.3 GDP by income

The third method is to calculate GDP by income, in the categories of 1993 SNA as the sum of wages and salaries including social benefits (W), operating surplus (OS), mixed income (MI), and consumption of fixed capital (CF) of the aggregate economy:[238]

$$\text{GDP by income} = W + OS + MI + CF \tag{3.3}$$

In the 1993 SNA, (net) operating surplus is defined as the (net) value added less wages and salaries (including social benefits) for all enterprises except unincorporated enterprises; it is the surplus or deficit accruing from production before taking into account any interests, rents or similar charges paid or received on financial or tangible non-produced assets. Mixed income is a similar measure but for unincorporated enterprises owned by households, and contains an element of remuneration for the worked performed by the owner or other members of his or her household, which cannot be separated from the remuneration of invested assets.[239] In this study, an attempt is made to calculate the part of income of self-employed that could be seen as remuneration for worked performed, and (gross

[236] *System of National Accounts 1993*, 1993: pp. 155 and 222, *European system of accounts: ESA 1995*, 1996: p. 52, and *A System of National Accounts*, 1968: p. 110.

[237] For a mathematical proof, see *A System of National Accounts*, 1968: pp. 67-68.

[238] In the 1993 SNA, income based GDP is expressed somewhat differently, as "the sum of primary incomes distributed by resident producer units" (*System of National Accounts 1993*, 1993: p. 41), which includes the excess of indirect taxes over subsidies. The expression in equation (3.3) is more related to GDP valued in factor incomes as described in 1968 SNA (*A System of National Accounts*, 1968: p. 95).

[239] *System of National Accounts 1993*, 1993: pp. 162 and 174-175.

Mixed income is probably also underestimated in modern national accounts since owners of enterprises have an incentive to portray goods bought for final consumption as being used by the enterprise to reduce profits reported to the tax authorities.

or net) surplus is then defined as (gross or net) value added less all types of labour income.[240]

In practice, the third method to calculate GDP is dependent on the calculation by economic activity or by expenditure.[241]

3.3.2 The effect of taxation

Due to different taxing principles and other complications, different economic concepts and relations are not so easy to calculate.

A large part of the value added goes to pay taxes, although companies also receive subsidies. But the state is not an independent actor. Most of the taxes are redistributed back to the private sector in one form or another, through transfers or through provision of different services. One portion of the taxes goes backs to workers in the form of sickness and unemployment benefits, pensions, child care, education, etc., and could be viewed as part of variable capital or wages. Another portion of the taxes goes to providing different services for private industries, maintenance of roads, public transports, R&D, etc., and could be described as outlays on constant capital, or intermediate consumption and consumption of fixed assets. A third portion of the taxes goes into upholding the social system (to defence, policing, judiciary, etc). A fourth portion of the taxes goes back to companies (in the form of subsidies) and enhances their profits, and so on.[242]

In the present investigation, no attempt is made to divide taxes in this way between different uses.[243] Instead, this study attempts, as far as possible, to abstract from the effects of taxes.

3.3.3 Purchasers', basic and factor prices and values

Because of various taxes, the different items of national accounts (as value added) can be measured in different types of prices and values. Unfortunately, the definition of the different prices has changed over time, and there is also a slight difference between the 1993 SNA definitions and those of Statistics Sweden. The main types of prices used by Statistic Sweden are: factor prices, basic prices and purchasers' prices. The relation between these measures can be summarised as follows:[244]

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[240] See section 6.8.

[241] SOU 2002: 118, bilaga 3: p. 91.

[242] Among Marxist economists, there is no consensus on how to consider taxes. See, for instance, Shaikh and Tonak, 1994: pp. 52-65 and Mandel, 1974 [first published 1962]: pp. 310-311 and 335-339.

[243] See Peter Vikström (2002) for a study of the distribution of income, including the parts paid in different taxes.

[244] Based on Meddelanden i samordningsfrågor, 1977:11: pp. 20-21, *System of National Accounts 1993*, 1993: pp. 150-154, and SOU 2002: 118, bilaga 3: p. 25.

Gross output at factor prices
+ non-commodity-related indirect taxes less non-commodity-related subsidies
= Gross output at basic prices
+ commodity-related indirect taxes less commodity-related subsidies[245]
+ transport and trade margin
= Gross output at purchasers' prices (3.4)

Statistics Sweden calculates GDP by expenditure at purchasers' prices, which is also the main method to compute GDP. GDP by activity is usually calculated at basic prices. These measures can be linked to each other as Statistics Sweden also provides data on commodity-related indirect taxes and subsidies, but only at the most aggregated level and not decomposed between different economic activities. GDP from the factor side is mostly estimated at factor prices, and the surplus exclude the excess of indirect taxes over subsidies. Data on non-commodity related indirect taxes and subsidies are provided by Statistics Sweden on the more disaggregated level.[246]

There is also a difference between the calculations by activity and by expenditure purely pertaining to the statistical methods applied.[247]

Intermediate consumption and consumption of fixed assets are always measured at purchasers' prices. To calculate gross and net value added at basic prices from the production side the following relations hold:[248]

Gross output at basic prices
- Intermediate consumption at purchasers' prices
= Gross value added at basic prices
- Consumption of fixed assets at purchasers' prices
= Net value added at basic prices (3.5)

[245] The most important commodity-related tax is the VAT. What is included in the formula is only non-deductible VAT, i.e. VAT payable by a purchaser which is not deductible from purchaser's own VAT liability to the government, if any, as differentiated from deductible VAT, which is the VAT paid for the purchases of goods and services which the producer is permitted to deduct from the producer's own VAT liability to the government (*System of National Accounts 1993*, 1993: p. 151).

[246] Meddelanden i samordningsfrågor, 1977:11: pp. 10-13, and SOU 2002: 118, bilaga 3: pp. 25-27.

[247] SOU 2002: 118, bilaga 3: pp. 35-36.

[248] See Meddelanden i samordningsfrågor, 1977:11: p. 13, and SOU 2002:118, bilaga 3, p. 27.

3.3.4 Comparison of variables expressed at different types of prices

In this dissertation, the different variables are related to each other and different ratios calculated. However, this can be problematic if one variable expressed in one type of prices is related to another variable that is expressed in another type of prices. For example, while operating surplus is expressed in factor prices, assets are expressed in purchasers' prices. This becomes problematic if the two are related to each other in order to estimate profitability. In chapters 5, 6 and 8 this problem is discussed further, and a solution suggested as to how different variables that are compared to each other could be expressed in the same type of prices.

3.4 Volume change

3.4.1 Volume indices

The quantity of qualitatively different items cannot be measured in a single unit as such. Hence, it is necessary to employ an index, and all indices are quite subjective and eclectic constructions. In national accounts, a distinction is made between the concept of quantity and that of volume.[249] Quantities are only additive for single homogenous products (i.e. distinct qualities), and could in this sense be related to (though not equalled to) the Marxist concept of use value.[250] A volume index is a weighted average of the proportionate changes in the quantities of a set of goods and services between two periods in time (although in practice volume indices are often calculated as the weighted average of the proportionate changes in the volumes at a more aggregated level). Volume indices are not direct measures, as for example the length of a human being or the number of apples produced in one year, but rather statistical constructs. In national accounts, volume indices are normally estimated by calculating the values of different items in constant prices, and for this purpose, current prices have to be deflated – i.e. the inflation (or deflation) component eliminated.[251]

There are different deflation techniques that can display quite divergent results (see also section 3.2.4). The question of which deflation technique to use is of crucial importance for how to judge the economic development.

The series of SHNA before 1950 and the series of Statistics Sweden after 1950 do not use the same deflation technique. Therefore, the two series are not quite

[249] *System of National Accounts 1993*, 1993: pp. 380-381.

[250] See section 2.2.1. According to Marx (1965a [first published 1867]: p. 36):

"When treating of use-value, we always assume to be dealing with definite quantities, such as dozens of watches, yards of linen, or tons of iron."

[251] *System of National Accounts 1993*, 1993: pp. 25 and 380-381.

comparable, and yet several writers[252] have used those series to compare the economic fluctuations in Sweden before 1950 according to figures from SHNA with the post-war period according to figures from Statistics Sweden.[253]

Some of the largest revisions made to earlier studies in the present thesis concern the method of deflation.

3.4.2 Laspeyre, Paasche and Fisher indices

The most commonly used volume indices are the Laspeyre and Paasche indices.[254]

The Laspeyre volume index expresses the change in the quantities of a bunch of items in the *prices of the base year* (if the accounting period is one year). Mathematically, this is written as:

$$V_{b,t}^{L} = \frac{\sum_{i} p_{b,i} q_{t,i}}{\sum_{i} p_{b,i} q_{b,i}} \tag{3.6}$$

"b" stands for the base year, "t" for the comparison year, "p" for price, "q" for quantity and "i" for item. $p_{b,i}q_{t,i}$ is thus the value of items i in year t expressed in the prices of the base year, and $p_{b,i}q_{b,i}$ the value of items i in the base year expressed in the prices of the base year.

The Paasche volume index expresses the change in the quantities of a bunch of items in the *prices of the compared year*, t. Algebraically:

$$V_{b,t}^{P} = \frac{\sum_{i} p_{t,i} q_{t,i}}{\sum_{i} p_{t,i} q_{b,i}} \tag{3.7}$$

This relation is similar to formula (3.6), but with the difference that $p_{b,i}$ is replaced by $p_{t,i}$.

Usually, the two volume indices roughly equal each other. However, when relative prices change dramatically the two indices often diverge considerably from each other. If relative prices would be the same over time the deflation

[252] See section 1.3.2.

[253] Krantz (2001) presents a GDP-series up to the 1990s, which is partly based on the same method as the SHNA-series before 1950. It is Krantz's series after 1950 that should be used, and not the series of Statistics Sweden, if comparisons are to be made with the SHNA-series for the period before 1950 and if consistency is strived for.

[254] See, for instance, *System of National Accounts 1993*, 1993: pp. 382-383.

problem would be non-existent. Especially when the studied period is very long, relative prices usually change significantly during the investigated period.

There is also a systematic difference between the two volume indices. Over longer periods, a Laspeyre volume index tends to show a higher growth rate than a Paasche volume index (if the base year is located earlier in time than the compared year, i.e. if t>b), the so-called Gerschenkron effect.[255]

The Gerschenkron effect arises when activities experiencing a decline in relative prices tend to increase their volume shares, and activities experiencing a rise in relative prices tend to decrease their volume shares in total production.[256] This is what happened during the industrial revolution; manufacturing expanded its volume share in GDP at the same time as the relative prices for manufactured goods decreased (due to faster increases in productivity than for other sectors).

The Fisher volume index, is a geometric average of the Laspeyre and Paasche indices:[257]

$$V^{F}_{b,t} = \sqrt{V^{L}_{b,t} \; V^{P}_{b,t}} \tag{3.8}$$

The Fisher volume index is more difficult to interpret than the Laspeyre and Paasche volume indices, but has the advantage of being more stable, and represents a middle ground between the Laspeyre and Paasche volume indices.

A price index, or deflator, is a measure of the level of prices in the compared year in relation to the level of prices in the base year. The volume index is then derived by dividing the ratio between nominal values in two years with the price index, a procedure termed “deflation”. The price indices can also be constructed in different ways, depending on how to weight the individual prices.

The Laspeyre price index is a measure of the level of prices in year t in relation to year b expressed in the *quantities of the base year*:

$$P^{L}_{b,t} = \frac{\sum_{i} p_{t,i} q_{b,i}}{\sum_{i} p_{b,i} q_{b,i}} \tag{3.9}$$

The Paasche price index is a measure of the level of prices in year t in relation to year b expressed in the *quantities of the compared year*:

[255] See Jonas and Sardy, 1970: p. 83 and Gerschenkron, 1947.
[256] Schön, 1979: p. 91 and *System of National Accounts 1993*, 1993: p. 383.
[257] See, for instance, *System of National Accounts 1993*, 1993: pp. 383-384.

$$P^{P}_{b,t} = \frac{\sum_{i} p_{t,i} q_{t,i}}{\sum_{i} p_{b,i} q_{t,i}} \tag{3.10}$$

The Fisher price index is the geometric average of the Laspeyre and Paasche price indices.

The Laspeyre volume index can be derived by dividing the ratio between nominal values in two years with the Paasche price index (and *not* with the Laspeyre price index):

$$V^{L}_{b,t} = \frac{\sum_{i} p_{t,i} q_{t,i}}{\sum_{i} p_{b,i} q_{b,i}} \Bigg/ \frac{\sum_{i} p_{t,i} q_{t,i}}{\sum_{i} p_{b,i} q_{t,i}} = \frac{\sum_{i} p_{b,i} q_{t,i}}{\sum_{i} p_{b,i} q_{b,i}} \tag{3.11}$$

Similarly, the Paasche volume index can be derived by dividing the ratio between nominal values in two years with the Laspeyre price index:

$$V^{P}_{b,t} = \frac{\sum_{i} p_{t,i} q_{t,i}}{\sum_{i} p_{b,i} q_{b,i}} \Bigg/ \frac{\sum_{i} p_{t,i} q_{b,i}}{\sum_{i} p_{b,i} q_{b,i}} = \frac{\sum_{i} p_{t,i} q_{t,i}}{\sum_{i} p_{t,i} q_{b,i}} \tag{3.12}$$

SHNA uses specific deflation periods of 20-25 years.[258] As deflators SHNA is using Paasche price indices to arrive at Laspeyre volume indices.[259] For the whole deflation period, the volume values are measured in the same prices, of the base period (in SHNA the base period is the average of three year's prices located at the beginning of the deflation period), and the base period is changed only for the next deflation period. Before the change to the 1993 SNA, Statistics Sweden also used deflation periods.[260] This method can be questioned. Olle Krantz also writes that alternative deflation methods could be used depending on the purpose of the analysis.[261]

An alternative deflation technique is to compute an annual chain index, where only two consecutive years are compared. The base year is changed (so-called re-basing) for every year. A volume index for a longer period is then calculated by

[258] The method of deflation periods is also used for historical national accounts of other Nordic countries. See Grytten, 2001.
[259] Krantz, 2001: p. 5.
[260] Meddelanden i samordningsfrågor, 1979:11: pp. 16-19.
[261] Krantz, 2001: p. 7.

linking the volume indices between consecutive years together to form a chain index.[262]

The deflation technique of SHNA has several advantages. The advantage to use a Laspeyre volume index over a Paasche volume index, and deflation periods instead of a chain index, is that the same prices are used for the whole deflation period. When expressed in one base year's prices, production for each year is additive (i.e. the aggregate figure equals the sum of its components), which is mostly not the case when the base year is changing. It is also less time consuming than calculating a chain index, but this advantage has been eroded by the fast expansion of computer power.

However, one problem with deflation periods is the Gerschenkron effect. The further away from the base year or base period, the larger is the effect normally. An annual chain index is preferable if the purpose is to analyse short-term fluctuations in the economy, for example when annual fluctuations are investigated. In the present enquiry, the method of chain indices is, therefore, used instead of the one with deflation periods.

There are also reasons of a more theoretical nature why the method of chain index is preferable to the method of deflation periods of 20-25 years duration.

The theoretical underpinning of the project of SHNA is partly inspired by Schumpeter and the Swedish structural analytical school.[263] In SHNA, it is implicitly assumed that it is possible to find periods of 20-25 year duration of a relatively stable structure, reflected in reasonably stable relative prices.[264] Such assumptions have also consequences for the long-term analysis of the empirical material. For example, it is common among representatives of structural analysis to express different ratios (as the investment/GDP ratio) in constant prices rather than in nominal prices. However, the change in price structure normally implies that the further away the comparison year is situated from the base period, the larger is the divergence between a volume and a nominal ratio.[265]

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[262] *System of National Accounts 1993*, 1993: pp. 385-390. For a further discussion of the use of chain indices see Al, Balk, de Boer and Bakker, 1986, and Forsyth and Fowler, 1981.

[263] Krantz, 2001: p. 3.

[264] Such stability does not even exist in the short-term perspective. An example is given in Dalgaard, 1997, p. 492:

"The 1973 oil crisis seriously inhibited the use of 1970 prices in the seventies, the 1978-79 oil crisis similarly made 1975 prices obsolete in the late 1970s, and the dramatic decline in oil prices in 1986 made both 1980 and 1985 less well-suited as bases for measuring volume changes in the late 1980s and 1990s. These examples illustrate that international conventions to rebase in years ending with 0 and/or 5 are not without problems. One of the merits of using chain indices as the main measures of volume change in economic aggregates is that they are robust in this respect."

[265] See also section 8.2.4.

The theoretical standpoint of the structural analytical school is questioned in the present study. I view economic change as a more irregular process, making too neat periodisations problematic. The chain index is, in this respect, a more unconditional research tool to investigate economic growth and fluctuations.[266]

In this study, annual chain indices of a Fisher type are constructed. The chain index of a Fisher type is also recommended by the 1993 SNA in the first place, and a chain index using a Laspeyre volume index combined with a Paasche price index is considered an acceptable alternative.[267] The latter alternative is less time consuming, and is also used by Statistics Sweden for the most recent years.[268]

Why is the Fisher volume index used in the present study and not the Laspeyre volume index?

When deflation periods are used, a Laspeyre volume index is preferable, since the constant price estimates are additive then. However, the property of additivity disappears with a chain index, as the base year is then changing for every year.

In the ideal case, a chain index would be constructed not on the basis of changes from one year to another, but with even shorter intervals, from one month to another, from one day to another, etc. When this time period tends to go towards zero, then (under the assumption of a continuous price and production function) the difference between Paasche and Laspeyre also tends to disappear. If a Fisher annual chain index is used, then this index seems to be closer than either the Paasche or the Laspeyre index to the infinitesimally time period chain index. Mathematically, therefore, the Fisher index should be preferred when a chain index is constructed, and when short-term fluctuations are to be most satisfactorily estimated.[269]

Furthermore, the Fisher index satisfies the time reversal test, which requires that the index for *t* based on *b* always must be the reciprocal of the index for *b* based on *t*. Neither the Laspeyre nor the Paasche indices pass the test.[270]

Finally, the Fisher index is a middle ground between the Laspeyre and Paasche indices, and thus dampens the biases of the latter two. In statistics, an average of several indices is often a preferable alternative in the absence of very strong theoretical arguments to use one index over another.

3.4.3 Deflating GDP by activity

Since GDP and value added by activity are computed from two other variables, as gross output less intermediate consumption, the deflation techniques described

[266] See also Lindmark and Vikström, 2004: pp. 569-570.
[267] *System of National Accounts 1993*, 1993: p. 392.
[268] SOU 2002:118, bilaga 3: p. 135.
[269] See, for instance, *System of National Accounts 1993*, 1993: pp. 388-389.
[270] *System of National Accounts 1993*, 1993: p. 384.

in section 3.4.2 cannot be used straightforward. In general, there are several methods to deflate GDP and value added by activity:

1) The simplest method is to use the deflator of gross output on value added as well.[271] The problem with this method is that the price index of intermediate consumption can fluctuate significantly in comparison to the price index of gross output, and, therefore, the calculation can show huge growth or contraction rates that only reflect sharp fluctuations of prices.
2) Another method is to use the deflator of gross output on value added, but also to hold the share of value added in gross output constant for the whole deflation period, and set it equal to the share in the base period.[272] The estimate of volume growth is then not affected by fluctuations of the prices of intermediate consumption relative to the prices of gross output. The problem with this method is that it is possible that an increase or decrease in the share of value added actually reflects a real change – for instance, if a company outsources part of its production so that what formerly was counted as part of value added becomes part of intermediate consumption. Especially, the method can give a wrong impression of long-term growth, considering that the share of value added in gross output can increase or decrease significantly over time.
3) The so-called "double inflation" implies that two separate deflators are constructed, one for gross output and one for intermediate consumption. The volume value added is calculated as the value of gross output deflated by the first deflator less the value of intermediate consumption deflated by the second deflator.[273] When applying this method, the real relation between intermediate consumption and gross output affects the volume growth of value added. From a theoretical point of view, this is probably the preferable method. But especially for older material there could be a lack of information on price changes of intermediate consumption, which is why this method is neither used by SHNA nor the present study. Another problem with double deflation is that estimates of value added in constant prices can be zero or even negative, even if value added is positive in nominal prices (something that cannot happen if the two other methods of deflating value added are applied). This can arise especially for activities where the value added is quite small in relation to gross output.[274]

[271] See Cassing, 1996: p. 197.
[272] See *System of National Accounts 1993*, 1993: pp. 391-392 and Schön, 1988: p. 199.
[273] See Cassing, 1996: p. 197-198.
[274] *System of National Accounts 1993*, 1993: p. 390. See also an example provided by Durand, 1994: pp. 304-305. A so-called double deflation Divisia index, which is a continuous

The 1993 SNA recommends[275] and Statistics Sweden uses the double deflation method, although at the aggregate level Statistics Sweden deflates GDP only from the expenditure side.[276] One advantage of the double deflation method is that it can be applied to compute volume GDP by activity as well as by expenditure and give the same result in both cases, while the second method only can be used to calculate volume GDP by activity.

The method of deflating value added applied by SHNA seems to vary between different writers. While Lennart Schön uses the second method, Krantz and Pettersson seem to use the first method.[277] This is unfortunate as the deflation method should be consistent for different activities when aggregating the whole economy.

In this study, the deflation technique of GDP and value added by activity is a kind of a mix of methods. In a first step the deflation technique assuming constant shares of value added (i.e. the second method) is used, and annual chain indices of both Laspeyre and Paasche type are constructed for the gross value added of each type of activities and for the GDP as a whole. As mentioned above, this does not take into account changes in the share of value added in gross output. Therefore, a correction factor is estimated for the volume growth rate of the gross value added of each type of activities based on the annual change in a weighted 10-year moving average of the ratio of value added to gross output. A Fisher volume index of GDP is calculated from these corrected volume relatives. Appendix 3.1 gives a more technical account.

3.4.4 Production series

This enquiry uses the most disaggregated data published in the SHNA-series and by Statistics Sweden. Data supplied by both SHNA and Statistics Sweden are based on more disaggregated data, but these have not been published. In relation to SHNA, Olle Krantz writes as follows:

> The intention was to publish the whole data collection down to the lowest digit level…
> This intention was, alas, not fulfilled, since data down to the lowest level were not always published, for instance in the volume on manufacturing industry and handicrafts. This, of

time number formula, cannot result in a negative volume value added as long as nominal value added is non-negative (see Cassing, 1996: p. 199).

[275] *System of National Accounts 1993*, 1993: pp. 392.

[276] SOU 2002:118, bilaga 3: pp. 142-143.

[277] The deflation method used by Lennart Schön is explicitly stated (see Schön, 1988: p. 199). The deflation method applied by Olle Krantz and Lars Pettersson can be derived from studying the tables they present (see Pettersson 1987, and Krantz, 2001).

course, restricts the possibilities to build other types of series on the basis of the data collected. [278]

Nevertheless, the ideal of one consistent method down to the lowest digit level is seldom fulfilled even for modern estimates of GDP and GDP deflators. For example, the deflators of Statistics Sweden are based on price index series that have been constructed with other methods than the one preferred by Statistics Sweden.[279]

Also at the most disaggregated level, on the level of individual goods and services, problems arise when it comes to measure the volume change. This is related to the question of how to measure changes in prices, production and productivity.[280]

It is easier to measure changes in production and productivity for goods than for services (although it is not unproblematic for goods production either[281]). Production and productivity are primarily measures of human activity towards the non-human natural world, but are conceptually more problematic to apply in relation to activities that are directed towards the humans themselves, in particular their minds.

The national accounts often estimate the volume change in net value added of many services by using information on changes in the labour input – and in total gross output by using information of all inputs – which implies that the volume of net value added per labour unit of these individual services cannot be increased by definition. This method is also used in SHNA and in the present study. The tendency over time has been to invent new measuring principles for

[278] Krantz, 2001: p. 4.

[279] See SOU 2002:118, bilaga 3, p. 47, and Meddelanden i samordningsfrågor, 1979:11: p. 18.

[280] See Ljungberg, 1990: pp. 51-56.

[281] One issue is how to take into account changes in quality, for instance, when the prices of qualities are not available on the market in some periods. For example, the so-called hedonic hypothesis, which assumes that the price is a function of certain measurable qualities, has been applied to estimate changes in the quality of computers (*System of National Accounts 1993*, 1993: pp. 399-401). The hedonic hypothesis is criticised, however. According to Maddison (2003: p. 80):

"The hedonic measure implied that prices dropped 32 per cent a year from 1994 onwards. If this rate had prevailed for the 1990s, it would mean that a consumer who spent $ 1000 on a computer in 1990 and again in 2000, would be getting sixteen times as much for his money in the latter year. Hedonic weights… are perfectly respectable, but one can be a bit sceptical about the assumption that quality change was so large and monotonically positive. The hedonic techniques used by BEA imply a direct connection between computing power (speed, memory etc.) and computer output without considering the quality of the software that converts power to output. In addition, hedonic techniques assume competitive markets where prices accurately reflect consumer utility, but recent anti-trust cases suggest that this assumption may be unrealistic."

See also Schreyer, 2002, and van Ark, 2002.

productivity, implying that later volume series are not comparable to earlier ones.[282]

For some services it is simpler to find measures of change in production and productivity. The volume gross output of transportation can be measured in ton-miles, of banking as total volume of transactions, and of trade as the volume of traded goods.[283] But how do we measure the change in production of an artist, a schoolteacher or a health care worker?[284] In national accounts, the volume gross value added of these kinds of services is still considered to grow with the amount of hours worked (weighted by the differences in the wage rates) and consumption of fixed capital.

3.5 Classification and linking problems

The empirical material of this study consists of different times series. The data from Statistics Sweden is also composed of different times series that are not linked to each other.[285] The data series that the present enquiry is based on cover the following time spans: 1950-63, 1963-70, 1970-80, 1980-94 and 1994-2000.[286] The division of SHNA into economic activities partly corresponds to the classification of Statistics Sweden, but there are many crucial differences.[287]

Much work of the present research has been about linking those series to each other.

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[282] See *System of National Accounts 1993*, 1993: p. 392. and SOU 2002:118: pp. 150-152.

[283] See, for example, Krantz, 1991: p. 133 and Krantz, 1986: p. 165.

[284] Olle Krantz (1994: pp. 22-23) gives an illuminating example:

"If the number of in-patients in the hospital is defined as output, productivity can be increased by shortening the time of hospital care. This could imply a real productivity increase if new treatment methods are used, which result in faster recovery than before. However, it could also mean a deterioration of the quality of the service due to improper care; the patients can, despite a need for more care, be forced to leave the hospital to make room for new patients… In all probability, the patients do not want these effects."

[285] In Enmark and Svensson, 2001, the possibility to project the newer series of Statistics Sweden back to 1950 using the classifications and methods of the 1993 SNA is discussed. No such complete series from Statistics Sweden at a more disaggregated level has been in vogue when writing this thesis.

[286] Statistiska Meddelanden, N 1975:98, Appendix 2, 4 and 5 (period 1950-63); Statistiska Meddelanden, N 1978:8.4, Appendix 2 and 4 and Statistiska Meddelanden, N 1981:2.5 Appendix 2 and 5 (period 1963-70); Statistiska Meddelanden, N 10 SM 8601, Appendix 2-3, 4 and 5 (period 1970-80); Statistiska Meddelanden, N 10 SM 9501, Appendix 1, 2 and 3 (period 1980-94); and Statistiska Meddelanden, N 10 SM 9701, Statistiska Meddelanden, NR 10 SM 0201 and *Statistiska databaser*, online at http://www.scb.se (030601) (period 1994-2000). Statistiska Meddelanden, NR 10 SM 0301 and NR 10 SM 0401 were published in 2004, and contain some new revisions for the period 1994-2000, but are not utilized in the present study, because my research had progressed too far to alter all calculations.

[287] See Appendix 3.2 and chapters 4 and 6.

In the present study, the series of Statistics Sweden for 1980-94 has been chosen as a benchmark to which the other series are adjusted. This benchmark series is extrapolated backward for the years before 1980, and forward for the years after 1994, using the other series as indicators for extrapolation. The most recent series of Statistics Sweden utilized by this study[288] apply the standard of classification into economic activities labelled as SNI 92, which is a change from SNI 69.[289] SNI 2002 is an even newer standard, but the difference to SNI 92 is minor.[290] SNI 92 and SNI 2002 especially take into consideration the growing importance of private services and the need for a more elaborate classification. The reason why no one of the newer series of Statistics Sweden has been chosen as benchmark series is because the classification system of the later series is very different from the series of Statistics Sweden for the period 1950-94,[291] and because the classification system of the latter series is more similar to the one applied in SHNA.[292] The period 1950-94 is also longer than 1994-2000.

The broadest division into economic activities in SHNA is as follows:[293]

1) Agriculture and subsidiaries
2) Manufacturing and handicrafts (including mining, electricity and water, but not building and construction)
3) Building and construction
4) Transport and communication
5) Private services

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[288] In, for instance, Statistiska Meddelanden, NR 10 SM 0201 data is presented for the period 1993-2001. No extrapolations has been made, however, for the period before 1993 at a more disaggregated level.

[289] See *SNI 91 - Förslag till reviderad svensk standard för näringsindelning*, 1990: pp. 5-24 and Meddelanden i samordningsfrågor, 1992:6.

[290] Meddelanden i samordningsfrågor, 2003:2.

[291] Researchers from Statistics Sweden even draw the following conclusion (*Background Facts on Economic Statistics* 2004:02: pp. 28 and 29):

"By introducing SNI92, Sweden changed its traditional domestic classification to an international standard. Many time series were strongly affected by the change, which can be palpably evinced in the data bases. It would not make much sense to project such series backward using the ratio method…

When SNI92 was introduced translation keys between the old and the new nomenclatures were published. Here is an example of the impact of a big change. In SNI92 there is a main group, nr. 28 called 'Industry for fabricated metal products except machinery and equipment'. The sector employed 76 000 persons at New Year 1993/94. The closest sector in SNI69 (code 381) is 'Industry for metal products'. This sector had at that time 101 000 employed!"

To project SNI92 backward would require a more in-depth analysis of the empirical material at a more disaggregated level than has been possible in the present study. It would probably demand the work input of a group of researchers for a longer time period. See also section 10.2.3.

[292] According to Søren Larsen (2001: p. 140), most existing databases of historical national accounts in Nordic countries are based on 1968 SNA or even older classification systems.

[293] Krantz, 2001: p. 3.

6) Services of dwellings (letting of dwellings and use of owner-occupied dwellings)
7) Government services

In the present study, this broad division is also used, with some minor changes. Services of dwellings are broadened to include all real estate services, in accordance with the classification of Statistics Sweden. In the empirical analysis, a division of private services is also made between circulation and private reproductive services.[294] This partly corresponds to Marx's distinction between productive and unproductive services (of use value). The more disaggregated classification into economic activities is, with some minor differences, based on the classification of the SCB-series of 1980-1994.[295]

TABLE 3.1 and TABLE 3.2 in Appendix 3.2 present in more detail the relations between the classifications into activities of this study and of SHNA and Statistics Sweden.

3.6 Summary

This chapter provides an overview of the concepts and methods of national accounts and how they are applied in this thesis.

National accounts are about presenting statistical estimates of various aspects of the economic activity of countries, from production to distribution, consumption and asset formation.

There are many controversies regarding how to compute aggregate production. One issue concerns where to put the so-called "production boundary", i.e. how to draw the line between productive and non-productive activities. The most commonly used measure of aggregate production is the Gross Domestic Product (GDP). The Gross Domestic Product is rather a measure of production that in one way or another involves a money transaction, while for example unpaid household work is excluded. In the Marxist tradition, productive activities are usually considered more narrowly, which exclude production outside capitalist relations and circulation activities.

GDP can be calculated in three ways: by activity as the sum of all gross values added, by expenditure as the sum of final consumption, investment and net export, and by income as the sum of surplus and labour income. If measured in the same type of prices these three methods should give the same result. This study provides estimates using all three methods. Because of the effect of

[294] See Appendix 3.2 and section 7.3.
[295] Described in Statistiska Meddelanden, N 19 SM 9501: pp. 5-7.

taxation, products can also be valued in different types of prices, which is problematic when comparing various variables expressed in different prices.

Measuring volume values of production, or other bunches of items, implies the elimination of the inflation component, i.e. the deflation of current values. There are, however, different deflation techniques. In this chapter, it is argued that the Fisher chain index has quite desirable properties, especially in relation to annual changes, and is also the one chosen in the present study. In contrast, SHNA and Statistics Sweden prior to the switch to the 1993 SNA (System of National Accounts) use the technique of deflation periods, which have certain advantages when investigating long-term growth, but is problematic when studying annual changes. In the 1993 SNA, an annual chain index is recommended.

For the period after 1950 the construction of the macroeconomic series is, in this enquiry, mainly based on the data from Statistics Sweden, and for the period prior to 1950 mainly on previously published historical national accounts, supplemented with some primary sources. There are, however, several breaks in those series, also in the material of Statistics Sweden after 1950. The division into types of activities is quite different in the material of previously published historical national accounts from the one applied by Statistics Sweden. In the present study, these breaks are eliminated by linking the various series to each other and applying consistent classifications throughout the relevant periods. For this purpose the presented series of Statistics Sweden for the period 1980-94 are used as benchmarks, to which the other series are adjusted. The newer series of Statistics Sweden are based on newer standards and classifications, but are not chosen as benchmarks since they are too different from earlier series.

Appendix 3.1: Deflating GDP by activity

This appendix provides an overview of how the main volume series of GDP by activity of the present study is calculated. In a first step, the deflation technique of constant (gross) value added share is applied (see section 3.4.3). In the next step, this volume measure of GDP is corrected for long-term changes in the value added share of each activity (or type of activities). The value added here refers to the gross value added.

Applying the method of constant value added share

In the first step, GDP is deflated using the method of a constant value added share. “s” refers to the nominal ratio of value added to gross output.

To arrive at an annual Laspeyre volume chain index for t based on t-1, the value added for each activity (or type of activities), i, in year t in the prices of

year t-1 ($p_{t-1,i}q_{t,i}s_{t-1,i}$) is calculated under the assumption of the same value added share as in year t-1 (here $s_{t-1,i}$). The sum of those are then divided by the sum of nominal values added in year t-1:

$$V^{L,s}_{t-1,t} = \frac{\sum_i p_{t-1,i}q_{t,i}s_{t-1,i}}{\sum_i p_{t-1,i}q_{t-1,i}s_{t-1,i}} \tag{3.13}$$

The Paasche deflator of this Laspeyre volume chain index is:[296]

$$P^{P,s}_{t-1,t} = \frac{\sum_i p_{t,i}q_{t,i}s_{t,i}}{\sum_i p_{t-1,i}q_{t,i}s_{t-1,i}} \tag{3.14}$$

When dividing the ratio of the nominal value added in year t to the nominal value added in year t-1 with $P^{P,s}_{t-1,t}$, we get $V^{L,s}_{t-1,t}$ (as it should be):

$$\frac{\sum_i p_{t,i}q_{t,i}s_{t,i}}{\sum_i p_{t-1,i}q_{t-1,i}s_{t-1,i}} \Bigg/ \frac{\sum_i p_{t,i}q_{t,i}s_{t,i}}{\sum_i p_{t-1,i}q_{t,i}s_{t-1,i}} = \frac{\sum_i p_{t-1,i}q_{t,i}s_{t-1,i}}{\sum_i p_{t-1,i}q_{t-1,i}s_{t-1,i}} = V^{L,s}_{t-1,t} \tag{3.15}$$

To arrive at a Paasche volume chain index for t based on t-1, the sum of the nominal values added in year t is divided by the sum of the values added in year t-1 in the prices of year t under the assumption of the same value added share for each activity as in year t:

$$V^{P,s}_{t-1,t} = \frac{\sum_i p_{t,i}q_{t,i}s_{t,i}}{\sum_i p_{t,i}q_{t-1,i}s_{t,i}} \tag{3.16}$$

The Laspeyre deflator of this Paasche volume chain index is:

[296] This deflator is also sensitive to changes in the value added share, but that follows from the deflation technique of constant value added shares. This deflator should, therefore, not be used as an index of changes in the general price level.

$$P^{L,s}_{t-1,t} = \frac{\sum_i p_{t,i} q_{t-1,i} s_{t,i}}{\sum_i p_{t-1,i} q_{t-1,i} s_{t-1,i}} \tag{3.17}$$

When dividing the ratio of the nominal value added in year t to the nominal value added in year t-1 with $P^{L,s}_{t-1,t}$, we get $V^{P,s}_{t-1,t}$ (as it should be):

$$\frac{\sum_i p_{t,i} q_{t,i} s_{t,i}}{\sum_i p_{t-1,i} q_{t-1,i} s_{t-1,i}} \Bigg/ \frac{\sum_i p_{t,i} q_{t-1,i} s_{t,i}}{\sum_i p_{t-1,i} q_{t-1,i} s_{t-1,i}} = \frac{\sum_i p_{t,i} q_{t,i} s_{t,i}}{\sum_i p_{t,i} q_{t-1,i} s_{t,i}} = V^{P,s}_{t-1,t} \tag{3.18}$$

Correcting for change in the value added share

To take into account the changes in the ratios of value added to gross output, a correction factor for the annual volume relative (the ratio of the volume value in year t to the volume value in year t-1) of each activity (or type of activities), i, is calculated:

$$c_{t,i} = \frac{0.2 s_{t,i} + \sum_{j=t-7}^{t-1} 0.1 s_{j,i} + 0.07 s_{t-8,i} + 0.03 s_{t-9,i}}{0.2 s_{t-1,i} + \sum_{j=t-8}^{t-2} 0.1 s_{j,i} + 0.07 s_{t-9,i} + 0.03 s_{t-10,i}} \tag{3.19}$$

The correction factor is calculated in such a way as to take into account long-term changes in the value added share and to prevent short-term fluctuations to have an unreasonably large impact. The weighted 10-year moving average of the ratio of value added to gross output, $0.2 s_{t,i} + \sum_{j=t-7}^{t-1} 0.1 s_{j,i} + 0.07 s_{t-8,i} + 0.03 s_{t-9,i}$, is constructed in such a way as to give the largest weight to the year concerned (year t) and smallest weights to the earlier years. To prevent future changes affecting how present changes are estimated, the moving average does not encompass later years.

The Laspeyre volume index based on the method of constant value added share can also be rewritten in the following way, where VA stands for the nominal value added and VR for the annual volume relative:

$$V^{L,s}_{t-1,t} = \frac{\sum_i p_{t-1,i} q_{t,i} s_{t-1,i}}{\sum_i p_{t-1,i} q_{t-1,i} s_{t-1,i}} = \sum_i \left(\frac{p_{t-1,i} q_{t,i} s_{t-1,i}}{p_{t-1,i} q_{t-1,i} s_{t-1,i}} \frac{p_{t-1,i} q_{t-1,i} s_{t-1,i}}{\sum_i p_{t-1,i} q_{t-1,i} s_{t-1,i}} \right) =$$

$$= \sum_i \left[\left(VR_{t,i} \right) \left(\frac{VA_{t-1,i}}{VA_{t-1,total}} \right) \right] \tag{3.20}$$

From (3.20) it can be seen that the Laspeyre volume index of the total value added is the weighted arithmetic average of the volume relatives of the different activities, where the weight of activity i is set equal to the ratio of the value added of activity i to total value added in year t-1. To arrive at the corrected volume index, the volume relative of activity i is set equal to the uncorrected volume relative of the activity multiplied by the correction factor of the activity ($c_{t,i}$). When formula (3.20) is corrected, it is rewritten as follows:

$$V^{L,s,corrected}_{t-1,t} = \sum_i \left[\left(VR_{t,i} \right) c_{t,i} \left(\frac{VA_{t-1,i}}{VA_{t-1,total}} \right) \right] =$$

$$= \sum_i \left(\frac{p_{t-1,i} q_{t,i} s_{t-1,i}}{p_{t-1,i} q_{t-1,i} s_{t-1,i}} c_{t,i} \frac{p_{t-1,i} q_{t-1,i} s_{t-1,i}}{\sum_i p_{t-1,i} q_{t-1,i} s_{t-1,i}} \right) = \frac{\sum_i p_{t-1,i} q_{t,i} s_{t-1,i} c_{t,i}}{\sum_i p_{t-1,i} q_{t-1,i} s_{t-1,i}} \tag{3.21}$$

Like in equation (3.20), the Paasche volume index is rewritten as follows:

$$V^{P,s}_{t-1,t} = \frac{\sum_i p_{t,i} q_{t,i} s_{t,i}}{\sum_i p_{t,i} q_{t-1,i} s_{t,i}} = \frac{1}{\sum_i \left(\frac{p_{t,i} q_{t-1,i} s_{t,i}}{p_{t,i} q_{t,i} s_{t,i}} \frac{p_{t,i} q_{t,i} s_{t,i}}{\sum_i p_{t,i} q_{t,i} s_{t,i}} \right)} =$$

$$= \frac{1}{\sum_i \left[\frac{1}{\left(VR_{t,i} \right)} \left(\frac{VA_{t,i}}{VA_{t,total}} \right) \right]} \tag{3.22}$$

From (3.22), it can be seen that the Paasche volume index is the weighted harmonic average of the volume relatives of the different activities, where the weight of activity i is set equal to the ratio of the value added of activity i to total value added in year t. To arrive at the corrected Paasche volume index, the volume relative of activity i is set equal to the uncorrected volume relative of the

activity multiplied by the correction factor of the activity ($c_{t,i}$), similarly as for the corrected Laspeyre volume index. If formula (3.22) is corrected similarly as in formula (3.21), it will be rewritten as follows:

$$V_{t-1,t}^{P,s,corrected} = \frac{1}{\sum_i \left[\frac{1}{(VR_{t,i})c_{t,i}} \left(\frac{VA_{t,i}}{VA_{t,total}} \right) \right]} = \frac{\sum_i p_{t,i} q_{t,i} s_{t,i}}{\sum_i \frac{p_{t,i} q_{t-1,i} s_{t,i}}{c_{t,i}}} \quad (3.23)$$

Appendix 3.2: Division into economic activities

TABLE 3.1 provides the "key" between the classifications into economic activities of the present study and of Statistics Sweden. The two classifications of Statistics Sweden that are compared to the present enquiry is firstly the one precisely before the switch to the SNI 92,[297] SNR-REV, which is a revised version of the SNI 69, and secondly, the one after the switch to the SNI 92.[298] TABLE 3.2 provides the "key" between classifications of the present study and that of SHNA. These "keys" are not 100 percent consistent with each other, but are rather used as rough approximations for linking the different times series.

In this thesis, groups of different activities are labelled variously. The following relations between those labels and the codes in TABLE 3.1 hold (within the SNA production boundary):

AA+MH+BC+TC+CC+PR+RE: The private sector
AA+MH+BC: Goods production
MH+BC: Industrial goods production
MH+BC+TC+CC+RE: Industrial activities
AA+MH+BC+TC+CC+RE: Goods-related activities
TC+CC+PR+RE+GS: Services
PR+GS: Reproductive services
AA+MH+BC+TC+CC+RE: Non-reproductive activities
CC+TC+RE: Industry- or goods-related services
TC1+TC2+TC5: Land transport
TC1+TC2: Land non-animal transport
PR6+PR7: Non-Profit Institutions Serving Households (NPISH).

[297] See Statistiska Meddelanden, N 10 SM 9501, Appendix 2, pp. 5-7, where also a key between SNR-REV, earlier applied SNR classification and SNI 69 is presented.

[298] See Meddelanden i samordningsfrågor, 1992:6, and Statistiska Meddelanden, NR 10 SM 0201.

TABLE 3.1: *"Key" between the classification into activities of the present study (PS), Statistics Sweden (SCB) 1980-94 and SNI 92.*

Present study	1980-94 SCB-series	SNI 92
AA. Agriculture & ancillaries	**1000**	**01-05**
AA1. Agriculture and hunting	1100	01
AA2. Forestry and logging	1200	02
AA3. Fishing	1300	05
MH. Manufacturing and handicrafts	**2000-4000, 9510**	**10-36, 40-41, 50.2, 50.4 (part), 52.7**
MH1. Mining, quarrying and basic metal industries	2000, 3700	10-14, 27
MH2. Food products industries	3100	15-16
MH3. Textile, wearing apparel, hair and leather industries	3200, 3900 (part), 9510 (part)	17-19, 36.4-36.5 (part), 36.62, , 52.71, 52.74 (part)
MH4. Wood and wood product industries	3300, 3900 (part), 9510 (part)	20, 36.11-36.14, 36.3, 36.4-36.5 (part), 36.63 (part), 52.74 (part)
MH5. Paper and pulp industries, printing and publishing	3400	21-22
MH6. Chemical, petroleum, rubber and plastic product industries	3500, 3900 (part)	23-25, 36.15, 36.4-36.5 (part), 36.63 (part)
MH7. Stone, clay and glass industries	3600	26
MH8. Engineering and fabricated metal industries	3800, 3900 (part), 9510 (part)	28-35, 36.2, 36.61, 36.63 (part), 50.2, 50.4 (part), 52.72, 50.73, 52.74 (part)
MH9. Electricity, gas and water works, excl. sewage plants	4000 excl. sewage plants	40-41
BC. Building and construction	**5000**	**45**
TC. Transport and communication	**7000**	**60-64**
TC1. Railway transport	7111	60.1
TC2. Other land non-animal transport	7112-7116	60.2-60.3, 63 (part)
TC3. Water transport	7120	61, 63 (part)
TC4. Air transport	7130	62, 63 (part)
TC5. Animal transport	Not included	Not included
TC6. Services allied to transport	7190	63 (part)
TC7. Postal services	7210	64.1
TC8. Telecommunication	7220	64.2
CC. Circulation (excl. real estate)	**6000, 8100, 8200, 8320, 9200-9520**	**37, 50.1, 50.3, 50.4 (part), 50.5, 51-52.6, 65-67, 71, 72, 74.1-74.6, 74.83, 74.84**
CC1. Wholesale and retail trade	6100	37, 50.1, 50.3, 50.4 (part), 50.5, 51-52.6
CC2. Financial institutions	8100	65, 67.1
CC3. Insurance	8200	66, 67.2
CC4. Business services	8320	71, 72, 74.1-74.6, 74.83, 74.84

TABLE 3.1: *"Key" between the classification into activities of the present study (PS), Statistics Sweden (SCB) 1980-94 and SNI 92, continued.*

Present study:	**1980-94 SCB-series:**	**SNI 92:**
PR. Private reproductive services	**6300, 9200-9520, other producers**	**55, 73, 74.7, 74.81, 74.82, 80-85, 90-95, NPISH**
PR1. Restaurants and hotels	6300	55
PR2. Sanitary services and sewage plants	9200 incl. sewage plants	74.7, 90
PR3. Education, R&D, health, community services, et al.	9300	73, 80-85, 91, 95
PR4. Recreation	9400	92
PR5. Other personal services	9520	74.81, 74.82, 93
PR6. Non-government associations (non-market producers)	Other producers (part)	NPISH (part)
PR7. Paid household services (non-market producers)	Other producers (part)	NPISH (part)
RE. Real estate	**8310**	**70**
GS. Government services	**Central and local government**	**Central and local government**
HW. Activities performed by "housewives"	**Not included**	**Not included**

TABLE 3.2: *"Key" between the classification into activities of the present study (PS) and Swedish Historical National Accounts (SHNA) before 1950.*

Present study:	SHNA before 1950:	Included in the PS that are excluded in SHNA:
AA	**Agriculture and ancillaries, plus logging**	
AA1	Agriculture and hunting	
AA2	Forestry plus logging	
AA3	Fisheries	
MH	**Manufacturing and handicrafts**	
MH1	Ore mining and metal industries, plus coal mines, less engineering and fabricated metal industries	
MH2	Food products industries	
MH3	Textile and wearing apparel industries plus leather and hair industries	
MH4	Wood product industries	
MH5	Pulp, paper and printing industries	
MH6	Chemical-technical industries plus rubber industries	
MH7	Stone, clay and glass industries, less coal mines	
MH8	Mining and metal industries, less mining, less basic metal industries	
MH9	Electricity, gas and water works	
BC	**Building and construction**	
TC	**Transport and communication, less logging**	**Air transport 1920-1950, services allied to transport**
TC1	Railway transport	
TC2	Lorry, taxi, buss and tramline transport	
TC3	Foreign and domestic shipping, stevedoring	
TC4	Missing for the period before 1950	Air transport 1920-1950
TC5	Team and carriage transport	
TC6	Missing	Services allied to transport
TC7	Postal services	
TC8	Telecommunication	
CC	**See below**	**Other business services**
CC1	Trade plus pharmacies	
CC2	Banking	
CC3	Insurance	
CC4	Lawyers et al.	
PR	**See below**	**See below**
PR1	Restaurants and hotels	
PR2-PR6	Private health care, hair-dressing, Recreation, non-state church religious services, private dentist services, private veterinarian services	Chimney sweeps, sewage plants, private teaching, laundry, funeral services, photo services, miscellaneous other services
PR7	Paid household work	
RE	**Letting of dwellings and use of owner-occupied dwellings**	**Letting of other premises (than dwellings)**
GS	**Central and local government services**	
HW	**Activities performed by wives working at home**	

4 The production side of national accounts

4.1 Introduction

This chapter deals with the estimates of gross output and value added of the different types of activities for the period 1800-2000. Special focus is given to how to link the different series with each other, especially the different series of SHNA for 1800-1950 with the series of Statistics Sweden for 1950-2000.

The codes for types of activities – and how the classifications into activities of the different sources used in the present study are related to each other – are described in TABLE 3.1 and TABLE 3.2 (see Appendix 3.2).

4.2 Linking production series

4.2.1 Differences between times series

In the present enquiry, the different production series of Statistics Sweden for the period 1950-2000[299] are linked with the series of SHNA. In reality, the latter are, in turn, also composed of different time series, but the breaks between these series have been eliminated in the research project of SHNA.

The SHNA series for the years after 1950 are different from the series constructed by Statistics Sweden for the period, since SHNA extrapolates the series of the period prior to 1950 *forward* to the period after 1950 using the SCB-series as indicators,[300] instead of projecting the SCB-series *backward* as in the present study.

A comparison of the estimates of Statistics Sweden with those of SHNA for the break in 1950 shows rather large differences. This is especially the case with the value of real estate and many private services, which are estimated higher by Statistics Sweden than by SHNA.[301]

As discussed in chapter 3, the break in 1994 poses some problems when linking the different series. Apart from the switch to a chain index and a new classification into economic activities, the new SCB series significantly upgrades the gross output as well as the value added.

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[299] For the period 1950-63 in Statistiska Meddelanden, N 1975:98, Appendix 4, for the period 1963-70 in Statistiska Meddelanden, N 1978:8.4 Appendix 4, for the period 1970-80 in Statistiska Meddelanden, N 10 SM 8601, Appendix 4, for the period 1980-94 in Statistiska Meddelanden, N 10 SM 9501, Appendix 2, and for the period 1994-2000 in Statistiska Meddelanden, N 10 SM 9701 and NR10 SM 0201.

[300] See, for example, Krantz, 1986: p. 216, Schön, 1988: pp. 117-118, Krantz 1991: p. 125, and Krantz, 2001: p. 7.

[301] See sections 4.7 and 4.8.

This upgrading can probably partly be explained by the fact that more additions are made to the GDP in the newer series, for instance, estimates of illegal production and underreporting of production in the private sector due to avoidance of tax payments.[302]

There is also a difference between the new series after the switch to the 1993 SNA and the earlier series of Statistics Sweden regarding how to draw the line between fixed capital formation (or fixed investment) and intermediate consumption. According to the Swedish law, only products with a life span of three or more years are considered as fixed investment, while other products used in production are classified as intermediate consumption. This definition is also applied in earlier national accounts.[303] In the newer national accounts, an item used in production is considered a fixed investment if its life span in production is more than one year, which implies that the level of fixed investment is increased compared to earlier series. This decreases the amount defined as intermediate consumption, which correspondingly increases the value added (as the latter is computed as gross output less intermediate consumption).[304]

Most of "other capital formations" in the newer national accounts consist of items that in the earlier SCB-series would be classified as intermediate consumption rather than fixed capital formation. The major part of "other capital formations" (which are presented at a more disaggregated level) consists of software products[305] (which have a rather short life span), and the other part of various immaterial products. To make the SCB-series of 1994-2000 consistent with the earlier series (before being linked to the benchmark series of 1980-94), in this study, "other capital formations" are added to the intermediate consumption (and distributed between activities using the amount of other types of intermediate consumption, presented at a more disaggregated level, as an indicator for this purpose), and fixed investment decreased correspondingly.[306]

In the series of Statistics Sweden, intermediate consumption of banking services (labelled as "Financial Intermediations Services Indirectly Measured" in the latest SCB-series) is only presented at an aggregate level for the private sector as a whole,[307] while other types of intermediate consumption are presented on a more disaggregated level. In this enquiry, intermediate consumption of

[302] SOU 2002:118, bilaga 3*:* pp. 29-32.
[303] Meddelanden i samordningsfrågor, 1979:11: p. 57.
[304] SOU 2002:118*,* bilaga 3*:* p. 34 and 60-65. See Schreyer, 2002, for a discussion of the impact on the estimated volume GDP growth of how ICT-products are classified.
[305] See, for instance, Statistiska Meddelanden, NR 10 SM 0201: p. 57.
[306] See section 5.2.2.
[307] Meddelanden i samordningsfrågor, 1979:11: p. 39 and SOU, 2002:118*,* bilaga 3*:* p. 35.

banking services is distributed between activities using the amount of other types of intermediate consumption as an indicator.

4.2.2 The ratio method

There is no consensus on how to link different series for the same variable but for different time periods. What is the most suitable method depends much on the character of the empirical material.

The main linking method used in this study is the ratio method.[308] The ratio method implies that a variable is increased or decreased by a certain percentage so that the breaks between consecutive time series are eliminated. The ratio method is suitable in the case when a variable grows geometrically and not arithmetically.

However, the ratio method in its simple form is not always the best choice when it comes to variables that are interdependent, as is the case with gross output, intermediate consumption and value added. Since gross output equals the sum of intermediate consumption and value added, two of the variables determine the third. If all three variables are extrapolated backward, the sum of intermediate consumption and value added does not always equal gross output.[309]

Two methods could be used instead:

1) One method could be to extrapolate gross output and intermediate consumption, and calculate the value added as the residual. A strong argument for this conduct is that, generally, direct information only exists on gross output and intermediate consumption. The method can, however, lead to some peculiar results when dealing with very long time series, and when the estimates of the ratio of intermediate consumption to gross output diverge significantly between times series for the break

[308] For a discussion of the use of the ratio method by Statistics Sweden see, for example, *Background Facts on Economic Statistics* 2004:02: pp. 27-32.

[309] This can be illustrated by an example. Assume that, according to the benchmark series of 1980-94, the gross output of an activity was 100, intermediate consumption 50, and value added 50 in the year 1980; and according to the 1970-80 series, the gross output was 100, intermediate consumption 20 and value added 80 in the same year. To adjust the 1970-80 series to the benchmark series, the estimated intermediate consumption has to be increased by 250 percent, the value added decreased by 37.5 percent, while the gross output remains unchanged in this linked series. Now, assume that, according to the 1970-80 series, the gross output was 10, intermediate consumption 5 and value added 5 in the year 1970. A simple ratio extrapolation would mean an unchanged estimated gross output of 10, an intermediate consumption of 12.5 and a value added of 3.125 for the year 1970. In this case, the estimated sum of intermediate consumption and value added does not equal the estimated gross output.

years. The method can then result in negative figures for value added, even when the calculations are based only on positive numbers.[310]

2) Another method could be to extrapolate intermediate consumption and value added separately, and to calculate gross output as their sum. The advantage of this method is that it does not result in any negative values (if it is based on positive figures). The negative side of this method is that the gross output is not the variable that is extrapolated directly, which is unfortunate considering that gross output is often the most reliable estimate, at least for goods production.

In this study, a third method is used that combines the advantage of the latter two methods. Two desired conditions are to be fulfilled:

(1) The gross output must be extrapolated using the ratio method.

(2) The proportion between intermediate consumption and value added must be the same as if only intermediate consumption and value added would be extrapolated using the ratio method.

To satisfy these two conditions, the backward and forward linking from the benchmark series is made in two steps. In the first step, gross output, intermediate consumption and value added are extrapolated separately using the ratio method. Then, the sum of the extrapolated estimates of intermediate consumption and value added does not necessarily equal gross output. To achieve such equality, the value of intermediate consumption and value added is adjusted in a second step. The value added and intermediate consumption derived in the first step are divided by the ratio of the sum of the extrapolated intermediate consumption and value added to the extrapolated gross output.

Generally, the method of extrapolation used in the present study is preferable when the sum of two terms is the most reliable estimate and the borderline between the two terms is vague. This is mostly the case with gross output, intermediate consumption and value added, as it is often difficult to precisely draw the line between intermediate consumption and value added, not least because the definition of intermediate consumption can change.

This method of extrapolation is not suitable for the government services. Gross output for the government services is not calculated directly, while the value added is set equal to wages and salaries (including social benefits) and consumption of fixed assets.[311] Many private services before 1950 are estimated in this way as well in the present study.[312] The value added and intermediate

[310] In the example of footnote 309, this method of projecting the benchmark series of 1980-94 backward would for the year of 1970 give the following result: an estimated gross output of 10, an intermediate consumption of 12.5, and hence a value added of minus 2.5.

[311] See section 4.9.

[312] See section 4.7.3.

consumption for those private services are projected backward separately to the period before 1950, and the gross output is computed as their sum. For government services, wages and salaries (including social benefits) and intermediate consumption are extrapolated backward and forward separately from the benchmark period 1980-94 to all other years, while consumption of fixed assets is calculated directly from the investment data.[313]

Nevertheless, the purely quantitative methods of linking time series through extrapolations are quite crude.[314] A more qualitative analysis is needed as well to investigate whether the linking leads to erroneous biases, and if so to make some corrections. Such investigation has also been made in this study, at least for real estate and some private services.

4.3 Agriculture and ancillaries (code AA)

Lennart Schön constructs the SHNA-series of agriculture and ancillaries.[315]

In SHNA, log driving is part of transport and communication[316] (code TC), but in the division of Statistics Sweden it is part of forestry (code AA2).[317] Since this study is guided by the classifications of Statistics Sweden, log driving is put into forestry and not into transport and communication.

In the series of Statistics Sweden for the period 1950-94, agriculture with ancillaries is divided between agriculture, forestry and fishing (codes AA1-AA3). This division is also possible to obtain in SHNA, but only for gross output, while the value of intermediate consumption is only presented for all the three

[313] See section 5.5.

[314] An example provided by researchers from Statistics Sweden can illustrate the problems that can arise (*Background Facts on Economic Statistics* 2004:02: pp. 29-30):

"Backward linking can produce serious errors. In Hanaeus (1998) there is a warning example. The number of employees in a sector was reclassified according to SNI92 for the period 1985–1994 and compared to the old SNI69 figures. The difference between the two variables was ignorable for the period 1991–1994, but for the period 1985–1990 there is a divergence of the two variables; the reclassified variable overestimates the persons employed, because at the turn of the decade the number of misclassified persons suddenly starts to increase, and continues to do so the more backward in time one moves. If the parallel results for 1985–1990 had not been known and the ratio method had been blindly applied on the older data, a serious bias would have been introduced. The conclusion is that even the ratio method requires closer knowledge about the time series, implying that data be well documented, including methods applied and assumptions made, if the series has been linked."

Since this study is working with a very long time period (the extrapolation backward from the benchmark series 1980-94 is made for 180 years), this problem is clearly aggravated. As several series are linked to each other, the biased tendencies of the extrapolations can reinforce each other further.

[315] Schön, 1995.

[316] Krantz, 1986: pp. 70-106.

[317] See Meddelanden i samordningsfrågor, 1977:9: p. 10, and Meddelanden i samordningsfrågor, 1992:6: p. 34.

activities. For the period before 1950, the intermediate consumption is divided between the three activities using to the share of gross output of the respective activity in total gross output as indicator (with adjustments made for the share of the intermediate consumption of the respective activity in total intermediate consumption of agriculture and ancillaries in 1950 according to the linked PS-series).

4.4 Manufacturing and handicrafts (code MH)

4.4.1 Division into industries

Lennart Schön and Jonas Ljungberg construct the SHNA-series of manufacturing and handicrafts.[318] Their data is used in the present study for backward linking.

Lennart Schön makes the following division into economic activities or industries,[319] which follows earlier classifications before the switch to SNI69:[320]

I. Ore mining and metal industries
II. Stone, clay and glass industries
III. Wood products industries
IV. Pulp, paper and printing industries
V. Food products industries
VI. Textile and wearing apparel industries
VII. Leather, hair and rubber industries
VIII. Chemical industries
IX. Electricity, gas and water works

Jonas Ljungberg makes a further division at a more disaggregated level, but only for the period after 1888, and only for gross output.[321]

The division of manufacturing and handicrafts into industries is different in SHNA from the one applied by Statistics Sweden. In order to link those series to each other, the division into industries has to be the same. To make such linking possible, the division into industries of this study is different from both SHNA and Statistics Sweden, although the border line between manufacturing and handicrafts at the aggregate level and other activities is the same as in SHNA.[322]

One type of industries in the data of SCB are mining and quarrying industries (code MH1), but those activities are not presented separately by Lennart Schön. Schön puts ore mining and metal industries together, and coal mining into stone,

[318] Schön, 1988, and Ljungberg, 1988.
[319] Schön, 1988: p. 207.
[320] See, for example, Johansson, 1967: p. 29 and SOS, *Industri: Berättelse för år 1950*, 1953: pp. 104-106.
[321] Ljungberg, 1988.
[322] See Appendix 3.2.

clay and glass industries. In the present study, ore mining and metal industries are divided into two separate industries: engineering and fabricated metal industries (code MH8), and mining, quarrying and basic metal industries (code MH1).[323] The latter industries include coal mining, and coal mining is therefore deducted from stone, clay and glass industries as presented in SHNA for the years before 1950.[324] In the series of Statistics Sweden, mining and quarrying on the one hand and basic metal industries on the other hand are presented separately, but to separate those two industries for the period before 1950 poses too much difficulty.

Lennart Schön presents leather, hair and rubber product industries separate from textile and wearing apparel industries. In the classification of this study, textile, wearing apparel, hair and leather industries are put together (code MH3), in accordance with the Statistics Sweden classification, and rubber industries[325] are reclassified into chemical, petroleum, rubber and plastic product industries (code MH6).

For the period 1888-1955, Jonas Ljungberg presents deflators for the gross output on a more disaggregated level than Lennart Schön, and the deflators (up to 1950) of Laspeyre and Paasche type used in the present enquiry are based on these more disaggregated data. Schön's deflators are used for the period before 1888 with some modifications.[326]

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[323] This division is made on the basis of the estimated gross output of ore mining and metal industries, based on Schön (1988: pp. 68-75) for the period 1800-1871, NI (Lindahl, Dahlgren and Kock, 1937: part two, p. 185) for the period 1871-1888 and Ljungberg (1988) for the period 1888-1950.

[324] This reclassification is based on the estimated gross output of coal mining. Information on the volume change in the gross output of coal mining can be obtained from BiSOS, C) *Bergshandtering[en]* for 1857-1910 and SOS, *Industri* for 1911-1950. The nominal value of gross output is also given from these sources for the period 1896-1950. For the period 1857-1896, a price index series from Lennart Jörberg (1972, Vol. 1: pp. 698-699) over charcoal is used to reflate the volume values into nominal values. The share of gross output of coal mining in total gross output of stone, clay and glass industries (the latter according to Schön's figures) is assumed to have been the same in the period 1800-1856 as in 1857.

[325] The reclassification is based on the estimated gross output of rubber industries. Gross output of rubber industries is presented in Ljungberg, 1988 for 1888-1950, and in BiSOS, D) *Fabriker och manufacturer* for 1869-1888. In the period before 1869, rubber industries were principally non-existent.

[326] In this study, the Laspeyre and Paasche deflators for mining, quarrying and basic metal industries (code M1) for the period 1800-1871 are calculated using Schön's data on the production (in volumes and nominal values) of ore mining (Schön, 1988: pp. 64-75). For the period 1871-1888, the deflator of those industries is calculated as a weighted average using price series of copper, iron ore, pig iron, bar iron, horse shoes, nail, day rate for a male agricultural worker, and goods wagons (a price index for goods wagons can be found in Modig, 1971: table 14, and for the other products in Jörberg, 1972). Deflators of engineering and fabricated metal industries (code M8) for the period 1800-1888 are calculated as an average (with equal weights) of the price indices of mining, quarrying and basic metal industries (code M1), horse shoes, nails, the day rate of male agricultural worker and goods wagons. The

4.4.2 "Other manufacturing industries"

In the data of Statistics Sweden, one type of activities is labelled "other manufacturing industries". However, these industries are not presented separately in SHNA. There is also a difference between the series 1950-94 and 1994-2000 of Statistics Sweden concerning which industries are included in "other manufacturing industries".

For example, in the different SCB-series of 1950-94 "other manufacturing industries" are composed of manufacturing of products of precious metal, musical instruments, sports articles, brooms, umbrellas, pens, etc. In addition, the Samhall-conglomerate is also included under this label, which has a quite diversified production. In earlier classifications and in SHNA, products of precious metals are instead put together with "ore mining and metal industries", sports articles with "textile and wearing apparel industries", brooms with "leather, hair and rubber industry", music instruments with "wood product industries", etc. This study roughly follows this earlier classification.[327]

4.4.3 Repairs

Repairs (of goods produced within manufacturing and handicrafts) are quite difficult to classify. In the SCB-series of 1950-1963 and in SHNA repairs are considered as part of manufacturing and handicrafts, in the SCB-series of 1963-1994 as part of "other services", and in the SCB-series of 1994-2000 as part of wholesale and retail trade. For example, in the different series for the period before 1963, shoe repairs are considered as being part of leather industries. This change of classification is interesting in its own respect, since it reflects a change where the service sector grows and takes over some of the tasks formerly performed within manufacturing and handicraft activities.

Laspeyre price index is calculated as an arithmetic average of the price series, and the Paasche price index as a harmonic average (see *System of National Accounts 1993*, 1993: p. 382).

[327]Henceforth, for the SCB-series of 1950-1994, 35 percent of "other manufacturing industries" are reclassified into engineering and fabricated metal industries (code MH8), 25 percent into textile, wearing apparel, hair and leather industries (code MH3), 15 percent into wood and wood product industries (code MH4), and 25 percent into chemical, petroleum, rubber and plastic product industries (code MH6). These proportions are roughly the proportions that can be obtained from SOS, *Industri*, which are quite stable over time.

For the SCB-series of 1994-2000, a more elaborated method is used to divide up "other manufacturing industries", which encompasses more activities than the SCB-series of 1950-94. For this purpose, data from *Statistiska databaser*, online at http://www.scb.se (030101), of the composition of these industries 1997-2000 is utilized. For example, furniture industry is put into wood and wood product industries (code M4), and recycling industries into wholesale and retail trade (code P1).

For repairs, the present study follows the classification of SHNA and early Statistics Sweden for reasons of reliability as well as validity. To estimate the level of repairs before 1963 (in order to relocate them to the service sector) would be quite difficult. I further think that repairs are more related to manufacturing than to services, since those activities involve the processing of dead material items, which is also the main characteristic of goods production.[328]

4.4.4 Comparison of series

The differences between the estimates of SHNA and the linked PS-series for 1950 are quite small for manufacturing and handicrafts. According to SHNA the gross output of manufacturing and handicrafts was 28,101 million SEK in 1950, and three percent higher (29,024 million SEK) according this study.

The differences are larger between various series of Statistics Sweden (after reclassifications being made described above). According to the SCB-series of 1950-63, the gross output of manufacturing and handicrafts was 26,246 million SEK in 1950, which is ten percent lower than according to the linked PS-series (which is benchmarked to the SCB-series of 1980-94). The largest break is in the estimates for 1980; gross output of manufacturing and handicrafts is estimated to be seven percent higher in the 1980-94 SCB-series compared to the 1970-80 SCB-series for that year.

4.5 Building and construction (code BC)

Lars Petterson presents the SHNA series of building and construction.[329] The differences concerning the value estimates of building and construction are larger between various SCB-series than between SHNA and Statistics Sweden. According to the 1950-63 SCB-series, the gross output of those activities was

[328] In the SCB-series of 1963-80, repairs are divided between car/bicycle and household product repairs. In the present study, car and bicycle repairs are allocated to engineering and fabricated metal industries (code MH8). Furthermore, 10 percent of the household product repairs are allocated to textile, wearing apparel, hair and leather industries (code MH3), 10 percent to wood and wood product industries (code MH4) and 80 percent to engineering and fabricated metal products (code MH8). This roughly corresponds to the proportions according to consumption statistics (see Statistiska Meddelanden, N 10 SM 9501, Appendix 1, table 1.1).

In the SCB-series of 1980-1994, repairs are not divided between car/bicycle and household product repairs. For this period, therefore, it is assumed that the proportions were the same as in 1980. In comparison to statistics obtained for 1993 (*Nyckel mellan SNI69 och SNI92*, 1996-08-02) from Statistics Sweden, it seems to be a reasonable assumption.

In the SCB-series 1994-2000, repairs are classified as part of wholesale and retail trade. For 1997 onward, there is more detailed data online at *Statistiska databaser*, http://www.scb.se (030101), and for 1994-97 it is assumed that the value ratios between different forms of repairs and trade were the same as in 1997.

[329] Pettersson, 1987.

5,185 million SEK in 1950, but 20 percent less (or 4,164 millions SEK) according to the linked PS-series. SHNA puts the gross output at 4,433 million SEK for that year, i.e. in between the latter two estimates.

4.6 Transport and communication (code TC)

4.6.1 Differences between series

Olle Krantz constructs the SHNA-series of transport and communication.[330] As with manufacturing and handicrafts, the largest divergences in the value estimates of transport and communication for the break years are between various SCB-series, rather than between SHNA and Statistics Sweden.

Gross output of non-animal land and water transport (codes TC1-TC3) in 1950 was, according to SHNA, 2,936 million SEK, and 1.4 percent lower (or 2,894 million SEK) according to the 1950-63 SCB series. This study puts gross output of these activities at 3,685 million SEK for that year, which is 27 percent higher than the estimate of the 1950-63 SCB-series. This difference can be explained by the continual upgrading of transport and communication by Statistics Sweden. In the series of Statistics Sweden, the gross output of these activities is raised by eight percent at the break in 1963, by 14 percent at the break in 1970, and by seven percent at the break in 1980.

4.6.2 Missing activities

What goes under the heading of "services allied to transport" (code TC6) is treated differently by the various sources. In SHNA, these activities are not included. In the SCB-series of 1994-2000, more activities are put under this heading than in the SCB-series of 1950-94.

For the period prior to 1950, there are almost no direct sources that could be used to estimate the fluctuations and growth of "services allied to transport", and, hence, the PS-estimates must be viewed as quite unreliable. Services allied to transport include mainly storage, travel agencies, and forwarding of goods.[331] In this study, the estimates of those activities are based on the development of non-animal land and water transport (codes TC1-TC3) and on information on travel agencies in the census of enterprises for 1930 and 1950.[332] The deflator for those activities is set equal to Krantz's deflator for "other private services".[333] The

[330] Krantz, 1986.

[331] See Statistiska Meddelanden, N 10 SM 9501, Appendix 2: p. 6 and Meddelanden i samordningsfrågor, 1977:9: p. 66.

[332] *1931 års företagsräkning*, 1935: pp. 112-113 and SOS, *1951 års företagsräkning*, 1955: pp. 156-157.

[333] Krantz, 1991: pp. 134-136.

share of intermediate consumption in gross output of services allied to transport is assumed to have been constant in the period before 1950 and the same as in 1950.

In SHNA, air transport (code TC4) is not included for the period prior to 1950.[334] To estimate the size of air transport, in this enquiry, employment figures (over air transport and total transport) from population censuses 1920, 1930, 1940, 1945 and 1950 are used as indicators. Furthermore, for the census years, the ratio of the nominal gross output of air transport to the nominal gross output of all transports is assumed to have grown as the ratio of employment in air transport to total employment in transport. To arrive at the volume growth from one census year to another, the gross output of air transport is assumed to have grown as the employment of the activity plus an assumed average productivity growth of one percent per annum.[335] To arrive at the volume growth of the gross output of air transport for the years in between the census years, the volume growth of non-animal land transport and water transport are used as indicators. To arrive at the nominal gross output of air transport in between census years, the deflator of "other land non-animal transport" (code TC2) is used as an indicator. The share of intermediate consumption in gross output of air transport is assumed to have been constant in the period before 1950 and the same as in 1950.

Transport by animals (code TC5) is included in SHNA for the period before 1950, but set to zero for the period after 1950.[336] The activity does not exist in the SCB-series. To avoid a sudden break between 1950 and 1951, in the present study, the ratio of the gross output of transport by animals (code TC5) to the gross output of agriculture with ancillaries (code AA) is assumed to have been 90 percent of the ratio the preceding year during the whole period 1951-70,[337] and nil afterwards.

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[334] Krantz, 1986: p. 216.

[335] For air transport, the estimate of this study differs from Jungenfelt's. He puts the employment of the activity at a lower level than the population censuses, since he uses the census of enterprises as the source (Jungenfelt, 1959: p. 46). Nevertheless, I use Jungenfelt's figures to calculate employment, but use the population censuses to calculate value added. I prefer to not recalculate Jungenfelt's estimate of employment, since Jungenfelt uses other sources than the population censuses for the calculations of employment in transport. It is important that the same method is used for all activities in transport. Since the calculation of value added of this enquiry is linked to the series after 1950, it is not very important if those calculations are based on overestimated employment figures, only that the overestimation is reasonably systematic.

[336] Krantz, 1986: pp. 107-141.

[337] The deflator of animal transport during this period is set equal to the deflator of agriculture and hunting (code AA1).

4.6.3 Railways and urban, suburban and interurban highway transport

One important defect in the SCB-series that is corrected in this study concerns the estimation of value added in basic prices of railways (code TC1), and urban, suburban and interurban highway passenger transport (part of code TC2). The value added of these activities is, in my view, underestimated in the data of Statistics Sweden. For the period 1981-1991, the value added in basic prices of urban, suburban and interurban highway passenger transport is even presented as negative.[338]

An explanation for this underestimation is that the prices of these activities are not set by the market. These activities were rather part of the public sector. Because of different subventions, the recorded value added at basic prices is reduced significantly. Therefore, it should not be surprising that the value of intermediate consumption could be higher than the amount of money drawn in through the sale of tickets, as seems to have been the case for urban, suburban and interurban highway passenger transport in 1981-91. This should, in my opinion, not lead to the conclusion that those activities were value subtracting rather than value adding.

To find a better valuation, the value added of railway, urban, suburban and interurban highway passenger transport is (for the period covered by Statistics Sweden), in this study, calculated in the same way as for government services – i.e., as the sum of wages and salaries (including social benefits) and consumption of fixed assets. Still, this probably underestimates the value added of these activities if it would be truly set by the market, as the value added then would (if profitable) also include a net surplus.

4.6.4 Shipping in the early 19th century

There are indications that SHNA overestimates the price level of water transport (code TC3) during the first 15 years of the 19th century. According to the figures of Olle Krantz, the value added of foreign shipping stood for between four and six percent (and the gross output for between seven and ten percent) of GDP during the first 15 years of the 19th century, compared to between one and two percent of GDP during the rest of the century. Since the whole gross output of foreign shipping is included in export, this also leads to an exaggerated export/GDP ratio for the early 19th century.[339]

[338] Statistiska Meddelanden, N 10 SM 9501, Appendix 2, pp. 24-25.

[339] Calculation based on Krantz, 1986: p. 39 (foreign shipping) and Krantz, 2001 (aggregated GDP-figures).

For the period 1800-1819, Olle Krantz's price index for water transport (foreign and domestic, including stevedoring)[340] is based on freight rates of Baltic timber to United Kingdom as presented by Douglas North.[341] This index shows quite high figures especially for the period 1800-1815. The level seems to be too high considering, for example, the development of import prices.[342] The volume series of shipping presented by Krantz are, however, more reliable and also used without change in the present enquiry.

Against this background, a new deflator series for shipping is constructed in this study for the period 1800-1817. For all other years, Krantz's deflator series for water transport is used without change.[343] The procedure of the present study lowers Krantz's estimate of the nominal values of water transport by more than a half for the first decade of the 19th century.

4.7 Circulation activities and private reproductive services (codes CC and PR)

Circulation activities and private reproductive services (in SHNA put together under the heading of "private services") pose some of the largest problems in trying to link different series. Olle Krantz constructs the SHNA-series of private services.[344]

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[340] Krantz, 1986: pp. 18, 49 and 165.

[341] North, 1965: p. 235.

[342] As Douglas North notes; it is a specific characteristic of ocean freight markets that rates tend to rise steeply in periods of wartime, which was the case with the period in question (North, 1965: p. 214). Nevertheless, while Krantz's price index for shipping is twice as large for 1800-1815 (average for the period) as for 1820, the price index of imports (which should include transport margins) and of team transport (part of it also went for export) for 1800-15 were both less than two-thirds of their levels for 1820. While the freight index based on North's figures probably gives a true picture of the costs of some foreign frights (for instance, to the countries involved in the Napoleonic Wars in the early 19th century), it is rather unlikely that the index is a reliable reflection of all foreign frights at that time. As Schön also notes, using Krantz estimate of incomes from foreign shipping gives unrealistically high positive balance of payment figures for the period before 1820, which according to Schön is probably explained by the high rate of smuggling before the 1820s (Schön 1984: pp. 18-19).

[343] The new annually rebased deflator is a weighted geometric average of the annual price index relatives of Krantz's series based on North (30 percent weight), of import (30 percent weight), of export of agricultural and manufactured products (30 percent weight), and of team transport (10 percent weight). The recalculated deflator series is then used as a reflator series to arrive at nominal values from the series of volume changes.

The price index of export of agricultural products is calculated from Schön 1995: pp. 105 and 131, of export of manufactured products from Schön, 1988: pp. 284 and 365, of imports from Schön, 1984: p 37, and of team transports from Krantz, 1986: p. 171.

[344] Krantz, 1987b and Krantz, 1991. For a comparison of the methods to construct series of private services within historical national accounts in Sweden and Finland, see Kauppila and Kavonius, 2001.

In the series of Statistics Sweden, there is a constant upgrading of many private services, with a notable exception of wholesale and retail trade (code CC1). This upgrading can probably be explained by the fact that the value of services was underestimated and that some activities were not included in the earlier statistical accounts.

There are also large differences between the value estimates of SHNA and Statistics Sweden. Krantz's value estimates of these services for 1950 are lower than the value estimates of the 1950-63 SCB-series as well as of the linked series of this study. One explanation for these differences is that Krantz excludes some of the services that are included by Statistics Sweden, most notably sanitary services, laundry, photo services, funeral services and work performed by non-profit non-religious organizations. Krantz also excludes most business services (and only includes services provided by lawyers).[345]

Another problem concerns Krantz's method of deflating. For the services dealt with in this section, he equals the volume growth of individual services with the growth in the number of employed. This should be a reasonable procedure, as it is quite difficult to estimate the physical units produced by many services (which is a problem in modern national accounts as well).[346] To determine the nominal value of services, Krantz uses different reflators based on the incomes of the employed. He then goes the other way round and uses only one deflator to deflate the nominal values to arrive at volume values. And this deflator does not always equal the reflator used, at least it seems to be so for private health care, hairdressing, and hotels and restaurants.[347]

Such a method leads to problematic results concerning the volume growth of different services for individual years, if used uncritically at a more disaggregated level. For example, using Krantz's figures for 1920-1921 would imply that legal services grew by 47 percent in volume terms, hair-dressing by 43 percent, hotels and restaurants by 25 percent, culture and recreational services by 40 percent, religious services outside the state church by 40 percent, banking by 51 percent and insurances by 41 percent.[348] At the same time, the period of 1920-1921 experienced a sharp economic crisis.

These effects also arise from Krantz's method of interpolation. The data of employment of services for earlier times are often known only from censuses, which in Sweden have been conducted every five or ten years. Interpolation is,

[345] An explanation why Krantz excludes, for example, photography and laundry from private services could be that these two types of activities are classified into manufacturing and handicrafts in most censuses before 1950.

[346] See *System of National Accounts 1993*, 1993: p. 392.

[347] Olle Krantz (1991: p. 133) takes up this problem as well.

[348] My own calculations from the data Krantz provides (Krantz, 1991: pp. 131-142).

therefore, necessary to determine the data for the years in between. However, the method of Krantz is problematic (at least when considering annual fluctuations) from two perspectives:

- It is the volume values, i.e. the statistics over employment in this case, that should be interpolated. But Krantz interpolates the nominal values. This gives a relatively smooth line for the nominal values, but since the annual deflators vary significantly from one year to another, it *overestimates* the fluctuations in volume values, which, for example, explains the (above-mentioned) overestimated volume growth figures of some private services in 1920-21.
- On the other hand, Krantz's interpolation technique is problematic even if it would be used only on the volume values, as it leads to a smooth series, while in reality there were most probably considerable annual fluctuations, which are henceforth *underestimated*.

In my view, a preferable method, at least from the point of view of estimating annual fluctuations is to use another related volume series based on more reliable data on annual fluctuations as an indicator for the annual volume fluctuations of the various private services for which such data is missing.

Since the SHNA-series are constructed for the purpose of long-term analysis the problems that are taken up here are of less importance in relation to this purpose, and are not the focus of SHNA.

On the other hand, this thesis puts emphasis on arriving at reliable measures of short-term fluctuations. Against this background, many of the PS-series of various private services diverge from Krantz's series.

4.7.1 Wholesale and retail trade (code CC1)

To estimate the value of wholesale and retail trade, Krantz's figures are used in this study. Krantz's estimates of trade are not based on the total number of employed. Instead, Krantz directly calculates how large part of goods production was sold for the market.[349] In earlier times, those activities were mostly performed by persons involved in goods production, and only a minor part of the market transactions were conducted by persons having their main occupation in trade, although the latter increased their share of employment over time. This makes the PS-series of employment and value added of trade not comparable with each other.[350]

[349] In the Finnish historical accounts, another method has been applied and the construction of a series of value added of trade is based on shopkeeper's income and assistants' wages (see Kauppila and Kavonius, 2001: p. 148).

[350] This issue is further discussed in section 6.6.5.1.

Krantz's data is based on older methods (used earlier also by Statistics Sweden), which puts the value added of trade at a much higher level than in the newer series of Statistics Sweden.[351] In this investigation, the new statistics of Statistics Sweden are used. Therefore, the gross output and value added of trade are reduced when projecting the newer series backward. The present study also puts pharmacies (for which Krantz presents a separate series but which is included in wholesale and retail trade in the SCB-classification) into wholesale and retail trade.

4.7.2 Banking and insurance (codes CC2-CC3)

To get the nominal values of banking and insurance, Krantz's data is used. The volume growth of those activities is, however, assumed to be equal to the growth of employment (see section 6.6.5.2) for the period 1850 to 1950, while Krantz's estimate of the volume growth is used as an indicator for the period 1800-1850. From the series of nominal and volume growth, a deflator series is obtained.[352]

4.7.3 Business and private reproductive services (codes CC4 and PR)

The annual volume growth rates of business services (code CC4) and private reproductive services (PR) are assumed to be the same as the growth rates of employment of these activities in the period 1850-1950 (as calculated in this study).[353]

For the period 1800-1850, the volume growth of business services is assumed to be the same as for banking and insurance, the volume growth of hotels and restaurants and paid household services as according to Krantz's figures, and the volume growth of other private reproductive services as the five-year average growth of town population.[354]

To arrive at the nominal values for the period 1800-1950, Krantz's deflator of "other private services"[355] is used as a reflator for business services and private reproductive services except household services. Paid household services are reflated by Krantz's deflator for that activity.[356]

One problem is how to classify housewives and "other family members". In many circumstances, it is quite obvious that part of the work of family members

[351] Krantz, 1991: p. 83.
[352] In addition, a smaller revision to Krantz's estimate of intermediate consumption of private insurances is made. According to Krantz, intermediate consumption of private insurance was zero before 1861 (Krantz, 1991: pp. 73-74), while in the present study, intermediate consumption is set to 0.06 of gross output for 1800-1860.
[353] See sections 6.6.5.3 and 6.6.6.
[354] *Befolkningsutvecklingen under 250 år*, 1999: p. 42.
[355] Krantz, 1991: pp. 134-136.
[356] Krantz, 1991: pp. 134-136.

should be classified as belonging to the same activity as the head of household, but part of their work is unpaid household services that are not included in GDP. This thesis follows the practice of SHNA and modern national accounts in general to classify the unpaid household work as outside GDP.[357]

Sewage plants are classified differently in various series. In the SCB production series for the periods 1950-63 and 1980-2000, sewage plants are classified as part of electricity, gas and water; while in the SCB production series for 1963-80, they are classified as belonging to sanitary and similar services. In the SCB-series for 1980-94, there is also an inconsistency, as it seems that in the employment statistics sewage plants are put together with sanitary and similar services. In SHNA, sewage plants are neither estimated for manufacturing and handicrafts nor for private services, and hence seem to be excluded altogether. In the production series of this study, sewage plants are put into private reproductive services together with sanitary services, and hence deducted from electricity, gas and water from the SCB-series for 1950-63 and 1980-2000.

In the SCB series of 1994-2000 (following SNI 92), the classification of most private services is different from the earlier series. For instance, "business services" include research and development, cleaning and photo services, but these three types of activities are put into "other personal services" in the earlier SCB-series. Hence, in this study, these three types of activities are moved to private reproductive services (code PR).

In the 1980-94 SCB-series, there is a reclassification affecting "other services", where part of them are put under the separate heading of "other producers" (partly corresponding to Non-Profit Institutions Serving Households in the 1994-2000 SCB series). These consist of paid household services and most of the work carried out within private interest organisations, but this does not affect the overall estimates of employment or value added of private reproductive services as defined in this study.

4.8 Real estate (code RE)

Real estate consists of letting of dwellings and other premises, but also of the use of owner-occupied dwellings.[358] From a general point of view, it could be questioned whether real estate should be counted into GDP at all. Real estate could be seen as final consumption of products created in the building sector in the past period rather than current production. In modern national accounts, final

[357] See section 3.2 for a further discussion of this issue.

[358] See Meddelanden i samordningsfrågor, 1977:9: pp. 66-67 and Meddelanden i samordningsfrågor, 1992:6: p. 97.

consumption of durable or non-durable goods are excluded from the calculations of GDP,[359] but letting of dwellings and use of owner-occupied dwellings are counted as production of services and therefore included in GDP.

Part of what is counted as belonging to real estate is simply rent paid. But a large part of this type of activities is composed of the use of owner-occupied dwellings that is not sold or bought on the market and hence does not have a price. The problem is solved by attaching a fictitious price tag on this "service", by estimating how much the owner would get from renting out the house or apartment and not consuming it himself/herself,[360] which is problematic considering the fact that the housing market is regulated and that different rent levels are in operation. Also, the further backward in time one looks, the larger part of dwellings were not rented out on the market, and hence the more difficult it is to put a fictitious price tag on those "services".

Krantz presents a series of letting of dwellings and use of owner-occupied dwellings for SHNA, but does not present data on letting of other premises.[361] The linking of his series to the SCB-series of real estate poses major difficulties.

According to SHNA, the gross output of letting of dwellings and use of owner-occupied dwellings was 1,697 million SEK in 1950, but according to Statistics Sweden the gross output of real estate was 4,297 million SEK, a 153 percent higher figure! This discrepancy can partly be explained by changes in 1971 over how real estate is measured by Statistic Sweden.[362] The largest change is that the consumption of leisure houses starts to be counted and that the value of the use of owner-occupied dwellings is upgraded. Statistics Sweden extrapolates the upgraded figures back to 1950.

Krantz takes the figures of Östen Johansson as a point of departure, and uses the figures from Statistics Sweden to extrapolate *forward* the estimate of Östen Johansson (in agreement with the general principles of the SHNA-series). This implies that the SHNA-estimate of gross output of real estate is less than half of the estimate of Statistics Sweden for the 1970s.[363]

The opposite method of using the figures of Östen Johansson to extrapolate the estimates of Statistic Sweden *backward* is not without problems either, as it puts the value added of real estate at 20-30 percent of GDP for some years before 1950. This result arises since the share of real estate in total GDP decreases

[359] *System of National Accounts 1993*, 1993: p. 492.

[360] *System of National Accounts 1993*, 1993: p. 134 and *European system of accounts: ESA 1995*, 1996: p. 47.

[361] Krantz, 1991: p. 155-159.

[362] Statistiska Meddelanden, SM N 1971:99: p. 141.

[363] Krantz, 1991: p 151-159 and Johansson, 1967:p. 119-121. For the years 1800 to 1861, Krantz constructs a completely new series. For the years 1861 to 1930, Östen Johansson's series is, in turn, based on the series of NI (Lindahl, Dahlgren and Kock, 1937: part two, pp. 533-545).

constantly over time in the series of SHNA. According to Krantz's series from 2001, real estate stood for less than five percent of GDP in 1950 (which then is significantly upgraded by Statistics Sweden), but for more than 15 percent during most of the 1820s.[364] However, such continual decrease of the share of real estate in total GDP runs counter to the finding of the present study of an increasing ratio of the nominal net residential stock to GDP during the period in question.[365]

Therefore, it seems that the problem here is the ratio method of extrapolation itself, and that both the estimates of SHNA and the estimates of Statistics Sweden should be questioned for the break in 1950.

If it is assumed that the nominal ratio of the value added of real estate to GDP did not grow significantly from 1820s to the 1960s, earlier studies either underestimate the volume growth of or the change in the price index of real estate (or both). To calculate the volume change, many of the earlier studies use indices of changes in the number of rooms as an indicator, without taking into account the qualitative improvements of the stock of apartments (both in terms of location and of inner qualities).[366] Such qualitative change can entail significant increases in average rent per room,[367] without that implying an increase in the rent per room of the same quality (and the increase in average rent should, in that case, be considered as a volume change and not a change in the price index).[368]

For the period 1965-2000, the PS-series of real estate is constructed by linking the different series of Statistics Sweden. For the years before 1965, two separate and completely new series are constructed, one for letting of dwellings and use of owner-occupied dwellings and another for letting of other premises. For both series, the same deflator is used.

For all the years before 1965, it is assumed that the volume index of letting of dwellings and use of owner-occupied dwellings had the same growth rate as the

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[364] See Krantz, 2001.

[365] See section 8.4 for a further discussion.

[366] For instance, according to Östen Johansson (1967: p. 121), the volume of dwellings increased by 92 percent in the period 1861-1930, but according to the present study the volume value of the net residential stock increased by as much as 470 percent in the period.

[367] According to Olle Engkvist (1945: pp. 87-88), qualitative improvements of apartments accounted for around 30 percent of the rise in rents from 1890 to 1939. This is probably an underestimation.

[368] An example can illustrate this. According to SOS, *Statistisk Årsbok för Sverige*, 1950 (p. 216), the average rent for an apartment having two rooms and a kitchen in 1945 was 1,324 SEK per year if the apartment included a toilet and a bathroom, but only 298 SEK if it did not have any water connections or drainage system (in addition, there was also a rent differential between apartments located in larger towns and in the countryside). A stock of apartments that are transformed from the latter to the former type would imply a volume change of as much as 340 percent, without that implying a change in the number of rooms in question. The decades before the 1960s precisely involved this type of qualitative transformation of the residential stock.

For a further discussion, see also Bladh, 1991: pp. 164-175.

volume index of the net residential building stock according to this study. During the whole period 1800-1965, this implies almost one percent faster annual volume growth rate than according to earlier studies. Still, this probably underestimates the qualitative improvements of dwellings (as it does not take into account, for example, quality changes due to changed structure of location), but makes the method consistent throughout the period. A strong argument for the method is also that the volume change in letting of dwellings and use of owner-occupied dwellings according to Statistics Sweden roughly followed the volume change in the net residential building stock, as calculated in the present study, for the period 1965-2000.

In the period before 1935, the price index of the residential building stock roughly followed the price index of dwellings as presented by SHNA.[369] Hence, no change is made to the latter price index in the present enquiry.

However, during the period 1935-1965, the price index of residential buildings increased on average two percent faster per year than the price index of real estate, based on SHNA for the years 1935-50 and on Statistics Sweden for 1950-65. To make the price index of real estate to follow the one for the residential stock in the long-term, in this study, two percent per year is added to the price index of real estate for the period 1935-62, and one percent per year for 1932-35 and 1962-65.

For the period 1950-65, it is assumed that the volume index of letting of other premises had the same growth rate as according to Statistics Sweden. To estimate the nominal gross output of letting of other premises for 1850-1950, this study uses the ratio of employment in real estate to employment in manufacturing and handicrafts, and the nominal gross output of manufacturing and handicrafts, as indicators linked to the relation of these variables in 1950.[370] For the period 1800-1850, the assumption is that the ratio of the nominal gross output of letting

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[369] This is not so surprising for the years 1861 to 1930, considering the price index of services of dwellings in NI is based on the cost-of-building index (Lindahl, Dahlgren, and Kock, 1937: part two, p. 534).

[370] The gross output of letting of other premises (abbreviated as l.o.o.p.) for year X (in the period prior to 1950) is calculated according to the following formula (EM stands for employment, GO for gross output, MH for manufacturing and handicrafts, and RE for real estate):

$$GO^{\text{l.o.o.p.}}_{\text{year X}} = \left(\frac{EM^{RE}_{\text{year X}}}{EM^{MH}_{\text{year X}}} GO^{MH}_{\text{year X}} \right) \left(GO^{\text{l.o.o.p.}}_{1950} \Big/ \left(\frac{EM^{RE}_{1950}}{EM^{MH}_{1950}} GO^{MH}_{1950} \right) \right)$$

This conduct makes the implicit assumption that a constant share of employed in real estate were involved in letting of other premises (than dwellings), an assumption that may be questioned; although this should not affect considerably the volume growth of the real estate at an aggregate level, because of the small size of letting of other premises in relation to letting of dwellings and use of owner-occupied dwellings in that period.

of other premises to the nominal gross output of letting of dwellings and use of owner-occupied dwellings was constant.

4.9 Government services (code GS)

Olle Krantz constructs the SHNA-series of government services.[371] The government services are divided into two types, central and local government services. Krantz puts social insurances together with private insurance. Since social insurances are put together with the central government services by Statistics Sweden, the same procedure is followed in this study.

As with private services, the value added of government services is upgraded over time. Krantz estimates the value added of government services for 1950 to 2,350 million SEK, while the 1950-63 SCB series puts it at 2,556 million SEK for the same year. The upgrading continues for every new SCB-series.

In modern national accounts, the gross value added of government services is not calculated directly but equalled to the sum of wages and salaries (including social benefits) and consumption of fixed capital.[372] The volume growth of government services is computed from the series of the volume growth of wages and salaries (including social benefits) and of consumption of fixed capital.

Since a completely new series of consumption of fixed assets is presented in this study,[373] the latter is also used to estimate the part of the value added of government services that consists of consumption of fixed assets for the whole period 1800-2000, which also replace the figures of Statistics Sweden. In SHNA, the consumption of fixed assets is not considered, and the value added of government services also seems to include rent[374] (which normally is considered as intermediate consumption[375]).

To get a consistent linked series of wages and salaries (including social benefits), the materials of both SHNA and Statistics Sweden are used. The volume growth of the wage part of value added is set equal to the growth of hours worked for the period 1950-2000 and to the growth of employment for the period 1870-2000 according to data of this study.[376] Krantz's deflators are used to arrive at volume values for the period 1800-1870.

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[371] Krantz, 1987a.
[372] *European system of accounts – ESA1995*, 1996: pp. 44-47.
[373] See section 5.5.
[374] When comparing Krantz's data in Krantz, 2001, with Krantz, 1987a: p. 186-190.
[375] *System of National Accounts 1993*, 1993: p. 143.
[376] See chapter 5. This method does not take into account movements between different types of work within government services that are paid differently, which can lead to a productivity change of government services at an aggregate level in spite of the assumption of zero productivity change at a disaggregated level (see, for example, Ljungberg, 2004: p. 83).

From the year 2000 onward, Statistics Sweden reclassifies the Swedish Church by putting it into the private sector.[377] This new procedure depresses the value added of government services and increases the value added of Non-Profit Institutions Serving Households (NPISH) for the period after 1999. In order to preserve a continuity of the division into economic activities through time, the Swedish Church is, in the present study, moved from NPISH back to the government services for 2000, for value added as well as for investment, hours worked, labour income and employment.

4.10 Summary

This chapter deals with the construction of series of gross output and value added by activity for the whole period 1800-2000. When the values added of activities are aggregated we get GDP by activity, which is probably the most reliable estimate of aggregate production presented in this study.

For the period 1950-2000, the PS-series are entirely based on different time series of Statistics Sweden, while for the period 1800-1950 the published series of *Swedish Historical National Accounts* (SHNA) is the main source. The material of Statistics Sweden consists of several time series that have not been linked to each other and that are partly based on different definitions. This means that there are several breaks between those time series for the overlapping years. For many activities there is a continuing upgrading of the value added in those time series. When these times series are linked to each other there is a clear risk that the linked series give an inadequate picture of the value added for various types of activities during some time periods.

Many private services included in the later series of Statistics Sweden are excluded in SHNA. In this study, new estimates are made for several private services.

The series of the value added of real estate seems to be underestimated in SHNA compared to the later series of Statistics Sweden. In the present study, a completely new series of real estate is constructed for the period 1800-1965.

However, the method of this study at least creates consistency over time that is independent of the level of disaggregation.

[377] SOU 2002:118: p. 41.

5 Expenditures and produced assets

5.1 Introduction

This chapter deals with expenditures (final consumption, investment and foreign trade) and GDP by expenditure for the period 1800-2000. The investment series are used to calculate stocks of produced assets and consumption of fixed assets. This also gives a series of Net Domestic Product. The main sources are Statistics Sweden for the period after 1950 and SHNA and Östen Johansson for the period prior to 1950.

5.2 Produced assets and investment defined

5.2.1 Different types of assets

In the 1993 SNA, an asset is defined as an entity over which an institution exercises ownership rights, and from which economic benefits can be derived by their owner through holding it. There are two main types of assets, financial and non-financial. Non-financial assets are either produced or non-produced. Produced assets consist of fixed assets, inventories and valuables.[378] In this study, no estimate is made of financial assets, non-financial non-produced assets or valuables.

Fixed produced assets consist of assets that are used in the production process for a longer time period. The time limit is set to more than one year in the 1993 SNA,[379] which is the present definition used by Statistics Sweden.[380] However, before adopting the 1993 SNA, Statistics Sweden sets the time limit to three or more years,[381] which is also the definition used in this study.

There are two types of fixed produced assets, tangible and intangible assets. In the new Swedish national accounts, "capital formation" in intangible assets consists mostly of mineral prospecting and software.[382]

The three types of fixed tangible assets that are estimated in this study are:[383]

- Buildings and structures, which are subdivided between dwellings, and non-residential buildings and structures.

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[378] *System of National Accounts 1993*, 1993: pp. 217-221. See also *European system of accounts: ESA 1995*, 1996: pp. 127-144 and Meddelanden i samordningsfrågor, 1979:11: pp. 77-82.

[379] *System of National Accounts 1993*, 1993: p. 218.

[380] SOU 2002: 118, bilaga 3: pp. 60-61. A minimum value is also set at 500 euro.

[381] Meddelanden i samordningsfrågor, 1979:11: p. 79.

[382] SOU 2002: 118, bilaga 3: p. 61.

[383] For definitions, see *European system of accounts: ESA 1995*, 1996: pp. 137-139.

- Machinery and equipment (including transport equipment).
- Fixed livestock.[384] Animals raised for slaughter are not included, as they are classified as inventories.[385]

Inventories consist of materials and supplies (goods destined for intermediate consumption), work in progress, finished goods and goods for resale, and are not considered as being part of fixed assets.[386]

5.2.2 Investment/"capital formation"

In the 1993 SNA, "gross capital formation" is defined as the total value of gross fixed capital formation, changes in inventories and acquisitions less disposals of valuables.[387] In the SCB-series after the switch to the 1993 SNA, acquisitions less disposals of valuables are included in "gross capital formation",[388] but seem to be excluded in the earlier series, and are, henceforth, not estimated in the present enquiry. As explained in section 3.3.1.2, in this dissertation, the term "investment" is used instead of "capital formation".

The 1993 SNA defines "gross fixed capital formation" (fixed investment) as the value of acquired fixed assets less the value of disposed fixed assets, plus "certain additions to the value of non-produced assets realised by the productive activity of institutional units".[389] This means that "gross capital formation" can have a positive as well as a negative value.

Net fixed investment can be defined as gross fixed investment less consumption of fixed assets.

The value of changes in inventories is set equal to the value of inventories acquired less the value of inventories disposed of in the course of the accounting period. Some of these transactions reflect actual purchases and sales while others are internal to the enterprise.[390]

There is no difference between net and gross changes in inventories. This is also the case for changes in fixed livestock, even though they constitute a fixed investment.

Gross investment in buildings and structures, and in machinery and equipment, almost always has a positive value as sales are quite low compared to purchases,

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[384] In the 1980-94 Statistics Sweden series (used as benchmark in the present study), racing horses are also included (see Statistiska Meddelanden, N 10 SM 9501, Appendix 1: pp. 52-53).

[385] *European system of accounts: ESA 1995*, 1996: p. 132 and Meddelanden i samordningsfrågor, 1979:11: p. 66.

[386] Meddelanden i samordningsfrågor, 1979:11: pp. 66-69, SOU 2002: 118, bilaga 3: pp. 70-73, and *European system of accounts: ESA 1995*, 1996: p. 139.

[387] *System of national accounts 1993*, 1993: p. 222.

[388] Statistiska Meddelanden, NR 10 SM 0201: p. 21.

[389] SOU 2002: 118, bilaga 3: pp. 60-61 and Meddelanden i samordningsfrågor, 1979:11: p. 57.

[390] *System of national accounts 1993*, 1993: p. 230. See also footnote 386.

and as purchases and sales tend to cancel each other at an aggregate level. However, changes in inventories and fixed livestock fluctuate quite sharply between positive and negative values.

As explained in section 4.2 there is a change in the new national accounts of Sweden affecting the 1994-2000 series, from setting the borderline between items of "fixed capital formation" (fixed investment) and intermediate consumption from a life span in production of at least three years to more than one year. Furthermore, in the earlier series of Statistics Sweden, "capital formation" in intangible assets seems to be excluded and only "capital formation" in tangible assets is presented.

Since the 1980-94 SCB series is used as the benchmark series to which all other series are adjusted, and since it is easier to exclude investment in intangible assets for the period 1994-2000 than to find an indicator for this type of investment for all earlier years, the investment series of the present study only include investment in tangible assets. This primarily affects how software is classified, which in this thesis is considered an intermediate consumption instead of a fixed investment. For the latter part of the 1990s, this method lowers somewhat the estimated total volume growth of gross investment since the volume growth of investment in software[391] was quite significant in that period.

To deflate investment and stocks of produced assets, the method explained in section 3.4.2 is applied.[392]

[391] According to Statistiska Meddelanden, NR 10 SM 0201: p. 57, the volume of gross capital formation in software increased by 132 percent in the period 1995-2000, while the volume of gross capital formation in machinery and equipment increased by 35 percent and the GDP as a whole by 17 percent. To exclude gross capital formation in software from GDP reduces the volume growth of GDP by expenditure probably by around 0.3 percent per year on average during this period. Such deduction of software from capital formation makes the GDP growth figures in the latter part of 1990s more comparable to the earlier GDP-series.

[392] Theoretically, the sign of the nominal and volume value of an investment can be different. For example, assume that the fixed livestock only consists of cows and horses. If the stock of cows is reduced by 100 units, and the stock of horses is increased by 100 units, the change in the aggregate fixed livestock can be positive as well as negative depending on whether a cow is valued more or less than a horse. If the nominal price of a cow is 100 SEK and of a horse is 200 SEK, while the price in a base year is 200 SEK for a cow and 100 SEK for a horse, then in nominal prices the fixed livestock has increased by 10,000 SEK, but in the base year's prices the fixed livestock has instead decreased by 10,000 SEK.

This problem is more noticeable for changes in inventories and fixed livestock than for fixed investment. The deflator of these changes can assume quite strange values and even be negative for some years. Therefore, such deflator should not be used, for instance, as a proxy deflator for the stock as a whole.

5.3 Fixed non-livestock investment

In this study, investment in non-residential buildings and structures, and machinery and equipment, is calculated only for seven types of activities; agriculture and ancillaries (code AA), manufacturing and handicrafts (code MH), building and construction (code BC), transport and communication (code TC), other private services including real estate (codes CC, PR and RE) and government services (GS). In addition, a series of investment in dwellings is estimated.

Statistics Sweden provides data on investment in buildings and structures, and machinery and equipment, for the whole period 1950-2000. These, however, consist of several times series that are not linked to each other.[393]

In order to obtain data on investment in machinery and equipment for the period prior to 1950, the present enquiry utilizes the material of SHNA. Schön divides the gross output of manufacturing and handicrafts between its different uses. The investment is divided between its destination to agriculture and ancillaries, manufacturing and handicrafts, building and construction, transport and communication, letting of dwellings and use of owner-occupied dwellings, other private services, and government services.[394]

To get the total investment, Schön's data is supplemented with statistics on imports and its destination from Östen Johansson for the period 1871 to 1950.[395] For the period prior to 1871, data from an unpublished manuscript by Lennart

[393] The series for the period 1950-63 is presented in Statistiska Meddelanden, SM N 1975:98, Appendix 2, for the period 1963-70 in Statistiska Meddelanden, SM N 1981:2.5 Appendix 2, for the period 1970-80 in Statistiska Meddelanden, N 10 SM 8601 Appendix 2-3, for the period 1980-94 in Statistiska Meddelanden, N 10 SM 9501, Appendix 1, and for the period 1994-2000 in Statistiska Meddelanden, NR 10 SM 0201 and *Statistiska databaser* (online at http://www.scb.se, 030601).

In the SCB-series for the period 1950-1980, investment in buildings and structures is not separated between its destination for government services and the private sector. The same is the case for investment in machinery and equipment. For government services, data only exists for gross fixed investment as a whole. To divide the aggregate investment between government services and the private sector, this study assumes that the ratio of the investment destined for government services to the investment destined for the private sector was the same for investment in buildings and structures as for investment in machinery and equipment.

For the period 1950-94, investment destined for repairs is reclassified from private services to manufacturing and handicrafts (by assuming that the ratio of investment destined for repairs to investment destined to private services as a whole was the same as the ratio between the values added of the two types of activities).

For real estate, only information about gross investment in residential buildings is provided by Statistics Sweden, and other parts of gross investment in buildings and structures destined for real estate is included in the figures for other private services. In this study, non-residential investment is, therefore, presented together for other private services and real estate (codes CC, PR and RE).

[394] Schön, 1988: pp. 282-290 and 363-371.

[395] Johansson, 1967: p. 146-147.

Schön on foreign trade in 1800-1871[396] on import and its destination is utilized.[397]

Östen Johansson provides data on gross investment in buildings and structures for the period 1861-1950[398] divided between different destinations.[399] For the years before 1861, data from SHNA presented by Lars Pettersson is utilized.[400] Pettersson's division into destinations to different economic activities is, however, different from the one applied for later years. In the present study, some reallocations are made to arrive at a consistent classification over time.[401] The recalculated data from Pettersson are linked to Östen Johansson's figures.

A problem of linking the data before 1950 to the one after 1950 is that the investment data of SHNA and Östen Johansson are expressed in basic prices, while the investment data of Statistics Sweden after 1950 are expressed in purchasers' prices. For the period before 1950 Östen Johansson provides data on indirect taxes and customs duties back to 1861, but only in aggregate for the whole economy.[402] In this study, Östen Johansson's series is linked up to the series of Statistics Sweden. For the years before 1861, this study assumes that the ratio of indirect taxes and customs duties to the value added of the private sector was the same as in 1861. The ratio of the indirect taxes and custom duties to the value added of the private sector expressed in basic prices is then used as an indicator to transform the investment series (with the exception of investment destined for government services) from basic to purchasers' prices.

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[396] Schön, 1984: pp. 63-64. I want to thank Professor Lennart Schön who has been kind to send me a copy of this manuscript.

[397] In this study, the assumption for this period is that import is destined for investment only for two types of activities, manufacturing and handicraft, and transport and communication. The investment from import is divided between those two types of activities in the same proportions as investment goods originating from domestic producers.

[398] Johansson, 1967.

According to Svante Holmquist (2003: pp. 80-81), Johansson's series of investment in buildings and structures destined for manufacturing and handicrafts are too high. But for the break year of 1950, Johansson's series rather underestimates this type of investment compared to the linked PS-series. See footnote 403.

[399] However, investment in buildings and structures destined to building and construction activities is not included in Östen Johansson's series. For the period before 1950, the ratio of employment in building and construction to employment in manufacturing and handicrafts is, in the present study, used to extrapolate the investment in buildings and structures destined for building and construction activities backward, adjusted to the relations between employment and investment in 1950.

[400] Pettersson, 1987.

[401] See Pettersson, 1987. Pettersson does not distinguish between investment in buildings and structures destined for productive use in agriculture and ancillaries, and investment in dwellings in countryside. Comparing the data of Pettersson and Östen Johansson for the year 1861, it seems that around 1/3 of the investment in buildings and structures destined for the agricultural sector as a whole (including dwellings) consisted of dwellings, and in this study the same proportions are assumed to have hold in the period prior to 1861.

[402] Johansson, 1967: p. 150-151.

Comparing the linked series after 1950 with the series of Östen Johansson and SHNA before 1950 shows that investment in buildings and structures is underestimated[403] and investment in machinery and equipment is overestimated[404] in the earlier series.

For the period before 1950, this study assumes that the deflator of investment in buildings and structures was the same for all types of activities, and sets it equal to the deflator of gross output of building and construction (in the calculations of GDP by activity), adjusted for the ratio between basic and purchasers' values.

5.4 Fixed non-livestock assets

The stock of fixed assets can be calculated either gross or net. The gross stock is estimated at the replacement costs of existing fixed assets, which does not take into account that the existing stock of fixed assets is also depreciated. The net stock is defined as the value of the stock after the consumption of fixed assets of the existing stock is deducted, at written down replacement costs.[405]

Generally, there are two methods to calculate the stock of produced assets, either direct calculation or the so-called Perpetual Inventory Method (PIM). The latter calculates the stock of produced assets indirectly from investment in preceding accounting periods.[406]

The stock of fixed assets calculated by these two methods may be described as the "capacity stock", which covers the total number of objects defined as fixed assets that are believed to have been installed at a given point in time and still have not been scrapped. Some of these objects may be temporarily idle or even be withdrawn from production for an indefinite period and held in reserve to

[403] While Östen Johansson estimates investment in buildings and structures in 1950 to have been 3,130 million SEK in basic values, or 3,303 million SEK if transformed into purchaser's values (my calculation), the linked PS-series puts the figure at 3,851 million SEK in purchaser's values.

[404] While Schön estimates total investment in machinery and equipment in 1950 to have been 2,919 million SEK in basic values, or 3,105 million SEK if transformed into purchaser's values (my calculation), the present study puts it at 2,304 million SEK in purchaser's values. The largest difference between the PS-estimates and those of Schön concerns investment in machinery and equipment destined for government activities; while Schön estimates it to have been 217 million SEK in 1950, this study puts it at 74 million SEK. One explanation for this difference could be that Schön de facto defines investment broader than Statistics Sweden for the series of 1980-1994.

[405] *System of National Accounts 1993*, 1993: p. 150 and Meddelanden i samordningsfrågor, 1979:11: p. 79.

[406] See, for instance, *Methods used by OECD countries to measure stocks of fixed capital - National Accounts: Sources and Methods No. 2*, 1993, and *System of National Accounts 1993*, 1993: pp. 148-150.

meet unexpected rise in demand. In contrast, "utilised stock" is referred to the stock of fixed assets actually used in production.[407]

The ideal is to use the direct method. Such a method can, for example, utilize company accounting data, fire insurance values or taxation material. But the direct accounting measure of assets is not without problem either. For instance, the amount of machinery that a company declares to own is primarily an accounting and not a real measure, derived as the purchase price less an ad hoc amount of depreciation over the years. Most often this differs from the price the company would have to pay to get a new machine, or what it would get if it would sell the old machine. If the depreciation period is fixed beforehand, the declared value of the machine could be zero, in spite of the fact that the machine is still used for many more years after the expiration date.[408] The direct measure can also reflect different types of valuations between different time periods and different branches and companies. For example, in the earlier Swedish accounting material, the depreciation was handled differently in different companies.[409]

Several estimates of fixed assets have been previously presented for Sweden.[410]

Yngve Åberg's calculations of fixed assets of market producers are based on the movements in real capital income and the assumption of a constant ratio of capital income to assets. Such an assumption, however, must be seen as quite problematic, especially for this thesis that strives to investigate the long-term change and short-term fluctuations of profitability.[411] Yngve Åberg also presents two different estimates of the volume of fixed assets for manufacturing based on installed horsepower as indicator for the inter- and post-war years, and at fire insurance values for the post-war period.

Lennart Jörberg presents estimates of horsepower within manufacturing and mining industries for the period 1872-1912.[412]

While installed horsepower only distantly relates to the stock of fixed assets (or more specifically to the stock of machinery and equipment),[413] fire insurance values can be seen as a more direct measure. Svante Holmquist's series of fixed assets for manufacturing and handicrafts for 1870-1930 is based on fire insurance

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[407] *Methods used by OECD countries to measure stocks of fixed capital - National Accounts: Sources and Methods No. 2*, 1993: p. 9.

[408] See *System of National Accounts 1993*, 1993: pp. 11-12.

[409] Holmquist, 2003: p. 83.

[410] Examples of studies using direct measures of capital stocks, followed over time, are Fahlbeck, 1890, Flodström, 1912, Lindahl, Dahlgren and Kock, 1937 (part two, pp. 394-404), Gårdlund, 1947, Järv, 1961, Åberg, 1969, Martinius, 1970, and Holmquist, 2003.

[411] Åberg, 1969: pp. 11-15.

[412] Jörberg, 1961: p. 99.

[413] This measure is discussed in Holmquist, 2003: p. 4.

values for the benchmark years 1879, 1913 and 1926. These are complemented with the application of the PIM, whereby investment series are used to arrive at values for other years of the investigated period.[414]

According to Holmquist, the fire insurance values to a large extent reflect the net stock rather than the gross stock. In my view, this may be questioned. For example, while Holmquist data puts the average lifespan of machinery and equipment at 31 years in the period 1879-1913 and at 24 years in 1913-1926, he is forced to make the assumption that 70 percent of investment in machinery and equipment during the 1870s were written off up to 1879.[415] He explains this anomaly by the fact that the economic crisis at the end of 1870s led to a situation where many companies closed down. However, Sweden went through a deeper crisis in the aftermath of the First World War, which is not reflected in Holmquist's series. Another interpretation of Holmquist's anomaly for the 1870s could be that his estimates of the net stock of machinery and equipment for 1913 and 1926 are overvalued in comparison to the estimated values for 1879, which would, therefore, not be comparable.

Another problem with Holmquist's primary material is how the line is drawn between machinery and equipment on the one hand and inventories on the other hand. Different definitions of what constitutes a fixed investment can change the estimated stock of machinery and equipment significantly, and it is not clear if the definitions used in Holmquist's primary material 1879, 1913[416] and 1926 are the same, or that they follow modern definitions (which are also constantly changing and are different for different primary materials).

The advantage with annual series, like the investment series used for calculations according to the PIM, is that it is easier to detect whether there is a significant change in the definitions of the primary material, which is more difficult when the data for two years separated by decades are compared.

Statistics Sweden provides data on produced assets for different periods after 1950, which are computing by the Perpetual Inventory Method (PIM).[417] These

[414] Holmquist, 2003: pp. 34-100.

[415] Holmquist, 2003: pp. 84-88.

[416] For example, Holmquist's primary material for 1913 (SOU 1923:37: table 8 and pp. 143-146) differentiates between "maskiner och inventarier" (machinery and equipment) on the one hand and "lager av råvaror, driftsförnödenheter och fabrikat" (stocks of raw materials, supplies and fabricated products) on the other hand, without specifying more exactly where the line between them is drawn.

[417] For example, in Statistiska Meddelanden, N 1975:98, Appendix 2 for the period 1950-1974, in Statistiska Meddelanden, N 1976:7.4, Appendix 7.4 for the period 1963-1975, in Statistiska Meddelanden, N 1981:2.5, Appendix 2 for the period 1963-1980, in Statistiska Meddelanden, N 1984:5.5, Appendix 2-3 for the period 1970-1984, in Statistiska Meddelanden, N 10 SM 9501, Appendix 3 for the period 1980-1995, in Statistiska Meddelanden,

are, however, based on different data and assumptions, which, for example, make the simple ratio method of linking time series problematic. As this study also presents series of gross fixed investment that differ from the ones of Statistics Sweden, the stocks of fixed assets are calculated directly from those series. In this way, the stocks of fixed assets are estimated for 1800-2000 using a consistent method for the whole period.[418] However, a problem with the computation is that it is based on a much less disaggregated level than the estimates of Statistics Sweden.

To calculate the *gross* stock of a type of assets (which should be fairly homogenous) according to the Perpetual Inventory Method, the following formula is applied (in volume values):[419]

$$S_{gross,t} = \sum_{k=t-Q}^{t-1} \left(I_{gross,k} \cdot L_{t-k} \right) \qquad (5.1)$$

$S_{gross,t}$ is the gross stock in constant prices on January 1st in year t, and $I_{gross,k}$ is the gross investment in year k in the same prices as $S_{gross,t}$.[420] Q is the maximum life span of an investment. L_{t-k} is the (undepreciated) volume proportion of assets that still exist t-k years after they were bought.

The assumed mortality and survival functions for fixed assets can be different in different studies and also vary between countries. With a linear retirement pattern, assets are assumed to be discarded at the same linear rate every year from the time of installation. A delayed linear retirement pattern implies that the assets are assumed to be discarded at a constant linear rate over some period (which must be shorter than twice the length of the average life expectancy of assets). Many countries use a bell-shaped mortality function that allows for different degrees of peakedness and skewness of the distribution. Finally, the

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NR 10 SM 0301 for the period 1997-2002, and in Statistiska Meddelanden, NR 10 SM 0401 for the period 1999-2003.

[418] A preliminary analysis based on the calculated series of produced assets was presented in Edvinsson, 2003b.

Lennart Schön (2004) also constructs an aggregate series for the whole economy over fixed assets for the period 1850-2000 using the Perpetual Inventory Method. However, no data series is made available to the reader.

[419] The two formulas (5.1) and (5.2) are re-elaborations of the equations in Meddelanden i samordningsfrågor, 1979:11: pp. 81 and 83, and Statistiska Meddelanden, N 10 SM 9501, Appendix 3: p. 4.

[420] The calculations in this study are based on 1950 year's prices, but any base year's prices will do at the disaggregated level.

simultaneous exit mortality function implies that all assets are scrapped after they reach their average service life.[421]

The parameters set in this study are largely the result of experimentation to adjust the figures to the estimates of Statistics Sweden of the stock of and consumption of fixed assets for some benchmark years in the second half of the 20th century.

In the present study, dwellings and buildings and structures that are used in government services are assumed to have an average life span of 79.5 years. Other buildings and structures are assumed to have an average life span of 59.5 years. The average life span of machinery and equipment is set at 16.5 years.[422]

To get the development of the stock of fixed assets from 1800 onward, data on investment back to 1642 is required (at least for the buildings and structures that have a maximum life span of 158 years). Therefore investments in constant prices are extrapolated back to 1642 using movements in population as an indicator.[423]

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[421] See *Methods used by OECD countries to measure stocks of fixed capital - National Accounts: Sources and Methods No. 2*, 1993: pp. 18-21.

[422] This roughly follows the assumptions of Statistics Sweden. In Meddelanden i samordningsfrågor, 1979:11, p. 82, the average life span of industrial buildings is set to 60 years, administration buildings to 75 years, (non-public) roads, etc. to 30-40 years and other buildings to 80 years. The average life span of busses and cars is set to 3-8 years, equipment to 20 years, and machineries to 10-40 years. No consumption of fixed assets is, however, assumed for roads and road constructions owned by public authorities, as repairs of roads make them last for a very long time period.

For buildings and structures, this study assumes that the rate of scrapping is very low for the first 15 years, i.e. a kind of delayed linear retirement pattern is applied.

For the fixed assets with an average life span of 79.5 years, L is set to 1 for the first year after the object has been bought. For the next 14 years, L is linearly decreasing with 1/(14*130) each year, for the next 130 years with 1/130*(128/130) each year, and for the last 14 years with 1/(14*130) each year, so that the maximum life span becomes 158 years. Such an assumption implies that only 1/130 of this type of fixed assets is scrapped during the first 15 years of their existence.

For the fixed assets with an average life span of 59.5 years, L is set to 1 for the first year after the object has been bought. For the next 14 years, L is linearly decreasing with 1/(14*90) each year, for the next 90 years with 1/90*(88/90) each year, and for the last 14 years with 1/(14*90) each year, so that the maximum life span becomes 118 years. Such an assumption implies that only 1/90 of this type of fixed assets is scrapped during the first 15 years of their existence.

For the fixed assets with an average life span of 16.5 years, L is set to 1 the first year and for the next years it is linearly decreasing with 1/32 for each year, so that the maximum life span becomes 32 years.

[423] Population back to 1749 can be obtained from *Statistiska databaser*, online at http://www.scb.se (030601). Maddison (1991, p. 227) puts the total population in Sweden within present borders at 1,260,000 in 1700 and at 760,000 in 1600. These figures are used in the present study, and for the years in between, it is assumed that population grew geometrically. A newer estimate by Lennart Andersson-Palm (2000: p. 49) puts the Swedish population within present borders at 639,000 in 1571, at 854,000 in 1620 and at 1,363,000 in 1699. Maddison's figures seem to correspond to this estimate for 1600, but seem to underestimate the population for 1700. Since the calculations of the stocks of assets were made

To calculate the *net* stock of a type of assets according to the Perpetual Inventory Method, the following formula is applied (in volume values):[424]

$$S_{net,t} = \sum_{k=t-Q}^{t-1} \left(I_{gross,k} \cdot L_{t-k} D_{t-k} \right) \quad (5.2)$$

This formula is the same as for gross stock, except for the factor D_{t-k}, which is the ratio of the depreciated volume value of a fixed asset t-k years after it has been bought to the (undepreciated) volume value at the time when it was bought.

In this study, fixed assets with an average life span of 79.5 years are assumed to depreciate with the factor 1/40 of the preceding year's value in constant prices, objects with an average life span of 59.5 years with the factor 1/30, and objects with an average life span of 16.5 years with the factor 1/12. In this way, the consumption of fixed assets is greatest when the object is relatively new.

To get the gross and net stock in current prices, the values in constant prices are reflated with the same deflators as for the different investment series.

Both the PIM and the assumptions made in the present study are problematic in many ways. The assumption of this study that the pattern of depreciation and mortality of machinery and equipment is homogenous does not take into account that the rate of depreciation and the average life span of fixed assets most probably change over time. For example, some authors argue that the average life span of machinery and equipment was higher in earlier times because of a slower technological development.[425] Since the present enquiry assumes a constant rate of scrapping through time, this could imply that the PS-estimates for machinery and equipment are too low for earlier years.

The PS-estimates for later years correspond quite well to the figures of Statistics Sweden.

In a series published in 1995,[426] Statistics Sweden estimates the value (in current prices) of the gross stock of machinery and equipment in 1991 to have been 1,212 billion SEK and the net stock to have been 651 billion SEK, while this study puts the figures at 1,227 and 651 billion SEK, respectively – i.e. the difference is not very large. The gross stock (in current prices) of buildings and

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before I got knowledge of Palm's data, and since there is a large margin of error in estimating population for this period (see Myrdal, 1999: p. 222), Palm's study has not been utilized. The calculations of the present study rest on the assumption that the volume value of investment per habitant was stagnant for the 17th and 18th centuries. Olle Krantz also argues that the volume value of GDP per capita was probably stagnant between the late 16th century and the early 19th century (Krantz, 2003: p. 17).

[424] See footnote 419.

[425] See, for example, Holmquist, 2003: pp. 82-84.

[426] Statistiska Meddelanden, N 10 SM 9501, appendix 3: pp. 29 and 47.

structures in 1991 was, according to Statistics Sweden, 5,486 billion SEK and the net stock 3,151 billion SEK, while the present study puts the figures at 6,010 and 3,479 billion SEK, respectively. The higher estimate of the present enquiry can probably be explained by the assumption that only a very miniscule part of buildings and structures are scrapped during the first 15 years of their existence.

In a series published 2003,[427] the Statistics Sweden estimate of the net stock of machinery and equipment for 2000 is somewhat higher than the PS-estimate, while its estimate of the net stock of buildings and structures correspond to the PS-estimate. In that series, Statistics Sweden puts the value of dwellings at a lower level and the net stock of other buildings and structures at a higher level than the present study.

Svante Holmquist's estimates of the net stock of machinery and equipment of manufacturing and handicrafts for the years 1913 and 1926 are three times higher than the PS-estimates,[428] but his estimate for 1879 coincides with the PS-estimate. While the volume value of the net stock of machinery and equipment of manufacturing and handicrafts on average increased by 4.6 percent per year between 1879 and 1913 according to the present study, it increased by as much as 7.2 percent per year according to Holmquist.[429]

5.5 Consumption of fixed assets, net investment and NDP

5.5.1 Consumption of fixed assets

Calculations of the net stock of non-livestock fixed assets ($S_{net,fixed\ non\text{-}livestock}$) also provide information on the consumption of fixed assets. The consumption of fixed assets during year t, CF_t, can be defined as[430] (in constant prices):[431]

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[427] Statistiska Meddelanden, NR 10 SM 0301: p. 139.

[428] The discrepancy between the present study and that of Holmquist concerning 1913 and 1926 probably does not only depend on the assumed life span of machinery and equipment. According to my calculations, an assumption of a maximum life span of 64 years instead of 32 years would only give a 33 percent higher figure for the net stock of machinery and equipment in manufacturing and handicrafts for 1913, and a 43 percent higher figure for 1926.

[429] See Holmquist, 2003: pp. 79 and 147.

From his data material, Holmquist also comes to the conclusion that the growth rate of total factor productivity was negligible during some of the studied decades (Holmquist, 2003: pp. 101-135), and for some branches even negative. In my view, this a questionable result. It follows from the (in my view) exaggerated figures of the volume growth of machinery and equipment, which, in turn, depresses the estimated growth of capital productivity.

[430] Statistics Sweden also uses PIM for most types of activities. See a further discussion of the method of Statistics Sweden in Meddelanden i samordningsfrågor, 1979:11 p. 82-83.

[431] In the 1993 SNA (*System of National Accounts 1993*, 1993: p. 77), the stock of assets can also be changed due to "other changes in the volume of assets", for example, due to major natural disasters or wars, and are not included in consumption of fixed capital. In this thesis, "other changes in the volume of assets" are not considered.

$$CF_t = S_{net,fixed\ non\text{-}livestock,t} + I_{gross,fixed\ non\text{-}livestock,t} - S_{net,fixed\ non\text{-}livestock,t+1} \quad (5.3)$$

5.5.2 Net investment

From the series of gross investment (I_{gross}) and consumption of fixed assets (CF) in constant prices, we get net investment (I_{net}) in constant prices; i.e. the investment that increases the volume of the net stock of produced assets (S_{net}). Algebraically (in constant prices):

$$I_{net,t} = S_{net,t+1} - S_{net,t} = I_{gross,t} - CF_t \quad (5.4)$$

5.5.3 Net Domestic Product

By deducting consumption of fixed assets from gross value, the net value added of the aggregate economy can be calculated for the whole period 1800-2000 in basic as well as purchasers' values. However, since consumption of fixed assets is not calculated on the same disaggregated level as gross value added, and since no data could be found to distinguish between investment in non-residential real estate and other private services, the net value added is not disaggregated between activities. The volume growth of Net Domestic Product by activity is calculated as a correction to the volume GDP growth by activity based on a weighted ten-year moving average of the nominal NDP/GDP ratio.[432]

5.6 Fixed livestock and changes in fixed livestock

Changes in fixed livestock are also defined as part of gross fixed investment. But (as for changes in inventories) there is de facto no depreciation of these assets. Therefore, the gross and net values of this type of investment are equal.

Data on changes in fixed livestock for the period 1950-2000 is presented by Statistics Sweden, but no information is given for the stock as such.[433] To link these series, first a series expressed in the constant prices of 1980 is constructed using the series of 1980-85 as a benchmark series. For this period, the same deflator is used for the stock and for the changes in the stock. Because of the problems with the deflator of changes in fixed livestock (which for some years is even negative), in the period 1950-1980, completely new deflators are constructed for this period. This deflator is based on changes in the price of meat

[432] See also section 3.4.3.
[433] The sources are the same as in footnote 393.

from cows and cattle,[434] and is subsequently used to reflate the data expressed in constant prices to current prices. For the period 1980-2000, the deflator from Statistics Sweden is used.

Lennart Schön presents figures of changes in fixed livestock for the whole period 1800-1950, but does not provide any estimates of the stock as such.[435] Data on the fixed livestock can be obtained for the period 1861-1930 from *National Income of Sweden 1861-1930* (NI).[436] The animals included are horses, bullocks, bulls, cows, calves, sheep, goats, pigs, reindeer, and feathered animals. Price series for all of these animals are presented in NI, and from these figures nominal and constant price values of the stock and changes in the stock are calculated in this study.[437] These data do not seem to take into account the qualitative improvements of the livestock, which were quite substantial from a long-term perspective.[438]

Changes in the stock for year t are set to equal the stock in year t+1 less the stock in year t (i.e. *not* the stock in year t less the stock in year t-1). The argument for this procedure is that the stock is normally estimated at the beginning of the year (although it can also be mid-year for fixed livestock), and hence the changes up to that year should be seen as the investment of the preceding year and not the current year. The same method is applied when calculating changes in inventories.

For the period 1930 to 1950, the PS-estimates of volume changes in fixed livestock are based on the data of Lennart Schön.[439] The deflator for the period

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[434] For the period 1950-69, in a first step, the annual deflators of the present study are calculated using the series of changes in the price of meat from cows (Ljungberg, 1990: p. 262), and for the period 1969-1980 the price of large cattle (*Jordbruksstatistisk Årsbok*). These series seem to underestimate the deflator of the changes in fixed livestock by around two percent per year. Therefore, in the next step, the first constructed annual deflator based on changes in the price of meat from cows and cattle are multiplied by a factor of 1.02 to correct for this discrepancy.

[435] Schön, 1995: tables J5 and J7.

[436] Lindahl, Dahlgren and Kock, 1937: part two, pp. 92-111.

[437] In the figures based on NI, slaughter animals seem to be included. However, since slaughter animals constituted a much smaller proportion of the total fixed livestock for those years compared to the period after 1950 (see SOS, *Jordbruk och boskapsskötsel*), and since some animals are not included in the series of NI, no changes are made to the data of NI before linking it to the PS-series based on the material of Statistics Sweden.

[438] See Norrman, 1997.

[439] However, the figures from Schön seem to overestimate the decrease in the livestock between 1930 and 1950. The total value of the livestock was 532 million SEK in 1930, according to the material of NI. Applying the figures of Schön without change gives the result that the volume value of fixed livestock decreased by 195 million SEK in the prices of 1930, or by 37 percent, between 1930 and 1950. Recalculated data from SOS, *Jordbruk och boskapsskötsel*, linked to the estimate based on NI in 1930 shows, however, that the fixed livestock should be valued 484 million SEK in 1950 expressed in the prices of 1930, and hence

1930-50 is based on the changes in the price of meat from cows,[440] and this deflator is used to reflate the volume estimates of changes in fixed livestock.

Since no information is provided on the fixed livestock after 1950 by Statistics Sweden, this study projects the calculated stock in 1861-1930 forward (computed from the data of NI), by utilizing the calculated series of deflators and nominal values of changes in fixed livestock. For this purpose, the following formula is used, where $P_{t-1,t}$ is the annually rebased deflator, set to be the same for the stock as well as the changes in the stock for that period:[441]

$$S_{t,nominal} = (S_{t-1,\ nominal}+I_{t-1,nominal})*P_{t-1,t} \tag{5.5}$$

Lennart Schön's data on changes in fixed livestock for the period 1800 to 1861 is based on information from the *Tabellverket* for the fixed livestock every five years.[442] Since he applies a method of simple interpolation, his data does not take into account the annual fluctuations. In the present study, his data is recalculated for the whole period. As an indicator for annual fluctuations, the growth of agricultural production lagged by one year is used, which is positively correlated to changes in fixed livestock for the decades after 1861. The price series for cows[443] is used as deflator.

Formula (5.5) can also be rewritten as follows:

$$S_{t-1,nominal} = \frac{S_{t,nominal}}{P_{t-1,t}} - I_{t-1} \tag{5.6}$$

Formula (5.6) is used to project the series of the fixed livestock in 1861-2000 back to 1800, by utilizing the estimates of deflators of and volume changes in fixed livestock for the period 1800-1861.

5.7 The inventory stock and changes in inventories

The nominal value of inventories at the beginning of year t can be expressed as the sum of the preceding year's inventory stock, changes in inventories and nominal holding gains. Algebraically:

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the decrease in the total stock was only 9 percent. Henceforth, I correct Schön's data in order to take account of this difference.

[440] Ljungberg, 1990: p. 261-262.

[441] If the deflator would be different for the stock of assets and changes in the stock, which is the case in the PS-series for the period 1861-1930, then this formula would have to be rewritten.

[442] Schön, 1995: pp. 49-51.

[443] Jörberg, 1972, Vol. 1: pp. 648-650.

$S_{t,nominal} = S_{t-1,nominal} +$
+ changes in inventories in year t-1 (in the prices of year t-1) +
+ nominal holding gains in year t-1 (5.7)

Nominal holding gains denotes the change in the monetary values of assets that arise purely out of holding assets over time without transforming them in any way, i.e. it is connected to the change in the prices of the assets. Nominal holding gains must also be calculated for the assets acquired or disposed during the course of the accounting period.[444] The annually rebased deflator of the inventory stock can, henceforth, be computed as:

$$P_{t-1,t} = \frac{S_{t,\,nominal}}{S_{t,\,nominal} - \text{nominal holding gains in year t - 1}} \qquad (5.8)$$

Statistics Sweden presents data on changes in inventories for the whole period 1950-2000.[445] However, data on the inventory stock and on nominal holding gains is only presented for the period 1980-95.[446] The data from Statistics Sweden for the period 1980-95 is not changed in this enquiry.

In SHNA, changes in inventories are not calculated separately and therefore cannot be separated from other expenditures for the period before 1950.[447] For this period, no other aggregate data exists on the stock of, or changes in, inventories at an aggregate level.[448]

In the present study, the same deflator is used for the inventory stock as for changes in inventories. In reality, there should be two different deflators, but the

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[444] For a discussion on nominal holding gains and their partition into neutral holding gains (connected to the general price change) and real holding gains (a residual), see *System of National Accounts*, 1993: pp. 273-286.

[445] Statistics Sweden presents three series online; for the periods 1950-80, 1980-96 and 1993-2000 (*Statistiska databaser*, online at http://www.scb.se, 030601). Since the difference between the estimates of the two first series for 1980 is negligible, no adjustment is made to the first series for the period 1950-1979. The last series, however, put changes in the inventory stock for the years 1993-96 at a higher level than the series of 1980-96, on average by 1.9 percent of total value added in manufacturing, handicrafts and trade. To adjust the data for the years 1996-2000 to the 1980-96 series, the equivalent of 1.9 percent of the total value added in manufacturing, handicrafts and trade is deducted from the changes in inventories for those years.

[446] Statistiska Meddelanden, N 10 SM 9501, appendix, 3: table 3:6.

[447] See Hassler, Lundvik, Persson and Söderlind, 1994: p. 5, and Johansson, 1967: p. 21.

[448] Torsten Gårdlund (1947: pp. 267*-268*) presents the average annual ratio of sold values to the inventory stock for a number of companies in manufacturing and handicrafts for the period 1853-1913. It is, nevertheless, difficult to assess how representative his material is for the rest of the economy. For this period, the ratio seems to be stable in the long-term perspective at around 2.

advantage with just one deflator is that the calculations can be simplified and made consistent for the whole period 1800-2000.

The deflator for the stock of and changes in inventories for the period 1980-95 is calculated according to formula (5.8). For the periods 1800-1951 and 1995-2000, the deflator is set equal to the deflator of the gross output of manufacturing and handicrafts; while for the period 1951-81, the deflator is a recalculated version of the deflator for the gross output of manufacturing and handicrafts.

To compute the nominal inventory stock for the period 1951-1981, first the stock is estimated for two benchmark years, 1951 and 1973. For this purpose, data from business statistics are utilized, which are adjusted to the calculated inventory stock in 1981.[449] Formula (5.5) is used to compute the stock between those benchmark years, although the deflator for those years is adjusted recursively in order to arrive at the calculated stocks of inventories in the benchmark years of 1951, 1973 and 1981, respectively.[450] To estimate the stock in the years after 1995, formula (5.5) is used with no adjustments.

The lack of any data on inventories before 1950 makes it difficult to make any reasonable estimates for that period. However, for the period from 1950 up to the beginning of the 1980s the ratio of the total inventory stock to the value added of manufacturing, handicrafts and trade (codes MH and CC1) – here abbreviated as IR – was roughly stable with ups and downs for individual years. There is reason to expect that in the long run IR was quite stable also for the whole preceding period. The inventory stock outside of manufacturing, handicrafts and trade is quite small,[451] and the fall in IR during 1980s and 1990s should rather be seen as a structural transformation (the introduction of "lean production"), which came only in the last two decades of the 20th century.

[449] For (the beginning of) 1951, SOS, *1951 års företagsräkning*, 1955; for (the beginning of) 1973, SOS, *Företagen 1972*; and for (the beginning of) 1981, SOS, *Företagen 1980*. The reason the year 1973 is chosen is that comparisons can then be made with statistics provided by SOS, *Företagsräkningen 1972*, part 3, 1976, which, however, does not include data on smaller firms. According to the business statistics, the total inventory stock equalled 18 percent of the total gross output of the private sector in 1951, 24 percent in 1973 and 17 percent in 1981. These figures are adjusted with respect to the inventory stock in 1981 and the growth of the gross output of the private sector.

[450] This is done by multiplying the annual deflator of gross output of manufacturing and handicrafts by a factor for the period 1951-73 and by another factor for the period 1973-81. These two factors are derived recursively.

[451] It is possible, however, that in earlier years the inventory stock in agriculture stood for a larger share in the total aggregate stock, but since inventories are ultimately produced in manufacturing and handicrafts, and to a large extent traded, the growth of inventories in agriculture should be correlated with the growth of manufacturing, handicrafts and trade. In earlier times, a large part of trade was also performed by persons working within agriculture.

In the period 1950-80, IR was on average 0.99. For the benchmark years of 1800, 1825, 1850, 1875, 1900 and 1925, the assumption is made that IR was 0.99 then also.

There are also positive correlations between the ratio of changes in inventories to the gross value added of manufacturing, handicrafts and trade (MHT) on the one hand and the volume growth of the gross value added (GVA) of manufacturing, handicrafts and trade the preceding and the same year on the other hand. To estimate the IR for all years in the period 1800 to 1950, the following formula is applied (the volume change is measured in natural logarithms):

$$\frac{\text{changes in inventories in year t}}{\text{GVA of manufacturing, handicraft and trade in year t}} = b +$$
$$+ 0.3 * \text{volume change in GVA of MHT between year t-2 and t-1} +$$
$$+ 0.2 * \text{volume change in GVA of MHT between year t-1 and t} \qquad (5.9)$$

The assumption is further made that b was different for each period between the benchmark years, i.e. for 1800-25, 1825-50, 1850-75, 1875-1900, 1900-25, 1925-51. The different values of b are derived recursively so that formula (5.9) can be applied and so that the assumed values of the inventory stock in the benchmark years are fitted.

A very rough disaggregation is also made of the inventory stock between manufacturing and handicrafts, trade and agriculture and ancillaries. In the earlier data material of Statistics Sweden changes in inventories are estimated only for these three types of activities.[452] In this study, it is assumed that 95 percent of the inventory stock belonged to manufacturing, handicrafts and trade, while the division between manufacturing and handicrafts on the one hand and trade on the other hand is made in proportion to the value added of these two types of activities.

The PS-estimates of the inventory stock, and changes in inventories, for the years before 1950 should be treated with caution, since they are not based on any direct empirical material.

According to Isidor Flodström,[453] the total value of dead inventories in agriculture was 322 million in 1908, but not all of this amount would be included according to modern national accounts. For that year, he also values the total stocks and stored products in shareholding and banking companies to 561 million

[452] See Meddelanden i samordningsfrågor, 1979:11 p. 66.
[453] Flodström, 1912: p. 281.

SEK,[454] but this figure includes the value of real estates where the stocks are situated. No information is given for other types of production units. The PS-estimate of the inventory stock for 1908 is 912 million SEK, which should not be too far off from Flodström's data.

5.8 GDP by expenditure, foreign trade and final consumption

The calculations in this study of private and government final consumption, import and export for the period 1950-2000 are based on data from Statistics Sweden online,[455] using the 1980-94 series as the benchmark series. For private and government final consumption, some minor corrections are made corresponding to the calculations of GDP by activity.[456] Import and export are recorded on the c.i.f./f.o.b. basis up to 1994, although no changes are made to the 1994-2000 SCB-series of import and export, which are recorded on the f.o.b./f.o.b. basis, other than extrapolating the 1980-94 series forward using the ratio method.[457] The sum of final consumption, investment and net export (export

[454] Flodström, 1912: p. 727.

[455] Statistics Sweden presents three series online: for the periods 1950-80, 1980-96 and 1993-2000 (*Statistiska databaser*, online at http://www.scb.se, 030601).

[456] Since the PS-estimate of real estate is different from the estimate of Statistics Sweden for the period 1950-65, a correction is made for this to private final consumption.

Furthermore, the estimate of government final consumption is corrected for the difference between the Statistics Sweden and PS-estimate of the consumption of fixed assets in government services.

[457] Export of goods can be valued in two different ways:

1) in f.o.b. (free on board) prices, which can be regarded as the purchasers' price that would be paid by importers if loaded on their own carrier at the exporter's frontier; or

2) in c.i.f. (costs, insurance, freight) prices, which can be regarded as purchasers' price that would be paid by importers if taking delivery of goods at their own frontier.

The difference between c.i.f. and f.o.b. values consists of the costs of transports and insurances between the customs frontier of the exporting and importing country (System of National Accounts 1993, 1993: pp. 323-324).

Two methods are, henceforth, in use of how to record import and export (SOU 2002:118, bilaga 3, pp. 73-75; see especially table 3.5, which quite pedagogically presents the difference between the two methods):

1) Recording on c.i.f./f.o.b. basis. When imported goods are valued in c.i.f. prices, the costs of both domestic and foreign firms for transporting and insuring those goods between the custom frontier of the exporting and importing country are included. Export of goods are, however, always valued in f.o.b prices, and to keep the balance between total export and import, transport and insurance costs of domestic firms for importing and exporting goods are included in the export of services.

2) Recording on f.o.b./f.o.b. basis. When imported goods are valued in f.o.b. prices the costs of *foreign firms* for transporting and insuring imported goods are reclassified into *import of services*, which in itself does not change the amount of overall import. The costs of *domestic firms* for transporting and insuring imported goods must then be deducted from both import and export as estimated according to the first method.

Although the two methods lead to different values for total import and export, they give exactly the same result for net export (total export less total import). While Statistics Sweden

less import) at purchasers' prices equals GDP at purchasers' prices (see formula (3.2) on page 51).

The estimated nominal value of GDP at purchasers' price for the period before 1950 is based on the PS-series of GDP by activity at basic prices, according to the following formula:[458]

GDP by expenditure in purchasers' prices =
= GDP by activity in basic prices +
+ the excess of goods-related indirect taxes over goods related subsidies +
+ statistical discrepancy between calculations by expenditure and by activity
(5.10)

As an indicator for the excess of goods-related indirect taxes over goods-related subsidies, the linked series of indirect taxes and customs duties based on Östen Johansson's material (described in section 5.3) is used. The statistical discrepancy between calculations by expenditure and by activity is purely a statistical phenomenon that Statistics Sweden presents for all years from 1950 onward. In the present enquiry, it is assumed that ratio of this statistical discrepancy to the value added of the private sector was constant during the whole period up to 1950 and equal to the ratio in 1950.

To extrapolate total export and import backward, the data of Östen Johansson for the period 1871-1950 – which exist both in nominal and constant prices – is utilized.[459] For the break in 1950, the linked PS-series puts both export and

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records import and export on c.i.f./f.o.b. basis before the switchover to the 1993 SNA, after this change import and export are recorded on f.o.b./f.o.b. basis. Recording on f.o.b./f.o.b. basis is preferable from a theoretical point of view, not least because it avoids double counting the cost of domestic firms for transporting and insuring imported goods, but is more difficult to put into practice (SOU 2002:118, bilaga 3, p. 75 and Meddelanden i samordningsfrågor, 1977:11: pp. 69-70).

[458] See section 3.3.3.

[459] Johansson, 1967: p. 138-149. Östen Johansson, in turn, uses the material of *National Income of Sweden* (NI).

There are, however, several problems with Johansson's estimates. As Olle Krantz (1986: p. 12) points out, Östen Johansson (1967: p. 182) only includes net foreign shipping in export, i.e. "the difference between the freight income earned by Swedish ships in foreign trade and the freight income earned by foreign ships in Swedish trade". But if recording on c.i.f./f.o.b. basis is applied (and Östen Johansson estimates import in c.i.f. prices) then the whole gross output of foreign shipping should be included (for an explanation of c.i.f. and f.o.b. prices, see footnote 457). However, the underestimation of export and import seem to balance each other. No other changes are made to Östen Johansson's estimates of export and import than the backward projection of the PS-series.

NI (Lindahl, Dahlgren and Kock, 1937: part two, p. 216-217) and Östen Johansson also provide data on export and import for the period 1861-1871. But according to Lennart Schön, that material is based on a too shaky ground, and only for the years 1871 onward can the data from NI be seen as reliable (Schön, 1984: p. 1).

import at a 13 percent higher level than according to Östen Johansson, implying that backward extrapolation should not significantly distort the relation between export and import (i.e. net export).

To extrapolate export to the period prior to 1871, the different export series of SHNA are used.[460]

No data on import exists in the published volumes of SHNA. A volume dealing with foreign trade is supposed to be published by Lennart Schön but has not appeared so far. However, an unpublished manuscript exists,[461] which contains both nominal and volume values of import for the period 1800-1871, and the data of this manuscript is used to extrapolate the import-series back to 1800.[462]

To compute a series of government final consumption before 1950, the gross output of the government services is used as an indicator for backward extrapolation. No corrections are made for transformation into purchasers' prices (as purchasers' and basic values of government services equal each other).

For the period before 1950, the private final consumption is calculated as a residual: the PS-estimate of GDP at purchasers' prices less investment, government final consumption and net export. The Laspeyre and Paasche deflators for private final consumption are weighted averages of the deflators of the gross output of activities with a large weight in private final consumption,[463] with adjustments made for the ratio between basic and purchasers' prices.

As all the components of formula (3.2) are known in nominal values as well as volume values back to 1800, an alternative series of GDP growth, by expenditure, can be calculated. This series deviates somewhat from the GDP-series at basic prices by activity, especially for individual years (see chapter 7). As consumption of fixed assets is also known, a series of the Net Domestic Product by expenditure at purchasers' prices is calculated as well.

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[460] For export of products from manufacturing and handicrafts, see Schön, 1988: p. 284-285 and 365-366. For export of products from agriculture and ancillaries, see Schön 1995: p. 105-107 and 131-133. For export of commercial services, see Krantz, 1991: p. 143-145. For export of transport and postal services see Krantz, 1986: pp. 33-35, 139-141, 155-156, and 240-242. The export value of foreign shipping according to Krantz's estimate is reduced by the same amount as the gross output of the activity (see section 4.6.4 for a further explanation).

[461] Schön, 1984. The manuscript also contains data on export but lacks estimates of export of commercial, postal and transport services.

[462] See also Bohlin, 2003: p. 75.

[463] The activities included are fishing (code AA3), food products industries (code MH2), textile, wearing apparel, hair and leather industries (code MH3), wholesale and retail trade (code CC1), restaurants and hotels (code PR1), real estate (code RE), paid household services (code PR7) and other personal services (code PR5). Also included are half of the gross output of agriculture (code AA1) and land transport (codes TC1, TC2 and TC5), a third of the gross output of electricity, gas and water works (code MH9), and a third of the value of import.

5.9 Purchasers' and basic value estimates

Statistics Sweden does not provide information on the value added in purchasers' prices divided between activities; only the aggregate figure for the market producers as a whole is presented. No information is given on investment, final consumption, export and import in basic prices either. The calculated stocks of produced assets of the present study are also only expressed in purchasers' prices.[464] This situation renders comparisons difficult at a more disaggregated level between, for example, the stock of assets and value added, especially considering that the ratio between purchasers' and basic values has changed over time. In order to make such comparisons possible, the gross and net value added in basic value of different types of activities are transformed into being expressed in purchasers' proxy prices.[465]

In the material of Statistics Sweden up to 1994 (including the series used as the "benchmark series" in this study), the value added of government services at purchasers' prices is calculated in a different way than the rest of GDP. The VAT is included in the purchasers' price of government services only for the latest SCB-series of 1994-2000. For earlier SCB-series, the value added of the government services at purchasers' and basic prices is exactly the same.[466] Henceforth, the ratios between purchasers' and basic values of the gross value added of different activities is more similar to the ratio between the purchasers' and basic values of gross value added of the private sector as a whole. The last ratio is labelled as r. Algebraically:

$$r = \frac{(\text{GVA of the private sector})_{\text{purchasers' prices}}}{(\text{GVA of the private sector})_{\text{basic prices}}} \qquad (5.11)$$

To transform the gross value added of a type of activities expressed in basic prices into being expressed in purchasers' proxy prices, the following formula is applied (the purchasers' proxy prices here does not include any trade or transport margin at the disaggregated level):

[464] For inventories and fixed livestock the purchased objects (like supplies) are valued in purchaser prices, but the own-account objects (like inventories of finished goods) are valued in basic prices (see *System of National Accounts 1993*, 1993: pp. 293-294). In the latter case, the basic value can be seen as equal to the purchaser value, since no addition is made to the basic value for the acquisition of an own-account asset.

[465] See also sections 3.3.4 and 6.8.3.

[466] See SOU 2002: 118, bilaga 3: pp. 37-38.

$$GVA_{\text{purchasers' proxy prices}} = r*GVA_{\text{basic prices}} \quad (5.12)$$

In reality, the ratio between purchasers' and basic value of the gross value added varies with different activities, but the estimate calculated according to formula (5.12) should be close enough to the actual purchasers' prices to render meaningful comparisons with other variables expressed in purchasers' prices.

To estimate the net value added of different types of activities in purchasers' proxy prices, the consumption of fixed assets that is expressed in purchasers' prices is simply deducted from the gross value added at purchasers' proxy prices.

5.10 Summary

This chapter deals with the construction of series of expenditures and stocks of produced assets for the period 1800-2000. The estimated values for the variables discussed in this chapter are less reliable than the estimated values added of activities dealt with in chapter 4, especially for the period before 1950. Some of these are more guesstimates than reliable estimates.

The estimates of various expenditures – private final consumption, government final consumption, investment, export and import – are entirely based on the material of Statistics Sweden for the period 1950-2000, and for the period prior to 1950 mainly on SHNA and the data of Östen Johansson. For changes in inventories no previous estimates exist for the period prior to 1950 on an aggregate level, and are, in this chapter, computed using movements in the volume value of manufacturing, handicrafts and trade as an indicator. The estimate of GDP by expenditure prior to 1950 is based on the estimate of GDP by activity. Private final consumption prior to 1950 is calculated as a residual.

The series of the stock of various produced assets are computed directly from the investment series, applying the so-called Perpetual Inventory Method.

The calculation of fixed assets also allows the construction of a series of consumption of fixed assets, and by deducting the latter from GDP, series of Net Domestic Product (by expenditure and by activity) are constructed for the whole period 1800-2000.

6 The factor side of national accounts

6.1 Introduction

This chapter deals with the factor side of national accounts, the construction of series of employment, hours worked, labour income and surplus. For the period after 1950, the series are almost entirely based on data from Statistics Sweden.[467] For the period 1870-1950, this chapter mainly draws on Karl Jungenfelt's material.[468] For the period 1850-1870, completely new series of employment, labour income and surplus are presented.

6.2 Employment and hours worked

6.2.1 Definitions

The definition of employment is somewhat different for the various sources utilized in the present study. Statistics Sweden, before the change to the 1993 SNA, defines an employed as a person who works at least one hour during the period of measurement.[469] This is a broader definition than the one applied in Jungenfelt's study, as the latter excludes persons working for only short periods in a week (though this would probably still include most part-time workers).[470]

A more reliable variable would be total hours worked, especially considering that some workers (for example, seasonal workers in agriculture) are employed in one activity for part of the year and then in another activity for another part of the year.[471] In the data of Statistics Sweden a person can be counted twice in aggregate employment if he or she works in two different activities.[472] For the period after 1950, Statistics Sweden provides data on hours worked (for which there is no problems of double counting in the same way as for employment). However, information on average hours worked is very difficult to obtain for the period before 1950.[473] For instance, it is hard to judge how the average annual hours worked per occupied person varied from one year to another. There only

[467] See footnotes 478, 480, 484 and 566.
[468] Jungenfelt, 1959 and 1966.
[469] Statistiska Meddelanden, N 10 SM 9501, Appendix 2: p. 3.
[470] Jungenfelt, 1959: pp. 4-5. The definition of employment also varies between the different sources that Jungenfelt draws on. For example, a problem with the censuses (which are utilized also in the present study) is that they do not distinguish between employed and unemployed.
[471] For a discussion of definitions of employment and hours worked see *System of National Accounts 1993*, 1993: pp. 407-411.
[472] E-mail correspondence with Eddie Karlsson, National accounts div. Statistics Sweden, 050117.
[473] Jungenfelt, 1959: p. 5.

exist estimates for some activities for some years. Therefore, this study chooses to investigate employment as the key variable and hours worked are only presented for the period 1950-2000.

This study also divides up the employed in employees and self-employed. Especially for earlier times, it is difficult to pinpoint who was an employee and who was self-employed[474] since these two categories are more appropriate for analysing modern capitalist economies.[475] Statistics Sweden defines unpaid working family members of the owners as self-employed (but paid working family members of the owners are considered employees),[476] while Jungenfelt considers the social position of those family members as not very different from the position of employees.[477] The population censuses also seem to exclude family members from the category of self-employed.

6.2.2 Linking method

As explained in section 4.2, linking times series using the ratio method gives different results if a variable is linked at an aggregate level or if the linking is made separately for the different components that constitute this variable.

For all time series of the variables discussed in this chapter, backward and forward linking is made separately for the different types of activities using the ratio method.

For all the series of Statistics Sweden, the linking is also made separately for employees and self-employed, respectively.

However, the backward linking to the period before 1950 is made for the total of employees and self-employed of each type of activities (except in the case of agriculture and ancillaries), and not separately for employees and self-employed. The self-employed are then linked separately, and the number of employees computed as the residual. This seems to be the most adequate method, since the definitions of employees and self-employed are not consistent for the times series before 1950. They are also different from the definitions of Statistics Sweden. The sum of employees and self-employed is, therefore, a more reliable measure for that period.

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[474] Sten Carlsson (1968: p. 61) writes that the French term "entrepreneur" (not to be confused with its later Schumpeterian usage) as an economic category was used in 1709 (see also Gratzer, 1996: pp. 74 and 79), but that its Swedish equivalent, "företagare", is not known until 1881.

[475] Modern national accounts also have certain conceptual difficulties in distinguishing employees from self-employed. See *System of National Accounts 1993*, 1993: pp. 165-166.

[476] Meddelanden i samordningsfrågor, 1979:11: p 89. See also *European system of accounts: ESA 1995*, 1996: pp. 245-246.

[477] Jungenfelt, 1959: p. 10.

6.3 Employment and hours worked 1960-1994 (benchmark)

For the period 1960-1994, the PS-estimates of employment and hours worked are based on four different times series of Statistics Sweden – for the periods 1960-63, 1963-70, 1970-80 and 1980-94.[478] Linking those series does not pose any large problems as the classification into economic activities and the definition of employment is roughly the same throughout 1960-1994. There are, nonetheless, several breaks in those series.

The breaks between the SCB-series 1960-63, 1963-70, 1970-80 are of minor magnitude.

The breaks between the SCB-series of 1970-80 and 1980-94 can be explained by the fact that more persons are defined as employed in the newer series in manufacturing and handicrafts (a 7.3 percent increase), in the renting of dwellings and other premises (a 50 percent increase), and in business services (a 10.4 percent increase), which also affects the total level of employment.

In the SCB-series of 1980-94, employment in the telecommunication industry is downgraded compared to the earlier SCB-series, for the year 1980 from 38,300 to 20,100 employed. Hours worked are downgraded similarly. This can be explained by the fact that construction work in telecommunication in the earlier series is counted twice, as belonging both to building and construction and to telecommunication; while in the 1980-94 SCB-series, the construction work is deducted from telecommunication.[479] There is no information on how much of telecommunication work consisted of construction work for the earlier times series, and for simplicity it is assumed, in this study, that the proportion was the same as in 1980.

6.4 Employment and hours worked 1994-2000

The SCB-series for 1994-2000[480] deviate significantly from the earlier series, not least because of changes in the classification into economic activities, but also because of changes in the definition of employment, which for some activities tend to include more persons. The total employment in 1994 is recorded at a 1.9 percent higher level in the 1994-2000 SCB-series compared to the 1980-94 SCB-series; a discrepancy which cannot be an effect of reclassification only.

[478] Statistiska Meddelanden, N 1975:98, Appendix 5 (for the period 1960-63); Statistiska Meddelanden, N 1981:2.5 Appendix 5 (for the period 1963-70); Statistiska Meddelanden, N 10 SM 8601, Appendix 5 (for the period 1970-80); and Statistiska Meddelanden, N 10 SM 9501, Appendix 2 (for the period 1980-94).

[479] Statistiska Meddelanden, N 1984: 5.5, Appendix 5: p. 5.

[480] Statistiska Meddelanden, N 10 SM 9701 and Statistiska Meddelanden, NR 10 SM 0201.

To make the division into activities of the 1994-2000 SCB-series more compatible with the division of this enquiry, some changes have been made. The more detailed information of division into activities is not provided by the National Account figures. Instead, data presented online by the business accounts and labour market statistics have been used,[481] which partly deviate from the National Account figures.

As for value added, employment and hours worked in repairs are moved from trade to manufacturing and handicrafts, and research, cleaning and photographic work is deducted from business services and moved to private reproductive services.[482] Even with these adjustments, there are some large discrepancies between the two Statistics Sweden series for the break in 1994.[483]

6.5 Employment and hours worked 1950-1960

For the individual years between 1950 and 1960, no direct data on the number of occupied persons at an aggregate level is presented by Statistics Sweden. There is only one series from Statistics Sweden on total hours worked of different activities.[484] This series does not make a further subdivision between employees and self-employed, or between government services and the private sector. The PS-series of employment for this period are based on these figures. In order to transform the hours worked into employment, estimates are made of fluctuations in hours worked per employed person. This is especially important considering the fact that the period 1950-1960 experienced several reductions in the annual working days and hours worked per week, which was legislated by the Swedish

[481] *Sveriges statistiska databaser*, online at http://ww.scb.se (021001).

[482] See sections 4.4.3 and 4.7.3.

[483] For 1994, employment in agriculture is recorded at a 14 percent lower level in the 1994-2000 SCB-series compared to the 1980-94 SCB-series, building and construction at a 3 percent lower level, banking and insurance at a 7 percent lower level, and manufacturing and handicrafts at a 7 percent lower level.

Employment in hotels and restaurants are recorded at a 23 percent higher level for 1994 in the 1994-2000 SCB-series compared to the 1980-94 SCB-series. This can be explained by the fact that restaurant services carried out in, for example, schools or hospitals are reclassified as belonging to restaurant activities in the 1994-2000 SCB-series, while in the earlier series, they are defined as part of education and health care, respectively. See Meddelanden i samordningsfrågor, 1992:6: p. 153.

Employment in telecommunication are recorded at a 73 percent higher level for 1994 in the new series, and postal services at a 42 percent higher level. I have not been able to find an explanation for these two discrepancies. Nor have I been able to explain why employment in "other producers"/NPISHs is recorded at a 80 percent higher level for 1994 in the 1994-2000 SCB-series.

All of these discrepancies are adjusted by simple forward extrapolation from the 1980-94 series using the ratio method.

[484] Statistiska Meddelanden, N 1975:98, Appendix 5, pp. 59-60.

Parliament.[485] It is also important to take into consideration that the total hours worked per year vary with the number of holidays and working days per year.

The most reliable source on annual hours worked per employed person are the annually published statistics for manufacturing industries[486] where small-scale firms are excluded and figures are only presented for blue-collar workers. This series is also used in this study as an indicator for hours worked per year and per employed in other activities, thereby giving fluctuations in employment from the data on hours worked. Of course, this is not a completely reliable method as the structure of working time could have been different from manufacturing within other activities. Fluctuations in hours worked per employed are also different between self-employed, blue-collar workers and white-collar workers.

The population censuses of 1950 and 1960 are also utilized to make additional adjustments, especially for estimating the relation between the number of self-employed persons and employees in 1950-60.

The number of employees in agriculture (code AA1) in 1950-60 is directly estimated from the wage data of Statistics Sweden, and the number of self-employed persons is computed as a residual.[487] The number of self-employed persons for 1950 according to the present study is significantly larger than according to the census for that year, but this is a consequence of the data material of Statistics Sweden. Also for 1960, Statistics Sweden defines significantly more persons as self-employed in agriculture than the census for that year. The number of employees within agriculture is significantly larger according to Statistics Sweden than according to the census as well, as Statistics Sweden probably includes more part-time workers.

After the self-employed have been separated from the employees, the employed within government services have been separated from the employed within other activities using the ratio of wages and salaries (including social benefits) within government services to other activities as an indicator.

Gudmundur Gunnarsson and Thomas Lindh have also constructed series of employment in Sweden for the 1950s based on the hours worked presented by

[485] See Silenstam, 1970: p. 25.

[486] See SOS, *Industri (Manufacturing)*, for the years 1920-1950.

[487] For this purpose, data on changes in hourly earnings of agricultural workers is utilized, derived from SOS, *Lönestatistisk Årsbok*, for the years 1950 and 1951 and SOS, *Löner* for the years 1952 to 1960. The wage data from Statistics Sweden includes social benefits, which are presented separately for the 1950s. According to the data material of Statistics Sweden, the ratio of social benefits to wages excluding social benefits was around five percent in 1960. According to Jungenfelt social benefits stood for around two percent of total wage costs at the end of 1940s (Jungenfelt, 1966: p. 218). For agricultural workers, the assumption made in this study is that the ratio of social benefits to wages excluding social benefits grew linearly from two percent in 1950 to five percent in 1960.

Statistics Sweden.[488] They abstain from presenting any standard linked employment series "since the final choice of links should depend on the purpose of research", and instead provide different series.[489] None of these series have been utilized, however, since the present investigation must rely on the direct source material as presented by Statistics Sweden to make the division into economic activities to fit with the other series for other time periods.

6.6 Employment 1850-1950

As mentioned in section 6.1, the PS-estimates of employment for the period 1870-1950 is mainly based on Jungenfelt's data; while for the period 1850-1870, a completely new series is presented. Jungenfelt is primarily concerned with the long-term development, which makes his estimates of annual fluctuations not very reliable, as he himself admits.[490] Since the purpose of this study is also to investigate annual fluctuations, especially during depression years, some corrections are made to Jungenfelt's data in this respect. Jungenfelt neither presents data on employment in building and construction in 1870-1930 nor for most private services in 1870-1910, and in this thesis an attempt is made to "fill out" the missing parts.

In Jungenfelt's data, the category "professional services" includes miscellaneous private services. But several important services are missing, such as laundry, photography, hairdressing, funeral services and sanitary services. Also real estate and most business services are missing. While Jungenfelt estimates employment in "professional services" in 1950 to have been 45,700, the present study puts employment in private reproductive services (except hotels and restaurants and household services), business services and real estate (equivalent to Jungenfelt's category) to 132,900 for that year, or almost three times the figure of Jungenfelt. Therefore, Jungenfelt's data on these activities are recalculated for the whole period 1870-1950.

Apart from Jungenfelt's study, the main sources used for the period 1850-1950 are the censuses of population and enterprises. The censuses of enterprises were only published for two years in this period, where the data on employment refer to the years 1930 and 1950.[491] Population censuses containing detailed information on the structure of employment were conducted for every five years

[488] Gunnarsson and Lindh, 1997. This study came to my notice after I had constructed my own series for the period 1950-60.
[489] Gunnarsson and Lindh, 1997: p. 4.
[490] Jungenfelt, 1959: pp. 14-15.
[491] *1931 års företagsräkning*, 1935, and SOS, *1951 års företagsräkning,* 1955.

(ending with a 0 or 5) in the period before 1860,[492] and in the period 1860-1950 for the years 1860,[493] 1870,[494] 1880,[495] 1890,[496] 1900,[497] 1910,[498] 1920,[499] 1930,[500] 1940,[501] 1945,[502] and 1950[503].[504]

Earlier censuses also underreport many occupation categories, especially within building and construction and most private services.[505] In the present enquiry, various other primary sources and techniques are utilized to complement the censuses.

6.6.1 Agriculture and ancillaries (code AA)

For the break in 1950, this study puts the number of self-employed persons and employees within agriculture and ancillaries at a significantly higher level than Jungenfelt's material. The larger number of self-employed persons can probably be explained by the inclusion of family members in the SCB-series on which the present study is based, and the larger number of employees by the inclusion of more part-time agricultural workers.[506] Against this background, the backward extrapolations are made separately for self-employed and employees for agriculture and ancillaries, using Jungenfelt's estimate as indicators with some corrections made to the annual fluctuations.

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[492] These population censuses can be found in *Minnesskrift med anledning av den svenska befolkningsstatistikens 200-åriga bestånd*, 1949.

[493] BiSOS, A) *Befolkningsstatistik*, II: 3, 1865.

[494] BiSOS, A) *Befolkningsstatistik*, XII: 3, 1874.

[495] BiSOS, A) *Befolkningsstatistik*, XXII: 3, 1883.

[496] BiSOS, A) *Befolkningsstatistik*, XXXII: 3, 1895.

[497] BiSOS, A) *Befolkningsstatistik*, XLII: 3, 1907.

[498] *Folkräkningen den 31 december 1910*, part III, 1917.

[499] *Folkräkningen den 31 december 1920*, part V, 1927.

[500] *Folkräkningen den 31 december 1930*, part VII, 1938.

[501] *Folkräkningen den 31 december 1940*, part III, 1943.

[502] *Folkräkningen den 31 december 1945*, part IX, 1952.

[503] *Folkräkningen den 31 december 1950*, part VI, 1955.

[504] For a discussion of occupation categories used in the population censuses and other primary sources, see Carlsson, 1949 and 1968.

[505] In the early censuses, the occupation category labelled as "arbetare av obestämt slag" ("worker of no specific type") or "arbetare med ej uppgiven anställning" ("worker with no reported employment") is quite numerous. A maximum for this category was reached in 1880, when it encompassed 128,000 men and 8,000 women. According to Sten Carlsson (1968: p. 250), out of the 128,000 men probably around 20,000 were woodmen, 20,000 saw mill workers, 10,000 commercial workers, 10,000 workers in stone and clay industries, and the others were agricultural workers, dockers, construction workers, caretakers, waiters, and other types of workers. Many of these workers were changing occupation quite often.

Much of the seasonal work is also underrepresented in the censuses.

[506] The SCB-series seem to exclude the wives of farm owners from the labour force. Jungenfelt (1959: p. 12) admits that the agricultural type work of those wives was quite considerable, but exclude them from the workforce because of the difficulty in estimating their labour input. See also section 6.7.

Jungenfelt's series is, with some modifications, mainly based on the population censuses. This also partly explains the difference with the present study, since the data material of Statistics Sweden for later years diverge from the censuses as well. Jungenfelt puts together employment in agriculture, forestry and fishery, as it is, according to him, difficult to separate these activities. For interpolation between the census years, he uses different methods and indicators: 1870-1880 exponentially linear interpolation, 1880-1920 population movements, and 1920-1950 official statistics over industrial accidents and taxes.[507] His interpolations between census years in the period 1870-1920 seem to underestimate annual fluctuations. For this reason, new interpolations are made between censuses for employees using fluctuations in the agricultural production as an indicator.[508] Jungenfelt's data on self-employed is used without change, except for the effect of backward extrapolation.

For the period 1850-1870, the assumption of this enquiry is that agricultural employment had the same growth rate as the countryside population[509] between the census years, which is then benchmarked to Jungenfelt's estimate in 1870. The number of self-employed for the census years is based on the number of landowners and tenant farmers, which can be obtained from the population censuses, while the number of employees is calculated as a residual. To interpolate for the years between censuses, a similar method is applied for employees as in the period 1870-1920 using agricultural production as an indicator for fluctuations, while self-employed are geometrically interpolated.

6.6.2 Manufacturing and handicrafts (code MH)

Jungenfelt divides manufacturing and handicrafts into three sectors for which different methods are used to obtain employment figures:[510]

1) Production I was the production presented by official manufacturing statistics. To get the number of workers for this sector, Jungenfelt uses the official manufacturing statistics for the whole period. To arrive at the number of white-collar workers of the sector, Jungenfelt uses the official manufacturing statistics for 1913-1950, and the censuses for 1870-1913.
2) Production II was the production that sometimes was registered by official statistics, and sometimes was not registered. For this sector,

[507] Jungenfelt, 1959: p. 16.

[508] Fluctuations in the number of employees were most probably not as sharp as in production, and therefore the indicator is dampened to take this into account.

According to Gustaf Utterström (1957: Vol. 1, pp. 241-244), bad harvests in the 18th and 19th centuries tended to lead to higher unemployment, but this often happened with a time lag.

[509] This data can be obtained from *Befolkningsutvecklingen under 250 år*, 1999: p. 42.

[510] Jungenfelt, 1959: pp. 23-35.

Jungenfelt calculates employment by using fluctuations in production as an indicator.

3) Production III was performed by small manufacturers and handicraft producers. To get the employment level for this sector, Jungenfelt uses the data of NI.

For the period 1912-1950, Jungenfelt's estimates are utilized in this study for backward extrapolation. For the break in 1950, the linked PS-series records a 9.8 percent higher employment figure for manufacturing and handicrafts than according to Jungenfelt, which could almost entirely be explained by the break for the year 1980 in the two series of Statistics Sweden (1970-80 and 1980-94).

For the period 1870-1912, Lennart Schön considerably upgrades the estimated number of employed in small manufacturers and handicraft producers (i.e. in Production III) in comparison to Jungenfelt's estimate.[511] To correct Jungenfelt's estimate, the difference between Schön's and Jungenfelt's estimate of employment in Production III is added to Jungenfelt's estimate before being linked to the later PS-series.[512]

To calculate employment in manufacturing and handicrafts for the period 1850-70, the data provided by Lennart Schön on handicraft employment is added to the employment in factories and mining according to official statistics.[513] For 1870, this sum records employment 31 percent lower than Jungenfelt's figure as corrected by Schön's estimate of employment in Production III. Employment in Production II is basically missing here, and it is simply assumed that it followed the growth of employment in Production I and III.

To estimate the number of self-employed persons in manufacturing and handicrafts, Jungenfelt's figures are used for extrapolation back to 1912. This linked series increases the number significantly compared to Jungenfelt's estimate. For 1850, it is assumed that the proportion between employed and self-employed was the same as the ratio of "masters, patrons and owners" to "others", according to the census for that year.[514] For the years between 1850 and 1912,

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[511] Schön, 1995: pp. 90-111.

[512] Jungenfelt estimates that the number employed in manufacturing and handicrafts was 171,800 persons in 1870. When corrected for Schön's estimate of employment in Production III, this figure is upgraded to 201,600. Finally, when linked to the PS-series after 1912, the estimated employment in manufacturing and handicrafts for 1870 becomes 198,100.

[513] For mining and quarrying, the data can be obtained from *Bergs-Collegii Underdåniga Berättelse om Förhållandet med Bergshandteringen* for the years 1850-1857, and BiSOS, C) *Bergshandtering(en)* for the years 1858-1870. For manufacturing, the data can be obtained from *Commerce-Collegii Underdåniga Berättelse om Fabrikernes och Manufacturernes ställning* for the years 1850-1857 and BiSOS, D) *Fabriker och manufakturer* for the years 1858-1870.

[514] Reproduced in *Minnesskrift med anledning av den svenska befolkningsstatistikens 200-åriga bestånd*, 1949: pp. 146-151. Persons employed in entertainment and construction are deducted. According to Sten Carlsson (1968: p. 61), the persons labelled under the category of

Schön's series of employed persons in handicrafts is used as an indicator for interpolating the number of self-employed persons.

6.6.3 Transport and communication (code TC)

For 1950, the present study puts employment at a 4 percent higher level in transport and at a 9.8 percent higher level in postal services than Jungenfelt. However, Jungenfelt's estimate of employment in telecommunication is about 50 percent higher than the PS-estimate.[515] These discrepancies are only corrected by applying the ratio method.

Jungenfelt does not present any figures of employment in animal transport. No attempts have been made in the present investigation to estimate this type of employment. Part of it is probably included in agriculture and ancillaries.

6.6.4 Building and construction (code BC)

Jungenfelt's estimate of employment in building and construction is based on the censuses of enterprises referring to 1930 and 1950. From those he obtains data on the average output per employed. By dividing total output with output per employed he gets total employment. To interpolate between 1930 and 1950, he uses the production index as an indicator.[516]

This method may be questioned. For 1930, the figure of Jungenfelt is much higher than the figure of the population census. If this method would be used for earlier years, the discrepancy (with the censuses) would be even larger. This is an effect of the fact that the further back in time one looks, the larger part of building and construction work was not carried out separately in the market, but by persons building houses for their own use or by labour classified into other activities (as manufacturing or transport), which tends to depress the number of persons registered (by the censuses) as occupied in building and construction. This is also the reason why Jungenfelt refrains from making any calculations of employment in building and construction for the period before 1930.

The method of this study to calculate employment in building and construction before 1950 follows the definitions of the censuses rather than Jungenfelt's method. This also implies that the whole series of employment of building and construction is recalculated for the period 1930-1950, which puts the employment in this type of activities at a lower level than according to Jungenfelt. Also Statistics Sweden excludes building and construction for own

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"patrons, owners and masters" could be considered as self-employed ("företagare"), although it is quite difficult to distinguish between self-employed and employees for earlier times.

[515] This discrepancy probably arises for the same reason as the discrepancy between the 1980-94 and earlier SCB-series of employment in those activities (see section 6.3).

[516] Jungenfelt, 1959: pp. 36-39.

final use from employment and hours worked,[517] even though the value added of this activity is included[518] (which renders calculations of productivity based on the figures of Statistics Sweden somewhat problematic for building and construction).

According to the census data, employment in building and construction, forming the basis for the time series of the present study was 159,000 in 1930 and 244,300 in 1950, implying a 54 percent increase over the period. Jungenfelt estimates employment in building and construction to have been 239,600 in 1930 and 242,400 in 1950, implying just a 1.2 percent increase over the period. The difference can be interpreted in the following way: while censuses, and thus the PS-series, give a more accurate picture of the actual development of the number of employed in building and construction who had this type of work as their main occupation, Jungenfelt's calculation is a better approximation of the total amount of construction and building work carried out in society at large.

For the period up to 1920, the census data is supplemented in different ways[519] as a large part of employment in building and construction is missing in those data.

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[517] E-mail correspondence with Eddie Karlsson, National accounts div. Statistics Sweden, 050117.

[518] According to Mats Bladh (1991: p. 74) construction of dwellings for own final use stood for 11 percent of the total value added of building and construction in Sweden in the period 1975-83.

[519] For the whole period up to 1920, censuses provide quite reliable data on employment in house building, house paintings, glass work, tiled stove making, etc., and only some modifications are made in the present study. In the censuses up to 1920 all carpenters ("timmarmän") and joiners ("snickare") are recorded separately. Many of the carpenters and joiners worked in building and construction activities, and should be put there. Based on the percentage of carpenters and joiners that were working in building and construction activities according to later censuses, the assumption in this study is that 33 percent also did so during earlier census years. In the censuses of 1850, 1855 and 1860, no data is provided on the number of carpenters and joiners, and the assumption is that their share in total employment of house building, etc., was the same as in 1870. In the period 1890-1920, administrative personnel are recorded for building and construction and power- and water-stations together (and for earlier years they are almost non-existent), and the assumption is that 70 percent of them were working in building and construction activities.

The censuses are further supplemented with estimates on employment in plumbing and electric installation, and construction of water transport structures and roads, using series of investments and repairs in those activities as indicators.

Östen Johansson (1958: tables 29-31) provides data on investment in buildings and structures of water- and power-stations, which is used in the present study to calculate employment in plumbing and electric installation, making the assumption that the level of output per employed in those activities was the same as in manufacturing and handicrafts. In the 19th century, this type of investment was, according to the material of Johansson, principally non-existent.

Data on investment and repairs in structures in water-transports and roads in census years can be obtained from Östen Johansson (1958: tables 39 and 41-45) for the period 1870-1920, and from Lars Pettersson (1987: pp. 37-42) for the period 1850-1870. Data on railway investment in buildings and structures can be obtained from Eric Nicander (1980) for the period 1850-1910,

To interpolate between the census years, the annually published industrial accidents statistics are used for the period 1920-50.[520] For interpolations between census years in the periods 1850-1864 and 1910-1920, the production index is used as an indicator. For the period 1864-1910, the official statistics of factories, manufacturing and handicrafts[521] also provide annual data on employment in building and construction (although it only includes part of the total employment in these activities). As an indicator for interpolation between census years for that period, a weighted average of this time series and the production index is used.

From the various sources used to calculate total employment in building and construction, relevant information can also be obtained to estimate the ratio of self-employed to employees.

6.6.5 Circulation (code CC)

6.6.5.1 Wholesale and retail trade (code CC1)

Jungenfelt presents data on employment in wholesale and retail trade back to 1910, which is used without any changes to extrapolate the PS-series back to 1910. Jungenfelt's data is based on the population censuses that give a similar result as the censuses of enterprises. His interpolation between census years is based on statistics of cooperatives and production values.[522]

For several reasons, Jungenfelt refrains from calculating employment in trade for the years before 1910. If the census data would be used uncritically, the growth rate of employment in trade would be estimated at an unrealistically high level for the whole period 1870-1910. This is partly explained by the fact that

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and from Östen Johansson (1958: tables 33 and 34) for 1920. The assumption of this study is that the nominal output per employed in those activities followed the average wage of workers in the stone, clay and glass industries in the period 1870-1920 (which can be obtained in Jungenfelt, 1966: pp. 241-242), and the day rate for a male agricultural worker (see Jörberg, 1972: Vol. 1, p. 713) in the period 1850-1870.

[520] SOS, *Olycksfall i arbete*, 1920-1950.

SOS, *Olycksfall i arbete* only provides data on construction employment of the state and of larger companies. This is problematic since a large part of construction work was carried out by smaller companies and we cannot assume a positive correlation between the growth of employment in small and large companies (it could even be negative, if, for instance, expansion of large companies takes place at the expense of smaller ones, and vice versa).

Nevertheless, there seems to be a positive correlation (at the aggregate level for the whole economy, for which SOS, *Olycksfall i arbete* provides data also for smaller companies) between the number of large companies and employment in smaller ones (as for instance expansion in the employment of smaller companies leads to classifying more of them as larger companies). Henceforth, the number of large companies within building and construction is used as an indicator to interpolate employment of smaller companies between census years.

[521] BiSOS, D), *Fabriker och manufacturer* for the years 1864-1895 and BiSOS, D), *Fabriker och handtverk* for the years 1896-1910.

[522] Jungenfelt, 1959: pp. 50-55.

trade and handicrafts were often performed within the same institutional unit in earlier periods. It is a similar problem as for building and construction.

Another explanation for the underestimation of trade is that some employment categories are put into household services by the censuses when they actually belonged to trade.[523]

To extrapolate the employment of trade backward, this investigation does not utilize the censuses but some direct data of employees and self-employed in trade provided by official statistics back to 1850,[524] which only includes part of the total number of employed in these activities. According to this series, employment in trade increased eight-fold between 1850 and 1910, or 43 percent per decade on average. This should be quite a realistic assessment, at least for trade considered as a specialised activity, since this was also a period of a rapid market expansion. The calculated figures for employment in trade of the present study for this period is, henceforth, not comparable to the total value added of trade that is presented by Krantz (used also to estimate the value added in this study), since Krantz uses another method, which includes all kinds of trade activities, also outside the specialized profession.

Jungenfelt also makes a provisional calculation of employment in trade for the years 1870, 1880, 1890, 1900, based on the census material. He defines 80 percent of servants and family members who were part of households where the household head is categorised into trade as employed in trade as well.[525] This gives almost the same result as the computations of the present study (except for 1900).

This study also estimates employment in pharmacies. Jungenfelt excludes pharmacies from trade, while later SCB-series includes them (as is the case for value added). For 1930-1950, the PS-estimate of employment in pharmacies is based on population censuses and for 1860-1930 on data from NI.[526] For the period 1850-1860, it is assumed that the growth rate of the number of employed in pharmacies was the same as of town population.[527] For interpolation between census years, employment in trade is used as an indicator. This series of

[523] Jungenfelt, 1959: p. 53.

[524] *Commerce-Collegii underdåniga berättelse om Sveriges inrikes sjöfart* for the period 1850-1857; *Statistisk Tidskrift* for the period 1857-1895; and BiSOS, F) *Handel* for the period 1895-1910. This is actually one and the same series showing the same figure for the breaks.

[525] Jungenfelt, 1959: p 54

[526] Lindahl, Dahlgren and Kock, 1937: part two, p. 524.

[527] *Befolkningsutvecklingen under 250 år*, 1999: p. 42.

pharmacists is then added to the series of employment in trade before linking it to the later series based on the material of Statistics Sweden.[528]

6.6.5.2 Banking and insurances (codes CC2 and CC3)

As for trade, Jungenfelt presents data on the number of employed in banking and insurances back to 1910, which are used for backward linking in the present study. Censuses provide data on employment in banking and insurances for the period 1880-1910, but not for earlier years. To obtain employment data for earlier census years, the assumption of this study is that employment had the same growth rate as the volume of production of these activities (which can be obtained from SHNA[529]). To interpolate between census years, the number of employees in trade is used as an indicator.

6.6.5.3 Business services (code CC4)

Employment in various business services can be obtained from population censuses for the years 1940, 1945 and 1950, and for 1930[530] from the census of enterprises. No aggregate data of business services exists before 1930. For the period 1870-1930, the assumption of the present enquiry is that employment in business services had the same growth rate as the number of lawyers, which is provided by SHNA;[531] and in 1850-1870 the same as the growth rate of town population.[532] To interpolate between census years, the series of self-employed and employees in trade are used as indicators.

6.6.6 Private reproductive services (code PR)

6.6.6.1 Hotels and restaurants (code PR1)

As for trade, banking and insurance, Jungenfelt provides data on employment in hotels and restaurants back to 1910. Jungenfelt's estimates are based on NI for the years 1910-30. For the period 1930-1950, he uses census data and interpolates between the census years using various indicators.[533] For the break in 1950, Jungenfelt puts the employment in this type of activities at a 14 percent lower level than the linked PS-series. This discrepancy can probably be explained by the fact that many hotels and restaurants only functioned seasonally

[528] For the benchmark year 1950, Jungenfelt's estimate of employment plus the addition of pharmacists made in the present study is just 1.4 percent lower than the linked PS-series based on data from Statistics Sweden.
[529] See section 4.7.2.
[530] *1931 års företagsräkning*, 1935: pp 112-113.
[531] Krantz, 1991: pp. 11-16.
[532] See footnote 527.
[533] Jungenfelt, 1959: pp. 55-58.

and that a large part of the work force consisted of part-time workers.[534] Population censuses are probably quite good in measuring full-time full-year employment, while the SCB-series seem to include more persons in the work force.

For the period before 1910, Olle Krantz estimates employment in hotels and restaurants back to 1800.[535] These figures are primarily based on the censuses. However, the censuses in 1870-1900 seem to exclude most innkeepers in the countryside. This is confirmed by the fact that the census in 1860 (which Krantz excludes from his calculations, because it contradicts the result he gets for the other census years) shows a much higher figure of employment in hotels and restaurants in the countryside than the 1870 census. Another problem is that, in the 1860 census, servants of households where the household head were employed in hotel and restaurant activities are classified as employed in this type of activities as well, while in the subsequent censuses they are not. Krantz excludes the servants, while they are included in the present study since this at least creates consistency over time.

For this reason, a recalculation is made of the census data of employment in hotels and restaurants in 1870, 1880 and 1890, using the census of 1860 as a benchmark. The assumption of this study is that the number of employed (both employees and self-employed) in the countryside in the census years of 1870, 1880 and 1890 was the same as in 1860,[536] which is added to the more reliable data of town employment of hotels and restaurants according to the censuses 1870, 1880 and 1890. For the period 1850-1860, the assumption is that employment in hotels and restaurants had the same growth rate between census years as the town population. Against this background, the PS-estimates of employment in hotels and restaurants are larger than Krantz's estimates.

The censuses of 1900 and 1910 are used without change (except for the effect of backward extrapolation).

To interpolate between census years, the series of employment in trade is used as an indicator – separately for self-employed and employees.

6.6.6.2 Sanitary services and sewage plants (code PR2)

The estimated number of persons engaged in sanitary services varies significantly from one census to another as they use different definitions. For example, according to the censuses cleaning, except chimney sweeping, is estimated to have employed 9,797 persons in 1910, but only 3,689 in 1920, and

[534] See Jungenfelt, 1959: pp. 55-56.
[535] Krantz, 1991: pp. 96-99.
[536] According to *Statistisk Tidskrift*, 1860-1910, the number of innkeepers was relatively stable over the period.

then 5,211 in 1940. This is connected to the problem that many cleaning activities could be classified into other activities, for example, household services, real estate or even manufacturing. The only consistent series that can be obtained from censuses is over chimney sweeping, which goes back to 1805, and this series is the basis for the PS-estimates of employment in all sanitary services; even though chimney-sweepers only represented a fraction of total employment of those activities.

Back to 1920, the annually published official statistics over industrial accidents contain data on employment in sewage plants.[537] For 1910, there is data on the number of work accidents in sewage plants[538] that gives a rough idea of the number of employed in sewage plants.

For the census years of 1910 to 1950, the assumption is that the ratio of the number of chimney sweepers to the number of employed in sanitary services except sewage plants – among self-employed and employees, respectively – was the same as in 1950. For the census years in the period 1850-1910, the assumption is that the growth rate of employment between census years in sanitary services and sewage plants was equal to the growth rate of chimneysweepers.

To interpolate between census years in the period 1920-50, an index composed of the growth rates of self-employed and employees, respectively, in sewage treatment and trade are used as indicators. To interpolate between census years in the period 1850-1920, the growth rates of self-employed persons and employees, respectively, in trade are used as indicators.

6.6.6.3 Education, R&D, health, community services, et al. (code PR3)

NI provides data on teachers, medical practitioners, dentists, midwives and nurses working in the private sector for the census years in 1860-1930,[539] which is utilized in this study. For the census years 1940 and 1945, there is only data on self-employed; the estimate of employees in those two years is based on linear interpolation between the estimate of the linked PS-series for 1950 and NI for 1930. For the period 1850-1860, the assumption is that employment of those activities had the same growth rate between census years as town population. To interpolate between census years, an annual index of dentists and medical practitioners is used as an indicator for self-employed, and a weighted index of

[537] SOS, *Olycksfall i arbete*, for the period 1920-1950.
[538] SOS, *Olycksfall i arbete: 1910, 1911 och 1912.*
[539] Lindahl, Dahlgren and Kock, 1937: part two, pp. 524-525.

employees in trade, midwives, dentists and medical practitioners as an indicator for employees.[540]

6.6.6.4 Recreation (code PR4)

Krantz estimates the number of employed in recreation activities, but excludes many groups. A recalculation is, therefore, made in the present study of those activities.

According to the censuses, there were 25,150 employed in recreation (except for museums and libraries) in 1950 and 15,203 in 1930. Some of these should be located to the government services. Information from Statistics Sweden shows that 74 percent of total wages in recreation (classification 9400) were paid out in the private sector in 1950. Therefore, it is assumed that 74 percent of the 25,150 persons recorded in the census of 1950 belonged to the private sector. For 1930, the assumption is that 90 percent of persons engaged in recreation were part of the private sector. To arrive at the number of employed in those activities in the census years of 1940 and 1945, geometric interpolation is applied.

For the census years 1860-1930, the assumption is that the growth rate of persons employed in recreation was the same as the growth rate of artists and journalists,[541] and for the period 1850-1860 as the growth rate of artists.[542]

To interpolate between the census years, the number of self-employed persons and employees, respectively, in trade are used as indicators.

6.6.6.5 Other personal services (code PR5)

To estimate the number of employed in activities classified as "other services" (9520) by Statistics Sweden before the switch to the SNI 92[543] (or "other personal services (code PR5) in the present study) for the period 1850-1950, employment in laundry, dry cleaning, hair-dressing, photo services and funeral services is estimated.

Employment in laundry can be obtained from the population censuses for 1880-1950. Before 1880, the assumption is that the employment of the activity had the same growth rate between census years as town population.

Employment in dry cleaning is only presented in the population census of 1950, which puts it at 3,241 persons. The PS-estimates for earlier census years

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[540] The annual data on dentists, medical practitioners and midwives is presented in Krantz, 1991: pp. 49-51 and 120. The series of dentists goes back only to 1890, and for earlier years it is assumed in the present study that the number of dentists had the same growth rate as medical practitioners.

[541] This data can be obtained from Lindahl, Dahlgren and Kock, 1937: part two, p. 524.

[542] This data can be obtained from Krantz, 1991: pp. 103-104.

[543] See TABLE 3.1.

are pure guesstimates based on the assumption of a very fast growth of the activity.[544]

The population censuses present data on employment in photo services back to 1870. For 1870, the census records 201 persons in the activity. Furthermore, this study assumes that 40 persons were employed in the activity in 1860, and none in 1850.

Employment in hairdressing can be obtained from censuses back to 1910. The population censuses before 1910 put employment in hairdressing at a much lower level than later censuses, which can be explained by the fact that a smaller part of the actual employment in hairdressing was registered. According to the 1900 census, there were 304 employed in the activity; while according to the 1910 census this number increased to 2,927 persons ten year later – an almost a tenfold increase! Krantz estimates employment in hairdressing before that period, but that is a pure guesstimate, as he himself admits,[545] which most probably underestimates the size of the activity for earlier years. The growth rate of hairdressing between census years in the period 1870-1910 is in the present study, instead, assumed to have been the same as the growth rate of the recorded number of barbers and wig-makers according to a series presented in the official statistics of manufacturing and handicrafts.[546] For the period before 1870, the assumption is that employment in hairdressing had the same growth rate between census years as town population.

Funeral services are recorded in the censuses of enterprises and estimated to have employed 381 persons in 1930 and 929 in 1950.[547] The assumption of the present study is that the number of employed was 300 in 1920, 500 in 1940 and 600 in 1945. For the period before 1920, the assumption is that employment of funeral services had the same growth rate between census years as town population.[548]

Interpolation between census years for the total employment in "other personal services" (code PR5) is based on different indicators for different periods. A

[544] The employment in dry cleaning is estimated to have been 2,000 in 1945, 1,500 in 1940, 800 in 1930 and 200 in 1920. In the 1930 census of enterprises, dry-cleaning is included under the headline "dye works, dry cleaning, etc", for which employment is set to 2,952 persons. To assume that 800 of those were employed in dry-cleaning should be quite reasonable.

[545] Krantz, 1991: pp. 58-62.

[546] BiSOS, D), *Fabriker och manufacturer* for the years 1870-1895 and BiSOS, D), *Fabriker och handtverk* for the years 1896-1910. There is, however, a discontinuity between 1895 and 1896. For 1895, the number of barbers is estimated to have been 184, and in 1896 to have been 737. In the present study, it is assumed that the growth of the number of barbers between 1895 and 1896 was the same as the annual average in 1891-95 and 1896-1900.

[547] *1931 års företagsräkning*, 1935: pp. 115-116 and SOS, *1951 års företagsräkning*, 1955: p. 161.

[548] See footnote 527.

series of photographers from the official industrial accidents statistics is used for the period 1945-50 and persons employed in laundry and baths (from the same source) for the period 1920-1950.[549] For 1870-1910, the interpolation between census years is based on a series of barbers and wig-makers from the official statistics over manufacturing and handicrafts,[550] and for the periods 1850-70 and 1910-20 on the number of self-employed persons and employees in trade.

6.6.6.6 Non-government associations (code PR6)

To estimate the employment in non-government associations, census data on employment in religious activities outside the Swedish Church and non-religious associations is used.

In the 1910 census, employment in non-religious associations is estimated to just 86 persons, and no earlier data exist. This study puts employment in non-religious associations at half the number of the next census in the period 1880-1900, and none before 1880.

The census of 1860 puts the number of employed in religious activities outside the Swedish Church to just 13 persons. No data exist in the censuses before 1860, and it is, therefore, assumed to have been non-existent.

To interpolate between census years, data from the official industrial accidents statistics is used for the period 1920-1950[551] and geometric interpolation is applied for the period before.

6.6.6.7 Paid household services (code PR7)

Krantz's estimate of the number of employed in paid household services differs from Jungenfelt's. In the present study, Jungenfelt's figures are chosen since they take into account that many persons employed in household services were actually performing agricultural or other type of work, and are, therefore, lower than Krantz's estimate.[552] Jungenfelt's estimate is, in turn, based on NI, where it

[549] SOS, *Olycksfall i arbete*, for the years 1920 to 1950.
[550] See footnote 546.
[551] SOS, *Olycksfall i arbete*, for the years 1920 to 1950.
[552] Compare Jungenfelt, 1959: pp. 12 and 63 and Krantz, 1987b: pp. 21-26.

The method of Jungenfelt is, however, somewhat confusing. For the years before 1910, he deducts women servants from agriculture and classifies them into domestic work. He applies the same method for supporting female family members. He assumes that the proportion of supporting female family members working in agriculture and domestic work was constant for the period 1870-1930. In that case, all women servants should be considered part of paid domestic labour, and then the method of Krantz should be used and not the estimates of NI. But since Jungenfelt also includes more categories into agricultural labour, and since the extrapolation of the present study also tends to increase the number further, this effect is partly offset. In this respect, the PS-estimates of the agricultural workforce and paid domestic labour taken together are probably the most reasonable ones. Here, a much thorough investigation

is assumed that half of women servants in agriculture were occupied with agriculture and half were working with domestic tasks.[553] To extrapolate the series of paid household employees backward to the period 1850-1870, Krantz's estimate of the volume growth of these services[554] is used as an indicator.

6.6.7 Government services (code GS)

The PS-series of employment in the government services is entirely based on the data of Jungenfelt, which, in turn, is based on NI for the period 1870-1930. [555] The series of NI is a recalculation of the population censuses, whereby the estimated employment in private services is deducted from the activities to which government services belonged. Jungenfelt uses a similar method for the period 1930-50. For the years 1850-1870, the present enquiry assumes that the growth rate of employment in government services was the same as the volume growth rate of the wage part of government services, based on Krantz's data.[556]

6.6.8 Real estate (code RE)

Data on the employment in real estate can be obtained from the population censuses for the period 1940-1950, and the census of enterprises for 1930.[557] Between 1920 and 1930, this study assumes that the growth rate of employment in real estate was the same as the growth rate of employment in business services. For the period 1850-1920, the assumption is that the growth rate of real estate employment between census years was the same as the growth rate of town population.

To interpolate between the census years, a series from the official industrial accidents statistics on employment in larger real estate companies is used as an indicator for the period 1930-1950.[558] For the period 1850-1930, geometric interpolation is applied.

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would be needed, but it would probably not improve the overall aggregate estimates to any large extent.

[553] Lindahl, Dahlgren and Kock, 1937: part two, pp. 528-530.

[554] Krantz, 1987b.

[555] See Jungenfelt, 1959: pp. 64-66, and Lindahl, Dahlgren and Kock, 1937: part two, pp. 516-526 and 554-572.

[556] The deflators and wages can be found in Krantz, 1987a: p 56-64 and 175-182. This is not a completely accurate method since different occupations in Krantz's series are weighted differently depending on their wage rates, but a more thorough re-examination of the data would probably not add much at the aggregate level.

[557] *1931 års företagsräkning*, 1935: pp. 113-114.

[558] SOS, *Olycksfall i arbete*, for the years 1930 to 1950.

6.7 "Housewives" (code HW)

Unpaid domestic labour is not part of national accounts and is excluded in the calculations of GDP and employment.[559] But even if this work is not included in the concept of employment it is important to estimate the amount of unpaid work. If this type of work is not taken into account, statistical illusions may be generated. For example, if one activity previously dominated by unpaid work is transformed, and is taken over by paid labour, this may create the false impression of a rapid expansion of this activity.

How many persons should be included in the activity of unpaid domestic labour? The problem is that almost all persons perform unpaid domestic work. The best measure would, in this respect, be the number of hours spent on different types of work, paid as well as unpaid. However, hours worked in unpaid household services are very difficult to estimate, especially for earlier periods, and no attempt has been made in the present study to do that.

The present study instead restricts itself to estimate how many women were "housewives" instead of being in paid work, and how the size of this group has changed over time. This is rather a dummy category to take into account the difference in the rate of participation of men and women in employment and the fact that this difference mostly can be explained by the existence of so-called "housewives". For simplicity, it is assumed that the number of "housewives" after 1950 was equivalent to the difference between men and women in paid work. Statistics Sweden provides annual data from 1970.[560] Between 1950 and 1970, the censuses are used.[561] For the census years in the period 1850-1950, Krantz's data on the number of wives working at home,[562] which roughly corresponds to the difference between the number of employed men and women, is used for backward projection. For the years between censuses, geometric interpolation is applied. Krantz also provides data on farmwives and non-farmwives working at home.

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[559] See section 3.2.4. In *System of National Accounts 1993*, 1993: p. 125, it is argued:

"According to International Labour Organisation (ILO) guidelines, economically active persons are persons engaged in production included within the boundary of production of the System. If that boundary were to be extended to include the production of own-account household services, virtually the whole adult population would be economically active and unemployment eliminated. In practice, it would be necessary to revert to the existing boundary of production in the System, if only to obtain meaningful employment statistics."

[560] *Sveriges statistiska databaser*, online at http://ww.scb.se (021001).

[561] *Folkräkningen den 31 december 1950*, part VI, 1955; *Folk- och bostadsräkningen den 1 november 1960*, part IX, 1965; *Folk- och bostadsräkningen den 1 november 1965*, part IV, 1967; and *Folk- och bostadsräkningen 1970*, part 5, 1973.

[562] Krantz, 1987: pp. 72, 84 and 90.

The farmwives actually performed quite a large amount of agricultural work, but are excluded from the employed in the official statistics.[563] Anita Nyberg argues that farmwives should be included in employment, and this would change our picture of how the rate of participation of married women in the labour force has changed over time:

> Farmwives on small farms in northern Sweden devoted more than 1,700 hours per year to farmwork. Today we would call that a full-time job.
> According to the 1930 census (FR 1930), eight percent of married women were economically active. But if one includes all farmwives and part-time women workers listed in the 1935-36 census (SFR 1935/6) the figure is closer to forty percent. [564]

This thesis follows the method of Statistics Sweden. However, Anita Nyberg makes an important point. In the present study, farmwives are included in the category of "housewives", which are not part of official employment. It may also be suspected that many "housewives" outside of agriculture to a large extent also performed other types of work than household services.[565]

6.8 Labour income and surplus

As explained in section 3.3.1.3, in national accounts, gross value added is divided between operating surplus, mixed income, wages and salaries (including social benefits), and consumption of fixed assets. In this study, gross value added is divided between gross surplus and total labour income. The latter includes compensation to employees and to the self-employed for their labour input. Gross surplus is simply defined as gross value added less labour income. The gross surplus also includes consumption of fixed assets. If consumption of fixed assets is deducted we get net surplus.

The surplus share is defined as the ratio of the surplus to the value added. The labour income share is similarly defined as the ratio of labour income to value added. The sum of the two shares equals 1.

6.8.1 Labour income

For the period 1950-2000, the PS-estimates of wages and salaries (including social benefits) are based on the different series of Statistics Sweden.[566]

To extrapolate wages and salaries backward to the period prior to 1950, the present study uses the series of employees and the estimated average wage rate in

[563] See footnote 506 on page 126.
[564] Nyberg, 1989: p. 279.
[565] See also Frangeur, 1998: pp. 40-71.
[566] The sources for these series are the same as for the different production series. See footnote 299 on page 75.

different activities as indicators.[567] When no data on average wage rate for an activity is known, a substitute is used based on the movement in the wage rate in related activities. The following wage rate data are used for the purpose:

- For agriculture and ancillaries, manufacturing and handicrafts, and transport and communications: Jungenfelt's estimates of the average wage rate of those activities for the period 1870-1950, and the day rate for a male agricultural worker for 1850-70 according to Lennart Jörberg.[568]
- For building and construction: Jungenfelt's estimate of the average wage rate of building and construction for the period 1930-50, his estimate of the average wage rate in manufacturing and handicrafts for 1870-1930, and the day rate for a male agricultural worker for 1850-70.
- For banking and finance: Jungenfelt's estimate of the average wage rate of banking and finance for the period 1910-40 (the period 1940-50 is unfortunately missing), his estimate of the average wage rate within administration in manufacturing for 1870-1910 and 1940-50, and Krantz's deflator of "other private services"[569] for 1850-1870.
- For trade: Jungenfelt's estimate of the average wage rate in trade for the period 1910-50, and Krantz's deflator of "other private services" for 1850-1910.
- For real estate: Krantz's deflator of "other private services" for the period 1850-1950.

The above series of wage rates exclude social benefits for employees, which the estimates of Statistics Sweden include for the period 1950-2000. According to Jungenfelt, the cost of employers for different pension funds was roughly two percent of total wages in 1948, and almost non-existent up to the second half of the 1930s. Jungenfelt thinks this is insignificant, and hence does not include pension funds in his calculation of wage rates.[570] To take into account the small effect of a growing ratio between pension funds and wages in this period, the

[567] Peter Vikström's *The Big Picture* is a recent study over wages and wage shares. Vikström (2002: pp. 64-71) makes some corrections to Jungenfelt's series, for instance to take into account the upgrading of employment in manufacturing and handicrafts by Schön in the period 1870 to 1930 (see section 6.6.2). The present enquiry has not used Peter Vikström's newer data, since wages and labour incomes of self-employed are calculated directly from the employment series and the estimated wage rates.

[568] Jörberg, 1972: Vol. 1, p. 713. Unfortunately, for the period 1800 to 1870, there is not much empirical data on the development of wage rates outside of agriculture. Schön investigates whether a series of the wage rate in agriculture could be applied on manufacturing and handicrafts. He comes to the conclusion that in the long run, there is a correlation between wage rates in agriculture and production in some handicrafts (see Schön, 1988: pp. 104-105).

[569] See footnote 355 on page 90

[570] Jungenfelt, 1966: p. 217-218.

average wage rates used for extrapolation discussed above are assumed to have grown an additional 0.1 percent per year in the period 1935-1950.

For government services and Non-Profit Institutions Serving Households, the estimates for wages and salaries (including social benefits) are the same as for net value added.

Compensation for the labour input of self-employed is calculated using the wage rate of employees as an indicator. For the period 1950-2000, the proportion between the imputed labour income of self-employed and wages and salaries (including social benefits) earned by employees is assumed to be the same as the proportion between hours worked by self-employed and employees. The ratio of the number of self-employed persons to employees, together with aggregate wages, is used to project compensation of labour input of self-employed backward to the period 1850-1950.[571]

Jungenfelt also calculates shares of labour income in value added using a similar method as in the present thesis.[572] Since this study presents new series of wages and salaries (including social benefits), number of self-employed persons and employees, a new series is also constructed for labour income.

For reproductive services of market producers and business services, the assumption of the present study is that the ratio of gross surplus to labour income was the same for the whole period 1850-1950, since for those activities the value added is itself calculated from the movement of employment. The wage part of reproductive services of market producers and business services is then separated

[571] For agriculture and ancillaries, such procedure would imply that the labour income was around 25 percent higher than the net value added for the period 1960-2000. For those activities, a maximum limit is, instead, set on the labour income, which is equalled to the net value added. Since the employment in agriculture and ancillaries was dominated by self-employed in the latter half of the 20th century, it seems to be a reasonable assumption that depressed incomes resulted in a depressed labour income for self-employed rather than a negative net surplus. This probably underestimates the level of labour income for self-employed for the period 1960-2000, which, in turn, most likely can be explained by an underestimation of the value added for agriculture and ancillaries. In the newer national accounts, the gross output and value added of agriculture and ancillaries are upgraded significantly (for 1994, the SCB-series of 1994-2000 puts the gross output at a 22 percent higher level and value added at a 29 percent higher level than the SCB-series of 1980-94), probably to take into account of unreported incomes.

As discussed in section 6.7, the work of farmwives are not included in the employment series, and, henceforth, is also excluded in the calculations of labour income. This may put the labour income at a too low level especially for earlier years, although it could be partly balanced by the fact that farm owners and their employees also performed other types of work than farm work.

Against this background, a more in-depth investigation on agriculture and ancillaries (for example, based on hours worked) would be needed.

[572] Jungenfelt, 1966: p. 251-255. See also Aulin-Ahmavaara, 2003: p. 127.

Within the Marxist tradition Duménil and Lévy (1999a [first published 1990]: p. 5) apply a similar method when analysing the American economy, where "profits are defined in a very broad sense as the excess of private Net National Product over the remuneration of labor, employees and self-employed".

from labour income using the ratio of employees to self-employed as an indicator, which is benchmarked to the estimate in 1950. No corrections are made to include the effect of social benefits.

6.8.2 Surplus and surplus share

In this enquiry, the gross surplus is computed as the gross value at basic prices less the labour income. Generally, incomes are estimated at factor prices.[573] No attempt has been made in the present study to estimate non-commodity indirect taxes and subsidies or value added at factor costs. This implies that the gross surplus includes the excess of non-commodity related taxes over non-commodity related subsidies, though it does exclude the excess of commodity related taxes over commodity related subsidies. Nonetheless, the advantage of this computation is that it connects the labour income and surplus shares to the PS-series of nominal and volume value added since the latter are calculated in basic prices as well.

For government services, the gross surplus is defined as the consumption of fixed assets and the net surplus is set to zero.[574] To include the government services in the measurement of surplus is somewhat problematic if we want the surplus to be an indicator of profit levels.[575] Government services should therefore be excluded in an analysis of the development of the surplus share.

No net surplus arises from paid domestic labour (except when it is employed by larger firms) or from non-government organisations, but these activities are not profit-oriented.[576]

Since much of trade and building and construction was performed outside the paid sector in earlier periods, the surplus share of those activities was larger the further backward in time one looks, if the method of the present study is applied. The surplus in building and construction largely consisted of the dwellings that people built for their own use. Much of the surplus in those activities should rather be attributed to other activities, mostly to agriculture, but also to manufacturing and handicrafts. However, on the aggregate level, taken the

[573] See section 3.3.1.3.

[574] See also *System of National Accounts 1993*, 1993: p. 162.

[575] One argument to include government services is that investment levels could be compared to the total surplus. The problem is that within government services, investments are not financed from the gross surplus (i.e. consumption of fixed assets) in the same way as it tends to be in the private sector, but through taxations. Hence, investments of government services can be many times larger than the gross surplus.

[576] See footnote 574.

private sector as a whole, the surplus share calculated in this way should have some validity.[577]

6.8.3 Labour income and surplus in purchasers' proxy prices

In this study, labour income and gross and net surplus are also calculated in a kind of purchasers' proxy prices in order to be made comparable to stocks of fixed assets, investment and value added in purchasers' prices.[578]

To estimate labour income and net surplus in purchasers' proxy prices, the difference between the net value added at purchasers' and at basic prices is distributed between the labour income (at factor costs) and net surplus (at basic values) in proportion to their respective levels. Since consumption of fixed assets is estimated in purchasers' prices, nothing is changed to that amount, and the gross surplus in purchasers' proxy prices is equalled to the sum of the computed net surplus in purchasers' proxy prices and consumption of fixed assets.

This procedure to estimate purchasers' proxy prices implies that the ratio of net surplus to labour income expressed in basic values equals the ratio expressed in purchasers' values. However, this equality does not hold for the ratio of gross surplus to labour income.

6.9 Summary

This chapter focuses on the construction of series of employment, wages and salaries (including social benefits), imputed labour income of self employed and surplus for the period 1850-2000 and hours worked for the period 1950-2000.

For the period 1960-2000, the PS-series of employment and hours worked are based on the material of Statistics Sweden. For the 1950s no direct annual data exist for employment, and the PS-series of employment is based on a series presented by Statistics Sweden over hours worked for that period.

No estimates are made of hours worked for the period prior to 1950. For the period 1870-1950 the series of employment is mainly based on Karl Jungenfelt's study, which is supplemented with some primary sources. For the period 1850-1870, a completely new series of employment is constructed, based on primary sources. The series of employment in building and construction, and in wholesale and retail trade, for the period prior to 1950 only include persons who were performing this type of work as their main occupation, which are, henceforth, not

[577] Reservation must, however, be made that the inclusion of some excluded groups that contributed to the value added included in GDP could imply that the calculated surplus share also at an aggregate level would be lowered, especially for earlier times.

[578] See sections 3.3.4 and 5.9.

comparable with the production series for these activities (for example, if a series of labour productivity would be calculated).

The estimates of wages and salaries (including social benefits) are based on the material of Statistics Sweden for the period 1950-2000, and on the movements of employment and wage rates for the period 1850-1950. The imputed labour income of self-employed is calculated utilizing the series of hours worked and employment for self-employed and the wage rate of employees as indicators. The surplus is simply computed as the value added less labour income of both employees and self-employed.

7 Long-term growth and its composition

7.1 Introduction

The focus of this chapter is on long-term fluctuations and trends in the economic development based on changes in GDP, GDP per capita[579] and employment and their compositions. In section 7.2, an overview of the structure of the Swedish economy for the years 1800, 1850, 1900, 1950 and 2000 is given. Section 7.3 looks at the process of industrialisation by investigating how the composition of employment has changed over time. Section 7.4 attempts to analyse the long-term pattern of GDP per capita growth in terms of "long upswings" and "long downswings". Section 7.5 compares various estimates of aggregate production.

Unless otherwise stated, the figures are based on the data material of the present study. The analysis in this thesis of aggregate production is mainly based on the calculated GDP series by activity, deflated by the Fisher annual chain index and corrected for long-term changes in the share of value added in gross output.[580] Unless otherwise stated, the GDP-estimate is referring to this volume index.

7.2 GDP per capita 1800, 1850, 1900, 1950 and 2000

This section gives an overview of GDP per capita every 50 years in the period 1800 to 2000.[581] For this purpose, GDP per capita and its growth rate over time is decomposed, first into the contribution of activities and subsequently into the contribution of expenditures.

7.2.1 GDP per capita by activity in basic prices

Between 1800 and 2000, GDP by activity has grown 98-fold in volume terms. Since population has increased four times in that period, this implies that GDP per capita by activity has increased 26-fold.

On average, GDP by activity increased by 2.3 percent per year in the period 1800-2000, population by 0.7 percent per year, and GDP per capita by 1.6

[579] The per capita and population figures are based on estimates of population during the whole year. For this purpose a geometric average is computed of the population at the end of the year and at the end of the preceding year. Population figures (at the end of the year) are obtained from *Statistiska databaser*, online at http://www.scb.se (030601).

[580] See Appendix 3.1.

[581] When comparing individual years, there is, however, a risk that the averages are influenced by single deviating values, which is why Olle Krantz (2001: p. 9) prefers to compare growth rates between five-year averages.

percent per year. Population growth explains 29 percent and GDP per capita growth the remaining 71 percent of the increase in GDP.[582]

In current basic prices, GDP per capita was 204,450 SEK in 2000, but only 47 SEK in 1800 (see TABLE 7.2). In current prices, GDP per capita has increased more than 4000-fold! Most of this nominal increase can be explained by a significant increase in the general price level.

In constant prices (the reference year being 2000), GDP per capita was 7,958 SEK in 1800 (see TABLE 7.1). By 1850, it had increased by over 20 percent to 10,059 SEK. Since 1850, the growth of GDP per capita has accelerated significantly. GDP per capita doubled in the second half of the 19th century, and increased almost ten-fold during the 20th century.

Long-term comparisons are quite problematic. A question could be asked: if GDP per capita in 1800 was 1/26 of the level in 2000, how did people survive in 1800? For instance, people could not have eaten 1/26 of what they eat today. To answer this question it is important to look at the composition of GDP.

As shown in TABLE 7.2, the economy in the first half of the 19th century was dominated by agricultural production. The gross value added of agriculture and ancillaries stood for nearly 50 percent of GDP both in 1800 and 1850, while in 2000 this proportion had fallen to just two percent.

The share of manufacturing and handicrafts in GDP increased steadily up to the 1950s, from 11 percent in 1800 to at most 36 percent in 1951, and stabilised at around 25 percent in the last two decades of the 20th century.

The share of government services in GDP was higher in 1800 than in 1850, but this was rather due to higher relative wage rates within government services in the early 19th century.[583] The per capita volume of government services was at a lower level in 1800 compared to 1850. The large expansion of government services came between the 1930s and the end of 1970s.

As shown in TABLE 7.1, in constant prices the per capita gross value added of agriculture and ancillaries was about the same in 2000 as in the first half of the 20th century. Between 1950 and 2000, the gross value added per capita has even decreased quite significantly. The decrease can almost entirely be explained by a decrease in the value added share in gross output of agriculture and ancillaries.

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[582] In percent of total growth expressed logarithmically. The average annual volume relative is calculated as the geometric average of all annual volume relatives, which gives the same result as the arithmetic average of all annual growth figures expressed logarithmically.

[583] According to Tom Söderberg (1972: p. 170), the higher and better-paid circles in the state administration did not increase with the population growth during the course of the first half of the 19th century. After the wars in the early 19th century, Sweden experienced an uninterrupted peace. There was therefore no need to expand the number of officers in the army. The number of priests was also quite stable. The groups that expanded in the government sectors were mostly low paid.

The per capita gross output of agriculture and ancillaries was in constant prices roughly at the same level in 2000 as in 1950, and about twice as large in 2000 as in the first half of the 19th century.

There has also been a steady and significant increase through time in the per capita volume value of the gross output of food products industries (which belongs to manufacturing and not agriculture). Between 1800 and 2000, it has increased more than ten-fold.

As can be noted from TABLE 7.1, adding the constant values added of the different activities gives a larger figure than the total GDP per capita for all years but 2000. For 1800, the sum is 13,342 SEK, almost twice as much as the actual figure. The non-additivity is a consequence of the changing base year when applying the Fisher chain index.[584] At the most disaggregated level (of individual goods and services) the sum of all values added of different activities would be GDP per capita directly expressed in the prices of 2000. That figure would probably amount to between 15,000 and 20,000 SEK for 1800, i.e. slightly less than a tenth of the volume GDP per capita in 2000.

Comparing the GDP per capita in one year in the prices of a year further back in time generally gives the impression of a high volume growth rate. This can be explained by the fact that some products have a very high productivity growth rate and, therefore, have a higher weight in the current prices of the earlier year (if such prices existed at all; to value the production of computers in 2000 in the prices of 1800 is impossible, because no prices of computers existed in 1800). Comparing GDP per capita in the later year's prices have the opposite effect of giving the impression of a lower volume growth rate between the two points in time. This is precisely the Gerschenkron effect as discussed in section 3.4.2.

TABLE 7.3 presents the average annual per capita growth of the values added of different types of activities. The contribution to the overall GDP per capita growth from one type of activities depends not only on the per capita growth of those activities, but also on the weight of those activities in total economy. TABLE 7.4 presents the contribution of various types of activities to GDP per capita growth.[585]

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[584] To avoid misuse it is common to publish the data of non-additive material in the form of index numbers, and not in price terms as presented in TABLE 7.1. For a further discussion, see *System of National Accounts 1993*: p. 389-380.

[585] The calculation of the (annual) contribution of a type of activities or an expenditure to overall GDP per capita growth is based on the difference between actual GDP per capita growth and how large GDP per capita growth would have been if the type of activities or expenditure in question would have experienced zero per capita growth. This method also leads to a residual, which is distributed between the different types of activities or expenditures according to their calculated contribution to overall GDP per capita growth. GDP per capita growth (in percent) can then be expressed as follows (where "i" stands for a type of activities or an expenditure):

In the first half of the 19th century, agriculture and ancillaries contributed to 39 percent of total GDP per capita growth, although the per capita volume value added of agriculture and ancillaries only grew by 0.3 percent per annum (on average). Such large contribution is explained by the large weight (nearly 50 percent) of agriculture and ancillaries in total economy.

Nevertheless, most of the per capita GDP growth in 1800-1850 came from activities outside of agriculture and ancillaries. Manufacturing and handicrafts, transport and communication, and circulation, all had a per capita growth of around one percent per year, twice the growth rate of the aggregate economy. These three types of activities together contributed to 56 percent of GDP per capita growth in 1800-1850. Other types of activities grew insignificantly and did not contribute much to aggregate growth.

An important contribution came from transport and communication, which, in turn, came almost entirely from sea transport. Between the late 1830s and mid-1850s the per capita volume value added of sea transports doubled. This was connected to the growing importance of foreign trade.

The data from SHNA, on which the present enquiry is based, is the first to present aggregate production series for the first half of the 19th century, which shows a modest GDP per capita growth in this period.[586] Jan Bohlin even concludes that the "research by Lennart Schön and others has indicated that the industrialisation process and economic growth were already well underway in the first half of the nineteenth century", and that this overturns an older interpretation that "the Swedish industrialisation process took off in the latter half of the nineteenth century, stimulated by export demand".[587] However, it must be considered that, for example, manufacturing and handicrafts only contributed to 0.1 percentage points to the average annual per capita GDP growth in 1800-1850.[588]

There is also a risk that the data overestimates the early GDP growth since many activities outside the market are unrecorded.[589] Neither do we know much

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$$\text{GDP per capita growth} = \left(\prod_{i} \left(\left(\text{Contribution of i in percent} \right) / 100 + 1 \right) \right) * 100 - 100$$

[586] See Schön, 2000a: pp. 57-61 and Krantz, 2001.

[587] Bohlin, 2003: pp. 73-74.

[588] On the basis of the data of SHNA, Olle Krantz (2001: p. 8) draws the following conclusion:

"Another observations is that in the case of GDP per capita the accelerations starts around the middle of the 19th century, and before that there is more or less stagnation."

[589] For example, home craft production is not included in the SHNA-series of manufacturing and handicrafts. According to Lennart Schön (1988: p. 14) home craft production stood for around one third of output in manufacturing and handicrafts during the 1820s as recorded by SHNA, but only for one sixth during the 1860s.

about the development of GDP per capita during the 18th century,[590] or whether the level of GDP per capita in 1850 had been reached in some individual years in the period before 1800.[591] According to Carl-Johan Gadd, the period 1725-1770 experienced improvements in living standards, while the crisis around 1770 induced a period of decreasing living standards that lasted up to 1810.[592] This is also supported by the PS-data showing that GDP per capita fell slightly in the period 1800-1810.

In the second half of the 19th century, the average GDP per capita growth accelerated to 1.6 percent per year. The most important contribution to this growth came from manufacturing and handicrafts, which on an average had a per capita growth rate of 3.4 percent per year, a higher growth rate even than the average during the 20th century. Industrial goods production (i.e. manufacturing and handicrafts and building and construction) accounted for 40 percent of the GDP per capita growth, while different industry-related services (transport and communication, circulation, and real estate) accounted for another 40 percent of the aggregate per capita growth. Although agriculture and ancillaries continued to grow, the contribution to GDP per capita growth from that type of activities now fell to only 17 percent.

During the 20th century, agriculture and ancillaries stopped contributing to GDP per capita growth. The per capita growth of the value added of agriculture and ancillaries was even negative in the second half of the 20th century, but as explained above this can be explained by the decreasing share of value added in gross output of that type of activities. The contribution to GDP per capita growth from manufacturing and handicrafts was quite stable throughout the century. The importance of different services to aggregate growth has grown.

[590] According to data presented by Lennart Jörberg (1972, Vol. II, p. 337), the real wage rate of an agricultural worker was higher in 1850 than in 1800, but lower in 1850 than in 1740. Of course, part of these long-term changes in the real wage rate can probably also be explained by changes in the surplus share.

According to Mats Morell (1997: pp. 215-216), the per capita consumption of calories was lower in the 18th century than in the 16th century.

[591] For example, Janken Myrdal and Johan Söderberg (1991: pp. 114 and 119) show that there were quite sharp fluctuations in harvests in the period 1539-1600 in Sweden. 1592 was a very good year with a total harvest that was 45 percent above the "normal harvest" for the period.

[592] Gadd, 2000: pp. 341-347.

TABLE 7.1: *Gross value added per capita (in SEK) of different types of activities in constant basic prices (chain-linked series, reference year 2000).*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total GDP per capita
1800	2784	289	1214	78	241	3276	4189	1271	7958
1850	3258	444	1290	142	400	3336	4725	1273	10059
1900	4307	2333	2263	647	1374	3817	5935	4443	21777
1950	4505	12489	5227	3458	8194	8709	15191	10808	66819
2000	3161	51153	9304	14724	43852	16715	41688	23852	204450

Sources: Calculations based on the PS-data. See also chapter 4 and footnote 579 (on page 147).
Comment: Because of the effect of the deflation method, GDP per capita is only additive for the year 2000.

TABLE 7.2: *The nominal ratios (in percent) of gross value added of different types of activities to GDP, and GDP per capita in current basic prices (in SEK).*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP	Nominal GDP per capita
1800	47	11	5	6	4	13	10	4	100	47
1850	46	13	6	6	8	9	6	5	100	127
1900	31	23	7	7	11	6	5	10	100	410
1950	14	33	8	8	12	6	10	9	100	4143
2000	2	25	5	7	21	8	20	12	100	204450

Sources: Calculations based on the PS-data. See also chapter 4 and footnote 579 (on page 147).

TABLE 7.3: *Annual average per capita volume value added growth (in percent) of different types of activities (based on basic values).*

Period	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP per capita
1800-1850	0.3	0.9	0.1	1.2	1.0	0.0	0.2	0.0	0.5
1850-1900	0.6	3.4	1.1	3.1	2.5	0.3	0.5	2.5	1.6
1900-1950	0.1	3.4	1.7	3.4	3.6	1.7	1.9	1.8	2.3
1950-2000	-0.7	2.9	1.2	2.9	3.4	1.3	2.0	1.6	2.3

Sources: Calculations based on the PS-data. See also chapter 4 and footnote 579 (on page 147).

TABLE 7.4: *Contribution of different types of activities to average annual volume growth of GDP per capita, in percentage point contribution to GDP per capita growth, and in percent share of total GDP per capita growth (in parenthesis).*

Period	Agri-cul-ture and ancil-laries	Manu-factu-ring and handi-crafts	Buil-ding and con-struc-tion	Trans-port and com-muni-cation	Circu-lation	Priva-te re-pro-ducti-ve ser-vices	Go-vern-ment servi-ces	Real estate	GDP per capita
1800-1850	0.2 (39)	0.1 (23)	0 (3)	0.1 (19)	0.1 (14)	0 (1)	0 (2)	0 (0)	0.5 (100)
1850-1900	0.3 (17)	0.6 (36)	0.1 (4)	0.2 (13)	0.2 (14)	0 (1)	0 (2)	0.2 (13)	1.6 (100)
1900-1950	0 (2)	0.9 (39)	0.2 (7)	0.3 (12)	0.4 (19)	0.1 (5)	0.1 (7)	0.2 (9)	2.3 (100)
1950-2000	0 (-2)	0.9 (37)	0.1 (5)	0.2 (10)	0.5 (24)	0.1 (4)	0.3 (15)	0.2 (7)	2.3 (100)

Sources: Calculations based on the PS-data. See also chapter 4, footnote 579 (on page 147) and footnote 585 (on page 149).

7.2.2 GDP per capita by expenditure in purchasers' prices

TABLE 7.5 presents GDP per capita in constant purchasers' prices by expenditure, which between 1800 and 2000 increased 26-fold. The total increase of volume GDP per capita is somewhat larger expressed in purchasers' prices than in basic prices.[593] TABLE 7.6 presents the nominal ratios (in percent) of different expenditures to GDP.

The per capita volume of export has increased most significantly among the different expenditures, and per capita import has followed this increase. Between 1800 and 2000, the per capita volume of export increased more than 300-fold. The per capita volume of investment increased nearly 100-fold.

In the first half of the 19th century, the ratio of investment to GDP was on average 5 percent, and the export/GDP ratio and the import/GDP ratio stood both at around 11-12 percent. Private final consumption was at around 85 percent of GDP. These ratios did not change much until the third quarter of the 19th century. During the 20th century, the investment ratio was on average 18 percent, and the export/GDP ratio and import/GDP ratio stood both at around 24 percent. Since government final consumption has increased significantly in the second half of the 20th century, private final consumption has decreased to a level slightly above 50 percent of GDP in late 20th century. During the 1990s, the importance of

[593] This can probably be explained by the fact that GDP in purchaser prices give a slightly lower weight to the value added of government services, which have a lower productivity growth (by construction) than other activities.

foreign trade increased even further. Export accounted for nearly half of GDP in 2000.

TABLE 7.5: *The per capita value of different expenditures and GDP per capita (SEK) in constant purchasers' prices (chain-linked series, reference year 2000).*

Year	Private final consumption	Government final consumption	Investment	Export	Import	GDP per capita
1800	5897	2794	468	302	268	8598
1850	8051	3038	658	400	467	11218
1900	19102	5655	2818	2309	3413	25544
1950	51184	16887	10457	8612	10161	74223
2000	120531	61061	33439	108575	96680	226926

Comment: The relation (per capita) GDP = C + G + I + X – IM only holds for 2000 because of the effect of the deflation method.
Sources: Calculations based on the PS-data. See also chapter 5 and footnote 579 (on page 147).

TABLE 7.6: *The nominal ratios (in percent) of different expenditures to GDP, and GDP per capita in current purchasers' prices (last column).*

Year	Private final consumption	Government final consumption	Investment	Export	Import	GDP	Nominal GDP/cap. (SEK)
1800	83	12	5	13	13	100	49
1850	86	7	7	11	12	100	133
1900	80	8	16	23	26	100	439
1950	68	13	19	22	22	100	4538
2000	53	27	15	48	43	100	226926

Comment: The relation (in percent) GDP = C + G + I + X – IM holds for all years.
Sources: Calculations based on the PS-data. See also chapter 5 and footnote 579 (on page 147).

7.3 Towards a post-industrial society?

Currently, there is an ongoing debate concerning the growth of the service sector, the spread of ICT-technology, and the rise of a so-called post-industrial, informational or service society.[594] The new society is claimed to be a new economic paradigm that functions according to a new economic logic, in the same way as the transformation from an agrarian to an industrial society also implied a change in the economic logic. Ideas of a post-industrial society can be

[594] Recent contributions to the subject are, for example, Magnusson, 1999, Castells, 2000a, Castells, 2000b, Fossen, 2000, Smith, 2000, Hardt and Negri, 2001, and May, 2002. Webster, 2002 provides a good overview of different theories of the so-called information society.

found already in, for example, Daniel Bell's book *The coming of post-industrial society* published in 1973.[595]

Yet, to declare the death of industrial society and the type of social relations pertaining to it would be entirely premature. It is, in fact, not completely clear what a supposed service, informational or knowledge-based society entails. Furthermore, the terms "industry", "industrial" and "industrialisation" are used quite differently by various authors.

Longman Dictionary of Contemporary English[596] defines industry, on the one hand, as "the production of goods for sale, esp. in factories, or of materials that can be used in the production of goods", which is conceptually related to manufacturing. This is also the meaning attached to the Swedish word "industri". But the *Longman Dictionary* also gives another, wider, meaning to industry, which is the one commonly used in Anglo-Saxon countries, as "a particular branch or industry or trade, usu. employing large numbers of people and using machinery and/or modern methods", i.e. as contrasted to small-scale production.

These two meanings of "industry" are of course related. Large-scale production, especially in the form of the factory system, first emerged with and was partly restricted to manufacturing. The process of industrialisation can be seen *both* as a change in social organisation and in the material and technical foundation of production.[597] With the spread of industrial methods outside of manufacturing it is maybe more relevant to separate between the two notions. But as noted by Chris Freeman and Luc Soete in their book *The Economics of Industrial Innovation*:

> In essence… ICTs are making services more tradeable and more like manufacturing, leading to a further convergence of industrial and service activities. [598]

Lars Magnusson argues that instead of a transition to an "information economy" or a network society, it is more viable to speak of a third industrial revolution following the first industrial revolution connected to the transition from agriculture society to the factory system, and the second industrial revolution connected to the rise of mass production.[599]

Lennart Schön discusses three different definitions of the term "service society": 1) that the volume of production and consumption are dominated by

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[595] Bell, 1973.
[596] *Longman Dictionary of Contemporary English*, 1987: p. 535.
[597] Datta, 1986: p. 20.
[598] Freeman and Soete, 1997: p. 404.
[599] Magnusson, 1999 and 2000.

services, 2) that a majority of employed work in the service sector and 3) that the dynamic force within economic development comes from services.[600]

Schön investigates the share of services in GDP expressed in constant prices (in accordance with his first definition of a service society) and comes to the conclusion that the share of services excluding unpaid household services has been constant over the last 200 years. But if unpaid household services would be included, then the share has decreased significantly through time.[601] A problem with Schön's analysis is the measure in constant prices. Since the deflator of services has increased slower than the deflator of goods production, a constant price estimate of the ratio of value added of services to GDP tend to give overestimated figures for earlier times, in comparison to ratios expressed in current prices. An investigation based on value added in current prices, as in section 7.2.1, is also problematic considering the difficulties to price the services of unpaid domestic labour and that many paid services (for example, government services and paid domestic services) are underestimated according to the method applied by national accounts.[602]

In my opinion, the second definition of the service society suggested by Schön is probably the most suitable one for operationalisation (although the third definition could be more relevant from a theoretical perspective), and this section mainly relates to it. Section 7.3.1 investigates the structure of employment excluding "housewives", while section 7.3.2 examines the structure of labourers including "housewives".

7.3.1 The composition of employment excluding "housewives"

TABLE 7.7 presents the share of different activities in total employment excluding unpaid household services.

In the year 2000, industrial goods production – defined as manufacturing, mining, handicrafts, repairs, provision of water and energy, building and construction (codes MH and BC) – accounted for 26 percent of total employment, which was at the same level as in 1905. The industrial goods production so defined never encompassed the majority of occupied persons. At the peak in 1965 those activities accounted for 42 percent of the employed.

The rate of decline of the industrial goods production has slowed down in the 1990s, and it could even be a matter of definition if those activities continued declining in this decade. For instance, if computer consulting and technical support, which grew rapidly during the 1990, would be included into

[600] Schön, 2000a: pp. 455-463.
[601] Schön, 2000a: pp. 456-458.
[602] See section 3.2 for a further discussion.

manufacturing, the share of industrial goods production in employment would be roughly the same throughout the 1990s.

Industrial goods production here is principally defined as non-agricultural goods production. Industrial activities as such could, however, be defined broader.

Services are quite diverse types of activities and the borderline between goods production and services, and different kinds of services, is not written in stone. They constitute a kind of residual category defined as those activities that are not goods production.[603]

The most generally used, and broadest, definition of services as distinct from goods production is: "those activities (sectors) where output is essentially consumed when produced".[604] Services are in this respect distinguished from goods production, which, in contrast, results in materialised products that can be stored and accumulated for a period of time.

There are, however, many problematic aspects with this definition of services.[605]

For instance, are repairs or the supply of water or energy immediate consumption?

Does not goods transport involve a processing of material products, of adding geographic location to them, rather than their immediate consumption? Still, in all statistics goods transport is classified as a service. If we consider goods transport as immediate consumption, then why not do the same with all goods production, as all processing involves immediate consumption of the unprocessed materials?

Some services could actually be stored, are not immediately consumed and can have a longer storage time than most goods, which is the case with for instance information generation.

Some services have more in common with goods production than with other types of services. Those services could be viewed, in one way or another, as outgrowths of industry or goods-production itself.

In this dissertation, a distinction is made between industry- or goods-related services and reproductive services.[606] The basis for this distinction is the object matter of the services. Reproductive services[607] have the individual human life, social relations and collective human capabilities (as knowledge) as the object matter, while industry- or goods-related services have the function of serving

[603] See, for example, Peneder, Kaniovski and Dachs, 2003: p. 50.
[604] Freeman & Soete, 1997: p 402-403.
[605] See, for example, Furuåker, 1995 and Gadrey, 2000.
[606] See Appendix 3.2.
[607] See, for example, Vogel, 2000: p. 167.

industries rather than individuals or society at large, and are therefore quite closely related to goods-production.

Industry-related services here include transport and communication, wholesale and retail trade, finance, insurances, real estate and business services (codes TC, CC and RE). All government services are for simplicity classified as reproductive services. Private reproductive services include: restaurants and hotels (code PR1); sanitary services and sewage plants (code PR2); education, R&D, health, community services, et al. (code PR3); recreation (code PR4); laundry, photography services, hairdressing and other personal services (code PR5); non-government associations (code PR6); and paid household services (code PR7). Cleaning, sewage disposal and hotels and restaurants partly involve the processing of dead material objects, but have a common denominator of being activities also performed by domestic labourers. Together, industry-related services and industrial goods production are labelled as industrial activities, as distinguished from agriculture and ancillaries on the one hand and reproductive services on the other hand. Gunnar Eliasson similarly distinguishes between direct and goods-related services, although the services he defines as goods-related are not the same as in the present study.[608]

One important explanation of the growth of the service sector is the tendency towards outsourcing, connected to the rise of so-called lean production or just-in time methods.[609] What earlier would be carried out within the industrial company – trade, finance, advertisement, data support, consulting, juridical advice, etc. – and would be classified as belonging to goods production, is nowadays carried out by formally independent companies and classified as services.[610] For example, activities designated as "business services" have grown noticeably in the last decades. Such statistical illusions are partly also created in the transition from an agricultural to an industrial economy, contributing to exaggerated growth figures of manufacturing and GDP, as part of such growth can be explained by the transition from the family to the market sphere of many activities performed.

However, the inclusion of industry-related services in the broader concept of industrial activities changes our picture of industrial decline. The industrial activities, as defined in this study, employed more persons than agriculture and ancillaries for the first time in 1926, encompassed the majority of the employed for the first time in 1937, and reached a peak in 1966, when they constituted 65 percent of employed. In 2000, they still constituted 57 percent of employed, i.e.

[608] Eliasson, 1990: pp. 45 and 79.
[609] Harvey, 1989: p. 157 and Smith, 2000: pp. 12-17.
[610] See, for instance, Eliasson, 1990: pp. 37-45 and May, 2002: pp. 321-322.

the majority. What is more important is that they have stabilised at this level for the last 20 years, and even increased somewhat in the late 20th century.

The share of goods production in the total employment of industrial activities has on the other hand been on a steady decline, from 85 percent in 1850 and 77 percent in 1900 to 46 percent in 2000. This is a really significant structural transformation. In this respect, the rise of industry-related services can be considered as part of the general processes of industrialisation and commodification (and as an aspect of the third industrial revolution as discussed by Lars Magnusson), which is connected to the process of ever-greater division of labour that accompanies these processes.[611] Many of the "older" industry-related services (such as trade, transport and communication) had their most rapid growth in the period 1850-1950 and have stabilised since then. In 1980-2000, it was the so-called business services that grew most rapidly, which matched almost entirely the decline of the share of manufacturing and handicrafts in total employment for that period.

Gunnar Eliasson similarly draws the conclusion that the share of industry in GDP has not changed between the end of the 1960s and 1985 (being around 50 percent), if goods-related services are included in the concept of industry.[612]

TABLE 7.7: *The share (in percent) of different types of activities in total employment (which excludes "housewives").*

	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
Reproductive services:	**13**	**12**	**12**	**12**	**12**	**11**	**12**	**13**	**15**	**17**	**17**	**22**	**28**	**37**	**40**	**40**
1. Market producers	1	1	1	1	1	2	2	3	4	5	5	6	6	6	7	9
2. NPISHs	8	8	8	7	6	5	5	5	5	4	3	3	2	1	1	1
3. Government	4	3	4	4	5	4	5	5	6	8	9	13	20	30	32	30
Agriculture et al.	**75**	**74**	**72**	**68**	**65**	**57**	**51**	**44**	**38**	**32**	**23**	**16**	**8**	**5**	**4**	**3**
Industrial activities:	**12**	**14**	**15**	**19**	**23**	**31**	**37**	**42**	**47**	**51**	**60**	**62**	**64**	**57**	**56**	**57**
1. Manufacturing et al.	9	10	11	13	16	21	23	26	26	29	33	33	31	26	22	21
2. Building & construction	1	1	1	2	2	3	4	4	6	6	7	8	9	7	7	5
3. Transport & commun.	1	1	1	2	2	3	4	5	5	5	7	6	6	6	7	7
4. Trade and real estate	1	1	2	2	3	4	5	7	9	10	12	13	14	13	13	13
5. Finance and insurance	0	0	0	0	0	0	0	1	1	1	1	1	2	2	2	2
6. Business services	0	0	0	0	0	0	0	0	0	0	0	1	2	3	5	8
Services	***15***	***14***	***15***	***17***	***17***	***18***	***22***	***25***	***30***	***33***	***37***	***43***	***52***	***62***	***67***	***71***

Sources: See chapter 6.

Comment: NPISHs stands for Non-Profit Institutions Serving households, which include paid domestic services and activities performed by non-profit institutions.

[611] See Marx, 1965a [first published 1867]: p. 353.

[612] Eliasson, G, 1993: p. 12. This is also discussed in Magnusson, L, 1999, p. 26.

7.3.2 The composition of labourers including "housewives"

Lise Vogel[613] develops a Marxist conceptual framework where "necessary labour" (i.e. the part of working time that reproduces the variable capital[614]) includes two components, the one equivalent to wages (the social component) and the other equivalent to unwaged work. She draws the following conclusion:

> Capitalists' interest in reducing necessary labor may extend to its domestic as well as its social component… when domestic labor is reduced, additional labor power is potentially released into the labor market. Reduction of domestic labor has been an ongoing process in the 19th and 20th centuries. [615]

In Sweden, this process is especially visible for the second half of the 20th century. The share of the services within capitalist production has indeed increased in recent decades, and this is in many ways an effect of the expansion of capital into areas that hitherto have been predominantly organized under the state, the family and the small-scale firm. The wave of privatisation in recent decades could be seen from the perspective of the needs of capital to find new areas of capital accumulation.

The second definition of the service society suggested by Schön (see above) implies that a majority of the employed work within the service sector. Indeed, it is true that services have grown considerably during the last century. According to TABLE 7.7, services, reproductive and industrial, accounted for 19 percent of employment in 1900. Services employed more than industrial goods production for the first time in 1956, and reached over 50 percent of total employment for the first time in 1968, i.e. in the same period when the share of industrial goods production in total employment peaked. In 2000, services stood for as much as 71 percent of employment.

However, the official statistics based on its definition of employment partly provide an inadequate picture.

A large part of the growth of employment in the service sector can be explained by the fact that services formerly carried out within the household are today performed on the market, either in the private or the public sector. Yet, the unpaid work performed in the household is (with a few exceptions) not taken into account in official statistics, which only register paid activities. So this statistics tend to exaggerate the growth of the service sector.

Ulla Wikander argues that the gendered division of labour is seldom taken into account by historians looking at the development of technology and the division

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[613] Vogel, 2000: pp. 161-163.
[614] See also section 2.2.1.
[615] Vogel, 2000: pp. 162-163.

of labour, but that the gendered division of labour is important in terms of how the capitalist development is understood and how it can be periodised.[616]

TABLE 7.8 presents the composition of labourers in different activities including ”housewives”. The term labourers, which include both “employed” and “housewives”, is used here in order to distinguish it from the term employed as used in official national accounts.[617] If “housewives” would be included into service production, the rise of the service sector would not be so dramatic as suggested by TABLE 7.7. Services became the largest sector in 1904 when they overtook agriculture and ancillaries, and already in 1940 accounted for over 50 percent of all labourers. In fact, industrial goods production never engaged more labourers than services. Should the conclusion be that there has never been an industrial society, and that the birth of service society should be dated to the early 20th century? If we would take into account the unpaid household services performed by the employed at the market and others outside the workforce,[618] maybe we have always lived in a service society…[619]

Such conclusions are avoided if services are not considered as one homogenous type of activities following a common logic, in the same way as industrial or agricultural goods production, but of consisting of quite diverse types of activities that are more different from each other than services generally from goods production.[620]

As discussed in section 6.7, “housewives” within agriculture (farmwives) performed quite a considerable amount of agricultural work. Part of the work performed by farmwives should be considered agricultural work. However, for example, in 1938, two thirds of the work performed by farmwives was not agricultural work[621], most of which could be considered as belonging to reproductive activities. To a large extent, farm owners and their employees also

[616] Wikander, 1993.

[617] See section 6.2.1.

[618] According to Anita Nyberg (1995: pp. 26-27), the ratio of hours worked of unpaid household work to hours worked performed on the labour market was 0.96 in 1990/91. If all unpaid household work would be classified as services, this would imply that services stood for 87 percent of all hours worked (including unpaid ones) in 1990/91 (my own computation based on Nyberg’s data).

[619] Christensen, Hjerppe, Krantz and Nilsson (1995: p. 45) write that, when taking into account unpaid domestic work, the society as far back in time as the early 19th century could be described as “an early service society”.

[620] In fact, already Daniel Bell (1973: p. 15) recognises in his book, *The Coming of Post-Industrial Society*, that that the “term ‘services’, if used generically, risks being deceptive about the actual trends in the society”. He argues that various types of services are associated with different societies. Agrarian societies had a high proportion of persons working in personal services, in industrial society different services expand that are auxiliaries to production (like transport and distribution), while the post-industrial society is characterised by the growth of health, education, research and government services.

[621] Based on Nyberg, 1989: p. 343. See also Krantz, 1987b: p. 18.

performed other types of work than agricultural work, as construction, trade and household work.

TABLE 7.8 shows that the rapid growth of the government services in 1950-1980 was matched by a decline in the number of "housewives". Lennart Schön draws a similar conclusion,[622] although he includes more persons in unpaid household services than the present study.

In total, reproductive services, if including "housewives", have been at a relatively stable level accounting for around 40 percent of all labourers in the last 150 years. Correspondingly, if agriculture with ancillaries and industrial activities are taken together (which exclude farmwives and other "housewives" that may have contributed considerably to goods production), goods-related activities have been at quite a stable level throughout the period 1850-2000, accounting for around 60 percent of all labourers.

The real transformation here was the decline in the ratio of "housewives" to all labourers, a process roughly taking place between mid-1950s and the late 1980s. Up to the mid-1950s, "housewives" stood for around 26-28 percent of all labourers. Since the late 1980s, this unpaid domestic labour category has stabilised at around 5-6 percent of all labourers.

Since the late 1980s, a new transformation has taken place; the decline of the government services and the expansion of private reproductive services. At its peak in 1990, 1,437 thousands worked in government services, and in 2000 this number declined to just 1,237 thousands (including the Swedish Church), a 14 percent decrease. Reproductive services carried out by market producers have risen in the same period.

TABLE 7.8 further shows that if "housewives" are taken into account, the decline of the share of labourers employed in manufacturing and handicrafts has not been so dramatic as TABLE 7.7 suggests. Official employment statistics significantly overestimates the relative size of industrial goods production up to the 1970s since it excludes unpaid domestic labourers.

While TABLE 7.7 shows a decline in the share of manufacturing and handicrafts in total employment from 33 percent in 1960 to 21 percent in 2000, TABLE 7.8 displays a less dramatic decline in the ratio of employed in manufacturing and handicrafts to all labourers, from 25 to 20 percent in the same period. A 12 percentage points decline is halved to a 5 percentage points decline. Looking at all industrial activities, i.e. including industry-related services, those activities have rather increased their share in total number of labourers continually up to the mid-1960s, and since then stabilised at just over 50 percent;

[622] Schön, 2000a: p. 478.

even growing somewhat in the last two decades of the 20th century, reaching a peak in 2000 at 54 percent.

This analysis does not take into account that the same person performed different types of work, which was especially the case within agriculture. Much unpaid work is also excluded (even when including "housewives"). It must be considered that an analysis based on hours worked, both paid and unpaid, would give a different result than the presentation in this section.[623] However, it is difficult to get reliable estimates of how the hours worked of unpaid household work have changed over time.[624] As discussed in chapter 6, no estimates exist for the total number of hours worked before 1950, even for paid work.

TABLE 7.8: *The share (in percent) of different types of activities in the total number of labourers (which also includes "housewives").*

	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
"Housewives"	**27**	**27**	**27**	**27**	**27**	**26**	**27**	**26**	**25**	**27**	**28**	**24**	**18**	**11**	**5**	**5**
1. Farmwives	16	15	15	15	15	13	13	11	10	9	7					
2. Non-farmwives	10	12	12	12	12	13	14	14	15	18	21					
Paid reproductive services	**9**	**9**	**9**	**9**	**9**	**8**	**9**	**10**	**11**	**12**	**12**	**16**	**23**	**33**	**38**	**38**
1. Market producers	1	1	1	1	1	1	2	2	3	4	4	5	5	6	7	9
2. NPISHs	6	6	6	5	5	4	4	4	4	3	2	2	1	1	1	1
3. Government	3	2	3	3	3	3	3	4	4	6	7	9	16	27	30	28
Agriculture et al.	**55**	**54**	**52**	**50**	**47**	**42**	**37**	**33**	**29**	**24**	**16**	**12**	**7**	**5**	**4**	**3**
Industrial activities	**8**	**10**	**11**	**14**	**17**	**23**	**27**	**32**	**35**	**37**	**43**	**47**	**52**	**51**	**53**	**54**
1. Manufacturing et al.	7	7	8	9	11	16	17	19	20	21	24	25	25	23	21	20
2. Building et al.	1	1	1	1	2	2	3	3	4	4	5	6	8	6	6	5
3. Transport & com.	1	1	1	2	2	3	4	5	7	7	8	10	11	12	13	13
4. Trade and real estate	0	1	1	2	2	2	3	3	4	4	5	5	5	6	6	6
5. Finance and insurance	0	0	0	0	0	0	0	0	1	1	1	1	1	2	2	2
6. Business services	0	0	0	0	0	0	0	0	0	0	0	1	2	2	5	7

Sources: See chapter 6.

Comment: NPISHs stands for Non-Profit Institutions Serving Households, which include paid domestic services and activities performed by non-profit institutions. For 1960-2000, no distinction is made between farmwives and non-farmwives among "housewives".

[623] According to Magnus Nermo (1994: pp. 169-170), the total hours devoted by households to unpaid household work has decreased significantly between 1974 and 1991, in fact, more than would be explained by the increase in the rate of participation of women in the paid work during this period.

Anita Nyberg (1995: pp. 17-18) finds that among fulltime working women, the unpaid household hours worked *increased* between 1956 and 1982/83, but this is partly an effect of a shorter working week (in paid work), and is also countered by the decrease in the number of housewives.

See also footnote 618 on page 161.

[624] Jakobsen and Karlsson, 1995: pp. 276-277.

7.3.3 Various processes of "industrialisation"

Against this background, instead of a rise of the so called service or information society, suggesting a paradigmatic break with industrialism as great as the transformation from an agrarian to an industrial society, the expansion of the service sector in official statistics could be viewed as an aspect of the process of industrialisation, continuing a historical tendency of the capitalist system. Although it is true that the work in manufacturing has changed with more emphasis on information handling, many authors point out that large parts of the service sector have gone through a kind of industrialisation process where many service functions are organized according to Fordist principles or even are fully automatized and taken over by machines.[625]

This process of industrialisation has many features. In one period one feature can dominate over the others features. In another period, it can exhaust its potential and cease to operate. Some of these processes or tendencies, dealt with in this section, are as follows (in relation to relative sizes):

1) The decline of agriculture and the rise of industrial activities.
2) The rise of industry-related services.
3) The rise of reproductive services performed in the paid labour market and the decline of unpaid household labourers.
4) The rise of reproductive services carried out by market producers.

Process 1, the expansion of the relative size of industrial activities, has been in operation since 1850, but seems to have exhausted itself in the last three decades of the 20th century. It had the largest effect on total labourers during the period 1870-1970.

Process 2, the expansion of the relative size of industry-related services, seems to have been in operation during the whole period 1850-2000. The largest shift in percentage points of total number of labourers towards industry-related services occurred in 1980-2000.

Process 3, the rise of paid reproductive services, can almost entirely be located to the period 1955-1990, and has mainly taken the form of an expansion of

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[625] Tony Smith (2000: p. 9) argues as follows in his book, *Technology and Capital in the Age of Lean Production*:

"[M]any activities ordinarily characterized as services are in fact industrial processes. McDonald's assembly line, for example, involves the material transformation of inputs as much as any Fordist automobile plant. Also, a great many 'services' are themselves a part of manufacturing, such as writing computer programs to run machine tools. Other services are auxiliary to manufacturing… Finally, information-intensive activities are commonly taken to be the core of the postindustrial economy. But information-intensive activities require information technologies, and these, of course, must be produced in an industrial sector.

In the light of all these considerations it makes far more sense to say that the contemporary economy is characterized by *increasing* industrialization than it does to speak of a sudden shift to a postindustrial economy…"

government services. In the 1970s, a staggering 10 percent of all labourers were shifted away from being ”housewives”. A counter-tendency has been the decline of paid household services outside of market producers, which can be observed at least from the late 19th century.

Process 4, the expansion of market producing reproductive services, has been in operation throughout the period 1850-2000. The largest percentage shift of all labourers towards this sector occurred during the 1990s with a wave of privatisation of government services.

These processes also explain the ups and downs of the relative size of industrial goods production in official statistics. While process 1 (the expansion of industrial activities) dominated over process 2 (the expansion of industry-related services) industrial production was increasing its share of employment. But as process 2 started to dominate over process 1, which roughly began in the 1960s, the relative size of industrial goods production started to decline. In addition, process 3 (the rise of paid reproductive services) added to the statistically measured decline of the share of industrial goods production in total employment. The growth and decline, respectively, of the relative size of industrial goods production should in this perspective not be viewed as two distinct paradigms or logics of the economy, but just as different sides of the overall course of industrialisation in all its aspects.

A rough quantification of the different factors contributing to the decline of the share of industrial goods production in total employment (excluding ”housewives”) – based on a comparison with the counter-factual case that no change in the contributing factor would have occurred – is as follows:

- The exclusion of “housewives” from employment in official statistics explains almost 50 percent of the decline. This factor is not likely to have any larger effects in the future, as the relative size of ”housewives” has stopped declining and is already close to zero.
- The growth of business and other industry-related services, and the accompanying tendency of outsourcing, explains around 30 percent of the decline. This effect will most likely continue.
- The actual decline in the relative size of building and construction in addition explains the remaining 20 percent of the decline in the relative size of industrial goods production.

7.4 "Long upswings" and "long downswings"

This section attempts to chronologise and analyse the long-term fluctuations of GDP per capita growth by applying the concepts of "long upswings" and "long downswings".

To identify periods of depressed GDP per capita growth rate, or "long downswings", this section focuses on longer periods with an average GDP per capita growth rate (by activity) below one percent per year.[626] The period in between two consecutive "long downswings" is labelled a "long upswing".

Gérard Duménil and Dominique Lévy describe structural crises as "rather long periods, as distinct from the usual recessionary episodes of the business cycle", which, following Marx, are "typical outcomes of periods of actual decline of the profit rate".[627] They identify three structural crises in the US economy from the Civil War onward: one in the 1890s, The Great Depression in the 1930s, and in the 1970s.[628]

The "long downswings" defined in this section could be considered as such structural crises, although for simplicity only GDP per capita is used as an indicator to identify the "long downswings".

The profit rate is discussed further in chapter 8, but is generally less reliable as an indicator, considering, for example, the problem of how to deal with the income of the self-employed.[629] The profit rate is also more of a cause of crises than a direct measure of it (although this partly depends on the specific crisis definition). In fact, a booming economy can be accompanied by low profit rates, as was the case in Sweden in the 1960s. Similarly, periods of stagnation with high unemployment are not incompatible with a high level of the profit rate, as was the case in Sweden during the First World War.

The one percent per capita growth rate is chosen as a dividing line between "long upswings" and "long downswings", since it seems to be a reasonable

[626] Firstly, periods with a length of eight years or more are identified that had an average GDP per capita growth below one percent per year. If these periods overlapped each other the ones that were longest and latest in time are chosen. In the next step, from these periods, years are deducted at the beginning so that a "long downswing" starts with an annual change in GDP per capita which is below one percent and also with two consecutive annual changes with an average annual GDP per capita growth below one percent. At the end of these chosen periods annual changes are deducted with a GDP per capita growth rate above one percent.

The periodisation would, of course, look different if some of these criteria would be changed. If, for example, only 25-year periods of GDP per capita growth below one per cent per year are studied, none such occurred that began in a year after 1850 (which of course could be taken as an "evidence" for the steady growth theory). This type of periodisation should, henceforth, always be taken with a dose of scepticism.

[627] Duménil and Lévy, 2001: p. 144.

[628] Duménil and Lévy, 2001: p. 141.

[629] See section 6.8.

dividing line between a capitalist economy experiencing a structural or long-term crisis and a capitalist economy functioning in accordance with its operating principles, as steady accumulation and growth. Outright decreases in GDP per capita during longer time periods are quite rare in the modern history of Sweden. Even an average GDP per capita growth rate between zero and one percent for a longer time span could be considered as a crisis symptom for the capitalist system. Although a GDP per capita growth between one and two percent over a longer period is problematic for a capitalist economy, such sluggish growth could, in my opinion, not be described as an outright crisis. Furthermore, during all of the "long downswings" after mid-19th century, the volume of investment declined substantially, which is in line with those Marxists who define a crisis as "an interruption in the accumulation of capital".[630]

It must, however, be emphasised that in any operationalisation there is a certain arbitrariness, and there are no strong arguments for setting the dividing line at one percent instead of 0.7 or 1.3 percent, other than that the former is an integer number. Other variables could also be used to set criteria for "long downswings".

Most of the long cycle theories, discussed in section 2.4.1, are quite deterministic. For instance, they presuppose that a long upswing will continue for about 20-25 years. This implies that the "long upswing" beginning in mid-1990s would continue up to the end of the 2010s. The periodisation of this chapter, however, does not lead to such deterministic result. The length of "long upswings", according to the definition in this study, varied from 7 to 29 years.

The advantage of the type of periodisation applied in this section is that it deals with clear empirical phenomena. The disadvantage is that the nature of the periods can be quite different. "Long downswings" as defined in this section could be caused by major wars, capital overaccumulation or simply be the manifestation of a pre-capitalist society not yet driven to accumulate and grow per capita incomes. What is gained on appearance, at the empirical field, is often lost in essence, at the theoretical level.[631]

A periodisation based on the terminology of "long upswings" and "long downswings" may still be considered as just being a variant of a long-cycle theory, although of a less deterministic kind. However, in my view, there is no reason to let the long cycle theories monopolise all the terminology that are typical for their models, without that implying theoretical concessions to their assumptions of the nature of capitalist development. In this section, the

[630] O'Connor, 1987: p. 57.

[631] For a discussion of the Hegelian distinction between essence and appearance and its influence on Marxist thought, see Nicolaus, 1993.

dichotomy between "long upswings" and "long downswings" is to a large extent used as a method to organize the empirical material.

In this respect, there is no fundamental difference between making such periodisation of a more long-term kind than the identification of NBER of short-term "reference cycles" of 2 to 10-12 years duration in the American economy.[632] Schumpeter writes that by "the term cycle we designate the fact, that a given series corrected for seasonal displays recurrence of values either in its items or in its first or higher time derivates more than once".[633] According to such broad definition of a *cycle*, the definition of "long upswings" and "long downswings" in this chapter implies that there has been a long cycle movement of the Swedish economy since the mid-19th century. The supporters of the long-cycle theory are, in my opinion, correct to state that there is no fundamental difference between short-term and long-term fluctuations. But where, for example, Schumpeter is wrong is, in my view, that he assumes a *regular* cycle-movement of *both* short-term and long-term character (which is something different from his broader definition of a cycle).[634] The business cycles of NBER are as irregular, as the periodisation of the long-term economic development into "long upswings" and "long downswings" in this section.

FIGURE 7.1 graphically presents the average annual GDP per capita growth expressed as a three-year moving average and as "long-wave-smoothed" along different sinus curves where each sinus curve corresponds to a "long upswing" or a "long downswing" as defined in this section.[635]

TABLE 7.9 presents a periodisation where "long upswings" are followed and preceded by "long downswings" and the average per capita growth of different types of activities during these periods. TABLE 7.10 presents the per capita growth of expenditures during the long up- and downswings. TABLE 7.11 presents the contribution of different types of activities, and TABLE 7.12 of different expenditures, to GDP per capita growth during the long up- and downswings. Finally, TABLE 7.13 presents how much of the change in the GDP

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[632] See section 9.2. A similar point is made in Maddison, 1991: p. 114.

[633] Schumpeter, 1939: Vol. 1, p. 200.

[634] Schumpeter, 1939: Vol. 1, pp. 161-174.

[635] For each period of a "long upswing" or a "long downswing", beginning in year b and ending in year t, the "long-wave-smoothed" annual logarithmic GDP per capita growth between year a-1 and year a is expressed as:

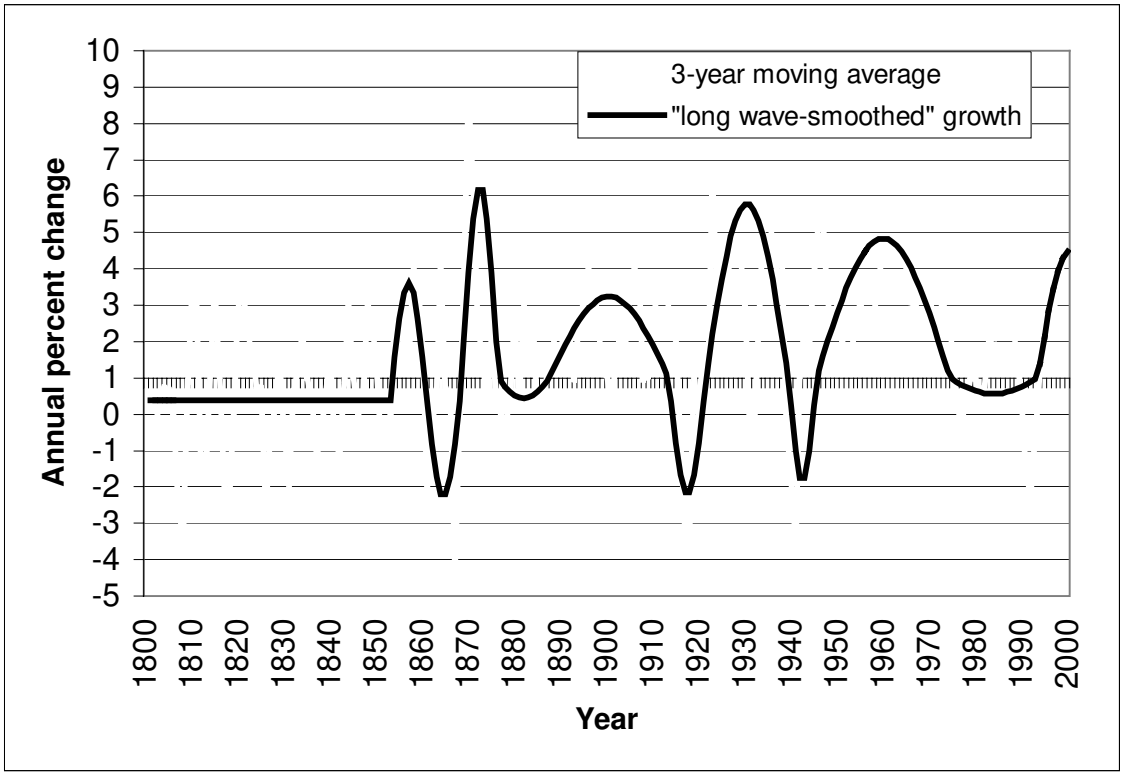
LN(1.01)+A*SIN[(-0.5/(t-b)+(a-b)/(t-b))π]

"A" is adjusted in such a way that the total "long-wave-smoothed" growth rate during a "long upswing" or a "long downswing" equals the actual growth rate during this period as a whole. "A" is positive during "long upswings" and negative during "long downswings". For the period 1800-1853, the "long-wave-smoothed" logarithmic growth rate is simply equalled to the arithmetic average for the period.

In FIGURE 7.1, the logarithmic growth rates are transformed into percentage growth rates.

per capita growth rate from a "long upswing" to a "long downswing", or vice versa from a "long downswing" to a "long upswing", that can be explained by the change in the growth of the various types of activities – i.e. what activities were behind the long-term fluctuations.

FIGURE 7.1: *Average annual GDP per capita volume growth 1800-2000 (in percent, based on basic values) expressed as three-year moving average and as "long-wave-smoothed" along sinus curves corresponding to "long upswings" and "long downswings".*



Sources: Calculations based on the PS-data. See chapters 3 and 4, and footnote 579 (on page 147). For an explanation of how the "long-wave-smoothed" growth rate is calculated, see footnote 635.

TABLE 7.9: *Average annual per capita volume growth (in percent) of different types of activities and of GDP by activity (based on basic values) during "long upswings" (bolded) and "long downswings" (normal style).*

Period	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP per capita
1800-1853	0.1	0.9	0.7	0.8	1.0	0.0	0.0	0.1	0.4
1853-1860	**3.1**	**3.2**	**0.7**	**4.8**	**3.5**	**0.6**	**0.1**	**3.1**	**2.7**
1860-1868	-2.7	0.9	-2.9	1.1	-0.7	-0.1	-0.3	2.8	-1.1
1868-1876	**5.0**	**4.7**	**4.5**	**8.2**	**4.5**	**0.4**	**0.7**	**2.6**	**4.4**
1876-1887	-0.6	2.0	-1.4	1.2	2.0	0.2	2.4	3.1	0.6
1887-1913	**0.7**	**5.2**	**1.6**	**3.5**	**4.2**	**1.3**	**0.4**	**1.6**	**2.4**
1913-1921	-0.3	-3.9	-5.9	-1.4	3.0	1.6	0.8	0.6	-1.1
1921-1939	**0.5**	**7.0**	**5.7**	**4.9**	**4.0**	**2.1**	**4.3**	**2.2**	**4.0**
1939-1945	-3.2	-1.3	-1.7	1.7	-2.9	0.6	0.5	1.4	-0.8
1945-1974	**-0.3**	**4.6**	**3.1**	**4.8**	**4.9**	**0.5**	**2.9**	**2.4**	**3.4**
1974-1993	-1.2	-0.3	-0.1	0.9	1.9	1.1	1.3	1.0	0.7
1993-2000	**0.1**	**6.5**	**-0.7**	**4.9**	**4.9**	**4.4**	**-0.6**	**1.2**	**3.2**

Sources: Calculations based on the PS-data. See also chapter 4 and footnote 579 (on page 147).

TABLE 7.10: *Average annual per capita volume growth (in percent) of different expenditures and of GDP by expenditure (in purchasers' values) during "long upswings" (bolded) and "long downswings" (normal style).*

Period	Final consumption		Investment	Export	Import	GDP per capita
	Private	Government				
1800-1853	0.4	0.1	1.1	0.8	1.1	0.4
1853-1860	**3.7**	**-0.3**	**2.4**	**4.9**	**7.6**	**3.0**
1860-1868	-1.8	0.5	-3.8	4.4	2.2	-1.5
1868-1876	**5.5**	**1.3**	**13.0**	**6.5**	**8.9**	**5.2**
1876-1887	0.9	2.8	-3.0	2.3	2.6	0.4
1887-1913	**2.3**	**1.7**	**4.1**	**2.7**	**2.3**	**2.6**
1913-1921	-0.2	0.0	-6.2	-7.0	-4.5	-2.0
1921-1939	**3.2**	**4.3**	**7.2**	**5.9**	**5.7**	**3.9**
1939-1945	-3.3	3.3	-1.0	-8.5	-20.2	-0.3
1945-1974	**3.2**	**3.2**	**4.7**	**8.1**	**10.6**	**3.4**
1974-1993	0.6	1.8	-1.4	2.6	1.5	0.9
1993-2000	**2.4**	**0.1**	**5.3**	**9.7**	**8.8**	**2.9**

Sources: Calculations based on the PS-data. See also chapter 5 and footnote 579 (on page 147).

TABLE 7.11: *Contribution (in percentage points) of different types of activities to average annual GDP per capita volume growth (based on basic values) during "long upswings" (bolded) and "long downswings" (normal style).*

Period	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP per capita
1800-1853	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.4
1853-1860	**1.4**	**0.4**	**0.1**	**0.2**	**0.3**	**0.1**	**0.0**	**0.2**	**2.7**
1860-1868	-1.2	0.1	-0.2	0.1	-0.1	0.0	0.0	0.2	-1.1
1868-1876	**2.3**	**0.7**	**0.3**	**0.5**	**0.4**	**0.0**	**0.1**	**0.2**	**4.4**
1876-1887	-0.2	0.3	-0.1	0.1	0.2	0.0	0.1	0.3	0.6
1887-1913	**0.2**	**1.1**	**0.1**	**0.3**	**0.4**	**0.1**	**0.0**	**0.2**	**2.4**
1913-1921	-0.2	-1.0	-0.3	-0.1	0.3	0.1	0.0	0.1	-1.1
1921-1939	**0.1**	**1.8**	**0.4**	**0.4**	**0.5**	**0.2**	**0.3**	**0.3**	**4.0**
1939-1945	-0.5	-0.4	-0.1	0.1	-0.3	0.0	0.1	0.2	-0.8
1945-1974	**0.0**	**1.4**	**0.3**	**0.4**	**0.6**	**0.0**	**0.4**	**0.2**	**3.4**
1974-1993	0.0	-0.1	0.0	0.1	0.3	0.1	0.3	0.1	0.7
1993-2000	**0.0**	**1.6**	**0.0**	**0.3**	**1.0**	**0.3**	**-0.1**	**0.2**	**3.2**

Sources: Calculations based on the PS-data. See also chapter 4, footnote 579 (on page 147) and footnote 585 (on page 149).

TABLE 7.12: *Contribution (in percentage points) of different expenditures to average annual GDP per capita volume growth (based on purchasers' values) during "long upswings" (bolded) and "long downswings" (normal style).*

Period	Final consumption:		Investment in:		Changes in:		Net export	GDP per capita growth
	Private	Government	Buildings/ structures	Machinery/ equipment	Fixed livestock	Inventory stock		
1800-1853	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.4
1853-1860	**3.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0.1**	**-0.3**	**3.0**
1860-1868	-1.6	0.0	-0.1	0.1	-0.2	-0.1	0.3	-1.5
1868-1876	**4.3**	**0.1**	**0.6**	**0.2**	**0.2**	**0.1**	**-0.4**	**5.2**
1876-1887	0.6	0.2	-0.2	0.0	0.0	0.0	-0.1	0.4
1887-1913	**1.8**	**0.1**	**0.3**	**0.2**	**0.0**	**0.1**	**0.1**	**2.6**
1913-1921	0.0	0.0	-0.6	-0.1	0.1	-0.3	-1.1	-2.0
1921-1939	**2.2**	**0.4**	**0.6**	**0.3**	**0.0**	**0.2**	**0.0**	**3.9**
1939-1945	-2.9	0.7	-0.1	-0.2	0.0	-0.1	2.2	-0.3
1945-1974	**1.9**	**0.6**	**0.5**	**0.5**	**0.0**	**0.1**	**-0.2**	**3.4**
1974-1993	0.3	0.4	-0.1	0.1	0.0	-0.1	0.3	0.9
1993-2000	**1.3**	**0.0**	**-0.1**	**0.7**	**0.0**	**0.2**	**0.8**	**2.9**

Sources: Calculations based on the PS-data. See also chapter 5, footnote 579 (on page 147) and footnote 585 (on page 149).

TABLE 7.13: *Contribution of different types of activities to change in average annual volume growth of GDP per capita (percent of total change, based on basic values) from "long downswings" to "long upswings" (bolded) and from "long upswings" to "long downswings" (normal style).*

Period	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Change in annual GDP per capita growth
1853-1860	**58**	**14**	**0**	**8**	**10**	**3**	**0**	**8**	**+2.3**
1860-1868	69	8	7	5	9	2	1	0	-3.7
1868-1876	**64**	**10**	**9**	**8**	**8**	**1**	**1**	**0**	**+5.5**
1876-1887	68	10	10	11	5	0	-2	-3	-3.6
1887-1913	**24**	**46**	**13**	**10**	**16**	**4**	**-7**	**-6**	**+1.8**
1913-1921	10	61	13	11	4	-2	0	3	-3.4
1921-1939	**5**	**56**	**15**	**10**	**3**	**0**	**6**	**4**	**+5.1**
1939-1945	12	46	11	5	17	3	5	2	-4.7
1945-1974	**10**	**43**	**9**	**6**	**23**	**0**	**7**	**1**	**+4.3**
1974-1993	1	56	11	12	11	-1	5	5	-2.6
1993-2000	**2**	**66**	**-1**	**12**	**25**	**10**	**-17**	**3**	**+2.5**

Sources: See TABLE 7.11.

7.4.1 1800-1853

During the first half of the 19th century, the Swedish economy was dominated by pre-capitalist relations and experienced a low growth rate of GDP per capita. The whole period before 1853 is classified as a "long downswing" according to the definition in this section. However, this "long downswing" had entirely different characteristics than the later "long downswings". The alterations between "long upswings" and "long downswings" did, in this respect, not commence until the mid-19th century. The chosen parameter of one percent per capita growth that differentiates between long up- and downswings also differentiates, in this context, between the average per capita growth achieved in a pre-capitalist society and the level of growth in a capitalist economy driven by capital accumulation. The pre-capitalist society also experienced longer economic fluctuations, but their characteristics were different from the characteristics of longer fluctuations in a modern type economy.[636] "Waves" of sustained and substantial increases in per capita production are rather phenomena connected to capitalism and industrialism.

[636] For a further discussion of long-term fluctuations in the pre-capitalist and agrarian dominated economies, see, for example, Myrdal and Söderberg, 1991: pp. 26-33 and Magnusson, 2002: pp. 15-55.

Although GDP per capita started to grow already in the first half of the 19th century, the average GDP per capita growth in 1800-1853 was only 0.4 percent per year. This period also experienced longer booms of above one percent GDP per capita growth. But these booms were quite short and were preceded and followed, respectively, by annual changes with more depressed growth figures, which in the long run took down the average per capita growth closer to zero. These booms were more the result of quite sharp fluctuations in the economy (mainly due to the fluctuations between bad and good harvests), rather than representing genuine economic advance.

7.4.2 1853-1913

During the 1850s, a wave of industrialisation swept the European continent. Especially important were the railway projects.[637]

The 1850s seem also to be one of the most dynamic decades of the 19th century in Sweden in terms of GDP as well GDP per capita growth.

The period 1840-70 actually saw a GDP growth at the same level as the period 1870-1900 (though not so in terms of GDP per capita growth, as the population growth slowed down towards the late 19th century).

Most Swedish economic historians similarly conclude that the mid-19th century was the period when the growth of the Swedish economy really accelerated.[638]

However, as can be seen from TABLE 7.11, the main contribution to GDP per capita growth during the "long upswing" of 1853-1860 came from agriculture and ancillaries, and not from industrial goods production. Up to roughly 1870 investment did not contribute much to GDP per capita growth either (see TABLE 7.12). In the period 1800-1853, the average contribution of investment to GDP per capita growth was on average 0.1 percentage points per year (although for individual annual changes it could be much greater). During the "long upswing" of 1853-1860, the contribution of investment to GDP per capita was also meagre, on average 0.3 percentage points per year;[639] and from industrial goods production, on average 0.5 percentage points per year. This was actually at the same level as during the boom years of 1842-50. The difference with 1842-50 was that the overall annual GDP per capita growth rate was higher, and this can almost entirely be explained by a larger contribution to GDP per capita growth from agriculture and ancillaries in 1853-60.

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[637] Schön, 2000a: p. 123.

[638] See footnote 588 on page 150.

[639] However, this does not take into account the indirect contributions of investment, for example, by increasing labour productivity of the production of private consumption goods (which is much more difficult to measure).

Qualitatively, the "long upswing" of 1853-60 was not different from the boom of 1842-50. It was merely a quantitative difference. In fact, the whole period 1842-60 could be viewed as a "long upswing" as well, if the parameters distinguishing between long up- and downswings in this study would be adjusted somewhat. On average, GDP per capita grew by 1.6 percent per year in 1842-60.

The negative growth rate of GDP per capita during the "long downswing" of 1860-68 entirely stemmed from agriculture and ancillaries, brought about by bad harvests in 1862, 1866 and 1868 (while the per capita volume value added of manufacturing and handicrafts, and transport and communication, respectively, continued to grow in those years).

According to Torun Hedlund-Nyström, agriculture suffered from overinvestment in the 1850s, which was a contributing factor behind the agricultural crises in the 1860s.[640] In that sense, the causes behind both the "long upswing" in the 1850s and the subsequent "long downswing" were of modern type (overaccumulation). This is also partly confirmed by the PS-data. The per capita volume of gross investment in agriculture and ancillaries was 69 percent higher in 1851-60 than in 1841-50, although the rise was from a low level.

During the "long upswing" of 1868-76 the contribution of investment to GDP per capita growth was substantial, on average 1.2 percentage points per year, and this was a larger contribution than during any other of the subsequent "long upswings". This was especially connected to railway investments, although most of the contribution came from other types of investments. Even during the "long upswing" of 1945-74 (although encompassing a longer time span) the contribution of investment to GDP per capita growth was on average not more than 1.1 percentage points per year. In terms of accumulation, it was the "long upswing" of 1868-76 that posed the sharpest break with earlier periods.

The contribution of industrial goods production during the "long upswing" of 1868-76 to GDP per capita growth was on average 0.9 percentage points per year, which was not much less than the contribution during the "long upswing" of 1887-1913 of 1.2 percentage points per year. Because agriculture and ancillaries contributed to as much as 2.3 percentage points to annual GDP per capita growth in 1868-76, which was an effect of the rebound from the bad harvests in the 1860s, this partly overshadowed the contribution from industrial goods production.

During the "long downswing" of 1876-87, the per capita volume value added of agriculture and ancillaries declined, and so did the per capita volume value added of building and construction. The per capita volume value added of manufacturing and handicrafts continued to grow (at two percent per year), and

[640] Hedlund-Nyström, 1970: p. 65.

contributed to half of the average annual GDP per capita growth of 0.6 percent. In other words, manufacturing and handicrafts behaved "counter-cyclically" during this "long downswing". In contrast, in all subsequent "long downswings" (of the 20th century), the per capita volume value added of manufacturing and handicrafts fell.

As displayed in TABLE 7.13, agriculture and ancillaries stood for around 60 percent of the acceleration in the GDP per capita growth rate during both the "long upswings" of 1853-1860 and 1868-1876. Industrial goods production contributed to less than 20 percent of the acceleration in the GDP per capita growth rate during the "long upswings" of 1853-1860 and 1868-1876. While it is true that other activities had a higher growth rate than agriculture and ancillaries, the weight of agriculture and ancillaries in GDP was much larger than for other types of activities. This has important implications on where to locate the dynamism behind the acceleration in the growth rate of GDP per capita during the third quarter of the 19th century. This study puts the initial locus of the dynamism to agriculture and ancillaries.[641]

A sharp break occurred in this sense first with the "long upswing" of 1887-1913, when industrial goods production contributed to nearly 60 percent of the acceleration in the GDP per capita growth rate. The contribution of agriculture and ancillaries to average annual GDP per capita growth fell to just 0.2 percentage points during that "long upswing".

7.4.3 1913-1974

The two deepest "long downswings" in the 20th century occurred during the two World Wars and their aftermath. During the "long downswings" of 1913-21 and 1939-45, GDP per capita fell by on average around one percent per year (although GDP by expenditure behaved a bit differently).

During the "long downswings" of 1913-1921 and 1939-1945, export and import fell sharply. The negative contribution to GDP from the fall in export was counteracted by the positive contribution to GDP from the fall in import.[642] The net export gave a negative contribution to GDP per capita growth in 1913-21, but a positive contribution in 1939-1945 (see TABLE 7.12). However, the cumulative effect of falling export *and* import via the so-called multiplier mechanism[643] is

[641] See also Jörberg, 1984: p. 29.

Lennart Schön (2000a: p. 138) also argues that the period 1850-1890 did not imply a radical break with the agricultural system, and that much of industrial goods production was located in the countryside and smaller towns.

[642] See formula (3.2) on page 51.

[643] See, for example, Ohlsson, 1969: p. 48.

not seen in this accounting of growth, and this effect was probably the main contributor to the two "long downswings".

During the "long downswing" of 1913-1921, GDP per capita continued to grow up to 1916, and the worst fall came in the second half of the First World War. In contrast, during the "long downswing" of 1939-45, the worst fall came during the two first years of the war.

Both in 1913-1921 and 1939-1945, investment and manufacturing and handicrafts contributed significantly to the downswing, although a negative development within agriculture and ancillaries also contributed to the downswing of 1939-1945.

Sweden experienced strong economic performance during the inter-war years. During the "long upswing" of 1921-39, GDP per capita grew by four percent per year on average, which was almost twice as much as during the preceding "long upswing" of 1887-1913 and even higher than during the "long upswing" of 1945-74. Between 1921 and 1939, GDP per capita more than doubled. Never before or after has GDP per capita doubled in a shorter period in Sweden. However, it must be borne in mind that the 1921-39 period was preceded and then followed by periods of contraction. Taken the period 1913-45 as a whole, GDP per capita grew by 1.8 percent per year on average, and it was first in 1947 that GDP per capita had doubled compared to 1913.

Within the structural-analytical tradition, Krantz, Nilsson and Schön locate a structural border to the first half of the 1930s, i.e. in the middle of the "long upswing" as defined in this chapter.[644] The "long upswing" of 1921-39, henceforth, encompasses the last 10-15 years of a phase of transformation and the first 5-10 years of a phase of rationalization according to Krantz's, Nilsson's and Schön's periodisation. They do not see the two World Wars as important structural borders.[645] In the present enquiry, this is partly questioned, at least when considering the transformation of the Swedish position in the international capitalist system during the course of the First World War, which is discussed further in chapter 8.[646]

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[644] See sections 1.3.2 and TABLE 2.1.

[645] See, for example, Schön, 2000a: p. 272.

[646] Although it is true that Marxists see the economic relations as more fundamental than the political relations, this must not be interpreted in a deterministic and reductionistic (or "economistic") sense, implying that important political events cannot have large economic impacts. As argued by Leon Trotsky (1973 [first published 1923]: p. 277) in a polemic against Kondratieff's "economistic" long cycle theory:

"The acquisition by capitalism of new countries and continents, the discovery of new natural resources, and, in the wake of these, such major facts of 'superstructural' order as wars and revolutions, determine the character and the replacement of ascending, stagnating or declining epochs of capitalist development…

Krantz and Nilsson argue that "delineations made on the basis of political criteria do not necessarily coincide with periods defined in economic terms."[647] This is a viable point. However, important political events as the two World Wars necessarily have important economic implications, for example, of speeding up or postponing structural processes. There is no "pure" economic level cleansed from politics, since economics and politics are interwoven. A study of structural change or of business cycles cannot, in my opinion, abstract from such important events as the two World Wars.

The high growth rate in 1921-39 may be surprising considering that the interwar years included the Great Depression in the early 1930s. As many Swedish economic historians point out, the Great Depression was not as deep in Sweden as in other countries. In contrast to Krantz, Nilsson and Schön, Erik Dahmén also considers the interwar period as a whole, possessing common characteristics.[648] Dahmén's explanation that the Great Depression did not have such a large and long-term impact on Sweden as on other countries is that the "Great Depression came at a time when a wave of unusually strong dynamic forces *had just begun to permeate the entire industrial economy of Sweden*…"[649] Another author, Peter Vikström, notes in his study a "rapid increase in trend growth that can be identified around 1920".[650]

The GDP per capita of 1930 was already surpassed in 1934, according to PS-data. In 1935, GDP per capita stood at a 11 percent higher level than in 1930, even though some of the depressive tendencies remained throughout the 1930s, for instance in the form of high unemployment.[651]

The "long upswing" of 1945-74 possessed many of the same characteristics as the "long upswing" of 1921-39. During both upswings, industrial goods production contributed to roughly half of the GDP per capita growth. The contribution of other activities to GDP per capita growth was significant as well, except for agriculture and ancillaries. In many ways, the "long upswing" of 1945-74 could be seen as a continuation of the "long upswing" of 1921-39.

Olle Krantz, as a contrast, challenges the view that the post-War boom was very successful for the Swedish economic performance.[652] In the period 1950-

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…it is naturally not at all difficult to fall into the most vulgar schematization and, above all, to ignore the tenacious internal conditioning and succession of ideological processes – to become oblivious of the fact that economics is decisive only in the *last analysis*."

[647] Krantz and Nilsson, 1975: p. 185.

[648] For example, according to Dahmén (1950: Vol. 1, p. 420), between one-third and one-half of workers employed in 1939 belonged to firms that started after 1918.

[649] Dahmén, 1950: Vol. 1, p. 425.

[650] Vikström, 2002: p. 219.

[651] Schön, 2000a: pp. 348-358.

[652] Krantz, 2000 and 2004.

1973, Sweden's GDP per capita grew 0.8 percentage points below the arithmetic average of the per capita growth of industrialized countries, and in the period 1973-1992 0.7 percentage points below the arithmetic average of industrialized countries. In contrast, in the period 1870-1950, Sweden's GDP per capita grew significantly above the arithmetic average of industrialized countries. Nevertheless, it must also be taken into account that the strong growth of many countries after the Second World War was a consequence of the recovery from the destruction during the war. Sweden escaped this destruction by not participating in the war.[653]

7.4.4 1974-2000

In the 1970s and early 1990s Sweden experienced deep economic crises. Although the 1980s were boom years, the whole period of 1974-93 can be viewed as a "long downswing". On average, GDP per capita grew less than one percent per year in this period.[654] The most important contributor to the deceleration in the growth rate came from manufacturing and handicrafts (also connected to the fact that those activities decreased their share in total GDP), as can be seen in TABLE 7.13.

The per capita volume of investment in 1993 was 23 percent lower than in 1974, and not until 1999 did the per capita volume of investment surpass the 1974 level (although during 1987-91, the per capita volume of investment was also above the 1974 level). The "long downswing" could, therefore, be viewed as a prolonged crisis of overaccumulation, following the large investment during the "long upswing" of 1945-74.

The stagnation of investment in 1974-93 can mainly be explained by the fall in investment in buildings and structures, a fall that continued during the "long upswing" of 1993-2000. The per capita volume of investment in buildings and structures in 2000 was at a 39 percent lower level than in 1972 and still at a lower level than in 1959. Per capita volume investment in machinery and equipment

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[653] Commenting the acceleration of growth after 1950, Angus Maddison (1991: p. 128) argues:

"The acceleration was biggest in Austria, Germany, Italy, and Japan and smallest in the USA, Canada, Switzerland, Norway, Sweden and Australia. This country distribution suggests the influence of different degrees of recovery from the war."

See also Korpi, 2004.

[654] In Sweden, a debate has been waged in relation to the economic performance of Sweden since the 1970s (see Korpi, 1990, Korpi, 1992a, Eklund and Karlström, 1992, Henrekson, 1992, Korpi, 1992b, Krantz, 1993a, Jonung and Ohlsson (ed.), 1997, Krantz, 2004, and Korpi, 2004). Walter Korpi (1992a: p. 87) points out, for example, that the assumption of a zero productivity growth of government services, in combination with the fact the these services increased their share of total GDP considerably in this period, makes the GDP growth in this period not comparable to earlier periods.

continued to grow throughout 1974-93, although at a meagre 0.5 percent per year on average.

The depressed accumulation was not overcome in 1993-2000, but rather continued. Nevertheless, the period 1993-2000 experienced quite a high growth rate of GDP per capita, almost at the same level as during the "long upswing" of 1945-74. The period 1993-2000 is quite short, and as the present investigation stops at 2000 the conclusions about the character of this period is only preliminary.

The per capita volume of investment in buildings and structures continued to fall in 1993-2000 making a negative contribution to GDP per capita growth. The contribution to annual GDP per capita growth of investment in machinery and equipment was on average 0.7 percentage points in this period. Most spectacularly, net export contributed as much as 0.8 percentage points to annual GDP per capita growth, as the weight of foreign trade in the overall economy increased and export grew faster than import.

Despite all talks about the death of manufacturing, it was the accelerated growth of manufacturing and handicrafts in 1993-2000 that contributed most to the better overall growth performance compared to 1974-1993.[655] The contribution of business services was also significant to the upswing. Together, circulation activities (trade, finance, insurances and business services) made a contribution of 1.0 percentage points to annual GDP per capita growth in 1993-2000. Government services made a negative contribution to GDP per capita growth, and this was clearly a reversal from earlier decades.

7.5 Different series of aggregate production

TABLE 7.14 summarises different estimates of the average annual GDP per capita growth during "long upswings" and "long downswings" as defined in section 7.4, and in the period 1861-1950 as whole.

The different estimates of GDP per capita growth in 1861-1950 of previous studies are generally higher than the PS-estimates. It is especially the Fisher volume index that gives a lower growth rate than the Laspeyre volume index (which is used, for instance, within the project of HNAS). The difference between the Laspeyre and Paasche volume indices of this study shows that the choice of deflation technique has an impact on the result concerning long-term growth.

[655] Daniel Lind (2002a and 2002b) argues that it was the contribution of ICT-related branches that was decisive for the acceleration in GDP growth.

Furthermore, a correction for the value added share in gross output gives a lower long-term growth rate than an estimate based on constant value added share, as the value added share has decreased over time. Similarly, the estimates of NDP per capita display a lower long-term growth than the estimates of GDP per capita, which can be explained by the fact that the ratio of consumption of fixed assets to GDP has increased over time.

The various series put GDP per capita growth during "long downswings" and "long upswings" at about the same level, with the exception of the "long downswings" of 1913-1921 and 1939-1945 connected to the World Wars. These years also experienced quite sharp price fluctuations. For the "long downswing" of 1913-1921, the PS-estimates of average annual GDP per capita growth varies between -2.4 and -0.5 percent. While according to the series of Östen Johansson and Krantz-Nilsson GDP per capita experienced a positive growth during the Second World War, according to all the PS-series (in TABLE 7.14) GDP per capita fell in this period.

Cumulatively, over the whole period 1861-1950, the differences between the various series are not so large.

TABLE 7.15 and TABLE 7.16 present correlations and the average annual systematic and absolute differences between various GDP-series for the periods 1861-1950 and 1950-2000, respectively. The average absolute difference is a measure of the difference (in percentage points) between two series irrespective of the positive or negative sign of this difference. In the long run, positive and negative signs tend to cancel each other and the average systematic difference is what remains.[656]

[656] The average annual systematic difference (in percent) between series 1 and series 2 for the period year a to year b can mathematically be expressed as (where V stands for volume index):

$$\left(\prod_{k=a+1}^{b}\left(\left(\frac{V_{\text{year k, series 2}}}{V_{\text{year k-1, series 2}}}\right)\Big/\left(\frac{V_{\text{year k, series 1}}}{V_{\text{year k-1, series 1}}}\right)\right)\right)^{1/(b-a)} * 100 - 100$$

The average annual absolute difference for the same period can be expressed as:

$$\left(\prod_{k=a+1}^{b}\exp\left(\left|\ln\left(\left(\frac{V_{\text{year k, series 2}}}{V_{\text{year k-1, series 2}}}\right)\Big/\left(\frac{V_{\text{year k, series 1}}}{V_{\text{year k-1, series 1}}}\right)\right)\right|\right)\right)^{1/(b-a)} * 100 - 100$$

The systematic difference is never larger than the absolute difference.

At the aggregate level, the difference between the annual GDP growth series by activity of the present study and the series of Krantz from 2001 is not large. The differences with earlier estimates are much larger.

The correlation between the GDP-series by activity of the present study and Krantz's series from 2001 is very high (+0.97) for the period 1861-1950 (although it is lower for the period 1800-1861), while the correlation with earlier series is below +0.75.[657] See TABLE 7.15. This should not be surprising as the PS-series to a large extent are based on the material of SHNA.

Perhaps more surprising is that the correlation for 1950-2000 between the PS-series of GDP by activity and the series of Statistics Sweden is comparatively low (only +0.92), although it must be considered that the GDP-series of Statistics Sweden is calculated by expenditure. The correlation between the PS-series of GDP by expenditure and the SCB-series for this period is higher (+0.98). The average annual systematic difference between the SCB-series and the PS-series is quite small (during the whole period 1950-2000 below 0.1 percentage points). See TABLE 7.16.

For the period 1861-1950, Krantz's 2001 series displays on average a 0.1 percentage points higher annual growth rate than the corrected Fisher volume index by activity of the present study.

The differences are greater for individual annual changes. The average annual absolute difference between the corrected Fisher series of the present study and Krantz's 2001 series is 0.8 percentage points for 1861-1950 (see TABLE 7.15). The largest differences between the two series are for those annual changes that either tended to display a very high increase or a very sharp fall in volume GDP (see TABLE 7.17).

The differences with the series of Östen Johansson (ÖJ) and Krantz-Nilsson from 1975 (K-N) are larger.[658]

The systematic difference is largest when comparing ÖJ with the other series. On average, the ÖJ-series displays a 0.4 percentage points higher annual growth rate than the corrected Fisher index by activity of the present study for the period 1861-1950 (see TABLE 7.15). This adds up to a significant difference concerning long-term growth. While according to Östen Johansson, GDP rose 14-fold between 1861 and 1950, according to the PS-series, GDP rose just ten-fold in that period.

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[657] No significance levels are presented here, since they are problematic to interpret (depending on whether we look at the various series as "total populations" or "outcomes" of an underlying stochastic variable).

[658] For a comparison between the SHNA-series and Krantz's and Nilsson's series, see Bohlin, 2003: pp. 87-93.

The average absolute difference between the ÖJ-series and the corrected Fisher index by activity of the present study for individual annual changes is as much as three percentage points. The average annual absolute difference between K-N series and the PS-series is around two percentage points (see TABLE 7.15). The absolute difference between Krantz's series from 2001 and the two earlier series is of the same magnitude.

For individual annual changes, these divergences can be rather huge and also affect whether the economy is considered to have grown or contracted:

- In 1920-21, GDP grew by 3.1 percent according to the K-N series, it fell by 8.5 percent according to the present study, it fell by 5.0 percent according to Krantz's series from 2001, and fell as much as 11.9 percent according to the ÖJ-series.
- In 1921-22, GDP contracted by 5.3 percent according to the ÖJ-series, while it expanded by 10.9 percent according to the PS-series.
- In 1914-15, GDP grew by 1.2 percent according to the PS-series, but fell by 1.7 percent according to the K-N series.

These examples clearly underline that the choice of GDP-series and deflation technique is not a matter of perfectionism. The result can be significantly altered by the chosen method. It must also be borne in mind that different series have been constructed for different purposes, and that previous studies are concerned with long-term changes more than annual fluctuations.

TABLE 7.14: *Average annual per capita volume growth (in percent) according to various estimates of aggregate production during "long upswings" (bolded), "long downswing" (normal style), and for the whole period 1861-1950 (italic).*

Period	GDP ÖJ 1967	GDP K-N 1975	GDP OK 2001	PS GDP by ex-pen-diture	PS GDP un-corr. Fisher	PS GDP corr. Las-peyre	PS GDP corr. Paa-sche	PS GDP corr. Fisher	PS NDP by acti-vity	PS NDP by ex-pen-diture
1861-1950	*2.3*	*2.1*	*2.1*	*2.0*	*2.1*	*2.1*	*1.8*	*2.0*	*1.9*	*1.9*
1800-1853			0.3	0.4	0.4	0.5	0.3	0.4	0.5	0.4
1853-1860			**2.4**	**3.0**	**2.7**	**2.8**	**2.6**	**2.7**	**3.0**	**2.6**
1860-1868			-0.6	-1.5	-1.1	-0.9	-1.3	-1.1	-1.7	-1.2
1868-1876	**4.5**	**3.9**	**4.2**	**5.2**	**4.5**	**4.5**	**4.2**	**4.4**	**5.2**	**4.3**
1876-1887	0.5	0.7	0.2	0.4	0.7	0.7	0.6	0.6	0.3	0.4
1887-1913	**2.9**	**2.5**	**2.6**	**2.6**	**2.6**	**2.5**	**2.4**	**2.4**	**2.6**	**2.4**
1913-1921	-0.7	0.1	-0.7	-2.0	-1.0	-0.5	-1.7	-1.1	-2.4	-1.2
1921-1939	**3.3**	**3.2**	**3.7**	**3.9**	**3.9**	**4.2**	**3.9**	**4.0**	**4.1**	**4.0**
1939-1945	2.2	0.9	0.0	-0.3	-0.4	-0.6	-1.1	-0.8	-0.7	-1.0
1945-1974	**4.4**	**2.9**	**5.8**	**3.4**	**3.5**	**3.4**	**3.4**	**3.4**	**3.3**	**3.3**
1974-1993				0.9	1.0	0.7	0.7	0.7	0.7	0.6
1993-2000				**2.9**	**3.1**	**3.2**	**3.2**	**3.2**	**3.1**	**3.4**

Sources: Johansson (ÖJ), 1967, Krantz and Nilsson (K-N), 1975, Krantz (OK), 2001, and the present study (PS). See also section 3.4, chapter 4, chapter 5, and footnote 579 (on page 147).

Comment: Corr. stands for "corrected for the change in the share of value added in gross output" when calculating GDP by activity, and uncorr. is the estimate under the assumption of a constant value added share (see section 3.4.3).

TABLE 7.15: *Correlations of and average annual systematic and absolute differences (in percentage points) between various series of GDP growth for the period 1861-1950.*

The two series compared	Correlation coefficient	Systematic difference	Absolute difference
ÖJ 1967 – PS corr. Fisher	+0.60	0.4	3.3
K-N 1975 – PS corr. Fisher	+0.70	0.1	2.2
Krantz 2001 – PS corr. Fisher	+0.97	0.1	0.8
PS uncorr. Fisher – PS corr. Fisher	+1.00	0.1	0.2
PS from expenditure side – PS corr. Fisher	+0.93	0.0	1.3
PS corr. Laspeyre – PS corr. Paasche	+0.99	0.3	0.3

Sources for calculations: Johansson (ÖJ), 1967, Krantz and Nilsson (K-N), 1975, Krantz, 2001, and the present study (PS). See also section 3.4, chapter 4, and chapter 5.

Comment: For abbreviations, see TABLE 7.14. The systematic difference measures how many percent larger (or smaller if taken a negative value) the annual volume relatives according to the left-hand series is on average compared to the annual volume relative according to the right-hand series. The absolute difference measures how many percent larger on average the largest estimate of the volume relative for an annual change is compared to the smallest estimate of the volume relative. The absolute difference is therefore always positive. The correlations relate to the logarithmic growth rates.

TABLE 7.16: *Correlations of and average annual systematic and absolute average differences (in percentage points) between various series of GDP growth for the period 1950-2000.*

The two series compared	Correlation coefficient	Systematic difference	Absolute difference
PS uncorr. Fisher – PS corr. Fisher	+0.99	0.1	0.3
PS from expenditure side – PS corr. Fisher	+0.92	0.0	0.6
SCB – PS corr. Fisher	+0.92	0.0	0.6
SCB – PS from expenditure side	+0.98	0.0	0.3
PS corr. Laspeyre – PS corr. Paasche	+1.00	0.0	0.1

Sources for calculations: *Statistiska Databaser* (online at http://www.scb.se, 030101), and present study (PS). See also section 3.4, chapter 4, and chapter 5.
Comment: See comment of TABLE 7.15.

TABLE 7.17: *The estimated annual changes of volume GDP (in percent) displaying the largest differences in the period 1850-1950 when Krantz 2001 series is compared to the corrected Fisher index series of the present study.*

Annual change	GDP growth according to:	
	Krantz 2001	Present study
1920-1921	-5.0	-8.5
1861-1862	-2.5	-5.5
1949-1950	7.0	3.9
1939-1940	-6.9	-9.3
1867-1868	-8.3	-10.6
1917-1918	-8.5	-6.2
1868-1869	6.8	9.4
1916-1917	-4.5	-6.7
1915-1916	7.0	5.1
1922-1923	3.3	5.1
1857-1858	3.9	5.6
1855-1856	0.5	-1.1

Sources: Krantz, 2001 and the present study. See also section 3.4 and chapter 4.

7.5.1 The corrected and uncorrected series by activity

For the period before 1950, a revision of this study to previous GDP-estimates is made when correcting for long-term changes in the ratio of value added to gross output of different types of activities. The ratio of GDP to the Gross Domestic Output has been relatively stable during longer periods, with some exceptions. Up to the end of 1880s, this ratio was around 60 percent. Between 1885 and 1905, it declined to around 53 percent. Between 1935 and 1950, it further declined and has since then been stable at around 50 percent. For individual activities there have been some additional transformations. See FIGURE 7.2.

The correlation between the uncorrected Fisher index and the corrected one (taking into account changes in the value added share) of the present study is

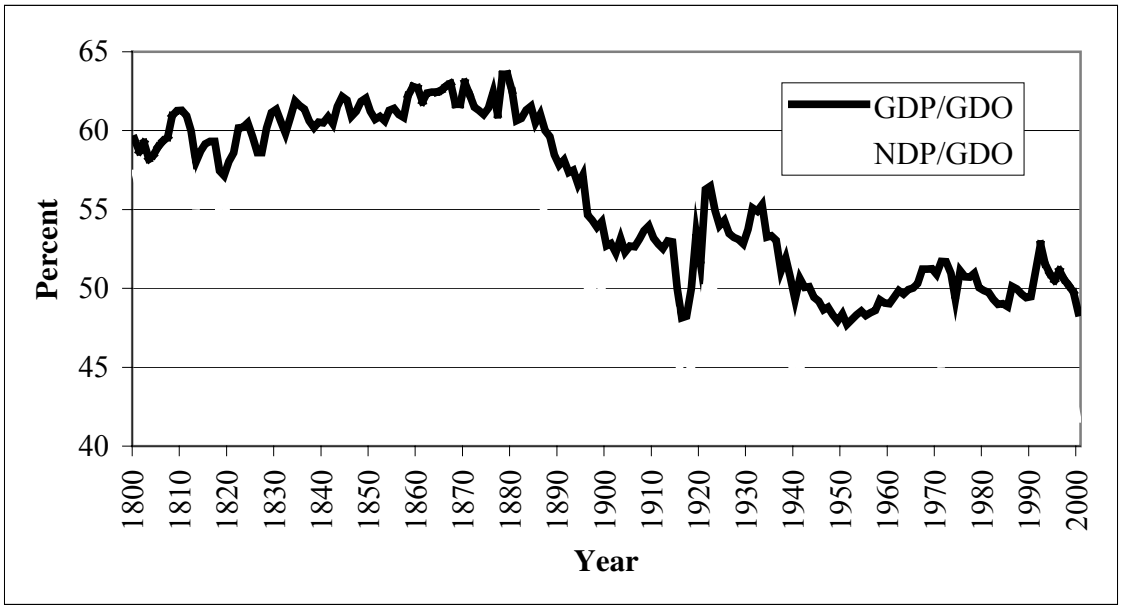
quite high, +0.997 for the period 1861-1950, and somewhat smaller (+0.987) for the period 1950-2000. The average annual systematic and absolute differences between the two series are quite small as well (see TABLE 7.15 and TABLE 7.16).

The largest differences (at the level of around 0.5 percentage points annual difference) between the two series concerns three periods – 1920-27, 1938-52 and 1975-85 – an effect of the long-term changes in the value added shares of different activities. See FIGURE 7.2.

However, the large decline in the GDP/GDO ratio between 1885 and 1905 is not translated into a large difference between the two series of GDP growth. In fact, the decline in the GDP/GDP ratio can mostly be explained by the increased weight, in this period, of activities with low ratios of value added to gross output (which, in turn, also affects the growth figures of the uncorrected GDP-series).

The largest annual difference between the two GDP series concerns the time span 1920-21. While GDP contracted by 9.8 percent according to the uncorrected volume Fisher index, it contracted by 8.5 percent according to the corrected one.

FIGURE 7.2: *The ratios (in percent) of Gross Domestic Product and Net Domestic Product, respectively, to Gross Domestic Output (based on current basic values).*



Sources: Calculations based on the PS-data. See chapters 3, 4 and 5.

7.5.2 GDP by activity and by expenditure

The correlation between the GDP-series by activity and by expenditure of the present study is somewhat higher for the period 1861-1950 than for 1950-2000, despite the fact that the sources and calculations of GDP by expenditure for the period before 1950 are more unreliable. This shows that the GDP-series by

expenditure is probably robust for earlier years too (see TABLE 7.15 and TABLE 7.16).

However, the average annual absolute difference between the two series is quite high, for the period 1861-1950 1.3 percentage points and for the period 1950-2000 0.6 percentage points. For individual annual changes, the difference can be quite large. For instance, while in 1890-91 GDP by activity rose by four percent, GDP by expenditure fell by two percent. Even for the period after 1950 the difference can be significant. While in 1970-71 GDP by activity rose by 2.3 percent, GDP by expenditure fell by 0.1 percent.

The average annual systematic difference between the two series is negligible. This means that the two series are much more similar when it comes to long-term growth than short-term fluctuations.

7.5.3 Differences between the Laspeyre and Paasche volume indices

The Fisher volume index is a geometric average of the Laspeyre and Paasche volume indices (section 3.4.2). Comparing the latter two is interesting from several points of view (this section only considers the ones corrected for changes in the value added share). Such a comparison illustrates how robust the result is when using different methods, and which annual changes could be problematic to interpret. This difference is purely an effect of the deflation technique, as the nominal values and deflators at the most disaggregated level are exactly the same for the two series.

The correlation between the Laspeyre and Paasche volume indices is very high, +0.995 for the period 1861-1950 and +0.998 for 1950-2000.

The systematic difference between these two series is significant only for some periods. On average, the Paasche volume index displays an annual GDP growth at a 0.3 percentage points lower level than the Laspeyre volume index for 1861-1950, and at a 0.2 percentage points lower level for 1800-1861, but at a 0.01 percentage point higher level for 1950-2000. According to the Laspeyre volume index, GDP rose 119-fold between 1800 and 2000, but only 79-fold according to the Paasche volume index. This demonstrates that our view of the long-term development of the economy is affected somewhat by the deflation technique used. Nevertheless, the result that the Laspeyre volume index tends to show higher growth figures than the Paasche volume index is expected, which is connected to the so-called Gerschenkron effect described in section 3.4.2.

For single annual changes the differences are not so great. The average annual absolute difference between the Laspeyre and Paasche volume indices is 0.3 percentage points for the period 1861-1950, 0.2 percentage points for 1800-1861,

and only 0.06 percentage points for 1950-2000 (see TABLE 7.15 and TABLE 7.16).

The largest differences between the two indices concerns the time span of the First World War and its aftermath (see TABLE 7.18). According to the Laspeyre volume index, GDP rose by 3.6 percent between 1916 and 1922 (which includes two cycles: the depression of 1916-18, the boom of 1918-20, the depression of 1920-21 and the revival of 1921-22). But according to the Laspeyre volume index, GDP fell by 5.4 percent in this period.

For individual annual changes, the differences between the two indices do not affect the sign of the volume growth figure (i.e. whether the economy is considered to have expanded or contracted).

TABLE 7.18: *The estimated annual changes of volume GDP (in percent) displaying the largest differences in the period 1850-2000 when the corrected Paasche and Laspeyre volume indices of the present study are compared.*

Annual change	Growth of GDP by activity according to:	
	PS Laspeyre volume index	PS Paasche volume index
1916-1917	-5.6	-7.9
1917-1918	-5.3	-7.2
1914-1915	2.4	0.7
1867-1868	-9.9	-11.3
1921-1922	11.7	10.0
1939-1940	-8.7	-9.8
1918-1919	5.2	4.0
1920-1921	-8.1	-8.9
1919-1920	7.2	6.2
1869-1870	13.5	12.5
1940-1941	-1.1	-2.0
1951-1952	0.3	1.1

Sources: See section 3.4 and chapter 4.

7.6 Summary

This chapter investigates patterns of long-term growth. The main variables analysed are GDP, GDP per capita and employment.

Between 1800 and 2000 GDP per capita increased 26-fold. Although GDP per capita increased somewhat during the first half of the 19th century, it was at around mid-19th century that GDP per capita growth accelerated significantly. The initial acceleration in GDP per capita growth came from agriculture and ancillaries and not from industrial goods production.

A common view today is that a so-called service or information society has replaced the industrial society, a transformation comparable to the shift from an agrarian to an industrial economy. The increase in the relative size of services during the second half of the 20th century can to a large extent be explained by the increasing rate of participation of women in the labour market. There are also some services – transport, communication, trade, finance, insurances, business services and real estate – that are more connected to industrial goods production, and their relative size has grown significantly. Services previously performed within the industrial goods producing unit has been shifted to separate units, leading to a statistical reclassification from industrial goods production to services. Especially during the 1990s, the growth of business services was significant, connected to so-called outsourcing. The ratio of employment in industrial activities, including both industrial goods production and industry-related services, to the total number of labourers (including "housewives") has in fact been stabled at above 50 percent in the last decades of the 20th century, and actually continued to rise somewhat. If the concept of industrialisation is defined in a broader sense, as the introduction of large-scale methods of production, some of the processes connected to industrialisation were still in operation towards the end of the 20th century.

In section 7.4, a periodisation is made by identifying "long upswings" and "long downswings". A "long downswing" is defined as a longer time span of average annual GDP per capita growth below one percent, and "long upswings" as the periods in between "long downswings". The whole period up to 1853 is considered as a "long downswing".

Five "long downswings" are identified for Sweden since mid-19th century: 1860-68, 1876-1887, 1913-1921, 1939-1945, and 1974-1993. These "long downswings" were of quite different characteristics. The "long downswing" of 1860-1868 was largely an agricultural crisis. The "long downswings" of 1913-1921 and 1939-1945 were connected to the two World Wars, but that does not devalue their significance and long-term impact on Swedish economic development. Sweden escaped a "long downswing" in the early 1930s according to the definition applied in this chapter, as the depression then was not as deep in Sweden as in other countries and the recovery was strong after the depression.

Section 7.5 compares various estimates of the volume growth of aggregate production. The differences between the present study and previous estimates of GDP growth are quite small when considering long-term growth. The differences are quite large, however, for single annual changes, which affects our view on, for example, the depth of individual economic crises.

8 The process of accumulation

8.1 Introduction

This chapter examines various aspects of the process of accumulation. The empirical investigation relates to the growth theories discussed in chapter 2, especially to the Marxist theory of a long-term tendency for the rate of profit to fall.

Section 8.2 discusses different concepts and ratios associated with the process of accumulation as the surplus/asset ratio and its determinants. The profit rate is related to the surplus/asset ratio, although surplus and assets also encompass sectors outside capitalist production. Section 8.3 deals with investment and foreign trade with special focus on the long-term patterns of stability and transformation in the "structure of expenditures". A fundamental ratio in economic growth theory, and one of the main determinants of the surplus/asset ratio, is the ratio of produced assets to value added (connected to the capital/output-ratio), which is discussed in section 8.4. Section 8.5 examines another important determinant of the surplus/asset ratio, the ratio of surplus to labour income, which is connected to the rate of exploitation. Finally, section 8.6 deals with the long-term determinants of the surplus/asset ratio. Because of the weak reliability of the series of labour income and surplus of various activities in the private sector, the focus of sections 8.5 and 8.6 is on manufacturing and handicrafts.

When not stated otherwise the presented figures are based on the data material of the present study.

8.2 Conceptualisation

The main variables discussed in this chapter are investment and its composition, export and import, stocks of produced assets, labour income and surplus. All of these variables are connected to each other. Investment increases the stock of produced assets. In Keynesian and Marxist theories of growth (although not in neoclassical), the size of investment is correlated with the size of the surplus.[659] A part of investment can also be financed from abroad by capital import or a net import, while a strong net export can contribute to increased net holdings of foreign assets.

[659] See footnote 106 on page 24.

These variables can be related to each other and to the value added of production in the form of ratios. The rise and fall in these ratios mark important shifts within the economy.

When these variables are compared to each other they should be expressed in the same type of prices. In this chapter, the comparison is mainly made in purchasers' prices. In the national accounts, value added at a more disaggregated level is only expressed in basic values, while surplus and wages are only expressed in factor prices. As explained in sections 5.9 and 6.8.3, in this study, value added, surplus and labour income are also expressed in a kind of purchasers' proxy prices to make comparisons possible.

As explained in section 8.2.4, the main focus of this thesis is on current ratios and not on volume ratios, which implies that the result of the present study can differ from studies focusing on volume ratios.

8.2.1 Profit rate, surplus and produced assets

The profit rate, computed as the ratio of profit to capital, is a fundamental concept to understand the functioning of the capitalist system. Both profit and capital can be estimated in different ways.[660] There is also the question of what parts of the economy should be included when the general profit rate is computed. As Erik Lundberg writes in relation to the term "capital":

> There is nothing in economic thought as perplexing, as foggy and unclear, as ambiguous, and interpreted and understood so differently by economists, as the term capital.[661]

In mainstream economics, the term capital is used both to refer narrowly to the humanly created means for production and broadly to any financial or non-financial assets that can provide an income, even if only potentially so (for example, residential buildings used by the owners themselves or even education).[662] Both definitions implicitly imply that capital is intrinsic to all societies and social relations.[663] However, the Marxist conception of capital is different. As explained by Marx:

> …capital is not a thing, but rather a definite social production relation, belonging to a definite historical formation of society, which is manifested in a thing and lends this thing a specific social character. Capital is not the sum of the material and produced means of production. Capital is rather the means of production transformed into capital, which in themselves are no

[660] See, for example, Erixon, 1987: pp. 33-36.
[661] Lundberg, 1961: p. 80. My translation from Swedish.
[662] Black, 1997: p. 47.
[663] Mohun, 1991: p. 68.

> more capital than gold or silver in itself is money. It is the means of production monopolised by a certain section of society, confronting living labour-power as products…[664]

In this study, a distinction is made between asset and capital. In this sense, asset can be considered a broader concept.[665]

Similarly, a distinction is made between surplus and profit or surplus value. Surplus refers to the excess that arises from production above the means of subsistence of the labourers,[666] which is appropriated either by a class of exploiters or by the labourers themselves, while profit or surplus value is the specific capitalist form of this surplus.

In the PS-data of produced assets and surplus no distinction is made between capitalist and non-capitalist parts, since it has not been possible to collect suitable information to make such a distinction.

To estimate the profit rate within the capitalist sector is not without problems either. According to Howard Sherman, in "terms of national income accounting, the rate of exploitation is roughly profit/wages".[667] This is criticised by Anwar Shaikh and Ahmet Tonak.[668] In the latter's analysis, the wages paid out to unproductive labour are considered as part of the surplus value and not of variable capital, and hence "the rate of surplus value… is typically almost 4 times as large as the ratio of profit-type income to employee compensation…"[669] Fred Mosley distinguishes between the Marxist rate of profit that relates the surplus value created by productive labourers to the capital stock within productive activities (which exclude circulation) and the conventional rate of profit.[670]

Such a "Marxist rate of profit" is quite problematic, however, as we then risk losing the connection between the concept of surplus value and actual profits, and the relation between profit and accumulation (as capitalists clearly cannot accumulate the part that goes to unproductive labour). Mosley also admits that the conventional rate of profit is a more important determinant of capital accumulation and capitalist crisis.

Also from a theoretical point of view, it is rather problematic to include the wage of unproductive labour in the concept of surplus value and exclude unproductive capital from the stock of capital. For example, it could be argued that the variable capital is the amount that a capitalist pays for the use of the

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[664] Marx, 1966 [first published 1894]: pp. 814-815.

[665] The term "asset" is also used in official national accounts (see *System of National Accounts 1993*, 1993: p. 218).

[666] For operationalisation, see section 6.8.

[667] Sherman, 1986: p. 198.

[668] Shaik and Tonak, 1996: p. 157.

[669] Shaik and Tonak, 1996: p. 221.

[670] Mosley, 1991: p. 103.

labour power; how the capitalist uses this labour (for example productively or unproductively, profitably or non-profitably) should not change its character as variable capital. Similarly, it could be argued that a machine bought by a capitalist is accumulation of constant capital irrespective of how the capitalist subsequently puts this machine to use, if it is put to use at all. On the other hand, it should be recognised that the volume value of the surplus value, in terms of the goods and services that capitalists consume and accumulate, is reduced if the costs of circulation are high.

Produced assets consist, in the present enquiry, both of means of production and assets that are not means of production in a strict sense, such as residential buildings.[671] It must, however, be considered that renting out residential buildings is an important source of profit in contemporary society, and the rents paid are important components of the expenses of wage workers.

The "conventional profit rate" can also be computed in different ways. Various financial relations imply that the production unit is different from the company as a financial unit. The existence of taxations, net financial payments, and so on, entail that the actual profit of a company can be very different from the profit derived from production. In fact, even the accounting profit rate will vary depending on different accounting methods. Financial incomes could be viewed as incomes coming from other business operations, and thus not included in the profit, and financial payments viewed as part of the profit coming from production. In national accounts, as well as in this study, surplus only includes the surplus derived from the production itself and not from other business operations. The surplus is, in this way, distinguished from "entrepreneurial income", which is defined as the surplus *plus* property incomes on financial or other assets *less* interest and rents paid.[672]

The profit can also be related to different measures of the capital stock.

As discussed in chapter 5, there are different methods to estimate the produced assets. The Perpetual Inventory Method used in this study does not take into account that the rate of scrapping can change from one year to another. As pointed out by Lennart Erixon:

> Probably, the size of the capital stock is *overestimated* by the national accounts during periods of major industrial restructuration, particularly in the recession of the mid-1970s.[673]

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[671] See Mosley, 1991: pp. 38-39.

However, residential buildings could be considered as "means of production" in relation to the reproduction of human labour within the domestic sphere, even though unpaid domestic labour is not registered in official national accounts.

[672] *System of National Accounts 1993*, 1993: p. 164.

[673] Erixon, 1987: pp. 36-37.

Furthermore, the total capital owned by a company is not the same as the produced assets. There is a difference between capital as owned by a company and how the company is valued at the stock exchange. There is, in this sense, a difference between "return on capital" and "return on equity".[674] The Marxist economist, Rudolf Hilferding, points out that the value of the industrial capital of a company does not equal, and is normally below, the value of the company when it is transformed into a joint-stock company, where its shares are bought and sold on a stock market. He terms the difference a "promoter's profit", which is a kind of "fictitious capital".[675]

There is also a difference between the profit rate based on national account data, as in this study, and based on business account data.[676]

Despite the difficulties described in this section, the ratio of surplus (gross or net) to the net stock of produced assets could be viewed as a very crude indicator of the profit rate (gross or net), at least for later periods. In this chapter, the asset/value added ratio is investigated for the whole economy, as well as for various types of activities. Since the surplus is not a meaningful concept to apply on government services, the surplus/asset ratio is only investigated for manufacturing and handicrafts and the private sector as a whole. Manufacturing and handicrafts are probably those activities that have been dominated by capitalist relations earliest in time.

The surplus/asset ratio can mathematically be expressed as (VA stands for value added, S for the stock of assets, and Sur for surplus):

$$\frac{Sur}{S} = \frac{Sur}{VA}\frac{VA}{S} = \frac{Sur}{VA}\Big/\frac{S}{VA} \tag{8.1}$$

The above formula implies that the surplus/asset ratio could be seen as determined by two variables, the surplus share and the asset/value added ratio.[677] The lower the surplus share in value added, the lower the surplus/asset ratio. The higher the asset/value added ratio, the lower the surplus/asset ratio. These two factors affecting the surplus/asset ratio are further investigated in section 8.6. This reasoning is a reformulation of the two determinants of the rate of profit in the classical Marxist model (the rate of exploitation and the value composition of capital), as described in section 2.2.

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[674] Stanford, 2002: pp. 12-13.
[675] Hilferding, 1981 [1910]: pp. 110-112.
[676] See Bohlin, 1989: pp. 64-65.
[677] For a criticism of such decomposition, see Carchedi, 1991: pp. 186-188. See also Bohlin, 1989: pp.148-154, who decomposes the profit rate for the shipyard industry using national account data.

While the relation between constant capital and variable capital is only relevant for a capitalist system, the ratio between produced means of production and means of subsistence of the direct producers can be estimated for all types of activities. Similarly, while the profit rate is only relevant for the capitalist system, the ratio of surplus to produced means of production can be estimated for all types of activities. When a capitalist takes over production from non-capitalist institutions, the direct producers are transformed into wage labour. In this sense, there is no Chinese Wall between general ratios, as the surplus/asset ratio and the asset/value added ratio, and their specific capitalistic form, as the profit rate and the capital/value added ratio. Furthermore, when non-capitalist relations are transformed into capitalist relations, the relation between produced means of production and means of subsistence of the direct producer is not only transformed socially but also materially by speeding up the accumulation of produced assets. In this respect, the asset/value added ratio can be investigated to test the hypothesis that the capitalist form of accumulation implies a higher such ratio.[678]

8.2.2 Accumulation

At the abstract level, the Marxist notion of capital accumulation means, as Satya Datta puts it, "a partial capitalisation of the social surplus created by living labour and expropriated by capital" and "is composed of additional constant capital (new means of production) and additional variable capital (money capital for new employment)".[679] This notion has no exact correspondence in the terminology of national accounts, although it is related to the concepts of net investment and net saving. Accumulation in new constant capital can be identified as the sum of net investment in fixed assets (after the depreciation is deducted) and of changes in the stock of products intended for the use as intermediate consumption. A part of the accumulated variable capital is transformed into accumulated inventories of finished or unfinished products and included in inventory investment. But a part of this accumulation is left out in the national accounts if wages have been paid out but the work done not yet got a form to be counted as investment.[680]

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[678] See section 1.4.

[679] Datta, 1986: p. 13.

[680] Some of the "products under labour" are of an immaterial character (for instance, outlays on research and development or the training of the staff) and are not captured by national accounts. Some of the problems connected to the operationalisation of the Marxist concept of accumulation can equally be directed against the concept of investment, which is also recognised by the "new growth theories" emphasising the importance of immaterial investment (see section 2.3.3).

Generally, accumulation refers to an increase due to natural growth or addition. In economics, accumulation refers to an increase in assets. In this dissertation, a distinction is made between accumulation of capital and accumulation of produced assets. The latter also includes the accumulation of produced assets that from a social perspective are not capital.

From the point of view of the national economy, accumulation can also take the form of net capital export or net export. The net financial claims on the rest of the world (i.e. financial assets less financial liabilities for the total domestic economy) are also affected by the other components of the current account (balance of payments) than the net export, and on neutral and real holding gains on existing financial assets and liabilities.

From a Marxist point of view, capital accumulation as a process (i.e. expansion of capital) is fundamental for the working of the capitalist system, which gives rise to both steady growth and reoccurring crises of overaccumulation and overproduction.[681] It can in this sense be seen as the fundamental historical tendency of capitalism. See also chapter 2.

8.2.3 Foreign trade

The relations between foreign trade and investment to aggregate domestic production are important aspects of the transformation process in the economy.[682] Investment and foreign trade are connected to each other. Export less import (of goods and services) equals the net export. If the net export is negative, we can say that there is a positive net import. National saving is the sum of investment, net export, net income from abroad, and net transfer payments from abroad.[683] Henceforth, the relation between export and import must be taken into account of when investigating national saving.

In this chapter, net export and investment are together labelled as non-consumptive expenditures (NCE), since they constitute the part of GDP by expenditure that is not consumed. NCE are the material base of national saving and accumulation of produced assets. The other part of GDP consists of government and private final consumption.[684]

There are different ways to measure the integration of the economy into the international markets. A common measure is the export/GDP ratio and the import/GDP ratio. A problem with these ratios is that export and import are measured as gross outputs and not as values added and should, in this respect, be

[681] See, for example, Datta, 1986: pp. 14-15 and 278.
[682] See, for example, Åkerman, 1960: pp. 185-186.
[683] See *System of National Accounts 1993*, 1993: pp. 41-42 and 163, and Hall and Taylor, 1993: pp. 50-54.
[684] See section 3.3.1.2.

related to the total domestic gross output (GDO) rather than the total domestic gross value added (GDP). Both ratios can also be much larger than 100 percent, especially in the case when the value added share in gross output is very low. Two alternative measures are the ratios of export and import, respectively, to Gross Domestic Output (GDO). Normally, the latter two ratios cannot be larger than 100 percent.[685]

8.2.4 Volume or current ratios?

Different ratios can be studied either in current or in constant prices. In this thesis, the focus is on the nominal ratios, although the volume ratios are discussed in so far as they have relevance to the nominal ratios. This is partly linked to the chosen theoretical perspective. For example, while from some perspectives it is important to emphasise relations between physical products, from other perspectives it is more important to emphasise nominal relations.[686] As Peter Vikström puts it in the case of investment ratios:

> A ratio calculated with fixed prices fails to accurately reflect the investment ratio as a result of an economic decision. [687]

Another problem with volume ratios is that they are prone to different biases in the deflation techniques.

8.3 Foreign trade and investment

This section deals with the "structure of expenditures", although the analysis focuses entirely on foreign trade and investment. There are some observable patterns in the development of foreign trade and investment in Sweden in relation to the whole economy. In some periods, the pattern has been very stable. In other periods, quite drastic changes have taken place. The pattern is somewhat different, although correlated, for investment and for foreign trade. This section begins by investigating whether the pattern conforms to the supposed 40-50 year structural cycle as formulated by Lennart Schön and others, which is followed by a more detailed account of the different time periods.

In a 1983 article (mentioned in section 2.4.5), Krantz and Schön discuss three structural indicators: the long-term movements in the investment ratio, the share of machinery and equipment investment in total investment, and the share of

[685] If the changes in inventories are negative and of quite a large magnitude, either export or import can in fact be larger than the Gross Domestic Output. Since changes in inventories are quite small in comparison to Gross Domestic Output, such scenario is very improbable.

[686] See also section 3.4.2.

[687] Vikström, 2002: p. 125.

export in goods production. According to Krantz and Schön, phases of transformation have been characterized by an increasing investment ratio, a turn in the composition of investment towards long-term projects (implying a decreased share of machinery and equipment investment in total investment), and a turn to the home markets. Phases of rationalization have displayed an opposite pattern, by a decreasing investment ratio, an increasing share of machinery and equipment investment in total investment, and a turn towards export markets.[688]

In a 1993 article, Krantz points out that after the 1970s the investment ratio continued to decrease, machinery and equipment investment increased its share in total investment, and the export ratio increased. This is opposite to the pattern suggested by him and Schön in 1983 if assumed that the 1970s would have entered a phase of transformation.[689] While Krantz takes this as an indication that no phase of transformation was entered in the 1970s, in his answer to Krantz, Schön argues that this only shows that transformation has changed its form.[690]

In my opinion, there are reasons to also doubt that the structural indicators behaved in the manner that Krantz and Schön describe in the 1983 article for the period up to 1970s.

FIGURE 8.1 displays the ratio of export to GDP expressed in current purchasers' prices, while FIGURE 8.2 depicts the movement of the five-year average of the ratio of net export to GDP. Three major transformations in the relation between foreign trade and the aggregate economy can be identified. During the first half of the 19th century, the ratios of export and import, respectively, to GDP were quite stable. Between 1840 and 1870, an important transformation took place in this respect and the foreign trade doubled its size in relation to GDP. The two ratios were quite stable in the whole period 1870-1970, although export became larger than import during the course of the First World War and Sweden was transformed from a capital importing to a capital exporting country. During the last decades of the 20th century the Swedish economy went through a second internationalisation process (termed globalisation), and the export ratio doubled.

This pattern of transformation and stability in foreign trade does not conform to the supposed 40-50 year structural cycle consisting of a phase of transformation followed by a phase of rationalization. The 1850s and 1860s supposedly experienced a phase of transformation in Schön's scheme, but instead of a turn towards domestic markets, the Swedish economy went through a significant integration into the international markets during those decades. This

[688] Krantz and Schön, 1983: p. 479.
[689] Krantz, 1993b: p. 544.
[690] Schön, 1993b.

should, in my view, be seen as a transformation in its own right. The period 1910-1930 was supposedly a phase of rationalization, but it was during such "stability" that Sweden was transformed from a capital importer to a capital exporter. Again, and as Lennart Schön admits,[691] during the supposed phase of transformation in the 1970s and 1980s export became more important, not less important. Although the great spurt upward in the export ratio during the 1990s conforms to the description of a phase of rationalization, this could also be seen as a transformation in its own right as in the period 1850-1870.

When it comes to the movements in the investment ratio, Lennart Schön gives the following description:[692] A trough in the investment ratio coincides with a structural crisis, and is followed by a new structural cycle, consisting of a transformation phase followed by a rationalization phase. Such troughs occurred, according to Schön, in the early 1890s, early 1930s and early 1980s, ending three structural cycles. When the new structural cycle begins, the investment ratio increases throughout the transformation phase up to a culmination in the middle of the subsequent rationalization phase. Such culminations were, according to Schön, reached in mid-1870s, late 1910s and early 1960s – i.e. roughly 20 years after the structural crises. Then the investment ratio decreases until it reaches a new trough during the structural crisis that ends the rationalization phase and begins a new structural cycle. Schön demonstrates this graphically for the investment ratio in manufacturing and handicrafts, although he expresses this ratio in volume terms in the 1910/1912 prices. The latter is problematic, considering the large shifts in the relative prices through time.

FIGURE 8.3 presents the movements of the investment ratio for the whole economy per five-year period, although in current values and not in volume values (and also including changes in inventories). A wave-like movement of alterations between upswings and downswings in accumulation[693] can be observed in this figure, which is more pronounced for the net investment/GDP ratio than for the gross investment/GDP ratio. This wave-like movement did not entirely conform to Schön's scheme, although there are some congruencies.

Three or four cycles or waves of accumulation can be observed, which partly corresponded to the "long upswings" and "long downswings" in GDP per capita discussed in section 7.4.

The "first wave of accumulation" began during the 1840s and reached a peak in 1861/65, immediately followed by a trough in 1866/70. This corresponded to

[691] Schön, 1994: p. 38.
[692] Schön, 1994: pp. 24-25 and 2000b: pp. 182-185.
[693] See section 2.5.1.

the "long upswing" in GDP per capita of 1853-1860, and the subsequent "long downswing" of 1860-1868.

The next "wave of accumulation" began with a peak 1871/1875 and reached a trough in 1891/95, coinciding with the trough identified by Schön. It corresponded to the "long upswing" in GDP per capita of 1868-1876, although the trough in the investment ratio came after the "long downswing" of 1876-1887. This wave could also be seen as a continuation of the first wave, in accordance with Schön's description of a structural cycle stretching from the 1840s to the 1890s.

The "third wave" also began with a peak, in 1896/1900, and reached a trough in 1921/25 (and not in 1931/35 as Schön argues). This corresponded to the "long upswing" of 1887-1913 and the "long downswing" of 1913-1921.

The "fourth wave" corresponded to the two "long upswings" of 1921-1939 and 1945-1974. It reached a peak in 1961/65, in accordance with Schön's scheme, but reached a trough first in the 1990s and not in the early 1980s. According to Schön's scheme, the investment ratio should have started to rise after the "trough" in early 1980s, but this only happened briefly during the latter part of the 1980s and reached new lows during the 1990s.

While the first wave of investment was principally directed towards investment in agriculture and ancillaries, the second wave towards investment in transport and communication, the third and fourth waves were mainly directed towards investment in manufacturing and handicrafts. In all of these waves, residential investment played an important role.

The latter part of the 1990s could be the beginning of a "fifth wave" of accumulation (when looking at the ratio of non-consumptive expenditures to GDP), corresponding to the "long upswing" in GDP per capita beginning after the depression in 1990-1993. But this hypothetical accumulation cycle takes an entirely different form than the earlier ones. It is heavily directed towards capital and net export, while investment (especially residential investment) is depressed in relation to GDP (although this study does not take into account so-called immaterial investment, which has increased substantially in the last decades).

This account of "long cycles of accumulation" does not conform to a periodic rhythm as assumed by various long wave theories.[694] From trough to trough the first "cycle" was around 25 years, the second around 20 years, the third around 30 years and the fourth around 70 years. Henceforth, the length of such "cycles varied quite considerably.

In fact, the whole period 1850-2000 could be considered as an "overarching accumulation cycle", as a historical tendency encompassing the four waves of

[694] See sections 2.4.1 and 2.4.5.

investment, which reached a peak in the 1960s and a trough towards the end of the 20th century. Interestingly, this secular accumulation cycle corresponded to the acceleration and the subsequent deceleration in the growth of GDP per capita, but also with the rise and the subsequent fall in the relative size of industrial goods production; both processes reached a peak in the 1960s as well.

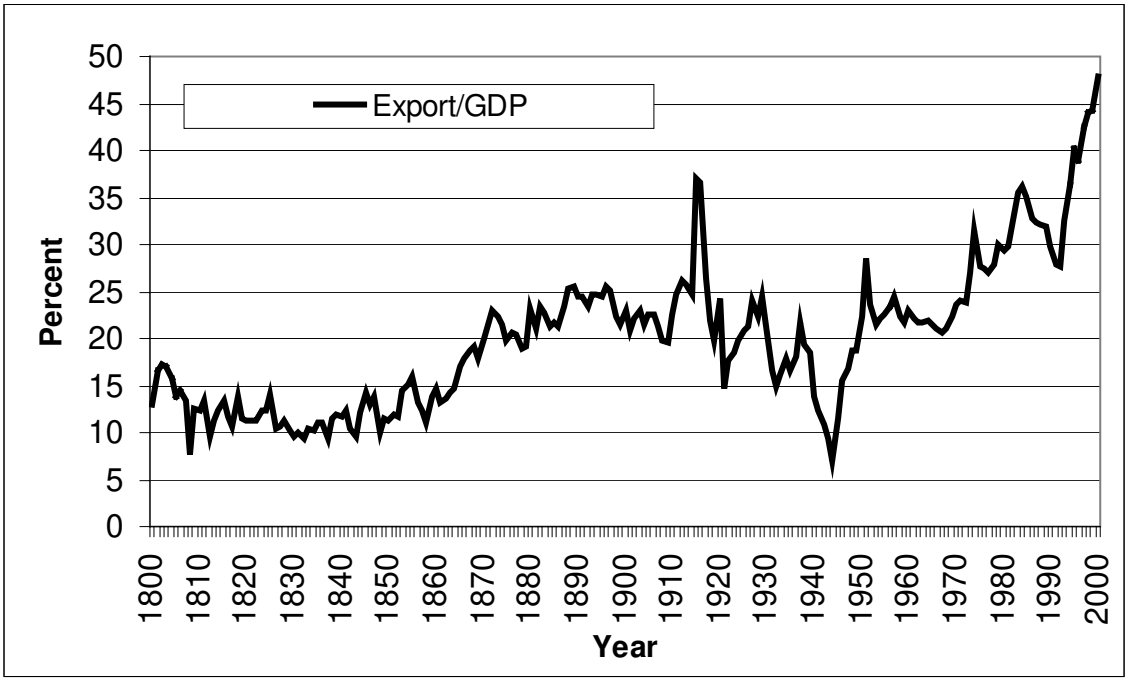
Lennart Schön, and later Svante Holmquist, retain also in recent works that the ratio of machinery and equipment investment to total investment is an important structural indicator.[695] Phases of transformation are, according to Schön and others, characterised by more long-term investment; implying that investment in new buildings and structures is large in comparison to investment in machinery and equipment. Phases of rationalization are characterised by more short-term investment and concentration of resources towards existing establishments, implying the priority of investment in machinery and equipment.

This hypothesis is tested in TABLE 8.1. Averages for the ratios of machinery (and equipment) investment and non-residential structure (and building) investment, respectively, to GDP during Lennart Schön's phases of transformation and rationalization are calculated. A "transformation indicator" is also computed as the difference between the increase in the non-residential structure investment ratio and the increase in the machinery investment ratio in relation the preceding period. A high value of this indicator shows that the non-residential structure investment ratio is increasing relatively faster in comparison to the machinery investment ratio, which is what is characterising phases of transformation according to Schön and others. A low level shows, on the other hand, that machinery investment is prioritised.

A pattern can be discerned from TABLE 8.1; the problem is that it is precisely opposite to the hypothesis of Schön and others. During three of Schön's transformation phases, 1893-1908, 1933-1952 and 1978-1992, the transformation indicator was lower than during any of Schön's phases of rationalization; the indicator was also negative, implying that investment in machinery and equipment was prioritised. Only the "transformation phase" of 1848-1867 behaved according to Schön's prediction, as the percentage point increase in the non-residential structure investment ratio was larger than the percentage point increase in the machinery investment ratio (although geometrically the machinery investment ratio more than doubled, while the non-residential structure investment ratio increased less then two-fold). The non-residential structure investment ratio reached two peaks, during the 1870s and 1960s, both of which occurred during phases of rationalization according to Schön's periodisation.

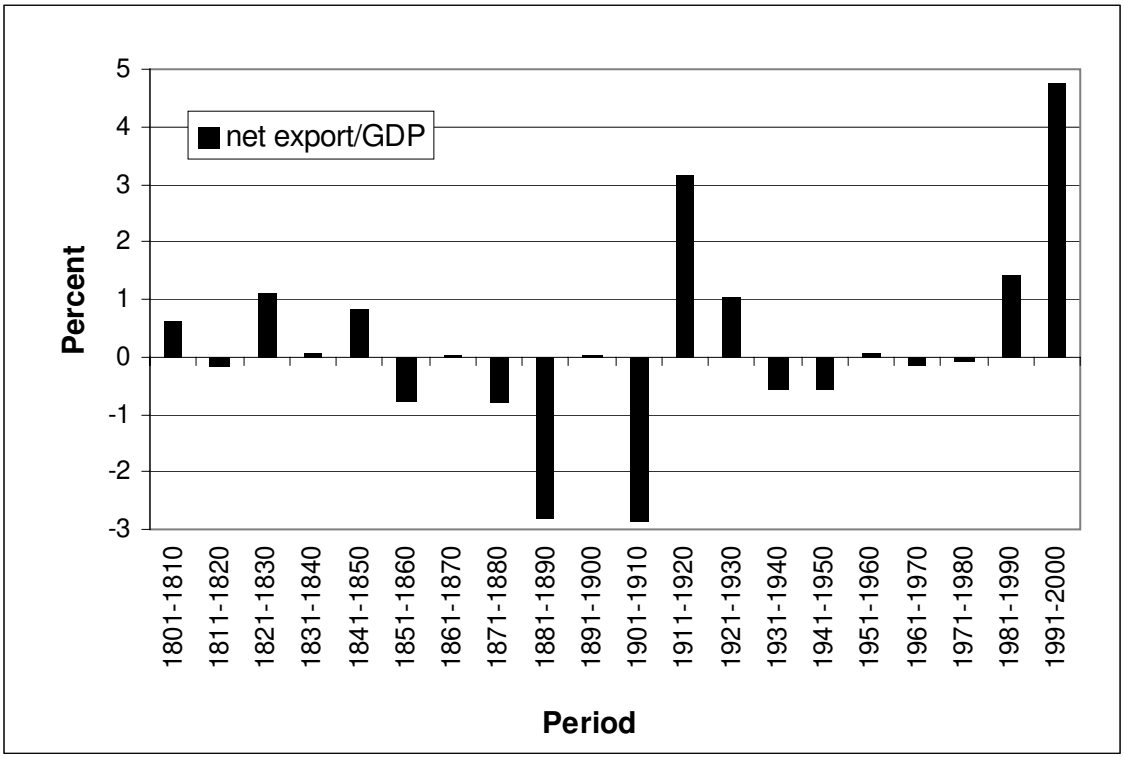
[695] Schön, 2000a: p. 20 and Holmquist, 2003: p. 3.

FIGURE 8.1: *The ratio (in percent) of export to GDP in current purchasers' prices.*



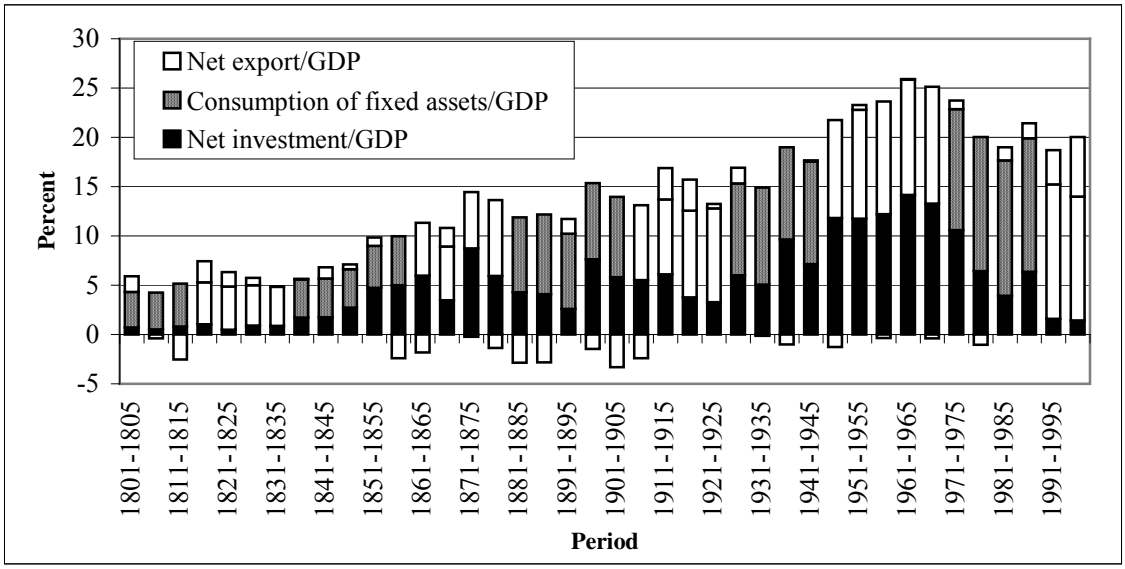
Sources: Calculations based on the PS-data. See chapter 5.

FIGURE 8.2: *The ratio (in percent) of net export to GDP in current purchasers' prices (unweighted arithmetic average per decade).*



Sources: Calculations based on the PS-data. See chapter 5.

FIGURE 8.3: *The ratios (in percent) of net investment, consumption of fixed assets and net export, respectively, to GDP in current purchasers' prices (unweighted arithmetic average per five-year period).*



Sources: Calculations based on the PS-data. See chapter 5.

TABLE 8.1: *The ratios (and their change) of investment in machinery/equipment and buildings/structures, respectively, to GDP (unweighted arithmetic average, based current purchasers' values) during Lennart Schön's phases of transformation (in bold) and phases of rationalization (in normal style).*

Period:	**Investment in machinery and equipment:**		**Investment in non-residential buildings and structures:**		**5. "Transformation indicator" ((4) less (2))**
	(1) Ratio, to GDP (%)	**(2) Change in ratio (percentage points)**	**(3) Ratio, to GDP (%)**	**(4) Change in ratio (percentage points)**	
1800-1847	*0.7*		*2.6*		
1848-1867	**1.7**	**+1.0**	**4.2**	**+1.6**	**+0.6**
1868-1892	2.3	+0.6	5.0	+0.8	+0.2
1893-1908	**2.8**	**+0.5**	**4.8**	**-0.2**	**-0.7**
1908-1932	3.0	+0.2	5.3	+0.5	+0.3
1933-1952	**5.4**	**+2.4**	**6.1**	**+0.9**	**-1.6**
1953-1977	7.6	+2.2	8.6	+2.5	+0.3
1978-1992	**7.8**	**+0.2**	**5.7**	**-2.9**	**-3.1**
1993-2000	7.0	-0.8	4.5	-1.2	-0.5

Sources: Calculations based on the PS-data (see chapter 5). The periodisation into phases of transformation and rationalization is based on Schön, 2000a: pp. 32-33; the 5-year time spans of structural and transformation crises that function as borders between phases of transformation and rationalization respectively in Schön's presentation are divided up between those phases (see also TABLE 2.1).

Comment: Schön's phases of transformation are bolded. The other time spans are phases for rationalization, except for the period of 1800-1847 (in italic), which is prior to when Schön's periodisation begins.

8.3.1 The phase of pre-capitalist accumulation

The capitalist relations of production were very underdeveloped in the first half of the 19th century. The accumulation of capital proceeded mainly within the foreign trade sector and not within production.[696] For the most part, accumulation of produced assets took a non-capitalist form. However, processes were going on that later laid the foundation for accelerated accumulation.

As many writers point out, capitalist or rather semi-capitalist relations constituted an important feature of the Swedish agriculture already in the first half of the 19th century, even before the industrialisation process began.[697] While the number of agriculturalists rose by 16 percent between 1750 and 1840, the number of the so-called lower classes rose by as much as 240 percent in the same period.[698] This was a precondition for acceleration in economic growth and accumulation in the subsequent decades, and provided the workforce for expanding industries.[699]

On average, the ratio of gross investment to GDP stood at 5.2 percent in the first half of the 19th century, and around 80 percent of the gross investment went to compensate for consumption of fixed assets. Hence, net investment stood at just 1.2 percent of GDP on average, and this barely compensated for population growth. Since net export was positive on average, the ratio of non-consumptive expenditures to GDP (at 5.6 percent on average) was slightly above the (gross) investment ratio.

Up to 1850, the relation between foreign trade and the economy at large was quite stable. With some exceptions (especially in the early 19th century), export and import, respectively, were stable at slightly above ten percent of GDP and at around seven percent of GDO (Gross Domestic Output).

Looking at the whole period 1800-1850, Sweden was a small net exporter. Net export stood on average for +0.5 percent of GDP. However, since the material is not very reliable, this must be considered within the margin of error.

8.3.2 The first acceleration of accumulation

During the 1840s, both the ratio of investment to GDP and the ratio of non-consumptive expenditures to GDP rose to their highest levels up to that point in time. This rise continued during the 1850s and into the first half of the 1860s. Between 1842 and 1856, the relative size of gross investment doubled from 5.3 to 11.1 percent of GDP, and the relative size of net investment quadrupled from 1.5 to 6.4 percent of GDP. Although the investment ratio continued to rise after

[696] This is argued in Herlitz, 1977: p. 148.
[697] Schön, 2000a: pp. 53-57.
[698] Jörberg, 1966: p. 17.
[699] See Jörberg, 1961: p. 11.

1856, most of this rise can be explained by the need to compensate for consumption of fixed assets, while the net investment ratio remained stable at around five percent up to the beginning of the 1930s (see FIGURE 8.3). For instance, while the relative size of gross investments increased from an average of 10 percent of GDP in 1856-60 to an average of 14 percent in 1901-35, the relative size of consumption of fixed assets increased from 5 to 9 percent of GDP, implying that net investment stood at 5 percent of GDP on average in both these periods.

Against this background, the time span 1842-56 can be viewed as a period of transformation, when the economy changed to a mode more directed towards accumulation. Even so, most of the rise in the investment ratio can be explained by rising investment in agriculture and ancillaries and in dwellings. Investment in agriculture and ancillaries stood on average at 4.2 percent of GDP in 1853-55 (compared to 2.1 percent in 1800-1840), which was the only period in 1800-2000 when it reached over four percent. The first wave of investment was clearly an agrarian accumulation cycle and not an industrial one.

The relative size of residential investment rose from an average of 1.2 percent of GDP in 1800-1840 and 1.7 percent in 1846-50 to 3.2 percent in 1856-60, according to PS-data. This can be linked to heightened urbanisation and internal migration after 1850.[700]

The relative size of investment in transport and communication doubled from 0.7 percent of GDP in 1800-40 to 1.4 percent in 1856-60. Expanding trade went hand in hand with the expansion of the transport and communication system.

Investment in manufacturing and handicrafts did rise significantly during the 1850s, but still only accounted for 1.3 percent of GDP in 1856-60, compared to 0.5 percent in 1800-40 and 0.8 percent in 1846-50. It was not until 1873 that the relative size of investment in manufacturing and handicrafts rose to above two percent of GDP, and not until 1899 that it rose above four percent of GDP. During the 1840s and 1850s, it was still not manufacturing that was the driving force behind accumulation. According to Olle Krantz, investment in manufacturing and handicrafts accounted for around 10 percent of total investment in the early 1850s, which increased to around 30 percent during the 20th century.[701] The same proportions are confirmed by the present enquiry.

Between 1850 and 1870, another important transformation took place. The weight of export and import, respectively, in the economy was roughly twice as large in the 1870s as in the period before 1850, although the weight of import increased more than the weight of export. The net export turned negative and

[700] See Schön, 2000a: pp. 144-147.
[701] Krantz, 1987c: p. 20.

Sweden became a net importer. The first wave of investment up to 1864 was partly financed by an increase in the import/GDP ratio. With the exception of 1853-54 (when net export rose to three percent of GDP in connection to the Crimean War), the net export was negative or close to zero during the whole period 1848-64. In 1856, the import/GDP ratio rose to above 20 percent, and the net import increased to seven percent of GDP.

During 1865-72, Sweden became a net exporter again and the non-consumptive expenditure ratio went up. It was especially during the initial years after the agricultural depression in 1866-68 that the recovery took the form of net export.

Economic historians have debated on the issue whether the increase of the relative size of foreign trade was the driving force behind the accelerated economic growth, or whether domestic factors were the main driving force – the "export model" versus the "domestic market model".[702]

Lennart Jörberg argues that initially (i.e. in the period before 1870) it was easier for export industries to expand than for home market industries in a Swedish type of society, because of the low per capita national income and underdeveloped transport system.[703] The large expansion of railways first came during the 1870s, and was also accompanied by a broader industrialisation.

According to Fridlizius, an advocate of the "export model":

> The foreign trade, principally export, was the driving force in the development. The capital which the export trade brought into the country stimulated in different ways the rest of the economic life. It was also via the export trade that technical and organised improvements reached the Swedish economy.
> With some emphasis it can be said that the expansion during the 1850's occurred on a kind of semi-colonial basis. The economically underdeveloped Sweden functioned as a raw product base, as an economic satellite state, to the highly industrialized countries in Europe, mainly England, and its natural resources developed in the direction of export of a few primary products partly with the help of capital from the importing countries.[704]

There is no clear empirical evidence that there was an unequivocal relation of foreign trade to investment or economic growth. During the period 1800-1840, there were several spurts in the export ratio (although that was partly an effect of price increases of shipping), but these spurts were not accompanied by investment booms. Domestic institutional changes were important for the capitalist development, although those institutional changes were partly induced by international events. The proletarisation of the agricultural labour in the

[702] See, for instance, Krantz, 1987c, pp. 41-54, and Schön, 2000a: pp. 34-37.
[703] Jörberg, 1966: pp. 21-22.
[704] Fridlizius, 1960: p. 56.

period 1750-1850 must also be seen as a domestic development that laid the foundation for the expansion of the market economy after 1850.

In the wake of the French Revolution and the Napoleonic Wars, an officers' coup overthrew the old monarch in Sweden in 1809. It subsequently led to the framing of a constitution that partly was influenced by Montesquieu's principles of power sharing.[705] The Marxist historian Aleksander Kan considers the events of 1809-1810 as a bourgeois revolution from above, as part of a longer process of bourgeois transformation.[706] One of Napoleon's generals became the Swedish king, but who later became rather conservative in his politics. The struggle between the conservative and liberal political forces reached its pinnacle at the end of 1830s, and was followed by several important liberal reforms in the period 1840-1866. The guild system was abolished in 1846. Full freedom of trade was introduced in 1864.[707]

Nevertheless, the increases in the investment ratio during the 1840s and 1850s partly followed the spurts in the export ratio, which speaks in favour of Fridlizius' hypothesis, although this should not stand in opposition to the hypothesis that the domestic development also played a partly independent role in accordance with the "domestic market model".

In 1844-47, there was an upsurge in export driven by the international boom, which led to a significant net export. It was also in those years that the investment ratio started to rise. The increase of investment in agriculture and ancillaries in particular can be seen as a response to increased export of agricultural products. In 1844, the export volume of agricultural products quadrupled compared to the preceding five-year period, reaching a high point in 1847, while the larger increase in export of forestry products came first in 1845-46. The next larger spurt in the export of products from agriculture and ancillaries came during the Crimean War 1853-54.[708]

Following the so-called "small-state theory", Olle Krantz emphasises that especially for small countries like Sweden, integration with the international markets is important for economic growth, since the home markets are limited. Production and markets demand a certain size to be efficient.[709] This is also a strong theoretical argument for the view that foreign trade played an important role for Swedish industrialisation.

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[705] Lagerroth, 1965.

[706] Kan, 1974 and Kan, 1982. Johan Söderberg (1976) criticises this view, and instead considers the events of 1809-1810 as an anti-aristocratic upheaval. Lars Herlitz (1977) also gives another interpretation than Kan from a historical materialist perspective.

[707] Weibull, 1993: pp. 93-96 and Schön, 2000a: pp. 109-118

[708] My own calculations based on Schön, 1995 (tables J7 and J8).

[709] Krantz, 2002a: p. 44.

8.3.3 Capital import based accumulation

In 1870, the relative size of export rose to 20 percent of GDP and, with the exception of the two World Wars, remained roughly at this level for the next 100 years. In 1970, the export/GDP ratio was not much higher, at 24 percent. The ratio of export to Gross Domestic Output was even more stable; both in 1870 and 1970, the ratio stood at 13 percent.

As is well known, in the decades prior to the First World War, import was higher than export, which contributed to an increased investment ratio. In 1871-1910, the relative size of net export stood on average at -1.6 percent of GDP, while it stood at +0.5 percent in 1800-1850. At the same time, the investment/GDP ratio rose from an average of 5.2 percent in 1800-1850 to 13.1 percent in 1871-1910, while non-consumptive expenditures rose from 5.6 to 11.5 percent of GDP. This implies that around one-fourth of the increase in the investment ratio can be attributed to the change in the ratio of net export to GDP, while the rest (around three-fourths) of the increase can be explained by an increase in the ratio of non-consumptive expenditures to GDP. The conclusion from this analysis points towards that the accelerated accumulation was mostly financed domestically, although capital import did made an important contribution.[710]

In 1873-78, there was a second wave of investment, which increased to 16 percent of GDP in the period compared to 10.2 percent of GDP in 1855-1872 (1855 was the first time investment rose to over 10 percent of GDP). The increase in the investment ratio in 1873-78 compared to 1855-1872 can be explained as follows: 39 percent by the increase in the investment in transport and communication, 38 percent by the increase in investment in dwellings, and 18 percent by the increase in investment in manufacturing and handicrafts. Other activities did not contribute to the increase of the overall investment ratio. The ratio of investment in agriculture and ancillaries to GDP remained at about the same level as in 1855-1872 (slightly above three percent).

To a large extent, the 1870s can be seen as going through an infra-structural transformation centred on transportation and the need for more residential buildings due to increased internal migration of labour. This decade was especially marked by large railway investments.

[710] Torsten Gårdlund (1947: pp. 123-127) writes that the financing of Swedish manufacturing companies was to a lesser extent coming from foreign loans in the 19th century. This changed somewhat at the turn of the century when the Swedish banks mobilised foreign credits for manufacturing.

In 1879-96, the investment ratio fell to an average of 11.6 percent. In 1891-96, the net export briefly turned positive and the non-consumptive expenditure ratio increased as well.

At the end of the 19th century, the investment ratio increased again, constituting the "third wave of investment", and was on average 14.2 percent in 1897-1913. Over 50 percent of the increase in the investment ratio, compared to the period 1879-96, can be attributed to the increased investment in manufacturing and handicrafts (rising to over five percent of GDP in 1913). The import increased more than the export. The net export turned negative again (up to 1910). The ratio of non-consumptive expenditures to GDP remained at the same level as in 1891-96.

8.3.4 Domestically financed and deepened accumulation

The net export was significant during the First World War, although Sweden was a net exporter already in the 3-4 years preceding the War. On average, net export stood at 2.1 percent of GDP in 1911-30. Non-consumptive expenditures increased from an average of 11.5 percent of GDP in 1871-1910 to an average of 15.7 percent in 1911-1930. As the investment ratio did not change much between those two periods (it increased from an average of 13.1 percent in 1871-1910 to an average of 13.6 percent in 1911-30), almost the entire increase in the non-consumptive expenditure ratio can be attributed to the transformation of Sweden from a net importer to a net exporter.

According to Lennart Schön, between the mid-19th century and the late 1880s the Swedish foreign debt increased from around zero to 80 percent of GDP, and stabilised at this level up to 1910. During the course of the First World War, the foreign debt decreased to around 20 percent of GDP.[711] Sweden went through a transformation from being a capital importer before the First World War to become a capital exporter after the War.

Eli Heckscher points out that the net capital import ceased in 1910 independent of the First World War. How capital flows would have developed if there was no War is of course impossible to determine, according to Heckscher. But the War played an important role in the subsequent development.[712]

In relation to ownership, it seems that an important transformation process also took place during the First World War and its aftermath. Jan Glete argues that the deflation crisis of 1920-1922 was a "watershed" in the structure of industrial ownership. Up till 1920, there was a continual transformation within this

[711] Schön, 2000a: p. 281.
[712] Heckscher, 1941: p. 276.

structure, while after the deflation crisis this structure was "frozen" up till the new transformations taken place in the 1970s and 1980s.[713]

Against this background, it could be argued that the First World War and its aftermath indeed constituted an important structural border in the Swedish economic development, contrary to the point of view of the Swedish school of structural analysis.

In the latter half of the 1930s, the investment ratio increased quite significantly to around 20 percent, although the net export turned slightly negative. During the Second World War, the investment ratio decreased to around 15 percent. But this decline was quite brief. After the War, investment increased significantly, reaching an average of 24 percent of GDP in the period up to the beginning of the 1970s. Since the net export/GDP ratio was close to zero, the non-consumptive expenditure ratio was at the same level.

Since the downturn in the investment ratio was so brief during the Second World War, the investment boom after the war could be viewed as a continuation of the investment boom in the latter half of the 1930s. The increase in the investment ratio in the period 1935-1972 (constituting the "fourth wave of investment") compared to the preceding decades can primarily be attributed to increased investment in manufacturing and handicrafts, in dwellings and in government services (in that order).

8.3.5 Globalisation: the phase of flexible accumulation

Between 1970 and 2000, the Swedish economy went through a second important transformation when viewing the weight of foreign trade in the overall economy, a "second wave of internationalisation". Similarly as in the period 1850-1870, the ratio of export to GDP roughly doubled. It increased from 24 percent in 1970 to 47 percent in 2000. This transformation was accompanied by an increase in the net export and a decrease of the relative size of domestic investment in the late 20th century, i.e. a shift in non-consumptive expenditures from domestic accumulation to net export.

This can be contrasted to the "first wave of internationalisation" in the second half of the 19th century that was accompanied by net import and an increased investment ratio, i.e. precisely the opposite pattern. The difference reflects the different position of Sweden in the world economy between the two waves of internationalisation.[714]

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[713] Glete, 1994: pp. 89-90.

[714] Still in 1913, despite the fast economic growth in the preceding decades, Sweden belonged to the poorer countries in Western Europe in terms of GDP per capita. See Maddison, 2001: p. 264.

According to Richard Palmer, the ratio of Sweden's outward foreign direct investment stock to GDP was quite stable at between 5 and 8 percent in 1960-1980. From 1980 to 1990 it rose from 5.8 percent to 20.7 percent. In 1999 it reached 39.4 percent.[715] The Swedish outward foreign direct investment has also been substantially larger than inward foreign direct investment to Sweden.[716]

On the other hand, according to data from Statistics Sweden,[717] the net financial claims (i.e. financial assets less financial liabilities) in foreign sectors at the aggregate national level had a negative development in the period 1981-1994, decreasing from -7.4 percent of national income at market price in 1981 to -23.8 percent in 1990 and to -44.6 percent in 1994.[718] The most severe deterioration in the net financial claims in foreign sectors was experienced in 1982-1983 and 1992-1994, connected to the devaluations of the Swedish krona. The "net property and entrepreneurial income" from the rest of the world changed from being positive in 1976, reaching -4.8 percent of national income at market price in 1994 and still being slightly negative at the turn of the century. Therefore, the increasing net export arising in this period can be partly seen as a response to this negative development of net financial claims in foreign sectors.

In the late 20th century, the international capitalist economy went through an important transformation associated with terms like globalisation, lean production, just-in-time, and information revolution. Although these phenomena refer to different aspects of the transformation, they are interlinked.

Many argue that globalisation is not something new,[719] or that even the internationalisation seen in the recent decades is not especially significant,[720] but that depends on how one defines the term globalisation.[721] Manuel Castells

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[715] Palmer, 2001: p. 51.

[716] SOU 1992:19, Bilaga 11: p. 31.

[717] Based on Statistiska Meddelanden, N 10 SM 9501, Appendix 3: pp. 70-71, Statistiska Meddelanden, N 10 SM 9501: p. 21, and Statistiska Meddelanden, NR 10 SM 0201: p. 17.

[718] However, it is difficult to estimate the value of different assets. According to SOU 1992:19, Bilaga 11, pp. 31-32, the outward foreign direct investment stock is often not measured at the market value but at a book value, which tends to underestimate this stock considerably. An example is given for 1990, when the *net* outward stock of foreign direct investment was 150 billion SEK (around 13 percent of national income at market price). Assuming that its market value was three times as large as its book value, the net financial claims in foreign sectors would, in fact, be slightly positive in 1990. A similar calculation for 1994 would also give a positive figure for the net financial claims in foreign sectors.

[719] See, for example, O'Rourke and Williamson, 2002.

[720] For example, Alfred Kleinknecht and Jan ter Wengel (1998) argue that for European economies, the deepened internationalisation mainly takes place as integration of the European Union, while the integration with the rest of the world has not been strengthened. Their data for Sweden shows, however, that in contrast to most other EU countries the Swedish export of goods as a proportion of GDP has increased significantly both to EU and to non-EU countries in the period 1960-1995.

[721] For a discussion of different views on globalisation, see Smith, 2000: pp. 119-134.

distinguishes between a world economy that is "an economy in which capital accumulation proceeds throughout the world" and a global economy that is "an economy with the capacity to work as a unit in real time, or chosen time, on a planetary scale". According to Castells, a world economy has existed since the 16th century, while the world did not become truly global until the late 20th century.[722]

To function as a unit in real time, a global economy presupposes changed forms of accumulation. It demands more flexible types of organisation than the old Fordist model that can adjust the lines of production more quickly to changing markets. These types of organisation are often labelled as lean production and just-in-time systems.[723] The information revolution gave the technological basis for this transformation.[724] At the political level, it meant a freeing of capital from the national boundaries and the rise of different supranational bodies like the European Union.[725] The collapse of the Soviet Union was also an important precondition for deepened capitalist globalisation.[726]

The new flexibility is, however, not on the terms of workers but on the terms of capital. In my view, the term "flexible accumulation" introduced by David Harvey best captures the new mode.[727] "Flexible accumulation" is marked by a confrontation with the rigidities of Fordism, and is characterized by flexibility in respect to labour organisation, production and consumption – for example, involving sub-contracting, revival of domestic and paternalistic labour systems, and increasing reliance on part time labour. Capitalism is becoming more organised on a larger scale, not less, but *through* dispersal and flexible responses. The deregulation of the financial markets, privatisation and the destruction of the old consensus between capital and labour prepared the way for this flexibility.

One important aspect of flexible accumulation is the new round of "time-space compression"; new communication technologies and declining transport costs have enabled the spreading of decision making to encompass an ever-wider space.[728] This also leads to a speeded up turnover time of capital,[729] which in turn enhances profitability.[730] The old Fordist forms of capitalist organisation demanded stability and depended on substantial investment and large stocks of

[722] Castells, 2000a: p. 101.
[723] Castells, 2000a: pp. 163-215.
[724] Webster, 2002: p. 73.
[725] See Castells, 2000b: pp. 338-365.
[726] See Castells, 2000b: pp. 5-67.
[727] Harvey, 1989: pp. 121-197. This term is also used in Smith, 2000: p. 16.
[728] Harvey, 1989: p. 147
[729] Harvey, 1989: p. 156.
[730] See section 2.2.1.

inventories. Flexible accumulation (also connected to the introduction of lean production methods) implies that investments and inventories are held to a minimum, which lowers the organic composition of capital. In this sense, flexible accumulation could be seen as a more extensive form of accumulation (see section 2.5.1). This could also explain the continued depressed investment ratio in Sweden at the end of the 1990s, despite the acceleration in economic growth. As argued by Tony Smith:

> Lean production institutionalizes a continuous search for innovations that lower the costs of constant capital. A central intent of the just-in-time production system is to reduce to a minimum the amount of raw materials and partially completed parts shipped by suppliers. This is matched by the commitment to reduce buffers in the production process, and to coordinate relations with distributors in order to minimize stocks of unsold inventories. Another goal is to reduce waste as much as possible in the production process. All these measures lower constant capital requirements. [731]

In relation to investment and foreign trade, the move towards "flexible accumulation" and globalisation of the Swedish economy went through different phases:

- During the initial phase 1973 to 1976, the relative size of export and import increased, while the investment and non-consumptive expenditures stayed at around 23 percent of GDP. The net export/GDP ratio was close to zero.
- During the crises years of 1977 to 1982, the investment ratio fell to 19 percent. The changes in inventories turned negative and remained negative up to the depression of the early 1990s. The export ratio stopped increasing and the net export turned slightly negative. Together, this meant that the non-consumptive expenditure ratio fell to 18 percent.
- During the boom years of 1983 to 1989, the investment ratio stabilised at around 19 percent of GDP. The most significant change was the increase in the export ratio and the positive net export (at two percent of GDP on average), which contributed to an increased non-consumptive expenditure ratio compared to the phase in 1977-82.
- Significant changes occurred from the beginning of the economic crisis in 1990 to the post-depression recovery in 1994. These changes were later sustained during the boom years in the late 20th century. While investment stood for 21 percent of GDP in 1990, that ratio decreased to 13 percent in 1994. At the same time, export increased from 30 to 36 percent of GDP and net export from near zero to four percent of GDP.
- During the boom years of 1995 to 2000, the investment ratio did not increase, even to the level of the boom years in 1983-89. On average,

[731] Smith, 2000: p. 29.

investment stood at 14.1 percent of GDP, although changes in inventories turned positive.[732] The ratio of net investment to GDP was just 1.5 percent on average during this phase, which was even lower than in the 1840s and only slightly above the average level in 1800-1840. However, the non-consumptive expenditure ratio (at 20 percent) was only slightly lower than during the boom years of the 1980s (at 21 percent). The discrepancy between the investment and non-consumptive expenditure ratios can be attributed to the staggering increase in net export to an average of six percent of GDP.

8.4 Ratios of produced assets to employment and to value added

This section gives an overview of the development of produced assets in relation to employment and value added for the aggregate economy. Unless otherwise stated, the stock of assets refers to the net stock.

8.4.1 Produced assets per employed

The volume of capital per employed can be seen as an index of the technical composition of capital, which according to Marx "is determined by the relation between the mass of the means of production employed, on the one hand, and the mass of labour necessary for their employment on the other".[733] TABLE 8.2 shows the development of the volume net stock of different types of produced assets per employed, which is related to Marx's concept.[734]

During the first half of the 19th century, the volume of produced assets per employed was stagnant, but has risen steadily since mid-19th century. Between 1850 and 2000, this ratio increased 25-fold.

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[732] However, due to different definitions of investment there is a significant difference between the estimate of investment according to the present study and according to the newer series of Statistics Sweden. This is connected to the upgrading of investment compared to earlier series of Statistics Sweden, after the switch to the 1993 SNA (see sections 3.3.1.2 and 5.2.2). According to the newer series of Statistics Sweden (Statistiska Meddelanden, NR 10 SM 0401), investment stood for 18.5 percent of GDP in 2000, but according to the present study only for 14.7 percent. The upgrading is also larger for the closing years of the 20th century. Investment stood at 14.1 percent of GDP in 1994 according to the earlier series of Statistics Sweden (*Statistiska databaser*, online at http://www.scb.se, 030601) and at 16.5 percent of GDP in that year according to the newer series, and at 25.6 percent in 1970 according to the earlier series and at 28 percent for that year according to the newer series.

[733] Marx, 1965a [first published 1867]: p. 612. See also section 2.2.1.

[734] The stock of assets is the stock on the 1st of January of the respective year. Employment is measured throughout the whole year, which is the same for GDP. For the period before 1850, I assume that the growth rate of employment equalled the growth rate of population. The official population figure is measured at the end of the year. To extrapolate employment before 1850, I calculate a mid-year population figure as a geometric average of the population at the end of the current and preceding year.

Looking at different types of produced assets, the most dramatic increase was for machinery and equipment per employed. Between 1800 and 2000, this ratio increased almost 1000-fold in volume terms!

The fixed livestock per employed was, on the other hand, roughly at the same level in 2000 as in the 19th century, but this does not take into account that much fewer people worked with animals in 2000. The increase in the livestock in the last decades of the 20th century was not connected to an increased use of livestock in agriculture but to an increase in the volume value of racing horses.[735]

TABLE 8.2: *The volume value of the net stock of different types of produced assets per employed (index = 100 for the year 2000).*

	Dwellings	Non-residential buildings and structures	Machinery and equipment	Fixed livestock	Inventory stock	Produced assets, total
1800	4.5	6.1	0.11	120.3	1.9	3.8
1850	4.5	5.6	0.16	110.8	3.0	4.0
1900	15.9	12.3	1.3	70.9	14.7	10.8
1950	33.1	23.7	12.8	80.0	72.6	27.5
1975	77.2	67.0	44.3	46.7	131.4	69.5
1990	94.7	82.7	70.7	68.9	107.5	86.7
2000	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Calculations based on the PS-data. See chapter 5 and footnote 734 (on page 213).

8.4.2 The asset/GDP ratio

The volume or technical relation between produced assets and employment is, however, not the same as the exchange value relation (expressed in nominal prices) between produced assets and the value added created by the employed. As the produced assets have increased per employed so has the value added per employed.

FIGURE 8.4 displays the development of the ratio of produced assets to GDP and labour income[736], respectively, both at current purchasers' prices. FIGURE 8.4 shows that there has been a secular rise in both of these ratios. The ratio of the value of produced assets to labour income is related to Marx's concept of the value composition of capital.[737]

[735] See especially Statistiska Meddelanden, N 10 SM 9501, Appendix 1: pp. 52-53.

[736] The estimate of labour income for the private sector in 1840-1849 is based on the movements of population and the day rates for a male agricultural worker (Jörberg, 1972, Vol. One, pp. 712-713), which together with the wage part of government services gives the labour income for the total economy.

[737] See section 2.2.1.

TABLE 8.3 presents the ratio of different types of produced assets to GDP at current purchasers' prices.

Buildings and structures have always constituted the main part of produced assets, and the development of the ratio of produced assets to GDP followed quite closely the ratio of buildings and structures to GDP.

The most dramatic increase was in the ratio of machinery and equipment to GDP, which rose from 5 percent in 1800 to 41 percent 200 years later.

TABLE 8.4 decomposes, for every decade, the movement of the nominal asset/GDP ratio into different factors influencing this movement.

The change in the nominal asset/value added ratio can firstly be expressed as the product of the volume asset/value added ratio and the deflator for the asset/value added ratio:

nominal asset/value added ratio = volume asset/value added ratio * deflator for the asset/value added ratio (8.2)

The asset/GDP deflator measures the change in the price index of produced assets in relation to the change in the GDP deflator. If the percentage change in the price index of assets is higher than the percentage change in the GDP deflator, then the asset/GDP deflator increases, and the percentage change in the nominal asset/GDP ratio is higher than the percentage in the volume asset/GDP ratio. If the percentage change in the price index of produced assets is lower than the percentage change in the GDP deflator, then the asset/GDP deflator decreases, and the percentage change in the nominal asset/GDP ratio is lower than the percentage change in the volume asset/GDP ratio. If the two price indices grow equally, the deflator of the asset/GDP ratio does not change.

On average, the nominal asset/GDP ratio has grown by five percent per decade in the period 1850-2000. Half of this long-term increase can be attributed to an increased volume asset/GDP ratio, and the other half to an increased asset/GDP deflator.

In TABLE 8.3, the volume asset/GDP ratio is expressed in the reference prices of 2000. As the price indices of assets and GDP changed at different rates, the nominal asset/GDP ratio was different from the volume asset/GDP ratio (expressed in prices of 2000) for all years except 2000.

From around 1930s, the asset/GDP deflator has been declining. TABLE 8.3 also shows that the volume asset/GDP ratio expressed in the prices of 2000 was lower than the nominal asset/GDP ratio for the period 1930-1990. The declining asset/GDP deflator can be explained by the rising weight of government and private reproductive services in GDP, which tended to accelerate the growth of

the GDP deflator because of the lower productivity growth of these activities. While the volume asset/GDP ratio increased by 12 percent between 1940 and 2000, the nominal asset/GDP ratio decreased by 4 percent.

The asset/GDP deflator was increasing up to the 1930s, and for this reason the volume asset/GDP ratio was higher than the nominal asset/GDP ratio up to 1910 according to TABLE 8.3.

Furthermore, the change in the volume asset/GDP ratio is affected by the volume growth of both assets and GDP. A high volume growth of assets does not necessarily imply an increased volume asset/GDP ratio if the volume growth of assets is matched by an equal or higher volume GDP growth. Conversely, if the volume growth of produced assets stagnates, but if the volume GDP growth rate is even lower than the volume growth rate of assets, then the volume asset/GDP ratio increases. For instance, during severe economic downswings, the volume asset/GDP ratio tends to rise for this reason (normally causing the nominal ratio to increase as well).

From FIGURE 8.4 and TABLE 8.4, it can be seen that there have been several "leaps" in the nominal ratio of the net stock of produced assets to GDP. In the 1870s, this ratio increased by as much as 3.8 percent per year on average (in total 45 percent), and in the 1850s, 1910s, and 1970s by 1.4 percent per year on average in each of these decades. In other periods, the ratio has been more stable.

In the first half of the 19th century, the volume growth of the net stock of produced assets was only 0.9 percent per year on average, which was only slightly above the population growth (at 0.8 percent per year). The growth rate of the net stock of produced assets was lower than the GDP growth rate, implying that the volume asset/GDP ratio fell. But since the price index of produced assets grew faster than the GDP deflator, the nominal asset/GDP ratio increased from 110 to 130 percent (see TABLE 8.3).

During the 1840s, the volume growth of the net stock of produced assets speeded up to an average of 1.6 percent per year. The net stock of machinery and equipment grew even faster, by 4.2 percent per year on average – only slightly below the average for 1850-2000 at 5.1 percent per year. In this sense, the 1840s could be seen as the first decade experiencing a substantial acceleration in accumulation.

The first "leap" in the nominal ratio of produced assets to GDP came in the 1850s, corresponding to the "first wave of investment" discussed in section 8.3. This "leap" can mostly be attributed to a rising asset/GDP deflator, although the volume asset/GDP ratio did increase 0.5 percent per year on average. The volume growth of produced assets was quite significant (3.3 percent per year on average, which was above the average in 1850-2000). The volume net stock of

machinery and equipment grew by a staggering 7.8 percent per year on average, which was faster than in any decade earlier or later, except for the 1940s (when the stock grew by 8.2 percent per year). Even so, the rapid GDP growth curbed the growth of the volume asset/GDP ratio.

The 1870s experienced the most rapid increase in the nominal asset/GDP ratio in any decade, corresponding to the "second wave of investment" discussed in section 8.3. This can be attributed to significant increases in both the asset/GDP deflator and the volume asset/GDP ratio. The price index of buildings and structures increased by as much as 4.1 percent per year on average, while the GDP deflator only increased by 1.3 percent per year on average. The volume growth rate of the net stock of produced assets was quite significant, at 4.2 percent per year on average, which mostly can be attributed to the heavy investment in transport and communication (especially railways) and in dwellings. The volume value of the net stock of buildings and structures in transport and communication increased by 8.5 percent per year on average (in total 127 percent), while the volume value of the net stock of dwellings increased by 4.6 percent per year on average (in total 56 percent).

According to Hans Modig, the 1870s experienced the most rapid expansion of railway structures in any decade, especially when considering the private railway system. The construction of railways began in the 1850s but it was not until the 1870s that the large expansion came. Between 1870 and 1880, the length of the railway system more than trebled, from 1,727 to 5,876 kilometres (or 13 percent per year on average). No other decade saw a larger expansion in the length of railways. The per capita length of railways increased from 0.4 meters in 1870 to 1.4 meters in 1880, which can be compared to 2.7 meters in 1930 and 1.7 meters in 1966.[738]

Although the volume value of the stock of machinery and equipment increased by an impressive 6.2 percent per year on average between 1870 and 1880 (see TABLE 8.5), this did not have a significant impact on the overall asset/GDP-level, since machinery and equipment only accounted for 6-7 percent of the total stock of produced assets in this period.

The "third wave of investment" was not accompanied by an increasing asset/GDP ratio. In 1880-1910 the nominal asset/GDP ratio was quite stable.[739]

[738] Calculations based on Modig, 1971: pp. 15 and 63.

[739] For manufacturing, the PS-result can be compared with two other studies, by Torsten Gårdlund (1947) and Svante Holmquist (2003). Torsten Gårdlund presents data (pp. 267*-268*) on the ratio of sales value to the value of fixed assets as an average for manufacturing companies, which does not encompass all manufacturing. The inverse of this ratio is the ratio of fixed assets to gross output. According to Gårdlund's data the nominal ratio of fixed assets to gross output was 1.25 in 1879 and 1.0 in 1913, i.e. it decreased by 20 percent between those years. According to the data from Svante Holmquist, this ratio increased significantly for

The volume growth of produced assets slowed down, while GDP growth speeded up. This led to a decrease in the volume asset/GDP, but since the price index of produced assets increased faster than the GDP deflator, the nominal asset/GDP ratio only decreased by a small amount.

During the 1910s, the nominal asset/GDP ratio increased quite significantly, but this was mainly due to a low GDP growth accompanying the First World War. The volume growth of produced assets continued at about the same level as in 1880-1910.

Between 1950 and 1970, the volume growth of produced assets was even higher than in the 1870s, around five percent per year on average. Since GDP growth also accelerated, the asset/GDP ratio did not increase much. The "fourth wave of investment" was not accompanied by an increased asset/GDP ratio.

In the 1970s, the volume growth of produced assets slowed down to 3.3 percent per year on average. Since the GDP growth slowed down even more, to 1.9 percent per year on average, the asset/GDP ratio increased quite significantly.

In the course of the 1980s and 1990s, the asset/GDP ratio fell somewhat, which can be attributed to a dramatic fall in the ratios of inventory stock and non-residential structures, respectively, to GDP.

The relative decline of the inventory stock occurred roughly between 1977 and 1992. Between those two years, the ratio of the inventory stock to GDP fell by two-thirds from 36 to 13 percent, while the volume value of the inventory stock fell by one-third. If the ratio of the inventory stock to GDP had not fallen, the total asset/GDP ratio would have increased between 1975 and 2000.

The fall in the asset/GDP ratio in the course of the 1990s can mainly be explained by the fall in the ratio of buildings and structures to GDP.

Up to 1993, the volume value of the net stock of buildings and structures increased every year in modern Swedish history. The last time before the 1990s when it declined was in 1833. In the period 1994-2000, the net stock of buildings and structures fell every year. This fall can entirely be explained by the fall in the net volume value of dwellings,[740] while the net volume value of non-residential buildings and structures continued to rise. Towards the end of the 20th century,

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manufacturing and handicrafts, from 0.35 to 0.45 between 1879 and 1913, or by 30 percent. According to the PS-data, the ratio of the net stock of fixed assets to gross output decreased only slightly between 1879 and 1913 (from 0.31 to 0.30), while the ratio of the gross stock of fixed assets to gross output decreased more significantly (from 0.55 to 0.48). Gårdlund puts the ratio at a much higher level than both the present study and Svante Holmquist, reflecting that the ratio probably was higher for larger companies, which are the ones Gårdlund investigates.

[740] Contrary to the result of this study, the data of Statistics Sweden from 2003 (Statistiska Meddelanden, NR 10 SM 0301: p. 139) shows a continued increase in the volume value of dwellings in the period 1997-2000.

the residential investment in Sweden became by far the lowest in any OECD country in proportion to GDP.[741]

In nominal prices, the ratio of the net stock of dwellings to GDP did not fall much during the 1990s (and was at the same level in 1989 and 2000, at 117 percent), while the ratio of the net stock of non-residential buildings and structures to GDP fell quite sharply. The explanation for this divergence between the nominal and volume development is that the price index for dwellings rose much faster than for non-residential buildings and structures.

Furthermore, the gross stock of dwellings as well as the gross stock of all buildings and structures continued to grow in volume terms throughout the 1990s. Hence, the negative development of the net stock of dwellings should not be interpreted as if the physical amount of dwellings would have declined (which is better measured by the gross figure). Rather, it is the average age of the dwellings that has increased so much that after taking account of consumption of fixed assets it led to a decline in the estimated volume value of the net stock (the moment when the asset will be scrapped has moved closer to the present time).

The decline between 1990 and 2000 in the nominal and volume ratios of the *gross* stock of produced assets to GDP was not as sharp as the decline in the nominal and volume ratios of the *net* stock of produced assets to GDP. See TABLE 8.3.

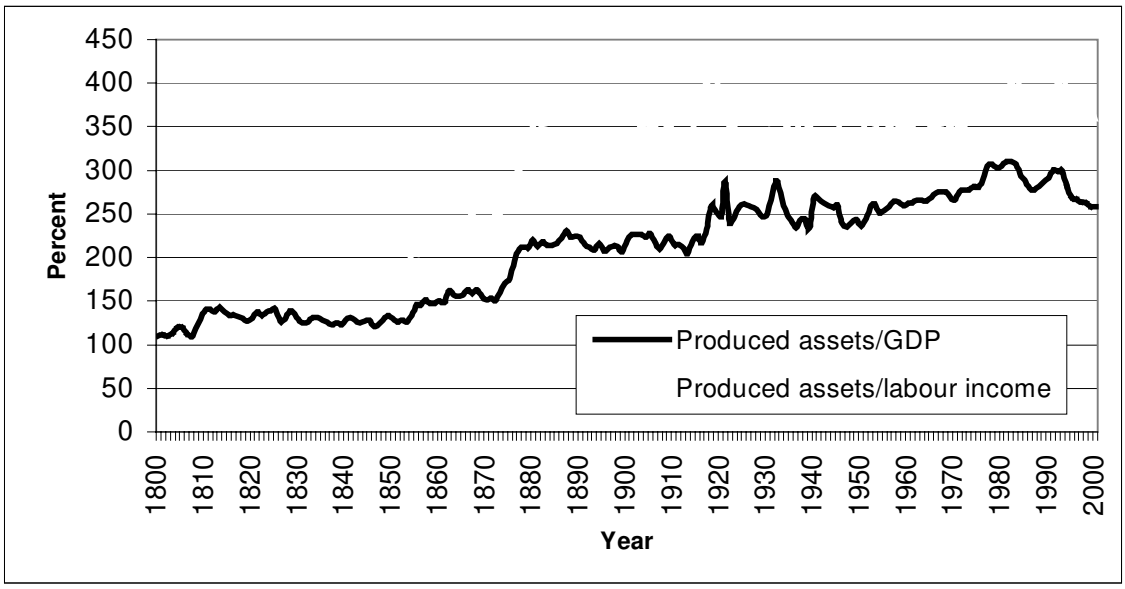
According to Nicholas Kaldor:

> [In the] first stage of capitalism… the capital/output ratio… will show a steady increase, in accordance with both the Marxian and neo-classical models…
> This first stage of capitalism, however, must sooner or later be brought to an end when the capital stock attains the level of 'desired capital'…[742]

The empirical evidence presented in this chapter partly confirms Kaldor's hypothesis. In Sweden, the ratio of produced assets to value added increased fastest in the period 1850-1880, i.e. in the first phase of capitalism. However, it continued to rise secularly up to the 1970s, although not at the same pace as in the first phase of capitalism. Furthermore, if other types of assets would be included that are excluded in the analysis of this chapter, connected to so-called "knowledge capital", it is entirely possible that the capital/value added ratio continued to rise after the 1970s as well.

[741] *OECD Economic Surveys 2000-2001: Sweden*, 2001: p. 28.
[742] Kaldor, 1960: p. 295.

FIGURE 8.4: *The ratio (in percent) of the value of the net stock of produced assets to GDP and to labour income respectively (based on current purchasers' prices and purchasers' proxy prices).*



Sources: Calculations based on the PS-data. See chapters 5 and 6.

TABLE 8.3: *The ratios (in percent) of net stocks of produced assets (and gross stocks in parenthesis) to GDP (based on current purchasers' prices).*

Year:	Current prices: Dwellings	Non-residential buildings and structures	Machinery and equipment	Fixed live-stock	Inventory stock	Total stock of produced assets	Volume ratios, total stock, reference prices of 2000
1800	28 (65)	49 (114)	5 (10)	15	14	110 (217)	230 (491)
1850	33 (72)	52 (120)	6 (12)	20	19	130 (242)	186 (370)
1860	43 (80)	60 (124)	10 (17)	18	19	150 (258)	195 (358)
1870	44 (78)	61 (118)	10 (18)	18	18	151 (249)	206 (366)
1880	73 (120)	97 (174)	14 (27)	15	20	220 (355)	251 (426)
1890	80 (132)	89 (171)	15 (30)	16	24	223 (373)	254 (445)
1900	82 (138)	80 (162)	16 (29)	13	28	219 (370)	229 (405)
1910	81 (138)	78 (154)	15 (27)	12	28	215 (360)	223 (390)
1920	88 (158)	94 (182)	21 (39)	10	35	248 (423)	248 (439)
1930	96 (178)	100 (201)	17 (34)	6	31	250 (449)	213 (383)
1940	107 (190)	98 (195)	24 (43)	5	36	270 (469)	230 (397)
1950	89 (152)	80 (152)	30 (52)	3	34	237 (393)	223 (370)
1960	87 (144)	97 (166)	39 (71)	2	37	263 (420)	247 (397)
1970	89 (139)	102 (162)	38 (70)	2	35	266 (408)	256 (399)
1980	115 (184)	116 (189)	45 (88)	2	27	305 (491)	292 (471)
1990	122 (208)	107 (187)	46 (87)	2	15	292 (498)	285 (488)
2000	117 (222)	89 (167)	41 (80)	2	10	258 (481)	258 (481)

Sources: Calculations based on the PS-data. See chapter 5.

TABLE 8.4: *Average annual growth rate (in percent) of different variables determining the growth rate of the nominal ratio of the net stock of produced assets to GDP (based on purchasers' values).*

1. Period	2. Volume of produced assets (net stock)	3. Volume GDP	4. Volume ratio of produced assets (net stock) to GDP	5. Deflator of the ratio of produced assets (net stock) to GDP	6. Nominal ratio of produced assets (net stock) to GDP
1800-1850	0.9	1.3	-0.4	0.8	0.3
1850-1860	3.3	2.8	0.5	0.9	1.4
1860-1870	2.9	2.4	0.5	-0.4	0.1
1870-1880	4.2	2.1	2.0	1.8	3.8
1880-1890	1.9	1.8	0.1	0.1	0.2
1890-1900	2.1	3.2	-1.0	0.8	-0.2
1900-1910	2.8	3.1	-0.3	0.1	-0.2
1910-1920	2.4	1.3	1.1	0.4	1.4
1920-1930	1.7	3.3	-1.5	1.6	0.1
1930-1940	3.1	2.3	0.8	0.0	0.8
1940-1950	3.7	4.0	-0.3	-1.0	-1.3
1950-1960	4.5	3.4	1.0	0.0	1.1
1960-1970	5.1	4.7	0.4	-0.2	0.1
1970-1980	3.3	1.9	1.3	0.1	1.4
1980-1990	1.8	2.0	-0.2	-0.2	-0.5
1990-2000	0.7	1.7	-1.0	-0.2	-1.2
1850-2000	**2.9**	**2.7**	**0.2**	**0.2**	**0.5**

Sources: Calculations based on the PS-data. See chapters 3, 4 and 5.

Comment: The deflator of the asset/GDP ratio measures the growth of the price index of assets in relation to the growth of the GDP deflator. If growth is measured logarithmically, the volume growth of assets less the volume growth of GDP gives the growth of the volume asset/GDP ratio. Similarly, the (logarithmic) growth of the volume asset/GDP ratio plus the growth of the deflator of the asset/GDP ratio gives the nominal growth of the asset/GDP ratio.

TABLE 8.5: *Average annual volume growth (in percent) of different types of produced assets (net stocks in purchasers' prices).*

Period	Dwellings	Non-residential structures	Machinery and equipment	Fixed livestock	Inventory stock	Total stock of produced assets	Annual population growth
1800-1850	0.8	0.6	1.5	0.6	1.7	0.9	0.8
1850-1860	4.2	3.0	7.8	0.6	3.5	3.3	1.0
1860-1870	3.4	3.3	4.5	-1.3	3.1	2.9	0.9
1870-1880	4.6	4.1	6.2	1.5	4.3	4.2	0.9
1880-1890	2.6	0.9	2.8	1.2	4.2	1.9	0.4
1890-1900	2.4	1.1	4.3	-2.3	5.5	2.1	0.7
1900-1910	2.5	2.3	6.0	1.7	3.7	2.8	0.7
1910-1920	1.5	2.4	5.3	0.8	4.1	2.4	0.7
1920-1930	1.4	1.2	2.4	4.0	4.2	1.7	0.4
1930-1940	3.3	2.0	6.4	0.4	4.5	3.1	0.4
1940-1950	3.1	3.0	8.2	-1.3	4.1	3.7	1.0
1950-1960	3.9	5.0	6.5	-2.2	3.2	4.5	0.6
1960-1970	5.0	5.7	6.0	-2.0	3.4	5.1	0.7
1970-1980	3.0	3.5	3.8	2.2	2.4	3.3	0.3
1980-1990	1.7	1.6	4.1	3.4	-2.0	1.8	0.3
1990-2000	-0.2	1.2	2.8	3.0	-1.4	0.7	0.4
1850-2000	**2.8**	**2.7**	**5.1**	**0.6**	**3.1**	**2.9**	**0.6**

Sources: Calculations based on the PS-data. See chapter 5 and footnote 579 (on page 147).

8.5 Labour income and surplus in manufacturing and handicrafts

8.5.1 The ratio of surplus to labour income

FIGURE 8.5 presents the development of the ratio of gross and net surplus, respectively, to labour income for manufacturing and handicrafts. The ratio of net surplus to labour income is the closest to what Marx calls the rate of exploitation or rate of surplus value,[743] although it also includes self-employed in the calculation, and hence does not reflect a pure capitalist relation as elaborated by Marx. The ratio of net surplus to labour income can, therefore, be viewed as an indicator of the rate of exploitation rather than a direct measure of it. However, for manufacturing and handicrafts the proportion of self-employed was quite low, at least in the 20th century. The estimate of the surplus for manufacturing and handicrafts is also more reliable than for the private sector as a whole.

The change in the ratio of surplus to labour income is determined by two factors, the change in the nominal labour income rate (nominal labour income per employed or per hour worked) and the change in nominal productivity[744]

[743] See section 2.2.1.
[744] Productivity here refers to labour productivity.

(nominal value added per employed or per hour). If the nominal labour income rate grows faster than nominal productivity, then the nominal ratio of surplus to labour income decreases. It increases in the reverse scenario. The change in the nominal labour income rate is, in turn, determined by the change in the real labour income rate and the change in the deflator of labour income (in this section equalled to the private final consumption). The change in nominal productivity is determined by the change in real productivity and the change in the deflator of value added.

In this study, for manufacturing and handicrafts, the labour income rate equals the wage rate (including salaries and social benefits) for employees.[745] This section also analyses labour income and surplus in basic values (labour income in basic values equals, in turn, the labour income at factor costs); the analysis in purchasers' proxy values would be slightly different.

For manufacturing and handicrafts, the ratio of gross surplus to labour income was about the same in 2000 as in 1850 (see FIGURE 8.5). This implies that the nominal wage (and labour income) rate increased as much as nominal productivity. Both variables (expressed per employed) had in fact an average annual growth rate of 4.8 percent in that period. In spite of this, the volume value added per employed (real productivity) grew faster than the real annual wage rate – 2.6 percent per year compared to 1.9 per year on average in the period. The reason for this divergence is that the price index of private final consumption on average grew faster than the price index of value added in manufacturing and handicrafts – 2.9 percent per year compared to 2.2 percent per year in that period.

In the long-term perspective, there was a decrease in the gross and net surplus/labour income ratios up to the end of the 1970s. Since the consumption of fixed assets as a proportion of surplus has increased over time, the ratio of net surplus to labour income has decreased more than the ratio of gross surplus to labour income.

In the early 1850s, the ratio of gross surplus to labour income stood at a historically high level. At the end of the decade, it decreased to lower levels as wages rose faster than productivity. While the annual wage rate increased by 16 percent in real terms and by 40 percent in nominal terms between 1854 and 1857, gross value added per employed increased only 5 percent in volume terms and 24 percent in nominal terms in this time span.

Between 1865 and 1873, the ratio of gross surplus to labour income more than doubled, from 37 to 76 percent. This increase probably played an important part behind the investment boom of the 1870s. The main factor behind this increase was the fall in the real wage rate, an effect of the agricultural crises during the

[745] See section 6.8.

latter half of the 1860s. Gross value added per employed grew in volume terms by 1.4 percent per year on average in the period, which was below the average in 1850-2000, although slightly above the average in the third quarter of the 19th century.

Between 1873 and 1879, the ratio of gross surplus to labour income fell again from 76 percent to 39 percent (and the investment boom ended as well). This fall can entirely be explained by a fall in the price index of the gross value added in manufacturing and handicrafts. This index fell by 32 percent compared to a fall of 12 percent in the price index of private final consumption. Real productivity, on the other hand, grew faster than the real wage rate.

From the late 1870s up to the First World War, the ratio of gross surplus to labour income was quite stable at around 40 percent.

Between 1914 and 1916, the ratio of gross surplus to labour income increased from 45 to 72 percent, which can be attributed to a significant increase (by 8 percent in the two-year period) in real productivity combined with a large fall (by 10 percent) in real wage per employed. Those years were marked by inflation that eroded real wages. The annual nominal wage increased by 17 percent, but since the price index of private final consumption increased as much as 30 percent, the real wage rate fell dramatically. The deflator of value added in manufacturing and handicrafts increased as much as the price index of private final consumption.

From 1916 up to the early 1930s, the surplus/labour income-rate fell continually, mainly due to a faster growth of the real wage rate compared to real productivity, which can be seen as a recoil from the high profitability attained during the First World War.

Between 1931 and 1937, there was another increase in the gross surplus/labour income ratio. Real productivity increased as much as four percent per year on average, while annual real wages stagnated. Between 1937 and 1945, the gross surplus/labour income ratio fell back again, because of falling real productivity combined with a small but positive growth in the annual real wage.

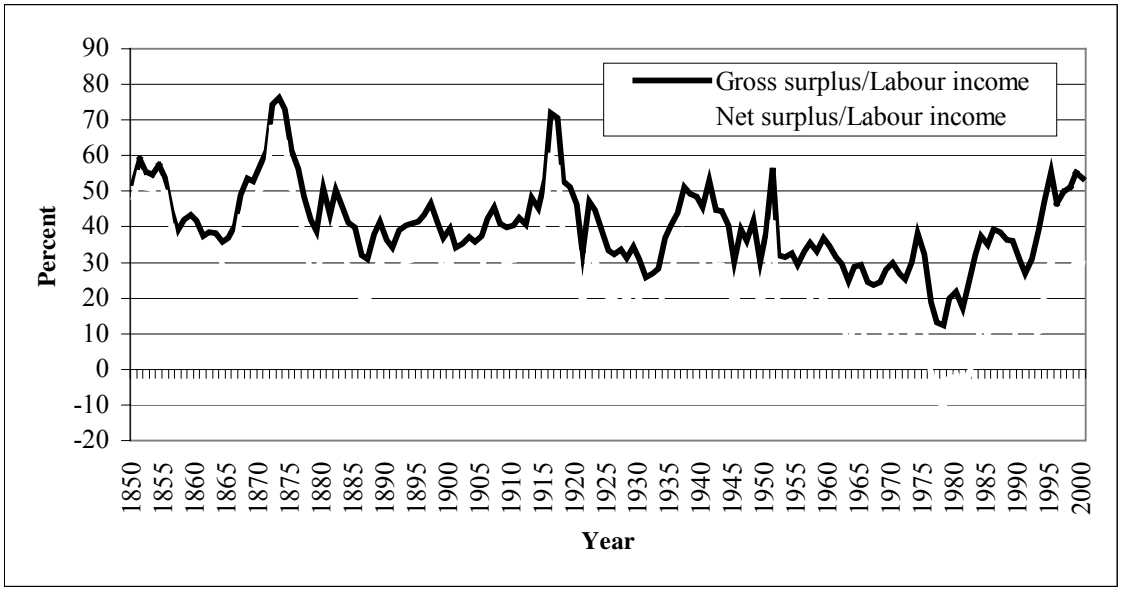
During the 1960s and 1970s the ratio of gross surplus to labour income decreased significantly, reaching its lowest level ever in the late 1970s. Between 1960 and 1978, the ratio decreased from 35 percent to just 12 percent. In 1976-82, the ratio of net surplus to labour income even reached negative figures, which was the only time in the period 1850-2000 that this occurred. This was the most severe crisis of profitability for manufacturing in modern times.

A peculiarity with the decrease in the surplus/labour income-ratio between 1960 and 1978 is, according to the data of this study, that real productivity actually increased faster than the real wage rate in this period. While the volume

value added produced per hour increased by 5.5 percent per year on average in that period, the real hourly wage increased by 4.8 percent per year. However, in nominal terms, the value added per hour worked increased by 10 percent per year, while the nominal hourly wage increased faster by 11 percent per year on average. This difference is explained by a significantly larger increase in the price index for private final consumption than for the deflator of value added of manufacturing and handicrafts connected to the increasing weight of services in private final consumption. The profitability crisis of the 1970s was, therefore, directly connected to the rise of the service sector and the decline of goods production.

Between the late 1970s and mid-1990s, the ratio of gross surplus to labour income increased to over 50 percent, a level not attained since 1951. This rise occurred in two steps. Between 1978 and 1984, the ratio increased from 12 to 37 percent, and between 1991 and 1995 from 27 to 55 percent. Between 1978 and 1984, the rise can be explained by the combination of a falling real wage rate and a modest growth of real productivity. Profitability was restored primarily at the expense of the workers. Between 1991 and 1995, the real hourly wage dropped somewhat, but it was primarily the accelerated growth in real productivity (five percent per year on average) that boosted profitability.

FIGURE 8.5: *The ratios (in percent) of gross and net surplus, respectively, to labour income for manufacturing and handicrafts (current basic values).*



Sources: Calculations based on the PS-data. See chapter 6.

Comment: The ratio of net surplus to labour income is the same expressed in purchasers' proxy values as in basic values. However, this equality does not hold for the ratio of gross surplus to labour income.

8.5.2 Surplus and investment

FIGURE 8.6 presents the ratio of gross surplus and gross investment, respectively, to gross value added for manufacturing and handicrafts based on purchasers' prices and purchasers' proxy prices. The relation between these two curves also pictures how large part of the gross surplus went for investment.[746]

In theory, the investment can be viewed as taken from the surplus. The surplus, therefore, restricts the level of investment that can be attained. In practice, investments can be higher than the surplus, especially of the individual activity, if part of the investment is financed from outside the activity itself (for instance, from the surplus of other activities or from abroad). If the labour force saves part of its labour income, the saving and investment of the overall economy can also be higher than the surplus.

According to Marxist theory, in a capitalist economy competition drives the capitalists to accumulate as large part of the surplus as possible (while in neoclassical growth theory there is mostly no link between profit and investment), which lenders the economy both a dynamism and a disposition for crises of overproduction and overaccumulation.[747] The pre-capitalist economy lacked the same impetus towards accumulation and investment.

As can be noted from FIGURE 8.6, the ratio of gross investment to gross surplus in manufacturing and handicrafts was quite low in the mid-19th century (below 20 percent). Up to the 1960s and 1970s, the ratio increased steadily, which can be viewed as a process of transformation towards an economy driven by capital accumulation.

For manufacturing and handicrafts, there was a strong correlation between the annual change in the ratio of gross surplus to gross value added lagged by one year and the annual change in the ratio of gross investment to gross value added ratio. This correlation increased over time and was strongest in the second half of the 20th century.[748]

For manufacturing and handicrafts, the ratio of gross investment to gross surplus was on average 132 percent in 1960-1981 and reached over 200 percent in 1976-1977. This was unsustainable in the long run. By the end of the 20th

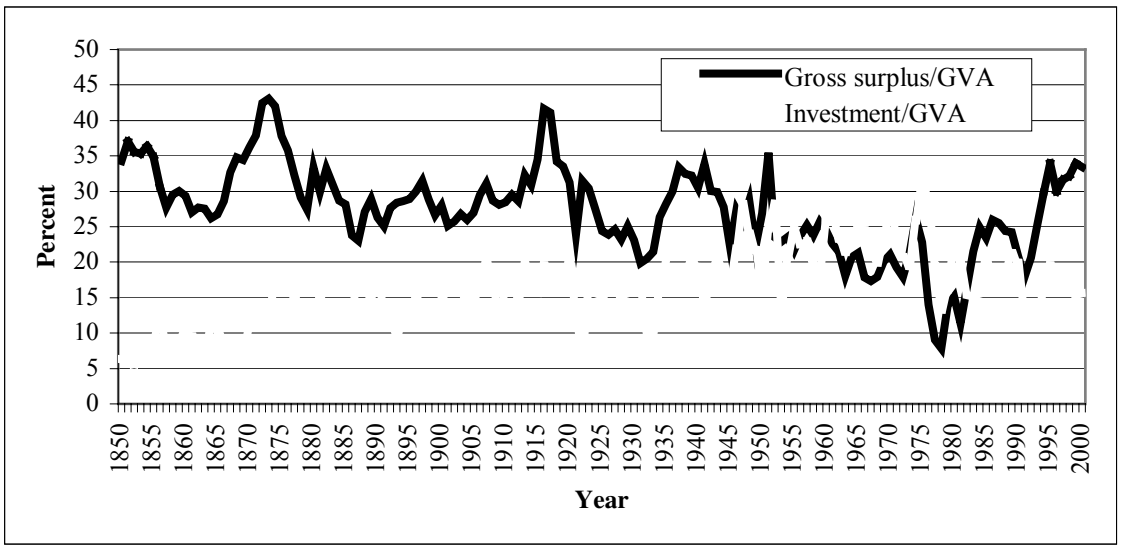
[746] The movements of the ratio of gross surplus to labour income for manufacturing and handicrafts according this study do not differ much from the movements of the Gross Profit Share according to Vikström, 2002 (Diagram 5.4, p. 127). A difference with the present study is that Vikström seems to include the labour income of self-employed in profits, which exaggerates profits especially for the earlier years. The investment/gross value added ratio of the present study differs considerably from Vikström's estimate (Vikström, 2002: Diagram 5.3, p. 126), mainly because the present study also includes changes in inventories in investment.

[747] See footnote 106 on page 24.

[748] The correlation was +0.38 for the period 1850-1900, +0.48 for the period 1900-50, and +0.71 for the period 1950-2000.

century, the ratio dropped to below 50 percent. In this sense, the 1970s could be described as a combined crisis of profitability and overaccumulation of secular proportions. This led to a downswing in accumulation that allowed profitability to rise again.

FIGURE 8.6: *Gross surplus and gross investment in percent of gross value added (based on purchasers' prices and purchasers' proxy prices) for manufacturing and handicrafts.*



Sources: Calculations based on the PS-data. See chapters 4, 5 and 6.
Comment: GVA stands for Gross Value Added.

8.6 Determinants of the surplus/asset ratio

TABLE 8.6 illustrates the effect of long-term changes in the asset/value added ratio and in the gross surplus share on the gross surplus/asset ratio in manufacturing and handicrafts and in the private sector as a whole. TABLE 8.7 illustrates the same relations but after deducting consumption of fixed assets from the value added and surplus.

As can be seen from TABLE 8.6 and TABLE 8.7, there has been a clear secular tendency for the surplus/asset ratio to fall in manufacturing and handicrafts as well as in the private sector. The decrease was even more pronounced if value added and surplus are measured in net terms. For the gross ratios, this can primarily be explained by the rise in the asset/value added ratio, at least for manufacturing and handicrafts. The fall in the surplus share also played an important part. In net terms, the fall in the surplus share had a more depressing effect on the surplus/asset ratio than the rising asset/value added ratio.

This partly validates Marx theory that there is a secular tendency for the profit rate to fall under capitalism, and that a growing capital stock appears to have a

depressing effect on the profit rate in the long run, at least for the period under investigation.

These secular tendencies were, however, in operation only up to the 1970s, at least for Sweden. TABLE 8.8 and TABLE 8.9 illustrate this for manufacturing and handicrafts.

From 1871-1900 to 1971-75, the ratio of gross surplus to the net stock of produced assets in manufacturing and handicrafts decreased from 19 to 9 percent, and the ratio of net surplus to the net stock of produced assets decreased from 15 to 3 percent. During the second half of the 1970s the gross surplus/asset ratio fell to even lower levels (the average for 1976-80 was five percent). In 1976-82, the net surplus/asset ratio turned negative (reaching -2.9 percent in 1978).[749]

The fall of the gross surplus/value added ratio between 1871-1900 to 1971-75 in manufacturing and handicrafts can be explained (in logarithmic terms) to 56 percent by the increase in the asset/value added ratio, while the decrease in the surplus share explains the remaining 44 percent. Between these two periods, it was entirely the rise of the ratio of fixed assets to value added that increased the overall asset/value added ratio, while the inventory stock decreased somewhat relative to value added.[750]

Since the early 1970s up to the end of the 20th century, the gross surplus/asset ratio in manufacturing and handicrafts almost doubled, to 16 percent. The rise was most significant from the end of the 1990s depression up to the initial recovery. Between 1991 and 1995, the gross surplus/asset ratio in manufacturing and handicrafts rose from 7 to 16 percent, the first time since the 1930s that such level had been attained and just slightly below the average in 1871-1900. Since the ratio of consumption of fixed assets to value added continued to be high, the revival of the net surplus/asset ratio was not as impressive, reaching an average of 9 percent in 1996-2000 compared to an average of 15 percent in 1871-1900.

The increase in the surplus share explains 62 percent, and the decrease in the asset/value added ratio the remaining 38 percent, of the rise in the gross surplus/asset ratio between 1971/75 and 1996/2000 in manufacturing and handicrafts. The slashing of the inventory stock relative to gross value added explains almost the entire fall in the asset/gross value added ratio, connected to the introduction of lean production methods. In fact, the ratio of fixed assets to gross value added only decreased by two percent between the two periods, and

[749] The decline in profitability in the post-war period up to the early 1980s is confirmed by the majority of Swedish studies, in spite of various definitions of profitability (Erixon, 1987: p. 49).

[750] This stable long run relation between the inventory stock and output is, however, an assumption that is made for the whole period before 1950 in this enquiry, and is not based on very reliable empirical sources.

the ratio of machinery and equipment to gross value added continued to rise by as much as 15 percent.

The ratio of gross investment to the net stock of produced assets has been quite stable over time at an average of 8 percent in the period 1871-2000 within manufacturing and handicrafts. The stability can partly be explained by the increase in the ratio of consumption of fixed assets to the net stock of produced assets. The ratio of net investment to the net stock of produced assets is more a measure of the actual growth of produced assets. From 1855 to 1976, the ratio was quite stable at around 4-5 percent, while the average in 1977-2000 was only 0.6 percent, which could be compared to an average of 1.3 percent in 1800-1850. This was partly connected to the decline of the relative size of manufacturing and handicrafts in late 20th century, but was also a symptom of the downswing in accumulation in the overall Swedish economy.

TABLE 8.6: *Various ratios (in percent) for manufacturing and handicrafts and the private sector (based on current purchasers' prices and purchasers' proxy prices). Unweighted arithmetic averages for 1871-1900 and 1971-2000.*

Ratios:	**Manufacturing and handicrafts:**			**Private sector:**		
	1871-1900	1971-2000	Change (%)	1871-1900	1971-2000	Change (%)
NSPA/GVA	170	260	53	210	300	43
GVA/NSPA	60	39	-34	48	33	-31
Gross surplus/GVA	31	22	-27	36	28	-22
Gross surplus/NSPA	19	9	-51	18	9	-46

Sources: Calculations based on the PS-data. See chapters 4, 5 and 6.
Comment: NVA stands for Net Value Added and NSPA for Net Stock of Produced Assets.

TABLE 8.7: *Various ratios (in percent) for manufacturing and handicrafts and the private sector (based on current purchasers' prices and purchasers' proxy prices). Unweighted arithmetic averages for 1871-1900 and 1971-2000.*

Ratios :	**Manufacturing and handicrafts:**			**Private sector:**		
	1871-1900	1971-2000	Change (%)	1871-1900	1971-2000	Change (%)
NSPA/NVA	183	307	68	228	351	54
NVA/NSPA	56	33	-40	45	29	-36
Net surplus/NVA	26	8	-67	31	16	-48
Net surplus/NSPA	15	3	-78	14	5	-66

Sources: Calculations based on the PS-data. See chapters 4, 5 and 6.
Comment: NVA stands for Net Value Added and NSPA for Net Stock of Produced Assets.

TABLE 8.8: *Different ratios (in percent) for manufacturing and handicrafts (based on current purchasers' prices and purchasers' proxy prices). Unweighted arithmetic averages for 1871-1900, 1971-75 and 1996-2000.*

Ratios:	1871-1900	1971-1975	1996-2000	Change (%) 1871-1900 to 1971-75	Change (%) 1971-1975 to 1996-2000	Change (%) 1871-1900 to 1996-2000
NSPA/GVA	170	264	206	55	-22	21
Buildings and structures/GVA	41	116	103	184	-11	151
Machinery and equipment/GVA	39	62	71	61	15	85
Fixed assets/GVA	79	178	174	124	-2	119
Inventory stock/GVA	90	86	32	-5	-63	-65
GVA/NSPA	60	38	49	-36	28	-18
Gross surplus/GVA	31	21	32	-30	50	5
Gross surplus/NSPA	19	8	16	-56	93	-16
Gross investment/GVA	15	24	17	65	-31	15
Gross investment/gross surplus	49	113	52	133	-54	7
Gross investment/NSPA	9	9	8	5	-11	-7

Sources: Calculations based on the PS-data. See chapters 4, 5 and 6.
Comment: GVA stands for Gross Value Added and NSPA for Net Stock of Produced Assets.

TABLE 8.9: *Different ratios (in percent) for manufacturing and handicrafts (based on current purchasers' prices and purchasers' proxy prices). Unweighted arithmetic averages for 1871-1900, 1971-75 and 1996-2000.*

Ratios:	1871-1900	1971-1975	1996-2000	Change (%) 1871-1900 to 1971-75	Change (%) 1971-1975 to 1996-2000	Change (%) 1871-1900 to 1996-2000
NSPA/NVA	183	303	239	66	-21	31
NVA/NSPA	56	33	42	-41	27	-25
Net surplus/NVA	26	10	21	-62	119	-17
Net surplus/NSPA	15	3	9	-78	178	-39
Net investment/NVA	8	13	3	54	-74	-60
Net investment/net surplus	33	138	16	318	-88	-51
Net investment/NSPA	5	4	1	-11	-68	-71
NSPA/labour income	245	336	303	37	-10	24
Net surplus/labour income	36	11	27	-69	149	-24

Sources: Calculations based on the PS-data. See chapters 4, 5 and 6.
Comment: NVA stands for Net Value Added and NSPA for Net Stock of Produced Assets.

8.7 Summary

This chapter deals with the development of accumulation, investment, foreign trade and profitability.

According to Marx there is a long-term tendency for the profit rate to fall, which is an effect of an increase in the value composition of capital (i.e. the ratio

of expenses on raw materials, depreciation of capital, etc. to wages). In this thesis, Marx' theory is slightly reformulated by studying two determinants of the profit rate. The profit rate is proportionately related to the surplus share and inversely related to the capital/value added ratio. Neoclassical growth theory shows that there is an upper limit for the (nominal) capital/output ratio; beyond a certain level, depreciation of capital becomes larger than output, which, in turn, must lead to a fall in the capital/output ratio. This also shows that there is a limit for how far the profit rate can fall as an effect of an increased capital/value added ratio. However, a permanent increase in the capital/value added ratio during the course of capitalist development has a permanent depressing effect on the profit rate.

The empirical material of this study does not allow a full operationalisation of concepts such as capital and profit, since the PS-series of produced assets and surplus also encompass non-capitalist parts of the economy. However, the profit rate is related to the surplus/asset ratio and the capital/value added ratio is related to the asset/value added ratio as computed in the present study, especially for later periods.

Both investment and foreign trade are important aspects of the process of accumulation. A higher growth of investment speeds up formation of produced assets. Capital import can be the basis of financing accumulation from abroad, while capital export can be the basis of financing accumulation in other countries.

In the first half of the 19th century, the volume growth rate of investment was only slightly above the growth rate of population. The weight of foreign trade in relation to the aggregate economy was quite stable. This was the phase of pre-capitalist accumulation. During the 1850s and 1860s several important transformations took place. The ratio of investment to GDP almost doubled, and so did the weight of foreign trade in relation to the aggregate economy. This first "wave of accumulation" was mainly directed towards the agricultural sector. Several such waves of (or accelerations in) accumulation can be observed in the subsequent period, but these did not quite conform to a neat periodic pattern, as, for instance, to Lennart Schön's scheme of phases of transformation and rationalization.

As many writers points out, part of the speeded up investment was financed by a net import up to 1910, which deteriorated Sweden's financial position. During the 1910s, Sweden was transformed to a net exporter. Especially the large export drive during the First World War eliminated the financial dependence of the Swedish economy on foreign capital.

The last decades of the 20th century saw another important transformation of the Swedish economy, connected to globalisation and flexible accumulation. While the ratio of export to GDP doubled, the investment ratio decreased significantly. Part of accumulation instead took the form of a significant net export during the 1990s.

This chapter confirms that there has been a secular rise in the ratio of produced assets to GDP during the course of capitalist development in Sweden. This rise continued roughly up to the 1970s. But since then it has declined somewhat, connected to flexible accumulation that brings down expenditures on constant capital. It is especially the inventory stock that has been slashed in relation to GDP. During the 1990s, the volume value of the net stock of buildings and structures declined, which was the first time this occurred (at annual rate) since the 1830s. However, since there is lot of uncertainties concerning the life span of investment goods this result must be taken with caution.

Both within manufacturing and handicrafts and the private sector there was a secular decline in the surplus/asset ratio. This decline can be explained both by an increased asset/value added ratio and by a decreased surplus share. The period after 1970s saw a partial reversal of this process, mostly due to an increased surplus share.

9 Short-term fluctuations and depressions

9.1 Introduction

This chapter deals with the short-term economic fluctuations in Sweden. The main focus is on severe economic crises or depressions.

Section 9.2 discusses different definitions and operationalisations of concepts such as recession, depression and expansion. Section 9.3 provides an overview of earlier historical comparisons of Swedish economic crises. Section 9.4 examines annual fluctuations in GDP and its composition by expenditure and by activity. Section 9.5 presents a division of the modern economic history of Sweden into expansions and recessions.

The rest of the chapter compares and analyses Swedish depressions since 1850. The aim is to investigate the different characteristics of these depressions. For this purpose various crisis typologies are considered.

When not stated otherwise, the figures are based on the data material of the present study.

9.2 Conceptual framework

Any division of the economic development into expansions and crises is inevitably problematic. Nevertheless, an operationalisation of concepts such as crisis, recession, depression, boom, expansion, upturn and downturn is necessary in order to identify these events. There are, though, no common definitions of these terms, reflecting the complexity of the phenomena they relate to. As succinctly put by an economist:

> If you ask 100 different economists to define the terms recession and depression, you'd get at least 100 different answers. [751]

Mitchell formulates the following definition of the business cycle (which is probably the most authoritative one):

> Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration business cycles vary from

[751] Moffat, M., online at: http://economics.about.com/cs/businesscycles/a/depressions.htm (040524).

> more than one year to ten or twelve year; they are not divisible into shorter cycles of similar character with amplitudes approximating their own. [752]

This definition implies that not all historical periods and not all countries display a business cycle. It attempts to differentiate between the kind of fluctuations experienced by the economy prior to the emergence of a "business economy" from the modern business cycle. It also presupposes that there is no fixed length of the business cycle (in contrast to, for example, Schumpeter's description of 2-3 year Kitchin cycles and 8-11 year Juglar cycles[753]), and that it can vary considerably, although a lower and upper limit is suggested.

Marx explains that the simplest form of circulation of commodities implies that the exchange value is subordinated to the use value. Commodities are exchanged for money in order to acquire other types of commodities. Under capitalism another circuit becomes the dominant one. Money is exchanged for commodities (the purchase of the use of labour power), but not for the purpose of final consumption (use value), but to produce and sell commodities to get more money then one had in the first place. Use value is subordinated to exchange value.[754]

Howard Sherman also points to the difference between the modern business cycles and earlier economic fluctuations. Modern economic crises occur because of lack of demand. Situations arise where the holder of money can decide not to purchase products or where the capitalist owning a company can decide not to continue production if it is no longer profitable. However, in the earlier self-sufficient societies the problem of "lack of demand could not exist because the economic unit directly consumed most of the products of its own land and could do without trade altogether". [755]

Bob Shenton and Mike Watts make a similar distinction between pre-capitalist and capitalist crises:

> We find the distinction between 'pre-capitalist' and capitalist crises a useful starting point for future analysis. We can distinguish, at least in theory, between crises in pre-capitalist societies, characterized by an absolute underproduction of *use-values* and crises in capitalist societies characterized by an overproduction of *exchange values*. In our view crises in those societies in which the transition to capitalism is partial and incomplete share elements of both capitalist and pre-capitalist crises. Further, the two interact in such a manner as to be mutually reinforcing and cumulative in their effect.[756]

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[752] Quoted in Burns and Mitchell, 1946: p. 3.
[753] See footnote 131 on page 29.
[754] Marx, 1965a [first published 1867]: pp. 146-176.
[755] Sherman, 1991: p. 25.
[756] Shenton and Watts, 1979: pp. 60-61. See also Mandel, 1978 [first written 1977]: p. 167.

Crises of underproduction can occur under relatively modern capitalist conditions as well,[757] for example, in connection to wars and natural disasters. These are not capitalist crises from a strictly economic point of view, although it is often difficult to distinguish between the non-capitalist and capitalist elements of these crises. Wars are also indirectly connected to the capitalist system. Furthermore, a war can induce a crisis of overproduction, for instance, if the war first generates a demand, and if subsequently when the war ends, the demand is suddenly eliminated.

It is also important to distinguish between general and partial crises. In the late agrarian society, before the industrial revolution, more and more products were brought to the market.[758] Crises occurred that partly took a capitalist form, but these were normally not general economic crises, and only affected a smaller part of the economy. The general economic crises took a pre-capitalist form. General crises of a capitalist character came first with the transformation towards an industrial economy.

Burns and Mitchell distinguish between the "reference cycle", of the general economic activity, and the various "specific cycles", of various time series, which can lead or lag behind (or even not be correlated to) the reference cycle.[759] It is, however, not easy to identify a "reference cycle" since it needs to be based on the observation of "specific cycles". One indicator for the reference cycle that can be used is the movement of GDP, but GDP also encompasses activities outside the business sector and is, therefore, not a straightforward measure of the "business cycle".[760]

One definition of a recession often stated by the financial press is that GDP has to fall two consecutive quarters[761] (but this is only used for individual countries, a definition used for a global recession is that world GDP increases less than 2.5

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[757] For example, in relation to the war economy, Tony Cliff (1974 [first published 1948]: pp. 231-232) argues as follows:

"Like the crisis of overproduction, the war economy, while being an integral part of capitalism, throws into relief the obstacles to the capitalist mode of production, which are present in the system itself…

A war economy is inevitably accompanied not by a crisis of overproduction, but by a crisis of underproduction, because the demand for goods outstrips the productive capacity of the economy. Inflation, on a large or small scale, always accompanies a crisis of underproduction."

[758] Sherman, 1991: pp. 25-26.

[759] Burns and Mitchell, 1946: pp. 23-26.

[760] Burns and Mitchell (1946: pp. 71-76) also suggest that monthly or quarterly series of the gross national product could be used as criterion for identifying a reference cycle, although they think it would be preferable to "restrict the total to the portion of the national product that passes through the 'market'" and exclude especially "production of all sorts within local, self-sufficient communities".

[761] Hall et al., 2003: p. 6.

percent in one year[762]). Since this enquiry is based only on annual data, and since quarterly GDP data for Sweden do not exist before the 1960s, it is presently impossible to operationalise such a definition for the entire modern economic history of Sweden.

The National Bureau of Economic Research (NBER), which is a private research institution in USA, maintains a chronology of the American business cycle from the 1850s onward that is partly based on Burns' and Mitchell's work. The NBER defines a recession as;

> a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales. [763]

A recession begins after the economy has reached a peak, and it continues up to the trough. The time span between the trough and the peak is labelled an expansion. Although NBER's definition often coincides with two consecutive quarters of falling real GDP, there are some recessions that do not fulfil this criteria.[764]

Howard Sherman argues that there are many problems with the NBER classification, not least since it is today mechanically applied using a computer program, and that it does not distinguish between minor recessions and major depressions.[765]

We can also view economic fluctuations either in absolute terms or in growth terms. The *business cycle* as defined by Burns and Mitchell is measured in absolute terms, and what is investigated is whether there is an outright contraction in economic activity. On the other hand, the so-called *growth cycle* or *deviation cycle* is measured relatively, and the growth upturns and downturn are defined in relation to the average growth during a period or in relation to a supposed equilibrium state or potential output (potential output is defined as the amount of output that can be produced from existing labour and capital).[766]

It is, however, quite problematic to identify a trend line in the economic activity. For instance, the average varies with the years that are included to compute the average, how it is weighted, etc. Often, the assumption of a trend line is based on neoclassical theory presupposing the existence of a fictive economy in equilibrium to which the real economy can be compared. But as Burns and Mitchell argue:

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[762] *Central Bank of Sri Lanka Annual Report*, 2001: p. 8.
[763] Hall et al., 2003.
[764] Hall et al., 2003.
[765] Sherman, 1991: p. 38.
[766] Niemira and Klein, 1994: pp. 4-16, and Hall and Taylor, 1993: pp. 16-18.

> To say that business cycles are departures from and returns toward a normal state of trade or a position of equilibrium, or that they are movements resulting from discrepancies between market and natural rates of interest, will not help, because we cannot observe normal states of trade, equilibrium positions, or natural interest rates. Nor, when we start observing, can we tell whether cyclical movements are due to factors originating within the economic system or outside of it. [767]

For simplicity, in this chapter, the annual movements of GDP are used to identify various types of economic crises, although other methods could be appropriate as well, for instance by using a broader index. However, a problem with using broader indices is that the more components such indices include, the more difficult it is to interpret what they are measuring.

In this chapter, a *recession* is defined as an annual change in GDP of less than one percent, consisting of the consecutive annual changes when this condition is fulfilled. A *contraction* is defined as an annual change in the GDP that is negative, and a period of consecutive contractions as a contraction period. A *mini-recession* is defined as an annual change in GDP that is between zero and one percent.[768] It can be assumed that during such mini-recessions it is highly likely that GDP contracts at least for a few months, but the probability for that to happen is much lower if the growth rate of GDP in one year is above one percent. A period between two consecutive recessions is defined as an *expansion*. The chronology in this chapter of recessions and expansions, displayed in TABLE 9.19, is probably the closest possible to the method applied by NBER that can be obtained from annual GDP data.

The term depression is often used to describe severe economic crises, in contrast to just a regular recession. In this chapter, a *depression* is identified as an event when GDP in one year is beneath the level of GDP two years earlier. The depression consists of those consecutive annual changes when GDP growth is negative. This means that a depression can consist of just one annual change, if the contraction during one annual change in GDP is larger in magnitude than the increase in the preceding or following annual change in GDP.

Since GDP also encompasses non-capitalist sectors, the definitions of various economic crises in this chapter based on GDP can also be applied on the pre-capitalist economy. It can, therefore, in a strict sense not be used to identify business cycle fluctuations. On the other hand, since the same definition can be applied on the capitalist as well as on the pre-capitalist economy, it allows an investigation of how economic crises of earlier times differed from modern crises

[767] Burns and Mitchell, 1946: p. 5.
[768] The term "mini-recession" is used similarly in *World business cycles*, 1982: p. 5.

and when the transition to the modern business cycle (affecting the aggregate economy) occurred.

There are several risks in defining crises just by the movement of an aggregate variable. In sections 9.7 and 9.9, the fall in GDP during depressions is disaggregated into the contribution of different types of economic activities and expenditures, which is used to identify various types of depressions. However, the contraction of some activities and expenditures can come before or after a depression, while even showing a modest growth during the depression. Burns and Mitchell similarly note the discrepancy between the reference cycle and the specific cycles.[769]

9.3 Swedish economic crises in previous studies

The identification in this chapter of severe economic crises in Swedish economic history in is not very different from previous studies. The largest difference between the present and previous studies concerns the depth and significance of the various crises and how they are interpreted in an overall analytical framework.

Lennart Jörberg examines the business cycle and fluctuations in manufacturing in the period 1869-1912 using Burns and Mitchell's, and NBER's, model of reference cycles. For this purpose, Jörberg investigates the cyclical movement of a number of different series from which he establishes a reference cycle. A whole cycle runs from trough to trough. A business contraction is the time span from peak to trough. Although such cycles should be based on quarterly or monthly data, Jörberg only had access to annual data. He identifies troughs for the Swedish economy in 1869, 1879, 1887, 1893, 1901 and 1909.[770] All of these troughs were preceded by falling GDP according to the PS-data. Jörberg's troughs in 1869, 1879, 1887 and 1909 were also preceded by depressions according to the definition of this chapter.

In a postscript to Erik Lundberg's book on the same theme, Lars Jonung defines an economic crisis as a shorter time span under peaceful conditions when production falls "markedly". He also terms such time spans as depressions. This definition is similar to the one used in this chapter, with the difference that the two crises during the World Wars are excluded in Jonung's study. Jonung identifies four crises periods or depressions in Sweden after the First World War: 1919-24, 1929-34, 1973-78, 1979-84 and 1989-93.[771] All of these coincided with

[769] Burns and Mitchell, 1946: pp. 24-26.
[770] Jörberg, 1961: pp. 217-221.
[771] Jonung, 1994: pp. 217-221.

depressions according to the definition of this chapter, except the crises period 1979-84 that coincided with a recession (which actually is on the boarder line of being classified as a depression[772]).

Mikael Lönnborg et al. compare and identify five great financial crises in Sweden in the period 1850-2000: in the 1850s, 1870s, 1920s, 1930s and 1990s.[773] They do not include, for example, the economic crisis of the 1970s. According to them, this was not a major financial crisis.

Lennart Schön identifies three types of crises that have different temporal locations in the course of a structural cycle.[774] A structural cycle and a phase of rationalization end with a structural crisis that begins a new structural cycle. This is the most serious type of crisis. Such crises occurred in 1845/48, 1890/94, 1930/34 and 1975/80. A phase of transformation ends with a transformation crisis that starts a phase of rationalization. Such crises appeared in 1866/69, 1907/10, 1951/55 and 1991/94. In the middle of the phase of rationalization a culmination crisis occurs, which is the mildest kind of crisis. Such crises appeared in 1878/79, 1920/22 and 1961/63. [775]

Gustaf Utterström argues that the crisis of 1857-58 was the first crisis of a modern type brought about by the capitalist system. Swedish agriculture was by that time highly integrated with the international capitalist system. Utterström points out that, although Sweden during the 18th century and the first half of the 19th century was an agricultural country, around the turn of the century agriculture was becoming ever more market-oriented. The increase in the domestic grain market had grown significantly during the second half of the 18th century and the first decades of the 19th century.[776]

Contrary to Utterström, Torun Hedlund Nyström contends that the influence of international markets on Sweden was still quite weak in the 1850s and 1860s.[777] The international crisis in 1857 only had a faint impact on the Swedish economy. The crisis period in the 1860s was a result of over- and mal-investments in the 1850s (which partly, though, were a consequence of the export boom following the Crimean War), institutional changes in the early 1860s and bad harvests in the late 1860s, rather than being generated by international crises. She argues that this confirms the predominance of agriculture in Sweden in that period.

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[772] The average growth of GDP by activity during the recession 1979-81 was (according to PS-data) just 0.1 percent per year, very close to an average of zero growth used to define a depression in this chapter.

[773] Lönnborg, Rafferty and Ögren, 2003. See also Boksjö and Lönnborg-Andersson, 1994.

[774] See section 2.4.5.

[775] Schön, 1994: pp. 13-14. The "crises" of 1951/54 and 1961/63 are put in brackets by Schön.

[776] Utterström, 1957: Vol. 1, p. 209.

[777] Hedlund-Nyström, 1970.

Lönnborg, Rafferty and Ögren describe the crisis in 1857-58 as a commercial crisis, which followed the heavy lending of merchant houses and financial institutions to the agricultural sector during the Crimean War. When the war ended, there was a rapid contraction in international prices and demand.[778]

According to PS-data, the financial crisis in 1857-58 did not seem to have a larger negative short-term impact on the aggregate economy. It was, therefore, not a general capitalist crisis of a modern type. In 1855-56, the Swedish economy experienced a contraction, although not a depression, preceding the financial crisis. But the contraction was rather connected to crop failure. GDP continued to expand throughout 1856-1860. However, export fell quite significantly during the time span of 1855-58 (as a recoil from the export boom during the Crimean War), and trade, sea and animal transport, and some manufacturing branches (all foreign trade-oriented) experienced a sharp fall in 1857-58. The financial crisis of 1857-58 could also be considered to anticipate the crises of the 1860s brought about by over-investment in agriculture.

Like most other authors, Lennart Jörberg describes the crisis at the end of the 1860s as marked by an extensive crop failure. Nonetheless, the trough in 1869 was not as accentuated as the trough in 1879; some industrial branches had troughs a year or a few years earlier or did not undergo contraction at all. In contrast, the year 1879 experienced a pronounced trough for nearly all series, according to Jörberg. A business contraction appeared in 1875-1879. This contraction was the most severe in the period 1869-1912 (which is also confirmed by the present study), and followed a strong economic expansion especially centred on export industries and railway construction.[779]

In Schön's typology, the time span of 1875/80 is described as a transformation crisis. Schön depicts it as the first financial crisis with industrial roots, since the crisis was caused by overinvestment in areas that could not be profitable in the near future (which in Marxist crisis typology could be interpreted as overaccumulation). There was also a difference between this crisis and the monetary crisis of the 1850s. The latter was rather caused by weak connections between lenders and borrowers on a poorly developed credit market. The crisis of the 1870s also had a wider impact on the economy, according to Schön.[780]

Lönnborg, Rafferty and Ögren assert that the financial crisis in the latter half of the 1870s was not connected to agriculture like the commercial crisis of the 1850s. The 1870s crisis rather reflected a shift toward manufacturing activities within the Swedish economy. They describe it as a bond crisis related to the

[778] Lönnborg, Rafferty and Ögren, 2003: pp. 115-118.
[779] Jörberg, 1961: pp. 222-248.
[780] Schön, 2000a: p. 189.

issuing of railway bonds that were seen as sound financial assets during the boom years, but that plummeted in value when many railway companies found themselves in financial distress.[781]

According to Jörberg, during the business contraction in 1884-87, it was the capital goods sector that led the fall. Agricultural products experienced difficult times as well, the price of which fell more than the price of other products.[782] In this chapter, the crisis is defined as a depression (although of a milder kind).

According to Jörberg, the business contraction in 1890-93 was quite mild. The decline in economic activity was not uniform either. Many branches continued expanding. The export was not hit very hard by the international depression.[783] According to the definitions of this chapter, the crisis was a recession but not a depression. In contrast, in Schön's typology the time span of 1890/95 is described as a structural crisis, which is the most severe type of crises.

Jörberg describes the business contraction in 1900-1901 as mild as well. The contraction occurred entirely because of the difficulties felt by capital goods industries. A depression along the lines of the 1870s was prevented mainly due to the continued expansion of the consumer industries. Jörberg describes this as a situation when "expansion tendencies were stronger than the depressive tendencies", following the accelerated industrialisation that began during the 1890s.[784] In this chapter, the crisis is also described as a recession but not as a depression.

According to Jörberg, the business contraction of 1907-1909 was quite severe and lasted longer in Sweden than in other countries. In this chapter, it is also described as a depression – the most severe one since the depression of the 1870s. The crisis was marked by an increasing number of labour conflicts, as real wages were attacked. Fewer and fewer of the strikes were settled in favour of the workers. The general strike in 1909 was a huge defeat for workers, which more than halved the number of trade union members. This led to a decrease in workers' wages, which, according to Jörberg, mostly hit the consumer industries prolonging the crisis.[785] In Marxist terminology, such situation could be described as possessing an underconsumptionist tendency – although, according to PS-data, the real wage rate rebounded quickly in 1910 after a dramatic fall in 1909.

Lennart Schön depicts the crisis in 1907 as a transformation crisis that followed the boom years of 1905-1907 when transformation reached a high

[781] Lönnborg, Rafferty and Ögren, 2003: pp. 119-121.
[782] Jörberg, 1961: pp. 249-266.
[783] Jörberg, 1961: pp. 267-283.
[784] Jörberg, 1961: pp. 284-306.
[785] Jörberg, 1961: p. 307-333.

point. According to Schön, the crisis was one of the deepest financial crises that Sweden has ever experienced, but is not put on the list of Swedish financial crises by Lönnborg and others. Many banks were liquidated or reconstructed (although, according to PS-data, neither employment nor the volume value added of banking, finance and insurance experienced a negative development during those years). It was also a real estate crisis that was followed by many bankruptcies of building firms.[786]

Several authors point out that while industrial companies made huge profits during the First World War, the population at large suffered. Imports fell, and there was a redistribution of resources to industry that resulted in a food crisis. The food crisis deepened during 1916-1917 because of bad harvests in Northern Europe, which consequently led to social unrest towards the end of the War.[787] According to Eli Heckscher, one factor behind the problems in agriculture was that the foreign trade in fertilizers was interrupted by the War.[788]

Johan Örtengren describes the crisis in the early 1920s as produced by the speculation of the War years and by malinvestment. The crisis was also accompanied by a dramatic deflation, as an effect of a conscious policy to reintroduce the same gold parity as before the War. The crisis hit Sweden harder than most other industrialised countries.[789]

Arthur Montgomery writes that the rise in prices prior to the deflation crisis of the 1920s was the effect of a general inflation on the export markets connected to the War. The Swedish krona also fell in relation to some leading foreign currencies. However, the idea to abandon plans to restore the pre-War gold parity found little favour.[790]

Erik Dahmén depicts the 1920s as characterised by a struggle between old and new, partly triggered by the First World War and its consequences. However, he does not consider the deflation crisis in the early 1920s as marked by a struggle between old and new within the country. The crisis was rather caused by excessive mal-investment and speculation during the First World War, which was further aggravated by tight monetary policies.[791] In a Marxist terminology this could be described as disproportionality.

In Schön's typology, the deflation crisis of 1920s was a culmination crisis, which is the mildest type of crises. He admits, however, that 1921 experienced

[786] Schön, 2000a: pp. 263-264.
[787] See, for example, Montgomery, 1954: pp. 121-128 and Schön, 2000a: pp. 278-280.
[788] Heckscher, 1970: p. 291.
[789] Örtengren, 1979: pp. 65-70.
[790] Montgomery, 1938: pp. 16-17.
[791] Dahmén, 1950: pp. 366-376.

the deepest downturn in GDP in any single year in modern times that was not connected to wars or bad harvests.[792]

In contrast to the crisis of the 1920s, the depression of the 1930s was, according to Johan Örtengren, caused by external conditions. It was a crisis of foreign trade. But there were no large structural problems due to malinvestment, followed by a readjustment process, as in the 1920s. [793] This account partly goes against Schön's crisis typology where the 1930s depression is depicted as a structural crisis.

Dahmén argues that in the late 1920s, the new innovative forces had been firmly established and permeated the whole economy. It explains why the depression in the early 1930s was not as deep in Sweden as in other countries. The depression can entirely be explained by external factors and was not an expression of the struggle between the old and new within Swedish industry. The 1930s experienced a prosperity, which can be considered as a cumulative continuation of the development in the 1920s.[794]

Arthur Montgomery makes the case that the moderate expansionary financial policy in the early 1930s was of secondary importance as a factor contributing to the recovery after the depression. The strong recovery was rather due to a favourable competitive position of Swedish industry enjoyed in the international markets.[795]

Mats Johansson points to the dramatic effects on the Swedish economy produced by the outbreak of the Second World War, which ended the feverish boom of the 1930s. The development towards the home market that began during the 1930s was accentuated, as the export was hit hard. But also import fell drastically and affected the branches dependent on imported supplies.[796]

Erik Lundberg describes the time span of 1945-49 as a systemic crisis characterised by post-War readjustments and a legitimacy crisis for the economic system, although he admits that production grew positively during those years.[797] Lars Jonung argues that there was no real economic crisis in Sweden in 1945-49; it never developed into a real depression.[798]

Örtengren identifies an economic crisis occurring around 1952 characterised by a readjustment after the boom accompanying the Korean War.[799] In Lennart Schön's structural cycle, the times span of 1950/1955 experienced a

[792] Schön, 2000a: p. 287.
[793] Örtengren, 1979: pp. 71-72.
[794] Dahmén, 1950: pp. 376-382.
[795] Montgomery, 1938: pp. 84-86.
[796] Johansson, 1985: pp. 182-196.
[797] Lundberg, 1994 [first published 1983]: pp. 112-139.
[798] Jonung, 1994: p. 218.
[799] Örtengren, 1979: pp. 72-74.

transformation crisis. In this chapter, the time span 1951-52 is classified only as a mini-recession, although the value added of manufacturing and handicrafts decreased significantly then. Schön also recognises that there was no real crisis in the 1950s. He explains this non-occurrence of an economic crisis in the 1950s by the successful economic policy both in Sweden and internationally after the Second World War.[800]

Most authors describe the crisis of the 1970s as a structural crisis in one form or another. It was characterised by malinvestment or disproportionalities. The crisis was mostly felt within manufacturing, which experienced negative profitability. Some branches, most notably ship building,[801] were substantially reduced.

Erik Lundberg considers the whole period 1974-82 as one coherent crisis period even though it consisted of two recessions. He argues that important causes of this crisis period were the overvaluation of the Swedish krona and too high real wages.[802]

Örtengren points out that in contrast to the 1920s or the 1930s there was no quick readjustment during the course of the crisis in the 1970s. Unemployment was not allowed to rise too much and social policies did prevent a lot of human and social suffering. If the state had not intervened, the bad conditions of profitability and solidity would have taken catastrophic proportions. This, however, led to long-term structural problems within the economy.[803]

While Lennart Schön describes the crisis of the 1970s as a structural crisis, Krantz sees it as an "unreleased structural crisis". According to Krantz, the crisis was prolonged by institutional factors and was released in full scale first during the 1990s depression. Hence, the time span between the crisis of the 1970s and the depression of the 1990s cannot be characterized as a phase of transformation, as Schön argues.[804]

Many authors point out that the 1990s crisis was aggravated by contractionary and deflationary economic policies.[805]

Jonung argues that the main driving forces behind the depression in the early 1990s were domestic, especially of a financial nature. The deregulations of the financial markets during the latter half of the 1980s created a situation of overheating in the economy, which especially led to a construction boom. The

[800] Schön, 1994: p. 14.

[801] See Statistiska Meddelanden, N 10 SM 8601, Appendix 5: p. 28 (shipbuilding and repairing has the code 3843 in that publication). For a study of the shipbuilding industry in Sweden up to the 1970s, see Bohlin, 1989.

[802] Lundberg, 1994 [first published 1983]: pp. 155-160.

[803] Örtengren, 1979: pp. 74-77.

[804] Krantz, 1993b.

[805] Korpi, 2004: p. 54.

expansionary policies at the end of the 1980s were followed by contractionary policies in the early 1990s, which aggravated the downturn in the economy. The Swedish krona was also pegged to the ECU, and only after the devaluation of the Swedish krona at the end of 1992 did the economy start to recover.[806]

Lönnborg, Rafferty and Ögren see a similarity between the 1990s and the 1920s financial crises in that both crises were severe in Sweden, while the international downturns were quite mild.[807]

Lennart Schön purports that while there are some parallels between the 1990s depression and the 1920s deflation crisis, from a structural point of view there are special reasons to compare the 1990s depression with the financial crisis of 1907. Both of these were transformation crises in his structural typology. Like the 1990s depression, the financial crisis of 1907 was preceded by a large expansion of credits that enabled larger investment, which led to excessive speculations in the stock market and to the downfall of many companies and banks. A difference was that the Swedish economy was hit harder during the 1990s depression than during the crisis of 1907. While during the 1907 crisis, the financial stress was relieved by large state loans from abroad and later by the upswing of Swedish export during the First World War, the Swedish financial institutions were very expansive abroad at the end of the 1980s boom, implying that a large part of the European financial losses were borne by Swedish financiers when the crisis unfolded.[808]

9.4 Aggregate fluctuations

TABLE 9.1 and TABLE 9.2 present the number of negative annual changes for various types of expenditures and activities and for the economy as a whole in different periods.

The GDP has contracted on more occasions in the 19th century than in the 20th century. While the number of negative annual changes in volume GDP by activity was 30 in the 19th century, the number was only 15 in the 20th century.

On the expenditure side, the frequency of annual contractions for export was especially high before 1950. In the first half of the 20th century, almost 40 percent of all annual changes in the volume of export were negative. Since the 1950 the international markets have stabilised and only four annual changes in the volume of export was negative, namely 1951-52, 1974-75, 1979-80 and 1990-91, which were all connected to international economic downturns.

[806] Jonung, 1994: pp. 243-250.
[807] Lönnborg, Rafferty and Ögren, 2003: p. 138.
[808] Schön, 2000a: pp. 507-508.

An explanation for the larger frequency of contractions before 1950 is the larger fluctuations of aggregate components in that period. For the first half of the 19th century an additional explanation is the lower growth rate. TABLE 9.3 and TABLE 9.4 present the standard deviation for different types of activities and expenditures expressed in percentage points.[809] While the standard deviation for GDP growth was around 4-5 percentage points up to 1950, it was only two percentage points in 1950-2000. Except for reproductive services and real estate, which have never fluctuated much, the standard deviation was significantly lower for all types of activities and expenditures in the second half of the 20th century compared to earlier periods.

TABLE 9.1: *Number of negative annual volume changes in the value added of different types of activities and GDP by activity (measured in basic prices).*

Period	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP by activity
1800-1850	19	13	26	20	15	5	23	6	16
1850-1900	22	7	24	14	13	10	19	1	14
1900-1950	23	11	20	8	9	8	13	3	9
1950-2000	25	9	17	6	4	9	7	0	6

Sources: See chapter 4.

TABLE 9.2: *Number of negative annual volume changes in different expenditures and GDP by expenditure (measured in purchasers' prices).*

Period	Private final consumption	Government final consumption	Investment	Export	Import	GDP by expenditure
1800-1850	20	23	20	21	19	18
1850-1900	17	16	21	14	15	15
1900-1950	16	8	19	19	15	9
1950-2000	9	5	19	4	9	5

Sources: See chapter 5.

[809] The standard deviations are calculated from the logarithmic growth rates, and the latter are transformed into percentage points. The standard deviation expressed in percentage points can be interpreted as how much larger an annual volume relative is in percent compared to another annual volume relative, if the difference between the two annual volume relatives expressed logarithmically is one standard unit.

The standard deviations are calculated using the "non-biased" or "n-1"-method. Although, in this section, the calculations are based on "whole populations", these can also be seen as manifestations of underlying stochastic variables.

TABLE 9.3: *Standard deviations of the annual volume growth rates (transformed into percentage points) of different types of activities and GDP by activity (based on basic values).*

Period	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP by activity
1800-1850	6.0	3.2	9.9	12.2	3.5	0.6	6.9	0.7	3.6
1850-1900	7.4	4.2	10.8	7.6	5.5	1.6	5.2	1.7	3.9
1900-1950	6.9	8.5	11.2	7.3	7.4	2.4	7.1	1.6	4.5
1950-2000	3.3	4.0	4.4	3.1	2.6	2.5	2.2	1.2	2.0

Sources: Calculations based on the PS-data. See chapter 4.

Comment: For a further explanation of standard deviations of growth rates expressed in percentage points see footnote 809 on page 246.

TABLE 9.4: *Standard deviations of the annual volume growth rates (transformed into percentage points) of different expenditures and GDP by expenditure (based on purchasers' values).*

Period	Private final consumption	Government final consumption	Investment	Export	Import	GDP by expenditure
1800-1850	5.6	5.9	12.4	17.9	19.9	4.8
1850-1900	5.4	4.7	16.4	7.2	13.7	4.6
1900-1950	6.3	10.2	18.7	21.1	30.5	4.8
1950-2000	2.0	2.4	9.9	4.8	5.8	2.0

Sources: Calculations based on the PS-data. See chapter 5.

Comment: For a further explanation of standard deviations of growth rates expressed in percentage points, see footnote 809 on page 246.

9.5 Recessions and expansions

The period 1850-2000 experienced 26 recessions and 26 expansions (see TABLE 9.19) according to the definitions of this chapter. This is based on the GDP-series by activity, while the GDP-series by expenditure would result in a somewhat different chronology.

The alternation between recessions and expansions was sharper in earlier times. 14 of the recessions occurred in the second half of the 19th century, 8 in the first half of the 20th century, and just 4 in the second half of the 20th century.

The average length of recessions and of expansions, respectively, has consequently increased through time. The average length of a recession was 1.3 years in the second half of the 19th century, 1.5 years in the first half of the 20th century and 2 years in the second half of the 20th century. The average length of

an expansion was 2.5 years in the second half of the 19th century, 4.9 years in the first half of the 20th century and 10 years (or 5.7 years if the expansion of 1953-76 is excluded) in the second half of the 20th century.[810]

If the recessions and expansions were the result of a complete randomness, then their "life-time" should have behaved as a random geometric variable (or as a random exponential variable in the continuous case, but this study is stuck to the discrete annual figures).[811] Especially if there are cumulative forces that makes a recession (or an expansion) of low age to further go on, and that makes a recession (or expansion) of high age to end, there should be fewer very short and fewer very long recessions (or expansions) compared to the random geometric case.

TABLE 9.5 and TABLE 9.6 present the time span of recessions and expansions in the actual case and in the predicted case (if they would have behaved as a geometric stochastic variable) for the periods 1850-1900 and 1900-2000, respectively.

There are no strong indications of the existence of negative cumulative forces that have made recessions or expansions to end when they reached a high "age". Rather the empirical evidence points to the contrary, at least for the 20th century.

A chi square test shows that only the lengths of recessions in the 20th century differed significantly from the random geometric distribution. 7 out of 12 recessions had a length of more than one year, while in the predicted case it would have been 2.4 out of 12. This points towards that recession years had a weak tendency to group with each other during the 20th century and that there were underlying forces (both of economic and non-economic character, in the latter case, for instance, the two World Wars) that prolonged those recessions.

The lengths of expansions did not differ significantly from the random geometric distribution during the 20th century, although 6 out of the 13 expansions had a length of seven years or more, while in the predicted case only 3 expansions would last so long. The latter could be an indication of forces that prolonged the expansions once they have started. There is no evidence of cumulative forces acting to end an expansion that has lasted a long time. The probability that an expansion of a high age ends does not seem to be significantly different from the probability that an expansion of low age ends.

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[810] The expansion of 1941-52 is included in the average of the first half of the 20th century.

[811] A geometric random variable is defined as: $P\{X=n\} = (1-p)^{n-1}p$, $n = 1,2,\ldots$ (see, for instance, Ross, 1994: p. 167). In this section, X is the length of the recession (or expansion) in years, P the probability that a recession (or expansion) has the length X years, and p the probability that a year is a recession (or expansion) year, all under assumption of randomness. The probability of a recession (or expansion) year can simply be calculated as the number of recession (or expansion) years divided by total number of years, under the condition that recession (or expansion) years occurred completely randomly.

The expansion in 1953-76 was exceptional as it had a length of 23 years.[812] The probability that an expansion attains such length (or longer), assuming a geometric random distribution of the expansion years, is less than one percent. It can really be discussed whether the business cycle was not suspended for those years. According to Burns and Mitchell, the upper limit of a business cycle is set to 10 to 12 years.[813] The longest cycle of expansion followed by a recession in the American economy in this period was ten years,[814] which is within Burns and Mitchell's upper limit for a business cycle. A cycle of more than 20-year duration cannot really be considered to fulfil Burns and Mitchell's criteria. However, the so-called growth cycle can be observed throughout this period.

During the second half of the 19th century the length of recessions and expansions was very close to the predicted frequencies.

This empirical result gives some support for the disproportionality theory of capitalist crisis, alternatively for models of external shocks, as contrasted to the other crises theories,[815] at least when it comes to more short-term fluctuations. The other theories presuppose, directly or indirectly, negative cumulative forces that ends an expansion: a too small basis for consumption according to the underconsumptionist theory, an increased value composition of capital according to the theory of a TRPF, and intensified competition between capitalists according to the labour shortage theory. The disproportionality theory, on the other hand, seeks an explanation for the crisis in the anarchistic nature of capitalism, which also implies that the timing of recessions and expansions is a rather random phenomenon. Models describing crises as caused by external shocks also presuppose quite a random behaviour.

Another, perhaps more likely, interpretation is that the recessions were caused by many different factors of both economic and non-economic nature that generated the appearance of randomness.

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[812] However, according to the PS-series of GDP by expenditure, the Swedish economy contracted by 0.1 percent in 1970-71, which would then be classified as a recession. On the other hand, according to that series there was no recession in the early 1950s.

[813] See footnote 752 on page 234.

[814] *US Business Cycle Expansions and Contractions*, undated. Online at: http://www.nber.org/cycles/recessions.html (040828).

[815] See chapter 2.

TABLE 9.5: *The length of recessions (in years), actual and "predicted" frequencies (the chi square test gives p=0.008 for the period 1900-2000 and p=0.55 for the period 1850-1900).*

Length of recession (in years):	For the period 1900-2000:		For the period 1850-1900	
	Actual frequency:	"Predicted" frequency:	Actual frequency:	"Predicted" frequency:
1	5	9.6	10	9.0
2	6	1.9	4	3.2
3	1	0.4	0	1.2
>3	0	0.1	0	0.7
Total	**12**	**12**	**14**	**14**

Sources: Calculations based on the PS-data. See also TABLE 9.19.

TABLE 9.6: *The length of expansions (in years), actual and "predicted" frequencies (the chi square test gives p=0.24 for the period 1900-2000 and p=0.83 for the period 1850-1900).*

Length of expansion (in years):	For the period 1900-2000:		For the period 1850-1900	
	Actual frequency:	"Predicted" frequency:	Actual frequency:	"Predicted" frequency:
1	2	2.6	7	4.7
2	3	2.1	1	3.0
3	1	1.7	2	1.9
4	0	1.3	1	1.2
5	1	1.1	0	0.8
6	0	0.9	1	0.5
7	3	0.7	1	0.3
8	0	0.5	0	0.2
9	1	0.4	0	0.1
10	0	0.3	0	0.1
>10	2	1.4	0	0.1
Total	**13**	**13**	**13**	**13**

Sources: Calculations based on the PS-data. See also TABLE 9.19.

9.6 Depressions in 1850-2000

9.6.1 Aggregate growth and inflation during depressions

According to the definition of this chapter, the Swedish economy has experienced 12 depressions in 1850-2000 (almost one depression per decade), the period beginning roughly when the growth rate accelerated. TABLE 9.7 presents figures of aggregate economic growth during those depressions. As a comparison, the Swedish economy experienced as many as 10 depressions in the first half of the 19th century.

Of the depressions in 1850-2000, five had a time span of just one year, six a span of two years, and just one a span of three years. Seven of the depressions

occurred in the 20th century. The 1990s depression was the only time in modern history when GDP fell for three consecutive years. The last time before the 1990s when GDP fell for three consecutive years was in 1806-1809 (in connection to wars).

Some depressions and recessions were quite close to each other in time and could actually be viewed as part of one depressive period with small recoveries in between:

- The time span of 1916-21 could be viewed as one depressive period, including the temporary recovery of 1918-20. During this period, GDP fell by 11 percent and the 1918-20 recovery never lifted the economy above the level of 1916.
- Some writers also consider the two recessions, 1976-78 and 1980-81, as forming one and the same crisis.[816] As discussed in section 8.5, profitability in manufacturing in this period stood at its lowest point ever in the modern economic history of Sweden. Nevertheless, between 1976 and 1981, GDP actually increased by two percent, and the recovery of 1978-1980 was enough to lift the economy above the level attained in 1976. In spite of this, the average annual GDP growth in 1976-81 was only 0.4 percent,[817] and hence below the one percent set to define a recession in this chapter (although this must occur for consecutive years to be classified as one and the same recession). It was to a large degree the expansion of government services that rescued the economy from contracting. The volume value added of the private sector fell two percent in this period. The volume value added of manufacturing and handicrafts decreased as much as 10 percent, more than during the 1990s depression. It should therefore not be unreasonable to consider the whole period 1976-81 as possessing depressive features.

The two deepest depressions occurred during the two World Wars. GDP fell by 13 percent in 1916-18, and by 11 percent in 1939-41. The depressions of 1867-68 and 1920-21 saw the largest fall in GDP in peacetime (i.e. not occurring during the two World Wars; Sweden has not been directly involved in any war since the early 19th century).

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[816] See Lundberg, 1994 [first published 1983]: pp. 140-172 and the discussion of this in Jonung, 1994: p. 217-219.

[817] According to figures from Statistics Sweden, GDP grew slightly above one percent per year in this period. The large difference between the PS-data and the estimate of Statistics Sweden can be explained by the medium-term fall during the 1970s in the share of value added in gross output, which seems to depress the estimated data according to the present study more than according to Statistics Sweden. Nonetheless, other GDP-estimates of this study are closer to the estimates of Statistics Sweden for this time span.

Total GDP contraction does not take into account the duration of the depressions or their long-term impacts. During some of the depressions, the recovery was quite fast. Other depressions were the manifestations of long-term slowdowns in the economy. In TABLE 9.7, two measures take into account such factors.

- "Growth relative to the average growth in 1850-2000" is a measure of how much below the average growth rate of 2.6 percent per year (the "trend line") the economy has moved during the depression. Taken this into account, the two Wartime depressions were still the most severe. During the depression of 1916-18 GDP fell 17 percent below the "trend line". During the depression of 1939-41 GDP fell 15 percent below "trend line". The two most severe depressions in peacetime in this respect were the 1867-68 and 1990-93 depressions.
- "10-year growth of GDP around depression" compares the level of GDP in the five-year period beginning five years after the onset of the depression[818] with the GDP-level in the five-year period preceding the depression.[819] From such a long-term perspective, the 1970s depression was the most severe one as the recovery after the depression was so weak. Interestingly, this was the depression experiencing the lowest levels of profitability. The 1990s depression was also a severe one from such a long-term perspective. On the other hand, the depressions of 1920-21 and 1930-32 were the mildest ones from such a long-term perspective; the recoveries after these two depressions more than compensated for the initial fall in GDP.

[818] The time span of five years after the beginning of the depression allows for the post-depression recovery to have an impact.

[819] For example, for the 1990-93 depression the GDP-level in 1996-2000 is compared with the GDP-level in 1986-1990.

TABLE 9.7: *Growth (in percent) of volume GDP by activity (basic values) during the 12 depressions of Sweden since 1850.*

Time span	Length of depression (in years)	Total GDP growth	Average annual GDP growth	Growth relative to the average growth in 1850-2000*	10-year growth of GDP around depression**
1850-52	2	-1.5	-0.8	-6.7	27
1861-62	1	-5.5	-5.5	-8.0	21
1867-68	1	-10.6	-10.6	-12.9	31
1876-78	2	-3.4	-1.7	-8.5	19
1886-87	1	-0.3	-0.3	-3.0	23
1907-08	1	-1.7	-1.7	-4.3	37
1916-18	2	-12.6	-6.5	-17.2	16
1920-21	1	-8.5	-8.5	-11.0	37
1930-32	2	-4.1	-2.1	-9.1	38
1939-41	2	-10.7	-5.5	-15.4	28
1976-78	2	-1.6	-0.8	-6.8	13
1990-93	3	-5.0	-1.7	-12.4	17
Average	1.7	-5.5	-3.9	-9.7	25
Median	2	-4.5	-1.9	-8.8	25

Sources: Calculations based on the PS-data. See section 3.4 and chapter 4.

*"Growth relative to the average growth in 1850-2000" is a measure of how much below the 2.6 percent average growth per year (in 1850-2000) GDP has moved during the time span of the depression.

**"10-year growth of GDP around depression" is the growth of GDP between the five-year period preceding the depression and the five-year period five years after the depression commenced.

9.6.2 Different estimates of aggregate growth during depressions

TABLE 9.8 presents different estimates of aggregate growth according to previous studies as well as to the alternative computations of the present study, including estimates of the Net Domestic Product (NDP).

The GDP estimates of Olle Krantz (OK) from 2001 are not very different from the corrected Fisher GDP-index of the present study. The largest difference is in relation to the depth of the 1920-21 depression.

However, the differences with earlier studies are larger. According to the estimates of Krantz-Nilsson from 1975, the time spans of 1861-62, 1907-08 and 1920-21 (classified as depressions in this chapter) in fact experienced positive GDP growth.

An important modification is that this study revises GDP growth upward for the depression in the early 1930s. According to the present study, GDP by activity actually fell more during the 1990s depression than during the 1930s depression. This runs counter to all previous studies. The present study is based

on the newer available data of SHNA, which also upgrades GDP growth in the early 1930s compared to previous studies.

This result, that the depression of the 1990s was deeper than or at least as deep as the depression of the 1930s, is also confirmed by other variables. For instance, employment decreased more in the early 1990s than during any of the previous depressions (see section 9.8).

Another revision to earlier studies is that the 1920-21 depression was, according to the present enquiry, much deeper than the 1930-32 depression. Of the three deepest peacetime depressions in Sweden in the 20th century (i.e. the depressions of the 1920s, 1930s and 1990s), the depression of the 1930s only came third in terms of GDP contraction.

Lars Jonung argues: "even though the crises of the 90s was serious, it was hardly as serious as either the depressions of the 20s or 30s".[820] Such conclusion needs to be modified.

The Laspeyre and Paasche estimates of GDP growth give roughly the same result, except for the depressions of 1916-18 and 1939-41. The differences between the uncorrected Fisher index and the corrected one concerning aggregate growth during depressions are not so large either.

The estimates of GDP by activity and by expenditure differ somewhat, which has repercussions for the comparison of depressions. GDP by expenditure (which is a less reliable measure in the present study) fell more in 1930-32 than in 1990-93. GDP by expenditure did not decrease in 1976-78 (although it decreased by 1.5 percent in 1976-77, and the time span of 1976-77 would be classified as a depression), while GDP by activity decreased by as much as 1.6 percent in that period. The fall in GDP by expenditure in 1920-21 was also deeper than during the depression at the beginning of the Second World War, contrary to the behaviour of GDP by activity.

The estimate of Net Domestic Product does not add much information. It only implies a somewhat deeper fall during depressions than the GDP-estimate. The latter should not be surprising since consumption of fixed assets is quite stable, and hence does not tend to fall as much as GDP during downturns, which, in turn, depresses the NDP more than GDP when aggregate production falls.

[820] Jonung, 1994: p. 251. My translation from Swedish.

TABLE 9.8: *The volume growth (in percent) of aggregate production during the 12 depressions of Sweden since 1850 according to different estimates.*

Time span	ÖJ 1967	K-N 1975	OK 2001	SCB 2003	PS corr. Fi-scher	PS corr. Las-peyre	PS corr. Paa-sche	PS un-corr. Fi-scher	PS GDP by ex-pen-diture	PS NDP by acti-vity
1850-52			-1.9		**-1.5**	-1.3	-1.7	-1.4	-2.7	-1.5
1861-62	2.2	3.5	-2.5		**-5.5**	-5.2	-5.7	-5.4	-5.6	-5.6
1867-68	-1.2	-5.4	-8.3		**-10.6**	-9.9	-11.3	-10.3	-13.8	-10.6
1876-78	-4.3	-0.4	-4.0		**-3.4**	-3.3	-3.5	-3.3	-1.5	-4.0
1886-87	1.4	-1.4	-1.4		**-0.3**	-0.3	-0.3	-0.2	-1.2	-0.4
1907-08	0.7	0.4	-1.9		**-1.7**	-1.6	-1.8	-1.8	-1.4	-1.7
1916-18	-14.7	-11.5	-12.6		**-12.6**	-10.5	-14.5	-11.7	-13.9	-12.9
1920-21	-11.9	3.1	-5.0		**-8.5**	-8.1	-8.9	-9.8	-9.8	-9.0
1930-32	-11.9	-9.2	-5.8		**-4.1**	-4.0	-4.2	-3.9	-5.0	-4.5
1939-41	-2.8	-4.4	-8.2		**-10.7**	-9.7	-11.6	-9.8	-8.6	-10.9
1976-78				0.1	**-1.6**	-1.6	-1.5	-0.3	0.0	-2.2
1990-93				-4.2	**-5.0**	-5.0	-4.9	-5.6	-4.5	-5.2

Sources: Östen Johansson (ÖJ), 1967, Krantz and Nilsson (K-N), 1975, Olle Krantz (OK), 2001, Statistiska Meddelanden, NR 10 SM 0401, and the present study (see chapters 3, 4 and 5).

Comment: "Corr." stands for "corrected for the change in the share of value added in gross output" in the calculation of GDP by activity (see section 3.4.3), and "uncorr." refer to the estimate under the assumption of a constant value added share.

9.7 Behaviour of activities during depressions

The contributions from different types of activities to the change in GDP during depressions provide an important key to understand the causes behind economic crises as the nature of these causes has changed with the long-term transformation of the economy.

TABLE 9.9 presents the total growth of different types of activities during the depressions.

TABLE 9.10 shows the contribution of different types of activities to total GDP growth during depressions.[821] TABLE 9.11 illustrates the same relation, but

[821] The calculation of the (annual) contribution of a type of activities or an expenditure to overall GDP growth is based on the difference between actual GDP growth and how large GDP growth would have been if the type of activities or expenditure in question would have experienced zero growth. This method also leads to a residual, which is distributed between the different types of activities or expenditures according to their calculated contribution to overall GDP growth. GDP growth (in percent) can then be expressed as follows (where "i" stands for a type of activities or an expenditure):

$$\text{GDP growth} = \left(\prod_{i} \left(\left(\text{Contribution of i in percent} \right) / 100 + 1 \right) \right) * 100 - 100$$

expresses it in how large part of the downturn during the depressions that can be explained by the fall in respective type of activities.

While earlier depressions seem to have been induced by agricultural activities, later depressions were more correlated with the contraction in manufacturing and handicrafts. In this respect, the 12 depressions since 1850 could be classified into four types:

1) During the depressions up to the 1870s, agriculture and ancillaries contributed to most of the fall in GDP (this was also the case during the 10 depressions in first half of the 19th century). For instance, during the depression of 1867-68, the volume value added of agriculture and ancillaries fell by as much as 20 percent, while the volume value added of manufacturing and handicrafts only decreased by three percent. This reflected the domination of agriculture, and the causes behind those depressions must probably be sought from factors within the agrarian economy, bad harvests, etc – i.e. causes of a more pre-capitalist nature.
2) The depressions of 1886-87 and 1907-08 reflected an economy in a transitional phase from an agrarian to an industrial one. Agricultural production made an important contribution to the contraction of GDP, but also other types of activities contributed to the contraction. During the depression of 1886-87 it was building and construction that made the largest negative contribution to GDP growth (although too far-reaching conclusions should not be drawn from this since the fall in GDP was not so large), while during the 1907-08 depression industrial goods production as a whole made a larger negative contribution to GDP growth than agriculture and ancillaries.
3) The depressions during the two World Wars must be treated separately. During the depression of 1916-18 agriculture and ancillaries contributed to about half of the decrease in GDP, confirming the description of that depression as a food crisis.[822] The downturn in 1939-41 was quite a broad crisis induced by the fall in several types of activities, and the fall in agriculture and ancillaries made a substantial contribution to the contraction of GDP.
4) During all the depressions in peacetime in the 20th century, with the exception of the 1907-08 depression, agriculture and ancillaries made a negligible negative contribution to GDP growth. The depressions of 1920-21 and 1930-32 were predominantly brought about by manufacturing and handicrafts, which contributed to 60 percent of the total GDP contraction in 1920-21 and 82 percent in 1931-32. During the

[822] See footnote 787 on page 242.

1990s depression, the volume value added of agriculture and ancillaries fell more than during the 1861-62 depression but contributed to only 5 percent of the decrease in GDP, while agriculture and ancillaries contributed to as much as 71 percent of the fall in GDP during the 1861-62 depression. Interestingly, also the 1990s depression was mainly induced by industrial goods production. The expansion of the service sector did not seem to generate a new type of crises in this respect.

Based on the behaviour of various activities, it is difficult to pinpoint which was the first modern general economic crisis. There was rather a longer transitional period where general economic crises contained elements of both pre-capitalist and capitalist society as described by Shenton and Watts.[823] There was no sudden transformation or a clear beginning of a modern business cycle.

Cycles within manufacturing and trade can be observed long before 1850.

The depressions during the 1850s and 1860s were largely agricultural crises, but agriculture was by then highly oriented towards the market where the importance of export also grew in those two decades.

While some authors describe the depression in the late 1870s as the first modern type of crisis of general character,[824] TABLE 9.11 shows that agriculture and ancillaries explains the whole decrease in GDP during the span of 1876-78; although this crisis showed some modern characteristics in other respects, as an overall fall in prices.[825] It was the ups and downs in agriculture that still set the pace for the overall economy. While, for example, the volume value added of building and construction fell by more than ten percent in 1875-76 and 1878-79, the strong growth of agriculture and ancillaries implied that the annual growth of GDP was above five percent during those two time spans.

During the depression of 1886-87, building and construction made the largest negative contribution to GDP growth. However, looking at the following recessions, it was agriculture and ancillaries that made the largest negative contribution to GDP growth up to the recession of 1904-05.

The 1920-21 depression was in a sense the first clear-cut case of a modern general crisis, since all major types of activities declined except agriculture and

[823] See footnote 756 on page 234.

[824] For example, Boksjö and Lönnborg-Andersson (1994: p. 17) describe the 1870s crisis as follows:

"This crisis was one of the first 'modern' crises in Sweden in the sense that abundance is a *conditio sine qua non* – a necessary condition – for these crises to arise, i.e. consumers did not demand the increased volume of production. Those crises that occurred before the mid-19th century were caused by shortage and lack of goods. However, with industrialisation and its increased goods production we got another crisis morphology."

My translation from Swedish.

[825] See section 9.9.2. The price index of agricultural products did, however, increase in 1876-78, but the prices of other products fell and so did the overall price level.

ancillaries. But still during the mini-recession of 1924-25 it was a sharp fall in agriculture and ancillaries that was the main factor behind the slowdown of GDP growth.

To estimate how large part of agricultural production was traded or exchanged is quite difficult. In his calculations of the value of trade, Olle Krantz assumes that the part of agricultural production that was exchanged was about the same as the ratio of the non-agrarian population to total population.[826] According to his data, around a fourth of agricultural production was exchanged in the first half of the 19th century, and this proportion started to increase first during the 1860s. It was not until the 1910s that more than half of agricultural production was exchanged, i.e. it was not until then that the balance shifted decisively from own final use to exchange within the agricultural sector.

On average, reproductive services (both private and government) and real estate registered a positive growth during depressions, implying that those activities tended to behave counter-cyclically. During the depressions of the 1920s and 1990s, government services did not follow this pattern and decreased quite significantly, about as much as the overall GDP, and contributed to around one percentage point decrease in GDP on both occasions. This is a major factor explaining why the 1990s depression was more severe than the 1970s depression, confirming the view that contractionary economic policy was important in aggravating the 1990s economic crisis.

Industry-related services were, on the other hand, highly pro-cyclical (except for real estate). During the depressions after the First World War, circulation contributed to around one fourth of the contraction in GDP.

[826] Krantz, 1991: pp. 84-86.

TABLE 9.9: *Total volume growth (in percent) of value added (in basic values) of different types of activities during depressions in Sweden since 1850.*

Time span:	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP by activity
1850-52	-7.8	4.3	33.1	-9.6	-0.9	-0.3	-0.6	6.1	-1.5
1861-62	-8.7	-2.7	-4.3	-10.3	-7.1	-0.2	1.3	3.6	-5.5
1867-68	-19.6	-2.8	-7.3	-3.3	-5.1	-0.1	-1.1	2.5	-10.6
1876-78	-9.8	-5.1	4.5	-15.3	0.4	1.1	23.1	11.7	-3.4
1886-87	-0.9	5.1	-13.5	1.7	-1.7	1.4	0.8	2.7	-0.3
1907-08	-3.1	-2.9	-9.0	1.1	-2.2	1.6	4.6	3.0	-1.7
1916-18	-18.1	-24.3	-5.8	-20.8	5.4	6.1	8.7	2.2	-12.6
1920-21	4.3	-19.0	-4.9	-4.7	-18.6	-3.4	-10.5	-1.3	-8.5
1930-32	-3.2	-12.4	-13.1	5.6	-8.5	0.7	11.3	6.1	-4.1
1939-41	-19.7	-14.0	-36.6	0.0	-19.1	4.1	4.3	8.0	-10.7
1976-78	-4.2	-8.2	-3.3	2.5	-2.2	-0.2	5.1	2.7	-1.6
1990-93	-10.0	-6.7	-15.8	-5.9	-6.2	3.6	-4.1	2.9	-5.0
Average	-8.7	-7.8	-7.6	-5.2	-5.7	1.2	3.3	4.1	-5.5
Median	-8.3	-5.9	-6.6	-4.0	-3.6	0.9	2.8	3.0	-4.5

Sources: See chapters 3 and 4.

TABLE 9.10: *The contribution (in percentage points) of various types of activities to volume GDP growth during depressions (based on basic values).*

Time span:	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP by activity
1850-52	-3.6	0.6	2.0	-0.6	-0.1	0.0	0.0	0.3	-1.5
1861-62	-3.9	-0.4	-0.3	-0.6	-0.6	0.0	0.1	0.2	-5.5
1867-68	-9.3	-0.4	-0.5	-0.2	-0.4	0.0	-0.1	0.2	-10.6
1876-78	-4.2	-0.7	0.4	-1.1	0.0	0.1	1.2	0.9	-3.4
1886-87	-0.3	0.8	-1.1	0.1	-0.1	0.1	0.1	0.3	-0.3
1907-08	-0.9	-0.7	-0.5	0.1	-0.3	0.1	0.2	0.3	-1.7
1916-18	-5.8	-7.0	-0.2	-1.8	0.7	0.5	0.5	0.2	-12.6
1920-21	1.1	-5.2	-0.3	-0.4	-2.8	-0.3	-0.8	-0.1	-8.5
1930-32	-0.5	-3.3	-1.3	0.5	-1.1	0.1	0.8	0.7	-4.1
1939-41	-3.1	-4.4	-3.1	0.0	-2.4	0.3	0.7	0.9	-10.7
1976-78	-0.2	-2.3	-0.3	0.2	-0.4	0.0	1.2	0.2	-1.6
1990-93	-0.3	-1.6	-1.2	-0.4	-1.2	0.2	-1.0	0.3	-5.0
Average	-2.6	-2.1	-0.5	-0.4	-0.7	0.1	0.2	0.4	-5.5
Median	-2.0	-1.1	-0.4	-0.3	-0.4	0.1	0.2	0.3	-4.5

Sources: Calculations based on the PS-data. See chapter 4 and footnote 821 (on page 255).

TABLE 9.11: *The contribution of various types of activities to the contraction of volume GDP during depressions (in percent of total contraction, based on basic values).*

Time span:	Agri-culture and ancil-laries	Manu-factu-ring and handi-crafts	Buil-ding and con-struc-tion	Trans-port and com-muni-cation	Circu-lation	Private repro-ductive ser-vices	Go-vern-ment servi-ces	Real estate	GDP growth (per-cent chan-ge)
1850-52	243	-37	-131	38	5	2	2	-21	-1.5
1861-62	71	7	6	11	11	0	-1	-4	-5.5
1867-68	88	3	4	2	4	0	1	-2	-10.6
1876-78	122	20	-11	32	-1	-2	-33	-26	-3.4
1886-87	105	-232	358	-39	45	-31	-16	-89	-0.3
1907-08	53	42	32	-5	16	-6	-14	-19	-1.7
1916-18	45	54	2	13	-5	-4	-4	-1	-12.6
1920-21	-12	60	3	4	32	3	9	1	-8.5
1930-32	11	82	31	-11	26	-1	-20	-18	-4.1
1939-41	27	40	28	0	21	-2	-7	-8	-10.7
1976-78	13	146	17	-11	23	1	-73	-15	-1.6
1990-93	5	31	23	9	23	-4	20	-7	-5.0

Sources: Calculations based on the PS-data. See chapter 4 and footnote 821 (on page 255).
Note: Negative figures imply that the type of activities contributed positively to GDP growth during a depression, implying a counter-cyclical behaviour (henceforth the negative sign).

9.8 Employment during depressions

TABLE 9.12 summarizes the data on growth of employment, hours worked and (labour) productivity during depressions in Sweden since 1850. Productivity is measured both as GDP per employed and as GDP per hour worked. However, no aggregate data exist on hours worked for the period before 1950.

TABLE 9.12 confirms that the 1990s depression was one of the deepest capitalist crises Sweden has ever experienced. During this depression employment fell by 11 percent, almost twice as much in magnitude as the second deepest reduction in employment (occurring during the 1920s depression). In the course of the 1930s depression, employment fell only by three percent. It is possible, though, that the fluctuations in employment are underestimated in the present study for the period before 1950, as the utilized indicators of annual fluctuations are not very reliable.

Looking at productivity, it seems that GDP per employed has tended to decline during depressions, which means that the fall in employment was generally lower than the fall in GDP. This can be explained by a tendency for companies to not fire employees at the same pace as the downturn in production, and the tendency

for self-employed to stay in the market (so-called "labour hoarding"[827]). Hours worked per employed fell during the 1970s depression, but increased during the 1990s depression.

The depression in the 1990s differed from all other depressions in that GDP per employed grew quite rapidly. That explains why the 1990s downturn was not so deep in terms of GDP as in terms of employment. Also during the depression of 1976-78 productivity increased, but only in terms of GDP per hour worked, while GDP per employed fell. The difference to the 1990s depression in this respect can be attributed to the large fall in hours worked per employed during the 1970s depression. This suggests that the actual decrease in GDP per hour worked during the depressions before 1950 could have been smaller in magnitude, or GDP per hour worked could even have been growing, if there was a tendency for hours worked per employed to decrease.[828]

The largest fall in GDP per employed took place during the two World Wars, which also saw the deepest downturns in GDP. But the drop in employment was not as dramatic.

The fall in the number of employees during depressions was generally larger than the drop in employment, while the number of self-employed actually tended to increase. During the 1990s depression, the number of self-employed increased quite significantly, more than during any other of the depressions, while the fall in the number of employees was the largest in magnitude ever. The only two occasions when the number of self-employed persons fell significantly was during the 1920s and the Second World War depressions. The data on the movements of self-employed is, though, not very reliable before 1950, as it is partly based on various techniques of interpolation.

[827] Black, 1997: p. 262.

[828] This is, however, not at all certain. For the US economy, it has been found that for earlier times the reduction in labour input has mainly taken the form of layoffs and dismissals, while for later times this reduction has mainly taken the form of reducing hours worked per employee (James, 1998). In this sense, the Swedish 1990s depression behaved more like the earlier economic downturns in USA.

TABLE 9.12: *Growth of GDP (in constant basic values), employment, hours worked and productivity during the 12 depressions of Sweden since 1850.*

Time span:	GDP by activity	Em-ploy-ment	Number of self-employ-ed	Number of em-ployees	GDP per em-ployed	Hours worked	GDP per hour worked	Hours per em-ployed
1850-52	-1.5	0.1	1.2	-0.2	-1.6			
1861-62	-5.5	-1.3	0.3	-1.7	-4.3			
1867-68	-10.6	-3.1	-0.3	-3.9	-7.7			
1876-78	-3.4	-0.8	1.3	-1.4	-2.7			
1886-87	-0.3	0.0	0.6	-0.2	-0.3			
1907-08	-1.7	-0.7	0.8	-1.1	-1.0			
1916-18	-12.6	-0.3	0.1	-0.4	-12.3			
1920-21	-8.5	-6.3	-1.9	-7.4	-2.4			
1930-32	-4.1	-2.9	0.6	-3.9	-1.2			
1939-41	-10.7	-3.3	-2.5	-3.5	-7.7			
1976-78	-1.6	0.3	-0.1	0.4	-1.9	-3.9	2.4	-4.2
1990-93	-5.0	-11.4	4.0	-12.7	7.3	-10.1	5.7	1.5
Average	-5.5	-2.5	0.3	-3.1	-3.1			
Median	-4.5	-1.0	0.4	-1.5	-2.1			

Sources: See chapters 4 and 6.

Note: Aggregate data on hours worked only exists for the period 1950 onward.

9.9 Behaviour of expenditures during depressions

9.9.1 The volume growth of expenditures

The behaviour of GDP by expenditure during depressions was slightly different from the behaviour of GDP by activity (see section 9.6.2).

The depressions identified by the series of GDP by activity are also classified as depressions when applying the series of GDP by expenditure, with two readjustments. While the series of GDP by activity shows a decline for the time spans of 1886-1887 and 1976-1978, the series of GDP by expenditure displays a decline for the time spans of 1885-1887 and 1976-1977.

Furthermore, the recession of 1879-1880 is classified as a depression according to the series of GDP by expenditure, but only as a mini-recession according to the series of GDP by activity. In this section, it is left out of the analysis (as the series of GDP by activity is more reliable than the series of GDP by expenditure).

TABLE 9.13 presents the growth of various expenditures, while TABLE 9.14 presents the contribution of the different expenditures to total GDP growth during depressions as defined by the series of GDP by expenditure (except for the time span of 1879-1880).

Generally, there was a tendency for both private final consumption and investment to fall during depressions. Government final consumption increased during all depressions, with the exception of the First World War depression.

The contribution of changes in inventories to GDP growth is, however, not a reliable estimate for the period up to 1950,[829] which increase the uncertainty concerning the contribution of investment. Since the private final consumption is calculated as a residual,[830] and this residual is affected by the estimate of changes in inventories, the contribution of private final consumption to GDP growth must also be considered as somewhat unreliable.

The fall in investment tended to be much greater than the fall in private final consumption during depressions. But it must also be considered that private final consumption has a larger weight in the economy. During all of the depressions in the 19th century the contribution of private final consumption to the decrease in GDP was greater than that of investment. In contrast, during the depressions of the 20th century, the contribution of investment to the fall in GDP was greater than that of private final consumption, except for the 1920s depression. This reflects the much greater weight of investment in the industrial economy. Major economic crises were driven more by the ups and downs of capital accumulation than by underconsumptionist tendencies. During the 1930s depression, the contribution of private final consumption was even significantly positive, which, nonetheless, was the only depression that happened.

In terms of the contribution of different types of investment to GDP growth, as many as six types of depressions can be identified:

1) Investment increased during the depressions of 1850-52 and 1861-62, which has not happened during any of the subsequent depressions.
2) The depression of 1867-68 was a severe agricultural crisis. This depression also experienced a significant decrease in fixed livestock, which dominated the negative contribution of overall investment to GDP growth.
3) During the depression of 1876-78, the negative contribution of investment to GDP growth was dominated by the fall in machinery and equipment investment. Building and structure investment made a significant negative contribution to GDP growth the year before the depression (in 1875-76) and the year after the depression (in 1878-79), but this was in both cases outweighed by a very strong positive growth of private final consumption. In the time span 1875-80 as a whole the total fall in building and structure investment made a stronger negative

[829] See section 5.7.
[830] See section 5.8.

contribution to GDP growth than the total fall in machinery and equipment investment.

4) During the depressions of 1885-87, 1907-08 and 1939-41, the negative contribution of investment to GDP growth was dominated by the fall in building and structure investment. For the depression of 1907-08, it confirms Schön's description of it as experiencing a real estate crisis.[831]
5) During the depressions of 1916-18 and 1976-77, the negative contribution of investment to GDP growth mainly came from changes in inventories.[832] A process of slashing inventories accompanied the crisis of overaccumulation of the 1970s. During the recession of 1980-81, changes in inventories also dominated the negative contribution of investment to GDP growth.
6) Interestingly, it was only during the depressions of 1920-21, 1930-32 and 1990-93 that no type of investment dominated the negative contribution of overall investment to GDP growth. These three were also the most sever peacetime depressions in the 20th century. During the 1990s depression, the fall in fixed investment gave the strongest negative contribution to GDP growth of all depressions; the process of slashing inventories beginning towards the end of 1970s had more or less been completed and did not give such a strong negative contribution to GDP growth as during 1970s depression. The fall in building and structure investment and machinery and equipment investment equally contributed to the fall in GDP during the 1990s depression. But while building and structure investment continued to make a negative contribution during the rest of the 1990s, machinery and equipment investment bounced back quickly.

During the depressions of 1850-1852 and 1867-1868, the volume of import increased. This coincided with major crop failures. The depression of 1861-62 was accompanied by crop failure as well, but import increased strongly the year before that was also a crop failure. Hence, during the whole time span of 1860-62, the net export made a strongly negative contribution to GDP growth. All the deep economic crises in the 1850s and 1860s could, therefore, be described as underproduction crises where a need for increased import of agricultural products was generated.[833]

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[831] See footnote 786 on page 242.

[832] This is a very uncertain result for the depression of 1916-18, since changes in inventories are not estimated using direct sources.

[833] According to data presented by Lennart Schön (1984: table 2), the volume value of import of agricultural products increased by 41 percent between 1850 and 1852, by 40 percent between 1860 and 1861, and by 53 percent between 1866 and 1868.

During all of the depressions after 1870, import declined significantly (although during the depressions before the First World War, import of agricultural products increased substantially[834]). Export also tended to decline, but not as much as import, implying that net export during most depressions made a positive contribution to GDP growth. This reflects the modern character of these crises. They took the form of overproduction, which was accompanied by a drive to cut down on import.

The decline in export and import was most severe during the World War and inter-war depressions, which confirms that international factors played a major role in causing these crises. The depressions of 1916-18 and 1930-32 were the only depressions after 1870 when export declined more than import leading to a negative contribution of net export to GDP growth. These two depressions were also the only ones when private final consumption made a positive contribution to GDP growth.[835] Although private final consumption decreased significantly during the time span of 1913-17 it experienced a growth in 1917-18, and while private final consumption decreased significantly in 1931-32, it had a strong growth in 1930-31.

Even though both the World War depressions suffered from a dramatic fall in GDP, the behaviour of expenditures was quite different during the two depressions. During the depression of 1939-41 import fell more than export, which led to a dramatic fall in private final consumption. A similar development occurred at the beginning of the First World War, which experienced an initial contraction in GDP by expenditure in 1914. But during the depression of 1916-18, at the end of the First World War, the dramatic fall of GDP can entirely be attributed to the negative contribution of net export and changes in inventories and livestock, while other types of expenditures only stagnated. This was rather the effect of recoiling from a large export drive during 1915 and 1916.

[834] See Johansson, 1967: table 52.

[835] Note that while private final consumption decreased slightly in 1916-18 according to TABLE 9.13, the contribution of private final consumption to GDP growth in 1916-18 was slightly positive according to TABLE 9.14. This anomaly is, however, purely a statistical effect of the deflation technique and how the contribution to GDP growth is computed.

TABLE 9.13: *Growth (in percent) of different expenditures (in constant purchasers' values) during depressions since 1850.*

Time span	Private final consump-tion	Govern-ment final consump-tion	Investment	Export	Import	GDP by expen-diture
1850-52	-4.1	1.3	22.6	9.6	16.1	-2.7
1861-62	-9.9	3.2	2.7	6.4	-10.8	-5.6
1867-68	-12.9	0.1	-24.7	0.4	6.9	-13.8
1876-78	-3.9	20.7	-6.6	-3.0	-8.7	-1.5
1885-87*	-2.8	8.1	-17.9	6.5	-4.6	-1.4
1907-08	-1.9	8.0	-17.0	-3.8	-11.6	-1.4
1916-18	-0.3	-1.8	-25.0	-51.5	-39.9	-13.9
1920-21	-12.3	1.5	-31.5	-22.0	-35.1	-9.8
1930-32	3.9	6.2	-35.4	-31.8	-23.3	-5.0
1939-41	-10.9	18.9	-40.9	-37.6	-53.0	-8.6
1976-77*	-1.0	2.9	-14.2	1.5	-3.8	-1.5
1990-93	-3.5	2.9	-36.0	7.6	-6.2	-4.5
Average	-5.1	5.8	-20.4	-12.4	-16.9	-5.9
Median	-3.7	3.1	-21.4	-1.3	-9.7	-4.8

Sources: See chapter 5.

* The time span for this depression is different for GDP by expenditure and by activity.

TABLE 9.14: *Contribution (in percentage points) from different expenditures (in purchasers' values) to volume GDP growth during depressions since 1850.*

Time span:	Private final con-sump-tion	Govern-ment fi-nal con-sump-tion	Investment in:		Changes in:		Net export	GDP growth by expen-diture
			Buil-dings/ struc-tures	Machi-nery/ equip-ment	Fixed live-stock	Inven-tory stock		
1850-52	-3.4	0.1	1.7	0.1	-0.1	-0.2	-0.8	-2.7
1861-62	-8.7	0.2	0.6	0.1	0.1	-0.5	2.9	-5.6
1867-68	-11.0	0.0	-0.8	0.2	-1.5	-0.1	-1.1	-13.8
1876-78	-4.8	2.2	0.8	-1.6	0.5	-0.8	2.4	-1.5
1885-87*	-2.9	0.8	-1.5	-0.6	-0.5	0.0	3.5	-1.4
1907-08	-1.5	0.6	-1.4	-0.4	0.2	-0.9	2.1	-1.4
1916-18	0.1	-0.1	0.3	0.0	-0.6	-3.3	-10.6	-13.9
1920-21	-10.2	0.1	-1.2	-1.3	-0.2	-2.1	5.1	-9.8
1930-32	3.0	0.7	-2.7	-1.5	-0.5	-2.1	-2.0	-5.0
1939-41	-7.8	2.9	-6.3	0.4	-0.2	-2.7	5.6	-8.6
1976-77*	-0.7	1.1	-0.2	-0.1	0.1	-3.7	2.1	-1.5
1990-93	-2.0	0.9	-3.6	-3.2	0.0	-0.8	4.2	-4.5
Average	-4.2	0.8	-1.2	-0.7	-0.2	-1.4	1.0	-5.9
Median	-3.2	0.7	-1.0	-0.3	-0.2	-0.9	2.2	-4.8

Sources: Calculations based on the PS-data. See chapter 5 and footnote 821 on page 255.

* The time span for this depression is different for GDP by expenditure and by activity.

9.9.2 Inflation and price changes of expenditures

In TABLE 9.15, inflation during depressions is measured as the change in the deflator of GDP by expenditure. Changes in the price index of various expenditures are also presented. The last column of TABLE 9.15 presents the average annual change in the GDP deflator during depressions relative to the 15-year moving average.

The behaviour of inflation during depressions gives a mixed picture. There was no clear tendency for the GDP deflator to fall. Only in four out of the twelve depressions did that happen. Neither was there a general tendency for the inflation to be different from the 15-year moving average. The behaviour of inflation during depression suggests the following periodisation pattern:

1) During all three depressions in 1850s and 1860s, the inflation was higher than the 15-year moving average. This was connected to underproduction of agricultural products, due to bad harvests, etc., tending to push up the prices of those products. During all three depressions, the price index of agricultural products increased more than the GDP deflator. The change in the price index of private final consumption was also above the change in the price index of other expenditures.
2) In the period 1870-1935, all five depressions that occurred in peacetime experienced price changes below the 15-year moving average. Except for 1907-08 those depressions actually experienced severe deflation. This was connected to the character of these crises as overproduction.
3) Inflation was very high during the two World War depressions, reflecting situations of underproduction and shortage. Inflation was especially high during the First World War.[836]
4) During the two depressions (and also during the recessions) after the Second World War inflation was not much different from the 15-year moving average.

In comparison, in the American economy wholesale and to a lesser extent consumer prices tended to fluctuate pro-cyclically in the period 1789 and 1932. But since then inflation has been persistent. Also internationally, the recessions in the period following the 1930s were no longer associated with deflations.[837] This partly reflected a Keynesian turn in the macroeconomic policy of governments.

[836] See also Heckscher, 1970: pp. 308-313.
[837] Zarnowitz, 1992: p. 9.

TABLE 9.15: *Annual changes in the price index of different expenditures and change in the deflator of GDP by expenditure (based on purchasers' prices) during depressions since 1850.*

Time span	Private final con-sump-tion	Govern ment final con-sump-tion	Invest-ment	Export	Import	GDP deflator	15-year moving average of GDP deflator	GDP deflator in re-lation to 15-year average
1850-52	4.1	2.2	-0.6	-0.1	-4.6	4.2	1.5	2.6
1861-62	5.0	-0.3	2.7	-3.9	-4.8	5.0	0.5	4.4
1867-68	13.7	3.5	1.0	-2.2	-3.7	12.0	1.5	10.4
1876-78	-2.6	-6.5	-4.4	-7.3	-4.7	-3.6	0.4	-4.0
1885-87*	-4.5	-2.1	-3.2	-3.8	-5.0	-3.9	-0.4	-3.5
1907-08	2.1	0.6	-0.3	-4.2	0.5	0.7	1.6	-0.9
1916-18	32.5	37.4	31.3	38.2	36.4	34.2	4.7	28.2
1920-21	-18.1	-0.9	-13.1	-39.7	-41.6	-14.6	4.1	-17.9
1930-32	-4.4	-2.5	-1.3	-5.0	-5.1	-3.7	-0.6	-3.2
1939-41	15.1	22.6	11.3	13.2	19.3	14.5	4.2	9.9
1976-77*	10.8	16.7	10.4	6.2	12.0	10.6	9.2	1.3
1990-93	6.0	2.0	1.1	2.6	3.8	3.7	4.2	-0.5

Sources: See chapter 5.

* The time span for this depression is different for GDP by expenditure and by activity.

9.10 Produced assets and surplus during and prior to depressions

9.10.1 Produced assets and surplus during depressions

TABLE 9.16 presents the behaviour of different nominal ratios for the private sector related to profitability and accumulation during depressions since 1850.

There was a clear tendency for the asset/value added ratio to rise during depressions. However, this is partly a statistical effect. The volume asset/value added ratio increases almost automatically when the output falls, as output then becomes smaller in relation to assets. The volume growth rate of produced assets is less volatile, because of the assumptions of rates of depreciation and scrapping (which especially for structures and building are quite low, as these types of assets have a long life-time). However, if the price index of assets falls relative to the price index of output, the nominal asset/value added ratio could fall even if the asset/value added ratio increases in volume terms.

TABLE 9.16 shows how the gross surplus/asset ratio (related to the profit rate) has tended to decrease quite significantly during depressions. For most of the depressions, the largest part of this fall can be attributed to an increase in the asset/value added ratio; although for the depressions of 1886-87, 1907-08, 1920-

21 and 1976-78, it was the fall in the surplus share that made the largest contribution to the fall in the surplus/asset ratio.

During all of the three depressions in the 1850s and 1860s the surplus share increased. The tendency for depressions in the period after 1870 was for the surplus share to decrease, which can be considered as a more modern characteristic (reflecting a crisis of profitability). A notable exception to the latter pattern was the depression of the 1990s when the surplus share increased sharply. This counteracted the simultaneous rise in the asset/value added ratio, and the surplus/asset ratio increased as much as 16 percent. During the 1990s depression the surplus/asset ratio initially decreased, but re-bounced at the end of the depression. It was the devaluation of the Swedish krona in 1992 that, together with stagnant wages and rising productivity, increased the profitability especially in manufacturing at the end of the crisis.

During all of the depressions, the ratio of gross investment to value added decreased substantially. This was partly a consequence of the tendency for the surplus share to decrease, but the main factor was that the part of surplus going for investment fell. Hence, depressions could reasonably be seen as downswings in accumulation accompanying the increased asset/value added ratio.

This speaks in favour of the claim that crises generally tend to be accompanied by an increasing asset/value added ratio and a decreasing surplus share, both tending to depress profitability; a result that should not be too surprising. But this does not say anything about the causation. The causes of a crisis should be rather sought in the time period prior to the occurrence of the crisis.

TABLE 9.16: *Change of different nominal ratios for the private sector connected to profitability and accumulation (based on purchasers' prices and purchasers' proxy prices) during depressions in the period 1850-2000.*

Depression:	NSPA /GVA	GVA /NSPA	Gross surplus /GVA	Gross surplus /NSPA	Gross investment /GVA	Gross investment /gross surplus
1850-52	-2.1	2.1	6.9	9.1	14.9	7.5
1861-62	8.9	-8.1	2.0	-6.3	7.8	5.7
1867-68	2.5	-2.5	2.8	0.3	-21.9	-24.1
1876-78	9.0	-8.3	-1.3	-9.5	-6.8	-5.5
1886-87	3.9	-3.8	-7.0	-10.6	-20.2	-14.2
1907-08	4.4	-4.2	-4.5	-8.5	-18.9	-15.1
1916-18	21.3	-17.5	-11.5	-27.0	-16.5	-5.7
1920-21	18.0	-15.2	-17.0	-29.6	-27.0	-12.0
1930-32	16.3	-14.0	-13.5	-25.6	-33.0	-22.5
1939-41	18.4	-15.5	0.7	-14.9	-43.0	-43.4
1976-78	9.4	-8.6	-13.5	-21.0	-26.8	-15.4
1990-93	6.0	-5.6	22.6	15.7	-42.2	-52.8
Average	9.4	-8.6	-3.3	-11.7	-21.2	-18.5
Median	8.9	-8.2	-2.9	-10.0	-21.1	-14.7

Sources: Calculations based on the PS-data. See also chapters 4 and 5.
Note: NSPA stands for Net Stock of Produced Assets and GVA for Gross Value Added.

9.10.2 Surplus and produced assets prior to depressions

TABLE 9.17 presents the change in the ratio of different types of produced assets to GDP in the five-year periods preceding the depressions, in order to pinpoint any possible causation.

The behaviour of the nominal asset/value added ratio prior to depressions was quite different during various depressions. The rise was strongest prior to three depressions:

- In the five-year period preceding the 1870s depression, the overall nominal asset/GDP ratio increased significantly by as much as 28 percent indicating that overaccumulation probably was an important factor triggering that depression. But a more immediate cause was a crop failure.
- The 1920s depression was preceded by a very sharp increase in the ratio of machinery and equipment to GDP. But other types of produced assets did not rise as much, and the fixed livestock fell sharply in relation to GDP. The overall asset/GDP ratio increased by 10 percent.
- The depression of 1976-78 was also preceded by an increase in the asset/GDP ratio.

During the five years preceding the 1990s depression, the ratio of dwellings to GDP increased as much as 13 percent, which points towards overaccumulation of

dwellings. Lars Jonung also argues that the fall in investment during the 1990s depression was closely connected to the construction boom in the latter half of the 1980s.[838] However, since the 1980s simultaneously went through a process of introducing lean production methods, the ratio of the inventory stock to GDP decreased significantly, and this contributed to a slow growth in the ratio of the total stock of produced assets to GDP prior to the 1990s crisis.

Only five out of the twelve depressions were preceded by five-year-periods when total asset/GDP ratio rose faster than the average in 1850-2000. The depressions of 1867-68, 1886-87, 1907-08, 1930-32 and 1939-41 were actually preceded by five-year-periods of a falling asset/GDP ratio.

There was, however, a weak tendency for the ratio of machinery and equipment to GDP to rise prior to depressions; the ratio increased faster than the average (in 1850-2000) ten out of twelve five-year periods preceding a depression. Only the depression of 1907-08 deviated significantly from this pattern, as the ratio decreased as much as 22 percent in the preceding five-year period.

Against this background, no conclusion can be drawn that there was a general tendency for the asset/value added ratio to rise prior to depressions. This could indicate that the depressions were of different types, suggesting different causations of exogenous as well as of endogenous nature. Overaccumulation could also have been partial during some depressions (most notably the 1990s depression) only affecting one type of assets, suggesting disproportionality.[839] Hence, the empirical evidence, at least for Sweden, points to that the tendency for the overall asset/value added ratio to rise was more pronounced as a secular or medium-term tendency[840] than as a short-term tendency.

TABLE 9.18 presents the movement of different ratios in the five-year periods prior to depressions for the aggregate private sector,[841] which also gives a mixed picture.

For the private sector, there was a very week tendency for the asset/value added ratio to rise and for the surplus share to decrease prior to depressions, which together acted to decrease the surplus/asset ratio. However, there were many exceptions to this pattern.

With the exception of the 1907-08 depression, all the depressions in peacetime after 1870 were preceded by a falling surplus/asset ratio. A falling surplus share also preceded these depressions. But not all of them were preceded by a rising

[838] Jonung, 1994: p. 230.
[839] See section 2.2.3.
[840] See sections 8.4 and 8.6.
[841] For the estimate of the surplus in the five-year period preceding the 1850-52 depression, see footnote 736 on page 214.

asset/value added ratio. This speaks in favour of the theory of a falling rate of exploitation[842] as a major factor behind modern capitalist crises in accordance with the labour shortage theory.

In the five years preceding the depressions of 1850-52, 1867-68, 1907-08, 1916-18 and 1939-41, the surplus/asset ratio increased quite significantly (although it subsequently decreased during the depressions). The main factor behind this increase was an increase in the surplus share, which suggests that a weakening profitability was not the triggering factor behind those depressions.

In the case of the two World War depressions, the causes behind the economic downturns should be sought in the external shock from international markets rather than factors within the Swedish economy. The 1867-68 depression was rather caused by bad harvests. In the five-year period preceding the 1850-52 depression, the large rise in profitability came between 1845 and 1846 but decreased between 1846 and 1850. A crisis of profitability could have contributed to that depression, although the major cause was probably the crop failure.

The depression of 1907-08 stands out in this respect, since this was the only depression in peacetime after 1870 that was preceded by a sharp increase in the surplus share and in the surplus/asset ratio. This may suggest that the crisis in 1907-08 had its origin in the sphere of circulation rather than in the sphere of production and material accumulation, and that underconsumption[843] could have been an important factor. Interestingly, this depression was later followed by a transformation of the Swedish economy from being a net importer to a net exporter leading to an increased national saving that provided an important outlet for the surplus.

TABLE 9.18 also shows that there was a strong tendency both for the ratio of investment to value added and the ratio of investment to surplus to increase in the years preceding depressions, which suggests that overaccumulation could have been an important factor behind severe economic downturns.

On the other hand, a high investment ratio does not always lead to an increase in the asset/value added ratio – for example if the price index of produced assets decreases significantly in relation to the price index of value added, or if value added grows faster than the stock of assets.

For instance, during the five years prior to the depression of 1907-08, the investment ratio for the aggregate economy increased quite sharply and the volume value of produced assets grew by three percent per year on average. But since the volume value added grew by four percent per year on average, the

[842] See section 2.2.3.
[843] See section 2.2.3.

asset/GDP ratio decreased in the course of those five years. Interestingly, this was also the only depression prior to which all types of produced assets fell in value relative to GDP.

TABLE 9.17: *Percentage change in the ratios of the net stock of different types of produced assets to GDP (current purchasers' prices) in the five-year period preceding the onset of a depression.*

Five years preceding the depression of:	Dwellings /GDP	Non-residential buildings and structures /GDP	Machinery and equipment /GDP	Fixed livestock /GDP	Inventory stock /GDP	All produced assets /GDP
1850-52	0.0	-2.5	12.3	16.7	2.0	2.0
1861-62	12.8	0.9	29.0	-19.0	3.7	2.8
1867-68	1.3	0.1	13.7	-18.7	-4.2	-1.5
1876-78	35.2	41.7	40.8	-23.2	4.9	27.6
1886-87	9.7	-0.2	6.9	2.8	5.1	4.3
1907-08	-5.8	-9.5	-21.9	-0.3	-3.1	-7.7
1916-18	-1.6	-0.1	8.8	29.5	-6.6	0.7
1920-21	4.6	13.2	41.1	-34.0	26.9	10.4
1930-32	-1.7	-8.4	10.2	-24.3	-1.3	-4.4
1939-41	-8.4	-15.0	19.6	2.9	4.8	-7.5
1976-78	5.3	5.8	14.7	20.7	-5.2	5.5
1990-93	12.6	-3.7	0.7	-15.6	-31.2	0.9
Average depressions	4.8	1.0	13.4	-7.2	-1.2	2.4
Median depressions	2.9	-0.2	13.0	-8.3	0.3	1.5
5 year average 1850-2000 all years	4.4	1.8	6.5	-7.8	-2.0	2.3

Sources: Calculations based on the PS-data. See chapter 5.

TABLE 9.18: *Change of different ratios (current purchasers' prices and purchasers' proxy prices) for the private sector connected to profitability and accumulation in the five-year period preceding the onset of a depression.*

Five years preceding the depression of:	NSPA /gross value added	Gross value added /NSPA	Gross surplus /gross value added	Gross surplus /NSPA	Invest-ment /gross value added	Invest-ment /gross surplus
1850-52	1.3	-1.3	25.4	23.8	10.4	-11.9
1861-62	3.7	-3.6	-7.5	-10.9	-6.1	1.6
1867-68	-0.9	0.9	23.6	24.7	-24.3	-38.7
1876-78	27.3	-21.4	-19.7	-36.9	76.5	120.0
1886-87	4.7	-4.5	-12.6	-16.6	12.1	28.3
1907-08	-9.1	10.1	15.6	27.2	19.3	3.2
1916-18	-0.6	0.6	27.6	28.3	-7.0	-27.1
1920-21	11.6	-10.4	-18.7	-27.1	16.8	43.6
1930-32	-5.4	5.7	-10.3	-5.2	15.7	29.0
1939-41	-6.8	7.3	16.8	25.4	38.3	18.4
1976-78	7.9	-7.4	-9.7	-16.3	8.9	20.5
1990-93	1.9	-1.9	-9.9	-11.6	14.2	26.7
Average depressions	2.6	-2.5	0.2	-2.3	12.3	12.0
Median depressions	1.6	-1.6	-8.6	-8.0	13.2	19.4
5 year average 1850-2000 all years	2.4	-2.3	0.4	-1.9	2.7	2.3

Sources: Calculations based on the PS-data. See chapters 4, 5 and 6. The estimate of labour income for the private sector before 1850 is based on the movements of population and the day rate for a male agricultural worker (Jörberg, 1972, Vol. One, pp. 712-713), which when deducted from value added gives an estimate of surplus.

Note: NSPA stands for the Net Stock of Produced Assets.

9.11 Summary

This chapter deals with short-term fluctuations; with special focus on sever economic crises or depressions.

There is no consensus on how to define or operationalise the concept of economic crisis, except that it involves stagnation or fall in overall economic activity. The business cycle is generally defined as short-term economic fluctuations in modern industrial capitalist economies, which is distinguished from the type of fluctuations experienced in pre-capitalist, agrarian economies. Within the Marxist tradition a distinction is made between underproduction of use values, characterising pre-capitalist crises, and overproduction of exchange values characterising capitalist crises.

In this chapter, a recession is operationalised as an event when the annual changes in volume GDP are below one percent, and expansions as the time spans in-between recessions. A depression is defined as an event when volume GDP in

one year is lower than two years earlier; a depression consists of the negative annual changes in GDP. These definitions do not differentiate between pre-capitalist and capitalist types of economic slowdowns or downturns.

The identification of various economic crises in modern Swedish history is (with some exceptions) not much different in this thesis from previous studies. The largest difference concerns the depth and significance of these crises, and how they are interpreted.

According to the definition of this chapter, the Swedish economy went through 26 recessions and 26 expansions in the period 1850 to 2000. The alternation between recessions and expansions was faster in the period up to 1950 than in the second half of the 20th century. Most striking was the expansion of 1953-1976; no recessions occurred in that period. The distribution pattern of the duration of recessions and expansions does not support the claim of a periodic cycle, and speaks in favour of theories emphasising the erratic movements of capitalism (such as disproportionality or random exogenous shocks) or a multiplicity of causes behind economic crises.

In the period 1850-2000, Sweden experienced 12 depressions, i.e. nearly half of the recessions were depressions. These depressions can be divided into different types.

The depressions 1850-52, 1861-62 and 1867-68 were all largely crises of pre-capitalist nature caused by bad harvests. They were characterised by underproduction rather than overproduction. All three depressions experienced price changes above the medium-term average.

The depressions of 1876-78, 1886-87 and 1907-08 possessed both pre-capitalist and modern, capitalist characteristics. Although the fall in the value added of agriculture and ancillaries made a substantial contribution to the fall in GDP, the price changes were below the medium-term average, which suggests overproduction of exchange value.

The depressions 1916-18 and 1939-41 were caused by the World Wars. They were crises of shortage. Both depressions also experienced sharp price increases.

The depressions of 1920-21, 1930-32, 1976-78 and 1990-93 were of a modern, industrial type. Agriculture and ancillaries made a negligible contribution to the contraction in GDP.

In terms of fall in GDP the worst depressions occurred during the two World Wars. The 1867-68 agricultural crisis and the 1920-21 deflation crisis experienced nearly as large decrease in GDP. The 1930s depression did not hit Sweden as hard as other Western countries, and according to the present study the fall in GDP by activity was actually somewhat larger during the 1990s

depressions. The Swedish economy also recovered quite quickly after the 1920s and 1930s depressions.

From a long-term perspective, when looking at the 10-year average growth around depressions, the 1970s depression was the most severe one, since the recovery was so slow after this crisis. Profitability reached the lowest levels ever in Sweden. The depression of the 1990s was also very severe, both from short-term and long-term perspectives. However, profitability increased significantly during the course of the 1990s depression.

A falling surplus/asset ratio and a falling surplus share within the private sector preceded all the depressions in peacetime after 1870, except for the 1907-08 depression. But not all of these depressions were preceded by an increasing asset/value added ratio. This speaks in favour of the labour shortage theory, of a falling rate of exploitation as a major cause of capitalist crises. The tendency for the rate of profit to fall due to an increased capital/value added ratio seems to have been a more long-term working tendency than a general cause of individual economic crises, at least when Sweden is considered.

TABLE 9.19: *Cycles of expansions and recessions in Sweden 1842-2001, and average annual volume growth of GDP by activity (basic values) during the expansions and recessions.*

Cycle of expansion and recession	Average annual GDP growth during cycle	Expansion	Average annual GDP growth during expansion	Recession	Average annual GDP growth during recession	The type of recession
1842-1846	2.4	1842-1845	4.2	1845-1846	-2.7	depression
1846-1852	2.5	1846-1850	4.7	1850-1852	-0.8	depression
1852-1856	2.4	1852-1855	3.6	1855-1856	-1.1	contraction
1856-1862	2.2	1856-1860	4.6	1860-1862	-2.4	minirec./depr.
1862-1866	3.5	1862-1865	5.4	1865-1866	-1.9	contraction
1866-1868	-4.3	1866-1867	2.5	1867-1868	-10.6	depression
1868-1875	4.8	1868-1874	5.7	1874-1875	-0.8	contraction
1875-1878	1.1	1875-1876	7.0	1876-1878	-1.7	depression
1878-1880	3.0	1878-1879	5.9	1879-1880	0.3	minirecession
1880-1882	1.0	1880-1881	2.9	1881-1882	-0.9	contraction
1882-1884	3.0	1882-1883	7.4	1883-1884	-1.3	contraction
1884-1887	1.2	1884-1885	3.9	1885-1887	-0.1	minirec./depr.
1887-1889	2.9	1887-1888	4.9	1888-1889	0.9	minirecession
1889-1892	2.0	1889-1891	3.2	1891-1892	-0.3	contraction
1892-1900	3.2	1892-1899	3.7	1899-1900	-0.5	contraction
1900-1902	1.4	1900-1901	2.7	1901-1902	0.2	minirecession
1902-1905	2.4	1902-1904	3.9	1904-1905	-0.5	contraction
1905-1909	3.4	1905-1907	7.4	1907-1909	-0.5	depr./minirec.
1909-1918	1.5	1909-1916	4.0	1916-1918	-6.5	depression
1918-1921	0.7	1918-1920	5.6	1920-1921	-8.5	depression
1921-1925	5.4	1921-1924	7.1	1924-1925	0.6	minirecession
1925-1932	3.0	1925-1930	5.1	1930-1932	-2.1	depression
1932-1941	2.8	1932-1939	5.3	1939-1941	-5.5	depression
1941-1953	3.6	1941-1952	3.9	1952-1953	0.7	minirecession
1953-1978	3.6	1953-1976	4.0	1976-1978	-0.8	depression
1978-1981	1.1	1978-1979	3.2	1979-1981	0.1	minirec./contr.
1981-1993	1.3	1981-1990	2.3	1990-1993	-1.7	depression
1993-2001	3.1	1993-2000	3.5	2000-2001	1.0*	minirecession

Sources: Calculations based on the PS-data (see chapters 3 and 4), and Statistiska Meddelanden, NR 10 SM 0401 (for 2000-2001).

* The estimate of Statistics Sweden. According to Statistiska Meddelanden, NR 10 SM 0401, GDP grew slightly above 1.0 percent in 2000-2001, although according to Statistiska Meddelanden, NR 10 SM 03, it grew 0.9 percent. Since the PS-estimate of annual average GDP growth is slightly lower than the estimate of Statistics Sweden for the 1990s, the time span 2000-2001 is here classified as a minirecession.

Abbreviations: minirec./depr. – minirecession followed by depression, depr./minirec. – depression followed by minirecession, minirec./contr – minirecession followed by contraction.

Comment: For definitions of different types of recessions, see section 9.2. Contractions where GDP in one year is below the level of GDP two years earlier are labelled depressions.

10 Concluding discussion

10.1 Introduction

This chapter discusses the central results of the preceding chapters and relates them to each other. It is structured around the two main objectives of this enquiry as presented in section 1.2: 1) the construction of historical macroeconomic data series for Sweden; and 2) the analysis of growth, accumulation and crisis in Sweden on the basis of these data series. The preceding chapters and their results are discussed in mixed order, with the aim to illuminate the principal threads running through the thesis.

10.2 The construction of macroeconomic data series for Sweden

10.2.1 Macroeconomic data are not neutral

The main concern of national accounts, which is also the focus of this investigation, is how to measure different aspects of the production and distribution process. In the general debate, the impression is often given that the value of aggregate production, often taken as synonymous with GDP, is something unequivocal once you have reliable sources. Aggregate production can, however, be calculated using different methods and definitions, which can lead to quite divergent interpretations of the economic development. Alternative series of aggregate production are also presented in this study.

A reoccurring emphasis in this thesis is to attain a balance between conceptual fixity and fluidity. On the one hand the construction of historical macroeconomic data series demands a certain conceptual fixity. On the other hand the problematic aspects of this construction are also emphasised, and it is argued that various concepts are more appropriate for some historical periods than for others.

Another point accentuated is that constructed macroeconomic data and economic categories have a social dimension.

What methods and definitions to use is not only an objective question, but also dependent on for what purpose the series are used. Official national accounts are not socially neutral, as they may appear, and are adapted to the needs of the present day society. Using the same definitions and methods to construct macroeconomic series for the whole period 1800-2000 necessarily introduces anachronistic elements into the present study. Writing history on the basis of the definitions of official national accounting is in a sense partly writing history from

the perspective of the social system that have conquered the whole world in the last two centuries, namely the capitalist system.

Although this enquiry chooses to follow many of the definitions of Statistics Sweden and international guidelines, it attempts to take a critical position so that the macroeconomic series presented and analysed can be put into their proper perspective. This is also made clear when the data are analysed in chapters 7, 8, and 9.

The focus of the present investigation is not on the technical relations of an aggregate production function. The growth accounting method of this study looks at the contributions of various activities and expenditures to aggregate growth. The dynamics of accumulation are analysed by looking at the relation of produced assets to value added and surplus in current values, which is more related to the social decision process than the same relations expressed in volume values. The social relations within the process of accumulation (as manifested in the market) cannot, in this sense, be reduced to (volume) relations between commodities.

One issue is which activities to include into production, i.e. where to put the so-called production boundary. This is connected to the different theoretical standpoints discussed in chapters 2 and 3. The distinction between productive and unproductive labour used by many Marxists implies that the production boundary is narrowed and that aggregate production is estimated at a lower level than in official national accounts, while the inclusion of unpaid domestic labour implies a widening of the production boundary. The present study applies the official definition of the production boundary, but this definition is also problematised.

In chapter 7, it is pointed out that the consideration of activities performed by unpaid household labourers, which are excluded in official accounts of employment and value added, is crucial when analysing whether there has been a transformation from an industrial to a service society during the second half of the 20th century.

In chapter 8, the process of accumulation is analysed from different perspectives. On the one hand it is emphasised that a distinction has to be made between produced means of production that take the social form of capital and those means of production that are not capital in a social sense. On the other hand the empirical investigation is based on analysing the whole economy, whereby it is difficult to make such a distinction.

As dealt with in chapter 3, the volume index is a weighted average of the proportionate changes in the quantities of specific goods or services between two periods of time. How the weights are chosen is not neutral or uncontroversial.

Most often the weights are based on relations between values expressed in current prices, whereby current values are deflated and transformed into volume values. This is also the method applied in this study. But it is entirely possible to construct volume indices that are not dependent on price calculations. The chosen weights could also be based on, for example, relations between hours worked to produce various quantities of goods and services.

Within the project of SHNA, the deflation technique of deflation periods is applied, implying that the weights are held constant for periods of 20-25 years. This is connected to the theoretical perspective adopted within the project. It is implicitly assumed that it is possible to find periods of 20-25 year duration of a relatively stable structure and reasonably stable relative prices. In contrast, in this study, it is argued that economic change exhibits rather an irregular pattern. The relation between commodities as manifested socially in the market is constantly changing. Against this background, I think that a Fisher volume index that changes weights every year, has the most desirable properties to take into account such irregular process, and is especially suitable for investigating short-term fluctuations.

10.2.2 The constructed data series and their reliability

In the present study, time series for the period 1800-2000 are constructed for the following variables: GDP and its division into types of activities and expenditures, Net Domestic Product, stocks of produced assets, and consumption of fixed assets. For employment, wages and salaries (including social benefits), imputed labour income of self-employed and surplus, this study covers the period 1850-2000, while for hours worked the covered period is only 1950-2000.

The empirical material of the present study consists both of secondary and primary sources. These sources do not use the same classifications and definitions. There are several breaks when the different time series for the same variable but for different periods are compared with each other. When these time series are linked with each other, the figures of the original time series are changed, and there is a risk that these linked time series give an inadequate picture of the actual values or levels. Furthermore, the further backward in time one looks, the larger part of production was for own final use and not for the market, which is problematic from the point of view of where to put the so-called production boundary as defined in modern national accounting.

The PS-estimates of the value added are probably reasonably reliable for most types of activities for the years prior to 1950, except for real estate and some private services. To extrapolate the value added of real estate to the period before 1950, the series of the net residential stock and employment in real estate are

utilized as indicators. Some private services identified by modern national accounts are not included in previous historical national accounts. In this enquiry, a lot of guess working had to be made to arrive at satisfactory estimates for those services.

The estimates of different expenditures for the period 1950-2000 are based on the material of Statistics Sweden, and must, therefore, be considered as quite sound.

The estimates of expenditures for the period 1800-1950 are of varying quality. The sources used to compute series of export, import, fixed investment and government final consumption are comparably reliable, except for export in the early 19th century. The series of changes in inventories is a pure guesstimate, based on the movements of related variables. The estimate of private final consumption is computed as a residual, but is probably reasonably trustworthy.

Stocks of produced assets are generally very difficult to value, even if based on reliable data and sources, since also their validity is low. Different methods and assumptions can lead to quite divergent results, even for modern times. In this study, the values of stocks of produced assets are not based on direct sources, but are derived from the investment series by applying the Perpetual Inventory Method. This, at least, has the advantage of consistency over time. The series of the inventory stock is a pure guesstimate, especially for the period 1800-1950. The computed livestock is less reliable also for the latter half of the 20th century.

In chapter 8, the relations between the stock of produced assets and other variables are analysed. Considering that the estimates of produced assets are not very reliable, this analysis must be taken as quite preliminary, and it should be borne in mind that other assumptions and sources could give significantly different results.

In the present study several series of aggregate production are presented.

When the values added of activities are aggregated, we get GDP by activity. The nominal and volume estimates of expenditures allows for the possibility to compute GDP by expenditure. For the period before 1950, the series of GDP by activity in basic prices are the most reliable estimates of aggregate production presented in this study.

Calculations of stocks of fixed assets provide information on consumption of fixed assets, which makes it possible to estimate the Net Domestic Product (NDP) by activity and by expenditure. From a theoretical point of view, NDP is preferable to GDP. It is a measure of what is actually added in the production process and is not affected by, for instance, changed definitions of what constitutes fixed investment. However, as shown in chapter 5, the consumption

of fixed assets varies with different methods and assumptions to compute stocks of fixed assets. Therefore, GDP is generally a more convenient variable.

Section 7.5 compares various series of aggregate production based on different methods. The differences between those series are quite small when it comes to economic growth in a long-term perspective. But for individual annual changes and for shorter periods the differences are quite large. The latter shows that which method to use when estimating volume indices is not a second rate issue. The different series are still working with the same production boundary. This thesis does not compute alternative estimates of aggregate production that put the production boundary differently. Calculating such alternative series could further change our interpretation of the long-term economic development in Sweden.

Constructing employment series for the period 1850-1950 poses some problems. The definition of employment and the distinction between employees and self-employed are more difficult to apply the further backward in time one looks. This is especially the case for agriculture, where the borderlines between household, agricultural and other types of work, and between full time and part time seasonal workers, are quite difficult to draw. Hours worked should, in this respect, probably be of a higher validity than employment, but the different sources are quite unreliable concerning this variable for earlier periods.

For building and construction and for trade, the estimated employment before 1950 diverge significantly from the total amount of persons involved in those activities, as it only consists of persons performing this type of work as their main occupation. This discrepancy is larger the further backward in time one looks. Since the value added of these activities also includes the value added created by persons not having this type of work as their main occupation, it should not be compared to the employment series, for example, if computing productivity.

The estimates of wages and salaries (including social benefits), compensation for labour input of self-employed and surplus are of low reliability and validity even for the period 1950-2000. For earlier years, the data series of these variables must be considered more as guesstimates. The borderline between the labour input of self-employed and surplus is very difficult to draw. The analysis of surplus in chapter 8 and 9 is mainly based on manufacturing and handicrafts, since the estimates of the latter type of activities are of higher reliability and validity than the estimates of other parts of the private sector.

10.2.3 Possible future research on constructing macroeconomic series

The empirical material puts a restriction on what theoretical propositions can be investigated. The calculations of historical national accounts must be seen as an

ongoing process. There are also many gaps to be filled by future research. Modern standards for national accounts change constantly, which requires revisions backwards in time.[844] Such revisions are made by Statistics Sweden regularly, but unfortunately mostly only for some years backwards, which creates new breaks in the series.

In this section, some suggestions are made on future research concerning the construction of historical macroeconomic series.[845]

A major research project may apply the standards of the 1993 SNA on historical national accounts back to 1800. It would, however, be unadvisable to simply extrapolate the latest series of Statistics Sweden backwards using older series (for example, of the present study) as indicators, since the differences with earlier classifications and standards are substantial. A more thorough investigation would be needed of how 1993 SNA could be applied on older material (probably with the help of the personnel of Statistics Sweden). It may also be examined whether the method of double deflation could be applied on earlier series.

The estimates in this study of various types of produced assets can be improved on in many different ways. This especially concerns the series of the inventory stock for the period before 1950, for example, by utilizing some direct sources.

This enquiry does not present any estimates of hours worked for the period prior to 1950. There are, however, some direct data on hours worked for some types of activities. A worksheet, produced by Lennart Schön, seems to exist for manufacturing for the period 1890-1950.[846] It may be possible to make reasonable guesstimates for other types of activities and for earlier periods. A special attention should be given to the division of work within the agricultural sector, between men and women, and between various types of activities performed by the same person.

In connection to hours worked, more attention should be given to compute "unpaid" hours worked, both within the household and outside of it. Various estimates for individual years exist over total hours worked performed by "unpaid" household labour. Especially for earlier times it is difficult to apply the distinction between "paid" and "unpaid" labour, since most of the production was not performed for the market but for own final use. In this respect, it is important especially for historical national accounts to consider all types of work performed in society.

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[844] SOU 2002:118, bilaga 3, pp. 18-23.
[845] See also, for example, Vikström, 2004.
[846] See Bengtsson, 2003: p. 198.

Computations of hours worked, including "unpaid" household work, would also illuminate some of the weaknesses of previously constructed series of employment and its composition. It should also be possible to construct series of employment for the period prior to 1850, by utilizing population censuses.

The previous estimates of various expenditures, including the ones of the present study, could be much improved on. Here, data from SHNA could be utilized. A calibration could also be made between the value added shares as presented by activity and by input-output tables; steps in that direction have already been taken by Jan Bohlin.[847]

Historical national accounts should also devote more attention to financial variables, for example of financial assets, net income and net transfer payments from abroad, and stock prices.

Series of value added, employment, etc., could be constructed that differentiate between various company sizes, especially between capitalist firms and non-capitalist production units, and between mixed income and operating surplus. Much data already exists to allow such estimations. This would facilitate, for example, the empirical application of Marxist categories.

Another project would be to stretch national accounts backwards to the period prior to 1800 on an annual basis. Olle Krantz, who presents an estimate of GDP and its composition for 1571, has taken an important step in this direction.[848]

Presently, no monthly or even quarterly data exist on GDP for the period prior to 1960. This restrains the analysis of, for example, the unfolding of economic crises. Nevertheless, it should be possible to construct such series by utilizing various monthly and quarterly indicators for which data already exist.

At present, various estimates of historical national accounts for different countries do not apply the same methodology, and are therefore not really comparable to each other. A Nordic project exists that tries to apply common methods of classification and standards for the Nordic countries, but such initiatives could be launched also at an international level.

Also in Sweden, more cooperation between researchers from different backgrounds should be encouraged to construct historical data series and make them accessible to the public. The ideal would be the set up of an institute for historical statistics that closely cooperates with Statistics Sweden and other statistical producers.

[847] Bohlin, 2003: p. 93.
[848] Krantz, 2003.

10.3 Patterns of growth, accumulation and crisis

The second objective of this dissertation is to investigate patterns of growth, accumulation and crisis. Section 2.4 emphasises the different time scales of various economic fluctuations, and that their characteristics can vary with these time scales. This section is organised around three time scales that are related to the second objective of the thesis (see section 1.2): i) historical tendencies and trends, ii) long-term periodisations and fluctuations, and iii) short-term fluctuations.

To understand the complexity of the object under investigation, in this thesis, various competing models and concepts are pitted against each other. For example, some insights of neoclassical growth theory are used to explain both the viability of and the limitations in Marx's theory of a falling rate of profit due to increased value composition of capital.

Short-term and long-term fluctuations possess different features, but there are also similarities. Some factors behind crises are of both short-term and long-term nature.

In section 2.4, four conceptualisations of long-term economic development are discussed: long waves or cycles, segments or phases, steady growth, and historical tendencies. The first two more relate to point ii of the second objective of the thesis, while the latter two more relate to point i of the second objective (see above). These four conceptualisations do not necessarily exclude each other, and they are as much empirical statements as they are analytical tools to organize the empirical material.

Although, in this dissertation, it is strived for to find patterns in the long-term economic development and make certain periodisations, it is also emphasised that periodisations can be made differently depending on the purpose of investigation. A hierarchy can be thought to exist between different factors. But such a hierarchy is not easily determinable either. The history of capitalism seems to be too complex to be easily divided into neat periods, even if there are glimpses of order in the chaotic constellation. In this respect, a multi-segmental approach is suggested, implying that different periodisations are applied for different purposes. This approach can to a certain extent accommodate all the four conceptualisations of long-term economic development described in section 2.4.

10.3.1 Historical tendencies and trends

Several economic processes can be described as historical tendencies that have operated throughout the history of capitalism, although some of these seem to have been exhausted since the 1970s. The concept of steady growth could also be

applied on Sweden from the 1850s onward, given that the economic growth has been quite stable since then in the long run perspective, if we allow for some medium term fluctuations.

The concept of historical tendencies emphasise the continuity of different processes going on throughout the history of the capitalist system, and are discussed in relation to the process of industrialisation in chapter 7 and in relation to the process of accumulation in chapter 8. This conceptualisation points to the difficulty to periodise modern, capitalist history.

Historical tendencies must not be seen in an absolute (ahistorical) manner. The concept of *historical* tendencies also points to that they are *historically bounded*. They can exhaust themselves as a consequence of their own endogenous mechanism, and be countered and replaced by other tendencies. A historical tendency can also be shown to be a manifestation of a more fundamental tendency, which at a later phase can appear in new forms.

Chapter 7 investigates the process of industrialisation by studying the composition of employment. The relative size of industrial goods production reached a high point in the mid-1960s. Some authors interpret the various transformation processes that took place in the last decades of the 20th century as constituting a shift from an industrial to a post-industrial society. But this is problematised in this thesis. Different explanations of the decline in the relative size of industrial goods production during the second half of the 20th century are considered. One important explanation is the increased participation of women in official employment, which creates the statistical illusion of a larger relative size of industrial goods production in earlier times. Another explanation is the tendency towards outsourcing, implying that what was formally performed within the industrial companies is outsourced to independent service companies (which is also connected to flexible accumulation[849]).

If the process of industrialisation is defined in a broader sense, as is done in chapter 7, this process was in operation throughout 1850-2000, although different aspects of it has dominated during different periods. For example, if all industrial activities are considered, including industry-related services, their weight in the total number of labourers (including "housewives") has not declined in the last decades of the 20th century. Some authors also write about an industrialisation of the service sector.[850]

The increase in the capital/value added ratio could be seen as a historical tendency for capitalism, which Marx formulates as an increase in the value composition of capital implying a Tendency for the Rate of Profit to Fall. The

[849] Harvey, 1989: p. 157.
[850] See footnote 625 on page 164.

inverse of the capital/value added-ratio is the maximum rate of profit. From a theoretical point (as shown by neoclassical growth theory) it could be questioned whether the capital/value added ratio would increase indefinitely, and henceforth that the maximum profit rate would fall towards zero. An increasing capital/value added ratio is an expansion path for capital accumulation, but this path is limited. What the tendency rather implies is that the capital/value added ratio is most likely to be higher at the end of a period of upswing in accumulation and in the later phases of capitalism, so contributing to depressed profitability.

The empirical evidence of this study speaks in favour of a secular fall in the surplus/asset ratio between the 1850s and 1970s, at least for Sweden. This can mainly be explained by an increasing asset/value added ratio, but also by a decreasing surplus/value added ratio. Since the 1970s these two secular trends seem to have stopped being in operation, at least when only the produced assets are taken into consideration.

The largest increase in the asset/value added ratio occurred in the early history of Swedish capitalism, roughly 1850-1880. This also coincided with the beginnings of industrialisation. The rise in the asset/value added ratio between the 1850s and 1970s can be viewed as part of the process of industrialisation and introduction of capitalism in the Swedish economy, and this meant that the economy moved from one "balanced growth path" to another with a higher asset/value added ratio, to use neoclassical terminology.[851] The investment ratio continued to rise in this period. As some processes of industrialisation were more or less completed in the 1960s and 1970s (and the relative size of industrial goods production even started to decline), the tendency for the asset/value added ratio to rise seized to be in operation. This was also connected to the fall in the investment ratio during the last decades of the 20th century. The depressed effect on profitability remains (is "permanentised"), nevertheless, as the higher asset/value added ratio impedes the economy in achieving the higher surplus/asset-ratio that existed at the beginning of capitalist development.

Accumulation of capital consists both of new variable capital, or living labour, and new constant capital, or dead labour. An increased capital/value added ratio, or ratio between dead and living labour, can be described as an intensive form of capital accumulation. The 1970s experienced the deepest crisis in profitability in the modern history of Sweden. In manufacturing and handicrafts, investment became larger than surplus. The historical tendencies producing such outcome were unsustainable. Capital accumulation found a new form – flexible accumulation (although economic change took a somewhat different course in Sweden than internationally). Flexible accumulation implies that the ratio of dead

[851] See section 2.3.

labour to living labour is slimmed down, which at the same time blocks the road to the more intensive forms of accumulation. Flexible accumulation could, instead, be seen as a more extensive mode of accumulation. At the international level, flexible accumulation presupposed globalisation and the opening up of the whole world to the penetration of capital accumulation.

This analysis does not take into account other types of assets. For instance, if expenditures in the private sector on advertising, R&D, and training of employees would be viewed as investments that increase the so-called "knowledge capital", the depressing tendency of a rising capital stock on the profit rate may still be in operation. It is possible that the asset/value added ratio has increased since the 1970s, but that the composition of assets has changed in favour of less measurable assets. This can also be connected to the industrialisation of services, one aspect being the tendency towards commodification of knowledge.

The process of increasing international integration can be considered a historical tendency of capitalism as well. The structural indicators connected to foreign trade are very important in analysing the development of the Swedish economy. Three important transformations can be identified in this sense that also coincided with important changes in the process of accumulation: 1) the first wave of internationalisation in 1850-1870 when the weight of foreign trade in GDP doubled, which coincided with a transition to a capitalistically driven economy; 2) the 1910s and 1920s when Sweden was transformed from a capital importing to a capital exporting country; and 3) the late 20th century when the weight of foreign trade in GDP doubled again, which was connected to so-called globalisation and flexible accumulation.

During the whole history of capitalism in Sweden, despite short- and medium-term fluctuations, there has been steady growth and accumulation. This can be interpreted as a support for the steady growth model.

From a Marxist point of view, it must be questioned whether steady growth and capital accumulation can continue indefinitely, although this is something that lies outside the scope of the present investigation. The steady growth models of neoclassical theory (as discussed in section 2.3) are implicitly based on the assumption of limitless growth. Indeed, steady growth can be viewed as the main historical tendency of capitalism. Changing forms of accumulation does not change the content of accumulation, which is (in the long-term) perpetual, geometric expansion. Capitalism possesses a growth imperative. However, as a *historical* tendency it should not be viewed as eternally valid and devoid of social context. This is connected to the Marxist view that capitalism is a transient historical social form.

The recurrent crises and "long downswings" in modern Swedish economic history are a testimony that the trend of steady growth was not as smooth as implicitly assumed in some neoclassical growth models. Furthermore, the identifying of a "trend line" is in itself a problematic endeavour.

10.3.2 Long-term periodisations and fluctuations

The growth of GDP per capita and of other variables has fluctuated in the medium term perspective, and this can be interpreted as a support for either the long cycle or segment theory. In chapter 7, it is suggested that the concept of long cycle could be used when studying long-term fluctuations in GDP per capita, provided that the notion of a fixed periodicity of long cycles is abandoned. Various segments or phases can be identified in the capitalist development, if we allow for the existence of several segmental divisions that are not necessarily always congruent with each other.

A reoccurring theme in this thesis is a critique of the tradition of structural analysis in Sweden, especially as formulated by Lennart Schön, which claims to have identified distinct structural periods, alternating between phases of transformation (of a high level of structural change) and phases of rationalization (of quite stable structural relations). Such long cycle pattern is not confirmed in this study. Although various periodisation patterns are identified, they are not portrayed to possess the distinct characteristic of an alteration between phases of rationalization and transformation.

For example, according to Lennart Schön, the 1960s were part of a phase of rationalization, but it was in the 1960s when the relative size of manufacturing and handicrafts started to fall. The 1910s are considered as belonging to a phase of rationalization, while it was during this decade that Sweden was transformed from a net importer to a net exporter. There is, in my opinion, no convincing evidence that the 1890s, 1930s and 1970s were more important structural borders, as claimed by Lennart Schön, than for example the 1910s, 1940s or 1960s.

However, to the advantage of Lennart Schön's theory of structural cycles, it must be said that it is an important attempt to structure our understanding of Swedish economic history as a whole.

In my view, if long cycle theory abandons some of its premises – if the long cycles are considered empirical phenomena where each cycle can have different causations (technological, economic, international-domestic, political, etc.) and if such long cycles are allowed to have different duration – it would stand on a much firmer ground. In fact, the usual business cycle is not periodic either and is not defined according to its causal mechanisms.

The term cycle does not necessarily imply periodicity, but only a reoccurrence of specific events (as, for example, contraction in economic activity or slowed down growth). In this sense, an analytical distinction should be made between supposed 40-60 year Kondratieff-cycles and supposed long cycles without a fixed length, as it must be distinguished between supposed 2-3 year Kitchin cycles or supposed 10 year Juglar cycles from business cycles without a fixed length. Of course, to be meaningful to speak of long cycles, the average or median length of such must be longer than the average or median length of the usual business cycles (which does not preclude that in individual cases a long cycle can be shorter than a business cycle).

In chapter 7, a periodisation is suggested based on the behaviour of the growth of GDP per capita in the medium-term perspective. "Long downswings" are defined as longer time spans of an average GDP per capita growth below one percent per year, while the periods in-between the "long downswings" are labelled as "long upswings". Five "long downswings" are identified since the mid-19th century in Sweden: 1860-68, 1876-1887, 1913-1921, 1939-1945, and 1974-1993. The periods 1853-1860, 1868-1876, 1887-1913, 1921-1939, 1945-1974 and 1993- are described as "long upswings".

In section 8.3, several "waves" of investment or accumulation are identified, which for some periods corresponded to the "long upswings" discussed in chapter 7.

While periodisations stemming from long cycles are based on the reoccurrence of certain kinds of events, such reoccurrence is not necessary in a periodisation based on segments or phases. Various alternative periodisations based on different criteria are suggested in the present study, but there are also some concurrencies between these periodisations.

During the first half of the 19th century pre-capitalist, agrarian relations dominated the Swedish economy. Chapter 7 points out that even if the economy experienced quite sharp economic fluctuations, the medium term growth rate of GDP per capita was quite meagre, but still (most likely) above the growth rate in the preceding centuries. The latter suggests that many important transformative processes were going on, albeit not at the same rate as subsequently. Many authors call attention to the growth of the relative size of an agrarian underclass from the mid-18th century to mid-19th century. However, the accumulation of produced assets was significantly depressed and capital accumulation occurred mainly within the sphere of circulation. The weight of foreign trade was quite stable throughout the first half of the 19th century.

The span from the 1840s to the late 1860s could be described as a phase of agrarian based transformation of the Swedish economy in a capitalist direction.

Chapter 7 argues that aggregate economic growth speeded up from around the mid-19th century. The accelerations in the volume growth rates of aggregate production, investment and export were all mainly induced by the agricultural sector. The first "long upswing" in 1853-1860 identified in chapter 7 corresponded in time with the first wave of accumulation and the increase in the weight of foreign trade in the overall economy, as discussed in chapter 8. Chapter 8 points out that the period was characterised by many important political reforms that laid the basis for the following capitalist development; i.e. it was a period of *bourgeois transformation* both in an economic and political sense.

The span from around 1870 to around 1910 was a period of transformation from an agrarian to an industrial economy. It was in the 1870s that the shift towards industrial goods production and industrial activities in general accelerated significantly. Two "long upswings" occurred in this period (as presented in chapter 7), in 1868-1876 and 1887-1913, which corresponded to the second and third waves of investment (discussed in chapter 8). It was firstly during the "long upswing" of 1887-1913 that the industrial goods production made the largest contribution to the acceleration in GDP growth. The period 1870-1910 could be labelled as a phase of import-based accumulation, considering that a substantial part of investment was financed by a net import. This led to a deterioration of Sweden's financial position internationally. Chapter 9 argues that the depressions occurring in this period possessed both pre-capitalist and modern, capitalist characteristics.

The span from the 1910s to around 1970 was the classical period of industrial capitalism in Sweden. During this period, Sweden experienced quite strong economic growth. Although the weight of foreign trade did not change much from the preceding period, the ratio of investment and non-consumptive expenditures to GDP increased, and the net import turned into a small net export.

The period 1910-35 could be viewed as period of transformation, when Sweden went from being a net importer dominated by foreign capital to a position at the upper ladder of the international capitalist system. This process was especially speeded up during the course of the First World War. To view the 1910s and 1920s as a phase of transformation from one mode of accumulation to another, goes against the periodisation of Lennart Schön and the Swedish structural analytical school that see those years rather as constituting a phase of rationalization and relative stability. For instance, Lennart Schön argues that the First World War was not any important structural border.[852]

Chapter 7 suggests that the two "long upswings" 1921-1939 and 1945-1974 possessed quite common characteristics and were only briefly separated by the

[852] Schön, 2000a: p. 272.

"long downswing" induced by the Second World War, and could therefore be considered constituting one longer phase of growth.

The period from around the 1970s onward could be described as a phase of globalisation and flexible accumulation. The Swedish economy went through a second wave of internationalisation and there was a shift in non-consumptive expenditures from investment to net export. The weight of foreign trade in relation to the aggregate economy almost doubled, and the investment ratio was almost halved. Lean production method slashed inventories and other expenses on constant capital. Profitability was restored, especially in manufacturing.

10.3.3 Short-term fluctuations

Short-term fluctuations are dealt with mainly in chapter 9. The chapter presents a chronology of the short-term economic fluctuations in Sweden since the 1840s where a cycle consists of an expansion followed by a recession, similar to the NBER business cycle chronology for the American economy. However, since monthly and quarterly data on key economic variables (like GDP) are missing for Sweden, for most of the period under investigation, this chronology is entirely based on annual data. The recessions are also divided into three kinds distinguished by their depth: depressions, contractions that were not depressions and mini-recessions. A focus of chapter 9 is on comparing depressions in the period 1850-2000.

The alteration between recessions and expansions was quite irregular in Sweden. This speaks against the existence of a periodical business cycle and in favour of crisis models emphasising mechanisms that operate randomly (as disproportionality and exogenous shocks) or of multiple causation.

An important distinction to be made is between pre-capitalist and modern, capitalist economic crises. The modern capitalist economy is characterized by production for exchange value and for profit. The modern capitalist crises can be described as crises of overproduction of exchange values and as profitability crises. In contrast, earlier economic crises of general reach took the form of crises of underproduction of use values. This study finds such differences between earlier and later general economic crises, both in relation to depressions and longer periods of depressed growth ("long downswings"). However, it is not possible to pinpoint exactly when the modern business cycle began in Sweden, or which general economic crisis was the first modern one. Pre-capitalist features permeated depressions and recessions well into the 20th century.

The depressions during the 1850s and 1860s were still of pre-capitalist, agrarian type, despite the acceleration in economic growth to modern levels that occurred in the mid-19th century. These depressions were clearly connected to

crop failures. They were not generally associated with decrease in the surplus share. They all experienced increases in prices, pointing to underproduction rather than overproduction. Although the ups and downs of trade and manufacturing were driven by the market demand, this did not have a major impact on the overall economy, other than indirectly, by for example stimulating increased output from agriculture. Nonetheless, it may be the case that the agricultural crisis of the 1860s partly was a crisis of overaccumulation within agriculture (first being felt during the commercial crisis of 1857-58), recoiling from the export drive of agricultural products in the 1840s and 1850s.

The three depressions that occurred in the period 1870-1910 reflected an economy in transition from agrarianism to industrial capitalism. Many authors would describe the 1870s as the beginning of the business cycle in Sweden. That is not unreasonable. However, the depressions of 1876-78, 1886-87 and 1907-08 possessed both pre-capitalist and modern, capitalist characteristics. During these depressions the prices either fell or increased below the medium-term average, pointing to overproduction. But the fluctuations of agricultural production still had a major impact on the ups and downs of the economy at large. The fluctuations within different branches of industrial goods production did start to have a major impact on the overall economy, but were not synchronized enough to produce a depression (according to the definition in chapter 9) by their own power.

During the 1907-08 depression industrial goods production made the largest negative contribution to GDP growth than during any single annual change before, reflecting the accelerated industrialisation in the preceding decades. But the negative contribution of agriculture and ancillaries was quite significant as well.

The 1920-21 deflation crisis was in a sense the first *fully* modern, industrial depression, in that agriculture and ancillaries did not contribute to its course. Interestingly, the 1920s depression followed the transformation of the Swedish economy from a capital importer to a capital exporter, which was speeded up during the First World War. The national market had been conquered by capital in the period roughly stretching from 1870s to 1910s, which was later reflected *both* in the character of deep economic crises and the international financial position of the Swedish economy.

Industrial goods production continued to be significant for the economic fluctuations also after 1970, despite a growing service sector, and contributed to most of the fall in GDP during the two depressions occurring in this period.

In Marxist theory, a fundamental contradiction of capitalism is, on the one hand, the immanent tendency of the system towards limitless steady growth and

accumulation,[853] and on the other hand, the physical and social barriers to such a path. This contradiction manifests itself at different planes and time scales, during short-term downturns, in medium-term periods of depressed or interrupted accumulation and in the long-term tendency of the system to eat up its own possibilities to follow an expansionist path. According to Paul Sweezy, each capitalist crisis should be viewed as a "memento mori" (reminder of death) for capitalism.[854]

In section 2.2.3 four different types of Marxist models of capitalist crisis are discussed: underconsumption, disproportionality, falling rate of profit due to a decreased rate of exploitation (labour shortage theories), and falling rate of profit due to an increased value composition of capital or capital/value added ratio.

Since the empirical data is quite weak for many variables, especially for earlier years, the conclusions drawn concerning crisis typologies must be considered as tentative. In relation to underconsumption and disproportionality, the empirical material of the present study does not allow a proper investigation of these factors.

A falling surplus share preceded all peacetime depressions since 1870, except for the depression of 1907-08 (which probably possessed some features of underconsumption). This speaks in favour of labour shortage theories. A general increase in the asset/value added ratio appeared only prior to some of the depressions, while such a secular tendency can be observed for the whole period up to the 1970s. This suggests that the tendency for the rate of profit to fall due to an increased capital/value added ratio was more pronounced as a long-term and medium-term tendency than as a short-term factor triggering economic crises, at least when Sweden is considered.

Economic crises and downswings as such are empirical phenomena that have many different causes, both of endogenous and exogenous character, mixed up with each other. Some crises are generated at the international level, and even if they are caused by endogenous factors within the international capitalist system, at the national level (which is the focus of this thesis) they can behave as if they were caused exogenously in relation to the economic system. For example, in terms of fall in GDP, the two deepest depressions in Sweden in modern time occurred during the two World Wars.

The long-term causes are not always visible prior to or during economic crises. Out of the studied Swedish depressions it was probably the economic crisis of the 1970s that most clearly manifested the secular contradictions within the process

[853] Marx, 1965a [first published 1867]: pp. 151-152.
[854] Sweezy, 1970 [first published 1942]: p. 190.

of capital accumulation. The transformation towards a mode of flexible accumulation was a response to the long-term crisis symptoms of the system.

Here it is important to distinguish between essence and appearance, between abstract models rooted in a real process and empirical phenomena manifesting the concrete.[855] Social sciences are not able to control the different factor in a kind of laboratory condition, as, for instance, in chemistry and physics.

[855] Mandel, 1978 [first published 1977]: pp. 168-169.

Summary tables

The following tables summarize some of the macroeconomic data constructed and discussed in the present study. The reliability is quite low for many data series, especially for the period prior to 1950.

The sources and calculations of the data series are dealt with in chapters 3, 4, 5 and 6. Appendix 3.2 provides information on the division into types of activities that is applied in this study.

Most data, especially at the most disaggregated level, are not published in this volume, because of the size of the gathered material. The intent is to publish the whole material online in the future, and to update the data series continually when correcting for errors and making improvements.

[Tables A to X are also available (as an excel-file) online at: http://www.historia.se/tablesAtoX.xls. The online version is continually updated and corrected.

The total of table S in this PDF-version refers to the aggregate economy, while in the printed version it refers to the private sector.

In table W, the gross value added of animal transport is deducted from the gross surplus of transport and communication and included in the gross surplus of agriculture and ancillaries.]

TABLE A: *Annual volume growth (in percent) of aggregate production according to different estimates.*

Annual change	GDP by activity corr. Fisher*	NDP by activity	GDP by activity corr. Laspeyre	GDP by activity corr. Paasche	GDP by activity uncorr. Fisher	GDP by expendi-ture	NDP by expendi-ture
1800-1801	-4.45	-4.43	-3.89	-5.00	-4.45	-7.24	-7.53
1801-1802	3.81	3.84	3.82	3.80	3.65	4.22	4.36
1802-1803	0.55	0.54	0.59	0.50	0.60	-2.04	-2.11
1803-1804	-0.74	-0.80	-0.66	-0.81	-0.71	1.49	1.52
1804-1805	4.49	4.48	4.40	4.57	4.40	3.95	4.10
1805-1806	0.22	0.23	0.39	0.05	0.33	1.83	1.88
1806-1807	-3.18	-3.15	-3.10	-3.27	-3.16	-4.16	-4.33
1807-1808	-3.64	-3.67	-3.27	-4.01	-3.57	-2.39	-2.51
1808-1809	-4.14	-4.18	-3.97	-4.30	-4.28	0.76	0.78
1809-1810	9.39	9.27	9.59	9.19	9.08	12.42	12.94
1810-1811	3.22	3.12	3.61	2.84	3.27	3.99	4.14
1811-1812	-3.00	-3.08	-3.00	-3.01	-2.93	-6.78	-7.12
1812-1813	-4.21	-4.32	-3.90	-4.53	-4.28	-6.71	-7.04
1813-1814	4.43	4.38	4.37	4.49	4.32	6.41	6.72
1814-1815	6.02	5.95	6.07	5.97	5.97	4.98	5.22
1815-1816	2.47	2.35	2.46	2.48	2.38	2.11	2.18
1816-1817	-1.98	-2.03	-1.99	-1.98	-2.04	-2.85	-2.97
1817-1818	-3.08	-3.13	-3.13	-3.02	-2.93	-6.18	-6.46
1818-1819	0.81	0.82	0.81	0.81	1.00	-0.96	-1.05
1819-1820	5.13	5.16	5.11	5.15	5.05	6.71	6.97
1820-1821	5.28	5.23	5.46	5.09	5.18	5.93	6.18
1821-1822	3.61	3.63	3.75	3.47	3.49	6.84	7.15
1822-1823	1.40	1.41	1.42	1.38	1.28	1.81	1.92
1823-1824	4.47	4.45	4.43	4.50	4.38	4.60	4.82
1824-1825	0.74	0.72	0.76	0.71	0.71	-1.37	-1.42
1825-1826	1.51	1.58	1.57	1.45	1.76	0.04	0.01
1826-1827	-5.97	-5.92	-5.35	-6.58	-6.19	-6.78	-7.08
1827-1828	6.72	6.68	7.00	6.44	6.46	9.23	9.62
1828-1829	2.38	2.37	2.68	2.08	2.26	4.63	4.83
1829-1830	-2.14	-2.08	-2.00	-2.28	-2.15	-1.16	-1.24
1830-1831	0.43	0.49	0.49	0.36	0.46	-0.39	-0.46
1831-1832	-2.12	-2.07	-2.04	-2.21	-2.09	-4.04	-4.21
1832-1833	6.00	6.03	6.20	5.81	5.97	9.35	9.76
1833-1834	2.83	2.86	2.87	2.79	2.69	4.14	4.31
1834-1835	1.02	1.04	1.04	1.01	0.81	0.32	0.32
1835-1836	2.51	2.53	2.49	2.54	2.37	2.10	2.15
1836-1837	0.69	0.73	0.70	0.68	0.74	-0.70	-0.80
1837-1838	-3.84	-3.82	-3.74	-3.94	-3.78	-3.00	-3.17
1838-1839	3.58	3.62	3.60	3.56	3.54	2.96	3.01
1839-1840	3.81	3.81	3.87	3.75	3.81	4.46	4.57
1840-1841	-0.38	-0.39	-0.38	-0.39	-0.42	0.40	0.37

TABLE A: *Volume growth rates, continued.*

Annual change	GDP by activity corr. Fisher*	NDP by activity	GDP by activity corr. Laspeyre	GDP by activity corr. Paasche	GDP by activity uncorr. Fisher	GDP by expendi-ture	NDP by expendi-ture
1841-1842	-2.95	-2.94	-2.89	-3.01	-2.80	-4.49	-4.73
1842-1843	3.32	3.33	3.26	3.37	3.27	5.12	5.27
1843-1844	5.76	5.76	5.79	5.74	5.54	6.00	6.21
1844-1845	3.51	3.48	3.87	3.14	3.70	4.25	4.37
1845-1846	-2.72	-2.68	-2.29	-3.14	-2.66	-5.76	-6.07
1846-1847	2.29	2.30	2.34	2.23	2.17	2.62	2.63
1847-1848	4.01	3.99	4.01	4.00	3.99	5.55	5.67
1848-1849	5.34	5.28	5.53	5.15	5.33	7.16	7.38
1849-1850	2.35	2.33	2.33	2.38	2.40	1.72	1.68
1850-1851	-0.07	-0.08	0.03	-0.17	0.03	-0.84	-1.05
1851-1852	-1.43	-1.46	-1.33	-1.53	-1.41	-1.86	-2.10
1852-1853	1.54	1.49	1.58	1.49	1.66	1.99	1.91
1853-1854	2.27	2.25	2.37	2.17	2.22	1.93	1.86
1854-1855	7.02	6.87	7.19	6.85	7.08	6.76	6.84
1855-1856	-1.06	-1.16	-0.82	-1.30	-0.90	0.43	0.16
1856-1857	2.84	2.65	2.88	2.79	2.94	3.65	3.60
1857-1858	5.56	5.48	5.61	5.51	5.49	4.17	4.18
1858-1859	6.32	6.19	6.34	6.30	6.26	7.66	7.89
1859-1860	3.61	3.50	3.62	3.60	3.58	4.29	4.38
1860-1861	0.72	0.62	0.74	0.70	0.83	0.70	0.53
1861-1862	-5.47	-5.64	-5.23	-5.71	-5.44	-5.59	-6.11
1862-1863	8.66	8.55	8.77	8.55	8.58	8.24	8.48
1863-1864	3.27	3.16	3.26	3.28	3.29	3.43	3.31
1864-1865	4.33	4.23	4.40	4.26	4.35	4.09	4.02
1865-1866	-1.92	-2.02	-1.81	-2.02	-1.91	-1.11	-1.39
1866-1867	2.46	2.43	2.43	2.50	2.45	2.90	2.94
1867-1868	-10.56	-10.64	-9.85	-11.25	-10.34	-13.81	-14.66
1868-1869	9.37	9.38	9.43	9.31	9.36	11.37	11.92
1869-1870	13.01	13.05	13.54	12.49	12.88	17.30	18.16
1870-1871	4.07	4.08	4.09	4.05	4.22	3.50	3.57
1871-1872	3.72	3.76	3.69	3.75	3.93	4.25	4.18
1872-1873	1.55	1.48	1.51	1.59	1.80	3.85	3.59
1873-1874	3.02	2.83	3.06	2.97	3.06	-1.12	-1.70
1874-1875	-0.82	-0.94	-0.74	-0.89	-0.66	2.40	2.07
1875-1876	6.99	6.70	7.24	6.73	7.15	6.74	6.87
1876-1877	-1.07	-1.39	-1.02	-1.12	-0.79	-0.67	-1.02
1877-1878	-2.37	-2.66	-2.34	-2.40	-2.49	-0.87	-1.15
1878-1879	5.88	5.56	6.09	5.67	5.88	7.26	7.79
1879-1880	0.26	-0.07	0.26	0.26	0.41	-3.42	-3.82
1880-1881	2.88	2.62	2.92	2.83	3.08	2.19	2.25
1881-1882	-0.87	-1.10	-0.80	-0.94	-0.75	-1.78	-2.03
1882-1883	7.38	7.21	7.46	7.29	7.42	7.42	7.88

TABLE A: *Volume growth rates, continued.*

Annual change	GDP by activity corr. Fisher*	NDP by activity	GDP by activity corr. Laspeyre	GDP by activity corr. Paasche	GDP by activity uncorr. Fisher	GDP by expenditure	NDP by expenditure
1883-1884	-1.25	-1.38	-1.22	-1.28	-1.26	0.30	0.11
1884-1885	3.94	3.88	3.98	3.90	4.04	3.15	3.20
1885-1886	0.15	0.07	0.13	0.17	0.15	-0.17	-0.36
1886-1887	-0.32	-0.40	-0.30	-0.34	-0.19	-1.19	-1.41
1887-1888	4.95	4.93	5.04	4.85	5.07	5.10	5.39
1888-1889	0.86	0.80	1.04	0.68	1.13	-1.44	-1.79
1889-1890	2.44	2.39	2.48	2.39	2.64	5.01	5.20
1890-1891	4.06	4.09	3.97	4.15	4.10	-1.70	-1.98
1891-1892	-0.31	-0.30	-0.18	-0.43	-0.22	5.41	5.75
1892-1893	2.91	2.92	2.97	2.85	3.01	4.39	4.69
1893-1894	1.41	1.39	1.43	1.40	1.52	1.46	1.54
1894-1895	5.02	5.10	5.08	4.96	5.01	4.42	4.66
1895-1896	5.32	5.35	5.30	5.33	5.89	3.82	3.95
1896-1897	4.47	4.51	4.45	4.49	4.56	5.04	5.20
1897-1898	3.60	3.64	3.68	3.52	3.86	3.76	3.73
1898-1899	3.49	3.56	3.64	3.35	3.64	5.31	5.32
1899-1900	-0.49	-0.57	-0.34	-0.64	-0.08	-0.12	-0.49
1900-1901	2.68	2.56	2.72	2.64	2.90	2.10	2.03
1901-1902	0.22	0.14	0.34	0.09	0.62	-0.18	-0.39
1902-1903	3.80	3.75	3.84	3.76	4.03	5.48	5.77
1903-1904	4.08	4.05	4.12	4.03	4.46	3.89	3.94
1904-1905	-0.49	-0.55	-0.44	-0.54	-0.45	0.20	-0.07
1905-1906	8.33	8.39	8.40	8.26	8.33	8.40	8.79
1906-1907	6.56	6.65	6.53	6.60	6.70	6.87	7.09
1907-1908	-1.69	-1.69	-1.59	-1.80	-1.75	-1.37	-1.72
1908-1909	0.72	0.71	0.76	0.67	0.69	0.26	0.12
1909-1910	6.96	7.07	7.10	6.81	7.00	5.59	5.85
1910-1911	2.17	2.22	2.07	2.26	2.14	3.62	3.68
1911-1912	3.82	3.94	4.01	3.64	3.90	3.80	3.87
1912-1913	6.71	6.83	6.74	6.67	6.57	6.41	6.57
1913-1914	1.56	1.53	1.73	1.39	1.55	-0.58	-0.95
1914-1915	1.53	1.51	2.36	0.71	2.15	2.90	2.89
1915-1916	5.13	5.11	5.29	4.98	5.79	6.33	6.65
1916-1917	-6.75	-6.91	-5.59	-7.89	-6.28	-11.95	-13.14
1917-1918	-6.23	-6.46	-5.25	-7.20	-5.82	-2.19	-2.64
1918-1919	4.60	4.44	5.17	4.02	4.17	1.44	1.39
1919-1920	6.70	6.47	7.20	6.20	7.19	4.75	4.98
1920-1921	-8.51	-8.97	-8.07	-8.94	-9.85	-9.85	-10.96
1921-1922	10.86	10.84	11.71	10.02	10.18	11.61	12.92
1922-1923	5.09	4.88	5.16	5.02	4.99	3.28	3.56
1923-1924	5.31	5.06	5.61	5.01	4.93	5.46	5.92
1924-1925	0.58	0.41	0.79	0.38	-0.17	0.17	0.00
1925-1926	7.95	7.83	8.15	7.75	7.28	7.04	7.60

TABLE A: *Volume growth rates, continued.*

Annual change	GDP by activity corr. Fisher*	NDP by activity	GDP by activity corr. Laspeyre	GDP by activity corr. Paasche	GDP by activity uncorr. Fisher	GDP by expenditure	NDP by expenditure
1926-1927	3.20	3.11	3.31	3.09	2.63	3.18	3.33
1927-1928	3.03	3.02	3.18	2.87	2.66	2.24	2.20
1928-1929	6.99	7.05	7.04	6.93	6.87	7.58	8.08
1929-1930	4.19	4.20	4.25	4.14	4.17	3.97	4.03
1930-1931	-1.04	-1.21	-0.91	-1.16	-0.96	-0.85	-1.20
1931-1932	-3.09	-3.32	-3.09	-3.08	-3.01	-4.18	-4.75
1932-1933	3.03	3.04	3.05	3.01	2.88	3.68	4.06
1933-1934	8.11	8.18	8.29	7.93	8.36	6.39	6.88
1934-1935	5.53	5.62	5.62	5.44	5.52	6.47	6.76
1935-1936	4.94	5.06	5.01	4.88	4.95	6.04	6.19
1936-1937	4.40	4.35	4.54	4.26	4.92	2.51	2.29
1937-1938	3.72	3.69	3.74	3.70	3.67	3.97	3.82
1938-1939	7.28	7.36	7.45	7.12	7.84	9.33	9.67
1939-1940	-9.26	-9.47	-8.74	-9.79	-8.56	-8.74	-10.02
1940-1941	-1.54	-1.54	-1.10	-1.99	-1.39	0.19	-0.18
1941-1942	2.32	2.22	2.48	2.17	3.09	1.28	0.98
1942-1943	4.56	4.39	4.70	4.42	5.03	5.49	5.65
1943-1944	2.91	2.67	3.08	2.74	3.40	3.09	2.95
1944-1945	1.40	1.15	1.39	1.42	1.70	2.08	1.98
1945-1946	11.26	11.18	11.50	11.03	12.00	10.80	11.47
1946-1947	7.28	7.20	7.63	6.94	7.73	6.74	6.71
1947-1948	1.95	1.90	2.09	1.80	2.28	1.53	1.00
1948-1949	3.75	3.68	3.84	3.66	4.09	2.28	1.90
1949-1950	3.90	3.96	4.01	3.78	4.20	7.00	7.10
1950-1951	3.93	3.89	3.85	4.02	4.23	3.54	3.25
1951-1952	0.70	0.53	0.34	1.06	1.24	1.52	1.08
1952-1953	1.66	1.51	1.47	1.84	1.64	2.39	2.05
1953-1954	4.81	4.81	4.82	4.81	4.88	6.19	6.24
1954-1955	2.58	2.44	2.57	2.58	2.70	3.27	3.04
1955-1956	3.74	3.55	3.76	3.72	3.70	3.33	3.17
1956-1957	3.23	3.01	3.23	3.23	3.19	2.13	1.86
1957-1958	2.49	2.27	2.51	2.48	2.36	2.22	1.89
1958-1959	4.39	4.21	4.38	4.40	4.30	5.29	5.28
1959-1960	5.69	5.47	5.71	5.67	5.61	4.23	4.07
1960-1961	5.62	5.52	5.64	5.60	5.41	5.82	5.84
1961-1962	4.52	4.40	4.53	4.52	4.24	4.78	4.63
1962-1963	4.96	4.80	4.94	4.98	4.93	5.63	5.60
1963-1964	6.75	6.67	6.79	6.72	6.57	7.31	7.50
1964-1965	5.00	4.89	5.03	4.97	4.88	3.88	3.63
1965-1966	3.07	2.92	3.07	3.06	3.00	2.00	1.51
1966-1967	3.86	3.76	3.88	3.85	3.68	3.14	2.81
1967-1968	4.14	4.05	4.14	4.15	4.11	3.76	3.61
1968-1969	4.92	4.91	4.95	4.89	4.83	5.24	5.31

TABLE A: *Volume growth rates, continued.*

Annual change	GDP by activity corr. Fisher*	NDP by activity	GDP by activity corr. Laspeyre	GDP by activity corr. Paasche	GDP by activity uncorr. Fisher	GDP by expendi-ture	NDP by expendi-ture
1969-1970	4.74	4.72	4.78	4.69	4.81	5.88	6.02
1970-1971	2.36	2.28	2.35	2.38	2.34	-0.08	-0.63
1971-1972	2.61	2.48	2.61	2.61	2.75	2.85	2.67
1972-1973	3.77	3.70	3.80	3.74	4.06	3.54	3.44
1973-1974	3.64	3.54	3.69	3.59	4.23	4.61	4.61
1974-1975	1.01	0.96	1.03	0.99	1.01	1.65	1.29
1975-1976	2.09	1.93	2.07	2.11	2.63	0.91	0.51
1976-1977	-1.44	-1.73	-1.49	-1.39	-0.78	-1.51	-2.21
1977-1978	-0.13	-0.46	-0.13	-0.13	0.45	1.56	1.52
1978-1979	3.20	3.03	3.21	3.19	3.93	4.14	4.49
1979-1980	0.78	0.57	0.80	0.76	1.46	1.54	1.39
1980-1981	-0.59	-0.84	-0.61	-0.57	0.18	0.03	-0.29
1981-1982	1.18	0.96	1.22	1.14	1.87	1.02	0.90
1982-1983	1.78	1.54	1.78	1.78	2.39	2.08	2.11
1983-1984	3.14	3.08	3.14	3.13	3.61	3.89	4.12
1984-1985	1.72	1.60	1.74	1.69	2.27	2.33	2.21
1985-1986	2.69	2.75	2.68	2.70	2.71	2.26	2.13
1986-1987	3.15	3.18	3.16	3.15	3.35	3.19	3.14
1987-1988	2.80	2.76	2.80	2.79	2.96	1.95	1.67
1988-1989	3.07	3.01	3.07	3.07	3.21	2.50	2.19
1989-1990	1.23	1.14	1.25	1.20	1.47	0.78	0.25
1990-1991	-1.30	-1.38	-1.31	-1.29	-1.53	-1.07	-1.66
1991-1992	-1.96	-1.96	-1.99	-1.93	-2.50	-1.48	-1.91
1992-1993	-1.78	-1.90	-1.80	-1.77	-1.73	-2.07	-2.39
1993-1994	3.56	3.67	3.56	3.56	3.38	3.09	3.57
1994-1995	3.63	3.81	3.69	3.56	3.34	4.04	4.48
1995-1996	1.48	1.63	1.50	1.45	1.20	1.15	1.08
1996-1997	3.08	3.25	3.13	3.03	2.91	2.22	2.30
1997-1998	3.93	4.12	3.90	3.96	3.66	3.18	3.36
1998-1999	4.51	4.74	4.55	4.47	4.33	4.12	4.37
1999-2000	4.15	4.42	4.21	4.08	4.46	4.15	4.37

Sources: See sections 3.4, 3.5, 4.2, 5.5.3 and 5.8.

*The main estimate of aggregate production analysed in the present study.

Comment: Corr. stands for "corrected for the change in the share of value added in gross output" when calculating GDP by activity, and uncorr. is the estimate under the assumption of a constant value added share (see section 3.4.3). The estimates by activity are based on basic values, while the estimates by expenditure are based on purchasers' values.

TABLE B: *Current values (in million SEK) of some aggregate variables.*

Year	GDP by expenditure, purchasers' prices	GDP by activity, basic prices	NDP by expenditure, purchasers' prices	NDP by activity, basic prices	Consumption of fixed assets, purchasers' prices	Purchasers' value less basic value of GDP	Intermediate consumption, purchasers' prices
1800	115.344	110.060	111.222	105.939	4.121	5.283	74.955
1801	118.169	112.732	114.036	108.600	4.132	5.436	79.321
1802	121.165	115.567	117.009	111.411	4.156	5.598	79.517
1803	115.421	110.113	111.341	106.032	4.080	5.309	79.094
1804	113.901	108.660	109.534	104.293	4.366	5.241	77.286
1805	123.820	118.092	119.199	113.472	4.621	5.727	82.129
1806	133.095	126.961	128.309	122.175	4.786	6.134	86.999
1807	139.552	133.091	134.748	128.287	4.804	6.461	90.247
1808	155.547	148.423	149.851	142.727	5.696	7.124	95.133
1809	166.616	158.744	160.288	152.416	6.328	7.871	100.386
1810	177.751	169.287	170.415	161.951	7.336	8.464	106.893
1811	191.782	182.697	183.566	174.481	8.216	9.085	117.054
1812	228.997	218.194	219.171	208.368	9.826	10.803	145.544
1813	239.032	227.744	228.201	216.913	10.831	11.287	164.912
1814	248.824	236.977	237.977	226.130	10.846	11.847	166.708
1815	250.653	238.689	239.945	227.980	10.709	11.965	164.795
1816	259.714	247.446	248.218	235.950	11.496	12.267	169.643
1817	267.406	254.777	256.022	243.392	11.385	12.629	174.752
1818	268.142	255.568	256.656	244.082	11.486	12.574	189.208
1819	278.550	265.474	267.051	253.975	11.499	13.076	199.121
1820	278.433	265.224	267.133	253.924	11.300	13.210	191.817
1821	263.220	250.789	251.598	239.166	11.623	12.432	177.322
1822	262.099	249.723	250.811	238.436	11.288	12.375	165.334
1823	265.702	253.098	254.271	241.667	11.431	12.604	167.254
1824	266.473	253.924	254.742	242.193	11.731	12.549	165.753
1825	276.954	263.903	264.600	251.549	12.353	13.051	178.687
1826	288.361	274.934	276.538	263.111	11.823	13.428	194.147
1827	306.777	292.336	294.685	280.244	12.091	14.441	206.463
1828	290.201	276.509	277.966	264.275	12.235	13.692	182.969
1829	289.562	275.934	277.268	263.640	12.294	13.628	175.388
1830	305.519	291.103	293.366	278.951	12.152	14.416	183.423
1831	323.714	308.501	311.169	295.957	12.544	15.212	200.521
1832	331.518	315.797	318.683	302.962	12.835	15.721	212.032
1833	323.231	307.897	310.279	294.945	12.952	15.335	198.401
1834	326.576	311.140	313.476	298.039	13.100	15.437	191.747
1835	338.993	322.874	325.484	309.365	13.509	16.120	201.415
1836	348.958	332.366	335.215	318.623	13.743	16.592	209.304
1837	356.792	339.855	343.046	326.110	13.746	16.937	220.773
1838	361.503	344.328	347.461	330.286	14.042	17.175	227.783
1839	386.774	368.331	372.300	353.857	14.474	18.443	240.159

TABLE B: *Current values of some aggregate variables, continued.*

Year	GDP by expenditure, purchasers' prices	GDP by activity, basic prices	NDP by expenditure, purchasers' prices	NDP by activity, basic prices	Consumption of fixed assets, purchasers' prices	Purchasers' value less basic value of GDP	Intermediate consumption, purchasers' prices
1840	381.822	363.604	367.290	349.072	14.532	18.217	237.362
1841	384.538	366.257	369.562	351.281	14.976	18.281	235.380
1842	391.476	372.817	376.337	357.678	15.139	18.659	244.179
1843	394.110	375.334	378.833	360.057	15.277	18.776	234.682
1844	389.071	370.409	373.809	355.147	15.262	18.662	225.472
1845	386.557	368.224	370.905	352.572	15.652	18.333	226.359
1846	426.582	406.305	410.435	390.158	16.147	20.277	260.845
1847	449.637	428.195	432.764	411.322	16.873	21.441	271.104
1848	455.423	433.680	437.997	416.254	17.426	21.743	267.412
1849	448.237	426.805	429.962	408.530	18.276	21.432	261.011
1850	460.802	438.787	441.981	419.965	18.822	22.016	277.872
1851	476.457	453.739	457.190	434.472	19.267	22.718	293.436
1852	486.940	463.670	466.945	443.674	19.995	23.270	297.797
1853	511.958	487.550	490.241	465.833	21.717	24.408	316.669
1854	580.418	552.494	556.083	528.159	24.335	27.924	349.095
1855	655.398	623.784	624.889	593.275	30.509	31.613	391.999
1856	742.289	706.296	707.526	671.533	34.763	35.992	451.179
1857	780.289	742.418	740.551	702.681	39.738	37.871	477.950
1858	717.965	683.375	682.675	648.085	35.290	34.590	414.825
1859	708.370	674.285	672.690	638.605	35.680	34.086	399.707
1860	743.371	707.588	705.953	670.170	37.418	35.783	420.882
1861	778.464	740.971	739.344	701.850	39.120	37.494	457.161
1862	771.484	734.242	729.637	692.396	41.847	37.242	442.692
1863	814.694	775.002	771.048	731.355	43.647	39.693	465.955
1864	809.141	770.735	765.100	726.693	44.041	38.407	463.615
1865	806.231	766.894	761.711	722.373	44.521	39.337	459.024
1866	808.578	768.180	762.553	722.155	46.024	40.398	454.712
1867	853.337	810.403	806.638	763.705	46.699	42.933	476.109
1868	823.896	781.001	777.227	734.331	46.669	42.896	485.367
1869	881.615	834.621	834.990	787.996	46.626	46.994	518.651
1870	937.816	886.782	890.454	839.420	47.362	51.033	519.823
1871	981.776	928.212	931.395	877.830	50.382	53.565	561.735
1872	1119.702	1060.325	1062.783	1003.407	56.919	59.377	664.326
1873	1267.578	1199.974	1197.322	1129.719	70.256	67.604	758.268
1874	1369.244	1289.797	1283.076	1203.629	86.168	79.447	823.869
1875	1340.202	1267.169	1253.006	1179.973	87.196	73.033	795.522
1876	1416.490	1337.869	1314.063	1235.442	102.427	78.621	804.371
1877	1389.808	1312.093	1281.780	1204.065	108.028	77.715	837.864
1878	1295.352	1223.183	1193.322	1121.152	102.031	72.169	701.554
1879	1264.703	1192.585	1165.828	1093.710	98.875	72.118	682.854
1880	1314.293	1236.314	1211.206	1133.226	103.087	77.980	741.529

TABLE B: *Current values of some aggregate variables, continued.*

Year	GDP by expenditure, purchasers' prices	GDP by activity, basic prices	NDP by expenditure, purchasers' prices	NDP by activity, basic prices	Consumption of fixed assets, purchasers' prices	Purchasers' value less basic value of GDP	Intermediate consumption, purchasers' prices
1881	1375.960	1293.821	1271.352	1189.214	104.607	82.138	840.036
1882	1387.338	1305.848	1281.700	1200.209	105.638	81.491	842.628
1883	1445.631	1357.936	1337.012	1249.317	108.620	87.695	856.730
1884	1415.615	1327.983	1307.739	1220.107	107.876	87.632	829.337
1885	1406.339	1320.079	1298.731	1212.470	107.609	86.261	862.210
1886	1319.464	1237.336	1214.223	1132.095	105.240	82.128	789.463
1887	1280.194	1201.542	1174.762	1096.111	105.431	78.652	801.071
1888	1349.219	1260.874	1240.555	1152.210	108.665	88.345	853.791
1889	1430.701	1334.335	1314.833	1218.467	115.868	96.366	948.034
1890	1477.267	1379.280	1358.425	1260.439	118.842	97.986	1006.187
1891	1558.364	1458.635	1438.437	1338.709	119.927	99.729	1050.066
1892	1581.173	1482.792	1460.948	1362.567	120.226	98.381	1102.379
1893	1566.235	1469.494	1448.057	1351.316	118.178	96.741	1086.388
1894	1565.680	1465.865	1444.663	1344.849	121.016	99.814	1123.963
1895	1643.918	1539.302	1520.429	1415.813	123.489	104.616	1152.159
1896	1723.868	1612.347	1592.056	1480.534	131.812	111.522	1337.831
1897	1869.671	1750.987	1725.364	1606.681	144.306	118.684	1472.482
1898	2022.481	1889.162	1865.820	1732.501	156.662	133.319	1616.742
1899	2204.583	2056.652	2037.750	1889.820	166.832	147.930	1736.651
1900	2245.381	2099.333	2065.745	1919.698	179.635	146.048	1883.747
1901	2209.748	2079.606	2025.376	1895.234	184.372	130.142	1855.124
1902	2218.765	2077.116	2035.584	1893.934	183.182	141.649	1897.196
1903	2385.407	2234.950	2191.100	2040.643	194.306	150.457	1968.223
1904	2436.706	2280.453	2241.795	2085.542	194.911	156.253	2080.677
1905	2507.419	2347.720	2305.284	2145.585	202.135	159.699	2109.071
1906	2804.406	2634.409	2589.034	2419.038	215.371	169.996	2370.493
1907	3082.879	2901.314	2856.378	2674.813	226.501	181.565	2559.610
1908	3061.506	2887.136	2828.854	2654.484	232.652	174.370	2494.397
1909	3066.668	2886.392	2827.058	2646.782	239.610	180.276	2463.069
1910	3301.924	3108.411	3052.355	2858.841	249.570	193.513	2735.555
1911	3352.641	3157.563	3095.261	2900.182	257.380	195.079	2821.535
1912	3568.089	3370.811	3302.584	3105.306	265.505	197.278	3047.007
1913	3912.448	3687.679	3628.077	3403.309	284.371	224.768	3269.156
1914	3924.479	3712.109	3620.174	3407.803	304.305	212.371	3298.884
1915	4529.628	4296.786	4174.183	3941.342	355.444	232.841	4303.335
1916	5699.630	5412.783	5255.273	4968.426	444.357	286.847	5831.162
1917	6645.947	6345.381	6077.973	5777.408	567.973	300.565	6808.105
1918	8842.676	8464.850	8023.444	7645.619	819.232	377.826	8464.108
1919	11003.944	10433.625	10004.810	9434.491	999.135	570.319	9078.504
1920	12200.330	11536.324	11071.894	10407.887	1128.437	664.007	10844.772
1921	9397.825	8862.964	8408.387	7873.526	989.438	534.861	6885.486

TABLE B: *Current values of some aggregate variables, continued.*

Year	GDP by expenditure, purchasers' prices	GDP by activity, basic prices	NDP by expenditure, purchasers' prices	NDP by activity, basic prices	Consumption of fixed assets, purchasers' prices	Purchasers' value less basic value of GDP	Intermediate consumption, purchasers' prices
1922	8168.39	7666.04	7430.58	6928.22	737.81	502.35	5907.66
1923	7801.21	7284.89	7090.17	6573.84	711.05	516.32	5974.46
1924	8069.35	7541.20	7309.81	6781.66	759.54	528.16	6429.99
1925	8221.75	7702.47	7446.29	6927.02	775.45	519.28	6482.60
1926	8403.84	7866.36	7616.31	7078.82	787.54	537.49	6846.41
1927	8480.28	7918.35	7680.52	7118.60	799.76	561.93	6956.08
1928	8775.85	8195.57	7961.49	7381.21	814.36	580.27	7236.07
1929	9210.70	8598.81	8369.78	7757.90	840.92	611.89	7677.69
1930	9271.11	8661.56	8402.70	7793.15	868.41	609.55	7456.51
1931	8721.93	8148.18	7837.46	7263.71	884.47	573.75	6640.81
1932	8164.54	7627.29	7292.34	6755.08	872.20	537.25	6268.59
1933	8345.70	7785.13	7516.04	6955.47	829.66	560.57	6291.35
1934	9028.92	8398.64	8183.66	7553.37	845.26	630.28	7371.80
1935	9724.82	9042.46	8849.49	8167.12	875.33	682.37	7915.14
1936	10366.05	9638.88	9462.61	8735.44	903.44	727.17	8528.54
1937	11352.03	10544.11	10311.11	9503.19	1040.92	807.92	10091.66
1938	11930.21	11076.10	10821.14	9967.03	1109.07	854.11	10259.26
1939	13102.40	12141.70	11914.01	10953.31	1188.39	960.70	11800.56
1940	13978.55	12868.72	12522.13	11412.30	1456.42	1109.84	13241.89
1941	15709.91	14338.71	14111.48	12740.27	1598.44	1371.21	13982.04
1942	17270.79	15720.37	15482.74	13932.32	1788.05	1550.42	15678.34
1943	18750.52	16998.64	16795.21	15043.32	1955.32	1751.88	16930.82
1944	19590.59	17691.43	17535.16	15636.01	2055.42	1899.16	18095.77
1945	20239.70	18274.37	18096.06	16130.74	2143.64	1965.33	18873.57
1946	23048.01	20646.75	20763.28	18362.02	2284.73	2401.26	21802.51
1947	25490.49	23174.63	22986.32	20670.45	2504.17	2315.87	24299.05
1948	27733.77	25240.83	25015.17	22522.23	2718.60	2492.94	27001.82
1949	28941.70	26376.08	26016.00	23450.38	2925.70	2565.61	28644.13
1950	31827.35	29060.88	28653.24	25886.78	3174.10	2766.46	30997.79
1951	39426.04	36175.88	35323.82	32073.66	4102.22	3250.16	39651.95
1952	43006.04	40292.58	38109.15	35395.69	4896.89	2713.46	43614.67
1953	44212.14	40470.49	39154.11	35412.46	5058.03	3741.65	43290.23
1954	47063.76	42950.98	41901.15	37788.37	5162.61	4112.78	45480.34
1955	50685.19	45996.45	45066.25	40377.50	5618.95	4688.75	49264.87
1956	55096.75	50355.90	48878.10	44137.24	6218.66	4740.85	53553.67
1957	58785.25	53922.76	52021.56	47159.07	6763.69	4862.49	57043.28
1958	62087.93	56144.79	54954.49	49011.35	7133.44	5943.14	57790.58
1959	66111.25	59140.33	58620.45	51649.52	7490.80	6970.92	61389.39
1960	72271.92	64446.46	63910.94	56085.49	8360.97	7825.46	67005.32
1961	78761.47	70631.32	69640.32	61510.18	9121.15	8130.15	72156.58
1962	85861.38	76726.12	75814.27	66679.01	10047.11	9135.26	77159.33

TABLE B: *Current values of some aggregate variables, continued.*

Year	GDP by expenditure, purchasers' prices	GDP by activity, basic prices	NDP by expenditure, purchasers' prices	NDP by activity, basic prices	Consumption of fixed assets, purchasers' prices	Purchasers' value less basic value of GDP	Intermediate consumption, purchasers' prices
1963	93194	82237	82240	71282	10954	10957	83413
1964	104207	92474	92074	80340	12133	11734	92742
1965	114931	102628	101376	89073	13555	12303	102514
1966	125107	110876	110133	95902	14974	14231	109543
1967	135727	120526	119430	104229	16296	15201	114753
1968	143960	128310	126618	110968	17342	15650	122172
1969	156318	138361	138048	120091	18270	17957	131624
1970	175222	152975	155091	132844	20131	22247	147585
1971	188946	167126	166374	144553	22572	21821	156031
1972	207138	179643	182149	154655	24988	27494	167975
1973	229689	200265	201937	172512	27753	29425	192794
1974	261765	236884	228673	203792	33092	24881	243519
1975	305362	276086	266910	237634	38453	29276	264019
1976	342979	311851	298101	266973	44879	31128	302742
1977	373644	336939	322506	285801	51138	36705	327344
1978	418053	373436	359629	315012	58425	44617	359535
1979	468578	420438	404865	356726	63712	48140	419649
1980	531884	475040	459456	402611	72429	56844	477614
1981	583656	517326	503024	436694	80632	66331	522854
1982	637318	569881	548122	480685	89196	67437	585723
1983	713763	634618	613717	534571	100047	79145	660798
1984	799474	708723	691999	601249	107475	90750	736933
1985	868853	763610	751816	646573	117038	105243	799594
1986	951809	840304	826016	714511	125793	111505	835968
1987	1027766	904392	891720	768346	136046	123374	905807
1988	1119771	988046	968310	836585	151461	131725	1002557
1989	1238391	1096193	1067649	925451	170742	142198	1122374
1990	1365700	1196088	1175611	1005999	190089	169612	1221505
1991	1453208	1255284	1250678	1052754	202531	197924	1199372
1992	1447782	1269103	1246512	1067833	201269	178679	1134255
1993	1452507	1276770	1246706	1070969	205801	175737	1199116
1994	1535359	1355746	1329482	1149869	205877	179612	1305921
1995	1652877	1468283	1441612	1257019	211265	184594	1438178
1996	1690230	1509366	1477302	1296438	212928	180864	1442430
1997	1755083	1570262	1534891	1350071	220191	184820	1533716
1998	1823666	1630486	1595068	1401888	228598	193180	1618176
1999	1911093	1704541	1672336	1465783	238757	206553	1720402
2000	2013311	1813900	1761256	1561846	252054	199410	1929457

Sources: See sections 3.3, 3.5, 4.2, 5.5 and 5.8.

TABLE C: *Estimates of GDP per capita and population.*

Year	GDP per capita by expenditure in purchasers' prices (SEK):			GDP per capita by activity in basic prices (SEK):			Estimated popu-lation during the year*
	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	
1800	49.04	8598.2		46.79	7957.7		2352143
1801	50.26	7979.2	-7.20	47.95	7607.0	-4.41	2351124
1802	51.26	8271.9	3.67	48.90	7855.3	3.27	2363568
1803	48.49	8046.1	-2.73	46.26	7842.3	-0.17	2380403
1804	47.53	8111.9	0.82	45.35	7733.2	-1.39	2396204
1805	51.32	8374.0	3.23	48.94	8024.2	3.76	2412909
1806	54.88	8483.1	1.30	52.35	8000.5	-0.29	2425384
1807	57.33	8100.5	-4.51	54.68	7718.0	-3.53	2434160
1808	63.92	7908.6	-2.37	60.99	7438.9	-3.62	2433588
1809	69.11	8044.0	1.71	65.85	7198.7	-3.23	2410788
1810	74.21	9102.1	13.15	70.68	7925.6	10.10	2395226
1811	79.78	9431.1	3.61	76.00	8151.9	2.85	2403855
1812	94.82	8751.0	-7.21	90.35	7870.2	-3.46	2415078
1813	98.72	8142.4	-6.95	94.06	7519.1	-4.46	2421363
1814	102.35	8629.8	5.99	97.48	7820.9	4.01	2431084
1815	102.24	8983.8	4.10	97.36	8222.2	5.13	2451617
1816	104.67	9063.6	0.89	99.73	8324.7	1.25	2481222
1817	106.56	8706.7	-3.94	101.53	8067.9	-3.08	2509434
1818	105.82	8089.3	-7.09	100.86	7744.2	-4.01	2533896
1819	109.06	7948.6	-1.74	103.94	7745.2	0.01	2554084
1820	108.20	8419.2	5.92	103.07	8082.1	4.35	2573210
1821	101.33	8833.9	4.93	96.54	8428.2	4.28	2597747
1822	99.71	9327.1	5.58	95.00	8630.3	2.40	2628532
1823	99.60	9356.7	0.32	94.88	8623.1	-0.08	2667587
1824	98.41	9641.5	3.04	93.77	8874.2	2.91	2707888
1825	100.75	9366.9	-2.85	96.00	8806.0	-0.77	2748975
1826	103.43	9239.0	-1.36	98.61	8814.1	0.09	2788038
1827	108.93	8526.6	-7.71	103.80	8204.9	-6.91	2816299
1828	102.28	9245.0	8.43	97.46	8691.9	5.94	2837237
1829	101.42	9613.3	3.98	96.65	8843.7	1.75	2854948
1830	106.25	9433.9	-1.87	101.23	8592.6	-2.84	2875580
1831	111.84	9335.2	-1.05	106.58	8572.7	-0.23	2894553
1832	113.85	8905.0	-4.61	108.45	8340.5	-2.71	2911900
1833	109.91	9641.8	8.27	104.69	8753.9	4.96	2940915
1834	109.92	9939.3	3.09	104.72	8910.0	1.78	2971074
1835	112.84	9861.6	-0.78	107.48	8901.9	-0.09	3004172
1836	114.70	9941.9	0.81	109.25	9011.0	1.23	3042350
1837	116.30	9790.4	-1.52	110.78	8998.1	-0.14	3067758
1838	117.25	9448.7	-3.49	111.68	8608.8	-4.33	3083215
1839	124.83	9680.5	2.45	118.88	8873.2	3.07	3098350
1840	122.28	10033.2	3.64	116.44	9139.6	3.00	3122631

TABLE C: *Estimates of GDP per capita and population, continued.*

Year	GDP per capita by expenditure in purchasers' prices (SEK):			GDP per capita by activity in basic prices (SEK):			Estimated popu-lation during the year*
	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	
1841	121.84	9966.5	-0.66	116.05	9008.2	-1.44	3155977
1842	122.72	9418.0	-5.50	116.87	8649.4	-3.98	3189924
1843	122.33	9802.2	4.08	116.50	8848.4	2.30	3221669
1844	119.50	10281.5	4.89	113.77	9260.0	4.65	3255826
1845	117.29	10588.6	2.99	111.73	9468.5	2.25	3295769
1846	128.11	9877.2	-6.72	122.02	9117.4	-3.71	3329705
1847	134.12	10067.4	1.92	127.72	9262.7	1.59	3352486
1848	134.75	10540.8	4.70	128.32	9556.1	3.17	3379717
1849	131.09	11164.9	5.92	124.82	9949.7	4.12	3419300
1850	133.11	11217.5	0.47	126.75	10058.8	1.10	3461852
1851	136.15	11003.1	-1.91	129.66	9943.6	-1.15	3499552
1852	138.00	10710.0	-2.66	131.41	9721.0	-2.24	3528508
1853	144.14	10851.1	1.32	137.27	9805.6	0.87	3551844
1854	161.87	10955.8	0.96	154.08	9933.6	1.31	3585650
1855	180.82	11570.8	5.61	172.10	10516.9	5.87	3624530
1856	202.98	11517.8	-0.46	193.14	10313.3	-1.94	3656965
1857	212.02	11862.0	2.99	201.73	10538.7	2.19	3680287
1858	193.48	12255.5	3.32	184.16	11033.1	4.69	3710847
1859	188.35	13018.9	6.23	179.29	11574.3	4.90	3760892
1860	194.42	13355.4	2.59	185.06	11795.5	1.91	3823562
1861	200.20	13224.9	-0.98	190.56	11681.7	-0.96	3888427
1862	195.73	12317.3	-6.86	186.28	10893.8	-6.74	3941544
1863	203.97	13156.5	6.81	194.04	11681.4	7.23	3994131
1864	199.97	13432.4	2.10	190.48	11907.9	1.94	4046243
1865	197.02	13825.5	2.93	187.41	12284.4	3.16	4092042
1866	195.43	13523.0	-2.19	185.67	11917.1	-2.99	4137344
1867	204.24	13779.1	1.89	193.96	12091.4	1.46	4178142
1868	196.90	11858.2	-13.94	186.65	10798.9	-10.69	4184365
1869	211.63	13265.6	11.87	200.35	11862.9	9.85	4165912
1870	225.24	15569.2	17.37	212.98	13413.8	13.07	4163638
1871	234.52	16026.4	2.94	221.73	13884.6	3.51	4186313
1872	264.88	16546.0	3.24	250.83	14262.3	2.72	4227231
1873	296.57	16994.3	2.71	280.75	14324.4	0.44	4274126
1874	316.98	16627.0	-2.16	298.58	14600.9	1.93	4319711
1875	307.22	16860.1	1.40	290.48	14340.0	-1.79	4362375
1876	321.46	17816.3	5.67	303.62	15188.7	5.92	4406441
1877	311.82	17495.6	-1.80	294.39	14855.1	-2.20	4457043
1878	287.34	17147.5	-1.99	271.33	14339.0	-3.47	4508140
1879	277.63	18201.3	6.15	261.80	15025.1	4.78	4555321
1880	287.45	17512.7	-3.78	270.39	15008.0	-0.11	4572280
1881	301.15	17909.3	2.26	283.18	15450.8	2.95	4568955

TABLE C: *Estimates of GDP per capita and population, continued.*

Year	GDP per capita by expenditure in purchasers' prices (SEK):			GDP per capita by activity in basic prices (SEK):			Estimated popu-lation during the year*
	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	
1882	303.20	17564.9	-1.92	285.39	15293.5	-1.02	4575679
1883	314.86	18804.3	7.06	295.76	16365.4	7.01	4591339
1884	306.15	18727.6	-0.41	287.19	16046.5	-1.95	4623976
1885	301.56	19153.3	2.27	283.06	16537.6	3.06	4663569
1886	280.74	18973.1	-0.94	263.27	16434.4	-0.62	4699947
1887	270.88	18643.2	-1.74	254.24	16291.1	-0.87	4726037
1888	284.55	19530.0	4.76	265.92	17041.2	4.60	4741574
1889	300.48	19168.9	-1.85	280.25	17116.2	0.44	4761315
1890	309.07	20051.8	4.61	288.57	17465.7	2.04	4779692
1891	325.08	19651.9	-1.99	304.27	18121.0	3.75	4793858
1892	329.08	20667.9	5.17	308.61	18024.6	-0.53	4804808
1893	325.25	21526.9	4.16	305.16	18508.0	2.68	4815500
1894	322.91	21693.0	0.77	302.33	18641.2	0.72	4848605
1895	335.76	22431.0	3.40	314.39	19387.3	4.00	4896167
1896	348.90	23076.1	2.88	326.33	20233.2	4.36	4940867
1897	374.98	24019.1	4.09	351.18	20945.4	3.52	4986044
1898	401.59	24674.5	2.73	375.12	21483.7	2.57	5036205
1899	433.96	25759.9	4.40	404.84	22042.2	2.60	5080131
1900	438.82	25544.3	-0.84	410.28	21776.5	-1.21	5116884
1901	428.59	25883.5	1.33	403.35	22191.6	1.91	5155798
1902	427.76	25681.0	-0.78	400.45	22105.8	-0.39	5186977
1903	457.85	26969.8	5.02	428.97	22844.1	3.34	5210009
1904	464.93	27853.3	3.28	435.12	23634.7	3.46	5241014
1905	475.09	27714.8	-0.50	444.83	23354.9	-1.18	5277821
1906	527.55	29828.7	7.63	495.57	25118.5	7.55	5315928
1907	575.45	31632.8	6.05	541.56	26560.1	5.74	5357345
1908	566.57	30932.2	-2.21	534.30	25887.2	-2.53	5403594
1909	562.38	30732.8	-0.64	529.32	25836.3	-0.20	5452970
1910	600.42	32178.2	4.70	565.23	27400.3	6.05	5499374
1911	604.94	33087.7	2.83	569.74	27778.4	1.38	5542066
1912	639.10	34094.0	3.04	603.77	28628.8	3.06	5582955
1913	696.00	36030.6	5.68	656.01	30340.2	5.98	5621361
1914	693.49	35583.1	-1.24	655.96	30608.0	0.88	5659058
1915	795.21	36376.5	2.23	754.33	30873.0	0.87	5696149
1916	993.81	38415.5	5.61	943.80	32237.0	4.42	5735109
1917	1149.98	33568.4	-12.62	1097.98	29832.2	-7.46	5779166
1918	1522.67	32675.2	-2.66	1457.61	27837.8	-6.69	5807345
1919	1887.33	33016.0	1.04	1789.52	29001.9	4.18	5830420
1920	2076.41	34317.2	3.94	1963.40	30707.1	5.88	5875693
1921	1584.97	30658.4	-10.66	1494.76	27840.5	-9.34	5929350
1922	1368.03	33979.1	10.83	1283.90	30650.2	10.09	5970895

TABLE C: *Estimates of GDP per capita and population, continued.*

Year	GDP per capita by expenditure in purchasers' prices (SEK):			GDP per capita by activity in basic prices (SEK):			Estimated popu-lation during the year*
	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	
1923	1300.93	34942	2.83	1214.83	32071	4.64	5996633
1924	1340.22	36700	5.03	1252.50	33638	4.89	6020919
1925	1360.13	36618	-0.22	1274.22	33701	0.19	6044834
1926	1385.87	39071	6.70	1297.23	36266	7.61	6063956
1927	1394.52	40202	2.89	1302.12	37320	2.91	6081142
1928	1439.48	40999	1.98	1344.30	38352	2.77	6096550
1929	1506.83	43991	7.30	1406.73	40923	6.70	6112630
1930	1512.14	45599	3.66	1412.72	42511	3.88	6131126
1931	1417.67	45055	-1.19	1324.41	41925	-1.38	6152310
1932	1321.90	43003	-4.56	1234.91	40473	-3.46	6176389
1933	1345.87	44408	3.27	1255.47	41534	2.62	6200956
1934	1451.05	47083	6.02	1349.76	44748	7.74	6222319
1935	1558.02	49974	6.14	1448.70	47074	5.20	6241792
1936	1656.26	52847	5.75	1540.08	49268	4.66	6258692
1937	1808.86	54025	2.23	1680.12	51296	4.12	6275799
1938	1894.45	55975	3.61	1758.82	53022	3.36	6297455
1939	2071.28	60924	8.84	1919.41	56631	6.81	6325739
1940	2199.15	55331	-9.18	2024.55	51137	-9.70	6356350
1941	2458.93	55155	-0.32	2244.31	50091	-2.05	6388929
1942	2685.02	55482	0.59	2443.98	50909	1.63	6432285
1943	2888.95	58005	4.55	2619.03	52754	3.62	6490433
1944	2986.38	59164	2.00	2696.87	53712	1.82	6559982
1945	3050.24	59706	0.92	2754.06	53847	0.25	6635439
1946	3430.49	65336	9.43	3073.09	59170	9.89	6718567
1947	3747.08	68875	5.42	3406.65	62693	5.95	6802753
1948	4029.11	69108	0.34	3666.94	63165	0.75	6883342
1949	4161.00	69953	1.22	3792.14	64855	2.67	6955467
1950	4537.72	74223	6.10	4143.30	66819	3.03	7013950
1951	5576.35	76237	2.71	5116.65	68895	3.11	7070227
1952	6036.25	76801	0.74	5655.40	68848	-0.07	7124626
1953	6165.04	78122	1.72	5643.29	69531	0.99	7171431
1954	6524.44	82476	5.57	5954.28	72452	4.20	7213459
1955	6979.19	84599	2.57	6333.56	73819	1.89	7262335
1956	7532.53	86790	2.59	6884.38	76035	3.00	7314511
1957	7983.05	88050	1.45	7322.72	77964	2.54	7363759
1958	8379.94	89454	1.59	7577.80	79419	1.87	7409115
1959	8878.49	93715	4.76	7942.32	82495	3.87	7446231
1960	9661.54	97229	3.75	8615.41	86792	5.21	7480374
1961	10473.65	102348	5.27	9392.51	91187	5.06	7519965
1962	11354.98	106647	4.20	10146.86	94787	3.95	7561563
1963	12255.46	112018	5.04	10814.51	98929	4.37	7604292

TABLE C: *Estimates of GDP per capita and population, continued.*

Year	GDP per capita by expenditure in purchasers' prices (SEK):			GDP per capita by activity in basic prices (SEK):			Estimated popu-lation during the year*
	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	Nominal value	Volume value (reference year 2000)	Growth from preceding year (%)	
1964	13602	119313	6.51	12070	104826	5.96	7661279
1965	14861	122776	2.90	13270	109038	4.02	7733756
1966	16023	124051	1.04	14201	111317	2.09	7807717
1967	17251	126967	2.35	15319	114733	3.07	7867892
1968	18195	131008	3.18	16217	118821	3.56	7911960
1969	19619	136914	4.51	17365	123791	4.18	7967648
1970	21787	143606	4.89	19020	128448	3.76	8042657
1971	23332	142507	-0.77	20637	130582	1.66	8098179
1972	25503	146138	2.55	22118	133595	2.31	8122144
1973	28229	151034	3.35	24612	138383	3.58	8136775
1974	32077	157529	4.30	29028	143001	3.34	8160544
1975	37273	159505	1.25	33700	143882	0.62	8192551
1976	41713	160368	0.54	37928	146357	1.72	8222299
1977	45281	157384	-1.86	40833	143736	-1.79	8251633
1978	50515	159379	1.27	45124	143129	-0.42	8275772
1979	56498	165614	3.91	50694	147384	2.97	8293718
1980	64002	167823	1.33	57162	148235	0.58	8310470
1981	70147	167671	-0.09	62175	147182	-0.71	8320485
1982	76552	169291	0.97	68452	148832	1.12	8325258
1983	85696	172732	2.03	76193	151410	1.73	8329028
1984	95899	179293	3.80	85014	156018	3.04	8336595
1985	104050	183169	2.16	91446	158437	1.55	8350376
1986	113719	186881	2.03	100397	162321	2.45	8369819
1987	122385	192201	2.85	107694	166884	2.81	8397783
1988	132730	195051	1.48	117116	170762	2.32	8436456
1989	145815	198599	1.82	129072	174832	2.38	8492894
1990	159567	198605	0.00	139750	175615	0.45	8558774
1991	168638	195151	-1.74	145670	172152	-1.97	8617333
1992	167025	191133	-2.06	146412	167794	-2.53	8668033
1993	166600	186102	-2.63	146443	163847	-2.35	8718521
1994	174857	190495	2.36	154401	168478	2.83	8780673
1995	187254	197156	3.50	166341	173671	3.08	8826932
1996	191181	199115	0.99	170723	175957	1.32	8840997
1997	198403	203413	2.16	177510	181272	3.02	8846062
1998	206041	209759	3.12	184215	188292	3.87	8850973
1999	215751	218227	4.04	192432	196625	4.43	8857873
2000	226926	226926	3.99	204450	204450	3.98	8872103

Sources: The per capita and population figures are based on estimates of population during the whole year. For this purpose a geometric average is computed of the population at the end of the year and at the end of the preceding year. Population figures (at the end of the year) are obtained from *Statistiska databaser*, online at http://www.scb.se (030601). See also TABLE A and TABLE B.

TABLE D: *Nominal gross value added (in basic prices, million SEK) of different types of activities and of GDP.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation*	Private reproductive services*	Government services	Real estate	GDP by activity
1800	51.555	12.086	5.465	6.508	4.060	14.439	11.188	4.759	110.060
1801	52.346	12.778	5.421	6.959	5.081	14.205	10.999	4.944	112.732
1802	54.245	13.231	4.232	8.351	6.004	13.719	10.812	4.973	115.567
1803	50.482	13.325	3.845	8.013	5.496	12.695	10.769	5.488	110.113
1804	49.015	13.252	4.569	7.761	4.689	13.128	10.586	5.661	108.660
1805	55.788	14.211	4.549	7.770	5.780	13.265	10.917	5.812	118.092
1806	57.753	14.763	4.852	7.320	7.158	16.606	12.176	6.333	126.961
1807	64.294	14.284	5.355	6.876	7.243	16.493	12.184	6.364	133.091
1808	69.047	14.428	7.392	4.669	9.582	20.661	15.106	7.538	148.423
1809	82.279	14.967	7.320	9.015	7.874	17.518	11.443	8.328	158.744
1810	87.345	16.038	8.727	12.101	7.917	16.691	10.888	9.579	169.287
1811	88.599	16.777	10.208	13.376	7.221	22.664	12.683	11.169	182.697
1812	102.792	18.722	14.741	10.740	13.018	29.062	16.035	13.085	218.194
1813	104.916	21.597	15.067	13.542	13.299	29.278	16.518	13.529	227.744
1814	116.040	23.701	11.538	14.883	14.291	27.096	15.275	14.153	236.977
1815	117.654	25.435	11.868	13.763	14.675	26.379	14.787	14.128	238.689
1816	113.687	27.377	14.729	14.064	15.252	29.867	17.878	14.592	247.446
1817	119.955	27.228	13.182	14.010	15.780	31.818	18.439	14.365	254.777
1818	112.019	28.156	15.176	15.547	15.633	34.260	20.267	14.511	255.568
1819	120.153	29.343	16.628	13.189	18.721	32.929	20.772	13.739	265.474
1820	127.891	31.737	13.850	14.242	18.695	27.387	18.024	13.397	265.224
1821	118.130	30.398	12.353	15.949	16.863	24.538	18.148	14.410	250.789
1822	115.758	28.435	13.658	15.574	15.479	28.368	18.139	14.311	249.723
1823	119.379	28.979	11.526	17.336	16.190	27.851	17.232	14.607	253.098
1824	118.693	30.433	13.391	17.723	15.566	24.373	19.093	14.652	253.924
1825	121.790	32.152	12.389	19.166	17.134	25.686	19.671	15.915	263.903
1826	122.356	32.181	14.635	13.785	18.610	34.747	23.656	14.963	274.934
1827	140.116	34.967	14.091	17.050	20.957	27.923	22.090	15.142	292.336
1828	133.865	33.968	13.076	17.054	18.581	24.459	20.292	15.216	276.509
1829	127.350	33.368	13.476	17.587	18.114	28.798	20.905	16.336	275.934
1830	139.290	33.507	13.637	17.110	19.526	31.402	21.332	15.299	291.103
1831	143.811	34.880	16.468	17.319	21.387	34.859	23.829	15.948	308.501
1832	155.919	35.162	14.062	18.741	22.519	32.243	21.600	15.552	315.797
1833	149.968	35.745	12.939	19.226	21.713	31.315	20.932	16.059	307.897
1834	149.142	36.117	14.879	18.435	21.830	32.188	22.266	16.283	311.140
1835	154.855	39.009	16.601	18.799	22.929	33.130	21.218	16.331	322.874
1836	157.958	41.816	18.294	17.566	24.744	33.707	21.872	16.409	332.366
1837	159.242	43.019	18.251	17.099	26.976	35.868	22.904	16.496	339.855
1838	160.571	42.038	17.995	19.485	26.479	38.177	22.928	16.654	344.328
1839	177.736	45.259	19.408	22.026	26.980	36.525	23.186	17.209	368.331

TABLE D: *Nominal gross value added, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation*	Private reproductive services*	Government services	Real estate	GDP
1840	175.32	45.09	18.13	22.43	26.57	36.14	22.69	17.23	363.60
1841	175.18	44.53	17.85	22.77	25.91	37.87	24.15	17.99	366.26
1842	180.43	44.52	16.34	23.44	26.94	39.11	23.63	18.41	372.82
1843	183.69	44.65	19.85	19.22	27.94	37.32	23.96	18.70	375.33
1844	181.36	46.72	20.85	21.20	26.36	34.04	21.18	18.70	370.41
1845	170.17	47.18	19.24	22.59	26.36	38.60	25.15	18.93	368.22
1846	193.07	49.58	25.02	21.11	30.11	41.39	26.84	19.19	406.30
1847	206.36	52.64	25.77	21.54	32.37	42.02	26.95	20.56	428.20
1848	210.53	53.71	23.87	23.53	33.98	39.09	26.79	22.18	433.68
1849	201.33	55.76	22.96	27.88	31.29	38.79	25.74	23.06	426.81
1850	202.50	58.00	26.78	25.69	34.25	41.10	26.80	23.67	438.79
1851	201.65	60.72	34.83	27.00	34.27	42.45	28.61	24.21	453.74
1852	207.56	61.03	36.43	25.40	35.99	43.95	28.20	25.12	463.67
1853	211.53	63.29	40.74	30.84	36.48	46.99	30.78	26.89	487.55
1854	257.19	70.94	44.12	29.21	42.65	47.99	29.93	30.46	552.49
1855	271.17	87.63	57.62	29.40	51.93	57.34	32.19	36.51	623.78
1856	317.89	92.95	63.77	32.50	61.24	63.33	32.75	41.87	706.30
1857	333.40	96.76	65.08	36.18	64.58	62.63	33.72	50.08	742.42
1858	318.81	86.52	54.08	32.08	57.48	54.48	36.07	43.85	683.37
1859	302.87	90.44	55.39	36.23	54.89	52.66	36.42	45.39	674.28
1860	309.47	97.09	59.09	38.49	59.71	57.58	37.96	48.21	707.59
1861	324.52	102.11	54.53	42.18	64.87	64.10	39.33	49.34	740.97
1862	321.89	100.43	52.44	39.90	62.02	63.95	39.50	54.12	734.24
1863	344.09	107.14	57.86	42.79	63.77	62.16	42.68	54.51	775.00
1864	330.52	110.26	63.81	40.77	64.51	60.68	44.11	56.07	770.73
1865	320.62	114.82	57.42	42.03	65.55	59.55	44.29	62.61	766.89
1866	320.45	112.49	54.71	46.59	63.17	63.60	46.06	61.11	768.18
1867	366.53	110.75	52.86	44.24	64.87	62.46	48.40	60.30	810.40
1868	344.91	106.97	47.77	43.93	64.18	63.40	49.54	60.32	781.00
1869	384.89	110.39	49.75	49.34	65.63	63.00	49.99	61.62	834.62
1870	421.14	116.31	53.26	48.80	69.95	63.36	50.62	63.34	886.78
1871	438.50	126.03	48.44	52.84	75.44	67.05	52.27	67.65	928.21
1872	474.46	161.87	76.66	62.23	87.61	71.91	54.82	70.78	1060.33
1873	505.61	188.50	108.42	77.05	100.46	76.17	57.81	85.96	1199.97
1874	538.43	208.87	112.46	95.04	112.44	79.78	59.54	83.24	1289.80
1875	518.84	198.11	109.36	89.63	108.56	81.94	64.93	95.81	1267.17
1876	556.43	197.79	115.69	92.82	109.08	86.98	71.21	107.89	1337.87
1877	534.20	195.77	111.82	92.69	112.35	89.21	70.23	105.83	1312.09
1878	510.74	153.69	117.18	78.82	99.18	85.07	74.09	104.40	1223.18
1879	520.50	141.32	99.57	70.37	97.99	84.42	74.40	104.00	1192.59
1880	507.42	174.84	97.61	84.98	100.39	86.48	75.73	108.86	1236.31

TABLE D: *Nominal gross value added, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation*	Private reproductive services*	Government services	Real estate	GDP
1881	527.7	189.2	89.1	93.9	111.1	90.0	78.4	114.5	1293.8
1882	522.5	206.7	79.1	104.5	104.8	90.2	78.7	119.4	1305.8
1883	551.8	196.4	93.9	105.3	113.4	90.3	79.0	127.9	1357.9
1884	505.1	197.5	107.1	102.4	112.9	93.0	80.3	129.7	1328.0
1885	504.5	199.4	103.5	95.9	114.9	90.5	80.4	131.0	1320.1
1886	449.9	180.6	107.0	89.3	106.5	90.9	81.2	131.9	1237.3
1887	428.3	185.8	87.6	89.9	104.5	91.9	81.6	132.1	1201.5
1888	434.7	212.9	92.1	98.7	105.4	95.5	82.2	139.3	1260.9
1889	449.5	239.8	94.8	110.3	120.4	94.6	83.6	141.3	1334.3
1890	467.9	246.3	98.8	108.0	129.6	96.2	84.2	148.3	1379.3
1891	538.4	259.4	80.0	104.2	142.9	99.6	86.4	147.7	1458.6
1892	549.9	265.7	83.9	104.2	143.9	99.9	88.4	146.9	1482.8
1893	536.2	274.3	77.1	103.2	142.1	100.0	90.5	146.2	1469.5
1894	513.8	293.3	72.1	112.7	141.9	101.9	91.3	139.0	1465.9
1895	514.8	308.8	101.4	118.2	145.0	103.6	92.3	155.3	1539.3
1896	533.8	348.4	88.2	124.9	153.0	106.5	94.4	163.2	1612.3
1897	554.1	389.4	126.3	136.0	167.7	110.0	96.0	171.4	1751.0
1898	597.8	422.7	129.9	144.8	196.4	111.9	99.2	186.4	1889.2
1899	645.4	444.9	158.3	153.0	222.7	121.9	102.8	207.7	2056.7
1900	642.7	479.8	154.3	156.3	226.4	124.4	108.5	206.9	2099.3
1901	656.9	459.9	144.9	150.5	227.5	130.6	111.0	198.3	2079.6
1902	627.6	476.6	125.3	151.6	235.8	134.0	118.1	208.0	2077.1
1903	656.1	509.0	148.1	165.6	246.3	141.7	123.4	244.7	2234.9
1904	646.3	531.2	160.2	172.6	259.2	147.1	128.3	235.5	2280.5
1905	605.5	552.8	192.7	183.7	264.1	154.8	130.8	263.3	2347.7
1906	695.0	642.8	207.1	199.4	312.4	165.3	135.6	276.7	2634.4
1907	808.4	711.2	167.8	208.4	367.7	174.3	144.9	318.6	2901.3
1908	839.6	678.3	161.5	206.8	365.9	180.3	150.6	304.1	2887.1
1909	864.0	623.9	153.3	205.5	372.4	183.6	165.2	318.5	2886.4
1910	889.5	751.9	166.1	231.2	380.2	192.6	172.5	324.5	3108.4
1911	853.3	781.8	203.7	237.9	385.2	203.1	178.8	313.8	3157.6
1912	933.3	828.9	211.9	255.8	393.1	210.8	184.3	352.7	3370.8
1913	1022.9	937.5	255.8	276.0	417.7	224.5	191.4	361.9	3687.7
1914	994.8	938.5	240.8	275.3	428.9	251.1	201.0	381.7	3712.1
1915	1236.8	1050.6	234.4	337.2	492.5	312.4	225.4	407.5	4296.8
1916	1606.5	1402.8	246.6	421.3	642.7	405.4	246.8	440.8	5412.8
1917	1884.7	1695.0	241.9	429.6	803.7	552.2	272.7	465.6	6345.4
1918	2555.6	2026.7	363.8	634.1	1092.6	776.8	484.1	531.2	8464.9
1919	2994.8	2575.3	498.7	789.8	1441.0	905.2	607.2	621.8	10433.6
1920	2976.6	3064.7	508.0	887.7	1643.3	1004.2	739.0	712.8	11536.3
1921	2127.6	2128.0	567.3	693.4	1172.9	711.0	744.8	718.1	8863.0
1922	1725.7	1833.9	526.6	597.1	1013.1	613.0	644.1	712.4	7666.0

TABLE D: *Nominal gross value added, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation*	Private reproductive services*	Government services	Real estate	GDP
1923	1486.1	1842.9	473.9	593.5	992.2	612.4	588.9	695.1	7284.9
1924	1550.7	1922.9	537.5	593.5	1001.2	601.9	580.4	753.2	7541.2
1925	1535.4	1942.5	635.0	606.3	999.6	594.7	601.0	788.0	7702.5
1926	1589.3	2010.8	590.0	629.5	1024.6	609.3	591.1	821.9	7866.4
1927	1529.5	2069.1	603.9	644.1	998.7	622.1	593.8	857.0	7918.4
1928	1566.1	2135.1	653.0	643.1	1069.2	639.9	604.9	884.3	8195.6
1929	1603.1	2362.8	672.3	693.8	1101.5	633.6	615.1	916.6	8598.8
1930	1452.6	2332.9	828.2	686.9	1105.6	669.4	623.7	962.3	8661.6
1931	1341.5	2072.2	752.0	671.4	1010.4	654.9	647.5	998.1	8148.2
1932	1138.3	1910.9	668.9	683.5	902.8	638.2	653.4	1031.2	7627.3
1933	1311.5	1910.8	666.5	675.7	888.3	638.7	645.3	1048.4	7785.1
1934	1331.1	2311.4	664.2	712.3	1004.4	648.7	649.0	1077.5	8398.6
1935	1456.0	2570.0	744.0	738.4	1076.9	658.4	693.6	1105.0	9042.5
1936	1585.2	2787.4	840.0	769.6	1104.1	679.9	712.8	1159.9	9638.9
1937	1726.8	3249.3	804.2	837.2	1215.6	713.4	765.4	1232.4	10544.1
1938	1666.7	3399.0	970.9	853.9	1262.4	741.2	859.2	1322.8	11076.1
1939	1713.3	3659.7	1033.9	1011.9	1450.2	773.5	1073.1	1426.0	12141.7
1940	1800.4	3791.6	757.8	1099.0	1492.8	876.7	1495.2	1555.2	12868.7
1941	2037.7	4311.5	860.3	1200.2	1528.2	925.4	1831.1	1644.5	14338.7
1942	2182.3	4702.5	1139.2	1341.8	1624.7	988.2	2055.2	1686.5	15720.4
1943	2406.9	5153.8	1227.2	1416.4	1793.3	1073.4	2186.6	1741.1	16998.6
1944	2591.6	5327.5	1256.9	1476.6	1899.0	1122.1	2182.8	1835.0	17691.4
1945	2599.2	5440.8	1636.7	1543.2	1897.9	1178.3	2046.5	1931.8	18274.4
1946	2889.6	6490.4	1636.7	1767.4	2496.5	1265.3	1988.9	2111.9	20646.8
1947	3118.0	7299.0	2022.8	1844.1	2950.5	1417.2	2280.1	2243.0	23174.6
1948	3005.7	8454.6	1987.4	2106.0	3215.3	1552.2	2568.5	2351.2	25240.8
1949	3277.0	8547.4	2166.5	2205.6	3345.1	1599.2	2688.4	2546.9	26376.1
1950	3992.4	9544.9	2335.0	2329.7	3613.2	1710.3	2826.7	2708.7	29060.9
1951	5059.1	13055.6	2793.4	3124.5	4016.6	1949.1	3455.0	2722.6	36175.9
1952	6881.3	12618.0	3282.7	3520.2	4626.2	2164.5	4263.4	2936.2	40292.6
1953	5364.9	12815.4	3728.0	3529.3	4930.5	2318.4	4526.3	3257.7	40470.5
1954	5673.7	13769.3	3943.3	3704.3	5144.5	2440.5	4724.7	3550.7	42951.0
1955	5598.7	14765.9	4172.5	4081.2	5757.2	2564.2	5221.8	3835.0	45996.4
1956	6222.9	16123.9	4453.0	4493.0	6231.8	2755.4	5681.1	4394.7	50355.9
1957	5805.7	17507.0	4654.6	4957.7	6993.2	2936.6	6378.3	4689.7	53922.8
1958	5801.7	18037.2	4986.6	4867.3	7281.8	3093.7	6883.9	5192.6	56144.8
1959	5354.3	19199.7	5425.7	5128.5	7753.5	3166.5	7397.6	5714.7	59140.3
1960	5995.2	21147.6	5747.7	5641.6	8249.0	3423.1	8048.4	6193.8	64446.5
1961	6505.6	22945.1	6367.6	6058.8	9409.9	3692.9	8930.3	6721.2	70631.3
1962	6664.7	25208.7	7004.2	6437.4	10305.6	3951.3	10189.8	6964.5	76726.1
1963	6211.8	26479.9	7890.9	6844.2	11503.8	4352.6	11592.6	7360.9	82236.7

TABLE D: *Nominal gross value added, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation*	Private reproductive services*	Government services	Real estate	GDP
1964	7191	29850	8923	7395	13300	4582	12971	8263	92474
1965	7575	32926	9849	8116	14842	5139	14815	9366	102628
1966	7309	34209	10834	8831	16091	5710	17209	10682	110876
1967	7446	35843	11933	9792	17964	6368	19781	11399	120526
1968	6818	37833	12032	10500	19850	6936	22208	12132	128310
1969	6650	41726	12579	11188	20880	7365	24442	13531	138361
1970	7375	47289	12826	11742	22957	7823	28095	14867	152975
1971	8509	49522	13710	12771	25863	8377	32195	16179	167126
1972	8004	52218	14844	14174	27207	9408	35945	17843	179643
1973	8485	59334	16628	15936	30480	10362	39367	19672	200265
1974	12184	74549	17289	18112	36760	11253	45423	21315	236884
1975	13685	85306	20376	19871	44433	13414	55124	23878	276086
1976	15482	89310	25417	22131	51519	15913	65501	26580	311851
1977	15161	88699	26965	24858	55097	17917	78972	29270	336939
1978	15105	94582	27902	27436	63039	20006	91457	33910	373436
1979	15063	108074	30716	30998	72084	22118	103567	37819	420438
1980	17340	120127	34309	36257	80237	24583	119798	42390	475040
1981	19224	124563	36215	39805	88610	28538	131291	49081	517326
1982	21124	137100	39612	42136	97673	31460	142806	57970	569881
1983	23871	157265	41252	45416	112404	34638	155028	64743	634618
1984	26298	182593	45970	48303	128528	38343	168106	70581	708723
1985	27509	197978	48782	51985	139567	41988	179398	76404	763610
1986	28813	219090	50726	57398	160197	46537	194350	83193	840304
1987	29393	233488	56369	62473	177332	52209	203155	89972	904392
1988	30612	251379	63918	70443	198884	57051	217849	97911	988046
1989	33748	273051	79208	77700	219602	64352	242827	105706	1096193
1990	33603	282013	88602	86935	240568	68302	279960	116105	1196088
1991	29924	279528	93093	93684	243692	74513	297772	143079	1255284
1992	28513	277838	87853	94396	228487	81601	302483	167933	1269103
1993	26040	279978	74305	88059	247747	82835	301425	176380	1276770
1994	29035	323127	70094	93777	258454	87263	305382	188614	1355746
1995	32180	374999	71836	102306	287378	95733	311244	192607	1468283
1996	29882	376643	72366	106881	294179	102653	325892	200870	1509366
1997	30496	397110	71275	116162	306762	109622	332159	206677	1570262
1998	29816	417793	74760	121982	321683	123108	335700	205644	1630486
1999	29450	431038	78873	128657	349801	133379	346848	206495	1704541
2000	28049	453831	82548	130634	389057	148300	369861	211621	1813900

Sources: See section 3.5 and chapter 4.

*Circulation includes wholesale and retail trade, banking, insurance and business services. Private reproductive services include restaurants, hotels, sanitary services, sewage plants, education, R&D, health services, community services, recreation, other personal services, non-government associations, and paid household services.

TABLE E: *Annual growth rates (in percent) of the volume gross value added (in basic prices and corrected for changes in the value added share in gross output) of different types of activities.*

Annual change	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP by activity
1800-1801	-10.00	2.44	-0.16	-2.00	-2.42	0.34	2.83	0.40	-4.45
1801-1802	4.48	9.00	-16.98	13.13	4.39	0.60	3.86	0.58	3.81
1802-1803	0.54	-1.80	-1.77	2.38	-4.44	0.41	6.16	0.25	0.55
1803-1804	-1.41	0.13	5.75	0.43	3.40	0.47	-5.68	0.11	-0.74
1804-1805	7.70	4.77	-5.79	-1.92	5.11	0.80	4.67	0.29	4.49
1805-1806	2.39	1.19	-0.74	-1.67	4.13	-0.14	-10.93	0.27	0.22
1806-1807	-4.10	-6.29	7.16	-11.47	-2.56	-0.05	-0.27	0.48	-3.18
1807-1808	-3.83	-3.27	8.73	-26.97	-2.59	-0.52	-4.29	0.77	-3.64
1808-1809	-6.59	-5.50	-10.51	26.04	-1.25	-0.69	-7.63	1.32	-4.14
1809-1810	12.85	2.72	-1.61	29.75	7.90	1.73	4.02	1.17	9.39
1810-1811	5.32	-0.74	4.84	19.02	5.26	0.62	-16.00	0.47	3.22
1811-1812	-4.47	-3.21	18.70	-21.35	-4.00	0.91	-1.64	0.41	-3.00
1812-1813	-10.21	1.43	-4.20	6.23	-0.35	0.80	5.78	0.94	-4.21
1813-1814	9.60	3.61	-14.84	1.68	0.71	0.95	3.72	0.64	4.43
1814-1815	9.38	5.30	9.27	1.53	0.52	1.26	3.47	-0.18	6.02
1815-1816	1.83	2.41	12.63	4.71	0.67	1.12	3.77	-0.25	2.47
1816-1817	-1.97	-2.35	-8.60	-4.23	-0.44	0.61	-1.44	-0.34	-1.98
1817-1818	-7.77	-2.90	12.19	4.71	-1.91	0.99	-0.38	-0.22	-3.08
1818-1819	0.27	1.28	10.53	-11.29	2.10	0.39	4.89	0.58	0.81
1819-1820	8.14	6.73	-11.63	3.86	2.85	0.82	10.83	1.19	5.13
1820-1821	6.72	1.85	-12.35	19.38	3.97	1.41	15.15	1.03	5.28
1821-1822	6.09	-2.40	9.98	7.85	1.43	1.17	-2.06	0.59	3.61
1822-1823	2.74	1.22	-12.15	-0.05	0.26	1.89	5.42	0.77	1.40
1823-1824	3.14	6.27	9.61	7.86	2.92	2.59	11.35	0.31	4.47
1824-1825	1.87	-1.77	-9.81	3.34	1.91	1.96	0.83	0.01	0.74
1825-1826	-0.03	2.98	20.99	0.23	1.53	-0.34	1.82	-0.16	1.51
1826-1827	-10.21	0.82	-5.97	-13.64	1.13	0.68	-3.56	-0.04	-5.97
1827-1828	11.71	2.40	-8.21	14.11	-1.36	0.35	7.51	0.49	6.72
1828-1829	3.53	1.13	1.77	12.26	9.58	0.65	-11.61	0.25	2.38
1829-1830	-2.77	0.34	2.78	-10.39	0.51	0.76	-6.08	0.29	-2.14
1830-1831	-2.97	3.38	14.46	-3.28	6.69	0.44	6.39	0.56	0.43
1831-1832	-2.30	-1.26	-12.01	-4.87	0.71	0.21	-1.38	1.09	-2.12
1832-1833	8.96	4.06	-7.50	11.40	2.43	0.94	8.23	0.80	6.00
1833-1834	3.99	2.00	9.49	2.19	3.80	0.63	-2.93	0.20	2.83
1834-1835	0.34	4.88	6.60	-0.97	1.94	1.13	-3.36	0.29	1.02
1835-1836	2.16	4.07	8.07	-3.13	6.12	1.44	1.99	0.48	2.51
1836-1837	-0.41	2.02	2.68	0.64	6.53	0.91	-2.30	0.53	0.69
1837-1838	-7.73	0.54	-1.81	2.27	-2.27	0.37	-2.31	0.96	-3.84
1838-1839	3.39	5.00	8.24	6.62	-2.29	0.71	9.51	1.18	3.58

TABLE E: *Growth rates of volume gross value added, continued.*

Annual change	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP by activity
1839-1840	6.04	2.68	-4.05	9.56	1.75	1.03	-0.66	1.07	3.81
1840-1841	-0.70	-0.59	-3.15	-1.01	-2.73	0.77	5.03	1.12	-0.38
1841-1842	-5.54	-1.44	-3.37	0.39	-0.75	0.89	-0.65	1.19	-2.95
1842-1843	4.24	3.43	11.43	-9.00	4.72	0.84	5.70	1.58	3.32
1843-1844	7.86	4.65	5.70	4.64	0.28	0.99	9.70	2.27	5.76
1844-1845	5.08	3.95	-1.86	18.19	5.47	1.36	-13.61	2.41	3.51
1845-1846	-7.86	1.26	19.73	-14.51	3.69	0.83	5.18	2.31	-2.72
1846-1847	1.83	4.80	-1.78	-5.96	8.17	0.97	7.06	2.57	2.29
1847-1848	3.32	3.53	-5.12	16.43	6.44	1.45	11.72	2.43	4.01
1848-1849	7.10	5.57	-1.51	31.78	-3.85	0.89	-3.65	1.99	5.34
1849-1850	1.24	4.62	13.08	-2.45	7.38	1.36	-2.27	1.59	2.35
1850-1851	-4.87	3.91	30.08	4.90	-3.62	-1.86	-1.08	2.29	-0.07
1851-1852	-3.10	0.42	2.29	-13.83	2.83	1.54	0.53	3.74	-1.43
1852-1853	1.26	1.56	6.83	-2.32	6.91	0.59	-6.26	3.86	1.54
1853-1854	3.10	3.31	-1.76	2.52	-0.10	0.68	3.53	3.37	2.27
1854-1855	7.70	12.59	6.56	10.75	10.83	3.08	-8.35	2.80	7.02
1855-1856	-5.65	1.75	2.01	-2.29	10.45	2.42	-1.49	3.69	-1.06
1856-1857	4.90	1.13	-6.36	5.14	3.89	1.34	2.43	4.67	2.84
1857-1858	11.18	-3.50	1.45	2.34	-4.03	1.77	13.53	5.89	5.56
1858-1859	6.59	9.23	5.91	19.46	4.25	0.93	-0.66	4.92	6.32
1859-1860	2.28	6.43	4.85	4.76	8.08	1.64	0.33	3.99	3.61
1860-1861	-1.54	3.69	-5.98	2.56	7.35	3.43	1.67	3.89	0.72
1861-1862	-8.70	-2.70	-4.32	-10.32	-7.11	-0.17	1.30	3.59	-5.47
1862-1863	13.01	3.85	9.21	10.11	3.29	1.91	9.45	4.22	8.66
1863-1864	1.36	3.83	12.24	-1.80	2.70	4.61	6.80	4.88	3.27
1864-1865	6.60	7.27	-5.27	14.72	4.52	-2.48	-6.36	5.24	4.33
1865-1866	-5.68	1.81	-5.64	11.13	-3.69	0.70	-0.50	4.40	-1.92
1866-1867	5.92	2.04	-5.06	-2.90	2.00	0.23	-3.53	2.76	2.46
1867-1868	-19.63	-2.81	-7.31	-3.28	-5.10	-0.07	-1.11	2.51	-10.56
1868-1869	14.66	6.19	5.79	6.87	1.82	0.16	16.64	1.85	9.37
1869-1870	22.14	7.68	5.13	7.28	15.49	0.14	-0.74	1.16	13.01
1870-1871	4.79	6.56	-8.17	9.56	8.54	1.79	-0.62	2.07	4.07
1871-1872	0.63	5.11	40.23	12.94	2.44	1.00	-8.86	1.37	3.72
1872-1873	-2.38	1.24	21.36	16.37	0.70	1.14	-6.79	1.59	1.55
1873-1874	1.97	3.84	-2.87	18.67	3.09	1.13	-2.32	6.25	3.02
1874-1875	-5.16	3.96	1.52	-4.35	2.97	1.61	3.29	6.34	-0.82
1875-1876	11.67	8.44	-12.73	5.81	7.01	1.85	13.03	5.75	6.99
1876-1877	-5.54	2.77	-1.26	0.25	0.45	1.14	6.71	6.25	-1.07
1877-1878	-4.50	-7.61	5.78	-15.48	-0.10	-0.06	15.34	5.17	-2.37
1878-1879	14.49	-0.70	-9.95	-2.36	7.49	0.05	0.99	5.36	5.88
1879-1880	-3.73	8.80	-1.47	16.53	-5.91	0.35	0.40	4.25	0.26

TABLE E: *Growth rates of volume gross value added, continued.*

Annual change	Agri-culture and an-cilla-ries	Manu-factu-ring and handi-crafts	Buil-ding and con-struc-tion	Trans-port and com-muni-cation	Circu-lation	Private repro-ductive servi-ces	Go-vern-ment servi-ces	Real estate	GDP by acti-vity
1880-1881	-0.86	9.48	-4.34	8.16	12.97	3.16	1.30	3.98	2.88
1881-1882	-4.94	7.29	-9.18	10.23	-6.09	0.42	1.99	3.99	-0.87
1882-1883	12.27	0.89	10.21	4.82	14.05	-0.30	0.25	2.65	7.38
1883-1884	-6.48	-0.20	15.37	2.20	-3.81	2.47	2.46	1.92	-1.25
1884-1885	5.41	6.21	-0.83	-1.38	10.24	-0.58	0.52	3.05	3.94
1885-1886	-2.18	-1.74	4.89	-1.02	3.69	1.49	3.69	2.64	0.15
1886-1887	-0.94	5.11	-13.51	1.72	-1.65	1.36	0.78	2.69	-0.32
1887-1888	5.38	8.44	8.41	9.06	-0.38	2.53	1.02	1.86	4.95
1888-1889	-4.27	10.55	-0.88	8.43	0.84	-2.43	-0.67	1.45	0.86
1889-1890	2.16	4.05	2.40	1.82	3.95	0.17	1.03	2.13	2.44
1890-1891	8.77	4.62	-14.23	-2.48	9.60	1.99	1.40	2.39	4.06
1891-1892	-3.01	2.09	7.66	-2.62	-0.48	-0.21	2.86	1.28	-0.31
1892-1893	4.35	5.17	-4.07	2.32	2.99	0.51	2.07	0.03	2.91
1893-1894	-1.45	7.04	-6.12	8.08	1.60	2.19	0.68	0.16	1.41
1894-1895	3.00	7.51	27.97	7.20	5.21	1.00	0.47	-0.92	5.02
1895-1896	4.26	15.45	-6.06	7.45	3.46	1.83	-0.35	1.97	5.32
1896-1897	0.50	7.97	14.87	10.02	4.79	1.64	-0.32	3.85	4.47
1897-1898	1.18	6.24	0.78	3.00	13.14	-1.01	-1.11	4.39	3.60
1898-1899	-2.34	5.35	10.86	5.57	10.31	6.25	-0.13	4.89	3.49
1899-1900	-4.42	1.85	-4.02	1.22	0.41	0.34	3.47	4.96	-0.49
1900-1901	7.12	-0.48	-5.65	1.65	2.33	4.07	0.34	4.21	2.68
1901-1902	-5.44	6.42	-7.26	-1.14	2.98	0.72	8.44	3.02	0.22
1902-1903	2.14	5.10	9.73	8.08	3.00	3.47	1.67	1.51	3.80
1903-1904	2.31	5.71	8.21	5.06	6.96	2.42	-0.30	2.46	4.08
1904-1905	-9.95	2.74	6.41	0.83	3.81	3.20	4.13	3.01	-0.49
1905-1906	10.67	10.00	7.73	8.45	15.07	4.22	-8.12	3.90	8.33
1906-1907	10.97	6.38	-6.20	4.04	15.06	2.31	-1.09	3.36	6.56
1907-1908	-3.12	-2.93	-9.04	1.11	-2.17	1.56	4.63	3.03	-1.69
1908-1909	4.72	-4.81	-8.49	-0.67	3.85	1.40	4.61	1.65	0.72
1909-1910	2.55	19.50	10.12	10.44	3.34	3.13	-0.38	0.80	6.96
1910-1911	-2.08	2.42	14.02	4.64	4.80	4.00	2.22	0.88	2.17
1911-1912	-0.35	9.44	1.28	0.32	11.22	1.44	0.21	1.44	3.82
1912-1913	4.49	11.58	13.30	9.31	3.65	4.60	1.34	2.78	6.71
1913-1914	5.91	-1.37	-8.00	-0.52	5.11	-2.88	5.01	2.88	1.56
1914-1915	-4.68	7.26	-14.57	-4.99	12.16	4.08	10.32	3.49	1.53
1915-1916	3.03	8.82	-2.18	2.32	16.19	3.93	-6.03	2.31	5.13
1916-1917	-2.35	-12.68	-2.52	-27.98	1.87	2.16	-12.86	1.25	-6.75
1917-1918	-16.14	-13.35	-3.40	9.96	3.47	3.86	24.70	0.95	-6.23
1918-1919	4.08	4.28	-3.07	13.46	6.07	6.98	1.03	0.19	4.60
1919-1920	11.22	4.34	-2.93	14.04	7.23	4.00	5.00	0.38	6.70
1920-1921	4.33	-18.97	-4.91	-4.75	-18.61	-3.43	-10.47	-1.33	-8.51

TABLE E: *Growth rates of volume gross value added, continued.*

Annual change	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP by activity
1921-1922	7.47	21.98	22.00	6.54	8.57	6.84	5.50	-0.53	10.86
1922-1923	-1.35	11.08	2.98	6.53	7.55	4.88	8.01	-0.40	5.09
1923-1924	2.23	15.10	1.54	3.17	7.05	-0.97	-1.32	0.56	5.31
1924-1925	-8.52	4.21	9.81	7.97	-1.65	-0.71	1.89	1.46	0.58
1925-1926	14.19	8.71	0.84	10.86	6.83	5.90	5.63	2.50	7.95
1926-1927	-2.20	8.16	5.98	6.02	2.20	2.73	-0.89	2.12	3.20
1927-1928	-4.12	5.41	11.32	1.99	5.25	2.98	4.06	2.26	3.03
1928-1929	6.86	10.18	5.90	10.07	5.50	5.31	4.60	2.62	6.99
1929-1930	3.26	1.46	18.07	3.78	4.30	5.29	3.43	2.23	4.19
1930-1931	5.43	-7.07	-6.92	3.63	-4.38	0.69	7.69	2.88	-1.04
1931-1932	-8.15	-5.73	-6.65	1.91	-4.26	0.02	3.33	3.17	-3.09
1932-1933	8.32	4.50	-2.61	-0.53	3.45	1.74	0.70	2.27	3.03
1933-1934	-4.42	21.05	12.12	7.36	13.68	1.57	0.70	2.62	8.11
1934-1935	-1.52	9.88	14.97	5.48	4.99	3.08	3.91	2.55	5.53
1935-1936	-0.53	7.95	12.12	5.46	3.27	2.48	4.16	3.88	4.94
1936-1937	4.66	7.32	-5.15	5.65	3.52	2.30	3.93	5.24	4.40
1937-1938	-2.45	4.24	9.95	5.87	2.84	0.43	9.20	4.57	3.72
1938-1939	-0.42	8.05	9.44	4.69	11.91	1.06	20.78	5.61	7.28
1939-1940	-11.27	-11.73	-34.01	-3.53	-7.98	6.41	-10.79	5.82	-9.26
1940-1941	-9.56	-2.57	-3.89	3.69	-12.12	-2.16	16.95	2.09	-1.54
1941-1942	-5.34	2.06	20.82	5.94	-3.73	-1.00	9.22	0.38	2.32
1942-1943	7.44	3.16	6.16	2.98	8.09	2.98	5.90	0.94	4.56
1943-1944	4.12	5.10	2.59	1.71	8.17	1.30	-4.95	1.73	2.91
1944-1945	1.44	1.73	13.74	4.80	-3.31	0.89	-6.02	2.70	1.40
1945-1946	7.34	17.54	11.95	18.44	26.59	3.85	-9.51	4.78	11.26
1946-1947	-1.26	7.65	13.25	15.75	13.21	-0.16	7.02	4.47	7.28
1947-1948	-8.20	5.82	-5.75	8.32	1.07	1.59	4.00	4.15	1.95
1948-1949	12.81	1.55	4.17	3.26	2.84	-0.36	3.99	4.10	3.75
1949-1950	1.43	3.84	6.14	3.60	6.61	2.47	3.55	3.58	3.90
1950-1951	1.80	7.49	-2.98	8.13	1.71	2.81	3.42	0.33	3.93
1951-1952	2.69	-3.58	7.01	2.81	2.08	0.21	4.53	0.66	0.70
1952-1953	-5.46	2.16	12.25	-0.89	2.61	1.46	4.19	0.80	1.66
1953-1954	4.12	5.51	6.88	5.36	6.95	3.11	2.58	1.51	4.81
1954-1955	-3.75	4.44	2.11	6.31	4.10	0.61	2.01	1.95	2.58
1955-1956	0.50	4.70	3.68	4.32	5.72	1.85	4.20	2.14	3.74
1956-1957	1.57	4.44	2.46	4.58	3.69	0.54	2.86	1.90	3.23
1957-1958	-1.04	2.08	6.02	1.78	4.88	-1.01	4.32	1.86	2.49
1958-1959	-3.07	5.89	8.45	4.84	6.45	0.07	4.45	2.71	4.39
1959-1960	5.34	9.06	0.59	9.15	4.48	3.01	2.87	3.49	5.69
1960-1961	2.04	7.74	6.80	4.01	7.65	2.75	4.12	3.20	5.62
1961-1962	-0.25	7.18	4.44	4.92	5.43	0.04	2.78	3.45	4.52

TABLE E: *Growth rates of volume gross value added, continued.*

Annual change	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	GDP by activity
1962-1963	-4.04	5.71	6.31	3.65	6.93	3.56	6.51	6.10	4.96
1963-1964	4.45	10.14	6.30	5.72	9.15	-0.07	2.64	5.06	6.75
1964-1965	-0.11	7.74	3.61	5.72	5.22	0.38	3.64	5.04	5.00
1965-1966	-3.57	3.34	3.58	4.25	4.25	0.53	3.92	3.93	3.07
1966-1967	3.70	3.38	5.69	1.27	5.55	0.07	5.26	3.08	3.86
1967-1968	-1.81	5.68	0.85	5.11	4.52	1.62	6.02	3.20	4.14
1968-1969	-4.79	7.93	3.95	5.82	4.11	-0.64	6.09	3.58	4.92
1969-1970	0.69	7.20	1.90	2.75	4.91	-5.01	8.19	2.36	4.74
1970-1971	4.29	1.21	-0.74	4.49	3.08	-0.95	3.98	3.57	2.36
1971-1972	-3.91	2.01	3.56	1.31	4.35	3.48	3.41	3.19	2.61
1972-1973	-0.24	5.62	-0.70	6.92	5.01	4.49	1.81	3.18	3.77
1973-1974	4.27	3.96	-8.35	10.90	4.29	6.44	4.58	2.54	3.64
1974-1975	-6.80	-1.04	5.41	-3.70	2.32	4.92	4.17	2.14	1.01
1975-1976	0.60	0.15	2.02	2.60	4.16	-0.22	4.22	1.82	2.09
1976-1977	-5.62	-5.82	-1.34	1.93	-1.21	0.34	2.37	1.19	-1.44
1977-1978	1.49	-2.51	-1.97	0.59	-0.97	-0.51	2.67	1.48	-0.13
1978-1979	-0.84	4.80	0.82	3.01	4.01	1.10	3.54	1.35	3.20
1979-1980	0.75	-2.26	-0.30	3.86	1.16	1.44	2.92	0.92	0.78
1980-1981	-1.11	-4.19	-5.18	-0.38	0.63	4.45	1.85	1.18	-0.59
1981-1982	2.69	-1.80	1.97	0.69	3.66	0.82	2.07	1.47	1.18
1982-1983	4.73	3.07	-2.87	-2.05	3.11	1.27	2.03	0.96	1.78
1983-1984	-0.24	4.84	5.01	4.14	3.65	-0.27	2.39	1.07	3.14
1984-1985	-3.32	2.24	-0.30	0.47	4.53	0.34	1.20	1.37	1.72
1985-1986	-1.05	2.86	2.02	2.76	6.56	2.10	1.00	1.16	2.69
1986-1987	-3.03	3.46	4.06	3.47	6.99	6.17	0.18	1.65	3.15
1987-1988	-0.67	2.65	2.56	4.00	5.80	1.97	1.28	1.57	2.80
1988-1989	6.61	2.24	8.34	3.16	3.79	2.60	2.24	1.15	3.07
1989-1990	0.46	0.35	1.93	5.59	1.43	-1.22	1.07	1.41	1.23
1990-1991	-8.11	-5.21	-1.92	-1.15	0.69	0.57	0.42	0.93	-1.30
1991-1992	-1.34	-2.55	-5.76	0.53	-3.74	1.93	-2.32	1.33	-1.96
1992-1993	-0.73	1.01	-8.93	-5.35	-3.23	1.03	-2.28	0.59	-1.78
1993-1994	2.29	11.32	-4.39	2.15	5.55	1.18	-1.08	1.68	3.56
1994-1995	0.16	9.18	-0.79	4.91	4.30	5.53	-0.58	0.44	3.63
1995-1996	0.22	2.96	-0.45	3.98	1.55	1.51	-0.28	1.01	1.48
1996-1997	0.41	5.85	-3.27	7.56	5.40	2.85	-1.21	2.01	3.08
1997-1998	-1.48	6.44	1.47	4.42	4.83	10.36	0.71	0.91	3.93
1998-1999	0.73	5.82	2.84	7.84	7.46	4.02	1.30	1.99	4.51
1999-2000	0.45	6.21	1.68	5.33	7.06	7.41	-1.04	2.46	4.15

Sources: See sections 3.4 and 3.5, and chapter 4.

TABLE F: *Nominal values (in purchasers' prices, million SEK) of different expenditures and of GDP by expenditure.*

Year	Private final consumption	Government final consumption	Investment in:		Changes in:		Export	Import	GDP by expenditure
			Buildings/ structures	Machinery/ equipment	Fixed livestock	Inventory stock			
1800	96.133	13.272	4.594	0.684	0.120	0.105	14.857	14.420	115.344
1801	99.154	12.586	4.633	0.744	-0.306	0.151	19.653	18.446	118.169
1802	96.615	12.594	3.687	0.660	0.263	0.464	20.975	14.094	121.165
1803	91.646	12.977	3.450	0.652	0.145	0.427	19.551	13.426	115.421
1804	101.016	12.529	4.201	0.869	0.096	-0.021	17.993	22.783	113.901
1805	105.326	12.806	3.978	0.744	0.343	0.341	17.216	16.935	123.820
1806	112.459	14.229	4.124	0.960	0.076	0.498	19.140	18.391	133.095
1807	115.027	14.127	4.528	0.871	0.000	-0.007	18.723	13.716	139.552
1808	133.103	17.744	5.889	1.001	0.224	-0.427	11.918	13.905	155.547
1809	149.074	13.304	5.374	0.955	-0.207	-0.312	20.846	22.418	166.616
1810	161.515	13.700	6.853	1.261	1.360	-0.032	21.816	28.722	177.751
1811	158.676	16.627	7.923	1.276	0.771	0.416	25.713	19.620	191.782
1812	210.608	20.521	11.634	1.445	-0.108	0.082	21.799	36.984	228.997
1813	225.627	20.429	11.146	1.535	-0.513	-0.086	26.826	45.932	239.032
1814	227.711	19.059	8.705	1.553	1.002	0.442	30.939	40.587	248.824
1815	212.248	19.116	9.586	1.146	0.970	0.735	33.528	26.676	250.653
1816	217.001	22.465	12.205	1.354	0.453	0.745	30.236	24.744	259.714
1817	227.649	22.646	10.623	1.430	0.168	0.253	28.356	23.720	267.406
1818	220.739	25.470	12.177	1.364	-0.314	-0.252	36.985	28.027	268.142
1819	233.628	25.295	13.590	1.871	0.330	0.009	32.192	28.365	278.550
1820	234.838	22.220	11.375	2.110	0.981	0.939	31.256	25.285	278.433
1821	224.731	22.237	9.720	2.134	0.928	1.098	29.462	27.090	263.220
1822	223.522	22.180	10.804	1.444	0.863	0.410	29.697	26.822	262.099
1823	233.471	21.210	8.851	1.345	0.556	0.113	32.946	32.790	265.702
1824	224.385	23.173	10.869	1.512	0.561	0.741	32.743	27.513	266.473
1825	231.191	23.603	9.523	1.602	0.494	1.313	39.159	29.931	276.954
1826	246.274	28.372	11.981	2.005	0.344	0.875	30.050	31.539	288.361
1827	265.731	25.969	11.274	2.336	-0.661	1.327	32.427	31.626	306.777
1828	245.912	23.939	10.379	2.229	1.656	0.962	32.795	27.671	290.201
1829	247.815	24.723	10.279	2.175	0.681	1.259	29.869	27.239	289.562
1830	260.753	25.766	10.472	2.856	0.153	1.424	29.451	25.357	305.519
1831	272.167	28.960	13.057	2.278	0.159	1.377	32.281	26.567	323.714
1832	291.578	26.356	11.336	2.312	0.222	1.513	31.194	32.993	331.518
1833	285.957	24.719	9.669	2.146	1.349	1.089	33.356	35.054	323.231
1834	284.579	26.255	11.420	2.099	0.861	1.601	33.366	33.605	326.576
1835	297.945	25.503	13.070	1.825	0.424	1.661	37.326	38.761	338.993
1836	296.024	27.047	14.406	2.566	0.696	2.124	38.711	32.614	348.958
1837	314.400	28.271	14.398	3.761	0.451	2.304	33.522	40.316	356.792
1838	320.377	28.785	14.054	3.055	-0.388	1.561	41.482	47.423	361.503
1839	331.050	28.529	15.905	3.408	0.992	1.246	45.759	40.116	386.774

TABLE F: *Nominal values of expenditures, continued.*

Year	Private final consumption	Government final consumption	Investment in:		Changes in:		Export	Import	GDP by expenditure
			Buildings/ structures	Machinery/ equipment	Fixed livestock	Inventory stock			
1840	329.07	28.11	14.64	3.90	1.40	1.76	44.74	41.80	381.82
1841	332.77	29.98	14.24	3.37	0.61	1.23	47.31	44.99	384.54
1842	345.67	29.78	16.31	4.19	-0.14	0.55	40.50	45.38	391.48
1843	340.99	29.89	16.90	3.17	0.90	1.28	37.75	36.78	394.11
1844	329.80	27.09	16.65	2.74	1.25	2.11	47.35	37.93	389.07
1845	315.68	31.46	18.77	3.12	0.95	2.14	54.87	40.44	386.56
1846	355.50	33.82	20.87	4.19	-0.54	2.58	54.94	44.77	426.58
1847	371.41	33.62	20.54	5.03	0.90	2.85	62.34	47.05	449.64
1848	398.27	33.11	19.37	6.00	1.40	3.49	45.68	51.90	455.42
1849	392.45	32.69	19.59	5.10	1.88	2.62	51.70	57.80	448.24
1850	397.12	33.99	23.20	6.00	0.70	3.09	51.84	55.14	460.80
1851	405.66	36.14	30.94	6.32	-0.25	3.40	56.96	62.72	476.46
1852	412.55	35.97	31.12	6.43	0.09	2.30	56.67	58.19	486.94
1853	410.12	39.62	35.11	6.08	0.61	2.98	74.45	57.00	511.96
1854	475.56	40.10	37.48	6.87	1.28	3.89	87.67	72.44	580.42
1855	543.12	41.83	49.24	12.99	3.06	6.42	104.60	105.87	655.40
1856	672.64	42.34	55.55	17.70	-0.46	9.25	97.37	152.10	742.29
1857	691.83	43.02	56.99	15.64	2.31	5.79	96.01	131.31	780.29
1858	606.48	44.68	47.46	14.72	3.45	2.14	78.80	79.76	717.96
1859	597.21	44.91	49.01	11.71	1.98	2.57	98.04	97.06	708.37
1860	625.02	46.63	53.08	10.29	1.39	7.79	109.24	110.06	743.37
1861	692.17	48.62	58.66	15.00	0.02	7.66	103.06	146.73	778.46
1862	654.92	50.03	66.12	15.17	0.84	3.64	105.43	124.66	771.48
1863	680.70	52.47	70.60	15.04	0.64	1.70	115.76	122.22	814.69
1864	655.89	54.43	79.40	18.97	1.58	5.96	119.64	126.73	809.14
1865	656.52	54.90	66.63	21.22	-5.08	7.17	137.87	133.00	806.23
1866	642.04	58.19	61.70	16.73	3.36	6.04	144.72	124.21	808.58
1867	708.46	60.52	56.86	12.86	-0.84	3.76	160.03	148.33	853.34
1868	701.46	62.73	49.46	14.30	-11.43	2.95	157.15	152.72	823.90
1869	728.45	61.79	52.43	15.39	9.24	3.12	158.21	147.02	881.62
1870	749.97	64.33	57.60	15.13	5.90	9.82	187.59	152.52	937.82
1871	805.83	65.97	50.27	16.47	5.05	12.67	210.71	185.18	981.78
1872	884.51	67.95	100.61	24.49	5.87	11.98	258.03	233.74	1119.70
1873	991.24	75.06	160.72	35.84	7.08	9.54	283.95	295.84	1267.58
1874	1101.04	76.70	182.83	45.50	-5.33	8.64	295.22	335.36	1369.24
1875	1055.83	82.15	162.14	46.79	8.04	11.79	265.92	292.45	1340.20
1876	1136.73	89.10	158.83	39.92	1.11	15.13	292.96	317.29	1416.49
1877	1135.92	93.79	164.45	33.82	-2.28	15.52	285.07	336.49	1389.81
1878	1036.18	94.01	149.92	24.93	3.91	4.99	244.51	263.09	1295.35
1879	1029.28	91.46	118.88	20.34	0.45	3.69	241.13	240.51	1264.70
1880	1061.80	91.69	128.45	23.17	-0.42	10.25	304.23	304.87	1314.29

TABLE F: *Nominal values of expenditures, continued.*

Year	Private final consumption	Government final consumption	Investment in:		Changes in:		Export	Import	GDP by expenditure
			Buildings/ structures	Machinery/ equipment	Fixed livestock	Inventory stock			
1881	1149.1	95.2	119.7	27.0	-1.9	14.5	289.6	317.3	1376.0
1882	1144.0	96.8	101.4	30.0	5.7	16.9	323.4	330.8	1387.3
1883	1220.5	98.3	117.5	34.3	3.3	11.9	327.9	368.1	1445.6
1884	1186.8	100.8	133.7	35.7	2.9	10.5	302.0	356.8	1415.6
1885	1200.6	102.9	126.2	34.1	3.6	9.6	305.4	376.0	1406.3
1886	1091.4	104.2	129.7	28.6	1.5	12.1	281.7	329.7	1319.5
1887	1063.3	106.7	102.6	25.8	-2.4	7.4	300.8	324.1	1280.2
1888	1101.4	103.9	115.2	31.5	2.1	11.6	342.5	359.1	1349.2
1889	1197.5	106.3	119.1	41.7	-1.2	17.7	365.1	415.5	1430.7
1890	1230.7	110.6	124.0	44.1	5.5	19.6	361.7	418.9	1477.3
1891	1204.5	115.6	92.9	40.9	1.5	18.0	380.9	295.8	1558.4
1892	1318.8	117.8	108.5	35.3	4.4	16.4	369.6	389.6	1581.2
1893	1272.2	121.4	98.3	30.7	0.5	13.4	387.6	357.9	1566.2
1894	1289.4	121.2	95.4	32.9	4.5	18.5	387.6	383.9	1565.7
1895	1303.7	123.7	139.1	35.4	2.8	20.9	402.3	383.9	1643.9
1896	1337.9	124.1	145.5	46.9	0.7	30.1	441.7	403.1	1723.9
1897	1429.3	138.1	198.6	50.4	0.2	37.0	467.6	451.7	1869.7
1898	1604.1	146.6	220.1	67.6	2.4	34.5	450.7	503.6	2022.5
1899	1776.4	154.4	256.5	75.3	0.1	37.7	472.1	568.0	2204.6
1900	1795.1	173.6	253.2	74.7	-1.5	25.9	517.2	592.8	2245.4
1901	1782.8	178.4	228.2	62.7	0.6	14.5	463.1	520.5	2209.7
1902	1837.0	180.2	198.4	62.9	-2.0	19.0	490.1	566.8	2218.8
1903	1911.7	195.6	235.9	63.6	0.2	29.4	547.6	598.5	2385.4
1904	1995.9	204.5	261.8	72.6	-5.4	29.2	522.8	644.7	2436.7
1905	2002.5	213.7	277.8	68.9	1.0	28.1	565.6	650.4	2507.4
1906	2224.8	223.6	318.2	84.3	6.0	37.0	632.1	721.5	2804.4
1907	2478.3	244.4	291.8	105.9	1.5	60.7	659.2	758.8	3082.9
1908	2482.3	265.7	249.5	92.7	6.2	32.0	607.3	674.1	3061.5
1909	2565.5	278.7	227.7	83.9	3.9	0.8	598.3	692.2	3066.7
1910	2635.7	276.9	273.2	89.5	3.5	33.6	742.5	753.1	3301.9
1911	2554.1	278.7	329.6	87.5	-6.4	61.2	829.3	781.4	3352.6
1912	2750.5	297.4	337.8	95.6	-11.3	49.3	931.8	883.0	3568.1
1913	2962.9	304.8	402.6	122.8	-13.4	79.6	1008.5	955.3	3912.4
1914	2905.5	321.0	382.2	130.5	-18.8	53.7	969.0	818.6	3924.5
1915	3249.6	374.0	369.4	133.4	-8.1	55.8	1680.0	1324.5	4529.6
1916	3765.6	481.1	430.7	182.8	-4.5	135.8	2085.7	1377.6	5699.6
1917	4511.2	515.7	551.1	264.0	-39.8	77.3	1756.6	990.3	6645.9
1918	6595.4	891.4	773.8	350.0	-89.8	-70.3	1931.3	1539.0	8842.7
1919	9441.7	919.9	926.6	360.6	40.9	-7.1	2181.4	2860.2	11003.9
1920	10228.0	1060.3	1003.8	497.0	15.7	191.0	2946.5	3742.0	12200.3
1921	7349.2	1066.3	782.3	280.8	-5.3	-41.0	1385.9	1420.5	9397.8

TABLE F: *Nominal values of expenditures, continued.*

Year	Private final consumption	Government final consumption	Investment in:		Changes in:		Export	Import	GDP by expenditure
			Buildings/ structures	Machinery/ equipment	Fixed livestock	Inventory stock			
1922	6332	903	661	156	2	-64	1440	1261	8168
1923	5907	812	705	167	3	218	1451	1462	7801
1924	6083	825	805	183	5	189	1589	1609	8069
1925	6048	847	877	217	8	152	1706	1634	8222
1926	6320	825	826	222	10	94	1789	1682	8404
1927	6178	824	859	227	12	130	2039	1790	8480
1928	6553	845	936	275	16	121	1964	1935	8776
1929	6690	867	946	302	18	153	2252	2018	9211
1930	6667	881	1149	325	18	145	1974	1889	9271
1931	6683	901	1014	285	-19	29	1441	1612	8722
1932	6334	889	906	180	-20	-37	1216	1304	8165
1933	6372	861	788	183	1	21	1358	1238	8346
1934	6586	869	965	265	-3	205	1616	1474	9029
1935	6998	924	1193	357	11	295	1614	1667	9725
1936	7427	968	1335	395	16	197	1872	1844	10366
1937	8041	1071	1423	526	15	213	2461	2397	11352
1938	8367	1196	1628	583	7	198	2302	2351	11930
1939	9157	1587	1856	670	8	224	2423	2822	13102
1940	9792	2328	1308	806	-43	123	1927	2263	13979
1941	10812	2834	1324	871	-34	-142	1935	1890	15710
1942	11399	3045	1940	942	32	35	1890	2010	17271
1943	12305	3198	2230	1061	44	213	1748	2048	18751
1944	12843	3411	2386	1159	24	306	1356	1894	19591
1945	11937	3346	2789	785	17	274	2316	1224	20240
1946	15118	2975	3317	1417	-7	491	3561	3823	23048
1947	17388	3187	3896	1747	-47	914	4300	5894	25490
1948	18497	3689	3467	1918	-61	629	5179	5584	27734
1949	18561	3925	3578	1941	-26	418	5438	4893	28942
1950	21505	4165	3851	2304	-21	-176	7089	6890	31827
1951	23989	5202	4762	2969	-30	1605	11205	10276	39426
1952	26567	6326	5817	3157	-36	994	10184	10003	43006
1953	27674	6970	6491	3282	-36	-516	9532	9184	44212
1954	29238	7303	6990	3546	-17	166	10434	10597	47064
1955	31131	7935	7417	3536	-52	1154	11387	11823	50685
1956	33661	8771	8027	3819	-52	1104	12953	13186	55097
1957	35465	9771	8460	4057	-15	1169	14381	14503	58785
1958	37908	10397	9238	4572	-16	343	13835	14189	62088
1959	39804	11099	10300	4934	-36	1	14383	14374	66111
1960	42125	11931	11235	5565	-36	1897	16530	16977	72272
1961	45535	12956	12479	6194	-7	1237	17463	17096	78761
1962	49182	14838	13870	6924	-46	811	18567	18285	85861

TABLE F: *Nominal values of expenditures, continued.*

Year	Private final consumption	Government final consumption	Investment in:		Changes in:		Export	Import	GDP by expenditure
			Buildings/ structures	Machinery/ equipment	Fixed livestock	Inventory stock			
1963	53282	16576	15603	7411	-87	186	20131	19908	93194
1964	57714	18377	17875	8108	-111	1992	22839	22587	104207
1965	63718	20867	19722	8898	-42	2756	24608	25595	114931
1966	69215	24136	21250	10056	-66	1378	26231	27092	125107
1967	74620	27071	23376	10550	-56	248	28057	28140	135727
1968	79053	30269	24035	10432	14	440	30420	30703	143960
1969	85350	33255	25470	10838	6	1998	34993	35591	156318
1970	92747	38601	27289	12304	-4	5269	41501	42485	175222
1971	99922	43745	27812	13314	45	1984	45301	43177	188946
1972	109978	48365	30814	14987	120	-177	49267	46217	207138
1973	121347	53710	31995	17498	103	-1189	62112	55885	229689
1974	138386	62032	34166	23033	82	6066	82465	84465	261765
1975	157776	74676	37861	25578	85	10013	84650	85277	305362
1976	182468	88278	41329	28650	134	7865	94041	99785	342979
1977	200030	106002	45692	30374	174	-2399	101297	107525	373644
1978	221700	120014	51426	27913	255	-7423	116359	112191	418053
1979	245104	136292	57999	32580	340	962	140520	145220	468578
1980	273330	158010	65565	38776	358	5923	156469	166547	531884
1981	305552	174946	68090	39940	394	-4073	174107	175299	583656
1982	340036	190782	71275	44621	368	-6286	204756	208234	637318
1983	369442	209194	76604	53256	412	-10263	253260	238142	713763
1984	403775	227151	85702	61061	421	-7757	289819	260699	799474
1985	443671	245802	90602	74199	383	-484	305866	291186	868853
1986	487328	264356	96259	79111	494	-5840	311134	281033	951809
1987	537868	277679	107092	90068	681	-4764	332449	313307	1027766
1988	584354	295537	122461	101634	1008	-3559	359690	341354	1119771
1989	632744	327697	147716	122949	1057	-488	394467	387751	1238391
1990	692668	377855	167026	124696	899	-2475	406831	401800	1365700
1991	771310	400356	173403	105895	992	-21173	404184	381759	1453208
1992	777324	408567	155632	87845	1126	-6657	401586	377641	1447782
1993	796370	412366	124207	80708	800	-13742	473292	421494	1452507
1994	834502	422803	111481	94572	787	7178	557757	493722	1535359
1995	866845	436532	114905	114021	547	14177	665357	559507	1652877
1996	892240	458024	116159	120237	591	-3257	658599	552363	1690230
1997	933416	466145	109910	124559	668	-1373	748111	626354	1755083
1998	968980	490313	115957	135434	683	4033	802035	693769	1823666
1999	1017622	515328	119112	153421	834	-6501	847071	735793	1911093
2000	1069367	541739	130593	161874	693	3514	963287	857757	2013311

Sources: See chapter 5.

Comment: Import and export are recorded on the c.i.f./f.o.b.-basis.

TABLE G: *Annual volume growth rates (in percent) of various expenditures and of GDP by expenditure (based on purchasers' prices).*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1800-1801	-9.32	-1.39	-4.88	32.54	24.49	-7.24
1801-1802	0.19	4.49	-3.01	8.50	-15.43	4.22
1802-1803	-1.86	8.09	-6.67	-9.73	-5.26	-2.04
1803-1804	14.74	-6.15	4.71	-9.71	66.81	1.49
1804-1805	0.68	3.02	-0.42	-6.11	-21.06	3.95
1805-1806	0.81	-7.71	0.94	9.62	-4.57	1.83
1806-1807	-7.65	-0.51	-4.77	-3.14	-23.17	-4.16
1807-1808	4.57	-0.96	4.66	-44.72	1.71	-2.39
1808-1809	1.19	-15.34	-22.88	76.55	35.18	0.76
1809-1810	12.76	11.60	41.36	0.35	10.91	12.42
1810-1811	-2.97	-8.54	0.54	12.84	-35.53	3.99
1811-1812	2.69	-0.32	5.97	-26.01	61.46	-6.78
1812-1813	-4.67	-1.74	-15.82	27.39	24.86	-6.71
1813-1814	1.13	0.34	-3.43	7.79	-21.96	6.41
1814-1815	-1.55	4.79	7.21	6.55	-29.99	4.98
1815-1816	2.91	3.88	11.86	-17.90	-11.58	2.11
1816-1817	-1.45	-2.15	-14.84	-5.16	0.59	-2.85
1817-1818	-9.48	5.35	3.59	17.10	6.34	-6.18
1818-1819	-0.15	-1.16	23.33	-13.11	0.49	-0.96
1819-1820	6.45	6.50	-0.34	-0.82	-8.10	6.71
1820-1821	9.38	13.38	-10.43	-1.64	24.24	5.93
1821-1822	8.48	-1.90	0.75	0.52	2.65	6.84
1822-1823	3.61	3.19	-20.93	3.81	8.29	1.81
1823-1824	3.20	8.73	23.38	1.98	1.05	4.60
1824-1825	-1.67	-0.07	-10.73	5.64	1.31	-1.37
1825-1826	1.43	6.35	22.37	-11.92	11.51	0.04
1826-1827	-7.80	-7.54	-8.21	8.98	-1.97	-6.78
1827-1828	8.79	4.64	7.33	3.38	-5.10	9.23
1828-1829	8.25	-9.34	-2.93	-9.41	1.82	4.63
1829-1830	-2.11	-1.61	3.82	3.05	-3.49	-1.16
1830-1831	-3.05	8.41	11.08	8.42	-2.38	-0.39
1831-1832	-1.97	-3.59	-10.69	-2.10	15.98	-4.04
1832-1833	10.03	1.05	-7.11	6.76	-1.13	9.35
1833-1834	4.77	-0.36	11.75	-2.22	2.79	4.14
1834-1835	0.57	-1.51	3.33	13.69	15.62	0.32
1835-1836	-0.98	4.84	15.15	-3.84	-19.46	2.10
1836-1837	3.88	-0.87	6.74	-14.10	30.55	-0.70
1837-1838	-3.61	-1.46	-12.85	26.55	12.03	-3.00
1838-1839	-1.52	5.60	15.83	7.83	-16.99	2.96
1839-1840	5.51	0.40	2.06	2.13	6.20	4.46
1840-1841	1.47	5.68	-12.39	6.15	12.03	0.40

TABLE G: *Volume growth rates of various expenditures, continued.*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1841-1842	-3.01	0.87	8.02	-12.98	7.20	-4.49
1842-1843	3.12	4.07	7.74	0.87	-13.45	5.12
1843-1844	4.24	7.12	3.34	21.10	5.32	6.00
1844-1845	4.70	-8.36	9.92	8.09	6.01	4.25
1845-1846	-6.60	7.10	6.57	-2.29	9.34	-5.76
1846-1847	0.98	3.73	6.30	9.49	1.05	2.62
1847-1848	11.01	5.82	2.46	-18.96	15.47	5.55
1848-1849	8.09	-1.84	-4.92	13.38	6.59	7.16
1849-1850	-0.56	0.68	13.44	-0.44	-10.17	1.72
1850-1851	-1.72	0.01	23.98	9.39	18.00	-0.84
1851-1852	-2.46	1.29	-1.10	0.20	-1.65	-1.86
1852-1853	-0.70	-2.84	8.04	7.81	-9.29	1.99
1853-1854	1.61	5.68	0.57	20.51	24.58	1.93
1854-1855	11.18	-8.24	22.48	5.61	36.59	6.76
1855-1856	8.04	-2.04	7.15	-5.99	38.95	0.43
1856-1857	-0.26	0.66	-8.69	0.32	-22.32	3.65
1857-1858	0.03	11.21	-2.50	-7.05	-28.14	4.17
1858-1859	9.33	-0.69	-0.96	24.56	24.67	7.66
1859-1860	4.25	-0.18	9.00	8.50	9.31	4.29
1860-1861	5.33	2.50	11.31	-7.25	26.79	0.70
1861-1862	-9.91	3.21	2.65	6.41	-10.79	-5.59
1862-1863	7.92	5.07	2.56	7.32	0.55	8.24
1863-1864	-1.34	9.90	25.97	4.68	-2.90	3.43
1864-1865	5.12	-4.18	-11.78	19.62	7.03	4.09
1865-1866	-4.04	1.38	-1.46	6.34	-7.25	-1.11
1866-1867	6.43	-4.34	-16.65	9.08	11.12	2.90
1867-1868	-12.88	0.10	-24.68	0.40	6.90	-13.81
1868-1869	7.08	10.11	54.62	7.79	2.15	11.37
1869-1870	15.52	6.19	10.91	22.60	6.31	17.30
1870-1871	7.16	-1.27	-7.42	9.83	20.89	3.50
1871-1872	1.87	-7.62	54.37	5.75	14.37	4.25
1872-1873	4.13	-1.17	30.90	-1.26	14.57	3.85
1873-1874	5.47	-3.24	-3.26	-1.27	19.74	-1.12
1874-1875	-1.92	3.10	5.46	2.58	-9.52	2.40
1875-1876	11.13	10.65	-14.73	13.39	11.74	6.74
1876-1877	-0.20	11.57	-2.71	-1.48	2.17	-0.67
1877-1878	-3.67	8.20	-3.98	-1.50	-10.64	-0.87
1878-1879	7.14	-1.00	-17.76	13.31	-7.94	7.26
1879-1880	-0.48	-2.04	6.65	3.36	23.28	-3.42
1880-1881	4.44	1.58	-1.18	-2.92	3.15	2.19
1881-1882	-1.77	3.56	-3.52	9.36	9.49	-1.78
1882-1883	11.01	1.59	9.17	1.83	13.31	7.42

TABLE G: *Volume growth rates of various expenditures, continued.*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1883-1884	-1.76	4.04	12.78	1.80	1.37	0.30
1884-1885	6.23	3.60	-2.31	3.83	11.32	3.15
1885-1886	-2.98	4.32	4.51	-4.26	-8.96	-0.17
1886-1887	0.14	3.63	-21.48	11.28	4.79	-1.19
1887-1888	2.90	-3.26	18.73	7.73	3.30	5.10
1888-1889	2.77	-0.55	6.30	-2.97	14.00	-1.44
1889-1890	1.96	3.62	9.20	3.57	-3.45	5.01
1890-1891	-2.47	3.10	-20.38	5.91	-5.13	-1.70
1891-1892	6.82	2.93	8.04	-2.56	1.88	5.41
1892-1893	2.25	4.00	-10.87	8.35	-5.54	4.39
1893-1894	5.04	1.08	4.25	-0.22	13.45	1.46
1894-1895	-0.58	1.02	31.10	5.30	-2.16	4.42
1895-1896	1.74	-1.23	9.31	7.13	1.54	3.82
1896-1897	5.75	8.75	21.00	-3.33	8.03	5.04
1897-1898	7.26	1.90	9.35	-6.88	6.83	3.76
1898-1899	5.88	1.20	12.55	1.09	6.77	5.31
1899-1900	0.15	10.60	-7.59	3.87	2.11	-0.12
1900-1901	2.75	3.03	-12.34	-5.80	-11.03	2.10
1901-1902	1.09	1.51	-6.66	10.55	10.47	-0.18
1902-1903	2.74	6.63	14.17	11.53	6.49	5.48
1903-1904	5.48	1.95	11.49	-4.46	4.78	3.89
1904-1905	-2.96	5.17	4.17	9.14	1.26	0.20
1905-1906	9.11	-2.89	14.87	6.32	8.70	8.40
1906-1907	8.00	2.50	1.82	1.13	0.86	6.87
1907-1908	-1.90	8.01	-17.02	-3.82	-11.61	-1.37
1908-1909	4.50	1.38	-17.19	-6.45	0.16	0.26
1909-1910	1.05	-3.03	24.38	23.32	9.12	5.59
1910-1911	-1.38	-0.10	17.63	12.75	1.32	3.62
1911-1912	4.19	3.74	0.68	9.53	9.26	3.80
1912-1913	6.79	1.00	22.53	3.83	11.79	6.41
1913-1914	-4.05	3.94	-9.93	-10.61	-25.12	-0.58
1914-1915	-1.64	8.00	-9.04	54.13	40.98	2.90
1915-1916	1.68	10.05	11.63	-2.51	-13.13	6.33
1916-1917	-5.07	-18.48	-9.84	-43.34	-45.09	-11.95
1917-1918	5.04	20.46	-16.81	-14.39	9.41	-2.19
1918-1919	20.32	-33.64	13.24	2.06	69.03	1.44
1919-1920	3.19	29.34	18.31	13.95	20.87	4.75
1920-1921	-12.32	1.52	-31.46	-21.98	-35.05	-9.85
1921-1922	9.04	6.01	-0.06	37.43	10.53	11.61
1922-1923	1.20	2.73	50.24	-1.93	14.66	3.28
1923-1924	2.92	2.13	6.12	20.20	7.80	5.46
1924-1925	-1.50	1.22	6.19	10.74	9.37	0.17

TABLE G: *Volume growth rates of various expenditures, continued.*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1925-1926	9.97	3.13	-7.24	7.80	5.53	7.04
1926-1927	-1.00	0.21	7.65	19.26	5.86	3.18
1927-1928	5.41	3.83	10.82	-3.69	13.30	2.24
1928-1929	5.52	4.94	4.67	18.89	8.83	7.58
1929-1930	5.02	4.36	16.38	-7.66	3.54	3.97
1930-1931	6.74	5.88	-19.34	-18.53	-5.40	-0.85
1931-1932	-2.65	0.28	-19.95	-16.27	-18.97	-4.18
1932-1933	1.35	-0.94	1.59	12.50	-4.17	3.68
1933-1934	0.83	0.63	44.11	16.77	15.01	6.39
1934-1935	3.86	3.83	28.88	1.99	9.99	6.47
1935-1936	4.61	5.41	5.42	14.33	7.04	6.04
1936-1937	2.70	6.26	2.48	4.97	7.57	2.51
1937-1938	3.70	8.66	9.95	0.99	7.89	3.97
1938-1939	7.12	29.05	13.50	10.29	16.67	9.33
1939-1940	-7.14	7.28	-32.41	-32.42	-36.31	-8.74
1940-1941	-4.04	10.82	-12.58	-7.70	-26.15	0.19
1941-1942	-3.57	1.40	35.43	-8.44	0.12	1.28
1942-1943	4.60	3.48	14.83	-6.67	0.00	5.49
1943-1944	3.43	3.67	8.94	-25.48	-8.63	3.09
1944-1945	-7.56	-1.68	-1.28	54.95	-36.88	2.08
1945-1946	23.04	-15.90	33.44	60.72	225.57	10.80
1946-1947	10.52	1.55	21.50	15.14	45.08	6.74
1947-1948	-0.51	7.45	-11.78	10.47	-9.29	1.53
1948-1949	-1.83	5.32	-1.73	1.82	-14.07	2.28
1949-1950	12.78	4.29	-1.38	22.29	33.65	7.00
1950-1951	-1.03	4.81	27.62	6.73	14.73	3.54
1951-1952	3.73	5.51	-3.65	-7.78	-5.84	1.52
1952-1953	2.47	8.73	-5.69	3.83	-0.04	2.39
1953-1954	4.03	4.96	19.59	10.68	16.60	6.19
1954-1955	3.20	2.10	8.56	5.23	9.60	3.27
1955-1956	2.91	5.08	1.36	9.40	7.23	3.33
1956-1957	1.52	3.04	1.17	8.97	6.90	2.13
1957-1958	2.41	4.66	2.63	0.05	2.64	2.22
1958-1959	3.61	5.03	7.45	6.08	3.48	5.29
1959-1960	1.75	1.74	16.06	12.31	16.24	4.23
1960-1961	5.70	3.45	3.13	5.20	0.20	5.82
1961-1962	3.89	6.22	3.79	8.09	5.68	4.78
1962-1963	5.18	9.53	3.83	7.30	7.14	5.63
1963-1964	4.59	2.95	14.69	12.04	9.69	7.31
1964-1965	4.70	4.72	6.13	5.57	11.27	3.88
1965-1966	1.94	5.46	-0.62	4.86	4.25	2.00
1966-1967	2.28	4.64	1.39	5.51	2.46	3.14

TABLE G: *Volume growth rates of various expenditures, continued.*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1967-1968	4.11	6.88	1.04	7.61	8.28	3.76
1968-1969	4.44	5.41	8.24	11.47	12.90	5.24
1969-1970	3.50	8.13	10.84	8.65	10.36	5.88
1970-1971	0.09	2.19	-9.89	4.77	-3.32	-0.08
1971-1972	3.43	2.44	-0.08	5.86	3.97	2.85
1972-1973	2.58	2.53	-0.71	13.69	6.93	3.54
1973-1974	3.38	3.00	15.29	5.31	9.94	4.61
1974-1975	2.80	4.63	3.90	-9.28	-3.47	1.65
1975-1976	4.16	3.55	-3.43	4.32	9.01	0.91
1976-1977	-1.04	2.88	-14.20	1.46	-3.75	-1.51
1977-1978	-0.71	3.28	-13.23	7.80	-5.47	1.56
1978-1979	2.42	4.75	17.06	6.14	11.62	4.14
1979-1980	-0.80	2.29	8.25	-0.64	0.43	1.54
1980-1981	-0.26	2.34	-13.64	2.07	-5.36	0.03
1981-1982	0.72	0.91	-2.49	5.80	3.02	1.02
1982-1983	-1.99	0.85	-0.19	9.78	0.79	2.08
1983-1984	1.47	2.18	11.10	6.81	5.35	3.89
1984-1985	2.68	2.20	11.95	1.41	6.91	2.33
1985-1986	4.43	1.19	-0.89	3.73	4.49	2.26
1986-1987	4.56	0.91	8.26	4.26	7.70	3.19
1987-1988	2.43	0.85	6.65	2.50	5.34	1.95
1988-1989	1.17	1.87	13.32	3.11	7.39	2.50
1989-1990	-0.40	2.58	-0.02	1.63	0.67	0.78
1990-1991	0.92	2.74	-14.35	-2.32	-4.91	-1.07
1991-1992	-1.40	-0.04	-6.09	2.34	1.14	-1.48
1992-1993	-3.06	0.23	-20.46	7.64	-2.50	-2.07
1993-1994	1.78	-0.62	11.98	13.96	13.15	3.09
1994-1995	1.06	-0.44	12.06	11.54	7.20	4.04
1995-1996	1.64	0.80	-2.55	3.71	3.02	1.15
1996-1997	2.67	-0.97	-1.34	13.82	12.54	2.22
1997-1998	2.97	3.25	8.30	8.61	11.31	3.18
1998-1999	3.80	1.59	2.24	7.36	4.87	4.12
1999-2000	4.96	-1.22	9.61	11.30	11.53	4.15

Sources: See chapter 5.

TABLE H: *Annual changes (in percent) in the prices indices (purchasers' prices) of various expenditures and of GDP by expenditure.*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1800-1801	13.74	-3.82	-0.24	-0.19	2.76	10.44
1801-1802	-2.75	-4.24	0.21	-1.64	-9.66	-1.61
1802-1803	-3.35	-4.67	-1.33	3.25	0.55	-2.76
1803-1804	-3.93	2.88	5.14	1.93	1.73	-2.76
1804-1805	3.56	-0.78	5.52	1.91	-5.84	4.58
1805-1806	5.92	20.39	3.68	1.42	13.79	5.56
1806-1807	10.76	-0.21	0.06	0.99	-2.93	9.41
1807-1808	10.66	26.83	18.52	15.14	-0.33	14.19
1808-1809	10.68	-11.44	12.67	-0.93	19.26	6.31
1809-1810	-3.92	-7.72	14.96	4.29	15.51	-5.11
1810-1811	1.25	32.70	9.41	4.45	5.96	3.76
1811-1812	29.25	23.81	18.60	14.57	16.75	28.09
1812-1813	12.38	1.32	9.95	-3.40	-0.53	11.89
1813-1814	-0.21	-7.02	0.30	7.00	13.24	-2.18
1814-1815	-5.33	-4.28	-0.87	1.71	-6.12	-4.04
1815-1816	-0.66	13.13	6.07	9.84	4.91	1.48
1816-1817	6.45	3.02	-0.73	-1.11	-4.70	5.98
1817-1818	7.12	6.76	0.40	11.38	11.11	6.89
1818-1819	6.00	0.48	-1.26	0.18	0.71	4.88
1819-1820	-5.57	-17.52	-2.17	-2.11	-3.01	-6.33
1820-1821	-12.51	-11.73	0.60	-4.17	-13.76	-10.75
1821-1822	-8.31	1.68	-3.31	0.28	-3.54	-6.80
1822-1823	0.81	-7.33	1.62	6.87	12.88	-0.42
1823-1824	-6.87	0.49	2.08	-2.55	-16.97	-4.12
1824-1825	4.78	1.93	5.87	13.21	7.38	5.38
1825-1826	5.02	13.03	-3.92	-12.87	-5.50	4.08
1826-1827	17.03	-1.01	2.28	-0.98	2.29	14.12
1827-1828	-14.93	-11.90	-0.63	-2.17	-7.80	-13.40
1828-1829	-6.90	13.92	-2.61	0.54	-3.32	-4.64
1829-1830	7.49	5.93	-0.25	-4.32	-3.54	6.75
1830-1831	7.66	3.68	1.90	1.10	7.33	6.37
1831-1832	9.28	-5.61	2.09	-1.30	7.08	6.72
1832-1833	-10.87	-7.18	-0.25	0.16	7.46	-10.84
1833-1834	-5.02	6.60	0.33	2.30	-6.74	-2.98
1834-1835	4.11	-1.38	2.84	-1.60	-0.24	3.47
1835-1836	0.33	1.16	1.22	7.86	4.47	0.83
1836-1837	2.24	5.44	-0.99	0.81	-5.31	2.97
1837-1838	5.72	3.33	0.29	-2.21	5.00	4.46
1838-1839	4.93	-6.14	1.77	2.30	1.90	3.92
1839-1840	-5.79	-1.88	-1.29	-4.26	-1.88	-5.49
1840-1841	-0.34	0.95	2.30	-0.38	-3.94	0.31

TABLE H: *Annual changes in various prices indices, continued.*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1841-1842	7.10	-1.53	-0.52	-1.63	-5.90	6.59
1842-1843	-4.34	-3.55	-1.21	-7.58	-6.34	-4.23
1843-1844	-7.22	-15.38	-1.07	3.57	-2.10	-6.87
1844-1845	-8.58	26.70	-0.06	7.20	0.59	-4.70
1845-1846	20.57	0.40	1.73	2.47	1.23	17.10
1846-1847	3.46	-4.19	1.80	3.65	4.01	2.71
1847-1848	-3.40	-6.93	0.73	-9.58	-4.47	-4.04
1848-1849	-8.84	0.60	1.47	-0.18	4.49	-8.16
1849-1850	1.76	3.26	-0.39	0.71	6.20	1.06
1850-1851	3.94	6.32	-1.17	0.44	-3.60	4.28
1851-1852	4.26	-1.72	-0.08	-0.72	-5.68	4.14
1852-1853	0.11	13.34	3.76	21.87	8.00	3.09
1853-1854	14.12	-4.22	10.01	-2.29	2.00	11.23
1854-1855	2.73	13.68	18.22	12.98	7.00	5.77
1855-1856	14.63	3.34	6.77	-0.98	3.39	12.77
1856-1857	3.12	0.94	7.78	-1.71	11.14	1.42
1857-1858	-12.37	-6.61	-13.92	-11.70	-15.48	-11.67
1858-1859	-9.93	1.21	-2.75	-0.11	-2.39	-8.36
1859-1860	0.39	4.02	1.98	2.68	3.73	0.62
1860-1861	5.14	1.73	0.73	1.72	5.15	3.99
1861-1862	5.02	-0.31	2.72	-3.86	-4.77	4.97
1862-1863	-3.69	-0.18	0.02	2.31	-2.49	-2.44
1863-1864	-2.34	-5.62	-4.43	-1.27	6.78	-3.97
1864-1865	-4.78	5.28	-3.75	-3.66	-1.95	-4.28
1865-1866	1.91	4.55	-0.88	-1.29	0.70	1.41
1866-1867	3.68	8.72	-0.76	1.38	7.46	2.56
1867-1868	13.65	3.54	1.02	-2.19	-3.68	12.02
1868-1869	-3.02	-10.55	-6.18	-6.60	-5.76	-3.92
1869-1870	-10.88	-1.95	-0.55	-3.29	-2.41	-9.31
1870-1871	0.27	3.86	3.15	2.27	0.43	1.15
1871-1872	7.75	11.49	9.64	15.80	10.36	9.40
1872-1873	7.62	11.77	13.93	11.44	10.47	9.01
1873-1874	5.32	5.60	12.33	5.31	-5.33	9.24
1874-1875	-2.23	3.89	-6.36	-12.18	-3.62	-4.42
1875-1876	-3.12	-1.98	10.22	-2.84	-2.91	-0.98
1876-1877	0.13	-5.65	1.12	-1.23	3.79	-1.22
1877-1878	-5.31	-7.36	-9.52	-12.92	-12.50	-5.98
1878-1879	-7.29	-1.73	-5.14	-12.97	-0.70	-8.97
1879-1880	3.65	2.34	5.60	22.07	2.83	7.61
1880-1881	3.62	2.18	-0.11	-1.95	0.90	2.45
1881-1882	1.35	-1.73	0.15	2.11	-4.77	2.65
1882-1883	-3.89	-0.07	-0.66	-0.43	-1.81	-3.00

TABLE H: *Annual changes in various prices indices, continued.*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1883-1884	-1.02	-1.44	-2.92	-9.53	-4.37	-2.37
1884-1885	-4.77	-1.44	-2.91	-2.62	-5.34	-3.69
1885-1886	-6.31	-2.96	-5.15	-3.64	-3.68	-6.02
1886-1887	-2.71	-1.20	-1.16	-4.02	-6.20	-1.80
1887-1888	0.67	0.71	1.23	5.68	7.26	0.28
1888-1889	5.79	2.86	4.00	9.84	1.51	7.59
1889-1890	0.79	0.40	-0.23	-4.34	4.42	-1.67
1890-1891	0.35	1.34	-0.34	-0.58	-25.56	7.32
1891-1892	2.50	-1.01	-0.61	-0.41	29.25	-3.74
1892-1893	-5.66	-0.86	-2.55	-3.21	-2.72	-5.11
1893-1894	-3.51	-1.25	1.60	0.22	-5.46	-1.48
1894-1895	1.70	1.00	-0.15	-1.44	2.20	0.56
1895-1896	0.86	1.65	3.06	2.50	3.41	1.01
1896-1897	1.03	2.32	5.96	9.51	3.72	3.26
1897-1898	4.63	4.16	3.72	3.51	4.37	4.25
1898-1899	4.59	4.05	1.15	3.62	5.63	3.51
1899-1900	0.90	1.63	3.15	5.46	2.21	1.97
1900-1901	-3.34	-0.21	-0.94	-4.95	-1.30	-3.61
1901-1902	1.93	-0.53	-2.55	-4.26	-1.42	0.59
1902-1903	1.28	1.80	3.56	0.17	-0.86	1.92
1903-1904	-1.02	2.55	-2.33	-0.07	2.82	-1.67
1904-1905	3.39	-0.60	0.72	-0.87	-0.38	2.69
1905-1906	1.82	7.73	3.16	5.11	2.06	3.17
1906-1907	3.15	6.64	1.38	3.12	4.27	2.86
1907-1908	2.10	0.64	-0.33	-4.21	0.51	0.69
1908-1909	-1.10	3.48	0.43	5.30	2.52	-0.09
1909-1910	1.67	2.46	1.64	0.64	-0.28	1.97
1910-1911	-1.74	0.74	0.33	-0.95	2.40	-2.02
1911-1912	3.36	2.85	-0.79	2.59	3.43	2.53
1912-1913	0.87	1.49	2.42	4.23	-3.22	3.05
1913-1914	2.20	1.34	2.78	7.50	14.44	0.89
1914-1915	13.71	7.85	10.52	12.49	14.76	12.17
1915-1916	13.97	16.91	21.20	27.35	19.73	18.34
1916-1917	26.20	31.49	26.96	48.66	30.92	32.42
1917-1918	39.19	43.47	35.85	28.42	42.05	36.03
1918-1919	18.98	55.53	21.05	10.67	9.94	22.67
1919-1920	4.98	-10.89	9.26	18.54	8.25	5.85
1920-1921	-18.05	-0.93	-13.12	-39.72	-41.55	-14.56
1921-1922	-20.98	-20.09	-25.77	-24.40	-19.67	-22.12
1922-1923	-7.82	-12.55	-3.45	2.76	1.11	-7.52
1923-1924	0.07	-0.48	1.76	-8.92	2.08	-1.92
1924-1925	0.94	1.45	-0.01	-3.03	-7.16	1.71

TABLE H: *Annual changes in various prices indices, continued.*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1925-1926	-4.98	-5.61	-1.01	-2.70	-2.43	-4.51
1926-1927	-1.27	-0.21	-0.99	-4.43	0.49	-2.20
1927-1928	0.62	-1.25	-0.85	-0.01	-4.56	1.21
1928-1929	-3.24	-2.28	0.47	-3.54	-4.20	-2.44
1929-1930	-5.11	-2.58	-0.81	-5.09	-9.58	-3.19
1930-1931	-6.08	-3.45	-0.94	-10.40	-9.77	-5.12
1931-1932	-2.65	-1.62	-1.69	0.76	-0.18	-2.30
1932-1933	-0.74	-2.24	-5.14	-0.73	-0.98	-1.41
1933-1934	2.50	0.26	0.16	1.92	3.53	1.69
1934-1935	2.32	2.42	0.53	-2.09	2.83	1.16
1935-1936	1.45	-0.54	-0.69	1.45	3.36	0.53
1936-1937	5.41	4.04	9.34	25.26	20.86	6.83
1937-1938	0.34	2.79	0.95	-7.37	-9.10	1.08
1938-1939	2.17	2.84	0.53	-4.58	2.88	0.45
1939-1940	15.15	36.74	17.74	17.70	25.90	16.91
1940-1941	15.06	9.85	5.27	8.79	13.12	12.17
1941-1942	9.33	5.96	7.77	6.68	6.20	8.55
1942-1943	3.20	1.50	4.83	-0.91	1.91	2.92
1943-1944	0.92	2.87	0.25	4.08	1.18	1.35
1944-1945	0.55	-0.23	1.04	10.24	2.40	1.21
1945-1946	2.94	5.71	1.17	-4.32	-4.06	2.77
1946-1947	4.07	5.49	2.70	4.88	6.26	3.62
1947-1948	6.93	7.74	3.63	9.02	4.43	7.16
1948-1949	2.22	1.01	1.05	3.13	1.97	2.03
1949-1950	2.73	1.74	2.23	6.60	5.37	2.78
1950-1951	12.71	19.17	22.37	48.11	29.99	19.64
1951-1952	6.77	15.25	10.76	-1.44	3.38	7.45
1952-1953	1.66	1.34	-1.56	-9.86	-8.15	0.41
1953-1954	1.56	-0.17	-3.10	-1.09	-1.05	0.24
1954-1955	3.17	6.41	3.93	3.70	1.80	4.29
1955-1956	5.07	5.21	5.55	3.97	4.01	5.20
1956-1957	3.78	8.12	4.77	1.89	2.89	4.46
1957-1958	4.37	1.67	0.76	-3.85	-4.68	3.32
1958-1959	1.35	1.64	0.06	-2.00	-2.10	1.13
1959-1960	4.01	5.66	5.79	2.34	1.61	4.89
1960-1961	2.27	4.97	3.42	0.42	0.50	2.98
1961-1962	3.96	7.82	4.37	-1.64	1.21	4.04
1962-1963	3.00	1.99	3.25	1.05	1.62	2.76
1963-1964	3.56	7.69	5.11	1.26	3.43	4.20
1964-1965	5.45	8.43	5.96	2.06	1.84	6.17
1965-1966	6.56	9.68	4.74	1.66	1.53	6.71
1966-1967	5.40	7.19	3.17	1.37	1.37	5.19

TABLE H: *Annual changes in various prices indices, continued.*

Annual change	Private final consumption	Government final consumption	Investment	Export	Import	GDP
1967-1968	1.75	4.62	1.30	0.75	0.76	2.22
1968-1969	3.38	4.22	1.35	3.20	2.68	3.17
1969-1970	5.00	7.35	5.63	9.16	8.16	5.87
1970-1971	7.64	10.90	6.77	4.19	5.12	7.92
1971-1972	6.41	7.93	6.09	2.73	2.95	6.59
1972-1973	7.56	8.31	6.57	10.89	13.09	7.10
1973-1974	10.32	12.13	13.51	26.08	37.47	8.95
1974-1975	10.91	15.06	11.72	13.15	4.59	14.76
1975-1976	11.04	14.16	9.80	6.49	7.34	11.31
1976-1977	10.77	16.72	10.36	6.17	11.96	10.61
1977-1978	11.62	9.62	12.64	6.56	10.38	10.16
1978-1979	7.95	8.41	8.76	13.78	15.96	7.63
1979-1980	12.42	13.34	11.22	12.06	14.19	11.79
1980-1981	12.08	8.19	9.23	9.02	11.22	9.70
1981-1982	10.49	8.07	8.08	11.16	15.30	8.09
1982-1983	10.85	8.73	9.33	12.67	13.47	9.71
1983-1984	7.71	6.26	4.57	7.14	3.92	7.81
1984-1985	7.01	5.88	5.52	4.07	4.48	6.20
1985-1986	5.18	6.29	4.16	-1.93	-7.63	7.12
1986-1987	5.56	4.09	4.90	2.49	3.51	4.64
1987-1988	6.06	5.54	7.58	5.56	3.42	6.87
1988-1989	7.03	8.84	8.04	6.36	5.78	7.90
1989-1990	9.91	12.41	6.99	1.48	2.93	9.43
1990-1991	10.34	3.13	4.27	1.71	-0.09	7.55
1991-1992	2.21	2.10	-2.21	-2.92	-2.19	1.13
1992-1993	5.68	0.70	1.43	9.49	14.48	2.44
1993-1994	2.95	3.17	-0.44	3.41	3.52	2.54
1994-1995	2.79	3.70	1.59	6.95	5.71	3.47
1995-1996	1.27	4.09	-1.56	-4.55	-4.17	1.09
1996-1997	1.89	2.77	1.37	-0.20	0.76	1.58
1997-1998	0.82	1.88	1.16	-1.30	-0.49	0.71
1998-1999	1.18	3.46	1.92	-1.63	1.13	0.65
1999-2000	0.12	6.42	1.42	2.17	4.53	1.15

Sources: See chapter 5.

TABLE I: *Nominal value of gross investment (in purchasers' prices, million SEK) of various types of activities and total gross investment.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Building and con-struc-tion	Trans-port and commu-nication	Other private servi-ces*	Govern-ment services	Services of dwel-lings**	Total gross invest-ment
1800	2.140	1.013	0.017	0.631	0.305	0.196	1.201	5.503
1801	1.858	0.935	0.017	0.697	0.284	0.164	1.268	5.222
1802	1.953	0.966	0.015	0.646	0.323	0.181	0.990	5.075
1803	2.038	0.438	0.013	0.684	0.139	0.217	1.144	4.673
1804	2.117	0.741	0.018	0.720	0.200	0.196	1.152	5.145
1805	2.543	0.573	0.016	0.631	0.163	0.199	1.282	5.406
1806	2.649	0.487	0.013	0.703	0.167	0.216	1.423	5.658
1807	2.825	0.116	0.013	0.653	0.015	0.211	1.558	5.391
1808	4.291	-0.110	0.018	0.257	-0.134	0.072	2.292	6.687
1809	3.249	0.132	0.019	0.345	-0.008	0.064	2.009	5.810
1810	5.003	0.299	0.015	1.622	0.073	0.283	2.147	9.442
1811	5.073	0.636	0.016	1.554	0.204	0.373	2.531	10.386
1812	6.139	0.828	0.022	1.620	0.264	0.434	3.746	13.054
1813	4.914	1.689	0.028	1.741	0.510	0.404	2.796	12.082
1814	6.055	0.658	0.023	1.764	0.235	0.396	2.571	11.702
1815	5.529	1.700	0.035	1.545	0.603	0.449	2.576	12.437
1816	6.127	2.609	0.044	2.127	0.874	0.492	2.483	14.756
1817	5.529	1.081	0.032	2.112	0.327	0.468	2.926	12.475
1818	4.890	1.563	0.037	1.552	0.415	0.570	3.948	12.975
1819	6.841	1.905	0.042	1.897	0.551	0.523	4.042	15.800
1820	6.443	1.940	0.037	2.214	0.682	0.491	3.596	15.404
1821	6.221	1.358	0.029	1.985	0.501	0.502	3.284	13.880
1822	5.662	0.871	0.025	2.265	0.264	0.504	3.930	13.522
1823	5.088	0.697	0.027	1.991	0.169	0.499	2.393	10.864
1824	5.407	1.183	0.032	2.535	0.414	0.536	3.575	13.684
1825	5.588	1.450	0.030	2.509	0.557	0.535	2.263	12.932
1826	6.899	1.278	0.035	2.096	0.463	0.629	3.805	15.205
1827	5.244	2.224	0.039	2.105	0.836	0.559	3.269	14.275
1828	7.029	1.295	0.033	2.357	0.481	0.530	3.501	15.226
1829	6.501	1.353	0.031	2.001	0.552	0.555	3.400	14.394
1830	5.844	1.455	0.028	2.365	0.612	0.629	3.972	14.906
1831	6.622	1.648	0.032	2.655	0.664	0.727	4.523	16.872
1832	5.919	1.817	0.035	2.540	0.758	0.694	3.619	15.383
1833	6.757	1.426	0.033	1.448	0.548	0.594	3.448	14.254
1834	6.497	2.120	0.037	1.914	0.836	0.637	3.940	15.981
1835	6.030	2.879	0.046	2.231	1.072	0.668	4.055	16.981
1836	7.061	3.684	0.052	2.582	1.395	0.790	4.228	19.792
1837	8.613	2.412	0.040	3.005	1.043	0.827	4.975	20.916
1838	6.430	2.165	0.038	3.125	0.856	0.891	4.777	18.283
1839	8.194	2.700	0.048	3.908	0.932	0.854	4.916	21.551
1840	8.896	2.610	0.042	3.386	0.924	0.867	4.985	21.711

TABLE I: *Nominal value of gross investment, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Services of dwellings**	Total gross investment
1841	7.630	2.022	0.044	2.922	0.651	0.939	5.249	19.458
1842	7.943	1.446	0.042	4.059	0.354	0.978	6.087	20.908
1843	8.714	1.747	0.046	2.950	0.599	0.972	7.226	22.254
1844	8.287	2.799	0.055	2.905	0.991	0.955	6.758	22.750
1845	9.167	3.126	0.066	3.290	1.080	1.039	7.223	24.991
1846	9.367	3.159	0.064	4.387	1.210	1.159	7.749	27.094
1847	10.924	3.138	0.056	5.537	1.168	1.135	7.360	29.319
1848	12.253	3.643	0.057	4.626	1.437	1.099	7.143	30.258
1849	12.054	3.546	0.065	4.390	1.177	1.181	6.782	29.194
1850	12.097	3.899	0.072	4.959	1.314	1.222	9.424	32.988
1851	16.824	3.899	0.014	4.922	1.308	1.302	12.147	40.417
1852	17.958	3.513	0.088	5.343	1.079	1.356	10.602	39.939
1853	20.899	4.020	0.103	5.139	1.315	1.558	11.736	44.771
1854	22.693	4.959	0.105	6.581	1.741	1.671	11.779	49.529
1855	30.301	8.341	0.129	8.703	2.926	1.709	19.609	71.718
1856	27.390	11.840	0.129	13.191	3.988	1.729	23.776	82.043
1857	27.161	8.231	0.129	10.470	2.358	1.725	30.669	80.742
1858	25.742	7.075	0.119	9.942	1.496	1.691	21.700	67.765
1859	22.676	8.737	0.142	9.419	2.222	1.694	20.375	65.265
1860	24.226	10.660	0.147	9.760	3.669	1.760	22.325	72.548
1861	24.841	10.232	0.141	17.440	3.252	2.753	22.680	81.340
1862	24.989	8.117	0.157	22.057	1.881	1.879	26.687	85.767
1863	25.288	6.836	0.180	17.849	1.242	1.877	34.713	87.984
1864	27.540	13.379	0.195	27.667	3.261	1.880	32.000	105.922
1865	20.508	12.597	0.168	27.833	2.908	1.883	24.038	89.936
1866	27.973	10.415	0.160	21.272	2.522	5.433	20.061	87.836
1867	20.274	8.406	0.147	16.156	2.142	2.782	22.745	72.652
1868	12.055	9.772	0.148	12.966	1.450	2.796	16.091	55.278
1869	32.236	8.721	0.129	16.919	1.489	1.896	18.796	80.186
1870	29.183	13.343	0.146	14.624	4.153	2.801	24.193	88.444
1871	30.508	17.077	0.153	18.084	5.081	2.799	10.754	84.457
1872	38.456	19.647	0.225	41.364	4.702	3.673	34.878	142.945
1873	47.340	26.482	0.245	65.633	4.891	4.181	64.400	213.172
1874	38.045	36.950	0.690	85.715	4.688	4.862	60.693	231.643
1875	50.146	38.921	0.889	61.458	4.220	4.591	68.529	228.753
1876	42.939	34.876	0.452	52.733	7.670	6.359	69.963	214.992
1877	39.616	31.264	0.454	45.831	5.943	8.978	79.420	211.507
1878	39.908	21.838	0.481	40.589	2.329	7.244	71.359	183.747
1879	31.204	16.342	0.250	34.043	1.989	5.577	53.945	143.350
1880	29.894	21.890	0.249	26.517	4.271	5.611	73.016	161.449
1881	28.749	30.406	0.474	20.745	5.649	5.712	67.633	159.370
1882	36.362	37.779	0.287	21.007	5.385	5.882	47.289	153.991

TABLE I: *Nominal value of gross investment, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Services of dwellings**	Total gross investment
1883	35.427	34.482	0.272	26.810	4.788	5.644	59.574	166.998
1884	37.074	35.048	0.296	33.169	3.807	5.644	67.807	182.846
1885	38.758	34.261	0.297	33.271	4.145	5.780	56.922	173.433
1886	38.881	30.781	0.281	27.630	4.367	7.549	62.431	171.920
1887	33.035	25.905	0.275	25.362	2.989	6.529	39.328	133.423
1888	38.040	29.795	0.266	29.575	4.426	6.495	51.769	160.366
1889	35.384	39.817	0.477	28.046	7.013	6.495	60.064	177.295
1890	39.861	44.286	0.475	28.946	6.742	7.413	65.437	193.161
1891	34.667	39.255	0.258	33.277	6.563	7.976	31.265	153.260
1892	37.099	33.508	0.259	40.266	6.516	6.224	40.697	164.569
1893	33.644	28.340	0.257	43.983	5.200	7.108	24.409	142.941
1894	35.055	37.999	0.278	33.867	6.543	6.393	31.263	151.398
1895	31.459	44.573	0.531	25.303	6.649	6.766	82.890	198.172
1896	33.697	55.112	0.506	31.591	9.006	7.650	85.705	223.267
1897	30.586	72.835	0.588	38.878	12.301	8.839	122.228	286.256
1898	35.579	72.528	0.970	64.254	14.676	10.028	126.640	324.674
1899	34.066	90.205	1.087	81.418	16.134	11.763	134.970	369.643
1900	30.808	79.325	1.077	91.466	9.867	16.012	123.783	352.337
1901	32.415	63.969	1.063	81.683	7.505	15.297	104.007	305.938
1902	28.198	66.374	1.057	73.680	8.240	17.814	82.891	278.255
1903	33.153	76.151	1.081	58.670	13.242	21.829	124.889	329.015
1904	28.124	91.636	1.407	61.417	12.129	26.284	137.285	358.282
1905	34.414	87.014	1.210	64.242	10.620	28.968	149.436	375.904
1906	42.202	114.577	2.169	84.676	17.250	27.572	156.978	445.423
1907	41.864	153.387	3.309	73.597	24.633	25.261	137.743	459.794
1908	43.726	119.161	3.282	74.911	12.318	31.214	95.680	380.292
1909	40.167	83.779	2.752	71.786	4.408	25.603	87.810	316.306
1910	43.162	128.609	2.734	80.924	12.603	26.488	105.337	399.856
1911	34.962	148.973	2.613	84.728	31.594	25.976	143.092	471.938
1912	31.797	128.234	3.051	89.300	19.237	26.217	173.534	471.370
1913	38.613	196.066	5.128	99.804	38.161	27.677	186.072	591.520
1914	35.317	172.260	7.071	104.642	20.500	30.462	177.323	547.576
1915	54.766	174.159	6.915	114.269	23.655	34.808	141.938	550.510
1916	74.282	288.358	9.157	108.048	55.134	32.080	177.801	744.861
1917	53.068	324.947	13.563	145.224	50.534	42.071	223.262	852.669
1918	15.625	389.538	31.150	215.764	22.698	51.535	237.375	963.683
1919	164.031	437.594	19.408	250.049	63.803	87.320	298.853	1321.058
1920	153.102	675.683	32.463	318.592	90.802	103.501	333.482	1707.625
1921	86.425	273.885	18.884	260.209	7.430	132.344	237.678	1016.855
1922	61.715	135.526	10.012	197.296	26.420	127.791	195.532	754.293
1923	82.596	334.557	9.863	143.743	103.242	112.965	307.163	1094.129
1924	89.757	328.073	14.087	169.383	93.940	97.593	388.612	1181.443

TABLE I: *Nominal value of gross investment, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Services of dwellings**	Total gross investment
1925	92.14	313.41	14.04	224.61	80.41	102.90	427.02	1254.52
1926	96.97	284.00	14.07	141.52	70.89	103.58	440.94	1151.96
1927	97.45	300.03	13.92	193.74	88.20	92.29	442.15	1227.78
1928	103.52	346.28	16.48	226.22	79.12	97.25	480.23	1349.10
1929	113.19	402.43	18.89	176.56	117.32	108.68	481.69	1418.75
1930	113.83	439.93	21.50	194.13	117.64	126.23	624.48	1637.74
1931	60.06	356.12	15.74	176.54	73.99	135.07	491.17	1308.70
1932	45.96	205.71	15.04	128.05	45.87	149.63	439.55	1029.82
1933	72.35	216.19	12.45	117.42	46.83	156.69	370.46	992.39
1934	86.50	416.82	17.51	175.35	99.92	171.63	464.67	1432.40
1935	116.75	545.82	17.92	208.38	126.69	180.74	659.56	1855.85
1936	122.34	575.86	21.05	225.65	118.97	171.71	707.38	1942.96
1937	149.87	617.40	31.00	295.63	138.90	164.84	779.52	2177.16
1938	144.54	694.46	32.35	291.63	150.44	222.45	880.53	2416.40
1939	166.01	802.20	37.52	305.05	188.26	255.00	1003.09	2757.13
1940	77.83	803.02	61.19	313.90	169.16	327.73	441.27	2194.11
1941	88.89	659.21	61.76	324.52	83.91	374.45	426.57	2019.33
1942	179.02	980.15	68.23	331.44	133.14	349.78	905.64	2947.41
1943	227.60	1162.06	68.52	377.07	190.33	402.69	1119.73	3547.99
1944	245.54	1120.15	67.36	483.20	209.24	424.31	1324.94	3874.75
1945	225.25	1031.60	68.23	356.04	205.13	363.89	1614.98	3865.12
1946	293.28	1598.26	92.61	611.82	315.65	390.38	1915.72	5217.73
1947	312.84	2282.90	100.65	750.09	466.11	447.41	2150.77	6510.77
1948	356.63	2255.87	114.79	826.64	402.16	499.24	1496.98	5952.30
1949	386.31	2051.65	109.18	853.43	335.56	547.59	1626.86	5910.59
1950	518.09	1725.85	113.92	872.34	276.79	621.76	1830.07	5958.83
1951	521.10	3556.50	143.48	1287.08	783.93	825.58	2188.31	9305.98
1952	540.78	3816.36	180.06	1460.02	197.60	1187.04	2549.73	9931.59
1953	664.43	1902.19	191.86	1801.23	376.65	1474.20	2809.99	9220.56
1954	575.46	3180.48	234.47	1571.11	512.34	1517.64	3093.59	10685.08
1955	451.46	4027.35	268.29	1716.44	731.08	1625.76	3235.15	12055.54
1956	525.23	4008.92	287.93	1838.40	958.72	1734.07	3544.28	12897.54
1957	579.94	4422.25	327.79	1948.46	624.00	2013.90	3754.56	13670.90
1958	640.36	3964.79	341.99	2104.54	903.04	2192.23	3990.13	14137.09
1959	720.68	4027.41	420.61	2142.73	1027.70	2613.64	4246.46	15199.24
1960	644.06	6282.16	410.78	2541.32	1697.17	2542.18	4543.85	18661.52
1961	811.09	6925.91	488.07	2292.35	1528.33	2639.01	5218.57	19903.32
1962	838.02	6661.50	507.12	2542.68	2010.30	3056.42	5943.78	21559.82
1963	812.02	6575.51	614.92	2426.99	2346.77	3790.74	6546.12	23113.07
1964	1031.91	7982.46	656.91	2820.93	3140.48	4364.28	7866.54	27863.53
1965	1234.31	9339.27	676.86	2624.29	3596.39	4801.41	9061.73	31334.25
1966	1329.01	9647.57	650.92	3581.47	2843.55	5278.69	9285.85	32617.05

TABLE I: *Nominal value of gross investment, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Services of dwellings**	Total gross investment
1967	1240.2	8886.3	638.3	3834.9	2805.8	6059.4	10653.0	34118.0
1968	1349.1	8650.5	704.7	3314.3	3117.8	6890.3	10894.9	34921.6
1969	1281.7	11176.2	765.5	3149.0	3220.2	7411.2	11307.7	38311.4
1970	1333.4	15875.7	811.7	3396.4	3764.7	8338.0	11338.2	44858.0
1971	1757.1	13494.3	832.2	3898.3	3214.7	8080.7	11878.2	43155.5
1972	1697.4	12899.5	743.6	4728.2	4118.9	8557.6	12999.7	45744.8
1973	1906.8	13633.8	854.3	5491.0	4460.3	8316.4	13744.1	48406.7
1974	2427.9	21796.2	985.0	8079.9	7425.3	8784.4	13848.3	63347.0
1975	3816.9	30378.1	1265.5	6985.5	6108.3	9719.1	15263.7	73537.1
1976	4332.8	28958.0	1553.6	6968.2	9176.3	10386.6	16602.5	77978.0
1977	3960.8	19685.3	1391.4	9499.6	8278.3	12498.6	18527.4	73841.3
1978	3871.7	14637.6	1484.3	7659.0	7014.8	13922.8	23581.4	72171.4
1979	3987.0	20176.4	1713.8	10095.6	12966.0	15029.2	27913.5	91881.6
1980	4229.8	32011.0	2164.3	10900.7	14387.0	16900.9	30028.8	110622.5
1981	4912.7	28859.9	2267.0	10589.6	8737.1	18015.5	30969.0	104350.8
1982	5880.6	24634.2	2235.3	13156.2	13392.1	18408.4	32271.0	109977.8
1983	6371.1	27586.1	3016.0	12576.6	15914.0	19816.9	34728.6	120009.4
1984	6376.9	33518.6	3335.7	16761.2	18128.0	20502.4	40804.5	139427.3
1985	6483.0	48944.8	2887.0	17471.0	24552.3	21817.0	42544.9	164700.0
1986	6444.0	41896.4	3169.0	20912.0	30597.0	22196.0	44809.6	170024.0
1987	7124.0	48448.7	3982.0	23578.0	34176.4	23493.0	52274.9	193077.0
1988	8081.0	55482.6	4545.0	23562.0	39988.5	26704.0	63180.9	221544.0
1989	9857.0	67535.0	6954.0	29626.0	48829.2	31604.0	76828.8	271234.0
1990	8281.0	66422.5	7864.0	31923.0	50697.0	33142.0	91816.6	290146.0
1991	6208.0	42397.8	6245.0	30571.0	37817.2	33288.0	102590.1	259117.0
1992	6046.0	43006.5	3697.0	26506.0	34992.4	31996.0	91702.1	237946.0
1993	5590.0	38636.4	3153.0	22406.0	25414.1	34362.0	62411.5	191973.0
1994	6479.7	61703.0	3314.0	26044.0	36101.1	37632.0	42744.6	214018.4
1995	7455.7	84803.9	2891.0	39265.0	39807.2	36975.5	32451.9	243650.3
1996	7184.9	78105.1	3545.1	36831.8	37939.3	33701.8	36422.2	233730.2
1997	8786.4	78893.4	3937.3	42759.3	38731.3	28965.4	31691.2	233764.3
1998	8991.9	84410.0	4924.9	48305.4	45162.2	30941.4	33371.1	256106.9
1999	9790.0	75946.0	6473.9	53680.1	49640.2	32824.2	38511.4	266865.8
2000	10582.0	81411.0	6206.5	67589.6	56801.2	29745.4	44338.6	296674.2

Sources: See chapter 5.

*Other private services here include circulation (code CC), private reproductive services (code PR) and letting of other premises.

**Investment in services of dwellings only consists of investment in residential buildings.

Comment: Investment includes fixed investment and changes in inventories. Net investment can be obtained by deducting consumption of fixed assets (see TABLE J) from gross investment.

TABLE J: *Consumption of fixed assets (in current, purchasers' prices, million SEK) of various types of activities and total consumption of fixed assets.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Building and con-struc-tion	Trans-port and commu-nication	Other private servi-ces*	Govern-ment services	Services of dwel-lings	Total consump-tion of fixed assets
1800	1.928	0.370	0.014	0.534	0.097	0.139	1.039	4.121
1801	1.920	0.374	0.012	0.542	0.102	0.136	1.046	4.132
1802	1.912	0.392	0.014	0.547	0.105	0.140	1.046	4.156
1803	1.860	0.386	0.016	0.559	0.100	0.142	1.017	4.080
1804	1.982	0.423	0.017	0.598	0.109	0.152	1.086	4.366
1805	2.093	0.450	0.018	0.628	0.115	0.162	1.156	4.621
1806	2.181	0.455	0.018	0.653	0.115	0.168	1.196	4.786
1807	2.207	0.441	0.017	0.653	0.111	0.168	1.206	4.804
1808	2.656	0.477	0.013	0.730	0.132	0.190	1.496	5.696
1809	2.986	0.521	0.015	0.775	0.145	0.208	1.677	6.328
1810	3.459	0.587	0.016	0.909	0.166	0.241	1.958	7.336
1811	3.876	0.654	0.021	1.034	0.181	0.276	2.175	8.216
1812	4.625	0.765	0.022	1.248	0.216	0.329	2.621	9.826
1813	5.074	0.851	0.022	1.414	0.247	0.357	2.867	10.831
1814	5.083	0.845	0.025	1.463	0.239	0.362	2.829	10.846
1815	5.052	0.881	0.032	1.378	0.240	0.369	2.756	10.709
1816	5.353	1.022	0.042	1.477	0.271	0.409	2.923	11.496
1817	5.299	1.015	0.042	1.466	0.268	0.406	2.889	11.385
1818	5.311	1.048	0.044	1.477	0.275	0.415	2.917	11.486
1819	5.315	1.070	0.043	1.463	0.282	0.412	2.913	11.499
1820	5.257	1.042	0.039	1.422	0.278	0.399	2.863	11.300
1821	5.386	1.070	0.042	1.483	0.279	0.415	2.947	11.623
1822	5.202	1.042	0.044	1.454	0.263	0.411	2.871	11.288
1823	5.256	1.060	0.047	1.482	0.261	0.422	2.902	11.431
1824	5.364	1.063	0.045	1.530	0.268	0.433	3.028	11.731
1825	5.655	1.082	0.045	1.691	0.275	0.453	3.153	12.353
1826	5.437	0.987	0.037	1.645	0.259	0.427	3.030	11.823
1827	5.580	0.994	0.032	1.670	0.269	0.431	3.115	12.091
1828	5.647	0.988	0.031	1.703	0.271	0.434	3.160	12.235
1829	5.694	0.972	0.032	1.724	0.267	0.439	3.166	12.294
1830	5.611	0.941	0.032	1.762	0.257	0.436	3.114	12.152
1831	5.748	0.963	0.032	1.866	0.263	0.453	3.220	12.544
1832	5.845	0.985	0.032	1.931	0.268	0.470	3.305	12.835
1833	5.895	0.995	0.032	1.932	0.269	0.478	3.351	12.952
1834	5.935	1.012	0.032	1.951	0.275	0.486	3.409	13.100
1835	6.059	1.070	0.032	2.010	0.293	0.505	3.541	13.509
1836	6.109	1.138	0.037	2.076	0.305	0.519	3.560	13.743
1837	6.104	1.120	0.038	2.141	0.296	0.519	3.528	13.746
1838	6.178	1.131	0.038	2.267	0.299	0.534	3.595	14.042
1839	6.290	1.187	0.040	2.425	0.309	0.552	3.671	14.474
1840	6.255	1.198	0.040	2.514	0.307	0.556	3.662	14.532

TABLE J: *Nominal value of consumption of fixed assets, continued.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Building and con-struc-tion	Trans-port and commu-nication	Other private servi-ces*	Govern-ment services	Services of dwel-lings	Total consump-tion of fixed assets
1841	6.414	1.238	0.041	2.609	0.311	0.579	3.785	14.976
1842	6.435	1.256	0.043	2.709	0.304	0.587	3.805	15.139
1843	6.450	1.200	0.034	2.720	0.305	0.594	3.974	15.277
1844	6.428	1.199	0.035	2.694	0.302	0.598	4.006	15.262
1845	6.506	1.260	0.041	2.829	0.305	0.617	4.094	15.652
1846	6.647	1.318	0.048	2.995	0.306	0.640	4.194	16.147
1847	6.894	1.361	0.049	3.229	0.309	0.666	4.364	16.873
1848	7.145	1.403	0.049	3.303	0.312	0.689	4.525	17.426
1849	7.489	1.474	0.050	3.495	0.323	0.722	4.721	18.276
1850	7.703	1.555	0.055	3.602	0.324	0.740	4.843	18.822
1851	7.970	1.580	0.051	3.668	0.318	0.742	4.939	19.267
1852	8.374	1.620	0.053	3.780	0.318	0.759	5.093	19.995
1853	9.203	1.731	0.059	4.050	0.335	0.819	5.520	21.717
1854	10.396	1.891	0.064	4.492	0.372	0.915	6.205	24.335
1855	13.097	2.348	0.077	5.579	0.462	1.119	7.828	30.509
1856	14.760	2.822	0.086	6.512	0.506	1.224	8.854	34.763
1857	16.595	3.363	0.098	7.407	0.550	1.367	10.356	39.738
1858	14.557	3.211	0.093	6.772	0.469	1.169	9.020	35.290
1859	14.601	3.326	0.092	6.800	0.494	1.165	9.203	35.680
1860	15.221	3.517	0.098	7.090	0.527	1.207	9.758	37.418
1861	15.713	3.714	0.103	7.610	0.537	1.260	10.183	39.120
1862	16.624	3.856	0.104	8.338	0.563	1.324	11.037	41.847
1863	17.015	4.036	0.111	8.970	0.566	1.337	11.610	43.647
1864	16.738	4.353	0.120	9.421	0.567	1.294	11.548	44.041
1865	16.664	4.546	0.120	9.906	0.551	1.264	11.470	44.521
1866	17.073	4.744	0.123	10.397	0.557	1.374	11.755	46.024
1867	17.261	4.777	0.123	10.474	0.572	1.416	12.076	46.699
1868	17.112	4.836	0.121	10.519	0.565	1.438	12.078	46.669
1869	17.041	4.833	0.117	10.662	0.553	1.421	11.999	46.626
1870	17.666	4.695	0.107	10.313	0.581	1.468	12.533	47.362
1871	18.568	5.367	0.118	11.098	0.620	1.567	13.043	50.382
1872	20.614	6.199	0.130	12.813	0.679	1.749	14.735	56.919
1873	24.506	7.968	0.143	16.239	0.860	2.107	18.432	70.256
1874	28.186	11.396	0.252	21.167	1.038	2.448	21.681	86.168
1875	27.324	13.030	0.387	21.757	0.948	2.379	21.372	87.196
1876	31.435	14.606	0.410	25.332	1.218	2.868	26.558	102.427
1877	32.288	15.956	0.416	26.686	1.257	3.016	28.410	108.028
1878	29.668	15.915	0.419	25.243	1.074	2.885	26.826	102.031
1879	28.318	15.614	0.223	24.712	1.031	2.801	26.176	98.875
1880	30.044	14.153	0.228	24.980	1.179	3.037	29.465	103.087
1881	30.063	14.541	0.434	24.725	1.190	3.156	30.499	104.607
1882	30.162	15.060	0.233	24.689	1.160	3.266	31.068	105.638

TABLE J: *Nominal value of consumption of fixed assets, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Services of dwellings	Total consumption of fixed assets
1883	30.626	15.967	0.236	25.032	1.145	3.376	32.238	108.620
1884	29.852	16.942	0.238	24.795	1.102	3.292	31.655	107.876
1885	29.787	16.323	0.241	24.444	1.164	3.356	32.293	107.609
1886	28.882	16.345	0.242	23.637	1.088	3.355	31.691	105.240
1887	28.997	16.563	0.243	23.568	1.127	3.399	31.534	105.431
1888	29.356	18.135	0.244	24.343	1.198	3.482	31.906	108.665
1889	31.217	18.663	0.266	25.919	1.302	3.717	34.783	115.868
1890	31.822	19.594	0.288	26.299	1.318	3.888	35.634	118.842
1891	31.771	20.563	0.289	26.853	1.344	3.847	35.259	119.927
1892	31.706	20.986	0.285	26.943	1.416	3.864	35.026	120.226
1893	31.178	20.401	0.280	27.096	1.445	3.844	33.933	118.178
1894	31.883	20.465	0.280	27.807	1.577	4.049	34.955	121.016
1895	32.144	20.928	0.517	27.696	1.586	4.156	36.462	123.489
1896	33.827	21.813	0.298	29.549	1.721	4.541	40.063	131.812
1897	35.501	23.725	0.325	32.029	1.944	5.082	45.699	144.306
1898	37.115	25.909	0.468	35.205	2.333	5.493	50.140	156.662
1899	37.836	28.040	0.429	38.278	2.609	5.797	53.843	166.832
1900	39.113	31.700	0.491	41.916	2.906	6.491	57.020	179.635
1901	38.987	33.309	0.671	44.351	2.969	6.678	57.408	184.372
1902	37.659	32.661	0.707	45.299	3.003	6.770	57.082	183.182
1903	39.299	33.649	0.598	47.438	3.219	7.650	62.454	194.306
1904	37.866	32.961	0.664	47.602	3.285	8.101	64.431	194.911
1905	38.131	34.612	0.714	48.046	3.436	8.913	68.283	202.135
1906	39.180	38.132	0.906	51.055	3.749	9.814	72.536	215.371
1907	40.002	42.756	1.018	53.412	4.085	10.457	74.773	226.501
1908	40.054	45.984	1.310	54.826	4.213	10.999	75.265	232.652
1909	40.296	48.140	1.387	56.188	4.496	11.722	77.381	239.610
1910	41.699	50.924	1.516	58.626	4.489	12.319	79.998	249.570
1911	42.282	53.814	1.608	59.921	5.074	12.851	81.831	257.380
1912	42.158	55.612	1.729	62.161	5.382	13.172	85.292	265.505
1913	44.057	61.382	2.021	65.460	6.345	14.032	91.074	284.371
1914	46.052	66.193	2.496	69.571	6.894	15.189	97.910	304.305
1915	52.528	77.211	3.009	81.215	7.800	18.310	115.371	355.444
1916	64.774	102.852	4.511	101.644	11.007	22.781	136.788	444.357
1917	82.256	139.640	5.912	127.688	15.918	29.530	167.030	567.973
1918	115.969	205.982	12.108	184.673	22.861	41.618	236.020	819.232
1919	134.344	246.117	13.764	231.474	28.617	49.721	295.097	999.135
1920	151.929	288.188	15.543	255.896	32.056	56.554	328.271	1128.437
1921	129.859	246.284	17.899	223.575	26.380	51.257	294.184	989.438
1922	94.834	184.859	17.067	168.078	19.966	39.519	213.489	737.811
1923	91.768	181.428	9.013	149.194	20.834	41.529	217.279	711.045
1924	93.925	181.958	12.017	160.209	22.172	46.653	242.605	759.539

TABLE J: *Nominal value of consumption of fixed assets, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Services of dwellings	Total consumption of fixed assets
1925	94.85	184.28	12.25	160.03	23.18	49.19	251.68	775.45
1926	95.53	186.59	9.04	163.22	24.80	50.75	257.60	787.54
1927	93.10	187.98	11.48	167.70	26.68	51.69	261.13	799.76
1928	91.36	189.59	13.90	171.63	27.66	52.71	267.52	814.36
1929	92.77	197.82	11.43	180.21	29.97	54.57	274.15	840.92
1930	92.75	207.40	14.02	181.98	32.70	56.52	283.04	868.41
1931	91.77	214.37	12.60	183.77	34.17	58.37	289.42	884.47
1932	87.87	212.98	12.81	176.32	33.86	59.55	288.80	872.20
1933	84.04	202.77	13.96	159.64	32.89	59.42	276.94	829.66
1934	84.24	209.15	14.79	156.38	34.93	63.15	282.62	845.26
1935	84.86	216.90	15.06	162.51	36.16	67.23	292.63	875.33
1936	85.67	228.35	14.39	169.01	38.55	69.81	297.66	903.44
1937	97.27	267.37	16.84	195.87	46.16	80.60	336.82	1040.92
1938	101.90	289.17	18.43	201.64	51.39	86.76	359.78	1109.07
1939	107.35	316.04	20.57	215.22	57.09	93.90	378.22	1188.39
1940	130.11	396.96	27.27	259.90	71.49	122.86	447.82	1456.42
1941	139.15	441.22	31.41	281.01	78.93	145.97	480.76	1598.44
1942	153.02	500.00	37.55	309.95	88.03	170.58	528.91	1788.05
1943	161.21	546.63	42.56	347.56	96.41	191.26	569.68	1955.32
1944	166.40	574.64	43.89	368.16	101.33	204.69	596.30	2055.42
1945	174.17	600.58	49.66	367.00	106.58	214.71	630.95	2143.64
1946	183.36	644.38	52.44	392.41	115.96	219.95	676.22	2284.73
1947	195.80	718.34	58.29	432.21	129.54	235.48	734.51	2504.17
1948	216.85	801.35	62.72	458.75	142.67	248.25	788.01	2718.60
1949	238.04	877.32	68.52	513.76	152.99	257.68	817.39	2925.70
1950	262.88	976.03	72.40	561.23	167.00	275.55	859.02	3174.10
1951	338.14	1298.25	91.68	690.56	220.83	351.46	1111.31	4102.22
1952	422.91	1551.01	116.79	896.01	257.84	416.98	1235.34	4896.89
1953	426.26	1572.71	119.30	986.65	265.18	443.33	1244.61	5058.03
1954	405.20	1616.52	115.14	1019.19	265.02	471.83	1269.71	5162.61
1955	425.72	1796.60	133.65	1077.83	294.29	523.69	1367.17	5618.95
1956	454.87	1979.07	156.72	1237.61	330.61	582.13	1477.64	6218.66
1957	484.66	2122.12	179.36	1394.78	360.29	650.14	1572.33	6763.69
1958	506.22	2228.44	191.33	1483.93	378.62	700.84	1644.05	7133.44
1959	516.39	2376.10	211.38	1488.59	411.50	764.24	1722.59	7490.80
1960	553.32	2708.58	241.21	1596.96	484.24	857.30	1919.36	8360.97
1961	585.07	3000.47	268.21	1705.95	558.26	928.37	2074.82	9121.15
1962	628.13	3355.85	298.06	1797.56	659.58	1030.73	2277.21	10047.11
1963	672.88	3669.04	328.34	1885.84	764.50	1152.44	2481.28	10954.32
1964	731.16	4034.38	362.66	1999.39	898.90	1297.09	2809.57	12133.15
1965	806.44	4448.96	403.17	2161.61	1051.11	1483.77	3200.20	13555.27
1966	891.03	4856.49	441.25	2291.30	1236.39	1685.47	3571.94	14973.87

TABLE J: *Nominal value of consumption of fixed assets, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Services of dwellings	Total consumption of fixed assets
1967	946.2	5255.2	468.2	2508.8	1364.5	1871.2	3882.0	16296.2
1968	990.4	5574.0	511.3	2712.8	1432.4	2061.2	4059.8	17341.8
1969	996.1	5767.6	531.2	2820.5	1507.6	2283.1	4364.2	18270.1
1970	1097.7	6527.5	595.9	2904.7	1696.6	2614.8	4693.7	20130.7
1971	1197.7	7289.1	650.2	3494.1	1891.6	2961.6	5088.2	22572.5
1972	1313.5	8050.2	694.2	3936.4	2075.8	3275.4	5642.6	24988.1
1973	1497.4	9092.6	751.8	4159.3	2379.6	3622.6	6249.4	27752.6
1974	1783.0	11008.6	870.0	5345.1	2861.8	4241.6	6982.1	33092.3
1975	2026.0	13003.4	1019.7	6180.9	3379.5	4860.1	7982.8	38452.6
1976	2402.5	15031.0	1180.0	7113.6	3938.1	5605.3	9608.2	44878.6
1977	2793.9	17068.0	1331.3	7624.0	4567.4	6462.3	11291.2	51138.1
1978	3168.0	18995.0	1450.5	9231.4	5150.8	7294.9	13133.9	58424.6
1979	3472.4	20503.4	1580.1	8650.2	5839.3	8269.3	15397.5	63712.2
1980	3889.3	22950.0	1768.1	9204.9	6761.2	9612.9	18242.2	72428.7
1981	4236.8	25403.4	1929.2	9959.1	7684.1	10902.5	20516.9	80631.9
1982	4639.7	28424.2	2105.4	10953.3	8827.2	12025.3	22221.0	89196.1
1983	5332.9	31951.6	2315.4	12009.5	10478.6	13484.8	24473.8	100046.7
1984	5613.1	33715.7	2530.3	12836.7	11585.7	14600.3	26592.8	107474.6
1985	5995.7	36501.0	2698.1	14111.1	13269.4	15835.0	28627.1	117037.5
1986	6418.7	38673.4	2871.8	15281.6	15120.9	16877.8	30548.5	125792.7
1987	6747.9	41021.7	3085.4	16415.8	17400.9	18117.9	33256.7	136046.3
1988	7255.0	44634.7	3344.4	17833.7	20222.7	19980.4	38190.5	151461.4
1989	7610.5	49143.3	3828.9	19535.1	23704.9	22214.0	44705.1	170741.8
1990	8114.6	53591.1	4352.4	20871.3	26997.4	24557.7	51604.8	190089.2
1991	8390.3	55136.1	4457.0	20706.1	28441.8	23565.4	61834.0	202530.6
1992	8337.2	54388.8	4379.6	20798.6	28661.1	23294.8	61409.5	201269.5
1993	8890.6	56995.4	4534.2	21691.3	29539.7	24037.7	60112.2	205801.1
1994	8839.7	57863.9	4406.6	22108.2	29577.1	24508.4	58573.1	205877.0
1995	9041.3	60004.8	4440.2	22274.4	29373.7	25616.2	60513.8	211264.5
1996	8996.1	61169.9	4306.1	21973.9	29048.1	25874.6	61559.1	212927.8
1997	9134.1	64181.5	4318.5	22656.7	30005.4	26616.9	63278.0	220191.2
1998	9253.4	66652.3	4350.6	24377.7	30824.1	27345.4	65794.5	228597.9
1999	9548.8	69218.5	4473.5	27074.3	33010.4	28358.1	67073.8	238757.4
2000	9797.1	70856.9	4609.2	29761.7	34820.9	29510.3	72698.3	252054.5

Sources: See sections 5.4 and 5.5.1.

*Other private services here include circulation (code CC), private reproductive services (code PR) and letting of other premises (l.o.o.p.).

TABLE K: *Net (capacity) stock of various types of produced assets (in current, purchasers' prices, million SEK), aggregate economy, and the total net stock of produced assets of the aggregate economy, of the private sector and of manufacturing and handicrafts (1st of January each year).*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1800	32.758	56.115	5.434	17.396	15.682	127.386	123.513	18.613
1801	32.920	57.149	5.130	18.703	17.232	131.133	127.233	19.641
1802	33.142	58.119	5.286	19.005	17.335	132.887	128.940	19.742
1803	32.052	56.583	5.508	18.824	17.905	130.872	126.977	20.545
1804	34.255	60.204	5.733	18.958	17.267	136.417	132.192	20.913
1805	36.401	64.430	6.059	22.857	18.320	148.067	143.536	22.042
1806	37.571	66.308	6.303	19.549	20.038	149.769	145.070	22.670
1807	37.798	66.273	6.358	20.360	21.217	152.007	147.263	22.961
1808	46.627	81.274	6.100	25.358	24.352	183.712	177.957	24.857
1809	52.812	90.765	6.774	40.566	23.583	214.500	208.229	26.583
1810	61.821	105.145	7.394	51.192	23.430	248.981	241.874	28.456
1811	68.537	116.586	8.877	52.295	23.023	269.318	261.376	30.139
1812	82.015	139.437	10.111	50.428	32.136	314.127	304.585	35.090
1813	90.900	154.680	11.199	49.387	35.150	341.316	330.807	39.267
1814	89.721	154.651	12.281	48.399	37.312	342.364	331.881	41.490
1815	87.255	150.584	12.955	45.927	38.591	335.312	324.951	41.964
1816	92.586	160.898	13.621	41.953	40.917	349.974	338.757	45.651
1817	91.049	161.883	13.235	44.827	42.895	353.889	342.709	47.335
1818	91.086	162.834	13.441	37.622	44.836	349.819	338.537	49.119
1819	91.007	162.290	13.028	38.024	48.157	352.506	341.201	50.073
1820	89.890	160.996	12.701	49.713	48.165	361.465	350.364	51.143
1821	92.888	166.136	13.409	46.468	44.766	363.668	352.150	50.716
1822	89.815	159.665	13.741	43.473	42.917	349.611	338.355	48.886
1823	92.024	161.959	14.040	52.949	44.062	365.034	353.480	49.462
1824	94.947	167.798	13.199	50.896	42.820	369.660	357.621	49.793
1825	100.097	176.252	14.404	51.571	47.087	389.411	376.692	52.730
1826	94.645	168.130	13.169	40.948	48.494	365.386	353.239	51.037
1827	97.719	173.396	12.764	57.600	54.041	395.520	382.944	53.942
1828	99.025	176.249	13.009	61.379	51.415	401.077	388.252	54.033
1829	99.366	175.842	13.655	53.318	49.477	391.659	378.724	52.507
1830	97.284	171.371	13.996	54.761	51.875	389.287	376.531	52.359
1831	100.479	174.854	14.936	59.885	54.019	404.173	390.929	53.142
1832	104.148	180.172	15.109	60.215	57.234	416.879	403.052	54.681
1833	105.650	182.443	15.411	66.079	56.452	426.034	411.829	55.169
1834	106.936	183.154	15.390	65.618	56.608	427.706	413.239	55.334
1835	111.049	189.092	15.385	58.411	60.287	434.224	419.141	58.659
1836	111.563	190.167	16.020	57.122	63.940	438.812	423.524	61.642
1837	109.818	188.195	16.479	58.513	67.048	440.052	424.816	63.531
1838	112.487	191.809	17.900	62.733	67.712	452.641	436.934	64.210

TABLE K: *Nominal value of the net stock of produced assets, continued.*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1839	114.90	195.16	19.10	76.17	71.41	476.75	460.48	67.80
1840	114.90	195.82	19.66	89.59	70.35	490.31	473.92	67.89
1841	118.75	201.59	21.04	93.81	71.67	506.86	489.80	69.89
1842	118.94	200.06	21.84	85.55	74.58	500.96	483.71	70.98
1843	123.83	206.27	20.57	66.90	73.42	490.98	473.09	69.43
1844	125.74	205.19	20.85	68.11	73.63	493.53	475.46	70.62
1845	128.49	206.56	22.28	64.81	71.93	494.07	475.61	70.76
1846	131.62	209.50	23.50	71.88	78.99	515.49	496.55	73.99
1847	138.05	218.39	24.83	91.28	82.15	554.70	534.84	76.21
1848	143.99	227.11	25.15	105.50	83.75	585.48	564.75	77.14
1849	151.09	236.99	28.07	99.01	84.73	599.87	578.11	81.01
1850	153.15	240.02	29.82	90.19	87.50	600.68	578.43	82.31
1851	154.61	239.06	31.56	80.68	91.98	597.89	575.60	85.98
1852	161.82	247.82	33.31	82.76	95.72	621.43	598.59	87.59
1853	175.78	270.97	36.47	66.97	96.46	646.65	622.06	90.25
1854	199.49	310.21	39.02	116.17	111.21	776.10	748.38	100.83
1855	248.24	391.01	46.01	142.78	126.58	954.62	920.21	117.29
1856	280.74	436.78	55.14	161.74	139.03	1073.43	1035.66	126.98
1857	327.42	499.06	67.97	140.11	150.92	1185.47	1143.10	142.41
1858	290.83	422.64	67.51	132.09	144.75	1057.81	1022.01	133.59
1859	299.11	425.06	70.05	107.68	138.27	1040.16	1004.40	133.72
1860	317.13	446.08	73.74	137.01	141.38	1115.34	1078.26	140.23
1861	332.06	462.04	74.59	137.31	151.20	1157.21	1119.31	147.75
1862	358.85	499.03	77.71	150.52	161.65	1247.75	1206.80	157.88
1863	372.88	515.86	84.19	136.36	167.79	1277.08	1235.77	165.04
1864	375.07	502.95	86.41	127.13	166.79	1258.34	1218.60	164.57
1865	380.38	509.35	89.54	118.24	167.32	1264.84	1226.13	168.59
1866	393.53	531.99	96.56	130.22	168.81	1321.11	1281.79	173.93
1867	401.99	552.38	97.77	135.39	171.33	1358.86	1315.51	174.43
1868	407.68	557.62	94.38	106.21	175.90	1341.79	1297.73	176.40
1869	401.88	555.19	94.03	144.82	173.60	1369.51	1325.25	176.69
1870	414.66	574.93	89.35	169.19	168.52	1416.66	1371.43	171.38
1871	443.14	608.52	96.78	180.06	179.37	1507.87	1459.46	183.64
1872	477.57	675.68	103.39	195.77	230.20	1682.59	1628.76	226.84
1873	579.66	831.10	119.64	219.97	273.89	2024.25	1959.49	273.13
1874	698.31	996.18	161.98	178.83	303.85	2339.15	2264.87	322.15
1875	682.27	996.67	182.43	205.80	284.09	2351.25	2279.71	323.35
1876	864.15	1243.70	196.55	199.50	271.52	2775.42	2688.49	343.45
1877	921.39	1302.69	215.09	194.03	279.05	2912.26	2820.89	362.76
1878	873.05	1199.72	217.93	209.05	249.07	2748.83	2660.97	335.81
1879	865.61	1161.03	214.22	204.31	232.25	2677.41	2590.53	319.04
1880	963.74	1273.10	185.38	200.62	267.49	2890.33	2794.32	342.09

TABLE K: *Nominal value of the net stock of produced assets, continued.*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1881	1007.1	1278.7	184.2	183.6	274.8	2928.4	2829.8	345.2
1882	1046.0	1283.3	182.9	224.0	294.4	3030.5	2929.1	371.8
1883	1076.8	1304.7	186.4	230.2	289.2	3087.2	2982.1	372.8
1884	1050.1	1247.1	199.5	226.8	304.6	3028.1	2926.0	393.4
1885	1082.8	1259.8	188.0	209.0	297.4	3036.9	2932.9	385.5
1886	1059.6	1223.8	188.9	181.0	277.0	2930.3	2828.5	376.6
1887	1073.2	1223.1	193.2	176.1	284.8	2950.5	2846.2	390.0
1888	1068.1	1222.5	210.3	202.9	309.5	3013.3	2907.2	427.3
1889	1157.0	1315.4	207.4	201.9	333.3	3214.9	3099.6	449.8
1890	1176.3	1315.3	221.6	238.8	348.9	3300.8	3182.5	464.2
1891	1189.8	1303.4	238.1	243.7	369.9	3344.9	3225.3	486.5
1892	1165.8	1290.4	248.0	243.8	393.4	3341.4	3219.5	509.6
1893	1136.0	1266.3	248.2	223.1	399.7	3273.4	3152.8	512.9
1894	1159.0	1325.2	244.7	235.1	413.5	3377.5	3250.0	528.9
1895	1159.0	1339.9	248.2	232.6	424.0	3403.7	3273.5	544.4
1896	1278.6	1423.4	251.1	227.4	434.9	3615.4	3474.6	575.6
1897	1441.6	1552.4	259.8	233.7	485.5	3973.0	3816.2	636.9
1898	1593.7	1643.3	280.3	263.5	530.7	4311.5	4143.6	693.6
1899	1715.4	1714.6	299.6	260.4	568.8	4558.7	4382.4	735.0
1900	1838.5	1807.1	350.9	286.3	632.1	4914.8	4726.4	837.1
1901	1870.3	1829.2	392.1	287.5	634.8	5013.9	4819.0	863.8
1902	1881.1	1842.1	383.9	297.2	634.6	5038.8	4841.6	867.3
1903	2027.4	2001.9	382.2	319.7	663.3	5394.5	5173.0	921.5
1904	2086.6	2028.5	353.7	288.1	679.6	5436.6	5202.2	934.1
1905	2210.5	2120.0	356.9	301.3	717.6	5706.3	5448.1	1004.7
1906	2360.4	2228.9	379.7	360.2	788.8	6118.1	5830.7	1097.1
1907	2462.2	2316.6	416.3	411.5	854.2	6460.9	6152.8	1188.7
1908	2524.5	2377.3	457.1	416.4	912.2	6687.6	6364.9	1290.0
1909	2607.2	2494.4	472.8	403.3	909.1	6886.7	6535.9	1335.2
1910	2671.9	2587.8	494.6	400.1	928.8	7083.1	6711.2	1418.5
1911	2694.5	2649.6	523.6	380.9	972.2	7220.8	6833.9	1507.9
1912	2778.1	2753.5	532.1	458.3	1000.9	7522.9	7119.9	1571.2
1913	2960.5	2900.1	562.5	511.3	1067.1	8001.4	7572.3	1695.6
1914	3196.7	3140.7	596.0	473.9	1157.2	8564.5	8100.3	1859.4
1915	3818.8	3756.2	677.1	669.8	1236.1	10158.1	9598.6	2113.2
1916	4509.0	4497.9	968.2	838.4	1543.0	12356.5	11674.8	2668.3
1917	5496.5	5529.4	1349.2	891.7	2237.2	15504.0	14655.6	3617.5
1918	7812.5	7935.4	2005.1	1993.1	3166.6	22912.7	21703.0	5170.9
1919	9721.9	10132.1	2293.3	1774.9	3832.1	27754.2	26273.5	6444.8
1920	10761.3	11455.8	2573.1	1190.9	4223.6	30204.7	28528.9	7371.8
1921	9648.1	10454.5	2194.3	813.5	3824.6	26935.0	25410.8	6842.3
1922	6950.2	7666.2	1743.5	588.5	2709.6	19658.1	18501.7	5041.6

TABLE K: *Nominal value of the net stock of produced assets, continued.*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1923	6971	7866	1429	583	2413	19261	18018	4823
1924	7754	8738	1330	565	2423	20810	19370	4993
1925	8033	8965	1278	623	2585	21485	19966	5162
1926	8218	9073	1306	570	2627	21794	20221	5222
1927	8323	9015	1380	494	2626	21839	20231	5243
1928	8492	9066	1381	506	2716	22161	20517	5278
1929	8711	9171	1492	536	2832	22743	21052	5468
1930	8908	9263	1589	532	2876	23168	21425	5593
1931	9268	9439	1648	462	2858	23675	21864	5703
1932	9304	9419	1649	341	2787	23499	21646	5734
1933	8982	9037	1517	297	2640	22473	20630	5441
1934	9103	9122	1488	394	2675	22782	20841	5480
1935	9298	9273	1539	479	2939	23529	21478	5724
1936	9481	9260	1695	514	3263	24214	22089	6024
1937	10806	10398	2075	496	3724	27500	25059	6953
1938	11541	10903	2244	520	3952	29160	26580	7405
1939	12104	11249	2581	588	4068	30591	27870	7774
1940	15024	13721	3400	659	4998	37802	34429	9675
1941	16124	15044	3871	816	6015	41870	38073	11219
1942	17311	16525	4530	766	6215	45346	41021	12244
1943	18514	17684	5143	805	6550	48696	44006	13258
1944	19262	18275	5535	841	6561	50474	45557	13753
1945	20201	18829	6056	838	6831	52755	47553	14489
1946	21562	19580	6109	864	7086	55201	49815	14950
1947	23472	20893	6772	866	7832	59836	54033	16214
1948	26023	22815	7410	888	9491	66626	60362	18738
1949	26950	24091	8560	964	9985	70550	63973	20164
1950	28195	25514	9637	1031	10923	75300	68278	22037
1951	36605	32902	12533	1039	13204	96283	87193	28982
1952	40545	38030	16399	1307	15496	111778	101054	33579
1953	40594	39348	17132	1504	16963	115540	104069	34861
1954	41170	41645	16905	1375	16893	117987	105421	35421
1955	44629	46069	18604	1524	18100	128927	114763	38886
1956	48421	50826	21100	1631	20418	142396	126413	43143
1957	51654	55776	23280	1550	23179	155439	137378	47290
1958	54028	58737	24466	1604	24868	163703	144054	49864
1959	56594	62153	25445	1672	25871	171735	150329	52502
1960	63212	69985	28301	1783	26747	190028	165447	58108
1961	67976	76309	31014	1805	30010	207114	180264	63960
1962	74336	84344	34146	1895	33163	227884	198106	71119
1963	81125	92626	37117	2102	35169	248139	215105	76707
1964	91653	103041	40627	2432	37662	275415	238301	83819

TABLE K: *Nominal value of the net stock of produced assets, continued.*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1965	104531	114833	45336	2492	42053	309245	266763	92309
1966	117711	126766	49693	2433	46482	343086	295109	100984
1967	127640	138018	54579	2429	50393	373059	320169	108933
1968	133897	148493	59017	2551	52456	396413	338183	115137
1969	144403	160294	60467	2594	54923	422682	357580	120466
1970	156142	178418	66827	2704	61852	465942	391542	135060
1971	169653	197786	77945	2962	72388	520734	436152	151675
1972	188275	218653	86013	3441	77421	573802	479441	166294
1973	209046	244674	94784	4009	84183	636695	531521	185863
1974	234728	288143	116630	4529	94551	738581	614751	217970
1975	268592	328140	139514	5403	114021	855669	714141	254693
1976	324294	379980	162254	6490	124608	997626	833348	287949
1977	380992	435430	182916	7321	133876	1140536	952201	324001
1978	440082	482939	216187	7876	137467	1284550	1073395	352732
1979	514141	541034	220397	8688	134770	1419030	1179768	374037
1980	609885	616805	241647	9844	145747	1623928	1347066	412702
1981	686308	693288	267492	11419	154858	1813364	1500904	453773
1982	741435	755989	301853	12733	167812	1979822	1638845	501078
1983	813937	833285	343408	13937	183858	2188425	1811458	554014
1984	878188	899111	361281	15232	187418	2341231	1934691	582534
1985	943612	963300	394374	16418	191913	2509617	2073478	615955
1986	1004357	1015077	431528	16734	196457	2664152	2202898	646679
1987	1087035	1088097	463806	18908	188680	2846526	2355354	670937
1988	1242702	1193263	511036	21453	188783	3157237	2620131	716212
1989	1450456	1323449	561310	21938	196532	3553684	2961841	779619
1990	1670475	1457877	624203	21773	207409	3981737	3328732	850412
1991	2008336	1470503	650626	23137	217155	4369757	3744873	884876
1992	2003251	1441871	664552	26689	193735	4330098	3718632	863831
1993	1981643	1447071	714496	24684	190548	4358442	3739086	879581
1994	1939895	1452406	711398	26618	188805	4319122	3694751	875726
1995	2006030	1494057	708657	26464	212983	4448192	3794435	903116
1996	2028870	1523438	701055	27898	223696	4504957	3839327	920377
1997	2081873	1578785	727735	28527	218992	4635912	3949507	952679
1998	2154697	1646315	747191	28198	216393	4792794	4090178	980486
1999	2181781	1705031	791610	31629	217289	4927339	4207703	1008495
2000	2351564	1786653	824066	31191	207551	5201026	4451831	1030578
2001	2527611	1885064	877140	31582	210025	5531422	4754705	1072119

Sources: See sections 5.4, 5.6 and 5.7.

* The gross and net stocks are equal for fixed livestock and the inventory stock.

TABLE L: *Annual volume growth rates (in percent) of the net (capacity) stock of various types of produced assets (purchasers' prices, million SEK), aggregate economy, and of the total net stock of produced assets of the aggregate economy, of the private sector and of manufacturing and handicrafts.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1800	1.34	0.49	1.84	-0.69	7.51	0.67	2.01	2.03	0.54
1801	1.32	0.67	1.70	1.03	1.62	0.88	1.29	1.31	0.36
1802	0.26	-0.17	0.50	-0.77	-0.95	2.68	0.36	0.34	4.52
1803	0.11	0.40	-0.05	-1.42	0.71	2.39	0.43	0.38	2.83
1804	0.65	0.19	0.90	1.61	20.56	-0.12	3.29	3.36	-0.77
1805	0.16	0.35	0.06	-1.02	-14.47	1.86	-1.90	-1.98	-2.46
1806	0.18	0.60	-0.05	1.65	4.15	2.48	1.07	1.08	-0.57
1807	0.55	0.93	0.34	0.27	-37.73	-0.03	-6.04	-6.25	-6.80
1808	0.80	1.71	0.28	2.84	6.65	-1.75	1.48	1.60	3.03
1809	-0.03	0.63	-0.42	0.71	26.19	-1.32	4.56	4.78	-0.05
1810	0.32	0.31	0.32	3.30	2.16	-0.14	0.73	0.74	1.52
1811	0.48	0.52	0.46	1.01	-3.57	1.81	-0.11	-0.15	-9.01
1812	1.43	1.37	1.46	0.93	5.47	0.26	1.90	1.92	2.76
1813	0.74	-0.08	1.22	0.34	-2.00	-0.25	0.22	0.22	2.36
1814	-0.21	-0.29	-0.16	-0.71	-5.11	1.19	-0.77	-0.80	0.41
1815	0.23	-0.21	0.49	-4.09	-8.65	1.90	-0.93	-0.99	2.90
1816	0.98	-0.47	1.82	-3.17	6.85	1.82	1.63	1.66	2.46
1817	0.39	0.04	0.59	-2.44	-16.07	0.59	-1.77	-1.85	1.31
1818	0.97	1.13	0.88	-3.06	1.07	-0.56	0.62	0.60	-2.00
1819	1.52	1.24	1.68	0.86	30.74	0.02	4.47	4.59	3.42
1820	0.73	0.82	0.68	2.78	-6.53	1.95	-0.04	-0.07	3.13
1821	-0.03	0.36	-0.25	2.21	-6.45	2.45	-0.48	-0.52	1.19
1822	0.53	1.18	0.17	-2.68	21.80	0.95	3.08	3.16	-0.73
1823	-0.29	-0.55	-0.14	-3.56	2.99	0.26	0.11	0.09	1.02
1824	0.34	0.58	0.21	-1.86	1.33	1.73	0.56	0.55	-0.66
1825	-0.33	-0.89	-0.01	-2.16	-20.60	2.79	-2.74	-2.86	-0.97
1826	0.75	0.82	0.71	1.56	5.50	1.81	1.52	1.51	-0.41
1827	0.35	0.16	0.46	4.40	6.56	2.45	1.66	1.69	4.52
1828	-0.02	0.34	-0.23	3.36	15.82	1.87	2.50	2.55	0.47
1829	-0.06	0.24	-0.22	2.30	-22.97	2.55	-3.22	-3.36	-0.76
1830	0.10	0.88	-0.34	6.48	9.36	2.75	1.97	1.99	-0.17
1831	0.92	1.30	0.70	1.78	0.55	2.55	1.11	1.08	0.00
1832	0.19	0.30	0.12	1.83	17.05	2.64	2.95	2.99	3.03
1833	-0.43	0.09	-0.73	0.57	-0.70	1.93	-0.12	-0.16	1.02
1834	0.13	0.50	-0.09	0.31	-10.98	2.83	-1.19	-1.27	2.58
1835	0.53	0.46	0.57	-1.29	-2.21	2.76	0.41	0.39	2.71
1836	0.94	0.60	1.14	2.48	2.43	3.32	1.54	1.54	2.83
1837	1.00	1.32	0.81	8.74	7.21	3.44	2.48	2.50	2.27

TABLE L: *Volume growth rates of the net stock of produced assets, continued.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1838	0.80	1.05	0.65	3.47	-2.86	2.31	0.57	0.51	3.00
1839	1.30	1.08	1.43	4.28	17.61	1.74	4.11	4.19	2.63
1840	0.90	1.15	0.76	6.11	-12.74	2.51	-1.34	-1.45	2.58
1841	0.65	1.23	0.31	2.68	9.44	1.72	2.41	2.42	0.32
1842	1.30	1.92	0.93	5.49	3.85	0.73	1.78	1.76	-0.51
1843	1.32	2.63	0.54	2.11	1.82	1.74	1.48	1.46	3.18
1844	1.25	2.19	0.67	0.10	-4.85	2.86	0.59	0.53	3.29
1845	1.81	2.44	1.42	0.87	10.91	2.98	3.13	3.16	-0.17
1846	2.32	2.70	2.07	4.29	1.59	3.26	2.44	2.42	1.88
1847	1.98	2.17	1.87	6.53	-3.69	3.47	1.39	1.35	1.70
1848	1.47	1.82	1.25	9.85	-6.15	4.17	0.85	0.80	6.15
1849	1.31	1.36	1.28	4.70	9.31	3.09	2.95	2.99	1.26
1850	2.15	2.99	1.61	6.48	-10.54	3.53	0.65	0.59	4.08
1851	4.06	4.66	3.67	6.41	8.61	3.70	4.73	4.81	1.73
1852	3.82	3.40	4.08	5.75	1.16	2.40	3.39	3.42	2.69
1853	4.08	3.54	4.44	3.34	-0.89	3.09	3.25	3.26	1.09
1854	3.61	2.79	4.13	4.21	-4.41	3.50	2.38	2.37	3.08
1855	3.96	4.75	3.46	13.94	1.95	5.07	4.27	4.37	2.62
1856	4.01	5.32	3.18	17.58	-3.75	6.66	3.96	4.06	7.08
1857	3.22	6.20	1.26	9.31	6.06	3.84	4.00	4.12	4.28
1858	2.99	4.36	2.05	8.18	-6.83	1.48	1.95	1.97	5.16
1859	3.12	3.74	2.68	3.53	17.52	1.86	4.51	4.62	3.98
1860	3.31	3.96	2.84	0.96	0.22	5.51	3.05	3.11	4.15
1861	3.73	3.76	3.71	6.59	4.05	5.06	4.13	4.13	5.25
1862	4.05	4.36	3.83	6.04	0.07	2.25	3.48	3.55	3.68
1863	4.30	6.20	2.92	4.54	-0.02	1.01	3.42	3.49	2.03
1864	5.37	5.45	5.32	8.27	1.41	3.58	4.94	5.05	6.16
1865	3.88	3.30	4.30	9.88	-4.98	4.29	3.47	3.53	5.51
1866	3.08	2.11	3.79	4.06	-2.71	3.58	2.66	2.42	2.07
1867	2.39	2.65	2.20	0.24	-4.71	2.20	1.58	1.53	1.58
1868	1.57	0.98	2.01	2.00	-10.87	1.68	0.38	0.29	3.31
1869	1.91	1.69	2.07	3.01	6.06	1.80	2.43	2.47	1.44
1870	2.24	2.81	1.83	3.62	4.73	5.83	3.04	3.05	4.88
1871	1.22	-0.52	2.48	3.61	3.99	7.06	2.42	2.41	7.92
1872	5.04	4.22	5.61	9.77	3.50	5.20	5.16	5.22	6.80
1873	7.63	7.93	7.43	15.65	2.98	3.48	7.12	7.25	7.13
1874	7.06	5.59	8.09	13.93	-3.43	2.84	6.10	6.20	8.28
1875	5.98	6.91	5.34	11.73	0.06	4.15	5.70	5.78	7.99
1876	3.93	5.02	3.17	6.88	3.81	5.57	4.28	4.29	5.54
1877	3.80	5.54	2.58	2.61	-1.46	5.56	3.48	3.39	2.90
1878	3.65	5.10	2.60	-1.34	-2.30	2.00	2.65	2.57	0.33
1879	2.32	3.21	1.67	-3.11	4.01	1.59	1.97	1.93	3.33

TABLE L: *Volume growth rates of the net stock of produced assets, continued.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1880	2.21	4.52	0.46	-0.47	2.22	3.83	2.19	2.17	1.66
1881	1.72	3.69	0.18	1.42	-3.47	5.29	1.63	1.60	7.44
1882	0.87	1.55	0.31	3.01	3.22	5.74	1.63	1.59	4.21
1883	1.43	2.54	0.52	4.84	5.31	4.11	2.19	2.19	5.74
1884	2.30	3.44	1.33	4.36	-0.46	3.45	2.34	2.34	4.14
1885	1.88	2.27	1.54	4.64	6.36	3.21	2.48	2.48	4.91
1886	2.17	2.90	1.53	1.89	-0.19	4.37	2.21	2.14	4.86
1887	0.98	0.73	1.20	0.24	-0.78	2.60	0.96	0.89	4.12
1888	1.50	1.86	1.19	1.68	1.01	3.75	1.71	1.67	2.68
1889	1.28	2.19	0.49	6.34	-0.53	5.32	1.90	1.88	4.05
1890	1.42	2.53	0.43	6.22	1.47	5.62	2.20	2.17	4.59
1891	0.20	-0.34	0.69	3.72	1.01	4.87	1.03	0.94	3.94
1892	0.85	0.49	1.19	1.03	-10.65	4.16	0.46	0.40	3.13
1893	0.52	-0.84	1.74	-0.69	6.03	3.36	1.14	1.08	2.66
1894	0.27	-0.32	0.78	0.26	4.50	4.48	1.06	1.03	3.76
1895	1.94	4.01	0.16	1.02	1.27	4.92	2.19	2.20	5.86
1896	1.78	3.57	0.16	5.01	-4.64	6.93	2.21	2.21	5.83
1897	3.00	5.31	0.86	5.70	-2.29	7.63	3.40	3.44	6.57
1898	3.18	4.80	1.60	10.02	-25.85	6.51	2.47	2.46	5.61
1899	3.85	4.73	2.96	10.99	11.73	6.63	5.08	5.14	9.40
1900	3.34	3.63	3.04	7.57	-2.39	4.10	3.41	3.35	5.28
1901	2.59	2.49	2.69	2.71	-0.73	2.29	2.36	2.28	3.62
1902	1.78	1.37	2.20	3.04	18.27	2.99	3.12	3.02	4.41
1903	2.30	3.08	1.50	3.30	16.33	4.43	3.22	3.09	4.93
1904	2.80	3.49	2.09	6.86	-2.48	4.30	2.96	2.75	6.67
1905	2.87	3.67	2.03	5.74	-6.76	3.92	2.57	2.33	4.99
1906	3.38	3.58	3.17	8.38	1.17	4.69	3.73	3.61	6.16
1907	2.59	2.56	2.62	11.42	-0.78	7.10	3.53	3.47	8.90
1908	1.61	0.81	2.45	6.73	-0.02	3.50	2.10	1.89	4.86
1909	1.00	0.40	1.63	4.43	-2.61	0.09	0.90	0.74	4.68
1910	1.71	0.95	2.49	4.73	1.90	3.61	2.18	2.09	5.71
1911	2.65	2.27	3.03	3.44	-0.53	6.30	2.98	2.96	5.85
1912	2.59	3.18	2.01	4.58	3.71	4.92	3.11	3.11	5.51
1913	3.33	3.21	3.46	8.12	-1.08	7.46	3.94	3.98	7.66
1914	2.52	2.48	2.55	8.18	4.88	4.64	3.24	3.24	4.74
1915	1.39	0.70	2.10	6.20	-0.78	4.51	1.96	1.90	4.83
1916	1.29	0.91	1.68	5.45	5.56	8.80	2.84	2.92	6.11
1917	1.50	1.02	1.97	6.08	-7.38	3.46	1.78	1.80	3.35
1918	1.41	0.02	2.78	4.11	3.15	-2.22	1.12	1.14	2.90
1919	1.16	0.04	2.23	2.55	-0.97	-0.18	1.01	0.92	3.28
1920	1.00	0.05	1.90	5.89	2.99	4.52	1.98	1.93	6.89
1921	0.38	-0.59	1.28	-0.16	-5.23	-1.07	-0.02	-0.34	0.96

TABLE L: *Volume growth rates of the net stock of produced assets, continued.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1922	0.99	-0.26	2.12	-3.73	50.37	-2.37	1.13	0.71	-0.94
1923	1.21	1.29	1.14	-1.21	0.20	9.05	1.93	1.66	2.90
1924	1.34	1.88	0.85	0.57	-6.41	7.79	1.80	1.67	3.03
1925	1.61	2.18	1.10	3.55	1.44	5.89	2.23	2.13	2.70
1926	1.24	2.23	0.34	3.56	4.79	3.58	1.74	1.62	2.27
1927	1.41	2.17	0.70	3.04	-1.02	4.94	1.88	1.83	1.87
1928	1.77	2.50	1.09	6.31	-1.37	4.45	2.31	2.28	3.53
1929	1.73	2.38	1.11	6.55	3.19	5.41	2.53	2.48	3.71
1930	2.75	3.83	1.70	6.73	3.45	5.05	3.31	3.25	4.20
1931	1.88	2.18	1.58	3.85	-4.11	1.01	1.80	1.60	2.95
1932	1.32	1.62	1.02	-1.94	-5.80	-1.33	0.67	0.32	-0.45
1933	0.86	1.04	0.69	-0.95	0.27	0.79	0.73	0.32	0.23
1934	1.77	2.00	1.53	4.23	-0.73	7.66	2.57	2.30	3.90
1935	2.87	3.95	1.79	9.23	2.30	10.04	4.18	4.05	5.95
1936	3.57	4.32	2.80	9.34	3.04	6.04	4.30	4.25	6.05
1937	3.18	4.10	2.23	11.29	2.95	5.73	4.12	4.18	5.17
1938	3.72	4.51	2.88	11.91	1.37	5.01	4.49	4.41	5.21
1939	4.41	5.16	3.60	11.92	1.35	5.50	5.13	5.05	5.81
1940	1.12	-0.04	2.39	9.90	-6.46	2.46	1.93	1.53	4.84
1941	0.82	-0.34	2.06	8.82	-4.19	-2.36	1.01	0.51	2.23
1942	2.26	2.18	2.35	7.20	4.12	0.56	2.55	2.39	3.80
1943	2.68	2.97	2.37	7.08	5.51	3.26	3.27	3.14	4.35
1944	2.88	3.78	1.93	7.38	2.83	4.66	3.61	3.51	4.51
1945	3.65	4.87	2.34	0.06	2.04	4.01	3.26	3.30	2.36
1946	4.55	5.75	3.24	9.40	-0.81	6.93	5.31	5.54	5.69
1947	5.27	6.03	4.41	11.83	-5.42	11.67	6.69	7.01	10.14
1948	3.65	2.72	4.70	11.94	-6.85	6.63	4.85	4.94	7.59
1949	3.57	3.00	4.20	9.00	-2.74	4.18	4.23	4.21	6.14
1950	3.74	3.44	4.06	10.18	-2.02	-1.61	3.70	3.57	5.62
1951	3.43	2.94	3.95	10.00	-2.89	12.16	5.41	5.43	6.65
1952	3.96	3.24	4.72	5.91	-2.75	6.41	4.51	4.22	5.04
1953	4.66	3.86	5.48	5.81	-2.37	-3.04	3.58	2.98	1.92
1954	4.97	4.43	5.49	7.46	-1.22	0.98	4.67	4.24	3.79
1955	4.72	4.19	5.24	5.66	-3.40	6.38	4.99	4.65	5.37
1956	4.66	4.27	5.02	4.80	-3.20	5.41	4.70	4.38	4.59
1957	4.45	4.22	4.67	4.16	-0.98	5.04	4.44	4.03	4.66
1958	4.77	4.34	5.17	5.30	-1.02	1.38	4.27	3.82	3.93
1959	5.25	4.46	5.97	5.95	-2.17	0.00	4.50	3.91	4.24
1960	5.02	4.15	5.81	6.18	-2.02	7.09	5.42	5.21	5.74
1961	5.23	4.62	5.77	6.49	-0.41	4.12	5.21	5.03	5.91
1962	5.32	4.93	5.67	6.74	-2.40	2.45	5.05	4.78	4.31
1963	5.56	5.01	6.05	6.46	-4.14	0.53	4.89	4.42	3.63

TABLE L: *Volume growth rates of the net stock of produced assets, continued.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1964	5.77	5.52	6.00	6.44	-4.57	5.29	5.71	5.31	5.10
1965	5.60	5.61	5.59	6.19	-1.67	6.55	5.76	5.43	5.38
1966	5.32	4.85	5.75	6.69	-2.72	2.96	5.14	4.76	3.88
1967	5.43	5.30	5.55	5.87	-2.32	0.49	4.77	4.25	3.11
1968	5.16	5.10	5.20	4.34	0.57	0.84	4.43	3.76	3.55
1969	5.02	4.81	5.20	4.59	0.24	3.64	4.74	4.17	4.43
1970	4.82	4.26	5.31	4.94	-0.15	8.52	5.30	4.85	5.43
1971	4.25	4.00	4.46	3.75	1.52	2.74	3.95	3.54	4.06
1972	4.25	3.91	4.55	4.08	3.50	-0.23	3.61	3.22	3.18
1973	3.75	3.59	3.88	5.00	2.56	-1.41	3.24	3.00	2.80
1974	3.23	2.93	3.48	6.19	1.81	6.42	4.10	4.19	4.48
1975	3.04	2.71	3.31	4.85	1.57	8.78	4.05	4.17	5.08
1976	2.58	2.16	2.94	4.31	2.06	6.31	3.30	3.38	4.26
1977	2.31	1.90	2.68	3.30	2.38	-1.79	2.00	1.77	0.95
1978	2.29	2.37	2.22	-0.03	3.24	-5.40	1.12	0.72	-0.97
1979	2.22	2.43	2.01	1.57	3.92	0.71	1.99	1.82	0.36
1980	2.07	1.93	2.20	2.72	3.64	4.06	2.35	2.29	2.21
1981	1.66	1.52	1.79	1.69	3.45	-2.63	1.30	1.10	0.40
1982	1.47	1.36	1.59	1.54	2.89	-3.75	1.04	0.87	-0.34
1983	1.36	1.26	1.45	2.18	2.96	-5.58	0.90	0.74	-0.38
1984	1.51	1.62	1.40	3.45	2.76	-4.14	1.36	1.34	0.11
1985	1.43	1.47	1.38	5.18	2.33	-0.25	1.90	2.01	1.95
1986	1.44	1.42	1.45	4.77	2.95	-2.97	1.66	1.77	0.60
1987	1.58	1.75	1.41	5.77	3.60	-2.52	2.00	2.19	1.07
1988	1.68	2.01	1.33	6.23	4.70	-1.89	2.20	2.40	1.49
1989	1.97	2.21	1.69	8.07	4.82	-0.25	2.80	3.05	2.30
1990	2.00	2.41	1.50	6.32	4.13	-1.19	2.50	2.72	1.13
1991	1.65	2.03	1.12	2.94	4.29	-9.75	1.29	1.25	-1.48
1992	1.19	1.51	0.75	0.12	4.22	-3.44	0.83	0.73	-1.36
1993	0.32	0.12	0.59	-1.66	3.24	-7.21	-0.33	-0.66	-2.10
1994	-0.03	-0.82	1.03	0.13	2.96	4.85	0.23	-0.08	0.84
1995	-0.05	-1.40	1.78	2.67	2.07	6.66	0.70	0.53	2.69
1996	-0.07	-1.24	1.51	3.65	2.12	-1.46	0.45	0.33	2.01
1997	-0.34	-1.52	1.24	3.62	2.34	-0.63	0.28	0.26	1.52
1998	-0.30	-1.50	1.29	4.55	2.42	1.88	0.57	0.58	1.68
1999	-0.31	-1.31	1.00	5.70	2.64	-3.01	0.53	0.51	0.77
2000	-0.22	-1.21	1.09	5.94	2.22	1.70	0.82	0.95	1.02

Sources: See sections 5.4, 5.6 and 5.7.

*The volume change during the year is measured from 1st of January at the beginning of the year to the 1st of January the next year.

** The gross and net stocks are equal for this asset.

TABLE M: *Gross (capacity) stock of various types of produced assets (current, purchasers' prices, million SEK), aggregate economy, and the total gross stock of produced assets of the aggregate economy, of the private sector and of manufacturing and handicrafts (1st of January each year).*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1800	74.536	131.269	11.757	17.396	15.682	250.639	241.845	28.239
1801	74.951	132.777	11.168	18.703	17.232	254.830	246.009	29.228
1802	75.428	134.246	11.476	19.005	17.335	257.491	248.571	29.493
1803	73.260	130.815	12.024	18.824	17.905	252.827	244.049	30.210
1804	78.379	139.729	12.635	18.958	17.267	266.968	257.513	31.283
1805	83.471	149.318	13.258	22.857	18.320	287.224	277.104	33.163
1806	86.264	154.171	13.885	19.549	20.038	293.907	283.420	34.222
1807	86.772	154.672	13.907	20.360	21.217	296.928	286.363	34.593
1808	106.833	189.969	13.359	25.358	24.352	359.872	347.076	38.745
1809	120.265	212.533	14.643	40.566	23.583	411.591	397.436	42.118
1810	140.761	247.602	15.957	51.192	23.430	478.942	462.635	46.540
1811	156.310	274.926	18.890	52.295	23.023	525.445	507.230	50.379
1812	187.132	328.992	21.500	50.428	32.136	620.188	598.372	59.175
1813	206.532	363.131	23.788	49.387	35.150	677.989	654.019	65.559
1814	204.628	361.788	26.168	48.399	37.312	678.294	654.376	67.772
1815	199.976	353.771	27.868	45.927	38.591	666.134	642.484	68.040
1816	213.119	378.177	30.032	41.953	40.917	704.198	678.642	73.874
1817	210.796	377.857	29.708	44.827	42.895	706.083	680.631	75.408
1818	211.475	380.095	30.570	37.622	44.836	704.598	678.910	77.463
1819	210.594	378.229	30.085	38.024	48.157	705.090	679.459	78.241
1820	207.213	372.996	29.085	49.713	48.165	707.172	682.055	78.653
1821	213.824	384.811	30.284	46.468	44.766	720.153	694.121	79.272
1822	206.978	371.627	30.664	43.473	42.917	695.659	670.236	76.863
1823	211.349	377.891	31.758	52.949	44.062	718.009	691.940	78.195
1824	219.423	393.129	30.368	50.896	42.820	736.635	709.496	79.600
1825	231.285	413.796	33.418	51.571	47.087	777.156	748.532	84.049
1826	220.450	396.017	30.765	40.948	48.494	736.673	709.375	80.682
1827	227.229	408.083	29.366	57.600	54.041	776.318	748.248	84.040
1828	230.731	415.015	29.142	61.379	51.415	787.681	759.127	84.453
1829	231.743	415.879	30.046	53.318	49.477	780.463	751.677	83.089
1830	227.235	407.030	30.445	54.761	51.875	771.346	742.992	82.347
1831	234.205	417.307	31.519	59.885	54.019	796.936	767.637	83.840
1832	241.706	429.477	31.717	60.215	57.234	820.350	789.990	86.113
1833	245.499	435.784	32.189	66.079	56.452	836.002	804.963	86.983
1834	249.082	440.478	32.184	65.618	56.608	843.970	812.379	87.476
1835	258.684	456.121	32.265	58.411	60.287	865.768	832.886	91.824
1836	259.948	458.326	33.959	57.122	63.940	873.295	840.020	95.052
1837	255.751	451.739	34.627	58.513	67.048	867.678	834.688	96.385
1838	260.796	459.434	36.300	62.733	67.712	886.975	853.184	97.504

TABLE M: *Nominal value of the gross stock of produced assets, continued.*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1839	265.63	466.91	38.44	76.17	71.41	918.55	883.83	101.67
1840	264.81	465.90	39.10	89.59	70.35	929.75	894.94	101.56
1841	272.78	478.87	41.17	93.81	71.67	958.28	922.23	104.45
1842	272.19	475.67	42.67	85.55	74.58	950.65	914.41	105.43
1843	281.31	489.15	39.64	66.90	73.42	950.42	913.07	104.25
1844	282.57	486.43	40.45	68.11	73.63	951.20	913.70	105.17
1845	286.37	489.16	43.73	64.81	71.93	956.01	917.87	105.66
1846	290.62	493.53	46.52	71.88	78.99	981.54	942.66	109.32
1847	301.66	510.04	48.91	91.28	82.15	1034.04	993.59	112.47
1848	312.32	526.56	48.87	105.50	83.75	1076.99	1035.01	114.27
1849	325.99	547.46	53.18	99.01	84.73	1110.35	1066.44	119.45
1850	329.50	552.42	56.41	90.19	87.50	1116.02	1071.32	121.15
1851	328.98	547.26	59.19	80.68	91.98	1108.08	1063.51	124.37
1852	337.88	558.26	62.00	82.76	95.72	1136.63	1091.22	126.23
1853	362.65	599.78	67.61	66.97	96.46	1193.48	1144.86	131.09
1854	406.58	673.99	72.86	116.17	111.21	1380.80	1326.43	145.61
1855	501.80	835.91	86.19	142.78	126.58	1693.26	1626.18	171.49
1856	557.92	922.48	99.87	161.74	139.03	1881.03	1807.50	185.93
1857	638.52	1043.30	118.14	140.11	150.92	2090.98	2008.44	208.47
1858	554.91	883.29	116.43	132.09	144.75	1831.47	1761.52	190.36
1859	563.49	884.67	120.58	107.68	138.27	1814.68	1744.82	190.36
1860	591.82	921.93	128.81	137.01	141.38	1920.95	1848.52	199.19
1861	613.54	947.85	133.27	137.31	151.20	1983.18	1909.14	208.42
1862	657.28	1012.30	138.96	150.52	161.65	2120.71	2041.63	221.36
1863	675.67	1034.77	150.90	136.36	167.79	2165.49	2085.67	229.65
1864	667.73	1002.39	155.96	127.13	166.79	2119.99	2043.14	227.89
1865	667.96	998.03	160.52	118.24	167.32	2112.07	2037.18	231.05
1866	687.94	1030.45	171.06	130.22	168.81	2188.48	2112.44	238.13
1867	703.10	1060.69	175.13	135.39	171.33	2245.64	2164.93	240.02
1868	711.88	1069.57	173.22	106.21	175.90	2236.80	2155.24	242.73
1869	705.45	1064.77	175.34	144.82	173.60	2263.98	2182.49	242.87
1870	729.52	1102.22	168.62	169.19	168.52	2338.08	2254.52	237.72
1871	777.80	1167.55	183.60	180.06	179.37	2488.38	2399.36	254.92
1872	847.94	1293.62	197.44	195.77	230.20	2764.96	2666.24	305.03
1873	1020.66	1566.46	224.03	219.97	273.89	3305.01	3187.08	364.81
1874	1202.55	1836.36	291.14	178.83	303.85	3812.73	3678.13	431.07
1875	1160.78	1794.92	319.42	205.80	284.09	3765.02	3636.06	431.74
1876	1446.50	2215.67	338.78	199.50	271.52	4471.97	4315.82	471.02
1877	1529.32	2317.30	371.39	194.03	279.05	4691.10	4528.19	501.32
1878	1434.92	2136.42	382.94	209.05	249.07	4412.41	4258.44	473.22
1879	1411.73	2069.63	388.91	204.31	232.25	4306.82	4156.10	459.45
1880	1570.86	2280.50	350.07	200.62	267.49	4669.52	4503.50	486.34

TABLE M: *Nominal value of the gross stock of produced assets, continued.*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1881	1633.1	2313.2	355.8	183.6	274.8	4760.4	4590.1	494.9
1882	1692.8	2346.6	358.5	224.0	294.4	4916.3	4741.1	525.9
1883	1752.8	2409.7	367.3	230.2	289.2	5049.2	4867.6	533.7
1884	1713.0	2323.9	391.5	226.8	304.6	4959.8	4783.2	557.8
1885	1764.3	2359.3	368.5	209.0	297.4	4998.5	4818.4	547.1
1886	1732.0	2301.2	368.8	181.0	277.0	4860.0	4683.5	538.7
1887	1755.7	2308.9	380.6	176.1	284.8	4906.1	4726.3	557.1
1888	1762.8	2320.0	419.7	202.9	309.5	5014.9	4832.3	608.9
1889	1917.9	2509.0	417.1	201.9	333.3	5379.1	5180.8	640.5
1890	1955.7	2529.1	439.7	238.8	348.9	5512.1	5308.5	660.0
1891	1981.3	2526.6	466.9	243.7	369.9	5588.4	5382.8	690.1
1892	1965.8	2518.0	485.7	243.8	393.4	5606.7	5397.8	721.3
1893	1933.1	2481.0	491.6	223.1	399.7	5528.6	5321.3	727.1
1894	2000.3	2600.0	493.2	235.1	413.5	5742.0	5523.0	751.5
1895	2024.0	2644.0	506.3	232.6	424.0	5831.0	5606.6	774.6
1896	2219.5	2833.1	516.0	227.4	434.9	6230.8	5987.5	817.5
1897	2492.3	3115.7	527.5	233.7	485.5	6854.7	6583.5	896.3
1898	2726.3	3314.0	561.3	263.5	530.7	7395.8	7105.2	967.9
1899	2910.6	3461.5	582.1	260.4	568.8	7783.5	7478.5	1017.2
1900	3096.3	3628.4	662.0	286.3	632.1	8305.0	7980.0	1142.5
1901	3140.4	3651.9	730.0	287.5	634.8	8444.7	8111.5	1181.7
1902	3162.9	3664.2	719.4	297.2	634.6	8478.3	8143.0	1183.4
1903	3428.6	3976.7	721.0	319.7	663.3	9109.2	8736.4	1254.1
1904	3525.0	4037.7	668.2	288.1	679.6	9198.7	8809.0	1258.8
1905	3724.8	4216.1	667.8	301.3	717.6	9627.6	9205.2	1343.2
1906	3965.1	4430.0	707.1	360.2	788.8	10251.1	9788.3	1457.7
1907	4125.5	4577.2	764.6	411.5	854.2	10733.1	10241.0	1569.3
1908	4235.8	4682.6	820.3	416.4	912.2	11067.4	10554.0	1690.2
1909	4410.3	4902.7	845.4	403.3	909.1	11470.7	10917.1	1762.1
1910	4563.3	5094.9	891.5	400.1	928.8	11878.6	11292.0	1873.4
1911	4635.0	5204.5	949.1	380.9	972.2	12141.8	11531.3	1990.7
1912	4786.9	5382.6	973.6	458.3	1000.9	12602.3	11965.6	2080.1
1913	5091.3	5670.7	1033.6	511.3	1067.1	13373.9	12694.5	2248.3
1914	5486.6	6101.3	1084.6	473.9	1157.2	14303.7	13567.1	2456.9
1915	6560.3	7281.3	1222.0	669.8	1236.1	16969.5	16080.5	2828.0
1916	7808.2	8719.4	1746.5	838.4	1543.0	20655.5	19568.3	3597.3
1917	9584.4	10738.9	2441.2	891.7	2237.2	25893.5	24527.7	4848.0
1918	13709.2	15420.5	3628.4	1993.1	3166.6	37917.9	35954.7	6986.7
1919	17237.2	19634.0	4189.7	1774.9	3832.1	46667.8	44243.5	8715.2
1920	19272.5	22190.5	4763.7	1190.9	4223.6	51641.2	48888.2	10046.4
1921	17448.4	20274.8	4045.8	813.5	3824.6	46407.1	43901.7	9278.1
1922	12725.5	14927.2	3283.7	588.5	2709.6	34234.5	32347.4	6957.1

TABLE M: *Nominal value of the gross stock of produced assets, continued.*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1923	12900	15316	2803	583	2413	34014	32016	6825
1924	14400	17087	2664	565	2423	37139	34844	7159
1925	14931	17628	2595	623	2585	38363	35940	7441
1926	15266	17915	2653	570	2627	39032	36523	7591
1927	15451	17940	2792	494	2626	39303	36736	7687
1928	15756	18144	2790	506	2716	39912	37278	7778
1929	16132	18421	2973	536	2832	40893	38177	8068
1930	16473	18668	3120	532	2876	41669	38865	8289
1931	17011	19030	3195	462	2858	42555	39646	8493
1932	17073	19007	3196	341	2787	42403	39436	8579
1933	16519	18301	3021	297	2640	40778	37839	8234
1934	16820	18567	3020	394	2675	41477	38400	8379
1935	17186	18888	3103	479	2939	42595	39363	8703
1936	17385	18848	3324	514	3263	43334	40002	9051
1937	19633	21046	3964	496	3724	48864	45047	10386
1938	20803	22010	4167	520	3952	51451	47410	11025
1939	21617	22582	4661	588	4068	53517	49271	11566
1940	26526	27315	6001	659	4998	65498	60265	14343
1941	28765	29877	6746	816	6015	72219	66354	16396
1942	31237	32780	7840	766	6215	78838	72180	18034
1943	33422	34995	8901	805	6550	84674	77430	19541
1944	34671	36074	9593	841	6561	87741	80125	20365
1945	36137	37147	10493	838	6831	91447	83369	21497
1946	38175	38546	10883	864	7086	95554	87127	22352
1947	41006	40832	11944	866	7832	102479	93348	24112
1948	44843	44076	12847	888	9491	112145	102255	27255
1949	46430	45975	14641	964	9985	117995	107593	29189
1950	48510	48228	16449	1031	10923	125140	114032	31718
1951	62792	61391	21260	1039	13204	159685	145339	41813
1952	69488	70604	27714	1307	15496	184609	167733	48599
1953	69430	72513	29255	1504	16963	189665	171791	50220
1954	70111	75796	29149	1375	16893	193323	174051	51318
1955	75522	82812	32182	1524	18100	210140	188668	56607
1956	81523	90385	36809	1631	20418	230765	206763	62751
1957	86519	98211	41036	1550	23179	250495	223588	68620
1958	90071	102694	43649	1604	24868	262885	233845	72296
1959	93884	107582	45705	1672	25871	274716	243315	76230
1960	104330	119670	51011	1783	26747	303541	267828	85005
1961	111772	129221	56001	1805	30010	328810	289956	93317
1962	121586	141632	61690	1895	33163	359967	316978	103422
1963	131882	154247	67020	2102	35169	390420	342903	111862
1964	148097	170012	73382	2432	37662	431586	378542	122664

TABLE M: *Nominal value of the gross stock of produced assets, continued.*

Year	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock*	Inventory stock*	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1965	167650	187865	81926	2492	42053	481986	421656	134974
1966	187408	206005	89840	2433	46482	532168	464309	147642
1967	202324	222870	98556	2429	50393	576573	502020	159616
1968	211047	238358	106832	2551	52456	611243	529563	169501
1969	226548	256478	110282	2594	54923	650825	560007	177327
1970	244125	284450	122533	2704	61852	715664	612213	198926
1971	264873	314212	143616	2962	72388	798051	680652	222804
1972	293799	347178	159861	3441	77421	881700	750547	245347
1973	326162	388640	176968	4009	84183	979961	833347	275354
1974	366577	458608	218251	4529	94551	1142516	968968	325320
1975	420771	523595	260105	5403	114021	1323895	1124096	380224
1976	509932	607930	303236	6490	124608	1552195	1318652	433751
1977	602385	698888	342770	7321	133876	1785241	1515220	493244
1978	700140	778354	408902	7876	137467	2032739	1727700	546295
1979	821511	877230	424043	8688	134770	2266242	1918150	592112
1980	978355	1006262	469888	9844	145747	2610095	2204161	663276
1981	1107116	1137973	522817	11419	154858	2934183	2472235	737572
1982	1204295	1250419	595389	12733	167812	3230649	2721724	824025
1983	1331702	1389785	683116	13937	183858	3602398	3033813	922300
1984	1447486	1512117	722629	15232	187418	3884881	3265524	980013
1985	1564388	1633664	788324	16418	191913	4194707	3523261	1047205
1986	1675387	1733960	855672	16734	196457	4478210	3760787	1104867
1987	1824530	1871701	913957	18908	188680	4817775	4045743	1161382
1988	2095634	2066044	997443	21453	188783	5369357	4516325	1251854
1989	2454611	2307271	1083688	21938	196532	6064040	5114980	1370673
1990	2834323	2553290	1185447	21773	207409	6802243	5746402	1499375
1991	3413572	2596785	1227022	23137	217155	7477672	6458386	1567578
1992	3415705	2567587	1261613	26689	193735	7465329	6459844	1558793
1993	3396101	2603799	1382301	24684	190548	7597434	6570176	1617451
1994	3359828	2639132	1411161	26618	188805	7625544	6582345	1636329
1995	3524060	2735259	1426801	26464	212983	7925566	6827399	1689325
1996	3623387	2799956	1413770	27898	223696	8088708	6963378	1717696
1997	3776366	2915198	1462110	28527	218992	8401193	7230930	1782624
1998	3973906	3057052	1496995	28198	216393	8772544	7560943	1843670
1999	4090189	3181699	1574542	31629	217289	9095347	7841281	1905221
2000	4476150	3355625	1620381	31191	207551	9690899	8372488	1965472
2001	4881709	3561092	1706768	31582	210025	10391176	9007861	2061374

Sources: See sections 5.4, 5.6 and 5.7.

* The gross and net stocks are equal for fixed livestock and the inventory stock.

TABLE N: *Annual volume growth rates (in percent) of the gross (capacity) stock of various types of produced assets (purchasers' prices, million SEK), aggregate economy, and of the total gross stock of produced assets of the aggregate economy, of the private sector and of manufacturing and handicrafts.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1800	0.93	0.56	1.15	-0.08	7.51	0.67	1.33	1.34	0.62
1801	0.94	0.64	1.11	0.74	1.62	0.88	0.97	0.99	0.54
1802	0.47	0.26	0.59	-0.14	-0.95	2.68	0.49	0.47	3.36
1803	0.40	0.50	0.34	-0.51	0.71	2.39	0.51	0.49	2.19
1804	0.63	0.41	0.76	0.93	20.56	-0.12	1.98	2.02	-0.18
1805	0.42	0.48	0.38	-0.32	-14.47	1.86	-0.69	-0.74	-1.33
1806	0.42	0.59	0.33	0.95	4.15	2.48	0.84	0.84	-0.10
1807	0.58	0.73	0.49	0.31	-37.73	-0.03	-2.88	-3.01	-4.26
1808	0.69	1.09	0.46	1.58	6.65	-1.75	1.05	1.11	2.14
1809	0.32	0.62	0.15	0.62	26.19	-1.32	2.64	2.76	0.17
1810	0.46	0.47	0.46	1.95	2.16	-0.14	0.66	0.66	1.11
1811	0.54	0.56	0.52	0.90	-3.57	1.81	0.23	0.21	-5.32
1812	0.95	0.95	0.95	0.88	5.47	0.26	1.25	1.27	1.79
1813	0.66	0.30	0.86	0.59	-2.00	-0.25	0.41	0.41	1.62
1814	0.24	0.20	0.26	0.04	-5.11	1.19	-0.10	-0.12	0.40
1815	0.42	0.23	0.54	-1.74	-8.65	1.90	-0.19	-0.22	1.94
1816	0.75	0.10	1.12	-1.43	6.85	1.82	1.09	1.10	1.72
1817	0.50	0.32	0.59	-1.19	-16.07	0.59	-0.62	-0.67	0.99
1818	0.75	0.80	0.72	-1.58	1.07	-0.56	0.58	0.56	-1.10
1819	1.00	0.85	1.08	0.17	30.74	0.02	2.52	2.58	2.41
1820	0.66	0.67	0.65	1.12	-6.53	1.95	0.26	0.24	2.24
1821	0.32	0.47	0.24	0.95	-6.45	2.45	0.04	0.01	0.97
1822	0.57	0.84	0.41	-1.34	21.80	0.95	1.82	1.86	-0.29
1823	0.20	0.07	0.27	-1.87	2.99	0.26	0.31	0.30	0.80
1824	0.47	0.56	0.42	-1.18	1.33	1.73	0.53	0.52	-0.28
1825	0.17	-0.09	0.32	-1.39	-20.60	2.79	-1.14	-1.21	-0.50
1826	0.63	0.65	0.62	0.29	5.50	1.81	1.01	1.00	-0.16
1827	0.46	0.36	0.52	1.74	6.56	2.45	1.09	1.10	3.00
1828	0.29	0.44	0.21	1.47	15.82	1.87	1.51	1.54	0.41
1829	0.27	0.39	0.20	1.11	-22.97	2.55	-1.40	-1.48	-0.40
1830	0.33	0.67	0.14	3.31	9.36	2.75	1.24	1.25	-0.04
1831	0.68	0.86	0.58	1.24	0.55	2.55	0.82	0.80	0.06
1832	0.36	0.43	0.33	1.33	17.05	2.64	1.74	1.77	1.97
1833	0.09	0.33	-0.05	0.73	-0.70	1.93	0.18	0.15	0.69
1834	0.32	0.50	0.21	0.61	-10.98	2.83	-0.37	-0.42	1.68
1835	0.49	0.49	0.48	-0.24	-2.21	2.76	0.44	0.42	1.81
1836	0.66	0.55	0.73	1.61	2.43	3.32	1.02	1.01	1.96
1837	0.69	0.86	0.60	4.97	7.21	3.44	1.51	1.52	1.61

TABLE N: *Volume growth rates of the gross stock of produced assets, continued.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1838	0.61	0.76	0.53	2.59	-2.86	2.31	0.55	0.52	2.10
1839	0.84	0.78	0.87	3.17	17.61	1.74	2.40	2.44	1.90
1840	0.68	0.82	0.60	4.32	-12.74	2.51	-0.43	-0.50	1.89
1841	0.57	0.86	0.40	2.69	9.44	1.72	1.55	1.55	0.39
1842	0.85	1.17	0.67	4.33	3.85	0.73	1.23	1.22	-0.17
1843	0.87	1.51	0.50	2.63	1.82	1.74	1.08	1.06	2.27
1844	0.85	1.35	0.56	1.52	-4.85	2.86	0.62	0.59	2.36
1845	1.11	1.48	0.89	1.90	10.91	2.98	1.95	1.97	0.08
1846	1.36	1.64	1.19	3.76	1.59	3.26	1.64	1.63	1.47
1847	1.24	1.42	1.13	5.08	-3.69	3.47	1.12	1.09	1.36
1848	1.03	1.28	0.88	7.11	-6.15	4.17	0.85	0.82	4.34
1849	0.97	1.08	0.91	4.50	9.31	3.09	1.99	2.00	1.09
1850	1.36	1.86	1.07	5.55	-10.54	3.53	0.78	0.74	3.04
1851	2.27	2.71	2.01	5.62	8.61	3.70	3.02	3.07	1.45
1852	2.23	2.17	2.27	5.36	1.16	2.40	2.35	2.36	2.12
1853	2.43	2.28	2.52	4.03	-0.89	3.09	2.33	2.33	1.02
1854	2.27	1.95	2.45	4.49	-4.41	3.50	1.90	1.89	2.38
1855	2.50	2.98	2.21	10.12	1.95	5.07	3.02	3.08	2.10
1856	2.59	3.35	2.13	12.88	-3.75	6.66	2.92	2.98	5.24
1857	2.25	3.91	1.23	8.51	6.06	3.84	2.99	3.07	3.46
1858	2.17	3.04	1.63	7.93	-6.83	1.48	1.87	1.88	4.17
1859	2.27	2.76	1.96	5.04	17.52	1.86	3.36	3.43	3.40
1860	2.41	2.93	2.08	3.32	0.22	5.51	2.54	2.59	3.55
1861	2.67	2.87	2.55	6.57	4.05	5.06	3.21	3.22	4.34
1862	2.89	3.24	2.67	6.24	0.07	2.25	2.87	2.93	3.26
1863	3.08	4.34	2.26	5.33	-0.02	1.01	2.88	2.94	2.11
1864	3.73	4.02	3.54	7.51	1.41	3.58	3.86	3.95	5.21
1865	3.00	2.84	3.11	8.59	-4.98	4.29	3.04	3.10	4.83
1866	2.60	2.16	2.90	5.18	-2.71	3.58	2.57	2.44	2.32
1867	2.25	2.49	2.09	2.74	-4.71	2.20	1.91	1.88	1.93
1868	1.80	1.52	1.99	3.56	-10.87	1.68	1.16	1.11	3.19
1869	1.99	1.92	2.03	3.99	6.06	1.80	2.39	2.43	1.80
1870	2.17	2.57	1.91	4.24	4.73	5.83	2.76	2.78	4.30
1871	1.61	0.64	2.26	4.16	3.99	7.06	2.38	2.38	6.58
1872	3.73	3.35	3.97	7.60	3.50	5.20	4.10	4.15	5.91
1873	5.26	5.56	5.07	11.32	2.98	3.48	5.40	5.50	6.39
1874	5.09	4.32	5.60	10.96	-3.43	2.84	4.92	5.00	7.57
1875	4.59	5.19	4.20	10.06	0.06	4.15	4.75	4.82	7.48
1876	3.46	4.14	3.02	7.26	3.81	5.57	3.89	3.91	5.65
1877	3.41	4.50	2.69	4.54	-1.46	5.56	3.40	3.36	3.75
1878	3.34	4.29	2.70	1.90	-2.30	2.00	2.87	2.84	1.88
1879	2.56	3.15	2.16	0.57	4.01	1.59	2.40	2.38	3.77

TABLE N: *Volume growth rates of the gross stock of produced assets, continued.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1880	2.48	3.98	1.45	1.84	2.22	3.83	2.50	2.50	2.42
1881	2.19	3.49	1.27	2.72	-3.47	5.29	2.13	2.12	6.43
1882	1.67	2.15	1.32	3.45	3.22	5.74	2.10	2.08	4.20
1883	1.98	2.76	1.41	4.39	5.31	4.11	2.44	2.44	5.31
1884	2.47	3.32	1.84	4.13	-0.46	3.45	2.52	2.53	4.20
1885	2.22	2.60	1.94	4.27	6.36	3.21	2.60	2.61	4.74
1886	2.38	2.99	1.93	2.74	-0.19	4.37	2.43	2.39	4.67
1887	1.69	1.62	1.74	1.72	-0.78	2.60	1.64	1.59	4.10
1888	1.97	2.30	1.71	2.39	1.01	3.75	2.07	2.05	3.01
1889	1.82	2.49	1.31	4.85	-0.53	5.32	2.17	2.16	3.98
1890	1.88	2.70	1.24	4.92	1.47	5.62	2.34	2.32	4.40
1891	1.17	0.92	1.36	3.66	1.01	4.87	1.62	1.56	3.92
1892	1.51	1.40	1.60	2.16	-10.65	4.16	1.25	1.21	3.26
1893	1.31	0.58	1.88	1.08	6.03	3.36	1.62	1.58	2.80
1894	1.15	0.86	1.37	1.45	4.50	4.48	1.54	1.52	3.51
1895	2.05	3.38	1.03	1.73	1.27	4.92	2.19	2.19	4.94
1896	1.95	3.15	1.01	3.76	-4.64	6.93	2.20	2.20	4.95
1897	2.61	4.20	1.35	4.24	-2.29	7.63	2.91	2.93	5.55
1898	2.72	3.95	1.71	6.75	-25.85	6.51	2.41	2.40	4.98
1899	3.11	3.95	2.40	7.69	11.73	6.63	3.98	4.01	7.86
1900	2.86	3.32	2.46	6.12	-2.39	4.10	3.04	2.99	4.95
1901	2.46	2.64	2.30	3.45	-0.73	2.29	2.42	2.36	3.72
1902	2.01	1.95	2.06	3.56	18.27	2.99	2.86	2.79	4.29
1903	2.29	2.97	1.71	3.66	16.33	4.43	2.90	2.81	4.68
1904	2.57	3.23	2.00	5.67	-2.48	4.30	2.76	2.62	6.07
1905	2.62	3.35	1.97	5.17	-6.76	3.92	2.54	2.38	4.87
1906	2.92	3.31	2.57	6.83	1.17	4.69	3.26	3.17	5.87
1907	2.49	2.70	2.31	8.89	-0.78	7.10	3.19	3.13	8.12
1908	1.95	1.63	2.23	6.47	-0.02	3.50	2.33	2.18	5.12
1909	1.60	1.37	1.80	5.15	-2.61	0.09	1.59	1.47	4.97
1910	1.98	1.67	2.25	5.27	1.90	3.61	2.35	2.28	5.76
1911	2.50	2.45	2.55	4.45	-0.53	6.30	2.83	2.79	5.86
1912	2.47	2.98	2.03	5.02	3.71	4.92	2.91	2.88	5.58
1913	2.89	3.00	2.80	7.08	-1.08	7.46	3.42	3.42	7.25
1914	2.45	2.58	2.34	7.24	4.88	4.64	3.02	2.99	5.07
1915	1.82	1.51	2.11	6.18	-0.78	4.51	2.24	2.19	5.13
1916	1.75	1.61	1.88	5.75	5.56	8.80	2.78	2.80	6.10
1917	1.86	1.66	2.03	6.11	-7.38	3.46	2.15	2.14	4.07
1918	1.80	1.06	2.46	4.93	3.15	-2.22	1.73	1.72	3.75
1919	1.65	1.05	2.19	3.91	-0.97	-0.18	1.64	1.58	4.01
1920	1.55	1.03	2.01	5.75	2.99	4.52	2.21	2.16	6.66
1921	1.20	0.65	1.67	2.21	-5.23	-1.07	1.00	0.80	2.19

TABLE N: *Volume growth rates of the gross stock of produced assets, continued.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1922	1.51	0.81	2.10	-0.04	50.37	-2.37	1.63	1.36	0.73
1923	1.61	1.65	1.58	1.14	0.20	9.05	2.04	1.86	3.43
1924	1.67	1.97	1.42	1.94	-6.41	7.79	1.95	1.84	3.45
1925	1.80	2.13	1.53	3.38	1.44	5.89	2.18	2.08	3.16
1926	1.59	2.16	1.11	3.35	4.79	3.58	1.89	1.78	2.80
1927	1.67	2.12	1.28	3.07	-1.02	4.94	1.95	1.88	2.48
1928	1.85	2.31	1.46	4.79	-1.37	4.45	2.19	2.13	3.59
1929	1.82	2.24	1.45	5.05	3.19	5.41	2.32	2.25	3.70
1930	2.35	3.05	1.74	5.29	3.45	5.05	2.77	2.69	4.05
1931	1.90	2.16	1.67	3.81	-4.11	1.01	1.92	1.77	3.20
1932	1.60	1.85	1.38	0.55	-5.80	-1.33	1.27	1.03	0.86
1933	1.34	1.52	1.19	0.90	0.27	0.79	1.27	1.00	1.26
1934	1.81	2.04	1.60	3.51	-0.73	7.66	2.28	2.07	3.65
1935	2.38	3.12	1.72	6.25	2.30	10.04	3.20	3.06	5.02
1936	2.77	3.36	2.23	6.66	3.04	6.04	3.32	3.22	5.17
1937	2.59	3.28	1.95	8.10	2.95	5.73	3.27	3.24	4.64
1938	2.90	3.55	2.29	8.90	1.37	5.01	3.54	3.43	4.74
1939	3.31	3.97	2.68	9.36	1.35	5.50	3.98	3.86	5.23
1940	1.55	1.00	2.08	8.54	-6.46	2.46	2.16	1.86	4.61
1941	1.38	0.81	1.92	8.09	-4.19	-2.36	1.64	1.28	2.86
1942	2.15	2.22	2.08	7.21	4.12	0.56	2.55	2.37	3.97
1943	2.38	2.67	2.10	7.16	5.51	3.26	2.98	2.81	4.37
1944	2.50	3.14	1.87	7.37	2.83	4.66	3.19	3.05	4.47
1945	2.93	3.79	2.09	2.78	2.04	4.01	2.98	2.92	2.97
1946	3.46	4.35	2.57	8.30	-0.81	6.93	4.22	4.27	5.26
1947	3.91	4.59	3.22	9.99	-5.42	11.67	5.12	5.23	8.40
1948	3.06	2.70	3.43	10.35	-6.85	6.63	4.12	4.12	6.82
1949	3.05	2.87	3.22	8.74	-2.74	4.18	3.80	3.75	5.90
1950	3.17	3.14	3.21	9.56	-2.02	-1.61	3.54	3.42	5.61
1951	3.02	2.85	3.20	9.56	-2.89	12.16	4.62	4.59	6.36
1952	3.34	3.03	3.64	7.01	-2.75	6.41	4.10	3.90	5.24
1953	3.76	3.41	4.10	6.84	-2.37	-3.04	3.56	3.15	3.02
1954	3.98	3.77	4.18	7.77	-1.22	0.98	4.25	3.94	4.34
1955	3.89	3.66	4.11	6.59	-3.40	6.38	4.47	4.21	5.40
1956	3.90	3.73	4.04	5.95	-3.20	5.41	4.31	4.06	4.83
1957	3.81	3.73	3.88	5.42	-0.98	5.04	4.16	3.85	4.82
1958	4.04	3.83	4.23	5.98	-1.02	1.38	4.07	3.73	4.32
1959	4.37	3.93	4.76	6.29	-2.17	0.00	4.24	3.81	4.55
1960	4.29	3.76	4.74	6.38	-2.02	7.09	4.85	4.64	5.57
1961	4.46	4.07	4.78	6.54	-0.41	4.12	4.75	4.57	5.73
1962	4.55	4.29	4.78	6.67	-2.40	2.45	4.68	4.45	4.65
1963	4.75	4.38	5.07	6.51	-4.14	0.53	4.61	4.24	4.19

TABLE N: *Volume growth rates of the gross stock of produced assets, continued.*

During year *	Buildings and structures	Residential buildings	Non-residential structures et al.	Machinery and equipment	Fixed livestock**	Inventory stock**	Total, aggregate economy	Total, private sector	Total, manufacturing et al.
1964	4.93	4.73	5.10	6.47	-4.57	5.29	5.17	4.83	5.18
1965	4.87	4.83	4.91	6.29	-1.67	6.55	5.22	4.93	5.36
1966	4.74	4.39	5.05	6.57	-2.72	2.96	4.86	4.53	4.32
1967	4.85	4.71	4.97	6.07	-2.32	0.49	4.64	4.22	3.77
1968	4.70	4.62	4.78	5.10	0.57	0.84	4.42	3.90	4.04
1969	4.64	4.45	4.80	5.16	0.24	3.64	4.62	4.15	4.62
1970	4.53	4.11	4.89	5.30	-0.15	8.52	4.99	4.58	5.30
1971	4.17	3.95	4.36	4.53	1.52	2.74	4.10	3.73	4.35
1972	4.18	3.89	4.43	4.64	3.50	-0.23	3.87	3.52	3.73
1973	3.86	3.68	4.00	5.11	2.56	-1.41	3.63	3.38	3.48
1974	3.52	3.25	3.73	5.77	1.81	6.42	4.18	4.14	4.61
1975	3.38	3.09	3.62	5.01	1.57	8.78	4.13	4.12	5.00
1976	3.07	2.72	3.37	4.66	2.06	6.31	3.62	3.59	4.44
1977	2.88	2.53	3.19	4.01	2.38	-1.79	2.76	2.54	2.20
1978	2.85	2.82	2.88	1.99	3.24	-5.40	2.14	1.83	0.87
1979	2.78	2.84	2.73	2.74	3.92	0.71	2.66	2.48	1.66
1980	2.66	2.50	2.82	3.28	3.64	4.06	2.85	2.73	2.78
1981	2.38	2.22	2.54	2.65	3.45	-2.63	2.17	1.97	1.61
1982	2.24	2.09	2.39	2.47	2.89	-3.75	1.97	1.80	1.10
1983	2.14	2.01	2.27	2.73	2.96	-5.58	1.86	1.69	1.04
1984	2.21	2.21	2.21	3.36	2.76	-4.14	2.12	2.04	1.31
1985	2.14	2.10	2.17	4.28	2.33	-0.25	2.43	2.43	2.39
1986	2.12	2.05	2.19	4.12	2.95	-2.97	2.28	2.29	1.57
1987	2.18	2.23	2.14	4.72	3.60	-2.52	2.48	2.54	1.84
1988	2.22	2.37	2.07	5.07	4.70	-1.89	2.60	2.67	2.09
1989	2.38	2.48	2.26	6.22	4.82	-0.25	2.97	3.06	2.57
1990	2.38	2.59	2.13	5.41	4.13	-1.19	2.78	2.88	1.89
1991	2.15	2.35	1.89	3.54	4.29	-9.75	2.04	1.99	0.33
1992	1.86	2.03	1.64	1.85	4.22	-3.44	1.73	1.64	0.33
1993	1.33	1.18	1.52	0.68	3.24	-7.21	0.99	0.77	-0.16
1994	1.10	0.60	1.74	1.48	2.96	4.85	1.27	1.05	1.40
1995	1.06	0.24	2.13	2.72	2.07	6.66	1.51	1.36	2.41
1996	1.03	0.31	1.97	3.23	2.12	-1.46	1.35	1.23	2.08
1997	0.86	0.13	1.80	3.23	2.34	-0.63	1.23	1.18	1.84
1998	0.86	0.12	1.82	3.76	2.42	1.88	1.38	1.35	1.93
1999	0.83	0.21	1.64	4.46	2.64	-3.01	1.35	1.31	1.43
2000	0.85	0.24	1.67	4.72	2.22	1.70	1.50	1.54	1.53

Sources: See sections 5.4, 5.6 and 5.7.

*The volume change during the year is measured from 1st of January at the beginning of the year to the 1st of January the next year.

** The gross and net stocks are equal for this asset.

TABLE O: *Number of employed (employees and self-employed) of various types of activities.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total employment
1850	1105486	130822	12975	9055	15764	132872	56701	845	1464520
1851	1102721	131122	16068	9146	15868	129716	55335	858	1460835
1852	1103603	133137	15616	9484	16493	130948	55977	872	1466130
1853	1113419	135097	15895	9468	16348	132140	52842	885	1476095
1854	1126990	140236	14837	9869	16970	131772	56525	899	1498098
1855	1150862	146014	15012	10454	17518	135459	50213	913	1526445
1856	1143045	152931	15787	11073	18614	137339	49276	938	1529002
1857	1158127	154578	15247	11902	19747	138252	49909	963	1548726
1858	1185729	152900	15938	12612	20500	140449	54551	990	1583669
1859	1204603	161745	17419	12987	20899	142046	53938	1017	1614653
1860	1214229	167373	18878	12848	21561	144123	53680	1045	1633737
1861	1213014	176874	18179	13709	22795	148324	54597	1068	1648559
1862	1194475	173955	17947	13197	23358	146761	56954	1091	1627736
1863	1223786	177693	20127	13286	24715	148730	60058	1114	1669509
1864	1228721	188044	23110	13831	27677	156076	64264	1139	1702862
1865	1245386	197758	22583	15170	26384	151265	60449	1164	1720157
1866	1233768	201557	21918	16169	27343	152397	61318	1189	1715659
1867	1248372	196579	21326	16804	28610	152006	58837	1215	1723749
1868	1201011	191841	20342	17276	29167	151112	59018	1242	1671010
1869	1233088	193022	22050	17769	29251	150903	66086	1270	1713438
1870	1281254	198130	23689	19494	30038	151063	67746	1298	1772712
1871	1294794	205501	23909	21683	31436	152373	67260	1330	1798285
1872	1297874	221422	29565	24705	33404	153378	61057	1363	1822768
1873	1294853	231840	33528	27658	35477	154490	56678	1397	1835920
1874	1300976	245501	34482	31662	37053	155588	55219	1431	1861912
1875	1290712	247466	36256	35239	39684	156934	57043	1467	1864801
1876	1321030	257884	35781	36707	41349	158252	64705	1504	1917212
1877	1308899	261520	37534	40036	42369	159186	69084	1541	1920169
1878	1299803	237343	38614	41804	43788	159539	80030	1580	1902503
1879	1334343	232233	36858	42290	44449	159859	80760	1620	1932413
1880	1328307	246090	36794	45104	47430	160626	81003	1660	1947014
1881	1322823	271938	38489	45422	50830	161212	81976	1705	1974395
1882	1306039	275672	36057	46841	52690	160392	83558	1750	1962998
1883	1330798	270463	36745	47476	53884	159152	83679	1797	1983994
1884	1311233	272527	39559	45904	55683	159198	85747	1845	1971696
1885	1319634	280783	40969	43515	58265	157958	86112	1894	1989130
1886	1311012	277638	42211	42969	59444	157482	89274	1945	1981975
1887	1305662	283338	39685	43977	60913	156959	89882	1997	1982414
1888	1315337	296507	41286	44433	61902	156913	90734	2051	2009162
1889	1301093	306827	41962	46445	59834	154214	90004	2107	2002486

TABLE O: *Number of employed, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total employment
1890	1303184	317342	42778	47046	59556	152988	90855	2164	2015913
1891	1318144	336998	40405	48409	61771	153212	92071	2208	2053219
1892	1307022	336507	41838	50108	65983	152509	94747	2253	2050967
1893	1312008	340929	40360	50490	66096	151804	96693	2300	2060681
1894	1304567	358423	40541	50287	68739	152114	97301	2347	2074320
1895	1307069	369234	47427	50770	72245	151994	97666	2395	2098800
1896	1314487	402255	47128	52489	76441	152277	97180	2445	2144702
1897	1311332	422992	53484	55226	78121	152345	96693	2496	2172689
1898	1309325	447759	57447	56219	81226	151143	95355	2547	2201022
1899	1300839	463581	65081	61565	88272	153855	94991	2600	2230784
1900	1285953	474196	64491	66413	91324	153301	98153	2655	2236485
1901	1287755	476849	65590	68745	92158	155362	98153	2712	2247324
1902	1262222	484122	65739	68531	92785	155733	106545	2770	2238447
1903	1254395	495817	72220	69586	94462	157688	108005	2830	2255002
1904	1246736	507807	79899	74009	99730	159453	107153	2891	2277678
1905	1212015	514490	84220	77298	104721	161648	111289	2954	2268632
1906	1220151	529232	89896	80476	116267	165059	101072	3018	2305171
1907	1228008	536603	89499	85481	122492	166971	99491	3083	2331627
1908	1210159	528052	93784	86293	122070	167857	103991	3150	2315357
1909	1207624	524318	82043	87099	122578	168762	108856	3219	2304498
1910	1199597	543679	88604	89625	133129	171577	108126	3289	2337625
1911	1192930	550853	100455	88414	140518	175920	110437	3369	2362895
1912	1189144	564612	101416	90451	139660	178618	110437	3451	2377790
1913	1194445	590077	114315	94667	149274	183531	111775	3536	2441619
1914	1202590	597980	106310	96646	136928	183131	117491	3623	2444698
1915	1189181	614005	91874	101138	143777	187613	130262	3711	2461562
1916	1192869	646933	91833	103967	152873	192056	121384	3803	2505718
1917	1184119	655604	93808	107617	158267	195323	103869	3896	2502504
1918	1148168	640238	92001	112997	168479	199754	132452	3992	2498080
1919	1152063	655165	104089	118424	184087	206683	133668	4091	2558268
1920	1171483	689630	112257	120361	194301	211495	140601	4192	2644321
1921	1159602	586125	110691	111811	169944	211063	124303	4391	2477930
1922	1147836	582064	126368	116506	195033	219172	130992	4599	2522570
1923	1140118	618724	124232	119442	212075	225827	141695	4817	2586931
1924	1132515	646933	122520	121753	191659	227352	139263	5046	2587041
1925	1124543	667239	127517	126723	179252	229127	141695	5286	2601383
1926	1122022	687545	130818	130557	205984	236889	149966	5538	2669318
1927	1120416	695887	131211	136177	223194	241926	148141	5801	2702754
1928	1117223	731120	138408	137136	234681	247281	154344	6078	2766270
1929	1115254	753292	150644	147079	256922	255096	161642	6367	2846297
1930	1112550	761414	162540	152147	274156	263250	167115	6671	2899843

TABLE O: *Number of employed, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total employment
1931	1087605	732547	175615	152323	262293	264010	180616	7390	2862400
1932	1069926	700167	180755	149283	255708	263992	186454	8234	2814520
1933	1058442	689959	182833	145960	262968	265954	186940	8841	2801898
1934	1071813	751097	234218	143709	274634	267735	187184	10492	2940881
1935	1072601	793025	233341	147760	280839	271345	193995	12498	3005403
1936	1069276	827929	228563	155183	287419	274352	201779	13867	3058368
1937	1056656	877322	218320	161858	290422	277244	209685	14989	3106496
1938	1054169	891920	234676	166302	294276	277781	229631	16664	3165421
1939	1042761	921885	238798	172428	304908	276895	280715	19613	3258002
1940	1020540	915738	192327	168056	315806	287210	245321	21386	3166385
1941	980432	920019	186562	159332	316265	280825	288012	20592	3152039
1942	940413	965899	199351	167203	324288	278175	314770	21646	3211746
1943	900255	996852	201709	170089	347638	282184	332771	22274	3253771
1944	894554	1014304	208972	179070	347875	286121	312459	21779	3265134
1945	886196	1060953	225396	185071	352483	285439	290566	22439	3308543
1946	851339	1081039	240379	198797	397170	292305	258943	23946	3343918
1947	831926	1096406	246350	213126	403981	286437	278404	23151	3379780
1948	814646	1111882	248012	218211	410015	289025	290080	21409	3403281
1949	801463	1113419	247098	221751	415837	280425	301999	22301	3404293
1950	774966	1120004	249374	223536	423406	277945	312702	23994	3405927
1951	746021	1146531	257103	227563	426697	284073	326930	23138	3438057
1952	722973	1123432	263113	227272	425242	285729	341609	21896	3411265
1953	682120	1117248	254283	228425	444795	294119	358710	23198	3402897
1954	676037	1122305	266118	224047	454197	299545	365018	23816	3431083
1955	650392	1149348	276500	225786	463467	303203	371383	23003	3463083
1956	638743	1155755	280077	233813	475494	314739	392009	24303	3514932
1957	617150	1155804	279714	239696	486557	315976	401454	24534	3520885
1958	605832	1147942	285651	235576	494933	325836	423969	26527	3546266
1959	582118	1156100	297363	236191	515458	329847	447959	27054	3592091
1960	585925	1204677	306900	236967	528721	339592	462403	27903	3693087
1961	557519	1233030	308100	235782	544232	335792	478932	30094	3723481
1962	542905	1241578	317900	236372	549295	330600	493156	32743	3744551
1963	496011	1241790	327900	240058	562915	334500	528518	35645	3767338
1964	474401	1258464	340400	239625	585059	327200	556867	39922	3821939
1965	448278	1263110	359500	237794	596975	321700	577302	43435	3848096
1966	421644	1248305	364500	239956	605048	321600	604950	45879	3851884
1967	389416	1209110	366900	242041	604028	309600	643517	46796	3811409
1968	362371	1188809	370600	244482	630997	311200	692502	47407	3848369
1969	343275	1206700	373800	245284	644990	316100	743190	48265	3921604
1970	326100	1226636	369600	243053	654545	322100	806300	49440	3997773
1971	310100	1184962	344900	248551	671977	318000	860300	49187	3987976

TABLE O: *Number of employed, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total employment
1972	290800	1163218	347500	253970	671033	319700	904500	51273	4001994
1973	274500	1174441	340800	255432	669732	314800	936900	81421	4048027
1974	270800	1193529	331600	262115	682030	314600	993900	49709	4098283
1975	261700	1201075	325300	267457	705986	322600	1044500	49814	4178432
1976	250700	1197503	314900	268794	707280	317800	1094200	48334	4199511
1977	242600	1158418	298300	271212	709855	320000	1139500	50520	4190405
1978	242600	1126250	297200	271632	701626	323300	1197600	52705	4212912
1979	237000	1127824	290100	274416	713135	321100	1251200	51742	4266517
1980	231300	1125100	301700	280400	710000	320200	1299700	51900	4320300
1981	222800	1094000	299100	281700	709600	323900	1331500	48200	4310800
1982	218700	1058100	293000	288100	704700	332500	1345200	48300	4288600
1983	214000	1036500	279900	283500	710000	339800	1359100	53700	4276500
1984	211600	1041400	272200	282400	720000	340400	1398400	53500	4319900
1985	206900	1053000	272000	288900	727100	350700	1412500	53500	4364600
1986	201400	1050300	273100	288300	755200	352000	1405500	60800	4386600
1987	181000	1043300	279900	289100	782400	361500	1387800	57300	4382300
1988	178400	1060100	280900	289100	807500	358900	1398400	57000	4430300
1989	169800	1043500	297300	293100	841300	366200	1426400	59500	4497100
1990	167800	1011600	299200	297900	851300	375200	1436600	64100	4503700
1991	160300	952700	297200	299700	848100	371700	1426500	65300	4421500
1992	154700	870500	267800	287600	817000	366800	1372400	67100	4203900
1993	154000	806900	229600	273000	768400	368900	1324400	63200	3988400
1994	154800	821100	214000	270000	774000	378300	1283900	62500	3958600
1995	151573	866307	220364	270233	805472	383097	1266988	62972	4027005
1996	144772	862795	214411	264973	813490	386145	1245660	61839	3994085
1997	134283	853990	207842	260868	813587	385847	1225460	57591	3939468
1998	129903	869036	210818	266410	848621	400447	1222641	52776	4000653
1999	129211	864676	220774	276097	889504	413231	1238989	53814	4086297
2000	134052	863905	227343	284978	940601	441249	1237294	56930	4186351

Sources: See chapter 6.

Comment: The calculated figures for the period 1850-1950 of employment in trade (which is included in circulation) and in building and construction are not comparable with the estimate of the total value added of these activities (for example, if productivity is computed). This partly also pertains to other types of activities, but on the aggregate level employment should be comparable with value added. Employment excludes "housewives" (see TABLE Q). The aggregate employment figures also involve certain double counting, as individuals working in two different activities tend to be counted twice by Statistics Sweden.

TABLE P: *Number of employees of various types of activities.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total number of employees
1850	829431	90105	9782	9055	7276	129463	56701	584	1132397
1851	825732	90474	12654	9146	7117	126309	55335	593	1127361
1852	825677	91382	12139	9484	7348	127466	55977	602	1130076
1853	834553	93122	12320	9468	7061	128703	52842	611	1138680
1854	847181	97743	11225	9869	7386	128275	56525	621	1158824
1855	870106	103020	11304	10454	7612	131899	50213	630	1185239
1856	858004	108703	11949	11073	8251	133669	49276	647	1181573
1857	868736	109372	11344	11902	8693	134476	49909	665	1195097
1858	891920	106745	11903	12612	8952	136623	54551	683	1223990
1859	906310	114524	13212	12987	8748	138193	53938	702	1248612
1860	911383	119617	14499	12848	8958	140233	53680	721	1261940
1861	908412	127539	13727	13709	9842	144409	54597	741	1272975
1862	888107	125255	13398	13197	10517	142928	56954	760	1251115
1863	915642	127542	15359	13286	11248	144801	60058	780	1288716
1864	918790	134908	18089	13831	11227	151490	64264	801	1313400
1865	933658	141643	17463	15170	11785	147156	60449	823	1328147
1866	920233	145283	16705	16169	11899	148162	61318	844	1320612
1867	933018	141942	16015	16804	12335	147644	58837	867	1327462
1868	883830	140381	14953	17276	12862	146780	59018	890	1275990
1869	914067	143120	16439	17769	13290	146676	66086	914	1318361
1870	960384	148993	17859	19494	13395	146752	67746	938	1375560
1871	971513	155663	18197	21683	14532	147969	67260	965	1397781
1872	973324	169034	23579	24705	15714	148910	61057	993	1417315
1873	967765	177953	27256	27658	17143	150015	56678	1022	1425490
1874	972747	189303	28104	31662	18731	151203	55219	1051	1448019
1875	959945	189982	29556	35239	20023	152213	57043	1081	1445083
1876	987725	197839	28398	36707	20764	153353	64705	1113	1490605
1877	974453	200454	29592	40036	21523	154196	69084	1145	1490483
1878	962693	177735	30415	41804	21971	154372	80030	1178	1470198
1879	996091	175496	28512	42290	21958	154683	80760	1212	1501003
1880	987516	189776	28489	45104	23904	155499	81003	1247	1512540
1881	980130	211316	29638	45422	26338	155771	81976	1285	1531876
1882	962711	215133	27041	46841	27698	154898	83558	1324	1519203
1883	985313	210563	27267	47476	28554	153563	83679	1364	1537780
1884	963465	212607	30081	45904	29551	153202	85747	1405	1521961
1885	970851	219722	30651	43515	31163	151871	86112	1447	1535332
1886	960072	215683	31333	42969	32093	151195	89274	1491	1524108
1887	952946	221620	28211	43977	33110	150524	89882	1536	1521807
1888	960971	235185	29777	44433	33955	150074	90734	1583	1546711
1889	945966	244257	29921	46445	31603	147346	90004	1631	1537172
1890	946154	254983	29986	47046	31518	146015	90855	1680	1548236

TABLE P: *Number of employees, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total number of employees
1891	960352	273297	27939	48409	33410	146189	92071	1720	1583388
1892	947327	272990	29885	50108	34900	145183	94747	1760	1576900
1893	951679	276425	29221	50490	34920	144252	96693	1802	1585482
1894	943097	291702	29577	50287	36889	144372	97301	1844	1595071
1895	944583	301889	36674	50770	39833	144043	97666	1888	1617345
1896	949844	333931	32092	52489	42746	144061	97180	1932	1654275
1897	945674	355076	37929	55226	45681	144184	96693	1978	1682440
1898	942779	379510	41454	56219	47213	142882	95355	2024	1707437
1899	931882	394240	48595	61565	53592	144971	94991	2072	1731908
1900	916489	405061	47513	66413	55467	144413	98153	2121	1735629
1901	916769	406809	48005	68745	55558	145230	98153	2172	1741440
1902	890221	412056	48115	68531	55359	145399	106545	2225	1728452
1903	880363	422962	54683	69586	56713	146788	108005	2279	1741378
1904	871816	434232	62402	74009	60967	148154	107153	2334	1761067
1905	836080	440179	66623	77298	64960	149861	111289	2390	1748679
1906	843709	456743	73479	80476	74178	152769	101072	2448	1784874
1907	850931	464611	73268	85481	79458	154202	99491	2507	1809949
1908	829529	456804	77589	86293	78183	154456	103991	2568	1789412
1909	824330	452337	66024	87099	78386	154822	108856	2630	1774484
1910	815795	470992	72762	89625	86740	156975	108126	2693	1803708
1911	811412	477446	83590	88414	92829	160825	110437	2765	1827719
1912	810037	490393	85430	90451	93922	163322	110437	2839	1846832
1913	818002	515994	97396	94667	101733	167527	111775	2915	1910009
1914	828432	522129	91536	96646	94982	167594	117491	2993	1921805
1915	817179	536523	79886	101138	100847	171570	130262	3074	1940480
1916	821882	567141	80582	103863	109390	175431	121384	3156	1982828
1917	814781	574588	83017	107513	115153	178334	103869	3240	1980497
1918	778830	558406	82064	112893	124760	182185	132452	3327	1974918
1919	785898	571431	93533	117902	137502	188264	133668	3416	2031613
1920	807475	603449	101568	119212	146639	192595	140601	3508	2115047
1921	796863	499808	102451	110036	128412	192979	124303	3682	1958533
1922	786492	494795	116893	114001	147172	199596	130992	3864	1993805
1923	778774	529825	114099	115579	159537	204887	141695	4055	2048452
1924	771298	556674	111421	116951	144395	206591	139263	4256	2050849
1925	763580	575620	115923	120564	135016	208184	141695	4467	2065049
1926	758394	593344	118760	122936	154641	214264	149966	4688	2116995
1927	755138	599918	119043	126678	167143	218032	148141	4921	2139014
1928	750677	633792	125482	127219	175422	222352	154344	5165	2194454
1929	747059	654469	136660	134239	191756	228263	161642	5421	2259508
1930	742959	660824	147181	136906	204150	234647	167115	5689	2299471
1931	715223	632093	158722	137187	196425	235429	180616	6127	2261821

TABLE P: *Number of employees, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total number of employees
1932	691708	600801	163007	134042	192625	235372	186454	6606	2210615
1933	673499	591137	163763	131450	199097	237026	186940	6883	2189795
1934	670122	650914	207574	129408	209030	238002	187184	7806	2300040
1935	659872	691892	205660	132519	214979	240800	193995	9197	2348913
1936	645763	726116	199615	138690	221271	243322	201779	9973	2386528
1937	627433	774829	188839	144216	224940	245654	209685	10097	2425692
1938	614289	790515	202389	148034	229224	245622	229631	10782	2470485
1939	597044	819800	205423	152907	238433	243107	280715	12357	2549786
1940	573047	815692	162477	149161	248098	251543	245321	12871	2458210
1941	541693	819701	159162	143569	249778	246912	288012	12350	2461177
1942	511063	864358	172847	150814	257488	245608	314770	13788	2530736
1943	480674	896534	175797	154535	277851	249068	332771	14515	2581745
1944	473198	913850	184179	161741	280032	253331	312459	14280	2593069
1945	465600	959411	200311	168682	285449	253357	290566	14949	2638326
1946	430870	983304	213841	180946	322175	258447	258943	16425	2664951
1947	416279	999214	218395	193396	328305	252086	278404	15659	2701737
1948	404581	1017001	219241	198169	333754	252955	290080	14469	2730250
1949	389749	1019353	217372	200455	339106	244574	301999	15648	2728257
1950	365028	1026483	219780	202241	346054	242148	312702	17395	2731830
1951	373178	1055536	226704	205555	350523	248715	326930	17425	2804566
1952	356141	1038586	232118	205544	350373	250107	341609	17037	2791518
1953	315759	1036946	224439	206365	367382	257676	358710	18568	2785844
1954	321250	1045468	235001	202138	376294	262823	365018	19538	2827529
1955	301274	1074328	244287	203693	385213	266216	371383	19281	2865676
1956	299387	1084011	247568	210614	396566	275796	392009	20758	2926708
1957	277524	1087523	247366	215892	407168	275756	401454	21306	2933990
1958	261379	1083337	252739	212144	415719	284329	423969	23378	2956995
1959	238189	1094135	263227	212438	434352	287753	447959	24156	3002210
1960	236925	1143077	271800	213467	447121	297800	462403	25203	3097795
1961	220919	1173830	271900	211882	464332	294900	478932	27494	3144189
1962	213805	1185178	280600	212072	471195	290400	493156	30243	3176651
1963	188611	1186890	289500	215358	487415	295200	528518	33145	3224638
1964	181201	1203864	300900	214525	510359	288500	556867	37422	3293639
1965	166578	1211910	318900	212294	524175	284100	577302	40935	3336196
1966	161144	1198605	322800	212456	536348	283200	604950	43379	3362884
1967	147016	1161310	324100	214441	533728	269000	643517	44296	3337409
1968	134271	1142509	326700	215482	557297	270100	692502	44907	3383769
1969	125675	1162500	329100	218584	572690	274600	743190	45365	3471704
1970	123600	1183936	327200	217753	583545	279700	806300	46740	3568773
1971	120200	1144762	302400	224851	601777	276400	860300	46587	3577276
1972	113000	1124018	304700	229970	606533	279000	904500	48573	3610294

TABLE P: *Number of employees, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total number of employees
1973	102300	1136241	297600	231232	604732	277700	936900	79121	3665827
1974	100900	1158129	293400	236715	618030	274800	993900	47809	3723683
1975	96500	1166275	289900	243257	643186	282200	1044500	48114	3813932
1976	92500	1164003	274500	244994	647880	277400	1094200	46434	3841911
1977	90000	1126018	256200	246312	652255	280700	1139500	48420	3839405
1978	88200	1094850	255400	245532	642026	281700	1197600	50405	3855712
1979	85400	1097224	248100	246916	649335	279200	1251200	49642	3907017
1980	79800	1094600	259500	252500	643900	278500	1299700	50100	3958600
1981	79900	1062400	254900	254600	643600	280800	1331500	46800	3954500
1982	79200	1024400	248100	261900	633900	284400	1345200	46800	3923900
1983	78700	1001800	236300	260300	638700	293900	1359100	52100	3920900
1984	77500	1005900	231800	261000	649700	295300	1398400	51600	3971200
1985	74900	1020000	231600	266200	660500	302900	1412500	51200	4019800
1986	70300	1017700	232700	265100	686100	305100	1405500	58300	4040800
1987	62400	1009800	237800	269100	707000	315900	1387800	54800	4044600
1988	64500	1029700	239500	268500	729500	311500	1398400	53800	4095400
1989	61700	1014000	253400	269800	759800	315900	1426400	55800	4156800
1990	62900	982100	255300	275300	771200	323700	1436600	60500	4167600
1991	60600	921100	254400	276600	765500	321200	1426500	61400	4087300
1992	55700	837500	222600	263400	733000	317900	1372400	63000	3865500
1993	51900	774600	186400	249100	682300	311100	1324400	59200	3639000
1994	51600	790100	173200	246300	683600	320800	1283900	57600	3607100
1995	56638	830935	179125	246450	711310	323706	1266988	57272	3672423
1996	55387	827110	171943	242105	724098	327527	1245660	56239	3650070
1997	50330	820648	163883	237002	727681	327488	1225460	52375	3604867
1998	51145	837177	169667	241296	764416	334868	1222641	47996	3669207
1999	48682	835550	180413	253395	801651	341549	1238989	48941	3749170
2000	62025	835325	187859	263856	850682	369051	1237294	51774	3857866

Sources: See chapter 6.

Comment: See comment of TABLE O.

TABLE Q: *Number of self-employed of various types of activities, and the number of "housewives".*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Buil-ding and con-struc-tion	Trans-port and com-muni-cation	Circu-lation	Private repro-ductive services	Real estate	Total num-ber of self-em-ployed	Num-ber of "house-wives"
1850	276055	40717	3193	0	8488	3409	262	332124	536378
1851	276989	40648	3414	0	8751	3407	266	333475	540761
1852	277926	41754	3477	0	9144	3482	270	336054	545179
1853	278866	41975	3575	0	9288	3437	274	337414	549634
1854	279809	42493	3612	0	9584	3498	278	339274	554125
1855	280756	42994	3709	0	9906	3559	282	341206	558653
1856	285041	44228	3837	0	10363	3669	290	347429	567640
1857	289392	45206	3904	0	11054	3776	298	353630	576772
1858	293809	46155	4034	0	11548	3826	306	359679	586052
1859	298293	47222	4207	0	12152	3853	315	366041	595480
1860	302846	47756	4379	0	12603	3890	323	371798	605060
1861	304602	49335	4452	0	12953	3915	327	375584	611059
1862	306368	48700	4549	0	12841	3833	330	376621	617118
1863	308144	50150	4768	0	13467	3929	334	380793	623236
1864	309931	53136	5021	0	16450	4586	337	389462	629416
1865	311728	56115	5120	0	14599	4109	341	392011	635656
1866	313535	56274	5213	0	15444	4235	345	395047	641959
1867	315353	54637	5311	0	16275	4362	348	396288	648324
1868	317182	51461	5389	0	16304	4332	352	395020	654752
1869	319021	49901	5611	0	15961	4227	356	395077	661244
1870	320871	49138	5830	0	16643	4311	360	397152	667800
1871	323281	49838	5712	0	16904	4404	365	400503	672666
1872	324550	52388	5986	0	17691	4468	370	405453	677568
1873	327087	53887	6272	0	18333	4475	375	410430	682506
1874	328229	56198	6378	0	18322	4386	380	413894	687479
1875	330767	57484	6700	0	19660	4721	385	419718	692489
1876	333304	60045	7383	0	20584	4899	391	426607	697536
1877	334446	61066	7941	0	20846	4990	396	429686	702619
1878	337111	59609	8199	0	21818	5167	402	432304	707739
1879	338253	56737	8347	0	22491	5176	407	431410	712896
1880	340790	56314	8305	0	23526	5126	413	434475	718091
1881	342693	60622	8850	0	24492	5441	420	442519	721826
1882	343328	60539	9017	0	24992	5494	426	443796	725581
1883	345485	59900	9478	0	25330	5589	433	446214	729355
1884	347768	59920	9478	0	26131	5996	440	449735	733148
1885	348783	61061	10318	0	27102	6087	447	453799	736962
1886	350940	61955	10879	0	27351	6287	454	457866	740795
1887	352716	61718	11474	0	27802	6435	461	460607	744648
1888	354366	61322	11509	0	27947	6839	468	462451	748521
1889	355127	62570	12041	0	28232	6869	476	465314	752415

TABLE Q: *Number of self-employed and "housewives", continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Real estate	Total number of self-employed	Number of "housewives"
1890	357030	62360	12791	0	28038	6973	483	467676	756328
1891	357792	63702	12466	0	28361	7023	488	469831	760437
1892	359695	63517	11954	0	31083	7326	493	474068	764569
1893	360329	64504	11139	0	31176	7552	498	475199	768722
1894	361471	66721	10964	0	31849	7742	503	479250	772899
1895	362486	67345	10753	0	32412	7950	508	481455	777098
1896	364643	68325	15036	0	33694	8216	513	490427	781320
1897	365658	67916	15555	0	32441	8161	518	490249	785565
1898	366546	68248	15994	0	34013	8261	523	493584	789833
1899	368957	69341	16485	0	34681	8884	528	498876	794124
1900	369464	69134	16979	0	35857	8888	534	500856	798438
1901	370987	70040	17585	0	36600	10132	539	505884	804894
1902	372002	72065	17623	0	37425	10334	545	509995	811402
1903	374032	72855	17536	0	37749	10900	551	513624	817963
1904	374920	73575	17497	0	38763	11299	557	516611	824577
1905	375935	74311	17597	0	39761	11787	564	519954	831244
1906	376442	72488	16417	0	42089	12291	570	520297	837965
1907	377077	71991	16232	0	43034	12769	576	521678	844741
1908	380629	71248	16196	0	43888	13401	582	525944	851571
1909	383294	71981	16019	0	44192	13940	589	530014	858457
1910	383801	72687	15843	0	46389	14602	595	533917	865398
1911	381517	73407	16865	0	47689	15095	604	535176	869735
1912	379107	74219	15986	0	45738	15296	612	530958	874094
1913	376442	74083	16919	0	47541	16003	620	531610	878475
1914	374159	75850	14774	0	41945	15537	629	522894	882877
1915	372002	77482	11988	0	42930	16043	638	521082	887302
1916	370987	79792	11251	104	43483	16625	647	522889	891749
1917	369337	81016	10791	104	43114	16989	656	522007	896218
1918	369337	81831	9937	104	43719	17569	665	523162	900709
1919	366165	83734	10556	522	46585	18419	674	526656	905223
1920	364009	86181	10689	1148	47663	18900	684	529274	909760
1921	362740	86317	8240	1775	41532	18084	709	519396	914445
1922	361344	87269	9475	2505	47861	19576	735	528766	919154
1923	361344	88900	10134	3862	52538	20940	762	538480	923887
1924	361217	90259	11099	4802	47263	20761	790	536192	928645
1925	360963	91619	11594	6159	44236	20943	819	536334	933428
1926	363628	94201	12058	7620	51343	22624	849	552324	938235
1927	365277	95968	12168	9499	56051	23895	881	563740	943066
1928	366546	97328	12925	9917	59258	24929	913	571816	947923
1929	368195	98823	13984	12840	65166	26834	947	586789	952804
1930	369591	100590	15359	15241	70007	28603	982	600372	957711

TABLE Q: *Number of self-employed and "housewives", continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Real estate	Total number of self-employed	Number of "housewives"
1931	372382	100454	16893	15136	65868	28582	1263	600579	975988
1932	378219	99367	17748	15241	63083	28620	1628	603905	994614
1933	384943	98823	19070	14510	63871	28928	1958	612103	1013595
1934	401691	100182	26644	14301	65605	29733	2685	640842	1032939
1935	412729	101134	27681	15241	65859	30545	3301	656490	1052652
1936	423514	101813	28948	16494	66148	31030	3894	671841	1072741
1937	429223	102493	29481	17642	65482	31590	4892	680804	1093213
1938	439881	101406	32287	18268	65053	32159	5882	694936	1114076
1939	445717	102085	33374	19521	66475	33788	7256	708217	1135337
1940	447493	100046	29850	18895	67708	35667	8515	708175	1157004
1941	438739	100318	27400	15763	66487	33913	8242	690861	1173189
1942	429350	101542	26504	16389	66800	32567	7858	681010	1189601
1943	419580	100318	25912	15554	69786	33116	7759	672026	1206242
1944	421357	100454	24793	17329	67843	32790	7499	672065	1223116
1945	420595	101542	25085	16389	67034	32082	7490	670217	1240226
1946	420469	97735	26538	17851	74995	33859	7521	678968	1257576
1947	415647	97192	27955	19730	75676	34351	7492	678044	1275168
1948	410065	94881	28771	20043	76262	36070	6939	673031	1293006
1949	411714	94065	29726	21295	76731	35851	6653	676036	1311094
1950	409938	93522	29594	21295	77352	35797	6599	674097	1329434
1951	372844	90994	30399	22008	76174	35359	5713	633491	1314709
1952	366831	84845	30995	21727	74868	35621	4859	619747	1300147
1953	366361	80302	29844	22059	77413	36443	4630	617053	1285746
1954	354787	76837	31118	21909	77903	36722	4279	603554	1271504
1955	349118	75020	32213	22094	78254	36987	3723	597407	1257421
1956	339356	71744	32509	23199	78928	38942	3545	588224	1243493
1957	339626	68280	32347	23804	79389	40221	3227	586895	1229719
1958	344453	64604	32912	23432	79213	41508	3149	589271	1216099
1959	343929	61965	34135	23753	81105	42094	2899	589882	1202629
1960	349000	61600	35100	23500	81600	41792	2700	595292	1189308
1961	336600	59200	36200	23900	79900	40892	2600	579292	1157310
1962	329100	56400	37300	24300	78100	40200	2500	567900	1126174
1963	307400	54900	38400	24700	75500	39300	2500	542700	1095875
1964	293200	54600	39500	25100	74700	38700	2500	528300	1066391
1965	281700	51200	40600	25500	72800	37600	2500	511900	1037701
1966	260500	49700	41700	27500	68700	38400	2500	489000	1009782
1967	242400	47800	42800	27600	70300	40600	2500	474000	982615
1968	228100	46300	43900	29000	73700	41100	2500	464600	956178
1969	217600	44200	44700	26700	72300	41500	2900	449900	930453
1970	202500	42700	42400	25300	71000	42400	2700	429000	905420
1971	189900	40200	42500	23700	70200	41600	2600	410700	876948

TABLE Q: *Number of self-employed and "housewives", continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Real estate	Total number of self-employed	Number of "housewives"
1972	177800	39200	42800	24000	64500	40700	2700	391700	851879
1973	172200	38200	43200	24200	65000	37100	2300	382200	846309
1974	169900	35400	38200	25400	64000	39800	1900	374600	814135
1975	165200	34800	35400	24200	62800	40400	1700	364500	764891
1976	158200	33500	40400	23800	59400	40400	1900	357600	740100
1977	152600	32400	42100	24900	57600	39300	2100	351000	683200
1978	154400	31400	41800	26100	59600	41600	2300	357200	623800
1979	151600	30600	42000	27500	63800	41900	2100	359500	582000
1980	151500	30500	42200	27900	66100	41700	1800	361700	540900
1981	142900	31600	44200	27100	66000	43100	1400	356300	466800
1982	139500	33700	44900	26200	70800	48100	1500	364700	430500
1983	135300	34700	43600	23200	71300	45900	1600	355600	392600
1984	134100	35500	40400	21400	70300	45100	1900	348700	360900
1985	132000	33000	40400	22700	66600	47800	2300	344800	327700
1986	131100	32600	40400	23200	69100	46900	2500	345800	302200
1987	118600	33500	42100	20000	75400	45600	2500	337700	264500
1988	113900	30400	41400	20600	78000	47400	3200	334900	253200
1989	108100	29500	43900	23300	81500	50300	3700	340300	258700
1990	104900	29500	43900	22600	80100	51500	3600	336100	251200
1991	99700	31600	42800	23100	82600	50500	3900	334200	228700
1992	99000	33000	45200	24200	84000	48900	4100	338400	187300
1993	102100	32300	43200	23900	86100	57800	4000	349400	152700
1994	103200	31000	40800	23700	90400	57500	4900	351500	168100
1995	94935	35373	41239	23783	94162	59391	5700	354582	200000
1996	89385	35685	42467	22868	89392	58617	5600	344015	213200
1997	83953	33343	43959	23866	85906	58359	5215	334601	224500
1998	78758	31859	41151	25114	84205	65579	4779	331445	235500
1999	80529	29126	40361	22702	87853	71682	4873	337127	226000
2000	72027	28579	39484	21122	89919	72197	5155	328485	224000

Sources: See chapter 6.

Comment: See comment of TABLE O.

TABLE R: *Total hours worked (in tens of thousands) of employed (employees and self-employed) of different types of activities.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Buil-ding and con-struc-tion	Trans-port and com-muni-cation	Circu-lation	Private repro-ductive servi-ces	Go-vern-ment servi-ces	Real estate	Total
1950	134851	225031	48927	49081	85496	47981	55024	4206	650598
1951	127503	227741	49875	49630	85192	48348	56882	3994	649165
1952	123715	222987	51011	49297	84839	48571	59405	3763	643588
1953	116283	219383	48778	49161	87741	49543	61723	3931	636544
1954	115335	221107	51229	48493	89896	50658	63033	4038	643788
1955	111022	225874	53109	48741	91504	51165	63993	3881	649290
1956	107275	223722	52992	49886	92470	52497	66541	4029	649414
1957	104145	223796	52945	51115	94642	52903	68175	4061	651781
1958	101143	218944	53268	49531	94856	53811	70936	4317	646806
1959	96202	217140	54614	49058	97342	53675	73821	4329	646181
1960	95092	224485	60874	48537	98133	55275	75658	4413	662467
1961	92426	227800	60590	47845	101291	55285	78624	4676	668537
1962	88418	227888	62374	48046	101490	54410	80492	4980	668098
1963	81939	225549	62928	48356	103865	56270	85628	5251	669786
1964	78044	225992	65211	47684	105533	53313	87370	5576	668722
1965	73806	225791	67983	46433	106946	52069	90129	5914	669070
1966	67365	222882	69416	47398	107492	51227	93282	5905	664968
1967	60280	212450	68539	47252	106152	48268	97903	6057	646903
1968	53796	204656	66692	47033	108551	47156	103524	5993	637401
1969	49747	203832	68099	47212	109374	48605	109589	5948	642406
1970	49053	206801	66351	46789	111811	48931	118559	6132	654428
1971	46686	199226	59838	45785	113026	47360	122988	6269	641178
1972	42560	190394	60311	44977	110298	46502	126897	6233	628173
1973	40555	188937	58720	45226	110711	45560	128842	6155	624706
1974	40101	189854	55151	45765	112224	45904	134812	6207	630018
1975	37958	187298	54158	46312	114306	46207	140455	6137	632832
1976	37251	184879	54647	46353	114563	45370	146469	6214	635746
1977	35375	177314	51177	46199	113206	44921	149738	6278	624209
1978	33643	168103	49335	45454	109627	44988	153566	6436	611153
1979	32881	165966	47688	45616	111425	44237	158965	6477	613254
1980	31495	163793	49182	46330	110312	43016	163495	6628	614251
1981	30395	160007	49081	46736	110090	43919	166317	6073	612618
1982	29696	155647	48350	46719	110460	45608	169658	6526	612664
1983	29023	154174	46352	45989	111573	46316	173007	6976	613410
1984	28652	157684	47649	45948	113146	47599	177128	6835	624641
1985	27227	158219	47458	46790	113078	49701	178983	7586	629042
1986	26605	157436	47790	48409	115715	51604	180490	7877	635926
1987	24847	157988	48521	48744	119841	53773	180362	7763	641839
1988	24594	160109	48958	49321	124468	55837	182359	8140	653786
1989	24299	157294	51734	50161	128632	57342	186266	8739	664467

TABLE R: *Hours worked of employed, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total
1990	23897	154407	51734	53314	128854	58911	187943	9311	668371
1991	22202	145215	50565	52193	127210	57869	188248	9042	652544
1992	21696	134075	45759	50672	124352	57870	183014	9431	626869
1993	21183	127467	39582	48140	118020	59036	178062	9494	600984
1994	21585	133364	38249	48055	120962	61327	175511	9625	608678
1995	21607	141210	38805	47531	124500	63099	174020	9543	620315
1996	20622	140415	38132	47545	126184	63344	173201	9260	618703
1997	19516	138596	37458	46661	126866	63518	170745	8820	612181
1998	18755	141031	37687	46721	131314	65895	171837	7973	621213
1999	19013	141158	39795	48454	138863	68749	173990	8214	638236
2000	18761	140367	40130	49087	143958	72349	171842	8443	644937

Sources: See sections 6.3, 6.4 and 6.5.

TABLE S: *Total hours worked (in tens of thousands) of employees of different types of activities.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total
1950	55858	204958	42513	44082	65949	41462	55024	2922	512770
1951	56464	208430	43361	44521	66165	42003	56882	2895	520721
1952	53858	204990	44373	44257	66153	42213	59405	2829	518078
1953	47249	202529	42454	44097	68623	43129	61723	3051	512855
1954	48243	204922	44611	43446	70591	44205	63033	3221	522272
1955	45145	210106	46273	43663	72158	44705	63993	3172	529215
1956	44194	208867	46196	44633	73253	45827	66541	3364	532875
1957	40985	209652	46179	45722	75306	46042	68175	3455	535516
1958	38031	205760	46486	44301	75856	46865	70936	3735	531969
1959	34135	204684	47686	43836	78191	46775	73821	3801	532929
1960	33468	212193	53180	43422	79208	48382	75658	3926	549436
1961	31754	215961	52988	42733	83073	48470	78624	4196	557798
1962	29693	216719	54683	42958	83932	47646	80492	4486	560609
1963	25840	214729	55175	43222	86469	49242	85628	4793	565098
1964	25261	215668	57291	42596	89304	46551	87370	5127	569167
1965	24069	215915	60034	41134	90700	45490	90129	5476	572946
1966	21847	213423	61460	41898	92526	44649	93282	5473	574559
1967	20214	203555	60381	42136	90900	41893	97903	5650	562634
1968	17859	196207	58351	41857	93148	41058	103524	5594	557598
1969	16413	196306	59709	42311	94051	42511	109589	5551	566442
1970	16422	199174	58727	41803	96658	42443	118559	5714	579501
1971	15766	192185	52621	41472	97945	41050	122988	5891	569919
1972	14090	183615	52517	40571	96288	40471	126897	5856	560306
1973	12494	182252	50758	40575	96310	40152	128842	5879	557262
1974	12272	183473	48424	40949	98268	39787	134812	5920	563905
1975	11749	181102	48186	41726	100979	40053	140455	5896	570147
1976	11712	178659	47832	41850	102111	39367	146469	5931	573932
1977	11157	171615	44390	41595	101440	39227	149738	5949	565111
1978	9981	162601	42631	40644	97490	38809	153566	6068	551791
1979	9501	160442	41044	40534	98562	38139	158965	6148	553334
1980	8750	158402	42582	41301	97376	37242	163495	6314	555462
1981	8850	154448	42168	41850	97233	37947	166317	5829	554642
1982	8643	149780	41328	41996	96713	38899	169658	6264	553281
1983	8518	148113	39533	41806	97641	39816	173007	6697	555131
1984	8436	151508	40877	42090	99492	41169	177128	6504	567204
1985	8182	152561	41139	42698	101167	42908	178983	7185	574823
1986	8139	151746	41471	44227	102820	44930	180490	7441	581264
1987	8284	152148	41942	45138	105468	47274	180362	7327	587943
1988	8186	154791	42487	45487	109622	49087	182359	7572	599591
1989	8100	152048	44882	45589	113012	50343	186266	8098	608338

TABLE S: *Hours worked of employees, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Government services	Real estate	Total
1990	8079	149153	44718	48797	114195	51637	187943	8685	613207
1991	7574	139775	44153	47875	113018	50842	188248	8475	599960
1992	7092	128448	39337	46177	109683	51207	183014	8828	573786
1993	6661	121990	33482	43788	103175	51098	178062	8801	547057
1994	6842	127511	32344	43511	105624	53311	175511	8800	553454
1995	7638	134410	32865	43365	108126	54678	174020	8618	563720
1996	7110	133755	31907	43517	110579	54829	173201	8391	563291
1997	6533	132428	30771	42324	111944	54941	170745	7758	557443
1998	6686	135073	31462	42177	116681	56506	171837	6931	567353
1999	6275	135831	33392	44357	123665	58332	173990	7183	583026
2000	7572	134969	33940	45300	128528	62243	171842	7443	591838

Sources: See sections 6.3, 6.4 and 6.5.

TABLE T: *Total hours worked (in tens of thousands) of self-employed of different types of activities.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Building and con-struc-tion	Trans-port and commu-nication	Circu-lation	Private repro-ductive services	Real estate	Total
1950	78993	20073	6413	4999	19547	6519	1284	137828
1951	71039	19311	6514	5108	19027	6345	1099	128444
1952	69857	17997	6638	5041	18686	6358	934	125510
1953	69034	16854	6325	5064	19118	6414	881	123689
1954	67092	16185	6618	5047	19304	6453	817	121516
1955	65877	15768	6836	5079	19346	6460	709	120075
1956	63081	14855	6796	5253	19218	6671	665	116539
1957	63160	14144	6765	5393	19336	6862	606	116265
1958	63112	13185	6782	5230	19000	6946	582	114838
1959	62067	12456	6928	5222	19150	6900	528	113251
1960	61624	12293	7694	5115	18925	6893	487	113031
1961	60672	11839	7602	5112	18218	6815	480	110738
1962	58725	11169	7691	5088	17558	6764	494	107489
1963	56099	10821	7753	5134	17396	7028	458	104689
1964	52783	10324	7920	5088	16229	6762	449	99555
1965	49737	9875	7949	5299	16246	6579	438	96123
1966	45518	9459	7956	5500	14966	6578	432	90409
1967	40066	8895	8158	5116	15252	6375	407	84269
1968	35937	8449	8341	5176	15403	6098	399	79803
1969	33334	7526	8390	4901	15323	6094	397	75965
1970	32631	7627	7624	4986	15153	6488	418	74927
1971	30920	7040	7217	4313	15081	6310	378	71259
1972	28470	6779	7794	4406	14010	6031	377	67867
1973	28061	6684	7962	4651	14401	5408	276	67443
1974	27829	6381	6727	4816	13956	6117	287	66113
1975	26209	6196	5972	4586	13327	6154	241	62685
1976	25539	6220	6815	4503	12452	6003	283	61815
1977	24218	5699	6787	4604	11766	5694	329	59097
1978	23662	5502	6704	4810	12137	6179	368	59362
1979	23380	5525	6644	5082	12863	6098	329	59921
1980	22745	5391	6600	5029	12936	5774	314	58789
1981	21545	5559	6913	4886	12857	5972	244	57976
1982	21053	5867	7022	4723	13747	6709	262	59383
1983	20505	6061	6819	4183	13932	6500	279	58279
1984	20216	6176	6772	3858	13654	6430	331	57437
1985	19045	5658	6319	4092	11911	6793	401	54219
1986	18466	5690	6319	4182	12895	6674	436	54662
1987	16563	5840	6579	3606	14373	6499	436	53896
1988	16408	5318	6471	3834	14846	6750	568	54195
1989	16199	5246	6852	4572	15620	6999	641	56129

TABLE T: *Hours worked of self-employed, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Circulation	Private reproductive services	Real estate	Total
1990	15818	5254	7016	4517	14659	7274	626	55164
1991	14628	5440	6412	4318	14192	7027	567	52584
1992	14604	5627	6422	4495	14669	6663	603	53083
1993	14522	5477	6100	4352	14845	7938	693	53927
1994	14743	5853	5905	4544	15338	8016	825	55224
1995	13969	6799	5941	4165	16374	8421	925	56595
1996	13511	6659	6225	4028	15605	8515	869	55413
1997	12984	6168	6688	4337	14922	8577	1061	54738
1998	12069	5958	6225	4544	14634	9388	1042	53860
1999	12737	5327	6403	4096	15198	10418	1031	55211
2000	11189	5397	6190	3787	15430	10106	1000	53099

Sources: See sections 6.3, 6.4 and 6.5.

TABLE U: *Wages and salaries (including social benefits) of employees (current factor values, million SEK) of various types of activities.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Building and con-struc-tion	Trans-port and commu-nication	Other private services*	Govern-ment services	Real estate	Total
1850	136.905	25.636	3.748	5.268	39.798	26.057	0.433	237.845
1851	136.294	25.741	4.849	5.321	40.169	27.866	0.449	240.689
1852	138.078	26.342	4.713	5.590	41.808	27.439	0.472	244.441
1853	143.188	27.541	4.907	5.725	43.751	29.963	0.492	255.567
1854	154.554	30.737	4.754	6.346	45.626	29.013	0.527	271.557
1855	192.751	39.339	5.813	8.162	53.789	31.070	0.597	331.521
1856	204.978	44.764	6.627	9.323	60.370	31.526	0.683	358.271
1857	222.635	48.315	6.749	10.751	61.311	32.351	0.710	382.822
1858	201.458	41.560	6.242	10.040	54.239	34.902	0.641	349.081
1859	200.771	43.731	6.795	10.139	52.185	35.253	0.623	349.497
1860	211.792	47.915	7.822	10.523	56.550	36.752	0.677	372.031
1861	217.020	52.520	7.613	11.543	62.315	38.067	0.727	389.806
1862	210.240	51.111	7.364	11.010	63.437	38.172	0.773	382.107
1863	226.702	54.432	8.828	11.593	62.761	41.343	0.762	406.421
1864	225.486	57.070	10.306	11.963	61.819	42.812	0.752	410.209
1865	225.079	58.859	9.773	12.889	60.883	43.030	0.767	411.281
1866	207.853	56.564	8.760	12.872	63.341	44.683	0.816	394.888
1867	200.609	52.607	7.994	12.734	62.695	46.985	0.842	384.466
1868	182.355	49.926	7.162	12.562	63.524	48.098	0.881	364.508
1869	194.549	52.508	8.123	13.329	63.180	48.574	0.878	381.141
1870	204.407	54.662	8.824	14.623	63.268	49.155	0.898	395.837
1871	214.249	58.114	9.150	17.060	67.601	50.700	0.968	417.843
1872	248.760	69.680	13.091	20.716	73.796	53.067	1.074	480.183
1873	311.862	80.711	16.649	24.372	79.575	55.705	1.169	570.043
1874	362.525	91.489	18.293	28.027	84.841	57.096	1.252	643.523
1875	352.010	92.639	19.410	31.683	86.533	62.549	1.274	646.098
1876	367.263	95.349	18.433	32.902	91.223	68.338	1.355	674.862
1877	362.327	99.308	19.745	36.557	92.560	67.212	1.380	679.089
1878	325.039	79.481	18.319	37.776	87.154	71.205	1.313	620.287
1879	295.447	75.563	16.534	38.995	86.021	71.602	1.326	585.487
1880	281.930	87.878	17.768	41.432	89.959	72.690	1.400	593.058
1881	277.308	100.898	19.060	42.650	94.077	75.277	1.453	610.724
1882	278.963	105.479	17.856	43.869	94.956	75.405	1.486	618.014
1883	293.092	103.296	18.015	45.088	95.359	75.602	1.528	631.980
1884	300.594	107.390	20.464	43.869	97.413	76.958	1.578	648.266
1885	301.238	109.726	20.615	41.432	94.936	77.024	1.551	646.523
1886	282.302	104.464	20.439	41.432	94.332	77.888	1.553	622.410
1887	279.392	109.277	18.735	42.650	94.911	78.183	1.577	624.725
1888	273.530	120.484	20.545	43.869	97.957	78.680	1.653	636.718
1889	277.345	132.810	21.911	46.306	96.247	79.898	1.741	656.259

TABLE U: *Wages and salaries (including social benefits) of employees, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Real estate	Total
1890	291.149	142.965	22.644	47.525	97.714	80.334	1.828	684.158
1891	318.503	154.546	21.279	48.743	101.978	82.525	1.906	729.480
1892	318.232	152.932	22.548	49.962	102.959	84.534	1.953	733.121
1893	327.015	156.299	22.253	51.180	101.701	86.633	1.960	747.042
1894	321.648	167.192	22.832	49.962	103.287	87.210	1.965	754.096
1895	326.999	176.105	28.813	51.180	106.808	88.128	2.023	780.055
1896	328.008	199.092	25.769	53.618	111.192	89.814	2.087	809.581
1897	331.418	220.363	31.703	57.273	116.550	90.904	2.164	850.375
1898	347.327	251.061	36.935	58.492	121.197	93.669	2.303	910.984
1899	375.971	273.148	45.347	65.803	134.629	96.990	2.441	994.328
1900	390.128	290.494	45.892	74.334	138.805	101.983	2.533	1044.168
1901	394.949	288.941	45.922	76.771	140.376	104.298	2.569	1053.825
1902	377.425	296.519	46.633	76.771	143.630	111.346	2.681	1055.004
1903	370.236	312.977	54.498	80.426	151.100	115.753	2.823	1087.813
1904	369.622	331.078	64.080	86.519	159.323	120.206	2.905	1133.733
1905	367.335	340.383	69.387	92.612	169.331	121.841	3.031	1163.920
1906	378.620	385.669	83.564	101.142	190.253	125.779	3.217	1268.244
1907	409.500	418.625	88.912	124.295	207.696	134.413	3.475	1386.917
1908	418.345	412.243	94.305	132.826	211.050	139.566	3.622	1411.958
1909	421.360	381.314	74.961	132.826	215.905	153.509	3.761	1383.635
1910	443.496	459.264	95.557	142.574	234.540	160.159	3.902	1539.492
1911	449.436	470.947	111.049	145.011	252.036	165.930	4.003	1598.413
1912	459.060	506.748	118.897	152.323	264.518	171.124	4.257	1676.927
1913	474.062	547.745	139.248	157.197	285.870	177.320	4.434	1785.875
1914	518.345	558.996	131.989	163.290	296.223	185.818	4.721	1859.382
1915	557.406	593.103	118.940	179.132	338.423	207.069	5.402	1999.474
1916	671.612	708.262	135.536	198.629	423.841	224.015	6.462	2368.358
1917	842.012	862.940	167.921	238.842	545.914	243.219	7.794	2908.642
1918	1070.484	1146.732	226.976	407.007	780.651	442.465	12.093	4086.409
1919	1269.635	1470.580	324.193	549.581	954.702	557.445	13.100	5139.236
1920	1468.073	1814.878	411.413	679.969	1135.189	682.473	15.054	6207.048
1921	1215.830	1354.939	374.064	594.669	926.532	693.512	12.481	5172.027
1922	933.787	1048.103	333.489	487.433	861.678	604.621	11.104	4280.216
1923	820.778	1078.365	312.772	455.750	860.699	547.364	10.849	4086.578
1924	787.186	1176.959	317.280	443.564	803.589	533.699	11.253	4073.530
1925	791.710	1244.651	337.595	466.717	793.450	551.822	11.772	4197.718
1926	776.610	1298.686	350.093	480.122	836.243	540.315	11.862	4293.930
1927	772.631	1321.156	353.086	502.056	862.280	542.143	12.205	4365.556
1928	766.140	1397.469	372.642	498.400	901.899	552.188	12.885	4501.624
1929	768.195	1512.889	425.475	533.739	953.705	560.514	13.250	4767.767
1930	756.358	1531.268	459.336	531.302	1034.089	567.175	13.524	4893.053

TABLE U: *Wages and salaries (including social benefits) of employees, continued.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Building and con-struc-tion	Trans-port and commu-nication	Other private services*	Govern-ment services	Real estate	Total
1931	715.3	1406.3	485.7	526.4	1001.3	589.2	14.5	4738.6
1932	677.0	1278.5	499.5	522.8	974.7	593.9	15.1	4561.4
1933	643.6	1261.7	486.4	502.1	984.0	585.9	15.3	4478.9
1934	634.1	1449.9	631.1	492.3	1014.8	585.9	17.7	4825.7
1935	634.5	1583.2	668.8	502.1	1048.5	626.3	20.7	5084.2
1936	666.4	1684.9	649.8	535.5	1080.9	643.0	24.0	5284.4
1937	732.5	1882.8	655.6	588.5	1099.3	684.8	24.9	5668.3
1938	752.6	2002.4	732.0	623.3	1132.8	772.5	28.1	6043.7
1939	782.9	2171.8	787.6	661.9	1161.9	979.2	34.8	6580.2
1940	837.4	2304.1	600.3	701.7	1286.4	1372.4	38.1	7140.3
1941	913.9	2489.7	656.6	713.5	1392.1	1685.1	40.2	7891.1
1942	977.5	2884.3	750.8	801.3	1531.1	1884.6	49.1	8878.7
1943	979.1	3186.2	839.6	827.9	1729.3	1995.3	55.4	9612.7
1944	1003.6	3396.6	854.1	887.8	1853.9	1978.1	59.0	10033.0
1945	1111.1	3754.4	987.1	981.0	1996.2	1831.7	66.1	10727.5
1946	1139.1	4205.4	1207.8	1160.6	2339.2	1769.0	79.5	11900.6
1947	1214.0	4855.0	1344.1	1385.0	2547.3	2044.6	80.1	13470.0
1948	1346.0	5421.5	1491.9	1544.4	2872.4	2320.2	84.3	15080.8
1949	1339.2	5978.7	1512.0	1609.0	3010.7	2430.7	95.3	15975.6
1950	1304.9	6287.6	1577.5	1683.5	3204.4	2551.1	110.4	16719.5
1951	1571.9	7637.0	1954.7	2020.7	3811.0	3103.5	117.0	20216.0
1952	1891.1	8790.6	2419.3	2377.4	4428.6	3846.4	127.7	23881.1
1953	1722.5	9004.4	2485.1	2440.5	4735.4	4083.0	139.6	24610.5
1954	1857.0	9626.7	2724.7	2504.7	4948.8	4252.8	150.3	26065.1
1955	1932.3	10609.9	2989.0	2779.9	5482.9	4698.1	160.9	28653.0
1956	2033.7	11318.0	3212.9	2994.4	6072.3	5099.0	178.2	30908.4
1957	2050.7	12106.4	3431.0	3247.8	6552.3	5728.2	192.8	33309.3
1958	2012.6	12727.7	3621.5	3345.3	6928.4	6183.1	215.4	35034.0
1959	1920.2	13225.1	3918.2	3406.1	7373.3	6633.3	224.7	36700.9
1960	2148.1	14838.0	4427.0	3743.2	8131.1	7191.1	250.0	40728.6
1961	2310.7	16543.0	4813.0	4035.7	9121.6	8001.9	285.9	45111.9
1962	2392.0	18493.6	5474.0	4406.1	10514.3	9159.0	340.4	50779.5
1963	2403.1	20210.2	6113.5	4677.9	11708.1	10440.2	388.3	55941.2
1964	2544.2	22133.9	6942.5	5051.8	12947.7	11673.7	433.3	61727.0
1965	2642.4	24318.9	7909.0	5432.5	14407.1	13330.9	492.4	68533.2
1966	2633.2	26325.8	8680.1	6053.0	16146.2	15523.9	606.8	75969.0
1967	2751.8	27774.3	9334.3	6644.7	17430.1	17909.4	686.6	82531.1
1968	2664.9	29127.0	9935.4	6944.0	19090.7	20147.2	779.1	88688.3
1969	2607.6	31414.1	10740.8	7308.7	20550.6	22158.5	865.3	95645.7
1970	2835.6	35086.6	11588.5	7743.4	22743.3	25480.6	970.7	106448.8
1971	2976.5	37672.4	11876.7	8340.5	25163.9	29233.6	1090.3	116353.9

TABLE U: *Wages and salaries (including social benefits) of employees, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Real estate	Total
1972	2835	40170	12312	9040	28887	32669	1190	127103
1973	2790	43941	13107	9693	30248	35745	1297	136821
1974	3268	52120	14872	11162	34246	41181	1509	158358
1975	3905	62353	17068	13303	41008	50264	1817	189718
1976	4577	72561	20280	15413	49983	59896	2147	224857
1977	4921	75855	21367	17282	58098	72509	2408	252440
1978	5001	81502	23244	18916	65280	84162	2826	280932
1979	5014	87231	25024	20655	72148	95297	3229	308598
1980	5128	95483	28467	23385	80369	110185	3619	346636
1981	5790	102672	31479	25629	87800	120388	3704	377462
1982	5930	106451	32756	26857	92719	130781	4029	399523
1983	6251	114434	33615	28374	102669	141543	4831	431717
1984	6715	127594	35848	31611	115818	153506	5860	476952
1985	6945	141325	39812	34713	128941	163563	5724	521023
1986	7465	151470	42882	38785	142037	177472	6559	566670
1987	7979	162258	48667	41957	160416	185037	6907	613221
1988	8180	178123	54442	44560	179231	197869	7702	670107
1989	8951	193809	65029	50054	203817	220613	8964	751237
1990	9526	208025	74624	55972	227815	255402	10609	841973
1991	9534	211973	78637	59461	240914	274207	12359	887085
1992	9094	203459	70693	58338	240076	279188	13373	874221
1993	8543	192653	61920	58893	238340	277387	13867	851603
1994	8974	210138	59449	59199	255541	280874	13335	887510
1995	9094	229646	58688	60753	271345	285628	13566	928720
1996	9347	244926	60433	64780	291810	300017	13594	984909
1997	9365	253081	60894	67069	305133	305542	13282	1014365
1998	9395	264817	63198	70352	328359	308354	12196	1056672
1999	9330	267137	66661	74304	347653	318490	12746	1096321
2000	10078	283971	73612	81214	397116	340351	13776	1200118

Sources: See section 6.8.

*Other private services here include circulation (code CC) and private reproductive services (code PR).

Comment: See comment of TABLE O.

TABLE V: *Imputed labour income of self-employed (including social benefits, current factor values, million SEK) of various types of activities.*

Year	Agri-culture and an-cillaries	Manufac-turing and handi-crafts	Building and con-struction	Transport and com-muni-cation	Other private services*	Real estate	Total
1850	57.378	12.453	1.371	0.000	8.211	0.225	79.638
1851	57.572	12.432	1.466	0.000	8.769	0.233	80.471
1852	58.527	12.938	1.513	0.000	9.120	0.245	82.343
1853	60.251	13.345	1.595	0.000	9.818	0.255	85.264
1854	64.281	14.364	1.714	0.000	10.256	0.274	90.888
1855	78.319	17.648	2.137	0.000	13.041	0.310	111.454
1856	85.751	19.578	2.384	0.000	14.346	0.355	122.414
1857	93.391	21.466	2.602	0.000	15.513	0.368	133.340
1858	83.567	19.317	2.370	0.000	13.847	0.332	119.434
1859	83.211	19.383	2.424	0.000	14.196	0.323	119.538
1860	88.623	20.563	2.647	0.000	15.614	0.351	127.798
1861	91.636	21.839	2.766	0.000	16.883	0.371	133.495
1862	91.329	21.362	2.801	0.000	16.247	0.389	132.128
1863	96.072	23.007	3.070	0.000	17.372	0.377	139.899
1864	95.782	24.163	3.205	0.000	20.313	0.367	143.829
1865	94.632	25.066	3.210	0.000	17.962	0.368	141.238
1866	89.178	23.552	3.063	0.000	18.339	0.386	134.518
1867	85.383	21.767	2.970	0.000	18.184	0.392	128.696
1868	82.408	19.673	2.892	0.000	17.627	0.404	123.005
1869	85.503	19.680	3.106	0.000	17.867	0.396	126.553
1870	85.999	19.379	3.228	0.000	18.648	0.399	127.652
1871	89.777	20.000	3.218	0.000	19.784	0.424	133.203
1872	104.452	23.214	3.724	0.000	21.967	0.463	153.820
1873	132.730	26.272	4.293	0.000	23.793	0.497	187.585
1874	154.038	29.196	4.651	0.000	24.603	0.524	213.012
1875	152.737	30.131	4.930	0.000	26.445	0.526	214.768
1876	156.061	31.108	5.369	0.000	28.759	0.551	221.848
1877	156.596	32.520	5.937	0.000	29.274	0.553	224.880
1878	143.329	28.654	5.532	0.000	28.759	0.518	206.793
1879	126.339	26.260	5.423	0.000	29.126	0.516	187.663
1880	122.518	28.031	5.803	0.000	30.797	0.537	187.685
1881	122.095	31.115	6.376	0.000	32.480	0.549	192.616
1882	125.278	31.907	6.671	0.000	32.924	0.554	197.333
1883	129.412	31.587	7.016	0.000	33.410	0.562	201.986
1884	136.631	32.535	7.224	0.000	34.940	0.572	211.901
1885	136.279	32.778	7.775	0.000	34.770	0.554	212.156
1886	129.944	32.256	7.950	0.000	34.624	0.547	205.322
1887	130.222	32.713	8.537	0.000	34.976	0.548	206.997
1888	127.017	33.769	8.897	0.000	36.250	0.566	206.500
1889	131.112	36.571	9.879	0.000	37.291	0.588	215.442

TABLE V: *Imputed labour income of self-employed, continued.*

Year	Agri-culture and an-cillaries	Manufac-turing and handi-crafts	Building and con-struction	Transport and com-muni-cation	Other private services*	Real estate	Total
1890	138.348	37.584	10.822	0.000	37.913	0.609	225.276
1891	149.426	38.722	10.636	0.000	39.010	0.627	238.421
1892	152.157	38.250	10.105	0.000	42.311	0.634	243.455
1893	155.916	39.206	9.504	0.000	42.250	0.627	247.503
1894	155.243	41.107	9.482	0.000	42.694	0.621	249.147
1895	158.020	42.229	9.465	0.000	43.775	0.630	254.119
1896	158.568	43.789	13.527	0.000	45.834	0.642	262.358
1897	161.370	45.308	14.567	0.000	45.144	0.656	267.045
1898	170.048	48.532	15.965	0.000	48.496	0.689	283.730
1899	187.449	51.643	17.235	0.000	51.706	0.721	308.754
1900	198.046	53.296	18.373	0.000	53.858	0.738	324.312
1901	201.258	53.475	18.846	0.000	56.556	0.739	330.875
1902	198.606	55.745	19.136	0.000	58.917	0.761	333.165
1903	198.079	57.951	19.580	0.000	61.801	0.791	338.202
1904	200.164	60.301	20.129	0.000	64.118	0.804	345.515
1905	207.989	61.770	20.532	0.000	67.348	0.828	358.467
1906	212.727	65.796	20.917	0.000	73.027	0.867	373.334
1907	228.509	69.727	22.068	0.000	78.252	0.925	399.480
1908	241.724	69.117	22.054	0.000	81.995	0.951	415.841
1909	246.716	65.226	20.376	0.000	84.192	0.975	417.486
1910	262.741	76.188	23.310	0.000	89.464	0.998	452.702
1911	266.106	77.834	25.101	0.000	95.333	1.012	465.386
1912	270.545	82.442	24.927	0.000	95.544	1.062	474.520
1913	274.722	84.536	27.101	0.000	101.918	1.092	489.369
1914	294.803	87.292	23.866	0.000	98.060	1.149	505.170
1915	319.531	92.072	19.996	0.000	108.194	1.298	541.091
1916	381.752	107.115	21.201	0.215	128.979	1.534	640.795
1917	480.634	130.791	24.454	0.250	162.485	1.827	800.441
1918	639.255	180.642	30.791	0.405	218.090	2.799	1071.982
1919	744.911	231.641	40.990	2.620	273.156	2.994	1296.312
1920	833.382	278.616	48.507	7.054	326.877	3.397	1497.833
1921	696.945	251.536	33.705	10.329	267.383	2.783	1262.680
1922	540.242	198.711	30.285	11.537	262.164	2.446	1045.385
1923	479.567	194.501	31.122	16.403	269.319	2.360	993.271
1924	464.235	205.134	35.408	19.614	241.705	2.419	968.515
1925	471.291	212.951	37.828	25.677	238.638	2.499	988.885
1926	468.899	221.636	39.823	32.052	260.591	2.488	1025.489
1927	470.633	227.183	40.434	40.547	275.654	2.529	1056.980
1928	471.084	230.684	43.004	41.842	292.510	2.638	1081.761
1929	476.770	245.562	48.776	54.982	320.017	2.679	1148.786
1930	473.804	250.557	53.701	63.699	358.853	2.702	1203.315

TABLE V: *Imputed labour income of self-employed, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Real estate	Total
1931	468.96	240.24	57.92	62.55	338.41	3.46	1171.53
1932	433.75	227.30	60.92	64.02	322.53	4.30	1112.83
1933	463.24	226.73	63.45	59.69	321.22	5.04	1139.38
1934	478.64	239.87	90.76	58.59	325.87	7.03	1200.76
1935	499.78	248.76	100.86	62.19	331.99	8.62	1252.19
1936	550.32	253.95	105.58	68.58	333.24	10.85	1322.52
1937	630.98	267.72	114.67	77.54	329.37	13.96	1434.23
1938	678.63	276.11	130.83	82.85	332.32	17.78	1518.51
1939	736.01	290.71	143.35	91.01	340.18	23.68	1624.94
1940	823.43	303.78	123.57	95.73	376.20	29.15	1751.86
1941	932.13	327.53	126.64	84.36	400.15	31.03	1901.85
1942	1034.09	364.23	128.98	93.78	432.06	32.39	2085.53
1943	1076.22	383.24	138.64	89.74	478.76	34.27	2200.87
1944	1125.33	401.36	128.80	102.44	497.32	35.86	2291.11
1945	1263.89	427.13	138.49	102.65	520.00	38.34	2490.50
1946	1399.76	449.32	167.93	123.31	616.42	42.15	2798.88
1947	1526.36	507.63	192.76	152.17	671.50	44.37	3094.78
1948	1506.61	543.71	219.35	168.22	763.01	46.84	3247.73
1949	1752.40	593.06	231.65	184.08	797.41	46.92	3605.52
1950	1845.40	615.79	237.97	190.92	838.21	48.48	3776.78
1951	1977.69	707.58	293.64	231.85	959.06	44.42	4214.26
1952	2452.91	771.77	361.92	270.77	1097.07	42.15	4996.58
1953	2516.68	749.34	370.21	280.24	1170.27	40.31	5127.05
1954	2582.57	760.32	404.22	290.97	1195.89	38.10	5272.07
1955	2819.66	796.23	441.57	323.35	1307.96	35.97	5724.74
1956	2902.81	804.93	472.67	352.44	1451.00	35.23	6019.08
1957	3160.27	816.73	502.65	383.08	1566.96	33.82	6463.51
1958	3312.31	815.57	528.35	394.94	1623.59	33.59	6708.35
1959	2942.60	804.79	569.25	405.75	1695.92	31.23	6449.54
1960	3318.67	859.60	640.49	440.94	1821.99	31.01	7112.70
1961	3634.06	906.92	690.51	482.78	1874.88	32.70	7621.85
1962	3666.98	953.09	769.91	521.86	2118.33	37.49	8067.66
1963	3154.95	1018.45	859.04	555.66	2313.18	37.10	7938.37
1964	3935.31	1059.52	959.75	603.43	2356.51	37.95	8952.47
1965	4145.24	1112.28	1047.23	699.84	2586.59	39.38	9630.57
1966	3801.51	1166.75	1123.64	794.57	2692.58	47.90	9626.94
1967	3763.70	1213.75	1261.13	806.77	2967.62	49.45	10062.42
1968	3175.53	1254.27	1420.22	858.70	3177.13	55.57	9941.42
1969	3057.71	1204.30	1509.24	846.59	3408.06	61.88	10087.78
1970	3452.95	1343.54	1504.44	923.58	3741.18	71.01	11036.69
1971	4334.69	1380.07	1628.89	867.39	4116.89	69.96	12397.89

TABLE V: *Imputed labour income of self-employed, continued.*

Year	Agri-culture and an-cillaries	Manufac-turing and handi-crafts	Building and con-struction	Transport and com-muni-cation	Other private services*	Real estate	Total
1972	3855.6	1483.1	1827.2	981.8	4219.1	76.6	12443.4
1973	4197.2	1611.6	2056.0	1111.1	4549.3	60.9	13586.0
1974	7132.7	1812.7	2066.0	1312.7	5426.0	73.1	17823.3
1975	7754.4	2133.2	2115.4	1462.1	6401.1	74.3	19940.3
1976	8502.1	2526.1	2889.5	1658.4	7036.7	102.4	22715.2
1977	7446.0	2519.1	3266.9	1912.9	7389.2	133.1	22667.2
1978	6936.2	2757.7	3655.3	2238.6	8970.2	171.4	24729.4
1979	6576.5	3003.7	4050.8	2589.7	9978.1	172.8	26371.5
1980	8322.3	3249.6	4412.2	2847.5	10953.2	180.0	29964.9
1981	9197.5	3695.4	5160.7	2992.2	11943.9	155.0	33144.8
1982	10554.8	4169.8	5565.5	3020.4	13874.8	168.5	37353.8
1983	12287.5	4682.8	5798.2	2839.0	15013.6	201.3	40822.4
1984	13970.0	5201.2	5938.9	2897.5	16277.4	298.2	44583.2
1985	14568.8	5241.3	6115.2	3326.8	16918.6	319.5	46490.1
1986	14929.2	5679.7	6534.0	3667.4	19264.6	384.3	50459.2
1987	14666.1	6228.1	7633.9	3351.9	22730.5	411.0	55021.4
1988	15177.0	6119.6	8291.8	3755.9	25396.2	577.8	59318.2
1989	17186.8	6686.8	9927.8	5019.8	29197.8	709.5	68728.6
1990	15962.5	7327.8	11708.1	5181.2	31025.2	764.7	71969.5
1991	11999.5	8249.9	11419.8	5363.0	31721.8	826.8	69580.9
1992	11082.0	8913.1	11541.1	5678.8	32052.9	913.4	70181.3
1993	8606.5	8649.6	11281.0	5853.3	34983.8	1091.9	70466.1
1994	11221.4	9645.7	10853.5	6182.4	37244.1	1250.2	76397.3
1995	14043.9	11616.9	10608.2	5835.4	41531.2	1456.2	85091.9
1996	11538.5	12193.8	11790.6	5995.6	42534.1	1407.8	85460.6
1997	11996.9	11788.4	13234.4	6873.4	42950.1	1816.7	88659.8
1998	11167.6	11681.2	12504.7	7579.6	44772.3	1834.0	89539.4
1999	10571.6	10477.1	12782.5	6862.1	47366.9	1829.1	89889.4
2000	8173.9	11355.9	13424.4	6788.7	52489.3	1850.6	94082.8

Sources: See section 6.8.

*Other private services here include circulation (code CC) and private reproductive services (code PR).

Comment: See comment of TABLE O.

TABLE W: *Gross surplus (current, basic values, million SEK) of various types of activities.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Building and con-struc-tion	Trans-port and commu-nication	Other private services*	Govern-ment services	Real estate	Total
1850	24.197	19.908	21.659	4.444	27.345	0.740	23.011	121.304
1851	23.967	22.550	28.516	5.489	27.785	0.742	23.530	132.579
1852	25.426	21.751	30.203	5.336	29.009	0.759	24.401	136.885
1853	20.669	22.403	34.241	12.542	29.900	0.819	26.146	146.719
1854	52.332	25.836	37.655	8.893	34.759	0.915	29.660	190.049
1855	15.334	30.641	49.673	6.002	42.442	1.119	35.598	180.809
1856	44.368	28.609	54.754	5.968	49.853	1.224	40.836	225.611
1857	38.364	26.976	55.725	4.441	50.379	1.367	49.004	226.256
1858	54.635	25.642	45.467	1.195	43.873	1.169	42.880	214.860
1859	40.625	27.322	46.167	4.359	41.168	1.165	44.444	205.250
1860	31.154	28.608	48.617	5.865	45.131	1.207	47.177	207.760
1861	40.034	27.755	44.151	6.468	49.765	1.260	48.237	217.670
1862	43.628	27.958	42.271	5.585	46.282	1.324	52.959	220.007
1863	45.416	29.704	45.964	7.090	45.802	1.337	53.368	228.681
1864	30.421	29.031	50.300	7.641	43.058	1.294	54.950	216.697
1865	21.347	30.900	44.433	8.705	46.255	1.264	61.471	214.375
1866	46.841	32.377	42.891	10.292	45.091	1.374	59.909	238.773
1867	100.453	36.380	41.892	11.586	46.447	1.416	59.067	297.241
1868	99.554	37.367	37.712	11.955	46.425	1.438	59.036	293.488
1869	128.508	38.207	38.524	12.345	47.580	1.421	60.342	326.927
1870	151.818	42.269	41.207	13.093	51.392	1.468	62.046	363.293
1871	157.661	47.913	36.074	12.587	55.107	1.567	66.256	377.166
1872	150.677	68.971	59.848	12.082	63.755	1.749	69.240	426.322
1873	97.509	81.515	87.482	16.187	73.252	2.107	84.294	442.346
1874	68.901	88.183	89.510	19.976	82.775	2.448	81.467	433.261
1875	58.055	75.343	85.018	13.984	77.516	2.379	94.008	406.303
1876	74.157	71.329	91.890	18.859	76.077	2.868	105.980	441.159
1877	52.672	63.943	86.133	18.737	79.726	3.016	103.896	408.123
1878	71.160	45.559	93.330	12.254	68.342	2.885	102.573	396.102
1879	121.637	39.501	77.614	8.458	67.261	2.801	102.163	419.435
1880	131.715	58.929	74.039	14.811	66.112	3.037	106.927	455.571
1881	165.322	57.187	63.656	14.193	74.467	3.156	112.500	490.482
1882	160.417	69.303	54.563	18.469	67.150	3.266	117.333	490.501
1883	171.281	61.522	68.842	18.243	74.919	3.376	125.787	523.970
1884	107.288	57.576	79.438	19.123	73.548	3.292	127.550	467.816
1885	103.731	56.931	75.103	17.792	75.620	3.356	128.867	461.400
1886	69.658	43.888	78.645	15.860	68.422	3.355	129.776	409.604
1887	50.973	43.772	60.325	14.969	66.438	3.399	129.945	369.821
1888	69.675	58.691	62.673	19.312	66.742	3.482	137.081	417.657
1889	81.401	70.462	63.034	23.558	81.535	3.717	138.926	462.634
1890	77.291	65.731	65.292	21.552	90.218	3.888	145.875	469.846

TABLE W: *Gross surplus, continued.*

Year	Agriculture and ancillaries	Manufacturing and handicrafts	Building and construction	Transport and communication	Other private services*	Government services	Real estate	Total
1891	107.508	66.143	48.089	18.458	101.501	3.847	145.187	490.734
1892	115.282	74.516	51.225	18.495	98.512	3.864	144.321	506.216
1893	88.100	78.817	45.308	17.121	98.196	3.844	143.562	474.949
1894	76.747	84.988	39.809	22.849	97.795	4.049	136.385	462.623
1895	70.193	90.416	63.100	26.691	97.959	4.156	152.612	505.127
1896	88.376	105.525	48.873	30.175	102.412	4.541	160.505	540.408
1897	105.181	123.757	80.069	34.878	115.980	5.082	168.620	633.567
1898	128.308	123.136	77.006	38.396	138.693	5.493	183.417	694.448
1899	132.267	120.075	95.721	36.903	158.259	5.797	204.548	753.571
1900	105.598	135.991	90.046	30.960	158.188	6.491	203.579	730.853
1901	107.172	117.466	80.170	27.271	161.179	6.678	194.969	694.906
1902	95.640	124.299	59.560	30.765	167.315	6.770	204.597	688.947
1903	136.600	138.104	74.069	36.298	175.118	7.650	241.095	808.934
1904	123.819	139.849	75.947	38.723	182.926	8.101	231.839	801.205
1905	78.446	150.612	102.828	42.820	182.227	8.913	259.488	825.333
1906	157.942	191.339	102.626	44.023	214.436	9.814	272.651	992.831
1907	225.693	222.872	56.859	28.783	256.007	10.457	314.246	1114.917
1908	236.117	196.952	45.174	17.368	253.184	10.999	299.543	1059.337
1909	250.495	177.393	57.926	18.088	255.908	11.722	313.739	1085.271
1910	240.098	216.422	47.269	31.791	248.727	12.319	319.590	1116.216
1911	195.835	233.026	67.537	34.819	240.954	12.851	308.742	1093.764
1912	261.705	239.759	68.072	45.448	243.841	13.172	347.367	1219.364
1913	335.056	305.266	89.456	57.898	254.372	14.032	356.356	1412.435
1914	238.024	292.247	84.910	55.646	285.713	15.189	375.827	1347.557
1915	423.169	365.426	95.489	94.703	358.278	18.310	400.848	1756.222
1916	627.977	587.388	89.824	147.605	495.277	22.781	432.778	2403.630
1917	652.902	701.269	49.482	99.569	647.526	29.530	456.020	2636.298
1918	992.001	699.339	106.025	80.509	870.648	41.618	516.320	3306.459
1919	1173.851	873.062	133.514	43.944	1118.244	49.721	605.742	3998.077
1920	901.540	971.169	48.082	-25.681	1185.444	56.554	694.335	3831.443
1921	380.450	521.486	159.529	-77.222	689.959	51.257	702.799	2428.257
1922	366.036	587.115	162.788	-16.174	502.323	39.519	698.826	2340.435
1923	296.192	570.006	129.960	10.914	474.559	41.529	681.881	2205.041
1924	405.928	540.770	184.781	23.682	557.813	46.653	739.526	2499.154
1925	380.663	484.865	259.594	5.623	562.163	49.190	773.768	2515.867
1926	445.816	490.438	200.090	15.310	537.010	50.753	807.522	2546.939
1927	379.135	520.791	210.398	8.664	482.900	51.688	842.243	2495.818
1928	413.574	506.945	237.365	18.142	514.674	52.708	868.781	2612.189
1929	437.092	604.357	198.035	26.132	461.409	54.567	900.670	2682.262
1930	294.288	551.112	315.179	20.034	381.999	56.525	946.060	2565.196
1931	221.288	425.754	208.417	18.390	325.616	58.366	980.210	2238.042

TABLE W: *Gross surplus, continued.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Building and con-struc-tion	Trans-port and commu-nication	Other private services*	Govern-ment services	Real estate	Total
1932	87.87	405.06	108.52	36.43	243.84	59.55	1011.81	1953.09
1933	261.53	422.39	116.67	57.05	221.73	59.42	1028.03	2166.82
1934	272.16	621.63	-57.70	107.63	312.47	63.15	1052.83	2372.17
1935	372.41	738.12	-25.67	123.48	354.90	67.23	1075.63	2706.10
1936	417.44	848.56	84.54	116.62	369.86	69.81	1125.08	3031.91
1937	410.92	1098.76	33.88	123.56	500.26	80.60	1193.58	3441.55
1938	280.58	1120.46	108.08	102.59	538.54	86.76	1276.91	3513.92
1939	236.28	1197.16	103.02	217.11	721.65	93.90	1367.49	3936.60
1940	204.09	1183.75	33.86	237.07	706.91	122.86	1487.98	3976.52
1941	263.62	1494.28	77.00	330.35	661.28	145.97	1573.27	4545.76
1942	249.30	1453.93	259.43	368.10	649.69	170.58	1605.07	4756.10
1943	432.83	1584.37	249.03	417.46	658.74	191.26	1651.43	5185.11
1944	542.16	1529.47	274.03	406.88	669.91	204.69	1740.16	5367.31
1945	306.82	1259.28	511.15	377.03	559.94	214.71	1827.41	5056.33
1946	422.65	1835.66	261.04	411.54	806.20	219.95	1990.25	5947.31
1947	436.57	1936.33	485.95	248.06	1148.92	235.48	2118.55	6609.85
1948	216.85	2489.37	276.12	329.60	1132.09	248.25	2220.00	6912.28
1949	238.04	1975.59	422.82	359.88	1136.27	257.68	2404.67	6794.95
1950	888.71	2641.46	519.54	408.61	1280.87	275.55	2549.89	8564.64
1951	1562.34	4711.02	545.10	819.05	1195.59	351.46	2561.12	11745.66
1952	2600.81	3055.64	501.53	808.56	1265.02	416.98	2766.40	11414.94
1953	1171.37	3061.61	872.68	762.97	1343.27	443.33	3077.77	10732.98
1954	1277.47	3382.26	814.38	865.30	1440.22	471.83	3362.36	11613.82
1955	885.64	3359.69	741.97	939.04	1530.54	523.69	3638.10	11618.67
1956	1325.04	4001.04	767.41	1107.63	1463.88	582.13	4181.30	13428.43
1957	627.41	4583.81	720.96	1294.14	1810.47	650.14	4463.03	14149.96
1958	506.22	4493.98	836.66	1097.58	1823.53	700.84	4943.61	14402.42
1959	516.39	5169.77	938.23	1291.69	1850.80	764.24	5458.74	15989.86
1960	553.32	5449.94	680.18	1432.51	1719.04	857.30	5912.85	16605.14
1961	585.07	5495.15	864.07	1516.03	2106.31	928.37	6402.59	17897.58
1962	628.13	5762.06	760.21	1486.92	1624.35	1030.73	6586.58	17878.98
1963	672.88	5251.26	918.34	1591.53	1835.18	1152.44	6935.51	18357.14
1964	731.16	6656.08	1020.40	1719.94	2577.77	1297.09	7791.63	21794.07
1965	806.44	7494.60	892.79	1964.68	2987.42	1483.77	8834.52	24464.23
1966	891.03	6716.48	1030.49	1966.66	2962.41	1685.47	10027.48	25280.01
1967	946.21	6854.74	1337.16	2325.17	3934.23	1871.21	10663.30	27932.03
1968	990.43	7451.91	676.63	2684.53	4518.40	2061.19	11297.10	29680.20
1969	996.08	9107.69	328.71	3021.38	4286.57	2283.09	12604.03	32627.53
1970	1097.67	10858.90	-266.53	3063.67	4295.05	2614.76	13825.78	35489.30
1971	1197.74	10469.44	204.30	3563.38	4958.51	2961.62	15018.68	38373.67
1972	1313.54	10565.84	704.98	4152.02	3509.15	3275.37	16576.33	40097.23

TABLE W: *Gross surplus, continued.*

Year	Agri-culture and an-cillaries	Manu-factu-ring and handi-crafts	Building and con-struc-tion	Trans-port and commu-nication	Other private services*	Govern-ment services	Real estate	Total
1973	1497.4	13781.5	1464.9	5132.1	6044.8	3622.6	18314.1	49857.3
1974	1783.0	20616.7	350.7	5637.3	8340.8	4241.6	19732.8	60702.9
1975	2026.0	20819.7	1192.2	5106.4	10437.5	4860.1	21986.4	66428.3
1976	2402.5	14222.2	2247.4	5059.7	10411.5	5605.3	24330.5	64279.1
1977	2793.9	10325.1	2331.5	5662.7	7526.9	6462.3	26729.5	61831.8
1978	3168.0	10321.8	1002.0	6282.0	8794.5	7294.9	30912.1	67775.4
1979	3472.4	17839.3	1641.0	7753.6	12076.2	8269.3	34416.4	85468.2
1980	3889.3	21394.7	1430.0	10024.4	13496.9	9612.9	38591.0	98439.1
1981	4236.8	18195.1	-425.0	11183.3	17404.2	10902.5	45221.7	106718.8
1982	4639.7	26478.9	1290.9	12258.2	22539.0	12025.3	53772.6	133004.4
1983	5332.9	38147.9	1839.0	14203.4	29359.4	13484.8	59711.0	162078.4
1984	5613.1	49797.9	4183.0	13794.5	34776.5	14600.3	64422.9	187188.2
1985	5995.7	51411.3	2854.7	13945.7	35694.5	15835.0	70360.1	196096.9
1986	6418.7	61940.3	1309.9	14945.8	45432.5	16877.8	76249.6	223174.7
1987	6747.9	65001.7	68.6	17164.2	46394.8	18117.9	82654.4	236149.5
1988	7255.0	67136.0	1183.9	22127.5	51307.3	19980.4	89631.1	258621.1
1989	7610.5	72555.2	4250.8	22626.2	50938.5	22214.0	96032.1	276227.4
1990	8114.6	66660.6	2269.6	25782.2	50029.1	24557.7	104731.4	282145.3
1991	8390.3	59304.9	3035.7	28860.0	45569.1	23565.4	129893.1	298618.5
1992	8337.2	65466.1	5618.6	30379.1	37958.6	23294.8	153646.1	324700.6
1993	8890.6	78675.7	1104.3	23313.0	57258.1	24037.7	161421.2	354700.6
1994	8839.7	103343.1	-208.6	28395.8	52931.8	24508.4	174029.0	391839.1
1995	9041.3	133736.3	2540.0	35717.8	70234.9	25616.2	177584.5	454471.1
1996	8996.1	119522.9	141.7	36105.5	62487.5	25874.6	185867.8	438996.2
1997	9134.1	132240.4	-2853.7	42219.4	68301.2	26616.9	191578.8	467237.3
1998	9253.4	141294.6	-942.5	44050.1	71659.3	27345.4	191614.9	484275.2
1999	9548.8	153424.0	-570.5	47490.4	88159.3	28358.1	191920.5	518330.6
2000	9797.1	158504.4	-4488.7	42631.1	87751.1	29510.3	195994.1	519699.3

Sources: See section 6.8.

*Other private services here include circulation (code CC) and private reproductive services (code PR).

Comment: See comment of TABLE O.

TABLE X: *Various ratios (in percent, based on current purchasers' and purchasers' proxy prices) and change in real wage rate (in percent) for manufacturing and handicrafts.*

Year	Net stock of produced assets/ Gross value added	Gross surplus/ Labour income*	Gross surplus/ Net stock of produced assets	Net stock of produced assets/ Net value added	Net surplus/ Labour income*	Net surplus/ Net stock of produced assets	Change in annual real wage rate** from previous year
1850	134.72	52.05	25.41	138.24	48.18	23.52	
1851	134.42	58.86	27.56	137.82	54.93	25.73	-3.79
1852	136.23	55.16	26.10	139.75	51.25	24.25	-2.82
1853	135.37	54.57	26.08	138.98	50.56	24.16	2.48
1854	134.93	57.07	26.93	138.43	53.09	25.05	-6.83
1855	127.06	53.56	27.45	130.37	49.65	25.45	18.21
1856	129.68	44.24	23.65	133.53	40.08	21.43	-5.92
1857	139.71	38.41	19.86	144.48	33.84	17.50	4.03
1858	146.57	41.84	20.13	151.92	36.85	17.72	0.57
1859	140.36	43.01	21.43	145.43	38.02	18.94	8.89
1860	137.12	41.51	21.39	142.00	36.64	18.88	4.49
1861	137.35	37.06	19.69	142.26	32.33	17.17	-2.23
1862	149.21	38.30	18.56	154.85	33.26	16.12	-5.65
1863	146.12	38.08	18.87	151.53	33.15	16.43	8.60
1864	141.75	35.46	18.47	147.28	30.38	15.82	1.49
1865	139.25	36.53	19.21	144.68	31.40	16.52	3.16
1866	146.42	40.09	19.54	152.51	34.49	16.82	-8.07
1867	149.10	48.56	21.92	155.44	42.49	19.18	-8.18
1868	155.78	53.29	22.32	162.73	46.74	19.57	-15.57
1869	151.01	52.53	22.81	157.51	46.23	20.07	6.37
1870	138.87	56.71	26.06	144.37	50.75	23.32	12.21
1871	137.31	60.93	27.57	143.06	54.47	24.65	1.49
1872	132.33	73.86	32.10	137.29	67.57	29.37	2.48
1873	136.80	75.76	31.51	142.49	68.75	28.59	2.23
1874	144.88	72.47	29.00	152.71	63.63	25.46	1.18
1875	153.87	60.72	24.55	164.04	50.76	20.52	3.19
1876	163.50	55.68	21.88	175.72	44.86	17.62	2.02
1877	174.39	47.73	18.53	188.87	36.40	14.13	2.66
1878	205.58	41.17	14.19	227.77	27.41	9.45	-4.67
1879	212.07	37.76	12.92	236.63	23.46	8.03	3.85
1880	183.34	50.01	18.18	198.39	38.63	14.05	3.76
1881	170.89	42.57	17.47	184.15	32.30	13.26	-0.49
1882	168.67	49.71	19.69	181.04	39.48	15.64	1.32
1883	177.65	44.79	17.41	192.28	33.77	13.13	4.11
1884	186.11	40.28	15.43	202.33	29.04	11.12	4.02
1885	180.70	39.14	15.57	195.67	28.50	11.33	3.82
1886	194.71	31.23	12.22	212.68	20.15	7.88	3.52

TABLE X: *Various ratios for manufacturing and handicraft, continued.*

Year	Net stock of produced assets/ Gross value added	Gross surplus/ Labour income*	Gross surplus/ Net stock of produced assets	Net stock of produced assets/ Net value added	Net surplus/ Labour income*	Net surplus/ Net stock of produced assets	Change in annual real wage** from previous year
1887	196.17	29.99	11.76	213.99	19.16	7.51	4.64
1888	186.66	37.16	14.51	202.72	26.29	10.27	3.21
1889	174.13	40.75	16.63	187.68	30.58	12.48	0.33
1890	175.22	35.58	14.98	189.22	25.55	10.76	2.30
1891	174.84	33.45	14.34	188.79	23.58	10.11	0.50
1892	179.15	38.20	15.43	193.42	28.00	11.31	-3.35
1893	174.72	39.58	16.23	187.77	29.88	12.25	6.99
1894	168.12	40.09	17.02	179.81	30.98	13.15	5.06
1895	164.42	40.72	17.60	175.52	31.83	13.76	0.07
1896	153.89	42.79	19.47	163.42	34.47	15.68	1.33
1897	152.61	45.95	20.63	161.81	37.65	16.90	3.03
1898	152.70	40.47	18.87	161.94	32.45	15.13	1.88
1899	153.58	36.32	17.35	163.14	28.34	13.53	0.14
1900	162.54	38.89	17.22	173.21	30.34	13.44	2.59
1901	176.19	33.66	14.29	189.03	24.58	10.44	2.46
1902	169.71	34.62	15.15	181.30	26.01	11.39	-0.60
1903	168.99	36.59	15.85	180.11	28.16	12.20	1.53
1904	163.93	35.13	15.86	174.00	27.31	12.33	4.10
1905	169.55	36.84	15.88	180.07	28.84	12.43	-1.90
1906	159.81	41.81	18.45	169.21	33.94	14.97	7.25
1907	156.80	45.06	19.81	166.17	36.88	16.21	3.45
1908	178.78	40.30	16.07	190.95	31.36	12.50	-1.90
1909	200.70	39.00	13.98	216.35	28.95	10.38	-5.55
1910	176.99	39.79	16.08	189.00	30.91	12.49	13.77
1911	181.01	41.82	16.29	193.51	32.66	12.72	2.95
1912	178.49	40.11	16.04	190.53	31.25	12.50	1.36
1913	169.93	47.66	18.99	181.06	38.57	15.37	1.84
1914	186.82	44.59	16.51	200.12	34.98	12.95	-1.32
1915	190.26	52.68	18.13	204.48	42.06	14.48	-9.20
1916	180.21	71.33	23.10	193.66	59.42	19.25	-0.88
1917	203.36	69.85	20.22	220.68	56.52	16.36	-4.71
1918	243.60	51.91	14.03	269.78	37.17	10.04	-1.76
1919	236.53	50.42	14.17	260.02	36.83	10.35	5.32
1920	226.61	45.51	13.80	248.63	32.62	9.89	11.32
1921	301.67	31.40	7.92	338.42	17.13	4.32	10.00
1922	256.55	46.00	12.28	283.19	32.26	8.61	-1.11
1923	242.96	43.66	12.51	267.40	30.53	8.75	4.24
1924	241.37	38.11	11.43	264.64	25.96	7.79	3.80
1925	247.66	32.32	9.86	271.68	20.62	6.29	1.32
1926	241.83	31.33	9.87	264.70	19.99	6.29	6.53

TABLE X: *Various ratios for manufacturing and handicraft, continued.*

Year	Net stock of pro-duced assets/ Gross value added	Gross surplus/ Labour income*	Gross surplus/ Net stock of produced assets	Net stock of produced assets/ Net value added	Net surplus/ Labour income*	Net surplus/ Net stock of produced assets	Change in annual real wage** from previous year
1927	235.34	32.69	10.47	257.03	21.49	6.88	1.91
1928	229.67	30.23	10.11	250.32	19.49	6.52	-0.49
1929	214.96	33.50	11.67	233.09	23.12	8.06	8.35
1930	222.83	30.04	10.37	242.91	19.29	6.66	5.64
1931	255.67	24.83	7.78	282.85	12.84	4.02	2.23
1932	278.63	25.77	7.35	310.79	12.76	3.64	-1.75
1933	264.01	27.28	8.12	292.82	14.76	4.39	1.05
1934	219.25	35.77	12.02	239.28	24.41	8.20	1.81
1935	205.90	39.32	13.71	223.33	28.45	9.92	0.40
1936	199.85	42.81	15.00	216.23	31.99	11.21	-0.04
1937	197.66	50.07	16.88	213.92	38.66	13.03	-0.66
1938	201.06	48.11	16.16	218.19	36.48	12.25	3.88
1939	195.47	47.50	16.48	212.34	35.78	12.41	2.37
1940	232.49	43.90	13.12	257.00	30.17	9.02	-7.41
1941	234.50	51.34	14.47	258.33	37.38	10.53	-6.55
1942	233.84	43.02	12.86	258.53	29.36	8.78	0.49
1943	230.04	42.60	12.99	254.14	29.07	8.86	3.20
1944	229.99	38.44	12.07	254.44	25.14	7.90	3.64
1945	237.53	28.39	9.31	263.47	15.75	5.17	4.71
1946	204.07	37.71	13.42	223.75	25.59	9.11	6.17
1947	199.98	34.64	12.87	219.42	22.71	8.44	9.17
1948	199.67	40.28	14.38	218.32	28.30	10.10	2.61
1949	212.86	28.62	10.45	234.58	16.71	6.10	7.64
1950	208.85	36.78	12.87	230.14	24.12	8.45	1.66
1951	201.93	54.91	17.55	222.01	40.90	13.07	4.80
1952	247.48	30.67	9.48	279.42	15.73	4.87	9.57
1953	246.38	29.68	9.29	277.18	15.26	4.78	0.92
1954	232.26	30.87	10.16	259.80	17.00	5.59	4.42
1955	236.19	27.63	9.17	265.12	13.70	4.55	3.96
1956	241.90	31.24	9.84	272.09	16.68	5.25	0.62
1957	245.06	33.76	10.30	275.34	19.05	5.81	2.73
1958	246.69	31.19	9.64	277.26	16.73	5.17	1.12
1959	240.98	34.59	10.66	270.48	19.91	6.14	1.52
1960	241.29	32.35	10.13	271.87	17.46	5.47	3.25
1961	246.30	29.23	9.18	278.47	14.30	4.49	6.16
1962	248.06	27.27	8.64	280.95	12.37	3.92	6.50
1963	250.78	22.10	7.22	284.96	7.45	2.43	5.95
1964	244.69	26.16	8.47	277.36	11.30	3.66	4.26
1965	245.90	27.03	8.65	278.96	11.98	3.83	3.50
1966	256.26	21.77	6.98	292.29	6.77	2.17	2.71

TABLE X: *Various ratios for manufacturing and handicraft, continued.*

Year	Net stock of pro-duced assets/ Gross value added	Gross surplus/ Labour income*	Gross surplus/ Net stock of produced assets	Net stock of produced assets/ Net value added	Net surplus/ Labour income*	Net surplus/ Net stock of produced assets	Change in annual real wage** from previous year
1967	264.07	20.92	6.55	302.63	5.52	1.73	3.31
1968	265.21	21.82	6.75	304.27	6.18	1.91	4.76
1969	249.39	25.19	8.07	283.21	10.24	3.28	2.53
1970	242.42	26.74	8.70	274.59	11.89	3.87	4.45
1971	263.64	23.83	7.30	301.89	8.14	2.49	3.16
1972	267.31	21.80	6.70	307.05	6.04	1.85	2.05
1973	264.82	26.71	7.96	304.23	10.29	3.07	0.60
1974	258.76	35.53	10.13	297.66	17.82	5.08	5.49
1975	263.64	29.56	8.65	304.64	12.12	3.55	7.11
1976	286.25	16.30	4.90	336.53	-1.08	-0.32	5.01
1977	319.78	9.91	2.82	384.56	-8.60	-2.45	-2.45
1978	321.99	8.52	2.44	389.54	-10.29	-2.95	-1.00
1979	300.45	16.18	4.64	359.69	-2.95	-0.85	-1.07
1980	296.16	17.83	5.11	354.56	-1.58	-0.45	-2.40
1981	310.88	12.87	3.67	376.38	-6.78	-1.93	-1.15
1982	315.64	19.67	5.21	384.49	-1.76	-0.47	-2.68
1983	302.38	27.42	7.12	366.25	5.20	1.35	-0.84
1984	273.18	33.17	9.12	324.48	12.11	3.33	3.10
1985	263.63	30.57	8.88	312.44	10.17	2.96	2.07
1986	251.71	35.15	10.33	296.32	14.81	4.35	2.13
1987	244.36	34.30	10.45	287.28	14.23	4.34	2.28
1988	243.30	32.27	10.03	286.79	12.21	3.80	1.50
1989	244.74	32.05	9.92	289.38	11.68	3.61	3.23
1990	254.44	26.32	8.19	303.03	6.07	1.89	0.83
1991	262.33	21.80	6.82	313.59	1.89	0.59	-1.53
1992	262.41	26.04	7.87	314.34	5.22	1.58	3.28
1993	266.20	33.86	9.50	321.69	10.77	3.02	-3.13
1994	231.44	42.48	12.88	273.22	20.69	6.28	3.87
1995	207.70	51.46	16.36	240.95	30.56	9.71	1.10
1996	211.97	42.81	14.14	246.73	22.69	7.50	5.80
1997	208.74	46.26	15.15	242.90	25.70	8.42	2.21
1998	204.21	47.47	15.76	237.13	27.00	8.96	1.74
1999	203.07	51.44	16.73	235.96	30.33	9.86	-0.10
2000	199.53	50.30	16.77	231.26	29.68	9.90	6.20

Sources: See section 4.4, chapter 5 and section 6.8.

* The ratio of net surplus to labour income is the same expressed in purchasers' proxy values as in basic values. However, this equality does not hold for the ratio of gross surplus to labour income.

** Wages and salaries (including social benefits) at factor costs per employed deflated by the price index of private final consumption.

Glossary of variables and statistical terms

The following glossary is restricted to some of the statistical terms and categories used in this dissertation. Appendix 3.2 gives a further account of the division into types of activities applied in the present study (PS). Some of the terms are common, some are mainly used in the System of National Accounts (SNA), and some are only used in this study. For sources and further descriptions, see the different chapters of this thesis. It must be emphasised that the same term is often used with different (although mostly related) meanings in different contexts and by different authors.

Accumulation: Generally, accumulation refers to an increase due to natural growth or addition. In economics, accumulation refers to an increase in assets. In the PS, a distinction is made between accumulation of capital and accumulation of produced assets; the latter also includes the accumulation of produced assets that from a social perspective are not capital.

Accumulation of capital: In the Marxist tradition, accumulation of capital consists of the outlays both for new variable capital and new constant capital. The Marxist notion of accumulation has no exact correspondence in the terminology of national accounts, though it is related to the concepts of net investment and net saving.

Activity: In the SNA, described to take place when resources are combined leading to the creation of particular goods or services. Not all activities are defined as being productive in an economic sense and counted into aggregate production.

Additivity: Implies that the aggregate variable is equal to the sum of its components. Because of the deflation technique an aggregate volume value often does not equal the sum of its volume components and, henceforth, does not possess the property of additivity.

Asset: In the 1993 SNA, defined as an entity over which an institutional unit exercises ownership rights, that functions as a store of value, and from which economic benefits can be derived by their owner through holding it. There are two main types of assets, financial and non-financial. Non-financial assets are either produced or non-produced.

Average absolute difference: In the PS, a measure of the average distance between two volume series for the same time period irrespectively of the positive or negative sign of this distance (which could be applied to other types of series as well). It measures how many percent larger on average the larger estimate of the volume relative is compared to the smaller estimate of the volume relative. The absolute difference is therefore always positive.

Average systematic difference: In the PS, a measure of the average distance between two volume series for the same time period. The systematic difference measures how many percent larger or smaller the volume relatives according to one of the series are on average compared to the volume relatives according to the other series.

Backward linking: The linking of two data series for the same variable(s) for two consecutive time periods using the later series as the benchmark series.

Base period: The period that provides the weights for a volume or price index. The base period is mostly situated earlier than the compared period.

Basic prices: A type of price of a unit of good or services produced as output, which includes the excess of non-commodity related indirect taxes over non-commodity-related subsidies, but

excludes the excess of commodity related indirect taxes over commodity-related subsidies. It also excludes transport charges invoiced separately by the producer.

Benchmark series: In the PS, defined as the data series for a time period which is kept unchanged when linking consecutive series for the same variable(s) to each other, and to which the other data series are adjusted.

Breaks in data series: Occur when two consecutive data series for the same variable(s) give different figures for the overlapping periods, often arising from changing definitions over time or changed methods to collect data. Such breaks can be eliminated by various linking methods.

Buildings and structures: A type of fixed assets estimated in the PS. Are subdivided between dwellings (residential buildings), and non-residential buildings and structures.

Business cycle: A type of fluctuations experienced by capitalist or market economies. A business cycle consists of an expansion of business activity followed by a contraction. The length of the cycle is not fixed, but can vary from two to more than ten years. The business cycle is measured in absolute terms, and what is investigated is whether there is an outright contraction in economic activity, in contrast to the so-called growth cycle.

Capacity stock: The stock of fixed assets that are believed to have been installed at a given point in time and that still have not been scrapped. Some of these objects may be temporarily idle or even be withdrawn from production for an indefinite period and held in reserve to meet unexpected rise in demand. See also utilised stock.

Capital: The definition of capital varies significantly between different theoretical traditions and contexts. In mainstream economics, the term capital is used both to refer narrowly to the humanly created means for production and broadly to any financial or non-financial assets that can provide an income, even if only potentially so. Both definitions implicitly imply that capital is intrinsic to all societies and social relations, which is criticised in the Marxist tradition. In the PS, a distinction is made between asset and capital. Capital is referred to as an asset that specifically takes a capitalist form, while asset is considered a broader concept.

Capital formation: See gross and net capital formation. In the PS, the term is not used in preference for the term "investment".

Capital productivity: Production per unit of fixed capital.

Chain index: Is obtained by linking a price or volume index for consecutive periods. The short-term movements are calculated on the basis of weights pertaining to the relevant period. An annual chain index changes weights for every year.

Changes in fixed livestock: The fixed livestock acquired less the fixed livestock disposed of, in the course of the accounting period. There is no difference between net and gross changes in fixed livestock.

Changes in (the stock of) inventories: Is set equal to the inventories acquired less the inventories disposed of, in the course of the accounting period. Some of these transactions reflect actual purchases and sales, while other are internal to the enterprise. There is no difference between net and gross changes in inventories.

C.i.f. (costs, insurance, freight) price: The c.i.f. prices of imported goods can be regarded as the purchasers' prices that would be paid by importers if taking delivery of goods at their own frontier. The c.i.f. price is equal to the f.o.b. price plus the costs of transports and insurances between the customs frontier of the exporting and importing country. Exported goods are normally not expressed in c.i.f. prices.

Circulation: In Marxist theory, circulation is the sphere of exchange in which commodities and services are bought and sold and finance is organised, and these activities are considered

unproductive. In the PS, circulation (code CC) includes wholesale and retail trade, banking, insurance and business services. Real estate (code RE) is in the PS presented separately, although renting of real estate on the open market could be seen as a circulation activity.

Constant capital (c): In Marxist theory, the outlays of capital on materials used up in the production process. Corresponds to the sum of intermediate consumption and consumption of fixed capital in the SNA.

Constant prices: Express values of goods and services over time in the same prices, often of a base period.

Consumption of fixed assets: The term used in the PS instead of the SNA-category "consumption of fixed capital".

Consumption of fixed capital (CF): In the SNA, defined as the reduction in the value of fixed assets used in production. In the PS, the term "consumption of fixed assets" is preferred since the fixed assets also contain parts that are not capital owned by capitalists.

Contraction: In the PS, defined as an event when the annual change in the volume GDP is negative.

Cultivated assets: In the SNA, consist of fixed livestock and vineyards, orchards and other plantations of trees yielding products and controlled by institutional units. In the PS, only fixed livestock is estimated.

Current account (balance of payments): The external account of goods and services, primary incomes, and current transfers.

Current value: The value of items in the prices at the time of measurement.

Cycle: Implies that a data series corrected for seasonal movements displays recurrence of values. Some authors also define a cycle as periodical (i.e. having a specific length) and as deterministic. But, for example, the business cycle does not display such periodicity. In the PS, the term cycle is used in the broader sense. We can, in this sense, distinguish between periodic and non-periodic cycles.

Deductible VAT: The VAT paid for the purchases of goods and services that the producer is permitted to deduct from the producer's own VAT liability to the government.

Deflation period: A period for which the same prices (of the base period) are used to estimate volume values. When expressed in one base period's prices, the aggregate volume values possess the property of additivity.

Deflator: The deflator is used to eliminate the inflation component of a data series, i.e. to transform current values into a volume values. The volume index is derived by dividing the ratio between nominal values in two different periods (for example, years) with the deflator, a procedure termed "deflation". The deflator equals the price index.

Depreciation: Is usually calculated in business accounts by allocating past expenditures on fixed assets over subsequent periods. In the SNA, the term consumption of fixed capital is distinguished from the term depreciation as measured in business accounts, since the methods are significantly different in the two cases.

Depression: The term is often used to describe a severe economic crisis or downturn, in contrast to just a regular recession. In the PS, a depression is identified as an event when volume GDP in one year is beneath the level of volume GDP two years earlier, and consists of the negative consecutive annual changes in volume GDP.

Double deflation: A deflation technique implying that two separate deflators are constructed, one for gross output and one for intermediate consumption. The volume value added is then calculated as the value of gross output deflated by the first deflator less the value of intermediate

consumption deflated by the second deflator. This technique is applied by Statistics Sweden but not in the PS.

Dwellings/residential buildings: Buildings that are entirely or primarily used as residences.

Dwelling services: A type of activities; consisting of letting of dwellings and use of owner-occupied dwellings, i.e. of all real estate services except letting of other premises.

Effective labour: In various growth models, defined as labour multiplied by the technical level.

Employee: A person who enters an agreement to work in return for remuneration in cash or in kind.

Employment (EM): The definition of employment varies with different sources. Statistics Sweden defines an employed as a person who works at least one hour during the period of measurement. This is a broader definition than the one applied by, for example, population censuses. The PS also divides up the employed in employees and self-employed.

Entrepreneurial income: In the SNA, defined as the operating surplus or mixed income *plus* property incomes on financial or other assets *less* interest and rents paid. It must not be confused with the concept of entrepreneur as used by Schumpeterians.

Exchange value: In Marxist theory is connected to the power to exchange a product for other types of products. The actualisation of the exchange value under capitalism is the current price, although the current price can deviate from the underlying exchange value.

Expansion: In the PS, defined as the period between two consecutive recessions.

Export: Consists of goods and services that are sold, bartered or given from residents to non-residents.

Export ratio: Normally referring to the ratio of export to GDP.

Factor price: A type of price on a unit of good or services produced as output, which excludes the excess of indirect taxes over subsidies. It also excludes transport charges invoiced separately by the producer.

Final consumption: Consists of goods and services used up by households, government or other communities for their individual or collective needs or wants. In the PS, divided between private and government final consumption.

Financial asset: An asset held by an institutional unit for which there is a counterpart liability on the part of another institutional unit.

Fisher price index: The geometric average of the Laspeyre and Paasche price indices.

Fisher volume index: The geometric average of the Laspeyre and Paasche volume indices.

Fixed assets: Consist of produced assets that are used in the production process for a longer time period, in the 1993 SNA for more than one year, which is also the definition presently applied by Statistics Sweden. However, before adopting 1993 SNA Statistics Sweden sets the time limit to three or more years, which is also the definition applied in the PS. There are two types of fixed assets: tangible and intangible fixed assets. In the PS, only tangible assets are considered. Three types of fixed assets are estimated in the PS: buildings and structures, machinery and equipment (including transport equipment) and fixed livestock.

Fixed livestock: Livestock that yield products year after year (dairy cattle, draught animals, etc). Animals raised for slaughter are not included and are classified as belonging to inventories.

Fixed non-livestock assets: In the PS, consist of buildings and structures, and machinery and equipment.

Fixed non-livestock investment: In the PS, consists of investment in buildings and structures, and in machinery and equipment.

F.o.b. (free on board prices) price: The f.o.b. prices of exported and imported goods can be regarded as the purchasers' prices that would be paid by importers if loaded on their own carrier at the exporter's frontier. The f.o.b. price is equal to the c.i.f. price less the costs of transports and insurances between the customs frontier of the exporting and importing country.

Forward linking: The linking of two data series for the same variable(s) for two consecutive time periods using the earlier series as the benchmark series.

Geometric interpolation: The interpolation based on the assumption of a geometrical growth (or decline) of a variable.

Gerschenkron effect: Can arise over longer periods, when a Laspeyre volume index tends to show a higher growth rate than a Paasche volume index (if the base period is located earlier in time than the compared period). Is usually connected to fast industrialisation.

Goods production: A type of activities. In the PS, consists of agriculture and ancillaries, manufacturing and handicrafts, and building and construction. Goods as distinct from services have a physical embodiment and can be stored, although the borderline between goods and services is not always easy to draw.

Government final consumption (G): Consists of expenditures, including imputed expenditures, incurred by general government to satisfy individual or collective needs or wants.

Gross capital formation: In the 1993 SNA, defined as the total value of gross fixed capital formation, changes in inventories and acquisitions less disposals of valuables. In the SCB-series after the change to the 1993 SNA acquisitions less disposals of valuables are included in "gross capital formation", but seem to be excluded in the earlier series, and are, henceforth, not calculated in the PS. In the PS, the term is not used in preference for the term "gross investment".

Gross Domestic Output (GDO): The sum of all gross outputs of an economy. Equals the sum of GDP and total intermediate consumption.

Gross Domestic Product (GDP): Can be calculated in three different ways, by activity, by expenditure and by income.

Gross Domestic Product by activity (or from the production side): A method to compute GDP directly, as the sum of gross values added of all economic activities. Is normally estimated in basic prices.

Gross Domestic Product by expenditure: A method to compute GDP as the sum of different uses: private final consumption, government final consumption, investment and net export. Is normally estimated in purchasers' or market prices.

Gross Domestic Product by income: A method to compute GDP, as the sum of wages and salaries (including social benefits), operating surplus, mixed income, and consumption of fixed assets of the aggregate economy. In the PS, GDP in basic values is decomposed into wages and salaries (including social benefits), imputed labour income of self-employed and gross surplus (the gross surplus here includes non-commodity-related indirect taxes less non-commodity-related subsidies).

Gross fixed capital formation: In the 1993 SNA, defined as the value of acquired fixed assets less the value of disposed fixed assets, plus certain additions to the value of non-produced assets realised by the productive activity of institutional units. In the PS, the term is not used in preference for the term "gross fixed investment".

Gross investment: The term used in the PS instead of the SNA-term "gross capital formation".

Gross output (GO): The total value of goods and services produced. Equals the sum of gross value added and intermediate consumption. For trade the gross output is set equal to the trade margin.

Gross stock of fixed assets: Is valued at the replacement costs of existing fixed assets, which does not take into account that the existing stock of fixed assets is also depreciated.

Gross surplus (GS): In the PS, defined as gross value added less labour income (of both employees and self-employed). The gross surplus includes consumption of fixed assets.

Gross value added (GVA): The gross output less intermediate consumption. Gross value added includes consumption of fixed capital. When the latter is deducted we are left with the net value added.

Gross value added at basic prices: Equals the gross output valued at basic prices less intermediate consumption valued at purchasers' prices.

Growth cycle or deviation cycle: The fluctuations of the economy around a trend line. In contrast to the business cycle it is measured relatively, and the growth upturns and downturn are defined in relation to the average growth during a period or in relation to a supposed equilibrium state or potential output.

Holding gains: May accrue to the owners of financial and non-financial assets and liabilities as a result of the price changes of these assets. Can be positive or negative.

"Housewives" (code HW): A kind of dummy category applied in the PS to take into account the difference in the rate of participation of men and women in employment and the fact that this difference mostly can be explained by the existence of so-called "housewives". For the period 1850-1950, data on the number of "housewives" working at home is used in the PS, which roughly corresponded to the difference between the number of employed men and women. For the period 1950-2000, the number of "housewives" is assumed to be equivalent to the difference between men and women in employment.

Import: Consists of goods and services that are sold, bartered or given from non-residents to residents.

Imputed labour income of self-employed: In the PS, defined as the part of income of self-employed that could be seen as remuneration for worked performed (including social benefits).

Industrial activities: A type of activities. In the PS, consists of industrial goods production and industry-related services, i.e. of manufacturing and handicrafts (code MH), building and construction (code BC), transport and communication (code TC), circulation (code CC), and real estate (code RE).

Industrial goods production: A type of activities. In the PS, consists of all goods production outside of agriculture and ancillaries, i.e. of manufacturing and handicrafts (code MH), and building and construction (code BC).

Industry-related services: A type of activities. In the PS, include transport and communication (code TC), circulation (code CC), and real estate (code RE).

Input-output table: Presents in detail the process of production and the use of the produced goods and services.

Institutional unit: In the SNA, an economic entity that can own assets, incur liabilities and engage in economic activities and transactions with other entities.

Intangible fixed assets: In the SNA, non-financial produced fixed assets, mainly consisting of mineral exploration, computer software and entertainment, literary and artistic originals. No estimation is made of these assets in the PS.

Intermediate consumption (IC): Consists of the goods and services used up in the production process, except for consumption of fixed assets.

Inventories: Consist of materials and supplies (goods destined for intermediate consumption), work in progress, finished goods and goods for resale. They are not part of fixed assets.

Investment: The term used in the PS instead of the SNA term "capital formation".

Investment ratio: Mostly referring to the ratio of investment to value added or to GDP.

Labourers: In the PS, defined as the employed and the "housewives".

Labour income (LI): In the PS, consists of wages and salaries (including social benefits) of employees and imputed labour income of self-employed.

Labour income rate: In the PS, labour income per employed or per hour worked.

Labour productivity: Production per unit of labour.

Labour value: In Marxist theory, the socially necessary labour time it takes to produce a commodity. Labour values are assumed to be correlated with prices.

Laspeyre price index: A measure of the level of prices in the compared period in relation to the base period expressed in the quantities of the base period (the latter is mostly located earlier in time). Mathematically, a Laspeyre price index is the weighted arithmetic average of price relatives using the values of the base period as weights.

Laspeyre volume index: Expresses the change in the quantities of a bunch of items in the prices of a base period (mostly located earlier in time). Mathematically, a Laspeyre volume index is the weighted arithmetic average of volume relatives using the values of the base period as weights.

Liability: An obligation requiring that one institutional unit make certain payments to another unit in circumstances specified by a contract between them.

Linear interpolation: Interpolation of a variable based on the assumption of arithmetic growth (or decline) of a variable.

"Long downswing": In the PS, defined as a longer period of an average GDP per capita growth below one percent per year.

"Long upswing": In the PS, defined as a longer period of an average GDP per capita growth above one percent per year. Also defined as a period in between two consecutive "long downswings".

Machinery and equipment: Part of fixed assets. Consists of machinery and equipment, including transport equipment, that are not acquired by households for final consumption.

Market producer: Producers that sell most of their output at prices that are economically significant. In the SNA, consists of all activities within the production boundary, except for government services and Non-Profit Institutions Serving Households.

Maximum rate of profit: The ratio of value added to capital.

Mini-recession: In the PS, defined as an event when the annual change in GDP is between zero and one percent.

Mixed income (MI): In the 1993 SNA, defined as the net value added less wages and salaries (including social benefits) for all unincorporated enterprises owned by households. It contains an element of remuneration for worked performed by the owner or other members of the household, which cannot be separated from the remuneration of invested assets. Operating surplus is a similar measure but for all enterprises except unincorporated enterprises. In the PS, an attempt is made to calculate the part of income of self-employed that could be seen as remuneration for worked performed.

National disposable income (gross or net): Is defined as GDP (for the gross estimate) or NDP (for the net estimate) plus the sum of net income and net transfer payments from abroad.

National income (gross or net): Is defined as GDP (for the gross estimate) or NDP (for the net estimate) plus the sum of net income from abroad. The (gross or net) national income plus net transfer payments from abroad equals the (gross or net) national disposable income.

National saving: See Saving (aggregate).

Net Domestic Product (NDP): Defined as the Gross Domestic Product less aggregate consumption of fixed assets.

Net export (NX): Defined as export less import. A negative net export can also be described as a positive net import.

Net capital formation: Defined as gross capital formation less consumption of fixed capital. In the PS, the term "net investment" is preferred.

Net fixed capital formation: In the SNA, defined as gross fixed capital formation less consumption of fixed capital. In the PS, the term "net fixed investment" is preferred.

Net financial claims on the rest of the world (net financial claims in foreign sectors): Financial assets less financial liabilities for the total domestic economy.

Net fixed investment: Defined as gross fixed investment less consumption of fixed assets.

Net import: Defined as import less export. A negative net import can also be described as a positive net export.

Net income from abroad: The difference between the total primary incomes receivable by residents from non-residents and the total primary incomes payable by residents to non-residents.

Net investment: Defined as gross investment less consumption of fixed assets.

Net output: The same as (gross or net) value added.

Net surplus (NS): In the PS, defined as the net value added less the labour income (of both employees and self-employed).

Net stock of fixed assets: Is defined as the value of the stock of fixed assets at written down replacement costs, i.e. after the cumulative consumption of fixed assets of the existing stock is deducted.

Net surplus: In the PS, defined as the gross surplus less consumption of fixed assets, or as the net value added less labour income.

Net transfer payments from abroad: Current transfers received from non-residential units less current transfers payable to non-residential units.

Net value added (NVA): Defined as the gross value added less consumption of fixed assets, or as gross output less intermediate consumption and consumption of fixed assets.

Neutral holding gains: The value of holding gains if the price of the asset would change in the same proportion as the general rate of inflation or deflation.

Nominal holding gains: Denotes the change in the monetary values of assets that arise purely out of holding assets over time, without transforming them in any way, i.e. it is connected to the price increase of the assets. Nominal holdings gains equal the sum of real holding gains and neutral holding gains.

Nominal labour income rate: In the PS, nominal labour income per employed or per hour worked.

Nominal productivity: In the PS, nominal value added per employed or per hour worked.

Nominal value: The value of items in current prices.

Non-consumptive expenditures (NCE): In the PS, defined as investment plus net export. It constitutes the part of GDP by expenditure that is not final consumption.

Non-consumptive expenditure ratio: In the PS, the ratio of non-consumptive expenditures to GDP.

Non-deductible VAT: VAT payable by a purchaser that is not deductible from purchaser's own VAT liability to the government.

Non-Profit Institutions Serving Households (NPISHs): Consists of non-profit institutions that are not predominantly financed or controlled by government and that provide goods and services to households free or at prices that are economically insignificant.

Non-reproductive activities: A type of activities. In the PS, includes agriculture and ancillaries (code AA), manufacturing and handicrafts (code MH), building and construction (code BC), transport and communication (code TC), circulation (code CC), and real estate (code RE).

Occupied person: A person that is an employee or self-employed, and that is engaged in an activity that falls within the production boundary.

Operating surplus (OS): In the 1993 SNA, defined as the net value added less wages and salaries (including social benefits) for all enterprises except unincorporated enterprises. It is the surplus or deficit accruing from production before taking into account any interests, rents or similar charges paid or received on financial or tangible non-produced assets. Mixed income is a similar measure but for unincorporated enterprises owned by households.

Organic composition of capital: In Marxist theory, the value composition of capital, inasmuch as it is determined by, and reflects, the technical composition of capital.

Output: In the SNA, have the same meaning as gross output. In theoretical growth models what is termed as output mostly refers to the net output, which is the same as the value added.

Own final use: Output for own final use consists of goods and services that are kept for the own final use of the owner of the enterprises where they are produced.

Paasche price index: Measures the level of prices in the compared period (mostly located later in time) in relation to a based period expressed in the quantities of the compared period. Mathematically a Paasche price index is the weighted harmonic average of price relatives using the values of the compared period as weights.

Paasche volume index: Expresses the change in the quantities of a bunch of items in the prices of the compared period (mostly located later in time) and not the base period. Mathematically, a Paasche volume index is the weighted harmonic average of volume relatives using the values of the compared period as weights.

Perpetual Inventory Method (PIM): A method to calculate the stock of produced assets (and consumption of fixed assets) implying that its value is estimated indirectly from investments in preceding years.

Price (p): In the SNA, refers to the value of one unit of a good or service. In this sense, price can be distinguished from value; in that value does not depend on how many units it refers to. In the Marxist tradition, price is the manifestation of an underlying exchange value, but these do not necessarily equal each other.

Price index (P): A measure of the level of prices in one period in relation to an earlier period. Price indices can also be constructed in different ways, depending on how the individual prices are weighted.

Price relative: The ratio of the price of an item in one period to the price of the same item in an earlier period. It can also refer to the ratio of the price of an item in one country to the price of the same item in another country.

Primary income: In the 1993 SNA, defined as the incomes of institutional units coming from their involvement in the production process or ownership of assets that may be needed in the production process.

Private final consumption (C): Consists of the final consumption of households and NPISHs. The term is no longer used in the 1993 SNA, but is used in the PS.

Private sector: In the 1993 SNA, covers private corporations, households and NPISHs. In the PS, consists of all types of activities within the production boundary of official national accounts except for government services.

Produced assets: Non-financial assets that have come to existence from processes that fall within the production boundary. In the 1993 SNA, consist of fixed assets, inventories and valuables. In the PS, produced assets only encompass fixed assets and inventories.

Production boundary: Distinguishes between activities counted as production and those not included in production.

Productive and unproductive activities: Productive activities consist of those activities that are included in production, and unproductive activities of those that are excluded. Where to draw the line varies between different theoretical traditions.

Productivity: Output per unit of factor input. Can be measured in different ways. In the PS, mostly refers to labour productivity, or the volume value added per employed or per hour worked.

Profit: The excess of incomes over expenditures of a business during a period. The profit can be defined in different ways depending on context and accounting method. In the Marxist tradition, profit is linked to the exploitation of labour, and to the concept of surplus value.

Profit rate (p): The ratio of profit to capital.

Purchasers' prices: A type of price on a unit of good or services produced as output, which includes the excess of indirect taxes over subsidies and transport charges invoiced separately by the producer.

Purchasers' proxy prices: Used in the PS in order to make comparisons of different variables, of which some variables are only given in basic prices by the sources.

Quantity (q): In the SNA, a distinction is made between the concept of quantity and that of volume. Quantities are only additive for single homogenous products.

Rate of depreciation: Refers mostly to the ratio of the decrease in the value of the net stock of non-livestock fixed assets to the value of the existing net stock of non-livestock fixed assets.

Rate of exploitation (e): In Marxist theory, under capitalism, the same as the surplus value rate.

Rate of scrapping: Refers mostly to the ratio of the gross value of the non-livestock fixed assets scrapped to the existing value of the gross stock of non-livestock fixed assets.

Ratio method: A method to link data series of the same variable(s) but for different time periods. Implies that the data of one of the series is increased or decreased by a certain percentage, in the same proportion as the ratio between the two series at the point in time when a break occurs between the series.

Real estate: A type of activities. Consists of letting of dwellings and other premises, but also of the use of owner-occupied dwellings. In the SNA, real estate is considered a productive

activity, but it could also be seen as a consumption activity (like the consumption of other durable goods that is viewed as unproductive).

Real holding gains: The value accruing to the holder of an asset as a result of the change in the price of the asset relatively to the general inflation or deflation.

Real labour income rate: In the PS, the labour income rate deflated by the price index of private final consumption.

Real productivity: In the PS, the volume value added per employed or per hour worked.

Real value: The current value deflated by a price index.

Real wage rate: In the PS, wages and salaries (including social benefits) per employed or per hour worked deflated by the price index of private final consumption.

Rebasing: The change to a new base period in a volume or price index series.

Recession: Is defined differently in different contexts. One usual definition is that the GDP falls for two consecutive quarters. In the PS, a recession is defined as an event when the annual volume change in GDP is less than one percent, consisting of the consecutive annual changes when this condition is fulfilled.

Recording on c.i.f./f.o.b. basis: The recording of imported goods in c.i.f. prices and exporting goods in f.o.b. prices. When imported goods are valued in c.i.f. prices, the costs of both domestic and foreign firms for transporting and insuring those goods between the custom frontier of the exporting and importing country are included. Export of goods are, however, always valued in f.o.b prices, and to keep the balance between total export and import, transport and insurance costs of domestic firms for importing and exporting goods are included in the export of services.

Recording on f.o.b./f.o.b. basis: The recording of both imported and exported goods in f.o.b. prices. When imported goods are valued in f.o.b. prices the costs of *foreign firms* for transporting and insuring imported goods are reclassified into import of services, which does not change the amount of overall import. The costs of *domestic firms* for transporting and insuring imported goods must then be deducted from both import and export as recorded on c.i.f./f.o.b. basis.

Reference year/period: The year/period to which a volume or price index relates. It does not necessarily correspond to the base period that provides the weights for the index.

Reflator: A reflator is used to transform volume values into current values, by multiplying the volume value with the reflator. The reflator equals the deflator and the price index.

Relative price: The price of items in relation to the price of other items, irrespectively of the general level of prices.

Reproductive activities/services: In the PS, defined as activities directed towards human individuals, human collectives and social relations. This can be contrasted to activities directed towards the non-human world. Within the production boundary of SNA reproductive activities in the PS include private reproductive services (code PR) and government services (code GS). Outside the production boundary of SNA, reproductive activities in the PS also include activities performed by "housewives" (HW).

Rest of the world (foreign sectors): Refers to all non-resident units that have economic links to resident units.

Saving (aggregate): In various growth models, saving is equal to investment, but this equality only holds at a global level, and national saving can be different from investment. In the SNA, (gross or net) national saving is defined as (gross or net) national disposable income

less final consumption, or as the sum of investment, net export, net income from abroad and net transfer payments from abroad.

Saving rate: The ratio of saving to income or to value added.

Self-employed: Person who is the sole owner or joint owner of the enterprise in which he or she works. Especially for earlier times it is difficult to pinpoint who is an employee and who is self-employed, as these two categories are more appropriate for analysing modern capitalist economies. Statistics Sweden includes unpaid working family members of the owners into the self-employed (while paid family members are considered employees), which is also the definition applied in the PS, while in other sources they are counted as employees.

Services: Often defined as outputs produced that cannot be separated from their production, although some services (such as production of information) can indeed be separated from their production. In the PS, services are subdivided between industrial and reproductive services.

Surplus (Sur): In the PS, operationalised as the (gross or net) value added less labour income. In the PS, a distinction is made between surplus and profit or surplus value. Surplus refers to the excess that arises from production above the means of subsistence of the direct producers, which is appropriated either by a class of exploiters or by the direct producers themselves, while profit or surplus value is the specific capitalist form of this surplus.

Surplus share (net or gross): The ratio of (net or gross) surplus to (net or gross) value added.

Surplus value (s): In Marxist theory, defined as the value created by the workers above the value of their wages. It is a measure of capitalist exploitation. The surplus value can both be measured in labour value terms and in prices.

Surplus value rate (e): In Marxist theory, defined as the ratio of surplus value to variable capital.

Tangible fixed assets: In the SNA, non-financial produced assets consisting of dwellings, other (non-residential) buildings and structures, machinery and equipment, and cultivated assets.

Technical composition of capital: In Marxist theory, the physical relation between the mass of material input and living labour. It cannot be measured directly since it is composed of different types of items that are not additive. The organic composition of capital can be seen as a constant value measure of the technical composition of capital.

Technical level (A): In neoclassical growth models, a residual factor that explains the level of production in addition to what is explained by different factors of production.

Total factor productivity (TFP): In neoclassical growth accounting, production per unit of input (capital and labour), which can be interpreted as a weighted average of capital and labour productivity.

Trade margin: The value at which goods are sold less the value that would have to be paid by the distributor to replace the sold goods.

Transport margin: Consists of the transport charges paid separately by the purchaser to transport the purchased goods.

Turnover time (T): In Marxist theory, turnover-time includes both the average time capital is used in the production process and the average time capital exists in the form of commodity and money capital.

Type of activities: In the PS, used to describe a group of activities. A similar term used in the SNA is “industry”, but in the PS “type of activities” is preferred because of the different meanings of the term “industry” in other contexts.

Unincorporated enterprise: Producer units that are not separate legal entities from the owner. The assets of these enterprises do not belong to the enterprises but to the owner. Their owner is personally liable, without limit, for any debts or obligations incurred.

Unproductive activities: See Productive and unproductive activities.

Utilised stock: The stock of fixed assets that are actually used in production. In the PS, only the capacity stock is estimated.

Use value: In Marxist theory, the material properties of a product that makes it useful, as distinguished from exchange value.

Value: Is used differently in various contexts. In the Classical and Marxist tradition a distinction is made between use value and exchange value, in national accounts a distinction is made between volume value and current value. See also price.

Value added (VA): The contribution made by producers to increase the value of goods and services after deducting the value of the goods and services used up in production. Can be measured both gross and net.

Value added share: The ratio of value added to gross output.

Value Added Tax (VAT): A tax on products. The producers are obliged to pay VAT on the difference between VAT on their sales and VAT on their purchases for intermediate consumption and investment.

Wage rate: In the PS, wages and salaries (including social benefits) per employed or per hour worked.

Value composition of capital (VCC): In Marxist theory, the (exchange) value ratio of constant capital to variable capital.

Variable capital (v): In Marxist theory, the outlays of capital on wages.

Volume index (V): Mostly presented as a weighted average of the proportionate changes in the quantities of specific goods or services between two periods of time. The weights are often given by the relative prices of a time period, but it is entirely possible to construct weights that are not based on prices.

Volume relative (VR): The ratio of the volume value in one period to the volume value in an earlier period.

Volume value: The value expressed in the same price level over time, connected to the construction of a volume index.

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