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Saving and investment: the economic development of Singapore 1965-99

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Gregor Hopf

Saving and Investment: The Economic Development of Singapore 1965-99

An in-depth look at the country's saving
behaviour and government control

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Executive Summary

The first chapter of the dissertation removes Singapore's saving performance from its pedestal as an outlier in economic history, with the reputation of being hardly transferable and possibly not even desirable. Instead, the results of the benchmarking exercise clearly show the transferability of at least the saving aspects of Singapore's economic history. Moreover, the particular econometric approach applied highlights those circumstances, which are not directly related to saving policies but must be taken into consideration if transferability is assessed, particularly the demographic structure and external position.

The exercise shows that Singapore's saving performance between 1965-99 was far from extraordinary once the country's circumstances are controlled for, even though a mere comparison of averages of saving rates across countries would have us believe differently. Given Singapore's purely non-policy environment, it could have been expected of the country to achieve at least world average saving levels, substantially higher than its savings at time of independence. Above world average levels could have been expected if we also take into consideration the country's very successful external situation. Finally, if we also allow for potential peer-group mechanisms by placing Singapore within a group of successful Asian countries, the average benchmark saving ratio comes very close to the country's actual saving rate.

What is indeed extraordinary about Singapore's saving performance, is not the high saving rates in the late 1980s and 1990s, which usually attract the most attention, but rather the speed of transformation of the country's saving behaviour in the first half of the period, when Singapore was able to overcome its initial low saving performance much faster and much more strongly than could have been expected given her circumstances. The key to understanding Singapore's saving behaviour must lie in the turnaround achieved during the first decade of the country's independence. Therefore, looking merely at the country's more recent saving

performance will not be able to answer how Singapore was able to achieve its world-record saving ratios.

Chapter Two investigates the country's saving ratios in a time-series regression analysis. It is able to show that strong income developments are the main force behind Singapore's saving behaviour, while the demographic transition seems to have been the initial catalyst and also the enabling factor for the important compulsory saving scheme. However, the exercise also shows that the different subaggregates of gross national saving have very different driving factors and that contrary to parts of the past literature all main influences, which theory generally suggests, can be shown to have had a significant impact on the country's savings. Income, particularly its dynamic, i.e. transitory, component is the single strongest factor followed by the CPF, whose dynamic effects were offset by lower voluntary and public savings but its long-term effects more than compensated. Falling dependency is shown to have had opposite effects, positively adding to voluntary savings particularly during the early years but reducing public savings for the whole period. The lowering of borrowing constraints over time has led to more consumption and thus lower savings among the private sector, which was however compensated by a positive impact on public savings. Full Ricardian Equivalence has not been present, so that public saving has had a positive net effect on the country's gross national savings.

Since voluntary savings was the driving force behind the early saving transition and voluntary saving in the early years was itself largely driven by the rising labour force ratio, the favourable demographic environment must be considered as having been central to Singapore's saving 'take-off'. Moreover, the fact that the positive effect of the CPF was largely due to positive net-contributions to the fund, shows how important this demographic change was even outside of voluntary savings. Singapore used the chance to exploit this demographic dividend very well, by both kick-starting a changed voluntary saving pattern and by using the demographic window for the creation of a CPF 'hump-saving'.

The accounting exercise in the Third Chapter is able to offer quantitative evidence for a number of general speculations about Singapore's economic history. It is able to show that Singapore's government was in control of the equivalent of eighty percent of the country's gross national savings - as a lower bound limit. However, the analysis also shows that the government only made final investment decisions for two-thirds of the funds it controlled. Moreover, as a lower limit about one fifth of the total investment pool or fourteen percent of cumulative 1965-99 GNP was used as working capital, which would indicate that a more efficient use of the funds, i.e. less foregone consumption, could have still been possible without affecting the investment success. As a conservative estimate Singapore could have reduced its savings by at least three percent of cumulative GNP between 1965-99 without negatively affecting the economy's capital efficiency. The working capital appears to have been accumulated solely by the public sphere, which has surrendered some of it to compensate the financial limitations of the private sector.

Contrary to the standard development story which is based on Singapore exploiting her comparative advantage in cheap-labour manufacturing, the exercise finds that private investment was predominantly directed towards the service sector and public investment largely towards overseas. Based on their investment decisions Singaporeans did not see an exploitable comparative advantage in manufacturing. Even foreign investors, who dominated the comparatively little manufacturing investments made, primarily committed their funds to the tertiary sector. The analysis also shows that Singapore was not a flying goose in the strict sense. Singapore's development did not follow a flying geese pattern in which the country copied another country's earlier development success story and invested in a successive list of increasingly advanced industries. Instead Singaporeans decided to invest in the tertiary sector from the start. If at all, it was the foreigners who were the flying geese, using Singapore for their own industrial sequencing. Additionally, it becomes apparent that Gross Fixed Capital Formation captures only about half of total investments made, which shows the limitations and potentially misleading results of other analyses merely concerned with GFCF.

Chapter Three

With All Diligence Due:

Where did all the savings go?

Singapore's Investment Pattern 1965-99

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III. With all Diligence Due: Where did all the Savings go?

Investment behaviour is the essential link running from saving to growth, but has rarely and if at all only to a limited degree been investigated in Singapore's case. This has largely been due to the lack of a readily accessible data source. In an attempt to close this gap, a large variety of government and private sources have been combined into a new database, which allows a much more revealing investigation into Singapore's investment pattern than hitherto possible and leads to a number of new insights about Singapore's recent economic history.

Chapter One has shown that Singapore can be compared to a child with a good athletic built growing up in a family environment of sports enthusiasts. The odds that the child will become a successful sports person are in its favour. Chapter Two has shown what the child did to realise its potential. If we wanted to extend this metaphor further, this chapter will now finally look at the training and competition schedule of the child, at how much it was able to set the schedule itself and how much was determined by its trainers and at where it invested most of its energies to reap the gains it did.

Using a variety of sources, the following accounting exercise is trying to determine which agency controlled what portion of the total saving pool and where did it decide to invest it. In so doing the exercise offers the yet largely unexplored link between the literature on the country's savings and the literature on its growth performance.

Contrary to the earlier chapters, the accounting exercise does not test any hypothesis in its own right. Instead by purely compiling the numbers it offers upper and/or lower limits for a number of common speculations about Singapore's economic history. The exercise is able to show that Singapore's government was in control of the equivalent of eighty percent of the country's

savings. However, the analysis also shows that the government only made final investment decisions for two-thirds of the funds it controlled. Moreover, as a lower limit about one fifth of the total investment pool or fourteen percent of cumulative 1965-99 GNP was used as working capital, which would indicate that a more efficient use of the funds, i.e. less foregone consumption, could have still been possible without affecting the investment success. The working capital appears to have been accumulated solely by the public sphere, which has surrendered some of it to compensate the financial limitations of the private sector. Contrary to the standard development story which is based on Singapore exploiting her comparative advantage in cheap-labour manufacturing, the exercise finds that private investment was predominantly directed towards the service sector and public investment largely towards overseas. Based on their investment decisions Singaporeans did not see an exploitable comparative advantage in manufacturing. Even foreign investors, who dominated the comparatively little manufacturing investments made, primarily committed their funds to the tertiary sector. The analysis also shows that Singapore was not a flying goose in the strict sense. Singapore's development did not follow a flying geese pattern in which the country copied another country's earlier development success story and invested in a successive list of increasingly advanced industries. Instead Singaporeans decided to invest in the tertiary sector from the start. If at all, it was the foreigners who were the flying geese, using Singapore for their own industrial sequencing.

The Chapter will first review the relevant literature strings dealing with the degree of government control, the standard development story of labour-intensive manufacturing, the Flying Geese Hypothesis and the question of over-saving. The second part will describe in some detail the sources, data constraints and procedures used to compile the data set. Finally, the third section will present the findings followed by a short conclusion.

III.1. Literature Review

The existing literature on this subject area is very limited. Similar attempts have not been made before. The only known example of something even remotely similar is Nehru and Dhareshwar (1993), who create time-series on capital stocks and Gross Domestic Fixed Investment for a number of countries, one of which is Singapore. Their GDFI series is very similar to the official GFCF series. However, they do not investigate investment patterns, nor do they try to include non-fixed investments, e.g. overseas assets and other financial investments, beyond those resulting in fixed capital stock. Some studies have focused on a certain aspect of Singapore's investment pattern, e.g. Low (1998), who describes Singapore's outward (private) direct investment for 1981-91.

On the other hand, the discussion of high or excessive government control is comparatively frequent, but has so far been hardly backed up with quantitative evidence. The literature review will therefore take its point of departure from the discussion of the degree of government control in Singapore, continue with a summary of the literature describing Singapore's development as one largely based on labour intensive manufacturing, which leads to the review of the Flying Geese Hypothesis of industrial sequencing. The section will close with a discussion of the literature on over-saving in Singapore.⁴⁰²

III.1.1. The Degree of Government Control

The question of the degree of government control in Singapore and East Asia in general has seen a distinct evolution over time. Krueger (1978) is a prominent

402 The related issue of reasons for the country's high capital inflows has been investigated at quite some length in the literature and will thus not be covered here. Edwards (2000 pp. 204-5) gives a concise summary of the literature explaining international FDI capital flows. For a description of early FDI activity into Singapore (especially from UK, Australia, Japan, Hong Kong, Taiwan, USA) see Hughes and You (1969). Huff (1995, pp. 1425-1429) also deals with FDI in Singapore and so does Ermisch and Huff (1999). Lim and Pang (1991) analyse FDI to Singapore and Malaysia.

example for the early misconception of low government involvement in East Asia. Anne Krueger (1978), starting from an emphasis on trade, argues that those countries where government intervention has been lower have exhibited higher growth rates, with influential examples being the four East Asian Tigers. This view has already been revised among others by Amsden (1989), Wade (1989), Rodrik (1994) and Lall (1996). Amsden (1989) pointed out that government intervention in Korea was much more extensive than has been portrayed in the literature up to that point. Wade (1989 and 1990) showed that the governments of Japan, South Korea and Taiwan all gave central attention to ways of augmenting and directing the composition of investment.⁴⁰³ They led rather than followed the markets.⁴⁰⁴ He also argued that one of the lessons to be learnt from these countries' economic histories was that sectoral industrial policies that lead the market can improve upon growth outcomes of self-adjusting markets.⁴⁰⁵ From this point of view Wade (1989) compared the development policies employed by the nations of East Asia with those of Rosenstein-Rodan and Gerschenkron arguing for a big push in form of a sharp increase in capital formation under the prodding of government, allied at times with banks.⁴⁰⁶ Similarly, Rodrik (1994) argued that the governments of South Korea and Taiwan played a crucial role in overcoming coordination failures in their respective economies. Lall (1996) argues that the initial misconception of a market driven interpretation of East Asian success was due to the timely coincidence with the rise of neo-liberalism in the USA and UK, which itself was due to the disillusionment with earlier development economics, which believed that markets in developing countries were 'missing' or 'inefficient'.⁴⁰⁷

Nevertheless, the World Bank's influential East Asian Miracle (1993) publication went to great pains to (largely) echo the low government involvement

403 Wade (1989, p.68)

404 Wade (1990, 303)

405 Wade (1989, p.69) Nevertheless, Wade also pointed out that the governments gave little attention to ways of increasing the efficiency of resource use.

406 Wade (1989, p. 71)

407 Lall (1996, p.112). Lall also offers a summary of the development of the discussion about the degree of government control in East Asia.

hypothesis. On the one hand, it departed from the earlier World Bank approach by admitting that some markets actually did not function efficiently, and that government intervention was needed to remedy market failure. It also admitted the existence and pervasiveness of selective interventions in East Asia. However, on the other hand, it was obliged to defend the fundamental postulates of the World Bank's policy advice, that governments should not be selective in influencing resource allocation, and in particular, not mount industrial policy.⁴⁰⁸ Similarly the financial development literature used to refer to Singapore as an example of the advantages of liberal internal finance in promoting rapid economic growth.⁴⁰⁹

With particular respect to Singapore, Lim Chong-Yah (1991) had already concluded that the role of the government in Singapore's case had been central to Singapore's success based on his assessment of the role of public enterprises, fiscal policy, monetary policy, exchange rate policy and wage policy.⁴¹⁰ However, Lim (1991) discussed the role of the government in the economy rather than its control over the economy. Asher (1989), on the other hand, tried to determine the degree of government control but had to conclude that the traditional measures such as the share of government revenue in GDP or the share of government employees in the labour market do not adequately capture the degree of control in Singapore's case. Yet he is not able to calculate his own measure. Instead, he concludes that "the paucity of relevant and reliable empirical studies" necessitates a reliance on a qualitative rather than quantitative analysis.⁴¹¹ Years later Asher (2001) again comes to a similarly sceptical conclusion:

While Singapore's conventionally measured tax revenue to GDP ratio is rather low (fluctuating within a narrow range 15 to 18 percent during the

408 See for example Felix (1994) or Singh (1995) for good summaries and criticism of this and other aspects of the World Bank's East Asian Miracle publication.

409 See for example McKinnon (1993, pp.2 and pp.12-13)

410 Lim (1991, pp. 202-214)

1991-99 period), its total revenue to GDP ratio is not only high (reaching a peak of 37.2 percent of GDP in 1997), but has also shown considerable volatility. Even this does not fully capture the transfer of resources from the private sector to the public sector. This is because the budgetary figures, particularly for investment income and for capital receipts are incomplete and they do not include various off-budget accounts, preventing fiscal analysis on a consolidated basis. The balance sheet of the government is also presented in such a manner as to render rigorous analysis all but impossible.⁴¹²

Notwithstanding these apparent data problems, Koh (1987) had already argued that the government had increasingly been playing “the role of an intermediary between savers and investors. This intermediary role of the government is unique among countries in the world.”⁴¹³ According to Koh (1987), the public sector in Singapore commanded in the mid-1980s 70% of savings but only 30% of investment.⁴¹⁴ However, Koh (1987) does not give any details of his calculations or further support to this claim. Arguing along similar lines Ermisch and Huff (1999) state that although the government virtually determined Singapore’s remarkable savings ratio, investment came mainly from private enterprise and in the form of direct foreign investment. Again, they make this claim without reference or any statistical support.⁴¹⁵

Earlier Huff (1994) had already pointed out that in addition to government control of savings through the CPF, there was also a large indirect transfer of savings from the private sector to the government as a result of voluntary deposits with the Post Office Savings Bank since the POSBank was required to use most of the money deposited with it to buy government securities, or as

411 Asher (1989, p. 131)

412 Asher (2001, p. 4). His view on the usability of government budgetary statements is also shared in IMF (2000, p.3).

413 Koh (1987, p. 100)

414 Koh (1987, p. 82)

415 Ermisch and Huff (1999, p.22); Huff (1995c) at least contrasts the respective shares of the public and private sector in Gross National Saving and GFCF, which were published by the government until 1985.

deposits with the Monetary Authority of Singapore. Yet, he does not go on to quantitatively assess this 'redistribution'.⁴¹⁶ In Ermish and Huff (1999) they argue, again without statistical support, that the mobilization of public savings relied chiefly on manipulation by the government, which used its control over public utilities and telecommunications (constituted as statutory boards and given monopoly status) to turn the internal terms of trade against workers.⁴¹⁷ Additionally, they argue that most of the private sector's contribution to Singapore's high savings rate was extracted through the government's Central Provident Fund.⁴¹⁸

Alten (1995) tries to circumvent the (apparent) lack of empirical data by surveying the opinions of managing directors of multi-national companies in Singapore. Based on the answers obtained, he concluded that Singapore's "economic development is, above all, a political process, decided upon and guided by a strong government determined to overcome the country's backward economic status and to enter the first league of industrialised nations in the beginning of the next century."⁴¹⁹ Easton and Walker (1997) use economic freedom indicators to address the question of government control on prices for a cross-section of 57 countries in 1985 and conclude not too surprisingly that market socialism is a continuum, i.e. there are countries with strict pricing rules and with less strict pricing rules even though they have similar public ownership structures. Overall ownership and pricing policy are positively associated, i.e. public ownership will influence pricing in reality.⁴²⁰ Chiu and Lui (1998) assess Singapore's policies and also come to the conclusion that Singapore's government was very active in shaping the country's industrialisation particularly through its pioneer industries policy, the taming of unions, provision of infrastructure and by inducing foreign investments through the

416 Huff (1994, p. 336)

417 Internal terms of trade are defined as workers' wages in comparison with the prices at which they had to buy from government monopolies.

418 Ermish and Huff (1999, p. 30)

419 Alten (1995, p. 230)

formation of alliances with foreign partners, thus reducing significantly the risk in such undertakings. However, they further emphasise the differences between Singapore and the other Tigers. Contrary to some of her neighbours, Singapore has kept the economy open to foreign trade and investment.

Another aspect of government control is the government's high degree of involvement in the private sector through its many Government-linked-Companies. The IMF (2000, p.9) quotes a recent study by La Porta, Lopez de Silanes and Shleifer (1998) looking at the ownership structure of the twenty largest publicly traded firms in each of the 27 richest economies in the world, which has found that Singapore had the second-highest proportion of state-controlled firms (45 percent, second only to Austria), and higher than Korea and Japan.⁴²¹ Control was defined as ownership of 20 percent of stocks or more. Another study by Claessens, Djankov and Lang (1999) using 2980 publicly traded corporations in nine East Asian countries reaches similar results. Within their sample, Singapore has the highest level of state control with 23.6% of the 221 corporations scrutinised with state ownership of over 10%, 23.5% with ownership above 20% and 11.25% ownership above 30%. However, estimating the role of the GLCs in Singapore's economy has remained a contested issue.⁴²² For many years the annual review of the Singapore economy by the American Department of Commerce stated that GLCs produce as much as 60 per cent of GDP, an estimate taken from a report from the Ministry of Finance of 1993. The Singapore government has not commented on this estimate until very recently when, in answer to a question in parliament, the Minister of Trade and Industry stated that in addition to the government's own share of 8.9 percent of GDP the GLCs in fact contributed only 13 percent of GDP and foreign controlled

420 Market socialism is defined as a system in which public ownership is pervasive but where, nevertheless, markets are permitted to clear. In theory, reliance on public or private ownership is determined separately from the issue of control of market outcomes. Easton and Walker (1997) offer no direct reference to Singapore.

421 IMF (2000, p.9)

422 This section on the role of the GLCs follows Peebles and Wilson (2002, pp.13-16) See also Peebles and Wilson (2002, pp. 44-49) for more details on the inter-relationships between the different GLCs and other government bodies.

companies 42 per cent.⁴²³ Surprisingly, the Heritage Foundation, which still ranks Singapore as the second most free economy in the world, states that GLCs dominate Singapore's economy, constituting up to 70 percent of Singapore-owned companies and generating up to 60 percent of GDP. Moreover, it detected increasing evidence of Government intervention in Singapore's economy which led to it being downgraded on this criterion.⁴²⁴ The issue is further complicated by the fact that some of the GLCs in defence-related areas or strategic sectors are exempted from having to file accounts with the Registrar of Companies, as Low (1998) points out.⁴²⁵ Low estimates the number of GLCs in 1990 herself at 616.⁴²⁶ Peebles and Wilson (2002) report that after the 1985 recession the Public Sector Divestment Committee recommended in 1987 the selling of shares in many GLCs. Nevertheless, the government has retained significant holdings in many listed companies such as Singapore Telecommunications (79.7 per cent), Semb Corporation Industries (58.8 per cent), Singapore Airlines (53.8 per cent) and Singapore National Printers Corporation (49.0 per cent) and others at present.⁴²⁷ The GLCs owned by Temasek Holdings alone accounted for about 10 per cent of GDP and about 27 per cent of the stock market capitalization in 2000 despite years of privatization.⁴²⁸ Upon review of the literature, Peebles and Wilson (2002) summarise that it has proved very difficult to compile a complete list of GLCs.⁴²⁹ They also argue that many aspects of the government's influence over the economy's resources are not revealed in such numbers as the proportion of GLCs or the public sector in output. Ownership is not the main factor but rather how the government can mobilize resources and allocate them where it sees fit.⁴³⁰ However, the desired information is not offered in their publication.

423 The Straits Times, 24 February 2001, p. H6; and Singapore Department of Statistics (2001)

424 The 2001 Index of Economic Freedom

425 Low (1998, p. 159)

426 Low (1998, p. 201)

427 IMF (2000, p. 11)

428 Peebles and Wilson (2002, p. 46)

429 Peebles and Wilson (2002, p. 44)

430 Peebles and Wilson (2002, p. 24)

Approaching the question of government control from a qualitative angle necessarily leads to the government's own view on this issue. Yet, the picture which emerges appears at first ambiguous. Goh, Keng-Swee, Singapore's deputy prime minister at the time and former Finance Minister, wrote in 1972: "The government has to be the planner and the mobilizer of the economic effort" but "the free enterprise system, correctly nurtured and adroitly handled, can serve as a powerful and versatile instrument of economic growth."⁴³¹ In 1976, Goh Keng-Swee writes: "The laissez faire policies of the colonial era have led Singapore to a dead end, with little economic growth, massive unemployment, wretched housing and inadequate education. We had to try a more activist and interventionist approach."⁴³² Lee Kuan Yew is quoted in the *Straits Times*, January 6, 1982, as saying: "Those developing countries that have tried centralized state planning and nationalized economic activity, and put bureaucrats in place of entrepreneurs, they have stagnated." The ambiguity seems to suggest that the government was not quite sure where to strike the balance between a free market economy and a more centrally planned economy. The commitment to let the market set the prices appears to have been rather strong. Yet, the leaders also seemed convinced that some degree of control over the factors of production was necessary, particularly the control over credit.⁴³³ The government was also able to strongly influence the wage setting procedures through its National Wage Council, which Huff (1995c and 1995d) considers to be one of the central aspects of Singapore government control. Moreover, the government was convinced that the state together with foreign MNCs needed to compensate for a lack of entrepreneurs in Singapore.⁴³⁴

431 Huff (1994, p. 339), quoting Goh Keng-Swee in *The Asian*, 20 August 1972.

432 Goh (1976, p.84)

433 Lee (2000, p. 639) offers a very telling quote. Lee writes that when advising China on their development options in the 1980s Goh Keng-Swee "believed China's most important problem was the inability of the People's Bank of China (PBOC), their central bank, to control credit."

434 See for example Hughes (1969, p.29 and pp.32-33), Hermann (1970, p. 217), Yoshihara (1976, p. 21 and p. 162), and Lee (2000, p. 66)

In summary, a high degree of control by the government in Singapore has become the accepted view.⁴³⁵ However, so far the lack of data has not allowed to put a figure on it. If the government's own position has been assessed it was mostly through general macro-economic indicators or the government's budget statements. The government's Financial Statements have not been used. Nor have the balance sheets of government banks been reassessed and consolidated into the government's own financial position. Potentially very informative sources have yet gone unused, particularly when considering the central role of capital accumulation and thus saving and investment for Singapore's economic development.

III.1.2. Labour Intensive Industrialisation

The share of manufacturing value added in GDP more than doubled in Singapore between 1960 and the early 1980s. The World Bank's Development Indicators show an increase from 16.2 percent in 1960 to a peak of 39.2 percent in 1984. The share of the labour force employed in manufacturing rose from 14.2 percent at the census year of 1957 to a peak of 30.4 percent in 1981.⁴³⁶ Based on this 'transformation' Singapore's development story is often interpreted in the literature as springing from the exploitation of a comparative advantage in cheap labour through labour intensive manufacturing, which was followed by a move up the (manufacturing) value-chain. This understanding is founded in the

435 Huff (1995c, p.1) probably captures this view best when he writes: "The Singapore model featured a strongly interventionist government and planning, which went well beyond the World Bank's 'market-friendly' approach to include 'market replacement'. In Singapore, decisive departures from the price mechanism and a domestically managed regime allowed capitalism to work."

436 Labour force ratios taken from Dept. of Statistics (1982): Economic and Social Statistics; Table 3.5. p. 37. A very important statistic for the newly independent Singapore is the shift away from rubber processing to manufacturing. In 1959 manufacturing output was S\$ 389.9 million, while the value of rubber processing stood at S\$ 1186.8 million; by 1963 manufacturing had overtaken rubber processing with total output of 843.8 and 740.6 respectively and by 1966 manufacturing had surpassed the rubber processing output from 1959 with total manufacturing output of S\$ 1325.8. The increase in manufacturing was able to compensate for the fall in the rubber processing industries. The EDB Annual Report 1969 (p.52) offers the following figures for total output:

S\$ million	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Manufacturing	389.9	456.6	518.4	660.3	843.8	927.9	1086.4	1325.8	1687.2	2175.7	2635.8
Rubber proc.	1186.8	1195.9	891.7	1074.2	740.6	608.1	591.4	646.5	558.7	619.4	805.2

government's own view of Singapore's development and takes further support from the very well publicised incentives given to "pioneer industries" by the Singapore government.⁴³⁷ Exemplary proponents of this (standard) view of the country's development are Yoshihara (1976), Peoples Action Party (1985), Meier (1986), Lim (1991), Chan (1993), Islam and Chodhury (1997) or Peebles and Wilson (2002). This notion is even more prevalent in the popular press, see for example *The Economist* (June 1st, 20002, p. 59).⁴³⁸

The Peoples Action Party summarised Singapore's development up to 1985 in four phases:⁴³⁹

1. 1956-65: growth of import-substitution industries
2. 1965-73: trend towards labour-intensive industries. Examples given are: shipbuilding and ship-repairing, assembly of refrigerators and integrated circuits, production of garments and wigs⁴⁴⁰
3. 1973-1978: shift towards more diversified and higher value-added industries. Examples given are: production of semi-synthetic penicillin, oil refinery, oilfield equipment, liquid crystal displays, colour tv-tubes
4. 1978-84: upgrading and restructuring into skill and technology intensive industries. Examples given are: electronic components and materials, computer hard-drives.

437 Furthermore, the belief that a country would need to industrialise in order to develop was the prevalent view when Singapore set out to join the 'industrialised' nations. See for example Goh (1971, p.8): The Asian economists who set up the development plans for the newly independent Asian states "believed that it was the progress of the manufacturing activities in the West and its near absence in the East that explained the disparity in wealth. The expansion of industry was expected to introduce new technology, new social attitudes, raise levels of existing skills, provide employment for the large numbers of unemployed or underemployed citizens. In short, industry would modernize and enrich."

438 Yoshihara, Kunio (1976, p.10), for example, states: "Singapore swiftly changed her strategy after her separation from Malaysia, and emphasized export oriented, labour intensive industrialization." Lim (1991, p. 197 and p. 202) writes: "From a basket case at the time of Independence in 1965, Singapore has metamorphosed into a showcase economy. (...) Structurally, Singapore has been transformed from a largely entrepot trade economy into an industrialising one. (...) Manufactured exports also dominated the exports of Singapore, forming 71.8% of total exports in 1988, whereas in 1960, they formed only 21.1% of total exports. (...) Export-oriented industrialisation has remained the main strategy of development. It consists of a broad range of development activities, such as the establishment of physical infrastructure, construction of industrial parks, manpower training and development, creation of a legal and administrative framework for industrial promotion, and fiscal incentives for export-led industries. As unemployment was a serious problem, the initial emphasis was on labour-intensive industries. And as there was a dearth of local industrial entrepreneurship, the main reliance was on foreign investment and the creation of an investment climate conducive to such investments, both local and foreign, to take place. However, the orientation towards labour-intensive industrialisation has shifted towards higher skilled, higher value added activities since 1979." Chan (1993, p. 48) writes: "Stressing their comparative advantage in an abundant, cheap, and malleable work force, these economies [East Asia, including Singapore] found a favourable niche in the export of light-industrial, labour-intensive products, such as textiles, shoes, and toys, to the markets of the developed countries." Islam and Chodhury (1997, p. 199) write: "In the 1960s, the economic strategy focused on the expansion of low-skilled, labour intensive manufacturing activities. The focus shifted in the 1970s to the diversification of the manufacturing sector to higher skill levels and higher value added activities." For an article explicitly describing and analysing Singapore's pioneer industry policies see Ermish and Huff (1999).

439 PAP (1985, pp. 170-179); See for example also Goh (1995, pp. 34-38) about the pre-dominant role of manufacturing in Singapore's economic development between 1960-90. In a speech given in 1986 Goh (1995, p. 32) summarises: "Let me sum up our experience in economic growth between 1960-85. In the first 20 years, the manufacturing sector was the main engine of growth, providing rapid employment and income."

Some have built on this understanding of Singapore's development history and draw pessimistic conclusions from it for the country's economic future. Okposin (1997), for example, argues that after losing her comparative advantage in cheap labour combined with a high reliance on FDI Singapore will face difficult times in the future.⁴⁴¹ Michael Porter even suggested, among other things, that the focus of the Singapore economy must shift much more towards services in order to cope with the challenges of the future.⁴⁴² Young (1992) interprets the country's rapid industrialisation as one of the main reasons for its low return on capital due to the fast redundancy of former capital investments.⁴⁴³

Overall the role of services in Singapore's development history has not often been appreciated. Peebles and Wilson (2002) even refer to it as "apart from certain quirks arising from its history as an entrepot trading centre and island city state bereft of natural resources, Singapore's structural change began predictably with labour-intensive industrialization in the late 1960s and the economy has moved steadily up the value-added ladder ever since."⁴⁴⁴ They write this even though earlier in their book they point out one of the main advantages of the service sector for an economy bereft of natural resources, namely its low import leakage.⁴⁴⁵

On the other hand, Gereffi (1994) offers a more differentiated understanding of Singapore's economy and those of the other East Asian NICs. He argues that East Asian NICs have managed to built successful industries beyond their initial comparative advantage and original factor endowments which was limited raw materials, unskilled but disciplined labour, and small markets. The East Asian

440 This PAP publication, which celebrates 30 years of the party's existence, also mentions – not without a certain pride – that the exports of refrigerator compressors to the US and France attracted protectionist responses in the early 1980s.

441 Okposin (1999, p. 96)

442 Business Times, 6 August 2001

443 Young (1992, p.15 and pp.26-27)

444 Peebles and Wilson (2002, p. 135)

445 Peebles and Wilson (2002, p. 74)

NICs thus were motivated by the principle of dynamic competitive advantage rather than by their static comparative advantage in cheap, disciplined labour.⁴⁴⁶ Huff (1994 and 1995c) is one of the few examples which assigns the development of the service sector a more central role. He argues that the development of financial and business services followed a more precise planning strategy than manufacturing. He shows how this strategy was set out in the 1972 budget speech, strengthened in the 1981 economic development plan for the eighties and further elaborated in 1986 in *The Singapore Economy: New Directions*.⁴⁴⁷ He points out that during the 1980s “every budget statement contained new measures aimed at financial innovation. A complementary thrust of government policy which aimed at attracting international financial institutions to Singapore was demonstrably successful. From 1981 to 1990, while there remained 13 Singapore local banks offering a full range of banking services, the number of foreign banks rose from 86 to 128, and merchant banks from 39 to 68. By 1990 there were 199 ACUs, since virtually all banks and merchant banks dealt in Asian dollars.”⁴⁴⁸

III.1.3. Of Product Cycles and Flying Geese

Bruce Cumings (1984) argued in his often cited analogy with flying geese that countries in East Asia followed one another in a developmental trajectory in which the latecomers replicate the developmental experience of the countries ahead of them, starting with the Japanese.⁴⁴⁹ The Flying Geese hypothesis calls for a pattern of industrial sequencing, which moves from the import of consumer goods, to the production of consumer goods, to the export of consumer goods to

446 Gereffi (1994, p. 36)

447 Huff (1994, p. 341) and Huff (1995c, pp. 16-18)

448 Huff (1994, p. 343)

449 This idea was first developed by Akamatsu (1961). For an example of a graph visualising the flying geese pattern see Ito (1992, p. 26). For a summary of the literature see Ohkawa and Kohama (1989). For a recent (largely) descriptive comparison of the development policies of Japan and the Asian NICs see Yamada and Kuchiki (1997).

the import of capital goods, the production of capital goods and the export of capital goods. In its final stage the production of earlier stage products is terminated. This view has found early support by Singapore's and in general East Asia's industrial policies but more recently has also attracted a fair share of criticism.

Early support stems from Singapore's import substitution policies followed until the demise of the hope for a common market with Malaysia and later by the government's well publicised incentives given to pioneer industries, initially largely in labour intensive manufacturing.⁴⁵⁰ Even local politicians have early on described an Asian group of newly independent states in Asia which followed similar development policies, e.g. Goh (1971). In one of Goh's earlier speeches given in 1967 he even directly refers to Japan as a leading example for modernization without the loss of cultural identity against the other option of a communist development.⁴⁵¹ Meier (1986) also follows Cumings (1984) arguing that the East Asian NICs followed Japan and as the NICs move up the ladder of comparative advantage into capital-intensive and knowledge-intensive products, the second tier countries (Indonesia, Malaysia, Philippines and Thailand) follow behind with exports from light industries such as food processing, textiles, clothing and simpler electronics.⁴⁵² Soon and Tan (1993) also write that Singapore's policy makers did look to Japan - as well as Germany - for lessons for their development plan. They extend this view further and argue that even more importantly "although Singapore did not have a role model for its bureaucracy, the same qualities have been significant in the economic success of Japan, Republic of Korea and Taiwan, China."⁴⁵³ Ito (1996) also finds that the patterns in output and export for Singapore, Korea, Taiwan, Malaysia and Thailand imply

450 See for example: Economic Development Board (1962), International Bank for Reconstruction and Development (1955), and Legislative Assembly, Singapore (1959), which offers the industrial development plan by Mr. F.J.Lyle a Canadian industrial expert, who delivered his suggestions by request of the Singapore government.

451 Goh (1972, p. 30): "Can Asia modernize without recourse to the methods used by the communists? The Japanese have succeeded in establishing a modern state in every sense of the word while preserving all that is precious in their cultural heritage and discarding what is not consonant with progress." See also Hughes (1969) for a summary of Singapore's early industrialisation policies.

452 Meier (1986, p. 14)

453 Soon and Tan (1993, p. 43)

that these East Asian economies, with the exception of Hong Kong, are indeed repeating Japan's pattern of economic development.⁴⁵⁴ However, Ito (1996) also states that the flying geese hypothesis has not yet been rigorously tested beyond such observational evidence.⁴⁵⁵

On the other hand, Bernard and Ravenhill (1995) disagree with the simplified flying geese analogy and the notion that other East Asian countries tried to copy the Japanese development trajectory. Instead, they argue for the globalisation of production networks, increased governmental disputes over economic relationships and the rapid pace of technological change as explanatory factors for the economic integration in East Asia. While they do not deal with Singapore explicitly, they find that the pattern of industrialization in Korea and Taiwan has been dramatically different from that pursued by the original goose, Japan. They point out that "although Korea and Taiwan, and more recently Malaysia and Thailand, may be exporting products in the same industries in which Japan enjoyed success a few years ago, the context in which they are doing so is substantially different, in terms of both industrial organisation and geopolitics. (...) [The] dependence on Japanese technology, coupled with the dependence of Japanese corporations on other locations in the region for lower-cost labour for assembly operations, has produced a new regional division of labour that is based not on national economies but on regionalized networks of production."⁴⁵⁶ They also do not think that ultimately the East Asian countries will be able to overcome this dependence due to substantial changes "in the global political economy and in production techniques in the last twenty years. Steeper learning curves, increased costs of research and development, and the necessity of locating within an established distribution network all exacerbate the problems faced by economies seeking to reduce their technological dependence."⁴⁵⁷ While they disagree with the idea that East-Asian countries simply tried to copy the

454 Ito (1996, p. 250)

455 Ito (1996, p. 250)

456 Bernard and Ravenhill (1995, p. 206)

457 Bernard and Ravenhill (1995, p.207)

Japanese trajectory, as a whole they do not oppose the notion of a process of economic integration in East Asia. Instead, their main criticism is that the flying geese analogy does not fully capture the complexity of the regional political economy and that product cycle theory is not in line with the industrial development of many East Asian countries, particularly Taiwan and Korea.

III.1.4. Over-Saving in Singapore

The question of over-saving in Singapore's case has been discussed, more or less directly, since the second half of the 1980s, partly initiated by the country's recession in 1985/86 which only Singapore experienced and was preceded by sustained increases in the country's saving rates peaking at 46.6 percent in 1983. One of the earliest examples, a study group of the National University headed by Prof. Lim Chong-Yah, who was also the president of the tri-partite National Wage Council, did not necessarily address the question of over-saving directly, but still recommended changes to the CPF among them a reduction in mandatory contribution rates.⁴⁵⁸ The study group argued that after provisions have been made for housing, for life annuity, and for Medisave, the 50% rate of contributions to the CPF in the early 1980s was quite in excess of the needs of an average worker in Singapore. Koh (1987) reads this as implying that Singapore had over-saved.⁴⁵⁹ In fact, the government seems to have reached the same conclusion, because it did indeed lower the CPF contribution rates twice in 1986 and 1987.⁴⁶⁰ Nevertheless, the government has always emphatically disputed the view that Singaporeans are saving too much.⁴⁶¹ Han (1996), in a book edited by

458 Lim et al. (1986). This view is reiterated in Lim (1988a, pp. 234-235)

459 Koh (1987, p. 86)

460 A similar political situation occurred again during the Asian Crisis, when Singapore had reached another peak in her saving with 52.4 percent of GDP in 1998. This time an occasional paper by Singapore's Department of Statistics (1999) on household expenditures points out that Singapore's households have reduced their expenditure more than disposable incomes have fallen in 1998 and that thus household savings increased while incomes were declining. Such a situation is hardly conducive to a recovery, although the study stays away from making any such value statements. But again the government reacts by lowering the CPF rates from forty to thirty percent in 1999.

461 See Huff (1995b, p. 749) and Deputy Prime Minister Lee in the Straits Times Weekly (August 29, 1992): 'Too much Savings? Not true – BG Lee'. In this article Lee somewhat paradoxically argues that the country is not suffering from oversaving because the private sector has access to abundant

Lim Chong-Yah, argues that Lim's earlier position is no longer tenable and that statistical evidence had been "adduced to demonstrate that compulsory savings through the Central Provident Fund are not longer excessive."⁴⁶²

Although not directly addressing the question of oversaving, Young's (1992) study shows that Singapore, although investing and saving significantly more than Hong Kong, only achieved similar growth, which can be interpreted as a clear sign for over-saving.⁴⁶³ Moreover, his study shows how the real return to capital has rapidly fallen in Singapore to levels well below Hong Kong's. His central finding that Singapore's before subsidy rate-of-return on capital was one of the lowest in the world is taken up by Huff (1995b). Huff argues that Young's results indicate that additions to output from further investment (the marginal efficiency of investment) may have been close to zero. If so, Singapore's share of investment in national income approached growth maximisation.⁴⁶⁴ This, he continues, is a sign that the Singapore government was not maximising utility but growth. If it had maximised utility the government would have targeted a higher return. Therefore, Huff (1995b) argues that while in terms of utility there might have been over-saving owing to a potentially unrewarded sacrifice of current consumption, in terms of growth there probably wasn't. However, he does not further quantify his argument, i.e. the potential degree of over-saving in terms of utility or growth. Moreover, the comparison with Hong Kong at similar growth rates still poses the question why Singapore was not able to both maximise utility and growth, as her city-state neighbour apparently did. If we accept that Hong Kong should be Singapore's benchmark, we must conclude that

funds, but is not using it. He points to the fact that the interbank market is flush with funds, interest rates are at a historic low and the price/earnings ratios on the stock-exchange are high. "It is not projects which are short of funds, but banks which are short of good borrowers to lend to."

462 Han (1996, p. 24). However, Han does not offer a reference to this presumably existent statistical evidence. The only evidence Han refers to is Han's own calculation that CPF-Savings accounted for a mere 13 percent of Gross National Savings between 1975 and 1993. He also echoes the government's view that without CPF savings the majority of Singapore's population would have inadequate housing and medical services. Therefore, particularly the low return on investment of housing stock needs to be taken in consideration when comparing ICORs across different countries.

463 This view has been recently restated by Gerald O'Driscoll, one of the authors of the Heritage Foundation's Index of Economic Freedom report for 2000. In the *Straits Times* (1 December 1999, p. 23; as quoted by Peebles and Wilson 2002, pp. 67-8) he argues: "Hongkong pursues a persistent laissez-fair policy. In Singapore there are government-directed investments, almost twice the rate invested in Hongkong. Yet, the real per capita GDP is higher in Hongkong than in Singapore. In other words, the Singapore government has wasted the savings of its citizens." The executive summary of the *Economic Freedom 2000* report writes on p.8: "since Singaporean growth rates were no higher for all the compulsory investment required of its citizens, it is fair to say that the government effectively dissipated all the forced savings."

464 Huff (1995b, p. 750)

the country has clearly over-saved both in terms of utility and growth, unless we assume that Singapore's economy was not able out of some exogenous reason to increase its productivity further and thus raise its returns closer to world levels and consequently maximise its growth rates even more.⁴⁶⁵ Gapinski (1999) reaches the same conclusion that given the much higher rate of labour and capital accumulation in Singapore, the country should have experienced faster growth of output and labour productivity than did Hong Kong.⁴⁶⁶ Gapinski (1999) explains this growth shortfall by the high degree of government interventionism and reduced civil liberties in Singapore, which are manifested in the high saving rates. He refers to his earlier work (Gapinski, 1996), which has argued empirically that reduced civil liberties undermine economic growth. His calculations also show how the marginal product of capital in Singapore falls from 0.103 in 1961-65 to 0.028 in 1986-90. These dramatic declines notwithstanding, Singapore did however manage to post marginal products above the real rate of interest, which Gapinski (1999) interprets as a confirmation of the consonance of the country's capital acquisitions with capital optimization.

The World Bank's influential 'East Asian Miracle' publication, on the other hand, concluded that Singapore may have compelled its consumers to save too much. According to the World Bank, the country's overall low TFP performance lends support to the thesis that social returns of Singapore's saving were not very high, possibly even below the opportunity costs of foregone consumption.⁴⁶⁷

In the absence of direct evidence, which according to Koh (1987) is lacking due to the difficulties in calculating an optimal saving rate, he also interprets the rising Incremental Capital to Output Ratio (ICOR) in the 1980s as suggesting that there are increasing amounts of excess capacity. This in turn implies that "there is less

⁴⁶⁵ One such factor is pointed out by Peebles and Wilson (1996, p. 29). They argue that comparisons with Hong Kong must also allow for the fact that Singapore has the burden of maintaining a defence force while Hong Kong does not. It spends about 6% of GDP on national security expenditures – a comparatively high share due to the small size of the country. Lee (2000, p. 545) also refers to the basic difference that Singapore had to be a self-reliant nation: "We had to be a nation or we would cease to exist. We had to subsidize education, health, and housing even though I tried to avoid the debilitating effects of welfarism."

⁴⁶⁶ Gapinski (1999, pp. 154-159)

need for Singapore to invest as much as it has done over the last few years, and hence from the standpoint of the adequacy of savings, the need to save as much as it has done is less. Thus, there is a strong presumption that Singapore has over-saved.”⁴⁶⁸ Lim (1988a), without referring to excessive savings as directly, also points to a rising ICOR from 2.8 for the period 1965-73 to 4.6 for 1974-83.⁴⁶⁹ Similarly, Hooley (1995) approaches the question from an analysis of the ICOR as an arguably problematic but still best available measure for investment efficiency for a whole economy and finds that Singapore’s investment efficiency between 1977-89 has indeed been below that of other East Asian economies but above that of South East Asian countries. Arndt (1991 and 1993) also finds Singapore’s ICOR to be the highest, i.e. the least efficient, in his Asian sample, except for the Philippines. Even India’s ICOR was lower in the 1980s. However, as Peebles and Wilson (2002) point out the 1980s are particularly bad for an analysis of investment efficiency for Singapore due to the fact that the country experienced two recession years and much investment was in housing. Peebles and Wilson (2002) show that Singapore’s ICOR in the 1980s was indeed higher than in the two earlier and the following decade.⁴⁷⁰ Peebles and Wilson (2002) also refer to a discussion centering around an unpublished paper by Toh and Ng (2000), which most likely formed the basis for deputy prime minister Lee Hsien Loong’s claim that Singapore’s ICOR of around 5 during the 1990s compares favourably to that of Hong Kong with 9 and even Japan with 18.⁴⁷¹ Han (1996) argues that Singapore’s ICOR needs to be compared with Japan or Switzerland rather than its closer East Asian neighbours since these two countries share a very limited natural resource base with Singapore and finds that indeed Singapore does compare favourably to these countries between 1977-91.⁴⁷² Peebles and Wilson (2002) discuss Singapore’s absolute capital-output ratio, finding similar results as for the ICOR calculation, namely a continuously rising ratio between 1978-85 and

467 World Bank (1994, p. 221)

468 Koh (1987, p. 86) However, it must be noted, that a rising ICOR could also mean that new technologies simply demand higher capital ratios. In other words, a rising ICOR is not necessarily a sign of excess capacity but possibly a sign of structural changes in the economy.

469 Lim (1988a, p. 232)

470 Peebles and Wilson (2002, p. 67)

471 Lee, Hsien Loong: Speech at the 2000 Singapore Business Awards; as cited by Peebles and Wilson (2002, p. 67)

constant values for 1985-96. In 1996 the capital-output ratio is the highest compared to those of Indonesia, Malaysia, Philippines and Thailand and about the same as that of the United States.⁴⁷³ Miles and Scott (2002) compare the 1965-90 average investment ratios for 27 countries and relate them to the 'Golden Rule' finding that Singapore together with Japan have had high investment ratios but still within the 'target range' of 30-35 percent of GNP, which the Golden Rule would approximate as the optimal investment rate in an industrialised steady state economy.⁴⁷⁴

Guest and McDonald (2000) built a simulation model based on maximising a social utility function and various assumptions about productivity growth, demographic change and other aspects. For Singapore, their estimate of the optimal saving rate for 1996 was 30.9%, much lower than their estimate of the actual rate of 45.4%. Claessens et al.(1998) approach the question on the company level by calculating the return on assets defined as EBIT over Total Assets less annual inflation for 358 Singaporean companies. Singapore's average 4.4 percent real return for 1988-96 is one of the lowest among the country's Asian peers. Only Japan and Korea have worse returns. However, it is comparable to Germany's 4.7 percent or the United States' 5.3 percent, while Singapore's new investments ratio (new investments as percent of existing investment) with 10.4% was much higher than that of the United States (3.4) or Germany (2.5) and even Japan (8.0).⁴⁷⁵ However, the sample of companies is not necessarily representative of the economy, covering mainly large firms and not taking into account the economy's structural composition. The sample might be biased, for example, towards utility companies with high assets and low ROA while the total economy might have a different structure.

472 Han (1996, pp. 27-28)

473 Peebles and Wilson (2002, p. 56)

474 Miles and Scott (2002, p. 104). This assumes a standard Cobb-Douglas production function with a marginal return to capital which is approximated by the factor share of capital in GDP, which in turn stands at 30-35% in most industrialised steady state economies.

III.2. Procedures, Data Sources and Data Constraints

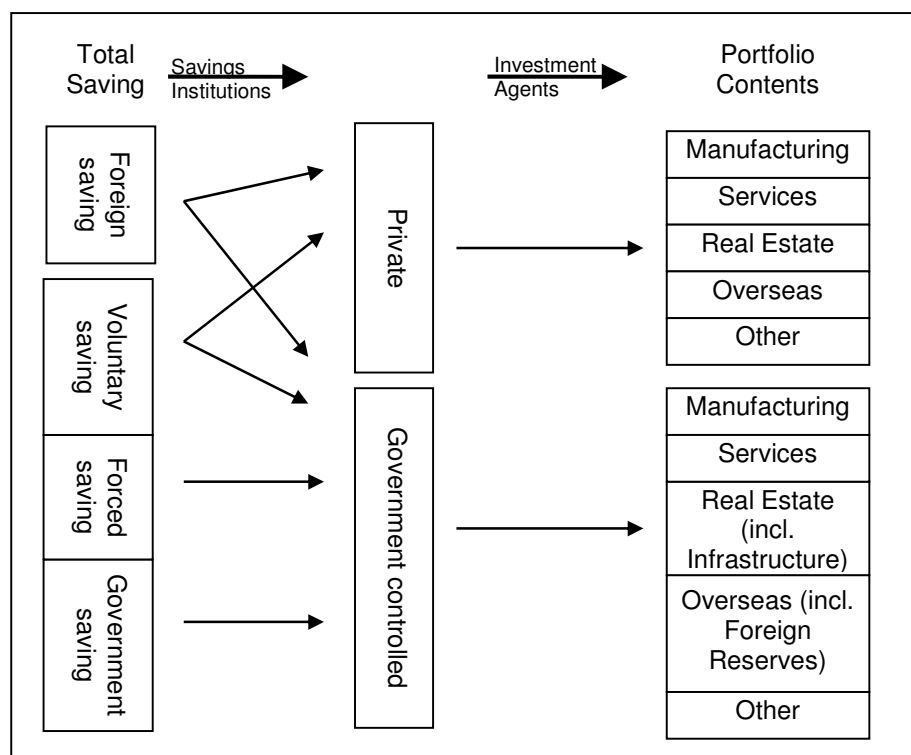
As discussed above investment behaviour has so far rarely and if at all only to a limited degree been investigated, largely due to the lack of a readily accessible data source. In an attempt to close this gap, a large variety of government and private sources have been combined into a new database, which allows a much more revealing investigation into Singapore's investment pattern than hitherto possible and leads to a number of new insights into Singapore's recent economic history.

The first step was to determine the country's total investment pool, inclusive of appropriated foreign savings, followed by the reclassification of Gross National Savings into public savings on the one hand, and voluntary and compulsory private savings on the other hand.⁴⁷⁶ Subsequently, the amount of foreign and voluntary private savings which the government managed to control through its own financial institutions was re-classified in order to derive a more accurate estimate of the government's role in the allocation process. The exercise continued by classifying total investments made over time by the agency in charge of the ultimate investment decision and by the main asset categories into which the funds were invested. Graph III.2. summarises the procedure graphically.

⁴⁷⁵ The returns calculated for Germany and the USA relate to those companies listed on the DAX or NYSE respectively.

⁴⁷⁶ Disaggregating the official Gross National Savings series followed the same methodology as described in Chapter Two and is therefore not separately discussed here. This chapter will use the GNS series adjusted for housing withdrawals as set out in Chapter Two.

Graph III.2. The Accounting Exercise



III.2.1. Gross Foreign Savings

In order to derive the total investment pool available for the purposes of this investigation Total Gross Foreign Savings appropriated into the Singapore economy need to be added to GNS.

Gross foreign savings appropriated into Singapore's economy are defined as the sum of Direct Investment Inflows, Portfolio Investment Inflows, Other Investment Inflows (including trade credits) as well as Errors and Omissions.⁴⁷⁷ The data is taken from the IMF's Balance of Payments publication, which has two

⁴⁷⁷ Errors and Omissions are customarily included in efforts to determine capital inflows, e.g. Edwards (2000) and Loayza et al. (1998a). Errors and Omissions are of a substantial nature in the case of Singapore's Balance of Payments. In total they account for S\$11.6billion out of a total of S\$351billion of appropriated foreign savings. It is not clear why Errors and Omissions are so high in Singapore's case. One possible explanation is the omission of trade with Indonesia in its national accounts, stemming from the years of the confrontation between the two countries during the formation of the Federation of Malaya. For an early reference to this peculiarity see Yang (1970, p.9).

main data constraints. Firstly, some subsections are netted before 1987, since separation between changes in assets and liabilities was not strictly adhered to, e.g. other long-term capital of deposit money banks. Before 1977 direct and portfolio investments are only reported as net-inflows. Errors and Omissions are by definition netted figures. This results in a tendency in the data-set to underestimate the additions to the total investment pool stemming from foreign sources. Secondly, the data offered in the annual IMF publications appears to have undergone regular and retro-active alterations. Assuming that the alterations are correcting mistakes from the past and not adding any of their own, the most recent figures for each year were used to compile the series, i.e. the observation for year X was taken from the publication in year $X+t$ when year X lay too far in the past to be reported any longer in year $X+t+1$. Notwithstanding these constraints, the data available through the IMF is much more detailed than any official Singaporean publication, which makes using it inevitable.

A potential difficulty occurs because data from national income accounting is combined with information taken from the Balance of Payments. The basic national income identity, which is used to determine GNS, already incorporates Net-Exports and Net-Income-From-Abroad, which are both accounted for in the Current Account of the BoP with their counter-entry in the Capital Account and thus might appear to be a source for double-counting. However, the opposite is the case. Without the inclusion of the Capital Account the total available investment pool would be substantially understated. If a country experiences a trade deficit, for example, the resulting net-imports reduce gross national saving but on a financial perspective are only made possible through foreign savings appropriated into the economy. Therefore, the total available investment pool would actually be understated if only Gross-National-Savings would be considered.⁴⁷⁸ If the country experiences an export surplus, as Singapore has

⁴⁷⁸ In mathematical form the calculation is represented as follows:

since the mid-1980s, the economy is investing overseas by giving trade credits to foreign buyers. The income effect of the net-exports increases gross national savings and is accounted for via the national accounts. The decision to allow the buyers to finance these purchases through trade credits or the sale of other investment vehicles is an allocation decision which should not affect the total investment pool. Therefore, only credit entries in the capital account of the BoP are used to determine total appropriated foreign savings and thus double-counting is prevented.⁴⁷⁹

III.2.2. Determining the Degree of Government Control

In order to derive the degree of government control that portion of voluntary savings, which was held through the government's financial institutions, needs to be re-classified. This in turn requires the construction of a data-series for all non-government liabilities on the balance sheets of the DBS, POSBank, MAS and BCCS.⁴⁸⁰ The sources and formulas used in detail are:

DBS: Total Liabilities less Government Loans both taken from DBS annual reports.⁴⁸¹

$$\text{Total Investment Pool} = \text{GNS} + \text{Credit Entries in Capital Account}$$

where

$\text{GNS} = Y - C - G - \text{Net-Imports}$

$\text{Credit Entries in Capital Account} = \text{Direct and Portfolio Investment Inflows} + \text{Trade Credits Received} + \text{Other Investment Inflows} + \text{Errors and Omissions}$

Rearranging the formulae gives us:

$\text{Total Investment Pool} = Y - C - G + \text{Direct and Portfolio Investment} + \text{Other Investment} + \text{Errors\&Omissions} + (\text{Trade Credits Received} - \text{Net-Imports})$

Therefore, only the balance of trade credits and net-imports affects the total investment pool. In other words only net-imports which have not been financed by trade credits would lower the investment pool and only trade credits which were not used to finance net-imports would increase the pool.

479 Overseas trade credits are part of Singapore's investment abroad and will be covered as such when the investments are traced.

480 DBS: Development Bank of Singapore; POSBank: Post-Office-Savings Bank; MAS: Monetary Authority of Singapore, Singapore's Central Bank; BCCS: Board of Currency Control Singapore

481 Total liabilities side of DBS balance sheet = all deposits, share capital, retained profits, other funds payable, but not contingencies/guarantees and other off-balance sheet liabilities. Loans from the Singapore government to DBS are deducted prior to 1994. From 1994 on, however, the annual reports do not list Singapore government loans separately anymore. Yet, the total amount has fallen to S\$20million in 1993 and is therefore negligible. The loan schedule in the government's financial statements does not show any loans outstanding to the DBS after the financial year 1992/3. Government share capital was not deducted from DBS' total liabilities, since share-issues after the banks' creation could not be separated into government and non-government placements. However, since total share-capital in 1998 was S\$1.65billion which is less than 2% of total liabilities this omission should not alter the results substantially. Furthermore, the majority of the government's share capital is held by government investment vehicles, such as Temasek and MND Holdings, which – due to the lack of data availability - must be considered part of the private sector along with all other government-linked companies.

POSBank: Total amounts due to depositors as reported in the MAS annual report.⁴⁸²

MAS: total balances of Commercial Banks and Finance Companies with the MAS taken from the MAS annual reports.⁴⁸³ For the years 1965-69 before the MAS' creation this refers to balances with the Accountant General and Bank Negara Malaysia as reported in Singapore's Statistical Yearbooks.

BCCS: non-currency liabilities taken from BCCS annual reports.⁴⁸⁴

In addition to the share of voluntary private savings captured by the government's financial institutions the share of foreign savings which was commanded by the government must also be re-classified. The information is taken from the IMF's Balance of Payments publications. However, it is questionable to which degree public and private spheres have truly been kept separate in the country's balance of payments statistics.

A further complication derives from the fact that after 1968 the government and the MAS operate on a financial year running until March 31st. The financial years were re-apportioned over the respective calendar years, for example $\frac{3}{4}$ of the increase between financial years 1997/8 and 1998/9 are allocated to calendar year 1998 and $\frac{1}{4}$ to calendar year 1999, with calendar year 1998 receiving $\frac{1}{4}$ of the increase between financial years 1996/7 and 1997/8.

482 The government uses the MAS as its bank and thus it is very unlikely that any of these deposits are government funds.

483 This definition excludes any deposits from financial institutions other than commercial banks and finance companies, such as insurance companies or merchant banks, which makes this figure a conservative estimate. However, the definition would include the DBS's deposits with the MAS, which have already been accounted for as part of the DBS non-government liabilities. Unfortunately, neither the MAS nor the DBS specify the amount of DBS reserves deposited with the MAS. Therefore, an imputation becomes necessary. Assuming that the DBS holds a similar ratio of its non-bank customer deposits with the MAS as the average commercial bank, we can impute a figure for the DBS' deposits with the MAS. The reserve ratio for each year of all commercial banks defined as deposits with MAS over total deposits by non-bank customers taken from the MAS' annual reports is applied to the DBS' non-bank customer deposits taken from the bank's annual reports. The POSBank is not considered a commercial bank until it is acquired by the DBS in 1998. Therefore, no imputation of its likely deposits with the MAS is necessary to avoid a potential problem of double-counting.

484 Since these non-currency liabilities are predominantly funds that are to be transferred to the Consolidated Fund, i.e. to the government, this treatment assumes that the government has not yet accounted for these funds as part of Total Government Revenue, otherwise this would lead to some degree of doublecounting, e.g. in 1999 the BCCS showed 132 Mil. to be transferred to Consolidated Account – in our treatment these funds are additional to the governments financial surplus (Tot Rev. – Consumption) of 35.8 Billion in 1999.

III.2.3. Tracing Public Investments

While the establishment of the savings pool and the degree of government control looks at the liabilities side of the saving agencies' balance sheets, tracing the corresponding investments requires an analysis of the development of their respective assets. The task is complicated by the fact that these agencies exchange funds among themselves, which if counted each time the same funds appear on one of the agencies' asset side will lead to a substantial degree of double-counting. For example the CPF carries government bonds on its asset side and the government itself shows the respective funds received from the CPF as an asset. Therefore, only assets which carry a final investment decision must be included in the analysis. The sources used for this exercise were the central government's financial statements and the annual reports for the individual institutions. Table III.2.3. summarises the respective asset items included and excluded.

Even though the asset side of the balance sheets has been disentangled as well as the information provided permits, some degree of double-counting is still possible, since the individual institutions use different formats to categorise their assets and since the schedules to their respective accounts vary substantially in terms of the detail offered – not only between them but also over time.

Two further investment vehicles need to be considered in order to fully capture the government's investment pattern, namely the government's capital expenditures and the country's foreign reserves. The former is necessary because unlike a private enterprise the government does not capitalize its capital expenditures onto its balance sheet in the form of fixed assets. The latter becomes necessary, because the officially reported foreign reserves do not match the external assets held by the MAS and the BCCS, which indicates that there are further vehicles involved in the foreign reserve position of the country.

Table III.2.3.: Asset Categorisation for Public Investments⁴⁸⁵

	Included Assets, i.e. with final investment decision	Excluded Assets, i.e. without final investment decision
Central Government	<ul style="list-style-type: none"> • Loans Receivable • Advances Receivable • Quoted Investments • Unquoted Investments • Public funds administered by organs of state • Other Assets 	<ul style="list-style-type: none"> • Cash • Government Stocks • Deposits with investment agents
DBS	<ul style="list-style-type: none"> • Loans Receivable • Domestic Equity Investments • Real Estate • Overseas Government Securities • Other Assets 	<ul style="list-style-type: none"> • Loans to and Equity in other financial institutions • Singapore government securities and T-Bills • Cash and balances with banks and agents • Amounts due from other banks
POSBank	<ul style="list-style-type: none"> • Loans Receivable • Real Estate • Listed and Unlisted Shares • Bonds and Debentures • Overseas Government Securities • Other Assets 	<ul style="list-style-type: none"> • Singapore government securities • Time deposits and short-term investments • Deposits with MAS • Treasury Deposits / T-Bills • Accrued Interest • Cash and Deposits
CPF	<ul style="list-style-type: none"> • Fixed Assets • Staff Loans • Portfolio Investments • Debtors & Deposits • Overseas Government Securities 	<ul style="list-style-type: none"> • Singapore government securities • Bank deposits • Cash and bank balances • Accrued Interest
MAS	<ul style="list-style-type: none"> • Foreign Reserves • Fixed Assets • Staff Loans • Overseas Investments • Other Assets 	<ul style="list-style-type: none"> • Singapore government securities • Cash and Cash Equivalents
BCCS	<ul style="list-style-type: none"> • External Assets • Real Estate • Other Assets 	<ul style="list-style-type: none"> • Cash in hand and with agents

The Singapore government does not publish capital expenditures in its own publications, where it refers to development expenditures, which can include current expenditures for salaries, training and the like. Therefore, Capital Expenditure were taken from the IMF's Government Financial Statistics, which however only refer back to 1972/3 and also do not offer a breakdown of the capital expenditures apart from the years 1977/8-86/7. For the years before 1972

⁴⁸⁵ Investments by the EDB are not separately listed, because they are included in the government's loan portfolio as loans to the EDB until the DBS takes over the industrial finance function from the EDB in 1969. From that point on they are included in the DBS' loan portfolio.

the IMF's International Financial Statistics were used instead. Yet, this source does not directly publish capital expenditure, which meant that they had to be derived by subtracting government consumption from total expenditure. Unfortunately, the derived figures are substantially larger than those published in the IMF's Government Financial Statistics for the years where both are available. In order to be rather on the conservative side and to have the longest continuous series the IMF's Government Statistics were used after 1971. This might underestimate government capital expenditures.⁴⁸⁶

The official foreign reserves were taken from Singapore's Statistical Yearbooks for the years 1965-99 and for 1963-64 from Singapore Department of Statistics (1982). The difference between official reserves and the sum of BCCS' external assets and MAS' foreign reserves was added to government overseas investments.

As a general clarification, it is important to point out that the public investment measure does not fully capture the whole public sector since Government-Linked Companies (except for the DBS) are not reclassified due to their multitude. Furthermore, potentially retained earnings of statutory boards (except for POSBank, CPF, MAS and BCCS) are also left in the private sphere. In essence, therefore, the definition of public sector in this exercise is rather narrow, comprising the central government, its financial institutions and that part of the statutory boards' investments, which was financed through government loans or took the form of profit transfers to the central government.

⁴⁸⁶ One potential explanation of this discrepancy between the IMF's IFS and GFS publications could be a differing treatment of debt service. However, as it turns out both publications consider debt service a separate item, i.e. the GFS does not consider debt-service (neither interest nor repayments) as part of capital expenditures. Instead it is part of current expenditure. The IFS does not include debt-repayments as part of either government consumption or government expenditure.

III.2.4. Tracing Private Investments

Private agents making investment decisions comprise commercial banks (excl. the DBS), finance companies, merchant banks, insurance companies, discount houses, foreigners and Singaporean residents investing in Singaporean equity or debt instruments as well as Singaporeans investing abroad. For the private financial institutions the same problem regarding double-counting applies as described above for investments by the public sector. Therefore, for the purposes of this exercise their assets exclude cash, investments in government securities and t-bills, deposits with the MAS, and amounts due from other Singaporean financial institutions. DBS assets were subtracted from commercial bank assets because they are already accounted for in the public sphere.

The information for the private financial institutions is taken from the MAS' annual reports, which summarise their balance sheet positions. However, the data series do not extend further back than 1969 or 1970. For merchant banks or discount houses they do not start until 1974 and 1972 respectively. Domestic equity investment by foreigners and Singaporean residents is taken from the surveys, 'Foreign Equity Investment in Singapore', conducted by the Department of Statistics. Their data is drawn from the accounts of all companies incorporated or registered in Singapore except for partnerships and sole proprietorships. The publication started in 1992 with data going back to 1978 for foreigners' equity positions and back to 1980 for Singaporeans'. Additionally, the EDB annual reports offer foreigners' investments in manufacturing going as far back as 1963 and investment by Singaporean residents in manufacturing for the years 1963 to 1968, which at least allows for interpolation of the years 1969-79 until the publication by the Department of Statistics becomes available. No information is available for domestic investment in corporate debt instruments by foreigners or Singaporean residents, which however seems unlikely to having been substantial. A potential source of doublecounting can stem from the fact that the

commercial banks have loans to non-bank financial institutions on their balance sheets. This can include financial holding companies and investment corporations but also finance companies and merchant banks, which are accounted for separately. If these loans were indeed granted to finance companies and merchant banks and these institutions in turn used the funds to finance their loan portfolio then the funds will have been double-counted.

A survey of overseas investments by firms registered in Singapore is published by the Department of Singapore, 'Singapore's Investment Abroad', with data going back as far as 1976. This survey does not cover official foreign reserves or any investments by the central government, which for the purposes of this exercise is beneficial since that information is already accounted for in the public investment analysis. However, it does include financial institutions' investments abroad from 1994 onwards, which have already been accounted for using the MAS annual reports. Since the publication does not list investments by source, i.e. where the funds for the investments came from, but only offers information about the type of overseas investment held, e.g. equity, portfolio etc., the information included in the MAS annual report about financial institutions' overseas investments was deducted from 1994 onwards in order to avoid double-counting.⁴⁸⁷ There is no information about individual Singaporean residents' personal investments overseas.

All equity measures are at cost. Domestic equity includes retained earnings. Investments abroad in foreign equity, however, do not include retained earnings, although this information is available, because retained earnings are by definition not repatriated. Consequently they are not part of the country's national income and thus not part of the domestic investment pool.

⁴⁸⁷ The subtraction of financial institutions' overseas assets as published in the MAS report leads to a dip in the series in 1994 below 1993 levels, which means that the publication by the Department of Statistics either already included some of those investments before 1994 or does not fully account for them in 1994.

While the potential pitfall of double-counting between the different sources has been minimised, the lack of observations for the early parts of the period is less easily dealt with. In general, there are four ways to deal with this problem. The first option is to disregard the early parts of the period and not start the exercise until the late 1970s. The second is to assume that the starting balances in 1965 were equal to the first available observation, while the third option would assume that they were zero. The fourth would apply some form of reverse engineering in order to estimate observations backwards from the given data. This would involve fitting a trend to the available observations and extending that trend backwards. Different trending mechanisms were applied to the data after their transformation into constant 1990 S\$, using the GDP-deflator as reported by the Department of Statistics. Linear trends often resulted in unlikely negative starting balances and quadratic trends in early observations far above the later observations. Exponential trending, on the other hand, yielded consistently good fits to the existing data and reasonable estimates above zero but below the later observations. Given the country's overall development, an exponential trend does not seem out of the question. Therefore, early observations for those data-series were estimated using exponential trends.⁴⁸⁸

III.2.5. Overall Evaluation of Quality of Data

The creation of this dataset had to contend with two, in their combination seemingly paradoxical main problems. On the one hand, there is the potential problem of having too much data, i.e. double-counting, when at the same time there is also the problem of having too little data, i.e. missing observations. The danger of double-counting has been removed as far as possible through a diligent read of the notes and schedules of the data-sources. As it turns out the

⁴⁸⁸ See appendix for the exact formulas and description of fit. Commercial bank loans (excl. DBS) to Transport and Communication and Foreign Equity in Agriculture, Mining and Quarrying could not be trended backwards, since they included negative observations for the early years. In that case

total cumulative investment pool for 1965-99 amounts to S\$1,217,986 million while the total traced investments account for S\$1,121,455 million or slightly over 92 percent of the investment pool (both constant 1990 S\$).⁴⁸⁹ Given the fact that the investment pool probably is somewhat understated due to the netting of some Balance-of-Payments positions, this outcome seems to indicate that double-counting has been successfully removed from the dataset, unless substantial gaps in the investment pattern remain unaccounted for. However, none of the gaps described above seems substantial enough to increase the traced investments significantly above the total investment pool. Even the reverse engineering of the starting balances for the missing private investment data series only amounts to S\$ 11,385 (constant 1990 S\$). In other words, if this imputation was not used and instead the worst case scenario of a zero value for the starting balances of these series was used, traced investments would still be below the cumulative investment pool. Other gaps, such as investments in sole proprietorships and partnerships or private investments in debt vehicles are also not likely to raise the traced investments significantly above the total investment pool. Therefore, the potential problem of too much data seems rather successfully dealt with.

The problem of missing early observations, however, is a more resilient one, which will never fully disappear unless potentially existent but not yet publicly available data is made accessible.⁴⁹⁰ Until then, it becomes paramount to analyse to what degree conclusions derived from this dataset are potentially affected by the methods used to compensate for the missing observations. In the aggregate, using the estimations derived from exponential trending can, on the one hand, lead to understating investments by S\$11,385 if indeed the zero assumption turns out to be true. On the other hand, it can result in a maximum overestimation of investments by S\$26,930 if the first available observations are closer to the 'true'

a zero starting balance was assumed.

489 Total traced investments for the period 1965-99 refer to the increase in total stock of investments between 31/12/64 and 31/12/99.

490 Requests to the EDB for access to their data sources have been declined.

starting balances.⁴⁹¹ In total, this estimation procedure adds a maximum error window of S\$ 38,315 or 3.4% around the traced investments. Therefore, conclusions based on the aggregate figures should not be too sensitive to this assumption. However, the more disaggregated the level of observation becomes the more will the degree of sensitivity to the trending assumptions increase. Therefore, in the extreme case of looking at an individual data series which has been trended back in time to derive its early observations, conclusions based on these early years must be considered as speculative.

⁴⁹¹ The sum of the first observations equals S\$38,315. Since S\$11,385 are accounted for in the dataset using exponential trending, the difference of S\$26,930 is the maximum likely overstatement deriving from this method.

III.3. The Allocation Process - An Accounting Exercise

III.3.1. The Total Investment Pool

In total the Singapore economy had 1.22 trillion constant 1990 Singapore dollars available for investment purposes, of which more than a third came from abroad increasing the total amount available for investment by over fifty percent above gross national savings. In turn this means that Singapore was able to make investments during 1965-99 equivalent to 70 percent of the sum of the country's Real GNP, while the gross national saving rate averaged 46.13 percent during these years.

Table III.3.1.a.: Total Real Investment Pool and Government Control

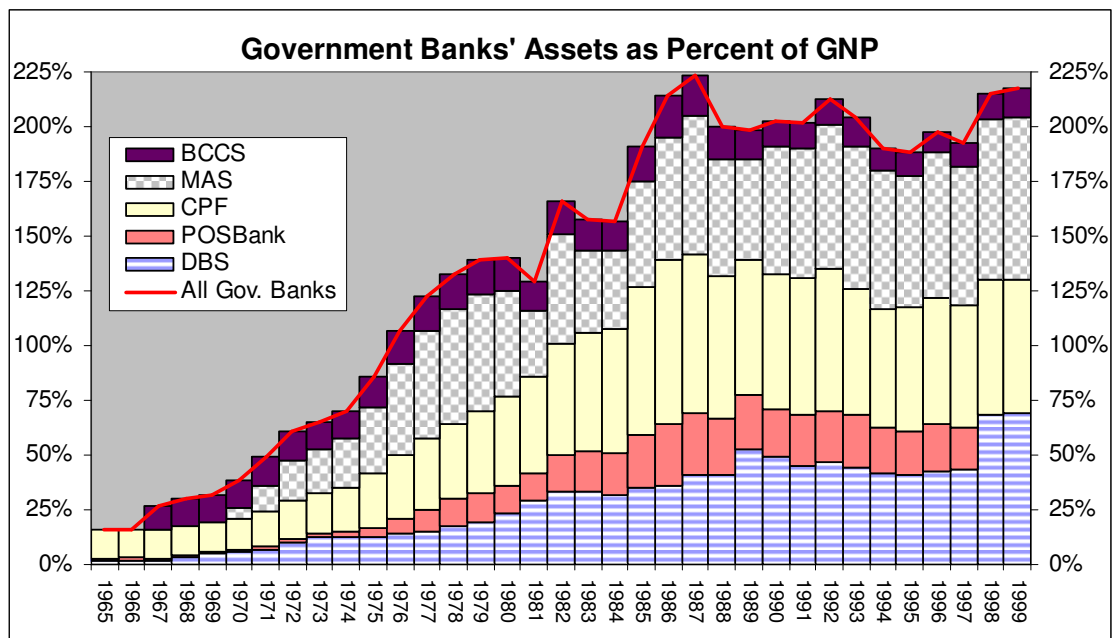
Constant 1990 S\$ - million	1965-99
Government Saving	360,113
Forced Private Saving	181,729
Voluntary Private Saving	284,990
Total Gross National Saving ⁴⁹²	826,831
Percent government controlled	65.5%
Reclassify POS + DBS + MAS + BCCS non-gov. liabilities	118,942
Percent government controlled	79.9%
Add Gross Foreign Saving Inflows	391,155
of which official funds	600
TOTAL GROSS INVESTMENT FUND	1,217,986
Of which government controlled	661,384
Percent government controlled	54.3%

Even more striking than this substantial amount of foreign savings is the extraordinarily high degree of government control. Beyond the government's own savings and its control over the compulsory pension scheme, it must be particularly noted that through its financial institutions the government was able

⁴⁹² Adjusted for investment in residential housing channelled through the CPF.

to attract the equivalent of over forty percent of private voluntary savings into its realm of influence.⁴⁹³ Overall, slightly over 54 percent of the total investment pool was controlled by the government which is equivalent to eighty percent of total gross national saving. This estimate of government control does not reclassify non-financial government-linked corporations, nor does it take into account other means of control such as the central banks' policies affecting credit creation or the influence over foreign savings exercised by Singapore's institutions dealing with Foreign Direct Investment. Therefore, it is safe to argue that even though this degree of government control appears already very substantial it is still a conservative lower limit estimate. Overall, the government is likely to have controlled or directed close to the equivalent of the nation's total gross national savings between 1965 and 1999.

Graph III.3.1: The Government's Expansion of Control through its Financial Institutions



493 The main government controlled financial institutions are the Monetary Authority of Singapore (MAS), the Post-Office Savings Bank (POS), the Development Bank of Singapore (DBS) and the Board of Currency Control of Singapore (BCCS).

Graph III.3.1. shows the development of the government's financial institutions consolidated balance sheets. At independence the government financial institutions controlled funds equivalent to a mere 15.5 percent of GNP. By the mid-1980s their balance sheets had increased to a value at or above 200 percent of GNP.

For a period of time the Singapore government published its own estimates of public sector saving. Huff (1995a) amended the official series by adding CPF savings for 1974-84. Table III.3.1.b. offers a comparison of the officially reported public sector saving and the CPF saving as a percent of GNS, both according to Huff (1995a) and the new estimates derived here.⁴⁹⁴

Table III.3.1.b.: Comparison of Government Control⁴⁹⁵

% of GNS	Amended Official Series (Huff, 1995)			New Estimates			
	Public Sector	CPF Saving	Total I (1) + (2)	Gov. Saving	CPF Saving	Total I (Gov + CPF)	Total II (+ Fin Inst.)
1974	22.8	20.0	42.8	42.0	22.2	64.2	70.6
1975	34.2	20.6	54.6	47.3	23.2	70.5	88.4
1976	32.1	18.1	50.2	39.3	22.8	62.1	92.3
1977	39.8	17.5	57.3	36.3	23.3	59.6	76.4
1978	37.6	17.3	54.9	33.7	23.6	57.3	78.7
1979	38.4	21.0	59.4	34.6	25.5	60.1	80.3
1980	41.1	24.6	65.7	42.0	29.1	71.1	73.3
1981	40.6	24.8	65.4	43.6	29.7	73.3	97.9
1982	46.1	27.2	73.3	46.3	31.7	78.0	110.7
1983	53.0	23.6	76.6	42.8	28.6	71.5	88.3
1984	60.7	17.0	77.7	33.5	27.8	61.3	71.8

Compared with the results from the current exercise even the amended official figures substantially underestimate the actual degree of control by the

⁴⁹⁴ Huff (1995a), pp. 1426-27, which offers the same data as Huff (1994) pp.332-333. Public Sector savings are defined as the current surplus in the consolidated accounts of the public sector, which consists of government plus seven major statutory boards, namely the Housing and Development Board, Jurong Town Corporation, Public Utilities Board, Port of Singapore Authority, Telecommunication Authority of Singapore, Urban Redevelopment Authority and Sentosa Development Corporation. Central Provident Fund savings are defined as the net addition that year to the accumulated fund due to members. Because of members' withdrawals of funds, this figure was normally less than members' contributions. A preliminary figure for 1985 is also given but not reported here. After 1985 the government discontinued the reporting of public sector saving.

⁴⁹⁵ After the addition of savings appropriated by the government's financial institutions its control over the savings pool is in some years larger than total GNS of that year, which means that the government must have attracted foreign savings into its sphere of influence. Huff's percentages are expressed as percent of official GNS, while this study uses as the denominator GNS adjusted for residential housing investments channelled through the CPF.

government. Only in the two final years are the estimates of the amended series by Huff (1995a) above the figures (excluding government financial institutions) derived in this exercise. Once the government's financial institutions are added, the gap between the two series becomes even more striking. The differences stem from a different definition of public sector savings and CPF savings. In our case government savings does not include the statutory boards due to limited data availability but adds in its final step savings appropriated by the government's financial institutions. Additionally, the current surplus used by Huff as the basis for government savings, does not always equal in Singapore's case the difference between total government revenue and total government consumption, the definition employed by this study. In respect to CPF savings, our series only deducts withdrawals for consumptive purposes in order to derive the net saving additions appropriated by the CPF. Other withdrawals, for example, for investments in government sponsored equity schemes or housing are considered to be merely a move between types of investment portfolios.⁴⁹⁶

Apart from a revision of earlier estimates of government control, the creation of a total investment pool also points out that an analysis based merely on Gross-Fixed-Capital-Formation (GFCF) substantially underestimates total investments made. Cumulative GFCF for 1965-99 accounts for 609.1 billion constant 1990 S\$, which is the equivalent of 80.3 percent of total GNS or fifty percent of the total Gross Investment Pool. Therefore, merely considering officially reported GFCF will limit the analysis to only about half of the total funds available for investments. As the analysis by asset category below will show almost half of this gap can be accounted for by overseas investments, both by the public and the private spheres.⁴⁹⁷

496 For a critical assessment of different definitions of CPF savings see section II.4.3.

497 For an interpretation of the remaining gap and what it can possibly tell us about the question of oversaving and crowding out in Singapore see section III.3.4. and III.3.5.

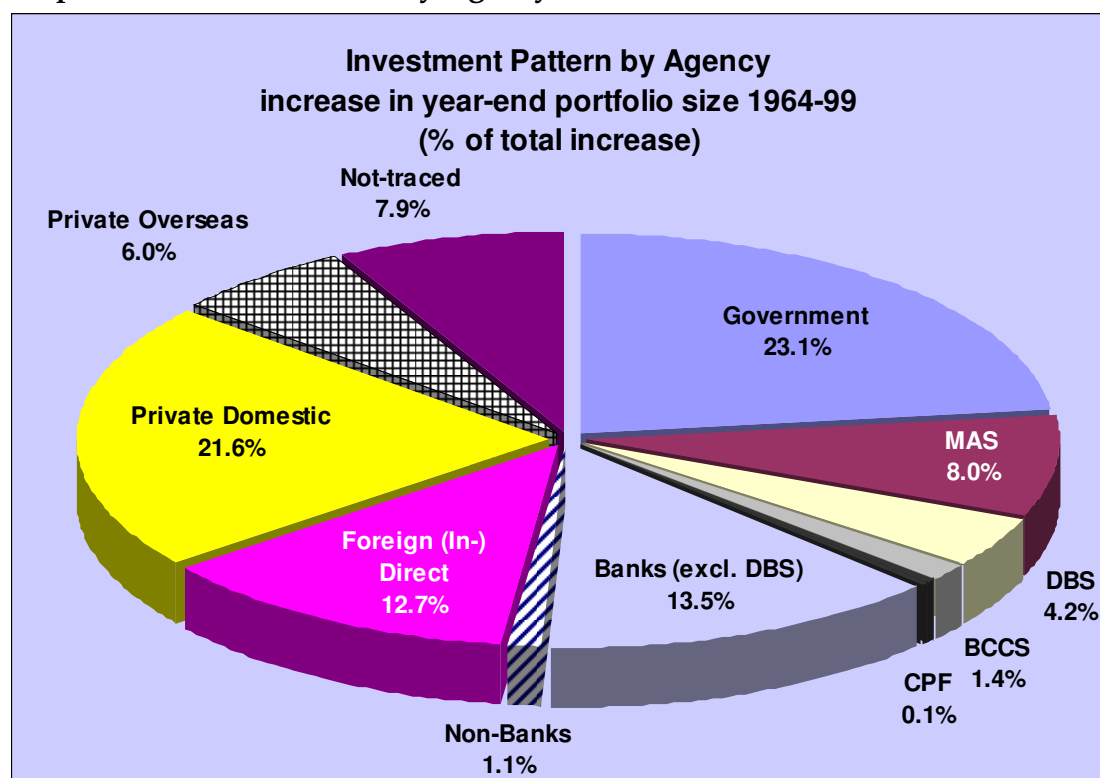
III.3.2. Investment by Investment Agents

While the total investment pool is based on annual flows of savings, the analysis of the investment patterns uses year-end stock balances for the respective agents. Comparing the starting balance of December 31st 1964 with the ending balance of December 31st 1999 yields the comparable figure to the cumulative saving flows for 1965-99. However, this comparison might not capture important developments taking place between these two points in time. Therefore, a measure summarising the development over the whole time period is needed. In order to derive such an overall measure each portfolio position was tracked for each year and converted into constant 1990 S\$. The sum of all year-end balances is then able to describe the cumulative importance of each respective item and agent. In other words, each portfolio position is given a 'point' for each constant 1990 S\$ invested in it at each year-end. The more 'points' the portfolio position collected between 1965-99, the higher was the exposure of the total portfolio to this type of investment.

Table III.3.2. summarises Singapore's investment pattern by investment agent, using both the increase in the year-end portfolios and the overall measure. As it turns out, there are no major differences of the respective agencies' shares of total investments made between the two measures. The increase in the year-end portfolios as opposed to the overall measure seems to slightly overstate the government's and understate the banks' role in making the ultimate investment decision. In turn this means that the government has actually become somewhat more important towards the end of the period as the main investment agent.

Table III.3.2.: Investment Pattern by Investment Agents⁴⁹⁸

(constant 1990 S\$)	Incr. Year-End Portfolio		Overall Measure	
Government	283,916	23.3%	2,480,477	21.2%
MAS	97,619	8.0%	918,969	7.9%
DBS	52,087	4.3%	332,509	2.8%
POSBank	(57)	0.0%	102,428	0.9%
BCCS	16,988	1.4%	216,159	1.8%
CPF	1,453	0.1%	9,429	0.1%
Additional Foreign Reserves	(4,266)	-0.4%	118,941	1.0%
Banks (excl. DBS)	165,643	13.6%	1,983,311	17.0%
Non-Bank Fin. Inst.	13,751	1.1%	263,720	2.3%
Foreign (In-) Direct	155,319	12.8%	1,337,904	11.4%
Private Domestic	265,548	21.8%	2,529,029	21.6%
Private Overseas	73,456	6.0%	609,169	5.2%
Not-traced	96,532	7.9%	786,493	6.7%
TOTAL	1,217,986	100%	11,107,675	100%

Graph III.3.2.a.: Investment by Agency – Increase in Year-End Portfolio⁴⁹⁹

498 The Not-Traced item is the difference between the Total Investment Pool and the sum of all traced items. The POSBank has a negative figure for the comparison of the starting and ending portfolios, because with the acquisition by the DBS in 1998 all assets have moved to the DBS. Additional Foreign Reserves, i.e. the balance between official reserves and those held at the MAS and BCCS, are also negative because in 1965 all foreign reserves are additional to MAS and BCCS since these institutions do not yet exist, while by 1999 unlike most of the rest of the period officially reported reserves are lower than what MAS and BCCS hold together. The BCCS is the Currency Board of Singapore in charge of issuing Singapore's national currency.

499 The graph only displays non-negative shares, as a result percentages can differ slightly from table III.2.

Nevertheless, the comparatively low government involvement, given its high control over savings, is very striking. In total the government and its financial institutions accounted for 36.7 percent of the total investments made, based on the increase of its year-end portfolios.⁵⁰⁰ At the same time, however, it controlled 54.3 percent of the total available investment pool as shown in Table III.3.1.a. Consequently, it must have given up control over 17.6 percent of the investment pool and re-injected this portion into the private sphere, which as a result accounts for 55.3 percent of total investments made.

Over the whole period 1965-99 the Singapore government and its financial institutions controlled savings of 661 billion constant 1990 S\$, but only made final investment decisions amounting to 452 billion. How can this gap of 209 billion be explained? The government shows on its balance sheet in 1999 investments in its own government stocks, presumably bonds, with the value of 88 billion constant 1990 S\$, which at the time of issue must have increased the government's revenue and thus its savings. However, because the bonds have since then been bought back from the private sphere, the government has in essence abandoned control over the funds initially raised through the issue of these securities and thus re-injected those monies back into the non-governmental sector. Similarly, an additional 2 billion constant 1990 S\$ was deposited with investment agents.⁵⁰¹ Together these items can explain forty-three percent of the gap between controlled savings and placed investments. The rest together with the question why the government felt the need to cease control over these funds remains a puzzle. This seems to suggest that due to too tight a grip on the nations' savings the government redirected more funds into its realm of influence than it could handle. After all the government went to quite some lengths in establishing and expanding its own financial institutions which were able to re-direct almost 120 billion constant 1990 S\$ from voluntary private saving into the realm of

⁵⁰⁰ Based on the overall measure, the government's share in investments made was 35.7 percent.

⁵⁰¹ Additionally, the government is holding 48.5 billion constant 1990 S\$ in cash at the end of 1999. To remain conservative it was assumed that these funds are deposited with government investment agents, such as the MAS or DBS. If that was not the case, the savings reflected in these funds would have effectively been neutralised.

government control, while at the same time the government felt the need to surrender control over 209 billion constant 1990 S\$.

Looking at the foreign direct and indirect investments throws up another intriguing aspect. According to the country's Balance of Payments Singapore was able to appropriate 391.2 billion 1990 constant S\$ in gross foreign savings. Yet, equity holdings by foreigners in Singaporean firms amounted only to 156.7 billion in 1999 or 155.3 billion above their estimated 1965 starting balance. Therefore, about 235 billion are either unaccounted for in the official publications or have been diverted to other investment agents, via such vehicles as sale of land leases, taxation, salaries and other running expenses. As the summary by investment category below shows, Singapore was able to increase her overseas assets by about 265 billion (constant 1990 S\$) during the same time.⁵⁰² In other words, the Singapore economy was able to increase her own foreign holdings by a little more than the equivalent of what the country was able to divert from foreign inward investments.⁵⁰³

III.3.3. Investment by Asset Category

Table III.3.3. summarises the investment pattern by target asset category, both in terms of the increase of the year-end portfolios between 1964 and 1999 and the overall measure. Again, no substantial difference between the two types of measurement emerges.

⁵⁰² Low et al. (1998) point out that a substantial portion of Singapore's overseas assets are owned by companies in Singapore, which themselves are controlled by foreign interests. For example, in 1990 50 percent of the stock of Singapore's direct investments abroad originated from foreign controlled firms.

⁵⁰³ This gives rise to another interesting question: why was Singapore not able or willing to invest even more overseas instead of having substantial domestic funds linger more or less unused as working capital? Two potential answers emerge: an even higher rate of foreign investment might have undermined the policy of a controlled appreciation of the Singapore dollar, which in turn would have resulted in higher inflation and thus less of a success-story based on macro-economic stability. Alternatively, the players in the economy might not have noticed the degree of under-utilised funds in the system.

Table III.3.3.: Investment Pattern by Asset Category⁵⁰⁴

(constant 1990 S\$)	Incr. Year-End Portfolio		Overall Measure	
Public Real Estate	89,217	7.3%	757,647	6.5%
Public Manufacturing	7,408	0.6%	68,143	0.6%
Public Services	19,813	1.6%	267,451	2.3%
Public Other	220,269	18.1%	1,862,053	15.9%
Public Overseas	111,032	9.1%	1,245,018	10.7%
Private Real Estate	100,529	8.3%	960,482	8.2%
Private Manufacturing	75,677	6.2%	927,904	7.9%
Private Services	322,225	26.5%	3,093,157	26.5%
Private Overseas	154,150	12.7%	1,365,891	11.7%
Private Other	21,135	1.7%	172,422	1.5%
Not-traced	96,532	7.9%	968,371	8.3%
TOTAL	1,149,879	100.0%	11,107,675	100.0%

Given the country's standard development story as a labour-intensive manufacturing export base, it might be somewhat surprising to find that manufacturing has attracted only 6.8 percent of the total investments made, far behind real-estate (15.6%), overseas investments (21.8%) and the service sector (28.1%).⁵⁰⁵ Moreover, of the small proportion in manufacturing two-thirds came from foreign sources. This is of particular interest in respect to the discussion about the country's productivity performance, because recent studies have found considerable productivity growth in the manufacturing sector, while the overall conclusion of the TFP literature points to very limited productivity gains in the economy as a whole. Rao and Thangavelu (1998) found that FDI intensive industries as a whole experienced a significant improvement in TFP growth from -2.6% in 1974-84 to 10.9% in 1987-95. Thangavelu and Rao (1999) show very strong productivity growth in the almost exclusively foreign electronics sector.⁵⁰⁶

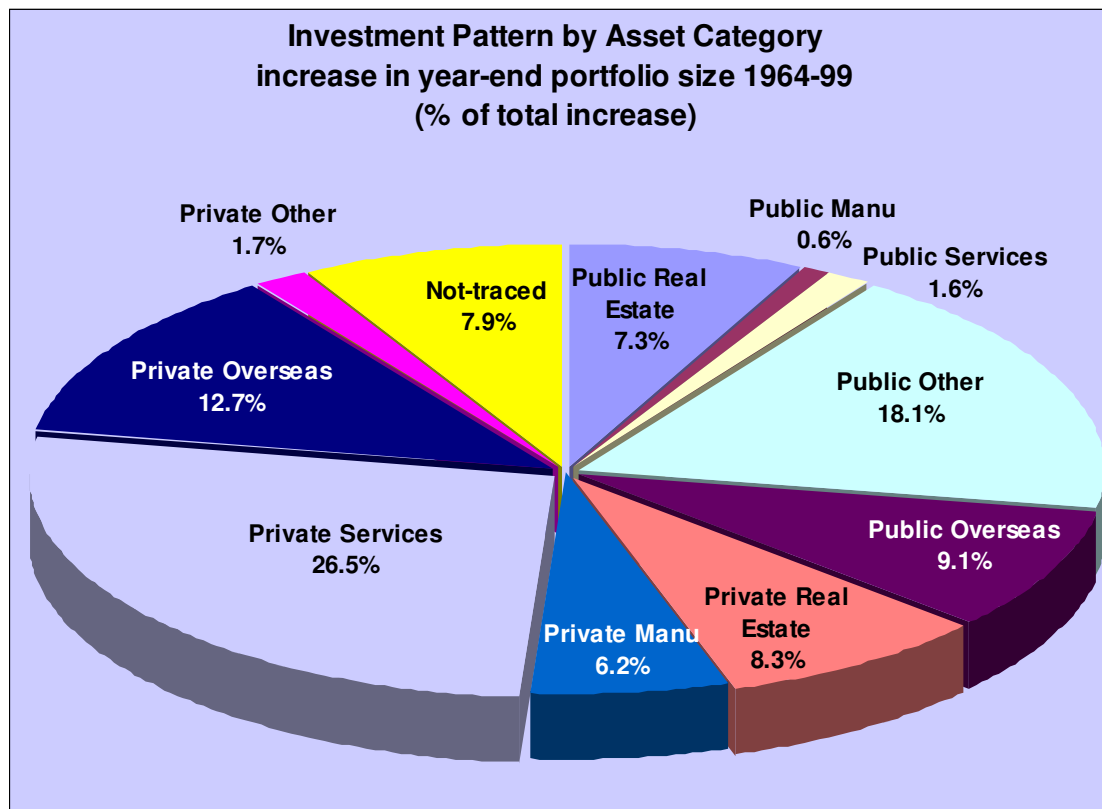
⁵⁰⁴ Foreign direct and indirect investment is considered part of the private sector for the purposes of this summary. Real Estate comprises investment in Housing, Real Estate Development as well as the Construction Industry at large.

⁵⁰⁵ Based on the overall measure the shares are: 8.5% manufacturing, 14.7% real estate, 22.4% overseas and 28.6% services. It must be noted, however, that this ranking of the recipient sectors is somewhat sensitive to that portion of the investment pool, which could not be traced or allocated. The non-traced share and the sum of Other category investments which could not be allocated due to lacking descriptions add up to 27.7%. Yet nevertheless, only if 73% of the non-traced and not-allocatable funds had gone to the manufacturing sector and none to services, would manufacturing have received the equivalent share of investments as the service sector. This seems very improbable particularly considering the fact that the main unallocatable investment portion are unspecified government investments and that the main GLCs are all in the service sector. Therefore, it seems much more likely that a sector specific treatment of the non-traced and non-allocatable investments would rather widen than close the distance between the investment shares received by the service and manufacturing sectors.

⁵⁰⁶ Thangavelu and Rao (1999) find TFP growth in the electronics sector of 8.5% between 1987-95 rising from 5.1% for 1974-84, which is significantly more than Young's (1994) hypothesis of close to zero growth for the whole economy. Young (1994) finds negative TFP growth for the manufacturing sector as a whole. Leung (1997) finds substantially lower, but still positive TFP growth in the manufacturing industries for the period 1983-93. Yet, the study is criticised by Thangavelu and Rao for not treating the 1985/6 recession years separately.

If productivity gains have been realised it appears they have been achieved in foreign dominated parts of the economy. However, it must be noted that even foreign investment preferred the service sector, with over 60 percent of foreign direct and indirect investment flowing into the tertiary sector accounting for 27.6 percent of total investments made in services. Therefore, while both domestic and foreign investors seem to have agreed on Singapore's investment opportunities in the service sector and on their respective abilities to exploit them, they appear to have disagreed on their comparative lack of opportunities in the manufacturing sector.⁵⁰⁷

Graph III.3.3.a.: Investment by Asset Category



⁵⁰⁷ Yoshihara (1976, p. 16) explains this different view about the respective comparative advantages as a response to Singapore's negative assessment of her own competitiveness in manufacturing on a world market: "the export oriented industry had to compete in the international market against well-established Western and Japanese firms which enjoy more advanced technology, better marketing and management know-how, and better access to capital. How could these disadvantages be overcome? Singapore's answer was to invite foreign investment."

That this decision to invest predominantly and from the start in the service sector might have been a superior development strategy for a government in charge of a country bereft of natural resources is supported by the generally low import leakage of the service sector.⁵⁰⁸ The MAS Quarterly Bulletin March 2001 offers a calculation which calculates the import component of each dollar of final expenditure in services to be only 0.29 cents as compared to over 90 percent imports for Petroleum refinery for example or 0.62 cents for manufacturing. While this aspect might not be of importance to the private investor, whose economic objective is to merely maximise return-on-investment, from the government's point of view guiding investment towards services makes fundamental sense because most of the income stays within the country, not like manufacturing where the predominant share of revenue needs to be spent on imported inputs. Given Singapore's resource endowment a concentration in services is therefore logical, especially if one also takes into consideration that services usually carry a high labour content, the one resource Singapore has been blessed with.

Additionally, at least the Singapore government was convinced that Singapore with its trading background was suffering from a lack of entrepreneurs suitable for exploiting manufacturing opportunities. Therefore, very early on it set out to built Singapore into a service hub, particularly a financial centre. Lee Kuan-Yew writes in his autobiography:

We did not have a group of ready-made entrepreneurs such as Hong Kong gained in the Chinese industrialists and bankers who came fleeing from Shanghai, Canton, and other cities when the communists took over. Had we waited for our traders to learn to be industrialists we would have starved. It is absurd for critics to suggest in the 1990s that had we grown our own entrepreneurs, we would have been less at the mercy of the rootless MNCs. Even with the experienced talent Hong Kong received in Chinese refugees, its manufacturing technology level is not in the same class as that of the MNCs in Singapore.⁵⁰⁹

⁵⁰⁸ See also Peebles and Wilson (2002, p. 74)

⁵⁰⁹ Lee (2000, p. 66) See also Lee (2000, pp. 543-544). The view of a lack of entrepreneurs has also been prevalent in the secondary literature. See for example Soon (1993, p.5), Rodan (1989, p. xv), Yoshihara (1976, p. 162 and p. 21), and Hermann (1970, p. 217) and Hughes (1969, p. 29 and p.33). Lee Kuan-Yew's autobiography also describes how the decision to turn Singapore into a financial centre goes back to 1968, when it was

While Singaporeans apparently did not consider opportunities in manufacturing as promising as foreigners and while the exploitation of opportunities in the service sector rested substantially on the private sphere, Singaporeans have instead had a continuous desire for overseas investments, indulged almost equally by the public and the private spheres.⁵¹⁰

In 1999 the Singapore government held (current) S\$128.5 billion in official foreign reserves, which equalled 90 percent of that year's GDP or 70 percent of total money supply (M3). On first sight this might appear excessive. However, it should not be forgotten that at the same time the government has a substantial liability through the CPF, which in 1999 amounted to S\$ 88.4 billion. The question on whether these overseas investments are indeed foreign reserves or rather pension funds rests fundamentally on the assessment of the government's (not-allocatable) other domestic investments. At the end of 1999 the central government listed quoted and unquoted investments of over (current) S\$160 billion. Yet, since no detail is provided on where and how these funds have been invested such an assessment is highly speculative, because it can only point to the government's shareholdings in a few large, well-known GLCs such as Singapore Airlines, Neptune Orient Lines, Singapore Telecom, Development Bank of Singapore etc. Therefore, the large public overseas investments are not only strikingly high but also strikingly difficult to assess. The most telling hint that these foreign reserves are actually pension funds comes from the fact that the Government Investment Corporation (GIC) is reported to have over 100 billion of these funds under its management. The GIC's portfolio includes such assets as real estate and direct investments in overseas companies. These investments are far from liquid and therefore will not be able to fulfil the

recommended that Singapore fill the time gap in the international financial world, which existed between the close of trading in San Francisco and the opening of the banks in Zurich. Lee (2000, p.72) describes the telephone conversation between Dr. Winsemius, Singapore's Dutch economic advisor, and Mr Van Oenen, the vice president of the Bank of America branch in Singapore, which gave rise to this idea. Van Oenen is quoted as saying: "If we put Singapore in between, before San Francisco closes, Singapore would have taken over. And when Singapore closes, it would have handed over to Zurich. Then, for the first time since creation, we will have a 24-hour round-the-world service in money and banking."

⁵¹⁰ The continued and substantial overseas investment flows by the public sphere contradicts some of the literature which points to the private sector as the driving force behind outward investment. See for example Yeung (1999, p.252)

standard role of foreign reserves, i.e. to alleviate a potential current account or currency crisis.⁵¹¹

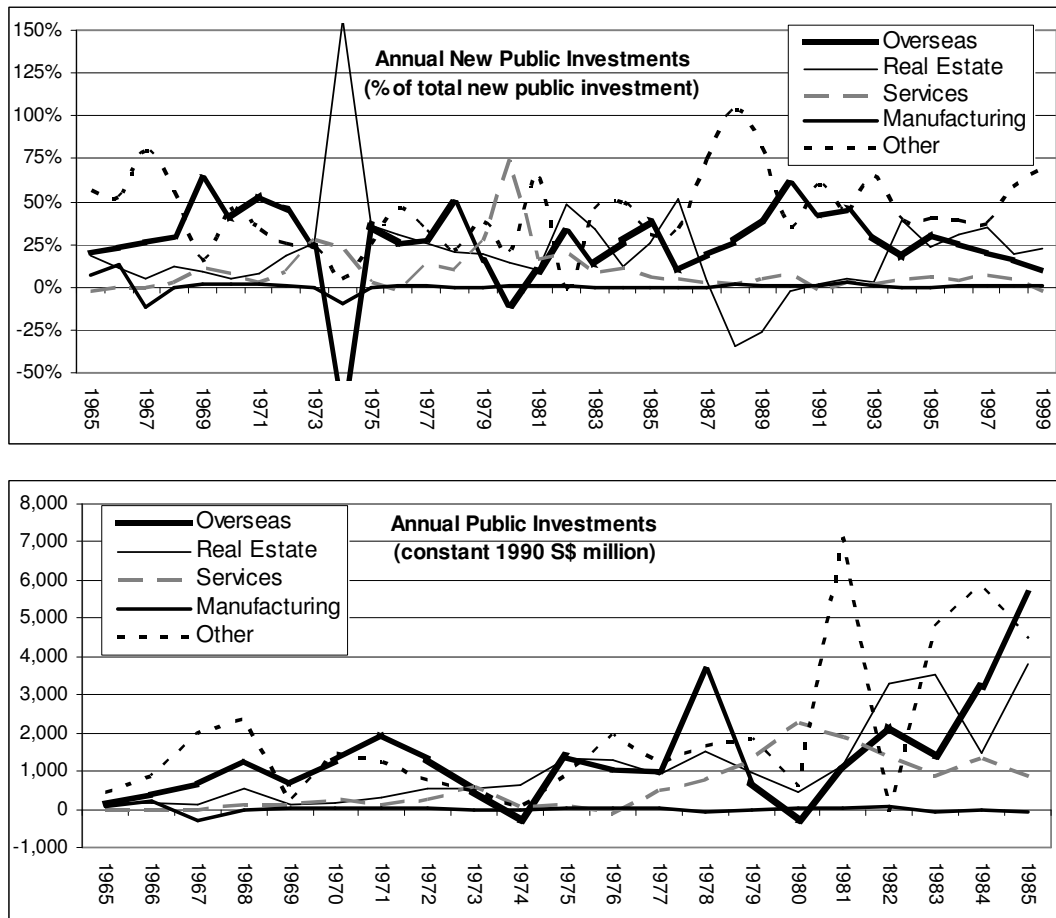
The monetary history of Latin American countries, can potentially suggest another reason for these substantial overseas investments, particularly by the public sphere. Edwards (2000) points out that almost every one of the Latin nations has tried to sterilize large capital inflows in an effort to maintain greater control over monetary policy – however rather unsuccessfully. He argues that the lack of success has been due to the fact that interest earnings on international reserves are rather low, while the central bank has to pay a relatively high interest rate to persuade the public to buy its own securities. Transplanting this argument to Singapore's history offers very intriguing insight. Contrary to the Latin American countries, Singapore was able to use the Central Provident Fund to mop up the additional purchasing power stemming from FDI (and other sources) at virtually no (real) interest cost to the government. At the same time, the government was able to profitably invest these funds overseas through its financial institutions, particularly the Government Investment Corporation. Therefore, sterilisation worked in Singapore due to the country's institutional framework and more active investment fund behaviour – but also at the cost of Singapore residents' real pension balances with the CPF. In other words, Singaporeans paid for low inflation with a negligible (real) return on their CPF balances. Whether this procedure resulted in a net social gain, however, cannot be assessed due to the fact that the GIC is not required to publish its annual reports.⁵¹²

511 The government is also substantially exposed to public sector housing. In 1999 its balance sheet showed 61.8 billion constant 1990 S\$ of loans outstanding from the HDB. However, since Singaporeans predominantly own their houses and apartments bought at some point from the HDB these loans do not have an asset value on a national level. In other words, if these assets were indeed used to pay back the CPF liabilities, then the pensioner would in essence receive a pension from the government which he would have to hand over to the HDB in service charges etc. in order for the HDB to be able to repay these loans to the government in the first place.

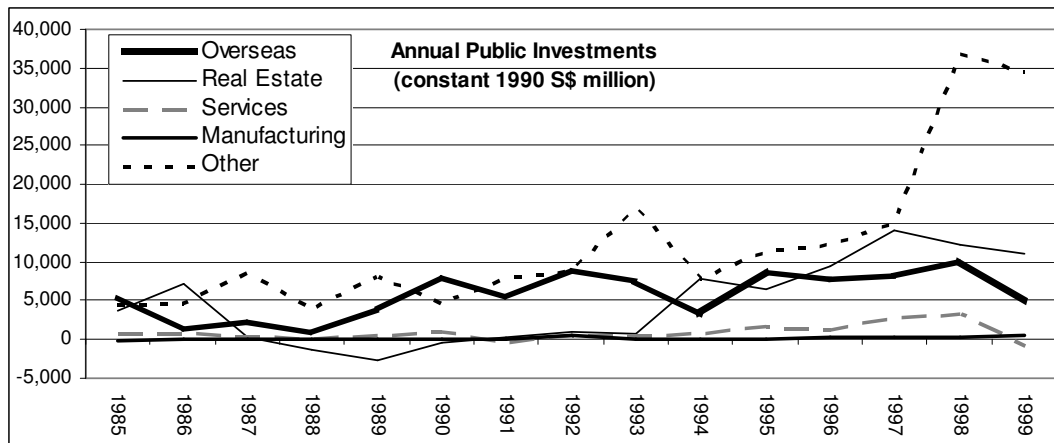
512 The income tax system also offers an institutional bias towards overseas investment, since overseas income is free of Singapore tax if not remitted back to Singapore. Even if such income is remitted, so long as Singapore has a double taxation relief agreement with the source country, no tax liability would be incurred.

In order to follow the annual investment flows and thus the development of the investment pattern over time, the (1990 constant S\$) year-end stocks of each portfolio item were converted into first differences. Graphs III.3.3.b-d show the percentage distributions, i.e. percent of total public investment flows, and the absolute figures.

Graphs III.3.3.b-d: Annual Public Investment Flows ⁵¹³



513 The not-traceable portion consists predominantly of not further specified quoted and unquoted investments. For the sake of the graph they were, however, calculated as the difference between total annual public investment flows and the sum of the flows going into overseas, real estate, services and manufacturing. Due to the lack of a 1964 year-end observation for foreign reserves, the 1965 figure for overseas investments assumes that there has been no change.

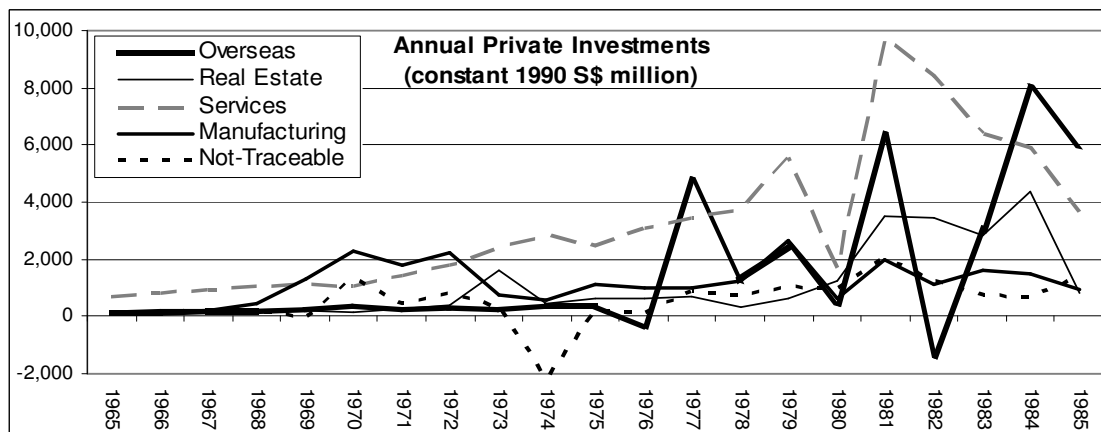
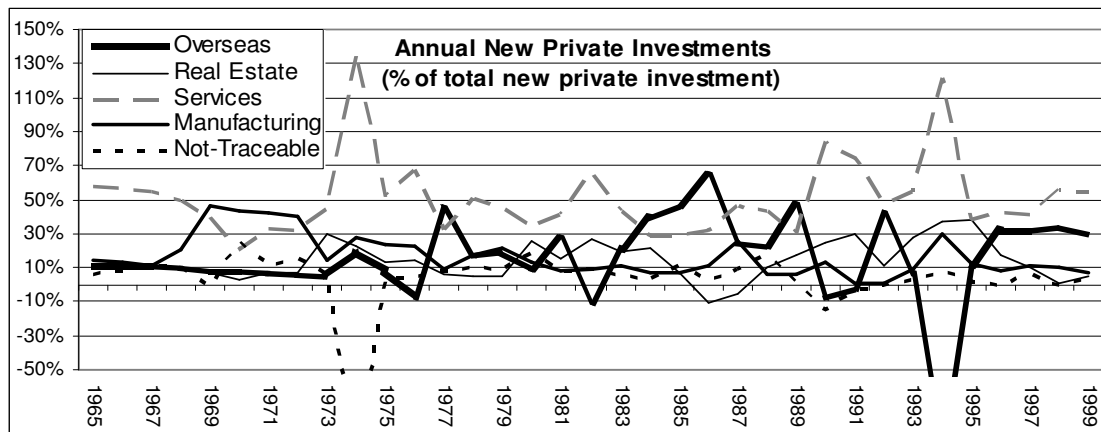


The small role of manufacturing investments for the whole period is reinforced. New investments in the service sector, however, seem to have been concentrated in the mid-1970s to mid-1980s. New overseas investments have always figured high on the government's investment agenda, apart from 1974 which shows a substantial divestment in that portion of foreign reserves not held by the MAS and BCCS most likely in response to the world-wide oil-crisis induced recession. Real estate investments figure prominently as well, with a rising importance from the late 1960s onwards. For a period until 1987 the share of new investments in real estate can even rival the share of new investments in overseas assets. Between 1986 and 1993, however, the government seems to have tried to reduce its portfolio's exposure to real estate. This coincides with an increasingly liberal policy of allowing Singaporeans to use their CPF funds to acquire their HDB apartments. Yet, from the mid-1990s on the government again increases the share of new real estate investments. The proportion of not-allocatable, new quoted and unquoted investments rises as well from the mid-1980s, which also coincided with a proliferation of the government's investment funds.

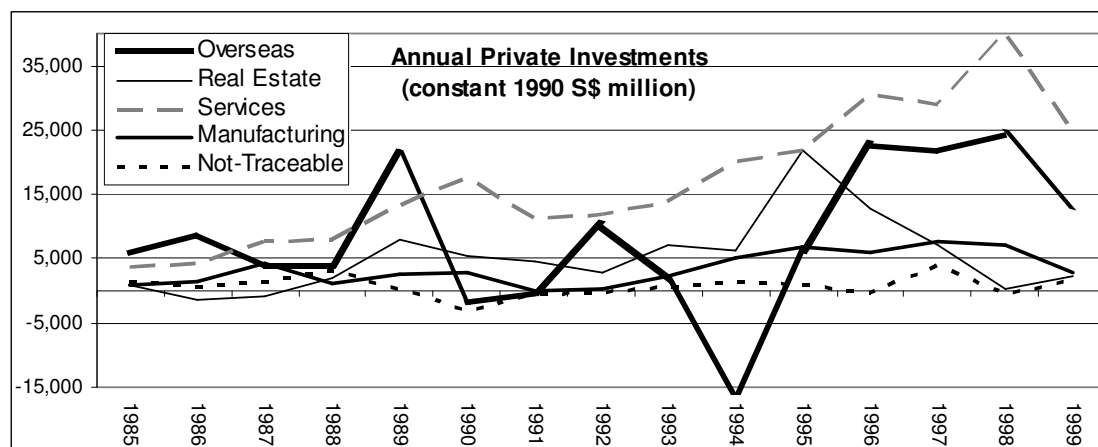
In the private sphere services have dominated for the whole period. Only for a very short time around 1970 does the manufacturing sector appear to have been the dominant target for new private investments. However, this result is

somewhat sensitive to data-limitations in this particular sector and time-period. Nevertheless, the predominant role of services is supported by the fact that in 1969 almost 50 percent of the non-government, non-cash assets of Singapore’s commercial banks’ were committed to the service sector and only about 20% to manufacturing. This finding revises the standard description of Singapore’s early development, which points to labour-intensive manufacturing as the driving force. Additionally, based on the analysis of the investment patterns a strict reading of the flying geese hypothesis must be rejected, since it would argue for a much later development of the tertiary sector. Instead Singapore ‘chose’ to develop its service sector from the outset and continuously invest overseas.

Graphs III.3.3.e-g: Annual Private Investment Flows ⁵¹⁴



⁵¹⁴ The not-traceable portion is calculated as the difference between total annual private investment flows and the sum of the flows going into overseas, real estate, services and manufacturing. Due to the lack of early observations – particularly for non-manufacturing – investments during the



III.3.4. Oversaving?

Ever since the mid-1980s there has been speculation about whether and if how much Singapore might have over-saved. What can the new dataset possibly add to that discussion? Taking the starting position from the literature, we explore the development of Singapore's Incremental Capital to Output Ratio (ICOR) over time. Additionally, we extend the ICOR concept by a Total Incremental Capital to Output Ratio (TICOR), which uses the increase in the total available investment pool instead of only considering fixed-capital investments.⁵¹⁵ Since GFCF only accounts for about half of the total available investment fund, this adjustment seems sensible if one wants to evaluate the question of whether the country has forgone unnecessary amounts of consumption. The difference between TICOR and ICOR can only be due to three factors: overseas investments, working capital and corporate investments in non-fixed assets, which have been capitalised, i.e. are shown as assets on the company's balance sheet and are thus not accounted for as an expense. Additionally, we assess the capital efficiency applying the Golden Rule to the development of Singapore's

early years of the period are sensitive to imputational assumptions. The divestment of overseas assets in 1994 might be due to data inconsistencies, since the series detailing Singapore's investment abroad changes in 1994.

capital stock and finally approach the question through a simple but revealing accounting exercise.⁵¹⁶

Table III.3.4.a. shows sub-period averages for the ICOR and TICOR concepts. The watershed of the 1985/86 recession becomes immediately visible, confirming Peebles and Wilson's (2002) argument that ICOR assessments of the 1980s might be unduly biased.⁵¹⁷ As a matter of fact, treating the two recession years separately and splitting the sample period around them reveals that the ICOR for 1987-99 is actually lower than that for 1965-84, which points to rising (fixed) capital efficiency in the second period. On the other hand, the TICOR continues to rise, indicating falling efficiency. The disparate behaviour of the two series can only be explained by higher returns to fixed capital than non-fixed capital investments in the post 1986 period.

Table III.3.4.a.: Singapore's ICOR and TICOR ⁵¹⁸

	ICOR	TICOR
1965-73	2.72	4.49
1973-78	5.13	7.66
1978-84	5.27	7.92
1985-86	90.45	164.72
1987-99	4.37	9.76
1965-84	4.55	6.92
1987-99	4.37	9.76
1965-99	4.69	9.38

Going beyond sub-period averages, annual (T)ICOR calculations have the disadvantage of being rather volatile. However, since we are predominantly interested in Singapore's development since the country's independence, using 1964 as the base year for an alternative (T)ICOR calculation, i.e. cumulative GFCF

⁵¹⁵ The (T)ICOR indices are calculated using GNP instead of the more customary GDP in order to ascertain consistency with the other parts of the chapter and explicitly allow for the effect of income on overseas investments.

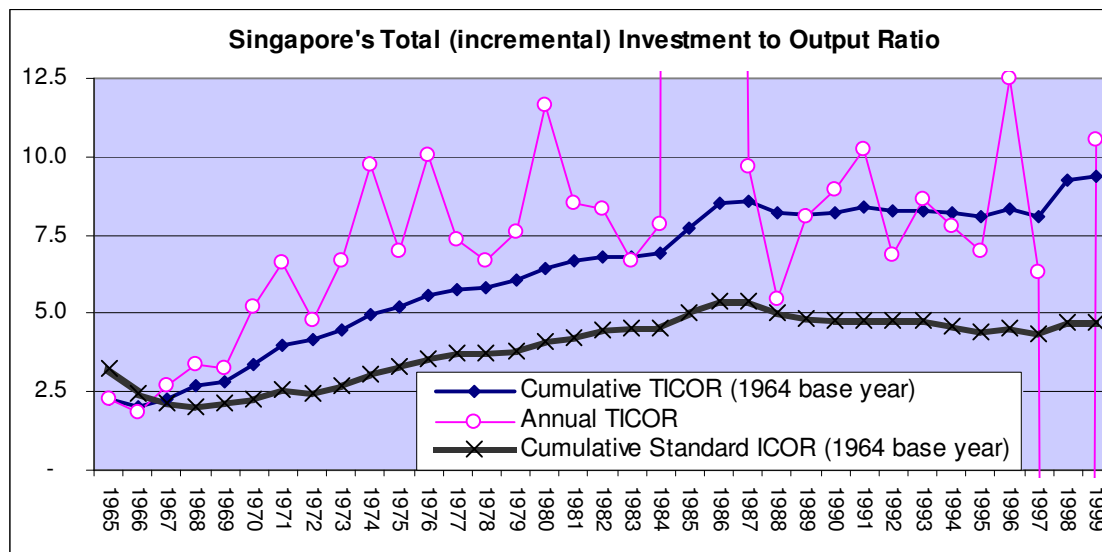
⁵¹⁶ For an assessment using financial counterfactuals see Section III.5. 'Excuse: Financial Assessment of Singapore's Oversaving' at the end of this chapter.

⁵¹⁷ Peebles and Wilson (2002, p. 67)

⁵¹⁸ The periodisation is based on the government's own view of Singapore's development stages. It is taken from PAP (1985, pp. 170-179) as described in section III.1.2. and extended by treating the Singapore recession of 1985/6 separately and the remainder of the period 1987-99 as one sub-period.

since 1965 over the change in real GNP since 1964, seems both historically sensible and analytically more revealing. As graph III.3.4.a. shows, the increasing distance between TICOR and ICOR is again striking. The inclusion of non-fixed asset investments can make a substantial difference to the evaluation of Singapore's investment success.

Graph III.3.4.a.: Singapore's Investment and Saving Ratios



Comparing, as is generally done, one country's ICOR with another's is not particularly helpful if one wants to evaluate the investment success. Since investing in another country's GNP and participating in that country's GNP is not an investment option. Instead one economy can only invest in another country's companies. Therefore, the appropriate benchmark with which to compare Singapore's TICOR would be the price-earning ratios of other countries' stock markets. The price-earnings ratio compares the earnings of a company with its stock market valuation. In essence, this allows for the same interpretation as the TICOR, namely that at a price-earnings ratio of x the company would need to achieve at least the same earnings for a period of x years to justify its price, i.e. the investment necessary to acquire the share. In 1999 Singapore had

accumulated investments of S\$ 1,218 billion, gross-fixed-capital assets of S\$ 609 billion and had achieved an increase in annual GNP of 130 billion (all in constant 1990 S\$). This equals a TICOR with base year 1964 of 9.38 and an ICOR with the same base year of 4.69. With a TICOR of a little over nine Singapore would need to stop investing for a period of a little over nine years while keeping its real GNP level in order to recoup her investments. From this perspective, a TICOR of a little over nine in the late 1990s does not look too bad, since most international stock markets had average Price-Earning Ratios significantly above 9 at that time.⁵¹⁹ In other words, if Singapore had wanted to acquire similar earning streams than what it enjoyed by 1999, it would have had to pay a much higher price at the end of 1999 than what it actually did by investing in her own economy over the course of the preceding thirty-five years. If Singapore was to indeed withdraw the whole investment pool at the end of 1999 and invest it in the Financial Times 30 stock market index it would only gain the rights to a little over a third of the earnings it realised by investing in her own economy. From that point of view, the investment was highly successful.⁵²⁰

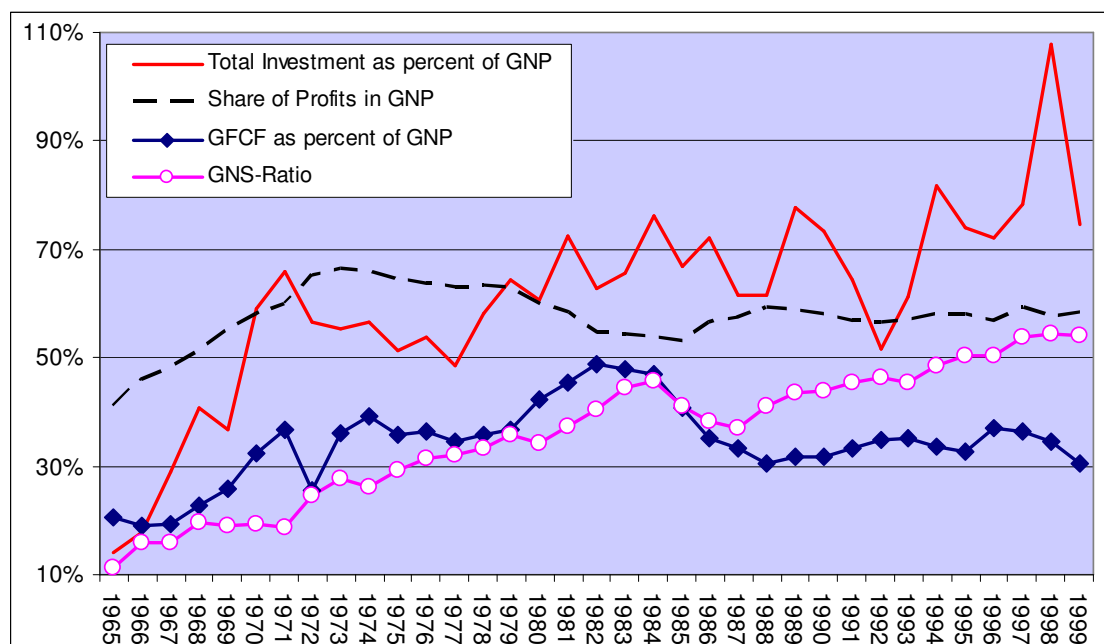
Beyond pointing to the relative falling efficiency of non-fixed assets and interpretations of possible comparisons with other countries, whose economies operate at different ICOR levels or whose stock markets offer different investment opportunities, it is difficult to draw definite conclusions from the mere observation of (T)ICOR indices. The question of over-saving can not be adequately resolved this way. However, macro-economic theory can further our investigation. The Golden Rule Rate of Investment states that the capital stock should be increased so long as steady state consumption also rises or in other words the optimal level of investment in the steady state is achieved when the marginal product of capital equals the depreciation rate. Under the general

519 For example, the price-earnings ratio of the shares combined into the Financial Times 30 index stood at 22.40 on December 30th, 1999, with a high of 25.41 and a low of 15.80 over the course of the whole year.

520 The Exkurse in Section III.5. calculates a similar counterfactual by assuming that Singapore had invested all of her savings in the NYSE composite index, yet not as one lump-sum investment in 1999 as the comparison of p/e-ratio and TICOR assumes but annually over the course of the whole development period. It comes to the conclusion, that although the counterfactual is unrealistic, if it had nevertheless been possible, investing in the NYSE composite index would have yielded a comparable increase in income by 1999 than the one actually achieved by Singapore's own economy.

assumption of diminishing returns, any additional investment beyond this level would result in a fall in total consumption, since the incremental cost of depreciation to the economy would be higher than the additional output achieved.⁵²¹

Graph III.3.4.b.: The Golden Rule⁵²²



The marginal product of capital is generally estimated as the factor share of capital in GDP, which empirically lies around 30 to 35 percent. Therefore, in the

521 The Golden Rule condition that the optimal level of saving is reached when the marginal product of capital (MPK) is equal to the depreciation rate (δ) can be quite simply derived at mathematically taking its starting position from the basic consumption identity in the steady state, where investment is equal to depreciation: $C = f(K) - \delta K$, where C stands for the total consumption of the economy. K is the total capital stock and $f(K)$ the economy's total output. To find the K, which maximises C in the steady state, we need to differentiate to find $dC/dK = f'(K) - \delta$ and set this derivative to zero. Since $f'(K)$ is nothing else than the marginal product of capital, we obtain the Golden Rule condition of $MPK = \delta$ for the optimal level of investment. If the model is extended to include population growth (n), the Golden Rule condition is achieved if $MPK = \delta + n$. If the model is further extended to allow for technological progress (g) the Golden Rule condition is given as $MPK = \delta + n + g$. Or in other words at the Golden Rule level of capital, the net marginal product of capital ($MPK - \delta$) equals the rate of growth of total output ($n + g$). An alternative interpretation of the Golden Rule therefore says that as long as the net marginal product of capital is larger than the growth rate, the economy would benefit from additional capital investments. For an explanation of the Golden Rule see most macroeconomics textbooks, for example Miles and Scott (2002, pp. 102-104) or Mankiw (2000, pp. 89-97). For an early discussion see Phelps (1961).

522 Sources: GFCF taken from 1960-95 from Department of Statistics: Singapore System of National Accounts 1995; Singapore, 1996; pp. 86-103; 1996-99 taken from Dept. of Statistics: Statistical Yearbook (various issues); Share of Profits: see NWage Series in Chapter One, which is based on various sources for total remuneration. The Profit Share appears relatively high, compared to the regularly assumed one-third of GDP. However, even the Singapore Department of Statistics (1997) puts it at an average of 0.551 for 1973-96 and Young (1995, p.658), calculating his estimates using interpolation from Input-Output tables, finds Singapore to have the highest capital factor share within his sample of Taiwan, South Korea and Hong Kong. He works from an average of 0.491 for 1966-1990. The average of our series is 0.5772. Asher (1999, p.1) argues that the Singapore government followed a policy to keep the wage share in national income as low as possible and correspondingly keep the share of capital as high as possible. With respect to the following analysis, if anything this high profit share gives our subsequent analysis a conservative character, since the gap between profit-share and investment-share is lower than if we had employed other, lower estimates.

steady state where depreciation equals investment, the 'optimal' investment is generally approximated as lying between 30 and 35 percent. While the country is moving towards a new, higher steady state from a comparatively low level of capital in the economy the investment rate can be higher until the depreciation rate matches the marginal product of capital. Based on this criterion and given the development of Singapore's Gross-Fixed-Capital-Formation as shown in graph III.3.4.b. no clear over-investment becomes visible, since the GFCF-rate stays largely within the target range.

An alternative reading of the Golden Rule has been proposed by Abel et al. (1989). If an economy is capital efficient, they argue, the operating profits of the corporate sector should be large enough to cover investments. If they are, the corporate sector has been a net-source of funds for consumption. But if investments exceed profits, then the capital stock has been financed at the expense of consumption. Comparing Singapore's gross-national-savings and the profit share as shown in graph III.3.4.a. give no indication of oversaving until possibly the very end of the period. However, once we consider total investments made, i.e. inclusive of the substantial savings appropriated from abroad, the assessment changes dramatically. Considering total investments made, the economy has been lacking capital efficiency from the early 1980s onwards, which can be interpreted as support for the oversaving hypothesis.

Table III.3.4.b. compares the averages for sub-periods. With the investment share averaging at 60.7 percent and the achieved average profit share at 57.7 percent, Singapore appears to have over-invested three percent of cumulative GNP between 1965-99. Moreover, splitting the sample period around the 1985/86 recession shows that over-investment has been concentrated in the post 1986 period when the investment share stood at more than 14 percent of GNP above the profit share.

Table III.3.4.a.: Total Investment vs. Profit Share (both as percent of real GNP)

	Total Investment	Profit Share
1965-73	41.7%	54.6%
1973-78	53.9%	64.5%
1978-84	65.7%	58.3%
1985-86	69.5%	54.8%
1987-99	72.3%	58.0%
1965-84	52.3%	57.9%
1987-99	72.3%	58.0%
1965-99	60.7%	57.7%

One could argue, that based on these results Singaporeans could have potentially lowered their savings rate and thus have enjoyed higher consumption levels without affecting the economy's wellbeing. However, because foreign and domestic investment can not be considered disjointly due to their multiple interactions and feedback mechanisms, the question whether the potential over-investment can be translated one-to-one into domestic over-saving depends on one's view of how much domestically financed investment was necessary in order to make Singapore such a successful recipient of foreign investment. The central question therefore turns out to be whether and to what degree lower domestic savings would have also lowered foreign investment in Singapore. While this cannot be established with an exact elasticity, looking at Singapore's own substantial overseas investments allows us to make a lower bound estimate. Even if we assume that all of the government's overseas investments were necessary in order to generate through its foreign reserves the required macro-economic stability requested by foreign investors, private overseas investments by Singaporeans will have hardly attracted foreign funds to Singapore. It is save, therefore, to assume that private overseas investments, which totalled (constant 1990) S\$ 154,500 millions or 11.28 percent of cumulative real 1965-99 GNP, could have been lowered by three percent of GNP without significantly affecting the country's ability to attract foreign investments. Thus, it can be argued that as a conservative estimate Singapore over-saved the equivalent of (at least) 3 percent of cumulative 1965-99 GNP and this largely in the period after 1980.

Moving beyond macro-economic theory, the simplest but potentially most revealing way of addressing the question of oversaving is to look at how much of the saving did go unused. Table III.3.4.b. offers the respective calculation, in which cumulative GFCF for 1965-99 together with all overseas investment is deducted from the total investment pool, which was available for these years. The balance can only be working capital or corporate investments in non-fixed assets, which have been capitalized onto the companies' balance sheets.⁵²³

Table III.3.4.b.: Working Capital in Singapore

1990 constant S\$ million	
Cumulative Investments 1965-99	1,217,986.29
Less Cumulative GFCF	- 609,117.33
<u>Less Cumulative Overseas Investments</u>	<u>- 269,437.74</u>
Equals Working Capital	339,431.22

The calculation shows that as an upper limit a little over 27.5 percent of the total investment pool were merely used as working capital, i.e. did not find a final investment target. If we were to assume that the 7.9 percent share of the investment pool, which can not be traced, was fully invested overseas, we obtain a lower limit bound of a little under 20 percent.⁵²⁴ This means that in a conservative estimate almost every fifth dollar, which Singapore had available for investment purposes, did not find a final investment. Twenty percent of the total investment pool equals about fourteen percent of the cumulative real GNP for 1965-99. Saving fourteen percent of GNP only for it to be used to help 'oil the system' appears somewhat high, although again no benchmark exists of how much working capital an economy requires. Moreover, Singaporeans and

⁵²³ Unfortunately, there is no information available about the amount of potential non-fixed capital investments capitalized onto corporate balance sheets. However, since this can only be capitalised patents, royalties or goodwill it is not likely to having been a substantial amount in terms of their share in GNP.

⁵²⁴ The portion of the investment pool which can be traced but not allocated, such as the unexplained quoted and unquoted investments by the government or parts of its capital expenditures, are not likely to having been overseas investments, because foreign investments are shown as a separate item on the government's financial statements and capital expenditures do by definition not allow for overseas investments.

particularly their government but also the country's foreign direct investors valued stability very highly.

Nevertheless, this large proportion of savings which was not put to a direct investment combined with the finding of over-investment based on the Golden Rule indicates that even though Singapore's investment performance must be considered a success, it could have potentially been achieved with lower (domestic) savings. Therefore, Singaporeans could have (in retrospect) enjoyed a higher level of consumption by at least three percent of cumulative GNP without affecting the country's growth performance. Particularly in the second half of the period gross national savings were unnecessarily high by more than ten percent of GNP. The thus generated investment funds went largely unused.

III.3.5. Crowding Out?

A related issue is the question of whether the high government involvement has crowded-out private enterprise. The IMF (2000), for example, argues that the overwhelming power of government owned companies in Singapore is "likely to have crowded out local private enterprise and thus prevented the development of a large and dynamic network of local corporations, contributing to the widely perceived lack of corporate dynamism in Singapore."⁵²⁵ On the other hand, Huff (1994 and 1995c) argues that public investment most likely crowded-in private investment. He points out that crowding-in would help explain the paradox of high public sector savings and yet reliance on private sector capital formation: "public sector savings which finances infrastructure brought even higher private sector investment. A possible drawback, however, was that private industry

⁵²⁵ IMF (2000, pp. 10-11)

crowded in was largely foreign.”⁵²⁶ At face value, our analysis so far could be understood as showing an even more direct form of crowding in. The government gave up control over savings and thus allowed the private sector to make the investment decision. Contrary to Huff (1994 and 1995c), however, it was not private industry investments, which were crowded in, but largely service sector investments. The surrender of control by the government combined with the fact of considerable unused funds in the economy, therefore, would cast some doubt over the argument that the government’s strong involvement in the economy has crowded out private domestic investments – at least from a financial point of view.

However, a closer look reveals a significantly different picture. Until 1995 Singapore published GFCF separated by public and private sector. Combining this information with our new database and applying the same calculations as in table III.3.4.b. shows that indeed the Singapore government kept the private sector at a tight financial leash.

Table III.3.5.: Crowding Out

1990 constant S\$ million	
Government controlled investment pool 1965-95	442,433.99
Less Real Public GFCF 1965-95	112,679.16
<u>Less Real Public Overseas 1965-95</u>	<u>79,623.88</u>
Collected Working Capital 1965-95	250,130.94
Private controlled real investment pool 1965-95	353,913.80
Less Real Private GFCF 1965-95	324,507.65
<u>Less Real Private Overseas 1965-95</u>	<u>71,830.40</u>
Collected Working Capital 1965-95	(42,424.25)

As table III.3.5. shows the government appears to have been responsible for the collection of the considerable amounts of working capital described above, while

⁵²⁶ Huff (1994, pp. 338-339). In Huff (1995, p. 1431), however, he argues that an “Adaptation, frequently suggested in the mid-1960s, of a Hong Kong development model reliant on small Chinese manufacturing enterprise and so local entrepreneurs appears never to have been seriously considered by the PAP. (...) It’s decision to rely for economic development on MNEs and state-owned enterprises allowed Singapore’s local business elite largely to be excluded from the decision-making process.”

on the other hand the private sphere seems to have experienced a financial crunch. The repurchase of government bonds shows nicely how this crunch has been remedied by the government by giving up control over parts of the savings appropriated into its realm of influence. At the end of the 1995/96 financial year the government's financial statements show (constant 1990 S\$) 42,571 million in government bonds and deposits with investment agents, which equals almost exactly the underfunding of the private sector. Additionally, the government's other investments of almost (constant 1990 S\$) 100 billion in quoted and unquoted investments will have further eased the private sector's financial tension. Yet, it must be assumed that these investments contrary to the repurchase of government bonds also came with a substantial degree of control by the government over the investment target's decision process and it is therefore doubtful whether they can be considered as evidence against crowding-out.⁵²⁷

While we can not show whether this tight leash has actually led to unfulfilled investment and the neglect of other entrepreneurial opportunities in the private sector, the disparate financial endowment seems to nevertheless rather support the crowding-out than the crowding-in hypothesis. If crowding-in has taken place it was under strong and financially direct influence of the government.

⁵²⁷ In addition, the government's financial statements also show a cash position of (constant 1990 S\$) 38,793 million and outstanding loans to the HDB of (constant 1990 S\$) 27,590 million, which are anybody's guess on whether they should actually be considered as capital expenditure and thus GFCF, see the discussion in sections III.3.2. and IV.3.

III.4. Conclusion

Essentially, this chapter intended to determine how the substantial amounts of savings were transformed into investment. In combination with the by now well-established growth literature and the saving investigations of Chapters One and Two, this link will be able to close the circle of Singapore's development: saving based on favourable circumstances, which were very well exploited, leading to investment, which in turn lead to growth and thus enabled more saving.

The investigation is able to establish for the first time the exact degree of control exercised by Singapore's government over the country's investment decisions. On a conservative estimate the government managed to appropriate the equivalent of eighty percent of the country's (real) gross national savings between 1965-99 into its realm of influence. The Government also acted as a very active Investment Fund Manager, who however delegated one third of his control over the appropriated funds to the private sector. In this respect Singapore has been a clear case of government control along the lines of Amsden and Wade: a pro-active state, which interferes in an hands-on, practical and substantial way in the economy, much more so than North's notion of a strong but limited government whose main role is to create efficient organizational structures, and even stronger than Eichengreen's, whose state only gets involved in re-distributory negotiations through its guarantee of a social contract.

In terms of industrial policy, contrary to the standard development story which is based on Singapore exploiting her comparative advantage in cheap-labour manufacturing, the exercise finds that private investment was predominantly directed towards the service sector and public investment largely towards overseas. Based on their investment decisions Singaporeans did not see an exploitable comparative advantage in manufacturing. Even foreign investors, who dominated the comparatively little manufacturing investments made,

primarily committed their funds to the tertiary sector. The analysis also shows that Singapore was not a flying goose in the strict sense. Singapore's development did not follow a flying geese pattern in which the country copied another country's earlier development success story and invested in a successive list of increasingly advanced industries. Instead Singaporeans decided to invest in the tertiary sector from the start. If at all, it was the foreigners who were the flying geese, using Singapore for their own industrial sequencing.

Additionally, it becomes apparent that Gross Fixed Capital Formation captures only about half of total investments made, which casts some doubt over other analyses merely based on GFCF. The exercise is able to show that as a lower limit about one fifth of the total investment pool or fourteen percent of cumulative 1965-99 GNP was used as working capital, which would indicate that a more efficient use of the funds, i.e. less foregone consumption, could have still been possible without affecting the investment success. Singaporeans could have (in retrospect) enjoyed a higher level of consumption by at least three percent of cumulative GNP without affecting the country's growth performance. Particularly in the second half of the period gross national savings were unnecessarily high by more than ten percent of GNP. Although not strictly comparable due to very different methodologies employed, it is striking how close this finding is to the policy impact on Singapore's savings established in Chapter One, which ranged from five to ten percent. The collected working capital appears to have been accumulated solely by the public sphere, which has surrendered some of it to compensate the financial limitations of the private sector.

Combining these findings with the results from Chapter One, it can be argued that while Singapore's savings in the second half of the period might not have been surprising, i.e. could have been expected of a country given Singapore's circumstances, they were nevertheless unnecessarily high. In retrospect,

Singapore consumers could have enjoyed a higher standard of living, without affecting the country's economic development. Expanding the metaphor from Chapters One and Two, the exercise shows that the trainer has committed the child to a highly controlled and unnecessarily ambitious training and competition schedule. In retrospect, we can say that the child could have had a little bit more fun, particularly during its adolescence, without endangering its success.

III.5. Excuse: Financial Assessment of Singapore's Oversaving

Even though financial theory has made major advances since the 1950s, it remains notoriously difficult to evaluate the efficiency of investments. While calculating the respective return might be comparatively easy, assessing that return and thus finding ex-ante performance benchmarks of similar risk-levels remains difficult. Therefore, we try to assess the country's investment performance through two counterfactual analyses. The counterfactuals try to estimate for two alternative investment strategies that return, which would have been necessary in order for these alternative scenarios to have yielded the same increase in income as Singapore's actual investment behaviour. This makes Singapore's actual investment success assessable.

If Singapore had used her savings in a purely financial manner and thus invested each year's addition to the investment pool as well as all cumulative investment revenue since 1965 in interest bearing debentures an annual real return of 6.21 percent would have yielded additional (real) income in 1999 equal to the increase in GNP actually achieved since 1964.⁵²⁸ Therefore, the (real) internal rate of return of Singapore's investment over the thirty-five years since the country's independence was a little over six percent per year. Table III.5. shows the spreadsheet procedure which was used to iteratively determine this internal rate of return.

Table III.5.: Singapore's Internal Rate of Return

Constant 1990 S\$ million	1965	1966	1967	...	1999
Starting Balance	0	1,125.33	2,760.78	...	2,091,440.86
Real Interest Earned	0	69.91	171.50	...	129,920.31
<u>New Saving that year</u>	<u>1,125.33</u>	<u>1,565.55</u>	<u>2,861.96</u>	...	<u>102,377.53</u>
Ending Balance	1,125.33	2,760.78	5,794.25	...	2,323,738.70
Increase in GNP since 1964					129,923.96

⁵²⁸ This calculation assumes that the saving is invested at year end. On the assumption of investment in mid-year, the real internal rate of return falls to 6%.

Considering this calculation a 'counterfactual' analysis in economic terms, however, brings out its main caveat. Although it is financially instructive, it is nevertheless historically impossible and thus not really useful for a benchmark analysis on which to base one's evaluation of the country's investment success. Investing the country's whole savings purely in financial instruments is neither politically nor economically viable. The saving performance, particularly of the early years, would not have been possible if the increase in GNP had been restricted to the interest earned from earlier financial investments. For example by 1970 Singapore's real GNP had already increased by (constant 1990) S\$6.8 billion from its starting base in 1964. The country also managed to add (constant 1990) S\$ 8.5 billion to its investment pool in that year. This would have been impossible if the increase in incomes would have been restricted to the interest earned on the financial investments of the last five years, which equals only (constant 1990) S\$ 1 billion. As a matter of fact, the assumption of the same saving behaviour as if the country had invested in its own infrastructure etc. would require Singaporeans in 1970 to have invested the equivalent to one hundred percent of their income.⁵²⁹ In other words, Singaporeans would have never been able to save as much as they have without the increase in income stemming from the growth generated by domestic investment. Given the investment performance which Singapore was able to realise the country did indeed achieve a real internal rate of return of a little over six percent. But Singapore would never have been able to follow such an investment performance had her income only increased by the equivalent of six percent on past investments.

A similar outcome is obtained if one assumes that Singapore had invested the additions to her total investment pool since 1965 annually in an equity portfolio tracking the performance of the NYSE composite index. Assuming –

⁵²⁹ GNP in 1964 = 7.5 billion. The additional income due to past investments in financial instruments at real rate of return of 6.21% would have yielded additional income of 1 billion in 1970, making that year's GNP 8.5 billion, which is exactly the amount which Singapore was in reality able to invest in 1970. All constant 1990 S\$.

counterfactually – that the country would have still been able to realise the same gross national savings, attracted the same amounts of FDI and had the foresight to sell its portfolio at the end of 1999, the country's total investment pool would have increased to over (constant 1990) S\$ 3.577 trillion, only based on the capital gains in the NYSE composite index.⁵³⁰ If reinvested in 1999 in interest bearing bonds with a real interest rate of 3.62 percent, this would yield (constant 1990) S\$ 130 billion income to Singaporeans, which equals the increase in (real) GNP since 1965. Given the fact that a real interest yield of 3.62 percent at the end of 1999 is not unreasonable, this counterfactual would argue that had it been possible for Singapore to simply invest the total investment pool in US stocks, the country would have potentially achieved a similar increase in GNP as was achieved by the country's actual domestic investment.

⁵³⁰ The historical NYSE composite index data was taken from the NYSE internet page (last updated 12.06.2003) at: <http://www.nyse.com/marketinfo/p1020656068262.html?displayPage=%2Fmarketinfo%2Fmarketinfor.html>. The lack of inclusion of dividend payments in the available data series can be rationalised in our case by assuming that these dividend payments would have been used to cover the expenses of the fund, which have also not been included in the counterfactual analysis.

IV. Concluding Remarks

Singapore's history holds many clues to understanding fast, capital-driven economic development. The thesis has examined some of the central, yet so far unresolved issues. The methodologies employed were largely quantitatively driven, the approach therefore predominantly investigative and not so much argumentative. The resulting findings are presented in a concise format in the Executive Summary at the beginning of the thesis. But how do these quantitative findings alter our qualitative perception of Singapore's economic history beyond each individual figure's respective impact? The following concluding remarks intend to briefly highlight two such aspects crucial to understanding Singapore's recent economic history and then extend the findings of the thesis to point to some likely challenges in Singapore's future.

IV.1. Favourable Starting Position

Both saving chapters point to a number of circumstances in favour of Singapore's saving transition and thus in favour of her capital-driven rapid development, such as the opportunity presented by the country's demographic transition and its geographic location allowing for a strong external position.

Beyond those circumstances which can be quantitatively assessed there are quite naturally a number of others which can not. Lucky timing is one of them. The country's comparatively late independence allowed Singapore to learn from the

mistakes of early developers.⁵³¹ The economic situation right after independence was furthermore helped by extraneous factors like the Vietnam war and the resumption of trade with the ‘new order’ in Indonesia. Rodrik (1996) also points to a relatively well educated work force, which in turn he argues made it easier to establish a competent bureaucracy as well as enhancing the productivity of interventions aimed at boosting private investment.⁵³² A comparatively equal income and wealth distribution is also regularly mentioned as a reason for a well functioning public administration.⁵³³ The political economy argument in essence maintains that societies with lower inequality will resort to less redistribution and grow faster, since redistribution acts as a tax on accumulation.⁵³⁴ Due to her free-trade history, Singapore did not have a problem accepting foreign economic influence, as Huff (1995) points out.⁵³⁵ Moreover, it should not be forgotten that Singapore was at her independence one of the richest Asian nations, which again is due to the country’s excellent geographic location, and had already shown a decent growth performance from the mid 1950s onwards.⁵³⁶

⁵³¹ See for example Goh (1971, p.9) as he describes the lessons learnt from other countries, which focused on import substitution policies, or Goh (1972, p. 43) in a 1967 radio interview or Goh (1972, p. 79) in a paper presented at a conference in February 1965. Lee (1998, p. 538-9) describes his impressions from his 1964 trip through Africa and subsequent missions in 1970 and 1979 as an unforgettable lesson in decolonisation, the crucial role of social cohesion and a capable, effective government to take power from the colonial authority. He summarises his experiences: “When misguided policies based on half-digested theories of socialism and redistribution of wealth were compounded by less than competent government, societies formerly held together by colonial power splintered, with appalling consequences.”

⁵³² Rodrik (1996, p. 20-21)

⁵³³ Huff (1995, pp. 1422-23) points out for example that Singapore had for Asian standards a substantial middle class and less of an immigration problem. See also Rodrik (1996), Alesina and Rodrik (1994), Persson and Tabellini (1994), George Clarke (1993) and Nancy Birdsall, David Ross and Richard Sabot (1994) or specifically on wealth distribution Bardhan (2001)

⁵³⁴ Rodrik (1999) additionally argues that the economic costs of external shocks are magnified by the distributional conflicts that are triggered and that this diminishes the productivity with which a society’s resources are utilized.

⁵³⁵ Huff (1995, p. 1434): “In Singapore ... development through multinationals as a substitute for local entrepreneurship required of the Republic no more than what historically it had always done – to respond to changes in the international economy and the resulting requirements of foreigners.”

⁵³⁶ Huff (1995, p. 1422-23); Goh (1972, p. 37), for example, writes in a 1966 speech to the Malayan Society: “In Malaya and Singapore, the primary accumulation of capital on which subsequent growth was mounted took place during the colonial era about the turn of the century.

Our findings reinforce the argument about the importance of a favourable starting position for Singapore's subsequent development. Rather than against all odds, as the PAP's legacy tries to describe Singapore's development success, the nation's true success story lies in how well the favourable odds have been exploited.⁵³⁷ This is far from a lesser achievement, but a different and more realistic one. Moreover, it is significant for those nations trying to learn from and possibly copy Singapore's development policies. Before doing so, they need to assess their own starting position, how it compares to Singapore's in the 1960s and how they can possibly compensate for differences. The analyses of this thesis should help in that undertaking.

IV.2. The Role of an Altruistic Generation and a Sense of Crisis

Putting a definitive paid to the notion of Singapore's success being due to the free movement of market forces, the thesis has been able to establish (lower limit) estimates on the degree of control exercised by the government over the nation's savings and the resulting degree of unnecessarily foregone consumption. The thesis therefore lends support to those interpreting the growth accounting literature on Singapore as an indication that the country's success was due to sacrifices.⁵³⁸ The thesis has shown which instruments the government used and which opportunities it was able to benefit from. However, while it has been relatively easy to establish which institutional tools the Singapore government employed to gain its high degree of control, it is more difficult to reason how it

This process produced conditions as abominable as those in Western Europe, the Soviet Union and Japan during the first stages of their industrial revolution."

⁵³⁷ Or as Huff (1994, p. 369) puts it: "Singapore became rich because it was already relatively rich, and because it had good policies."

⁵³⁸ Most forcefully Krugman (1994, p.78): "If there is a secret to Asian growth, it is simply deferred gratification, the willingness to sacrifice current satisfaction for future gain."

persuaded at least one generation of Singaporeans to allow such a high degree of control and forego substantial amounts of consumption for the sake of future generations.⁵³⁹ The thesis, especially the bridge built by its investment analysis to the existing growth accounting literature, shows that this role of an ‘altruistic generation’ must be considered the decisive factor in Singapore’s economic history.

One possible explanation is offered by Michael Barr (2000), who points out that since the expulsion from the Federation of Malaya Singapore was governed under a constant fear of crisis. Barr (2000) referring to Arnold Toynbee’s ‘Challenge and Response’ thesis, argues that Lee Kuan-Yew and the PAP have used the opportunity presented by the expulsion to face Singaporeans with the challenge to survive and to convince them to make immediate sacrifices. This has led to Singapore being governed under a constant sense of crisis, internal and external enemies and the re-occurring need to respond to some new crisis which needs all to stand up for Singapore and support the PAP.⁵⁴⁰ This strategy has been employed to the present day. Peebles and Wilson (2002) argue that even in contemporary Singapore “the government seems keen to keep its people in fear

⁵³⁹ That the PAP government knowingly aimed for a strategy of sacrifices combined with a highly controlling government becomes evident in the following quote from Goh (1972, pp.34-5) taken from a speech given in 1966 to the Malayan Society: “In the history of advanced industrial nations of today, except the fortunate few well-endowed with natural resources such as the United States and New Zealand, the first stage of economic development had been a harsh and cruel phase. It meant the destruction of traditional institutions and the imposition of terrible sacrifices on the vast majority of the population. In most instances the first stage of economic growth represented a traumatic experience. It was possible to drag the country through it only within a strong political framework. Such was the experience of Britain and Western Europe during the Industrial Revolution, and Japan too during the Meiji Restoration. (...) it is worthy of note that Western Europe, the Soviet Union and Japan, during the time they achieved their economic breakthrough, did not have universal franchise. (...) Hence it was possible to exact from the general population sacrifices which no popularly elected government today would dare even to contemplate. (...) I believe that unless democratic backward countries can create new institutions and promote new values which can galvanize, inspire, cajole, induce and, in the last resort, compel men into action, they will not be able to lift themselves out of the present state of stagnation and poverty.”

⁵⁴⁰ Barr (2000, pp.80-81). He also argues that Lee Kuan-Yew also applied this strategy in order to minimize his personal embarrassment as he had been the one who had manipulated Singapore into Malaysia in the first place.

of imminent collapse and the return to the low quality of life and standard of living of the colonial era.”⁵⁴¹

Indeed, it is striking how the picture propagated by the PAP government both at the time and to the present day in retrospect contrasts sharply with the one drawn above of a favourable starting position for Singapore. The PAP has always tried to convey a sense of crisis to the Singapore electorate.⁵⁴² Yet far from being a contradiction, this ‘tool’ was used deliberately and very effectively to help overcome the certainly existent challenges and to make the reforms and hard work more palatable which were necessary to allow the country to benefit from the yet-to-be exploited favourable initial situation.⁵⁴³ In other words, in the early 1960s Singapore had the advantage of actually having a favourable starting position which was however hidden under a very troublesome political environment. The PAP government’s main achievement was to combine both these apparently contradictory aspects into one successful development strategy, convincing the contemporaneous generation to accept sacrifices on behalf of later

⁵⁴¹ Peebles and Wilson (2002, p. 7)

⁵⁴² The problematic interpretation of Singapore’ situation particularly around and after the separation from the Federation of Malaya and the withdrawal of the British military forces was also shared by a number of outside commentators, for example: Bonavia (1967), Bellows (1968), Emery (1968) or Buchanan (1972). It is also noteworthy that on the other hand the Singapore government tried to convey just about the opposite interpretation of the country’s situation to the world outside. Yoshihara, Kunio (1976, p.18) quotes E.J. Mayer, the first Director of the Economic Development Board in January 1962: “It is completely wrong to think of Singapore as an underdeveloped country. Yet this belief is very prevalent both in Singapore and abroad. It has probably arisen from the fact that the surrounding countries are comparatively under-developed – but what may apply to nearby states certainly does not apply to Singapore. In almost every respect this is a highly developed country.”

⁵⁴³ It is also noteworthy that this tool of a sense of crisis has probably only worked due to the fact that Singapore had indeed something to lose due to its comparatively high standard of living in Asia. Furthermore, the PAP government made sure that at least parts of the gains from the growth success were immediately shared with the population, see for example Campos and Root (1996) or Jaspersen (1997). Moreover, the PAP used the HDB housing programme very effectively to support its legitimisation. These aspects function as the facilitating link between crisis and the need to make sacrifices on the one hand and a favourable situation on the other.

generations using the troubled political environment to create a sense of crisis as justification for the sacrifices.⁵⁴⁴

IV.3. Selected Challenges in Singapore's Future

Singapore was very successful at exploiting a government controlled, capital led development strategy, in which one generation has given up a substantial degree of their entitlements in form of foregone consumption and surrendered control. As pointed out by the growth accounting literature, once this strategy has run its course Singapore needs to focus on raising the economy's productivity instead of merely increasing its capital inputs. Given the results of the thesis on government control, this however would require a complete policy turn around and a substantial re-design of the economy's ownership structures. Whether the Singapore political elite will be able to steer a course which in essence requires it to return the control it accumulated over decades back to free market forces is questionable. The progress along this path has so far been very hesitant. If the PAP government is not able to relax its doubly firm grip over both the economy itself and the political system controlling it, it is not likely that a Schumpeter process of creative destruction will be able to take hold. Such a process almost by definition is not likely to be successfully instilled via doctrine no matter how efficient the public administration.

Beyond the mere theoretical argument for change, the thesis points to two further sources of pressure: the second stage of the demographic transition, in which the formerly beneficially increased labour force ratio turns into a quickly

⁵⁴⁴ This strategy is much in the Chinese tradition, where the word for Crisis combines two symbols: the first, wei, meaning 'danger' and the second, ji, opportunity.

aging population, and potential problems with the government's balance-sheet position.

The demographic transition which the saving analysis has shown was one of the central aspects in Singapore's capital accumulation, will over the course of the next decades turn into somewhat of a burden for Singapore's economy and social system. Asher (1994) already pointed out that by the year 2030, one in every four persons is expected to be above 60, as compared to every eleven persons in 1990.⁵⁴⁵ This second stage of the demographic transition has sparked a rather controversial discussion about the adequacy of CPF savings, which after all are designed to be the financial support in old age even though substantial amounts were diverted for the purchase of housing.⁵⁴⁶ The most studies point to a considerable under-endowment for the needs of an older generation in the mature industrialised economy, which Singapore has become. Combined with the wish of the 'altruistic' generation to fully benefit at least in their old age from the improvements in living standards achieved during their active working lives this situation puts substantial pressure on the existing solution to the welfare question in Singapore.⁵⁴⁷ Moreover, the positive effect of CPF savings on the overall saving performance of the country will evaporate as withdrawals start to equal or possibly even exceed contributions, making further capital accumulation strategies next to impossible.

Due to the very strong connections between the government's financial situation and the economy, and particularly the CPF, the government's balance sheet gives

⁵⁴⁵ Asher (1994, p.34).

⁵⁴⁶ See for example Asher (1994, pp. 78-80), Wong and Park (1997), Heller and Symansky (1998), Asher (1999, pp. 3692-3693), Shantakumar (2002) or Peebles and Wilson (2002, pp. 91-93) for a recent summary.

⁵⁴⁷ Shantakumar (2002, p.25), for example, recommends a minimum pension guarantee to people in the lower-income brackets. Interestingly, Asher (1994, p.71) refers to a quote by Goh Keng-Swee stating that all modern societies regardless of their economic or social systems move towards the welfare state in their advanced stage of development.

further rise to reservations about Singapore's economic future. While a complete assessment is not possible due to lacking details especially about substantial parts of the government's assets, one particular peril can be quite clearly established. In April 2000 the government carried loans granted to the HDB of S\$ 72 billion. With the exception of 1988 and 1989 the loans outstanding to the HDB have been continuously rising since 1960 with no sign of a substantial repayment. In the 1990s alone the outstanding loan arrangements increased from S\$ 16.5 billion in April 1990 to over S\$ 72 billion in April 2000. The quality of these loans is rather questionable. How will the HDB ever be able to repay those loans? After all already well over 90% of the population own their houses. Over the next fifty to sixty years, i.e. until the HDB regains the legal title to the leaseholds, these loans in essence can only be repaid through service charges, which is not very likely.⁵⁴⁸ If the government had to write-off these loans its financial position would be seriously harmed. This becomes evident if one considers the fact that the total loans outstanding equal in value about fifty six percent of the country's total officially reported foreign reserves, which as argued in the thesis must be considered to be largely pension fund assets. The financial and social snowball effect would be considerable. This in turn makes the Singapore government liable to a major moral hazard problem, similar to any bank which is dependent on one single debtor. It will need to continue to support the HDB's losses because it can neither politically nor financially afford to cut back its commitment to the debtor. The strong increase in outstanding loans in the 1990s might be an indication that this mechanism has already been at work. Technically, the government should consider payments to the HDB as capital expenditures instead of capitalising them as assets in the government's

⁵⁴⁸ The city of Glasgow gives a good point of reference for a city with similar problems, although at a much smaller scale. In 2002 the city had to write-off all of the debt outstanding to the local housing authority (financed with a grant from the British Treasury) and sell the remaining flats to a tenant organisation for £25 million, which however required a further cash-injection of £700m from the Scottish parliament. (The Economist, March 30th, 2002, p. 28)

loan portfolio. In the 1990s alone such a treatment would have reduced the government's reported surplus by about half.

The combination of the three challenges to Singapore's future briefly discussed here form a very potent cocktail, even without the consideration of other domestic or international challenges to Singapore's economic foundation. This cocktail is likely to create quite some headaches for the country and requires a substantial redesign of the nation's further economic policies.