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International Comparisons of Trends
in Economic Well-Being

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Abstract

This objective of this paper is to develop an index of economic well being for selected OECD countries for the period 1980 to 1996 and to compare trends in economic well being. We argue that the economic well being of a society depends on the level of average consumption flows, aggregate accumulation of productive stocks, inequality in the distribution of individual incomes and insecurity in the anticipation of future incomes. However, the weights attached to each component will vary, depending on the values of different observers. This paper argues that public debate would be improved if there is explicit consideration of the aspects of economic well-being obscured by average income trends and if the weights attached to these aspects were made visible and were open for discussion.

The four components of economic well-being which are identified are: (1) effective per capita consumption flows, which includes consumption of marketed goods and services, and effective per capita flows of unmarketed goods and services and changes in leisure; (2) net societal accumulation of stocks of productive resources, including net accumulation of tangible capital and housing stocks, net accumulation of human capital and R&D investment, environmental costs, and net change in level of foreign indebtedness; (3) income distribution, as indicated by the Gini index of inequality, and depth and incidence of poverty; and (4) economic security from unemployment, ill health, single parent poverty and poverty in old age. Although estimates of the overall index and the subcomponents are presented for 1980-1996 for 14 countries, the limited number of years for micro-data files from the Luxembourg Income Study make some estimates problematic – hence our major focus is trends in economic well-being in the USA, UK, Canada, Australia, Norway and Sweden.

International Comparisons of Trends in Economic Well-being[1]

1. Introduction

Has economic well being increased or decreased in recent years? How would one know and why might it be useful to know?

In 1980 Ronald Reagan asked the American people a seemingly simple question: "Are you better off today than you were four years ago?" Although U.S. per capita disposable real income was, in 1980, some 7.6 per cent higher than in 1976, his audiences answered "No!" Similarly, Bill Clinton in 1992 ran on the slogan "It's the economy, stupid." Both politicians were implying that their government would "do better". Whether or not it is possible for a country to do better is an issue that is often resolved by pointing to how well other countries have done. International comparisons of trends in well being are thus crucial to knowing whether a country could "do better".

In modern democracies, national systems of social and economic statistics have become a crucial part of the informational feedback loop of public policy. By providing measures of social and economic outcomes, statistical agencies provide decision-makers and voters with the information that often defines the success or failure of public policies. Evidence on such successes or failures can be used to reallocate resources, or to replace governments; hence the calculation of measures of economic well being is an important issue. However, as the Ronald Reagan quotation above indicates, current measures – such as trends in per capita disposable income - may not necessarily be a good guide to popular perceptions of trends in economic well being.

The core problem of statistical agencies is that of deciding what information to record and how to present it. Knowing that all statistics summarize a complex reality, and that there are wide variations among the public in which aspects of social reality are considered to be of greatest importance, statistical agencies still have to decide what to count, and what not to count, as part of a measure of economic well being.

For many years, the System of National Accounts (SNA) has been the accounting framework within which most discussions of trends in economic well- being have been conducted, and Gross Domestic Product (GDP) per capita has been an often used summary measure of economic trends.[2] The compilers of the national accounts have often protested that their attempt to measure the aggregate value of marketed economic output was never intended as a full measure of economic well being. Nevertheless, it has often been used as such, and the GDP accounting exercise has attracted a great deal of criticism as being a misleading indicator of economic well-being (e.g. Waring, 1988). Dissatisfaction with the GDP as a measure has led to a number of proposals for substitute measures (e.g. the Genuine Progress Indicator).

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[1] In order that this paper be self-contained and provide a full explanation of the methodology used to estimate the index of economic well being, it draws on material from earlier papers which develop the index (Osberg, 1985; Osberg and Sharpe, 1998 and 1999).

[2] Keunig (1998) reviews the contributions of Dawson (1996) and Kendrick (1996) and the most recent (U.N. 1993) revisions to the SNA

 Summarizing the economic well being of a complex society inevitably requires a series of ethical and statistical judgements. There are many different dimensions to well being, which are valued to different degrees by different observers. With a single index number it may be difficult to disentangle the relative importance of value judgements in the construction of the index. Furthermore, in thinking about the appropriate public policy response, it is not particularly useful to know only that well being has gone "up" or "down", without also knowing which aspect of well being has improved or deteriorated.

   This paper sees construction of measures of economic well being as a problem in the optimal aggregation of information. If the objective is to improve the quality of public decision making and political debate, excess aggregation is not helpful, because it does not enable value judgements and statistical judgements to be separated. Furthermore, excess aggregation offers no guide to policy priorities.

   Osberg (1985) therefore proposed that an index of economic well-being should be based on indices of consumption, accumulation, inequality and insecurity, <u>with the explicit recognition that the weights attached to each component will vary, depending on the values of different observers</u>.[3] The underlying hypothesis is that public debate is likely to be improved if issues of fact, analysis and values are as clearly separated as possible. Measurement of the current level, or trend, of economic well being can be seen as the first stage of a three stage discussion in which a society asks: (1) Where are we? (2) Do we want to go somewhere else? (3) How do we get there?

   Issues of measurement, of values and of analysis may be conceptually distinct, but in a single index of economic well being, they often become hopelessly entangled. If the democratic debate on economic policy is to be fruitful, it would seem desirable to separate issues of measurement (question 1) from the debate on ends (issue 2) or the discussion of means (item 3).

   If the discussion is organized in this way, those people who fundamentally care most about a particular aspect of well being can discuss the facts about that aspect of well being, without confusing the discussion with other issues. (For example, those who are concerned most with. the bequest that this generation will leave for the future can discuss whether the best way to safeguard sustainability is to emphasize environmental regulation, or capital accumulation, without simultaneously concerning distributional issues.) Such discussions of measurement issues are of a fundamentally different nature from discussions of values – which aspect of economic well being *should* receive greatest weight.

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[3] By specifying additive sub-indices, we are implicitly assuming that preferences for social outcomes are separable in their components (e.g. that the weight placed on consumption does not depend on the weight placed on inequality). We do not explicitly constrain the weights to be assigned to each component of well being, since we think of them as the preferences of different observers. However, some observers may, if they are consistent, have linked preferences – for example, <u>if </u>attitudes to insecurity are driven solely by risk aversion (but see Osberg (1998)), then the weight an individual places on inequality, and the weight they place on insecurity, will both depend on the second derivative of their utility function.

This basic framework - that a society's well-being depends on societal consumption and accumulation and on the individual inequality and insecurity that surround the distribution of macro economic aggregates - is consistent with a variety of theoretical perspectives. We therefore avoid a specific, formal model.[4]

As part of a larger project on the state of living of standards and the quality of life in Canada, the Centre for the Study of Living Standards (CSLS) has constructed the index of economic well-being proposed by Osberg (1985) for Canada (Osberg and Sharpe, 1998) and for all provinces and for the United States (Osberg and Sharpe, 1999). This paper now extends the index to other countries, with a base year of 1981, and includes specific consideration of differentials in working time.

The paper is divided into three main parts. Part two develops estimates of the four key components or dimensions of the index-consumption flows, stocks of wealth, inequality, and insecurity, and the overall index for Canada. Part three develops preliminary estimates of the overall index and its components for seven OECD countries. Part four compares trends in the index and its components.

Data availability and comparability problems mean that the construction of an international index of economic well being is a much more arduous undertaking than construction of an index at the national level, or even for two similar countries such as Canada and the United States. A crucial data requirement for the index is comparable estimates of poverty rates and poverty gaps for all members of society, the elderly, and single-parent families. Comparable estimates require comparable micro-data files and the only international source of such files is the Luxembourg Income Study (LIS). Consequently, the 14 countries covered by the LIS (Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, United Kingdom, and the United States) represent the maximum number of countries for which estimates of the index of economic well being can be constructed.

Because the number of years of micro-data tapes available for many of these countries is limited, the construction of a reliable time series for all 14 countries is not possible. Only some countries (Canada, the United States, the United Kingdom, Australia, Germany, Norway and Sweden) have a large enough number of public-use micro-data files accessible from the LIS for construction of reliable long-run time series. Consequently most of the discussion in the paper focuses on trends in these seven countries. Appendix B presents tables on seven other countries (Belgium, Denmark, Finland, Italy, Netherlands, France and Spain) in which the data is largely based on backward and forward extrapolation and interpolation techniques (extrapolated and

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[4] However, a sufficient (but not necessary) set of conditions for the index of economic wellbeing we propose would be that societal economic wellbeing can be represented as the wellbeing of a "representative agent", assuming that (1) such an agent has a risk-averse utility function (i.e. diminishing marginal utility); (2) from behind a "veil of ignorance" as to his/her own characteristics, each person draws an individual income stream (and prospects of future income) from the actual distribution of income streams; (3) each person has a utility function in which both personal consumption and bequest to future generations are valued; (4) individual income streams are exposed to unpredictable future shocks; (5) capital markets and public policies do not always automatically produce a socially optimal aggregate savings rate.

interpolated estimates are given in Italics). The data in both the main body of the text and Appendix A are derived from underlying raw data which are presented, for all 14 countries in tables available on the Web at www.csls.ca. We hope that over time, it will be possible to "fill in the blanks" and that more reliable estimates for more countries will become available.

Estimates of the index of economic well-being for Canada and the United States in this paper differ somewhat from our earlier estimates because the emphasis on international comparability of estimates has meant that some data originally used to construct the index for Canada and the United States, and not available for other countries, has not been used. Examples include estimates of the underground economy, commuting, human capital, and natural resources. These omissions can affect perceived trends[5]. In a sense, the index of economic well being presented in this paper is less sophisticated than our earlier estimates - an unfortunate tradeoff needed if more countries were to be included.

2. An Index of Economic Well-being

GDP is a measure of the aggregate marketed income of a society and most of its proposed substitutes (such as the GPI) are also primarily measures of adjusted average annual "income" flows [where the adjustments are meant to capture issues (such as environmental degradation) that GDP now ignores]. However, "income" is a flow variable that does not directly consider the aggregate value of the bequest which this generation will leave to its descendants. Although those now alive clearly care about the level of their own consumption, they also care (in varying degrees) about the well being of future generations. Furthermore, although trends in average income are important, individuals are justifiably concerned about the degree to which they personally will share in the prosperity of the average, and the degree to which their personal economic future is secure. The four components or dimensions of economic well being in the ideal index of economic well being are, therefore:

- 2.1 effective per capita consumption flows

   - includes consumption of marketed goods and services, and effective per capita flows of household production, leisure and other unmarketed goods and services;

- 2.2 net societal accumulation of stocks of productive resources

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[5] For example, because we could not get an internationally comparable series on unemployment insurance payments, the insecurity of employment calculations reported below are limited to changes in the probability of employment, not the probability of income loss due to unemployment which we used in our earlier papers. Unlike our earlier work, therefore, this paper does not capture the impact on economic insecurity of the precipitous drop in Unemployment Insurance coverage in Canada in the 1990s (UI recipients are now less than 40% of unemployment in Canada, compared to approximately 90% in the early 1990s). This paper therefore overstates the level of economic well being in Canada in the 1990s.

- includes at this stage net accumulation of tangible capital, housing stocks and consumer durables, net accumulation of human capital, social capital and R&D investment, net changes in the value of natural resources stocks; environmental costs, and net change in level of foreign indebtedness;

- 2.3   income distribution - poverty and inequality,

    - includes the intensity of poverty (incidence and depth) and the inequality of income;

- 2.4   economic insecurity,

    - economic security from job loss and unemployment, illness, family breakup, poverty in old age;

A fuller discussion of the rationale for this framework of average consumption flows, aggregate bequest, inequality and insecurity can be found in Osberg (1985). We distinguish these four main dimensions of economic well-being to enable persons with differing value judgements (e.g. a greater or less preference for intergenerational bequest, or for the reduction of poverty, compared to increases in average consumption) to account explicitly for those values. Each dimension of economic well being is itself an aggregation of many underlying trends, on which the existing literature is sometimes spotty.[6]

We recognize that the System of National Accounts has, thanks to many years of development effort by international agencies, produced an accounting system for GDP which is rigorously standardized across countries. Internationally comparable statistics on other dimensions of economic well being are far less complete. However, using GDP per capita as a measure of well being such would implicitly set the weight of income distribution or economic insecurity to zero, by ignoring entirely their influence, which is surely a bad approximation of their actual importance to economic well-being.

2.1 Average Consumption Flows

2.1.1. Marketed personal consumption

The starting point for this component of the index is aggregate real personal consumption per capita.[7] This estimate may be sensitive to the price series used to deflate nominal consumption. In the national accounts, the consumer expenditure deflator is used, which differs slightly from the Consumer Price Index. Any bias in price series would obviously bias estimates of average real consumption flows. The recent debate on

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[6] Since a great deal of work has been done on the valuation of household production, there is at least a clearly defined range of estimates. However, economists have paid very little attention to the measurement of insecurity (see Osberg, 1998) and the measures of economic insecurity are correspondingly underdeveloped.

[7]Consumption can also be calculated on a household basis.

CPI bias is thus directly relevant to the estimation of real consumption flows. The Boskin Commission (Boskin et al., 1996) estimated that the US CPI had an upward bias of 1.1 per cent, largely due to the failure of prices indexes to capture the welfare effects of new goods and the quality improvements in existing products (Nordhaus, 1996). In this paper, no adjustment is made for potential consumer price bias.

Estimates of personal consumption per capita, expressed in national currency units, and in constant prices (base years differ among countries) are provided in Table 1. These data have been taken from the OECD National Accounts publication. All countries experienced increases in real per capita marketed personal consumption over the 1971-96 period, but there was a large variations in the increase, ranging from a high of 100.2 per cent in Germany to a low of 26.4 per cent in Sweden. The increases in the other countries, in descending order of magnitude, were Italy (89.1 per cent), Norway (73.5 per cent), United Kingdom (71.6 per cent), Spain (70.1 per cent), Belgium (67.0 per cent), Canada (63.5 per cent), Finland (60.4 per cent), France (59.5 per cent), United States (59.1 per cent), Australia (58.6 per cent), Netherlands (53.0 per cent), and Denmark (47.7 per cent).

Adjustments to marketed personal consumption flows

The System of National Accounts provides a strong basis for estimating the consumption of marketed goods and the cost of providing government services, and there have been enough studies of the value of household production to enable some confidence as to the range of reasonable values. Estimates are more imprecise when one considers the value of a number of other factors that also influence consumption flows, such as leisure, regrettables, the underground economy and life expectancy. These factors are discussed below, with approximate estimates of their value, in some cases. At this stage in the development of the index of economic well being, our inclination is to include, rather than exclude, imprecise measures. Since omitting a variable would implicitly set its value to zero, an imprecise measure is likely to embody a smaller error than omitting a variable. However, in some instances there is no estimate at all available, for some countries, and omission is unavoidable.

The underground economy

Earlier versions of the index of economic well-being for Canada and the United States factored in estimates of the underground economy. These estimates were based on benchmark estimates by Statistics Canada and the Bureau of Economic Statistics and the trend in the share of the self-employed in total employment, on the argument that the self-employed have greater opportunity to hide income than paid workers. Since there always has been some level of "underground" activity, the issue for the measurement of trends in well being is whether or not the prevalence of the underground economy has changed substantially over time. Rising tax rates may have increased the incentive to go underground, but the increased penetration of franchise systems in the small business sector and the greater computerization of business records may have also made it more difficult to escape detection by tax authorities.

Unfortunately, central statistical agencies currently do not produce internationally comparable estimates of the magnitude of the underground economy so it was decided to drop this adjustment for construction of the index. Although international estimates of the underground economy based on the monetary approach to the underground economy are available, these estimates (Lippert and Walker, 1997:44) were judged too high to be credible.

<u>The value of increased longevity</u>

Life expectancy has increased significantly in recent years, and we have every reason to believe that having a long life is an important component of the well being. The economic value of these extra years of life should be included in the total consumption flows of individuals, since presumably people care both about how much they consume per year, and how many years they get to consume it.[8]

Years of life are one thing, and years of healthy, enjoyable life are a slightly different thing. A full appraisal of the value of increased longevity should consider trends in morbidity and health-adjusted life expectancy (HALE),[9] as well as easier-to-measure trends in longevity. However, in considering either, one has to face the issue that the value of more years of life may look very different, the closer one actually is to death. Changes in life expectancy are occurring "in real time" and are affecting the well being of all now alive. In aggregating over the population now alive, one is aggregating over individuals at very different points in the life course. Although the economist's reflex is to consider the discounted value of lifetime utility, it may be highly problematic to view the value of additional years of life as discounted to the point of view of a teenager. For the purposes of this paper, we adopt the simple expedient of considering an increase in consumption per year or consumption for an increased number of years to be equivalent – i.e. we add to consumption flows in each year the percentage increase in average life expectancy.[10] However, we do recognize the crudity of this measure of an existential issue.

Data on life expectancy for the 14 OECD countries are taken from the OECD Health Data CD-ROM and are given in Table 1. Between 1971 and 1996, all 14 countries enjoyed increased life expectancy, with per cent increase given in brackets: Australia (9.1 per cent), Belgium (9.4 per cent), Canada (7.9 per cent), Denmark (2.7 per cent), Finland (9.7 per cent), France (8.3 per cent), Germany (8.6 per cent), Italy (8.5 per cent), Netherlands (5.0 per cent), Norway (5.3 per cent), Spain (6.1 per cent), Sweden (5.8 per

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[8]Dan Usher (1980) of Queen's University has developed a methodology for the estimation of the value of increased longevity.

[9] Wolfson (1996) found for 1990-92 that the HALE for 15-year-olds was 7.8 years less than life expectancy (55.6 versus 63.4 years). However, since there is no time series on health-adjusted life expectancy for Canada, we do not know if the rate of increase in the HALE has been greater or less than life expectancy over time.

[10] Implicitly, this procedure ignores both the differential values which individuals might place on changes in mortality probability at different ages and the distribution, by age, of actual changes in mortality probability.

cent), United Kingdom (6.9 per cent), and the United States (7.0 per cent). For all years after 1971, personal consumption per capita is adjusted upward by the increase in life expectancy relative to 1971.

Reduced economies of scale in household consumption

When individuals cohabit in households, they benefit from economies of scale in household consumption. There is a large literature on the estimation of "equivalence scales", which attempt to account for the magnitude of such economies of scale in households of different sizes.[11] When comparing the average effective consumption of individuals over time, the implication is that as households have shrunk in average size, economies of scale have been lost. Trends in average per capita consumption should therefore be adjusted for the average loss over time of economies of scale in household consumption.

Since economies of scale diminish in family size, the extent of change in economies of scale depends on where change occurs in the distribution of family sizes.[12] Data on average family size were taken from the Luxembourg Income Study micro-data tapes. Unfortunately, estimates were only available for the years tapes were available. The average family size for the most recent year available (year in brackets) for the 14 countries was: Australia 2.46 (1994); Belgium, 2.65 (1992); Canada, 2.51 (1994); Denmark, 2.00 (1992); Finland, 2.21 (1995); France, 2.66 (1984); Germany, 2.28 (1994); Italy, 2.89 (1995); Netherlands, 2.38 (1990); Norway, 2.19 (1995); Spain, 3.41 (1990); Sweden, 1.85 (1992); United Kingdom, 2.55 (1986); and the United States, 2.58 (1997). All countries except Germany have experienced a long-term decline since the 1970s in average family size.

The "LIS" equivalence scale (i.e. the square root of family size) has been applied to average family income to construct an index of equivalent family income (1981= 100), which is used to adjust personal consumption per capita. The size of the downward adjustments to real per capita personal consumption are small, with the United Kingdom having the largest downward adjustment in 1996 relative to 1971, (10.8 per cent).

Regrettables and intermediate consumer goods

It can be argued that certain types of economic activity included in GDP do not contribute to economic welfare, but rather are defensive expenditures, or intermediate inputs that individuals make in order to be able to produce or consume. The costs households pay in order to commute to work are considered in the GDP to be part of household consumption, but the expenses which firms incur to bring materials to the work site are seen as an intermediate input in production. Since intermediate inputs in the

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[11] See, for example, Burkhauser et al (1996) or Phipps and Garner (1994).

[12] Even though the impact on average household size is the same, the impact on average living standards of (for example) a five-person household splitting will differ from the impact of a two-person household splitting, since the latter change will imply a greater loss of economies of scale.

business sector are netted out in the calculation of value added, it can be argued that similar expenditures by households should be subtracted from marketed consumption to obtain a better estimate of true consumption flows. Similarly, if the good that individuals want to consume is "a crime free street", but it now takes a greater expenditure on police services to produce that good, an increase in police expenditures that only serves to maintain the crime rate unchanged should not be counted as an increase in (public sector) consumption.

The Genuine Progress Indicator (GPI), a social indicator developed by the San Francisco-based think tank Redefining Progress, has defined regrettables to include crime, commuting, pollution abatement, and auto accidents and has developed methodologies to estimate their costs. The costs of commuting are defined as the cost of travelling to and from work using either public transportation or private vehicle, as well as an estimate of time use while commuting. The cost of crime and auto accidents is defined as the costs associated with medical and legal expenses and expenditures related to lost or damaged property. The cost of household pollution abatement represents the expenditure on air and water filters and devices to improve air and water quality in the home. In our papers that estimating the index of economic well-being for Canada and the United States (Osberg and Sharpe, 1998 and 1999), estimates for the four regrettables based on the GPI methodology were subtracted from personal consumption after the adjustments for the underground economy, family size, and life expectancy.

Because of the extensive data requirements involved in estimating of the costs of four regrettables, this adjustment has not been made in constructing the index of economic well being for the 14 OECD countries covered in this paper. Expenditure on regrettables was only 12.0 per cent of personal consumption in 1996 in Canada, and (more importantly) it has shown no trend over time. Hence, exclusion of such expenditure from the index of economic well-being developed in this paper may not have a major effect on the level of personal consumption and its trend.

Differences in Working Hours and Economic Well-being

In developing the Index of Economic Well-being for Canada, Osberg and Sharpe, (1998) recognized the importance of leisure for economic well-being and hence the potential impact of changes in working time on economic well-being. However, in Canadian data, the absence of any significant trend in average annual hours of work meant that inclusion of the aggregate value of leisure in the index would have had no major effect on the overall trend of the index[13].

This paper extends the Index of Economic Well-being to OECD countries among which there are major differences in both the initial level and trends over time in the average annual number of hours worked. Given these differences, ignoring working time variations would be much less defensible than for Canada. Level and growth rate comparisons at the international level of economic well being are affected by working time differences. Consequently, this paper develops a methodology for integrating variation in working hours into an international index of economic well being and provides estimates of the quantitative importance of this variable as an adjustment to consumption flows.

In this paper, we want to compare economic well being over time and across countries, but we have little good data on "leisure". Ideally, one would like estimates of the proportion of non market time that is spent in home production and the proportion of market remunerated time that is on the job leisure, in order to account for changes in the pace of work, both at home and in the workplace. Such measures are, however, infrequently available for any one country and difficult to compare across countries. We therefore proceed by standardizing for hours of paid work in relative, not absolute, terms, where the benchmark is the average annual hours worked per adult of working age in the United States in 1980.

Unlike the Measure of Economic Welfare (Tobin and Nordhaus, 1972), no attempt is made here to define leisure activities, estimate the amount of leisure enjoyed, and place a value on this total leisure time. Rather we adjust the value of consumption for differences in paid hours relative to the benchmark, with countries having average annual hours worked less than the benchmark (USA 1980) having a positive adjustment to consumption and countries having more working time than the benchmark having a negative adjustment. Within the United States, years with fewer hours worked than those in the benchmark year have positive adjustments and those with more hours worked negative adjustments.

Our methodology is equivalent to saying that at the margin, individuals ascribe a value equal to the after tax average wage to changes in non working time that are not due

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[13] Trends in the distribution of hours for particular socio-economic groups and the changing distribution of hours worked within the workforce (i.e. polarization between short hours and long hours workers) may affect the inequality of rewards, but insufficient evidence of such trends was available to enable inclusion in the inequality part of the index.

to unemployment fluctuations. By comparing changes in working time to a benchmark level, we avoid the necessity of placing a monetary value on infra marginal hours of leisure, which might be highly problematic. Estimates of relative working time per person employed are adjusted for the employment/working age population ratio to provide estimates of relative non working time on a working age population (15-64) basis to account for difference in employment/population ratios across countries. These estimates are then valued at the after tax wage rate to provide estimates of the value of relative non-working time per working age person.

It is initially assumed that all relative differences in non-working time per working age person are voluntary in nature. This figure is then adjusted by the working age population/total population ratio to control for differences in demographic structures across countries. This amount, expressed in constant prices of the national currency, is then added to consumption flows to produce a working time-adjusted estimate of consumption relative to the U.S. benchmark. We stress that the total value of leisure is not estimated, only the value of differences in non working time relative to the benchmark of the U.S. working time in 1980.

The assumption that all differences are voluntary can be questioned - unemployment does not constitute leisure. To account for involuntary leisure, a second series of estimates have been produced by subtracting average annual hours of unemployment per working age person from the relative non working time estimate.

Estimates of the imputed value for relative non-working time without adjustment for unemployment

There are very large differences in working time per employee across countries, ranging in 1980 from a high of 2003 hours per person employed in Spain to a low of 1439 in Sweden (71.8 per cent of those in Spain).[14] The United States had the second highest average annual hours at 1883 hours per year. Between 1980 and 1997, seven of the nine countries on which we have data experienced declines in working time, while two countries, Sweden and the United States, experienced increases.

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[14] [To put this in more concrete terms, note that a difference of 564 hours per year is equivalent to an additional working day of 10.84 hours, every week of the year.]

Tables detailing the calculations of this section are available on the CSLS web site. Tables 101-A to 112-A lay out the data for our estimation of the impact of working time on consumption flows, and hence economic well-being, for nine countries (Canada, Finland, France, Germany, Norway, Spain, Sweden, United Kingdom, and the United States) over the 1980-97 period. Table 101-A presents estimates of average annual hours worked per employed person from the International Labour Organization's KILN (Key Indicators of the Labour Market) database. Estimates for years where data are unavailable have been interpolated on the basis of a linear trend (and are italicized, for easy reference).

Table 106-A provides estimates of average after-tax hourly compensation in constant prices in national currency units and is calculated as the product of one minus the tax rate (Table 104-A) and hourly pre-tax compensation (Table 105-A).

There are also large international differences in the employment/working age population ratio[15] (the employment rate) (ranging in 1980 from a high of 79.7 per cent in Sweden in 1980 to a low of 50.5 per cent in Spain), which reflect differences in unemployment rates and (more importantly) labour force participation rates.

Annual average hours per working age person (ages 15-64), is calculated as the product of the employment/working age population ratio and average annual hours per person employed. From the point of view of economic well-being, it is the amount of working time (relative to the benchmark) for the total working age population that is relevant, not just that of the working population. Some countries with high hours per person employed (e.g. Spain) have low employment rates and certain countries with low hours per person employed have high employment rates (e.g. Sweden). Since these country differences are partially offsetting, the variation across countries in this measure of hours is less than in hours worked for person employed. For example, in 1980 Finland had the highest annual average hours worked per working age person at 1288 while Spain had the lowest at 1012. The United States was third at 1225. Spain's annual average hours per working age person were 78.6 per cent of those of Finland.

If we are to compare the gains, at the margin, from additional market work compared to either leisure or home production, we would like to estimate the total "tax wedge" between taxed returns to time in the market and untaxed returns to leisure or home production. For this purpose we need the sum of sales and income taxes. The share of general government current receipts in nominal GDP is used as the tax rate in the calculation of after tax wages[16] of labour compensation. In 1980, this tax rate ranged from a high of 48.2 per cent in Norway to a low of 30.0 per cent in the United States.

Average annual hours of non working time relative to the 1980 U.S. benchmark are calculated as the difference between a country's average annual hours worked per working age person in a given year and the 1980 figure for the United States (1225 hours. Countries with less hours worked than in the United States in 1980 had positive non working time while countries with greater working hours had negative non working time. In 1980, six counties put less working time into making cash income than the USA, ranging from 6 hours in Canada to 213 hours in Spain. Two countries had more working time, the United Kingdom and Finland. The United States by definition had the benchmark level of relative non working time in 1980, but with increasing working time in subsequent years, the impact of non working time on adjusted consumption became negative relative to the 1980 benchmark. By 1997, per adult working hours in the USA were 204 hours above their 1980 level.

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[15] See Table 102-A

[16] Table 105-A provides estimates of average hourly compensation per employed person in constant prices, expressed in terms of national currency. Use of national currency units of course means that the compensation levels cannot be compared across countries, although rates of change can be compared. Average compensation per hour is calculated by dividing total annual average compensation per employee (including in theory an imputation for the self-employed) by total annual average hours worked per employed person.

Between 1980 and 1997, seven of the nine countries enjoyed increased non-working time. The largest increase of 234 hours per working age person was in Finland, followed by 187 hours in France, 182 in Spain, 173 hours in Germany, 54 hours in Norway, 52 hours in the United Kingdom, and 38 hours in Canada. Since these are large changes [234 hours is equivalent to 4.5 hours per week] they represent substantial changes in well being, which should be reflected in a reasonable measure of well being. However, since leisure hours receive zero valuation in GDP accounting, neither these declines nor the increase of 28 hours of working time in Sweden and 204 hours increase of work hours in the United States are reflected in GDP per capita.

Estimates of the imputed value of non-working time per working age person are expressed in constant prices in national currency units. These estimates are calculated as the product of the average annual number of hours of non working time per working age person relative to the U.S. 1980 benchmark[17] and the after tax hourly compensation. Again because of the use of national currency units (as opposed to common currency units), and because we are evaluating differentials at the margin, level comparisons of the aggregate value of non-working time are not possible.

In 1980, the ratio of the working age population (ages 15-64) to the total population ranged from a high of 67.7 per cent in Finland (67.1 per cent in the United States) to a low of 52.1 per cent in Germany. These variations reflect differences in the relative size of the dependent population (persons under 15 and over 65) across countries. We estimate the imputed value of non-working time on a per capita basis, as opposed to a per working age population basis. This adjustment is necessary because the index of economic well being calculated consumption flows on a per capita basis. The figures are calculated as the product of the imputed value of non-working time per working age person and the ratio of the working age population to the total population.

The three components of per capita consumption flows (adjusted personal consumption, government consumption, and the imputation for non-working time are summed to total consumption flows adjusted for hours worked. As a share of total consumption flows, the imputations for relative non-working time are quite important for a number of countries. In 1996, they represented 21.4 per cent of total consumption in Spain (15.5 per cent in 1980), followed by 14.0 per cent in France (4.0 per cent in 1980), 9.1 per cent in Germany (3.0 per cent in 1980), 5.6 per cent in Finland (-2.6 per cent in 1980), 4.7 per cent in Norway (3.6 per cent in 1980), 1.6 per cent in Canada (0.2 per cent in 1980), 1.0 per cent in Sweden (2.4 per cent in 1980) and 0.9 per cent in the United Kingdom (-1.0 per cent in 1980). For the United States, the working time adjustment represented -8.0 per cent of total consumption in 1996 due to the large increase in working time from the 1980 base.

Estimates of the imputed value for non-working time with adjustment for unemployment

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[17] See Table 108-A, Table 107-A, Table 106-A.

The estimates presented above assumed that non-working time is by choice and adds to economic well being. But a strong case can be made that some hours of unemployment, which are included in non-work or leisure time, are not by choice and do not contribute to economic well being. Indeed, if there are psychological costs to unemployment, such hours may have strong disutility associated (Clark and Oswald, 1994). We cannot, in this paper, provide estimates of the negative utility of unemployment time, or the partial value of such time. As an approximation, however, in the calculation of the imputations for the value of non-working time, we can deduct hours of unemployment – i.e. assign such hours zero value. The tables discussed below make this adjustment.

Total annual hours of unemployment are calculated as the product of the number of unemployed and average annual hours per employed person on the assumption that an unemployed person wants to work average hours. Total unemployed hours are then divided by the working age population to determine average annual hours of unemployment per working age person. In 1980, average annual hours of unemployment per working age person ranged from a high of 127 in Spain to a low of 19 in Norway, and averaged 94 in the United States. Between 1980 and 1997, average annual hours of unemployment increased in all countries except the United States where it fell to 76. Annual average hours of labour supply per working age person are then calculated where unemployment is added to hours of work to give adjusted hours of labour supply.

Average annual hours of non-working time are then calculated relative to the 1980 U.S. benchmark of 1319 hours of labour supply. For countries with greater hours of unemployment per person 15-64 than the United States in 1980 (Canada, and Spain), the unemployment-adjusted estimates of relative non-working time will be less than the unadjusted estimates. For countries with less hours of unemployment than the United States (Finland, France, Germany, Norway, Sweden, United Kingdom), the unemployment-adjusted non working time will be greater than the estimates without a unemployment adjustment.

Estimates of the imputed value of non-working time per person 15-64 with the adjustment for unemployment embody the same hourly valuation of non working time but differs in the use of different estimates of labour supply time (to incorporate the unemployment adjustment). Again, the three components of per capita consumption flows (adjusted personal consumption, government consumption, and the imputation for non-working time with the unemployment adjustment are summed to total consumption flows adjusted for hours worked.

As a share of total per capita consumption flows, the imputations for relative non working time that incorporate the unemployment adjustment were in general less in 1996 than the estimates without the adjustment because all countries except Norway experienced higher hours of unemployment per working age person that year than the 1980 U.S. benchmark. The imputation for relative non working time based on the unemployment adjustment as a share of total consumption in 1996 was the following (1996 share without unemployment adjustment in brackets): 14.8 per cent for Spain (21.4

per cent), 11.7 per cent for France (14.0 per cent), 8.5 per cent for Germany (9.1 per cent), 5.9 per cent for Norway (4.7 per cent), 1.6 per cent for Finland (5.6 per cent), 1.0 per cent for Sweden (1.0 per cent), 0.4 per cent for Canada (1.6 per cent) and -7.4 per cent for the United States (-8.0 per cent).

2.1.2 Government services

The provision of non-marketed or heavily subsidized services by the government is part of the consumption flow. Current expenditure by all levels of government including defense and capital consumption allowances, but excluding debt service charges and transfer payments (which influence marketed consumption) are used. These data were taken from the OECD national accounts, expressed in constant prices in national currency units.

The importance of government final consumption expenditures relative to personal adjusted consumption expenditures differs markedly among OECD countries (Table 2). In 1996, it ranged from a high of 54.2 per cent in Sweden to a low of 24.3 per cent in the United States. The figures for the other countries in descending order of the relative importance of government expenditure were: Norway (41.5 per cent), Finland (40.8 per cent), Germany (34.9 per cent), United Kingdom (32.7 per cent), France (31.3 per cent), Canada (29.1 per cent) and Spain (26.5 per cent).

In addition, over the 1971-96 period there were major differences in the rate of growth of real per capita government final consumption expenditures, ranging from a high of 172.3 per cent in Spain (which admittedly had a low base) to a low of 16.4 per cent for the United States. The rates of increase for the other countries in descending order of change were the following: Norway (126.8 per cent), Finland (100.4 per cent), Germany (90.8 per cent), France (65.9 per cent), Sweden (46.1 per cent), United Kingdom (42.4 per cent), and Canada (29.1 per cent).

2.1.3 Unpaid work

Unpaid work contributes to economic welfare and thus should in principle be included in an index of economic well being. Unpaid work consists of both household work and volunteer work.[18] Statistics Canada (1996) has produced estimates of unpaid work for Canada[19] and these estimates were incorporated into the original index of

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[18]Statistics Canada has identified the following types of unpaid work: food and meal preparation; food or meal clean-up; cleaning; laundry and ironing; clothes repair and shoe care; home repair and maintenance; gardening and grounds maintenance; pet care; other domestic work, not elsewhere classified; physical care-children; education-children; medical care-children; other care-children; personal care-adults; medical care-adults; household management and administration; shopping for goods and services; transport-children; transport-all other household work; volunteer work; other help and care; and transport-other unpaid work. In 1992, household work represented 94 per cent of total unpaid work, with volunteer work the remainder.

[19] There are a number of methodologies for the valuation of unpaid work, including opportunity cost before tax or after tax, or at the replacement cost using a specialist or generalist. The value of unpaid work is not surprisingly greatest when it is valued on the basis of opportunity cost before taxes, followed by

economic well being developed for Canada (Osberg and Sharpe, 1998). Because of the unavailability of internationally comparable estimates of the value of unpaid work for countries other than Canada, this component has not been incorporated into the index of economic well being for OECD countries developed in this paper.

2.1.4 Total consumption flows

Total per capita consumption is defined as the sum of personal consumption (adjusted for changes in average household size and life expectancy), government services, and the adjusted relative value of leisure.

Between 1980 and 1996 (since leisure adjustments are relative to 1980, this year will be used as the base), the increase in the real per capita total consumption flows has ranged from a high of 60.6 per cent in Germany to a low of 9.6 per cent in Sweden. The rates of increase for the other countries were the following: Spain (54.0 per cent), France (42.3 per cent), United Kingdom (37.8 per cent), Norway (39.4 per cent), Finland (38.4 per cent), United States (18.9 per cent), and Canada (16.9 per cent).

2.2 Wealth Stocks, Sustainability and the Intergenerational Bequest

In our view, measurement of trends in well being should include consideration of changes in the well being of generations yet unborn. This consideration of future generations can be justified either on the grounds that those now living care about the well being of future generations or on the grounds that a concept of "society" should include both present and future generations. Either way, wealth accumulation by this generation will increase the bequest left to future generations, and is an important component of well being.[20] We would emphasize that this component of economic well being consists of those stocks of real productive assets that can generate real income for future generations – not the financial instruments that will determine the allocation of the return from those assets. The stocks of "wealth" left to the next generation, broadly conceived to include environmental and human resources as well as physical capital stock, will determine whether a society is on a long-run sustainable trajectory.

2.2.1 Physical capital stock

The physical capital stock includes both residential structures and machinery and equipment and non-residential, and both the business sector and the government sector. The greater the capital stock, the greater is future productive capacity and future potential

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replacement cost using a specialist, opportunity cost after tax, and finally replacement cost using a generalist. The rate of growth over time however is not greatly affected by which valuation method is used.

[20]If one could assume that income flows were always optimally divided between consumption and savings, one could omit separate consideration of consumption and wealth accumulation and concentrate on trends in average income. However, since aggregate wealth accumulation depends heavily on the political process, and because capital markets have significant imperfections, this seems too hopeful by far – for further discussion, see Osberg (1985).

consumption flows, and economic well being. The capital stock data are based on the perpetual inventory method where investment flows are accumulated over time, with depreciation rates applied to the different assets.

Data for the current net fixed capital stock, expressed in constant prices of national currency units, have been taken from the OECD publication *Flows and Stocks of Fixed Capital* and are given in Table 3. It is assumed that the estimates are internationally comparable, although the use of different depreciation rates by statistical agencies may reduce comparability for both level and rate of growth comparisons. For example, Canada assumes an average 18 per cent depreciation rate on fixed capital, compared to an assumption of only 4 per cent in the United States.

Between 1980 and 1996, the increase in the fixed capital stock, on a per capita basis, ranged from a high of per cent 40.3 per cent in Italy to a low of 9.3 per cent in Denmark. The rate of change in other countries, in descending order of magnitude, was the following: France (39.1 per cent), United Kingdom (34.5 per cent), Belgium (33.9 per cent), Norway (33.6 per cent), Germany (31.2 per cent), Canada (27.4 per cent), Sweden (26.7 per cent), Finland (24.7 per cent), United States (24.3 per cent), and Australia (20.8 per cent).

2.2.2. Research and development capital stock

Closely related to the physical capital stock is the concept of the research and development (R&D) capital stock. In an era of rapid technological change, expenditure on R&D is a crucial ingredient in the ability of society to innovate and create wealth. Statistical agencies do not produce R&D stock data. The Center for the Study of Living Standards has constructed a R&D stock series for 11 countries from OECD data on annual flows of total business enterprise expenditure on research and development. The stock of R&D capital is valued at cost of investment, and a depreciation rate of 20 per cent on the declining balance is assumed.

Between 1980 and 1996, the rate of change in the per capita real business enterprise R&D stock for business enterprises ranged from an increase of 233 per cent in Australia to a decline of 11 per cent in Germany. The rate of increase in the other countries (in descending order of magnitude was the following: Finland (232 per cent), Denmark (183 per cent), Norway (119 per cent), Italy (100 per cent), United States (91 per cent), France (67 per cent), Netherlands (36 per cent), Canada (27 per cent), and United Kingdom (20 per cent)

2.2.3 Value of natural resource stocks

Current consumption levels could be increased by running down stocks of non-renewable natural resources or by exploiting renewable resources in a non-sustainable manner, but this would be at the cost of the consumption of future generations. A key aspect of the wealth accumulation component of economic well being is net changes in the value of natural resources.

From an intergenerational perspective, it is the value of the natural resources, not their physical extent, which counts. The valuation of these resources poses conceptual problems, but estimates certainly are possible.[21] Statistics Canada (1997) has recently provided both physical and value estimates of natural resources such as forests, energy reserves, and minerals. These estimates, as well as estimates produced by the U.S. Bureau of Economic Analysis, were used in the construction of the index of economic well being for Canada and the United States (Osberg and Sharpe, 1998 and 1999).

Unfortunately, there are currently no internationally comparable time series estimates of the value of natural resources for OECD countries, so this component of wealth stocks has not been included in the index of economic well being developed in this paper.

The World Bank (1997) has produced estimates for one year (1994) of natural capital or "the entire environmental patrimony of a country" for nearly 100 countries and plans to release estimates for a second year (1998) in 2000. Natural capital is defined to include pastureland, cropland, timber resources, non-timber forest resources, protected areas, and sub-soil assets. Unfortunately, the short length of this time series will preclude its use in the index of economic well being except for the period after 1994.

Appendix B provides Work Bank estimates of natural capital for OECD countries in 1994. The OECD country with the largest natural capital, on a per capita basis expressed in 1994 U.S. dollars, was New Zealand ($51,090), followed by Canada ($36,590), Australia ($35,340), Norway ($30,220), Ireland (($17,780), United States (($16,500), Finland ($15,930), Sweden ($14,590), Denmark ($11,070) France ($8,120), Austria ($7,570), Spain ($5,740), United Kingdom ($4,940), Germany ($4,150), Netherlands ($4,140), Italy ($3,400), Switzerland ($3,050), Japan ($2,300), and Belgium ($1,750).

2.2.4 - Stocks of human capital

The human capital accumulated by the workforce generates both current and future income. Trends in the stock of human capital, including both formal educational attainment levels and on-the-job training, are important determinants of current and future economic well being. School retention and participation in post-secondary education have increased dramatically in many countries over the last three decades, and there is a strong relationship between educational attainment and individual income.

One approach to the valuation of human capital is to estimate the returns associated with different levels of educational attainment of the population and compute the implicit present discounted value of education (Jorgenson and Fraumeni, 1992). [A major problem with this methodology, however, is that it imputes to education stocks any

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[21] The estimated market value is the price the resources would bring if sold on the open market. It is based on the difference between the annual cost of extraction of a given resource and the revenue generated from the sale of the resource. In other words, the total value or wealth associated with a stock is calculated as the present value of all future annual rent that the stock is expected to yield. The quality of the resources, the state of extraction technologies, the price of the resource, and factor costs determine this amount of rent.

differential in the structure of wages that is correlated with education.] A second, input-based approach is to apply the perpetual inventory method of estimating the physical capital stock based on investment flows and depreciation assumptions to public and private expenditure on education and training (Kendrick, 1976). A third approach to human capital accounting is to develop methods for systematically evaluating and recording knowledge assets acquired through experience, education, and training (OECD, 1996).

The approach to measuring human capital used in the construction of the index of economic well being for Canada and the United States (Osberg and Sharpe, 1998 and 1999) was admittedly crude and incomplete.[22] The cost per year of education expenditures at the primary, secondary and post secondary levels was estimated. Yearly estimates of the distribution of education attainment in the population were then used to compute the total cash cost of production of human capital in education.

Unfortunately, it has not been possible to obtain comparable estimates of the cost of education by level of schooling for OECD countries. Consequently, it has not been possible to construct estimates of the stock of human capital for the index of economic well being developed in this paper. It is hoped that in the near future this gap will be filled.

2.2.5 Net foreign indebtedness

We do not count the gross level of government or corporate, debt as a "burden" on future generations, and we do not count as part of the intergenerational bequest the value of paper gains in the stock market[23]. In general, financial instruments represent both assets to their holders and liabilities to their issuers. The distribution of such assets/liabilities will play a major role in allocating the real returns to the future capital stock, but the issue at this point is the aggregate value of the intergenerational bequest.

However, net debt to foreigners is another issue. Since interest payments on the net foreign indebtedness of citizens of one country to residents of other countries will lower the aggregate future consumption options of those citizens, increases in the level of foreign indebtedness reduce economic well-being within a given country.

Estimates of the net investment position, expressed in current U.S. dollars, are published in the IMF's *International Financial Statistics Yearbook*. These estimates have

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[22] Like these other assets, the value of the human capital of living persons represents the future consumption that possession of such assets enables. The endogenous growth perspective has argued that the benefits of societal learning are partly the output such learning enables in the current generation and partly the fact that future generations can start learning at a higher level. As a consequence, higher levels of education produce a higher long run growth rate, as well as a higher current level of income [Galor and Zeira (1993), Eckstein and Zilcha (1994)]. If this is correct, a production cost valuation of human capital may underestimate considerably the value of the human capital stock investments.

[23] Implicit in this position is a belief that current stock market valuations (especially in the US) are excessive, and that the economy has not in fact entered a qualitatively new Internet era.

been converted to current price national currencies at market exchange rates and then deflated by the GDP deflator and adjusted for population to obtain real per capita estimates in the net international investment position, expressed in national currency units (Table 3).

2.2.6 State of the Environment and National Heritage

Like the excess depletion of natural resources, current consumption can be increased at the expense of the degradation of the environment, reducing the economic well being of future generations. Consequently, changes in the level of air and water pollution should be considered an important aspect of the wealth accumulation.

Countries pass on from generation to generation both a natural and made-made national heritage. If this heritage were damaged, the economic well being of future generations would be reduced. Since it is very difficult, if not impossible, to put a monetary value on, for example, the pristine condition of national parks, or historic buildings, there will be no attempt to set an aggregate value to these assets. However, the issue of *trends* in well being is the *change* in such assets, which is easier to measure and for which indicators of environmental quality can be developed.

Osberg (1985a) has argued that heritage preservation laws can be seen as an optimal intergenerational contract, which constrains the present generation not to despoil irreplaceable assets. In the presence of such constraints, the current generation still has to decide how large a bequest to future generations to leave in the form of replaceable assets, but the "national heritage" remains untouched. As a consequence, (like the family heirloom that is never priced because it will never be sold), trends in economic well being can be evaluated without placing an explicit monetary value on irreplaceable environmental and cultural assets.

Probably the best-known environmental change is global warning arising from increased emissions of greenhouse gases, the most common of which is carbon dioxide emissions. Fortunately, data are available on these emissions and it is possible to estimate the costs of these emissions. These costs can then be subtracted from the stock of wealth to obtain an environmentally adjusted stock of wealth.

The conceptual issues to be dealt with in estimating the costs of CO_2 emissions include whether the costs should be viewed from a global, national or sub-national perspective, whether the costs increase linearly with the levels of pollution, whether the costs should be borne by the producer or receptor of trans-border emissions, and whether costs should vary from country to country or be assumed the same for all countries. Since global warming affects all countries, we estimate world total costs of emissions and allocate these costs on the basis of a country's share of world GDP.

Fankhauser (1995) has estimated that the globalized social costs of CO_2 emissions (with no adjustment for different national costs) at $20 US per ton in 1990. World Bank researchers (Atkinson et al, 1997) have applied this number to CO_2

emissions in developed countries to estimate the value of the loss of environmental services as a proportion of output and the measure of genuine saving.

According to data from the International Energy Agency, world CO_2 emissions in 1997 were 22,636 millions of metric tons. Based on the $20.00 U.S. per ton cost of CO_2 emissions, the world social costs of CO_2 emissions was $452,720 million. This amount was allocated on the basis on a country's share of nominal world GDP, expressed in U.S. dollars. It was then converted into national currency at the purchasing power parity exchange rate and divided by population. As these costs represent a loss in the value of the services provided by the environment, they can be considered a deduction from the total stock of wealth of the society. For example, in 1997, per capita stocks of wealth in Canada were reduced by $415 Canadian per cent because of the social costs imposed by CO_2 emissions according to this methodology.

2.2.7 Estimates of total wealth

As the estimates of the physical capital stock, the R&D capital stock, net foreign debt, and environmental degradation are expressed in value terms, they can be aggregated and presented on a per capita basis (Table 3). Net foreign debt per capita is a negative entry, while the social costs of CO_2 emissions are subtracted from the stocks of wealth.

For the 1980-96 period, estimates for the four components of the wealth stock included in this paper are available for ten countries (Table 3). The rate of change for per capita real wealth stocks in national currency for these countries ranged from an increase of 64.3 percent in Denmark to 15.1 per cent in the United States. The rate of change for the other countries in descending order of magnitude follows: Norway (44.8 per cent), Italy (36.3 per cent), France (33.8 per cent), United Kingdom (32.6 per cent), Germany (29.7 per cent), Canada (23.3 per cent), Australia (15.8 per cent), and Finland (15.4 per cent).

2.3 Inequality and Poverty

The idea of a "Social Welfare Function" which is a positive function of average incomes and a negative function of the inequality of incomes has a long tradition in welfare economics. However, in measuring the level of social welfare, the exact relative weight to be assigned to changes in average incomes, compared to changes in inequality, cannot be specified by economic theory. Indeed, since Atkinson (1970) it has been recognized that the measurement of inequality itself depends on the relative value which the observer places on the utility of individuals at different points in the income distribution. For a "Rawlsian", only changes in the well-being of the least well off matter, but others will admit some positive weight for the income gains of the non-poor,[24] and will assign some negative weight to inequality among the non-poor.

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[24] Jenkins (1991) surveys the issues involved in measurement of inequality.

Since the economic well-being of the population is affected by inequality in the distribution of income and by the extent of poverty[25], there are two issues: 1) one's perspective on the importance of inequality/poverty compared to trends in average income, and 2) one's view of the relative weight to be placed on poverty compared to inequality. We therefore suggest that a compound sub-index to recognize explicitly these issues would place some weight (β) on a measure of inequality in the aggregate distribution of income and some weight (1-β) on a measure of poverty.

The most popular measure of inequality in the distribution of income is undoubtedly the Gini index. For the purposes of the construction of the index of economic well being, we have chosen the Gini coefficient of after-tax household income[26]. For the most recent year for which data are available for each country (Table 4), income inequality and the Gini coefficient was largest (and hence income inequality greatest) in the United States (0.387) and lowest in Finland (0.243). The Gini coefficients for LIS countries can be found in Osberg and Xu (1997, 2000).

Recently, Osberg and Xu (1997) have noted that the Sen-Shorrocks-Thon measure of poverty intensity is both theoretically attractive as a measure of poverty, and also convenient, since it can be decomposed as the product of the poverty rate, the average poverty gap ratio and the inequality of poverty gap ratios. Furthermore, since the inequality of poverty gap ratios is essentially constant, poverty intensity can be approximated as twice the product of the poverty rate and the average poverty gap ratio. The poverty rate is the proportion of persons who fall below the poverty line, defined here as one half the median equivalent after-tax family income. The poverty gap ratio is defined as the percentage gap between the poverty line and the income of those below the poverty line.

The poverty rate varies greatly among the 14 countries for which LIS data are available (Table 4). For the most recent year for which micro-data tapes are available for each country, it ranged from a high of 18.0 per cent in the United States to a low of 5.0 per cent in Belgium. The poverty rate in other countries, in descending order, was: Australia (17.5 per cent), Italy (13.2 per cent), Canada (12.4 per cent), Spain (9.9 per cent), United Kingdom (9.7 per cent), Norway (9.2 per cent), Sweden (8.9 per cent),

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[25] Wilkinson (1996) argues that greater inequality increases the mortality rate. Daly and Duncan (1998) argue that absolute deprivation reduces life expectancy and conclude that policies targeted at increasing the incomes of the poor are likely to have a larger effect on mortality risk than policies designed to reduce inequality more generally.

[26] Since there is no data available on inequality and poverty within families, we have no option but to follow the standard pattern of assuming that equivalent income is equally shared among family members. Sharif and Phipps (1994) have demonstrated that if children do not in fact share equally in household resources, inequality within the family can make a very big difference to perceptions of the level of child poverty – and the same implications would hold for gender inequalities. However, since the issue for this paper is the *trend* of poverty, our conclusions will hold unless there has been a systematic trend over time in the degree of inequality within families (e.g. if senior citizen families, whose share of the poverty population has fallen over time, have systematically different levels of within-family inequality than younger families).

Germany (8.6 per cent), France (8.1 per cent), Denmark (7.2 per cent), Netherlands (6.3 per cent), and Finland (5.5 per cent).

There was much less variation across countries in the average poverty gap ratio. For the most recent year for which micro-data tapes are available for each country, it ranged from a high of 38.9 per cent in Denmark to a low of 22.4 per cent in Belgium. The average poverty gap ratio in other countries, in descending order, was: Sweden (36.6 per cent), United States (34.9 per cent), Canada (31.0 per cent), Italy (30.7 per cent), Germany (30.6 per cent), France (30.4 per cent), Netherlands (29.6 per cent), Norway (28.5 per cent), United Kingdom (28.5 per cent), Australia (27.7 per cent), Finland (27.5 per cent), and Spain (25.7 per cent).

The overall index of equality is a weighted average of the indices of poverty intensity for all units or households and the Gini coefficient, with the weights 0.75 and 0.25 respectively. The index is multiplied by –1 in order to reflect the convention that increases are desirable.

Unfortunately, the LIS database allows calculation of a long time series of income distribution estimates for only a few countries. Osberg (1999) examines long run trends in income distribution in the US, UK, Canada, Sweden and Germany. In Table 4, values of the income distribution and poverty variables in the years before the first LIS estimate for that country are assumed equal to the estimate for the first year of LIS data and the values for the years after the last LIS estimate are assumed equal to the estimate of the last year of LIS data. This is obviously an inadequate methodology and may lead to unreliable estimates for countries with short time series of LIS estimates.

2.4 Insecurity

If individuals knew their own economic futures with certainty, their welfare would depend only on their actual incomes over their lifetimes, since there would be no reason to feel anxiety about the future. However, uncertainty about the future will decrease the economic welfare of risk averse individuals. Individuals can try to avoid risk through social and private insurance, but such mechanisms do not completely eliminate economic anxieties. Given the value that individuals place on economic security, any increase in insecurity reduces economic well being.

Although public opinion polling can reveal that many feel themselves to be economically insecure, and that such insecurity decreases their subjective state of well being, the concept of economic insecurity is rarely discussed in academic economics.[27] Consequently, there is no generally agreed definition of economic insecurity. Osberg (1998) has argued that economic insecurity is, in a general sense, "the anxiety produced

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[27] To be precise, in the ECONLIT database from 1969 to December 1997, there are nine matches to the term "economic insecurity". A search of the Social Sciences Index from 1983, and the PAIS International and PAIS Periodicals/Publisher Index from 1972, yielded eleven matches. The Social Sciences Citation Index for the years 1987-1997 was similarly unproductive.

by a lack of economic safety – i.e. by an inability to obtain protection against subjectively significant potential economic losses." In this sense, individuals' perceptions of insecurity are inherently forward looking, the resultant of their expectations of the future and their current economic context – hence only imperfectly captured by measures such as the ex post variability of income flows.[28] Ideally, one would measure trends in economic security with data which included (for example) the percentage of the population who have credible guarantees of employment continuity and the adequacy of personal savings to support consumption during illness or unemployment. However, such data is not widely available. For these reasons, rather than attempt an overall measure of economic insecurity, this paper adopts a "named risks" approach, and addresses the change over time in four key economic risks.

Over fifty years ago, the United Nations' Universal Declaration of Human Rights declared:

> *Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other loss of livelihood in circumstances beyond his control.* [Article 25][29]

For this paper, we construct measures of the percentage change over time in the economic risks associated with unemployment, illness, "widowhood" (or single female parenthood) and old age. In each case, we model the risk of an economic loss associated with the event as a conditional probability, which can itself be represented as the product of a number of underlying probabilities. We weight the prevalence of the underlying risk by the proportion of the population that it affects. The core hypothesis underlying the measure of economic insecurity proposed here is that changes in the subjective level of anxiety about a lack of economic safety are proportionate to changes in objective risk.

2.4.1 – Unemployment

The economic risk associated with unemployment can be modeled as the product of the risk of unemployment in the population and the extent to which people are protected from the income risks of unemployment. We have taken as a proxy for the risk of unemployment changes in the employment rate (employment/population ratio). Changes in this ratio reflect changes in the unemployment rate and changes in the participation rate (both cyclical and structural). The extent to which people have been protected by unemployment insurance (UI) from the financial impacts of unemployment can be

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[28] For example, a tenured professor with occasional consulting income may have a variable income stream, but feel little insecurity – and data only on individuals' income streams cannot reveal who had a long term employment guarantee (like tenure), and who sweated out a series of short term contract renewals.

[29] In the 1990s, the gender specificity of the language of 1948 will strike many people as odd – but Article 2 makes it clear that all Articles of the Universal Declaration of Human Rights are to be guaranteed to male and female persons equally.

modeled as the product of: 1) the percentage of the unemployed who claim regular UI benefits and 2) the percentage of average weekly wages replaced by UI. Unfortunately, internationally comparable data on these two variables have proven very difficult to obtain and are not included in this version of the paper (they will hopefully be included in later versions). Thus the only component of the risk imposed by unemployment that is included in this paper is the employment rate (Table 5). We reiterate that this procedure ignores the impact on economic insecurity of changes to unemployment insurance, such as the huge drop in UI coverage observed in Canada in the 1990s.

2.4.2 – Illness

Viewed from a longer-term perspective, the economic insecurities associated with illness in developed economies certainly dropped considerably with the introduction of universal health insurance in many countries. Since our other data series are often difficult to obtain prior to 1971, the period covered by the present study is 1971 to 1996. This period unfortunately largely omits the improvement in economic well being that universal health care represented. Nevertheless, it is still of interest to examine how the economic insecurities associated with illness have evolved over the last quarter century.

We would emphasize that we do not attempt to model the psychological insecurities associated with health – just the economic risks. Recent decades have seen both substantial advances in medical technology and increased awareness of health hazards (such as Jakob-Kreutzfeld Syndrome -"mad cow disease") which were previously unimaginable. It is not clear whether subjective anxieties about health have increased or fallen as a result.

Our objective is only to model the trend in economic anxieties associated with ill health, but at this stage of our research, there is an important omission. The economic risks associated with illness are partly the risk of loss of earnings. Historically, a portion of the labour force has had some protection against such losses through sick leave provisions in their individual or collective employment contracts. One implication of a trend to short term contract employment and self employment in developed economies is an increase in the fraction of the population whose incomes ceases totally, in the event of ill health. This paper does not attempt to model such risks. Instead, we focus on the risk of large out of pocket health care costs, with the risk directly proportional to the share of private medical care expenses in disposable income.

The OECD Health Data CD-ROM provides a long time series on medical care expenses as a proportion of disposable income (Table 6). For the 14 countries covered by the LIS data base, medical expenses as a proportion of disposable income in 1996 ranged from a high of 14.0 per cent in the United States to a low of 1.1 per cent in the United Kingdom. The proportion in the other countries, in descending order of magnitude was: Belgium (8.6 per cent), Netherlands (8.4 per cent), France (7.2 per cent in 1995), Australia (5.5 per cent), Italy (4.7 per cent in 1995), Spain (3.7 per cent in 1995), Finland

(3.5 per cent in 1995), Canada (3.2 per cent), Germany (2.5 per cent), Norway (2.0 per cent), Sweden (1.6 per cent) and Denmark (1.4 per cent).

However, to follow the convention that increases in the sub-components of the index of economic security are improvements, we want an index of "security" and not an index of "insecurity", hence we multiply the risk of illness where increases are negative for economic well-being by –1. A negative sign therefore indicates that an increased negative value represents a decline in well being (and a decreased negative value an increase in well being).

2.4.3 – Single Parent Poverty

When the UN Universal Declaration of Human Rights was drafted in 1948, the percentage of single parent families was relatively high in many countries, partly as a result of World War II. At that point in time, "widowhood" was the primary way in which women and children lost access to male earnings. Since then, divorce and separation have become the primary origins of single parent families. However, it remains true that many women and children are "one man away from poverty", since the prevalence of poverty among single parent families is extremely high.

To model trends in this aspect of economic insecurity, we multiply (the probability of divorce) * (the poverty rate among single female parent families)[30] * (the average poverty gap ratio among single female parent families)[31]. [The product of these last two variables is proportional to the intensity of poverty.]

We stress that in constructing a measure of the economic insecurity associated with single parent status, we are *not* constructing a measure of the social costs of divorce. Economic well being is only part of social well being, and divorce has emotional and social costs (e.g. for the involved children) that are not considered here. Arguably, over time the social costs associated with divorce (e.g. stigma) have changed, as the institution of marriage itself has changed – but such issues lie well beyond the scope of this paper.

Table 7 provides data on divorce rates from the UN Demographic Yearbook and estimates of the poverty rate and poverty gap ratio for single female parents calculated from the LIS micro-data tapes. The annual divorce rate ranged in 1996 (or the most recent year before 1996 for which data are available) from a high of 4.33 per cent of legally married couples in the United States to a low of 0.47 per cent in Italy. The divorce rate in other countries, in descending order of magnitude, was the following: Belgium (3.45 per cent), United Kingdom (2.89 per cent), Australia (2.86 per cent), Finland (2.69

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[30] However, RATE= INCIDENCE x AVERAGE DURATION. Since the poverty rate among single parents is equal to the conditional probability that a single parent will enter poverty and the average duration of a poverty spell, we do implicitly account jointly for the duration of poverty spells and for their likelihood.

[31] This procedure effectively ignores single male parents. While the authors of this paper feel this is an important group, males comprise only about 10 per cent of the single parent population, and their income loss on divorce is considerably less than that of women.

per cent), Canada (2.62 per cent), Denmark (2.43 per cent), Sweden (2.42 per cent), (Norway (2.28 per cent), Netherlands (2.24), Germany (2.14 per cent), France (1.90 per cent), and Spain (0.83 per cent).

The poverty rate for single female parents in the most recent year (in brackets) for LIS micro-files ranged from a high of 44.0 per cent (1997) in the United States to a low of 2.8 per cent (1992) in Sweden. The poverty rate for single female parents in other countries, in descending order of magnitude was: Australia, 40.7 per cent (1994); Canada, 40.7 per cent (1994); Germany, 40.0 per cent (1994); Italy, 32.2 per cent (1995); Netherlands, 25.5 per cent (1991); Denmark, 23.9 per cent (1992); Spain, 23.2 per cent (1990); France, 17.7 per cent (1984); United Kingdom, 13.8 per cent (1986); Norway, 11.3 per cent (1995); Belgium, 7.4 per cent (1992); and Finland, 6.4 per cent (1995).

The average poverty gap ratio for single female parents in the most recent year (same year as for the poverty rate above) for LIS files ranged from a high of 41.6 per cent in Norway to a low of 18.2 per cent in Sweden. The poverty gap ratio for other countries, in descending order of magnitude, was the following: Norway (41.6 per cent), Italy (40.0 per cent), United States (39.6 per cent), Germany (39.2 per cent), Belgium (33.6 per cent), France (32.1 per cent), Netherlands (29.5 per cent), Spain (28.6 per cent), Canada (27.5 per cent), Australia (24.5 per cent), Denmark (23.9 per cent), United Kingdom (23.6 per cent), and Finland (23.0 per cent).

Again, to follow the convention that increases in the sub-components of the index of economic security are improvements, we want an index of "security" and not an index of "insecurity", hence we multiply the risk of single-parenthood where increases are negative for economic well-being by –1. A negative sign therefore indicates that an increased negative value represents a decline in well being (and a decreased negative value an increase in well being).

2.4.4 – Old Age

Since income in old age is the result of a lifelong series of events and decisions, which we cannot hope to disentangle in this paper, we model the idea of "insecurity in old age" as the chance that an elderly person will be poor, and the average depth of that poverty.

The poverty rate and the poverty gap ratio for the population 65 and over are given in Table 8, as calculated from LIS micro-data files. The poverty rate for the elderly in the most recent year (in brackets) for LIS micro-data files ranged from a high of 33.1 per cent (1994) in Australia to a low of 2.6 per cent (1991) in the Netherlands. The poverty rate for single female parents in other countries, in descending order of magnitude was, the following: United States, 24.4 per cent (1997); Italy, 14.7 per cent (1995); France, 17.4 per cent (1984); Norway, 12.0 per cent (1995); Spain, 11.7 per cent (1990); Belgium, 10.0 per cent (1992); Germany, 7.9 per cent (1994); Sweden (6.0 per cent); Denmark, 5.7 per cent (1992); United Kingdom, 5.4 per cent (1986); Canada, 4.8 per cent (1994);

Finland, 4.3 per cent (1995).

The average poverty gap ratio for the elderly in the most recent year for the LIS micro-data files ranged from a high of 48.7 per cent in Denmark to a low of 9.3 per cent in Norway. The poverty gap ratio for other countries, in order of (descending magnitude was g: Denmark (48.7 per cent), Netherlands (41.1 per cent), Germany (31.6 per cent), Australia (27.6 per cent), United States (24.4 per cent), Spain (19,4 per cent), Belgium (19.6 per cent), Italy (18.3 per cent), Canada (13.4 per cent), Sweden (12.7 per cent), United Kingdom) 11.7 per cent), France (11.4 per cent), and Finland (9.8 per cent).

Again, to follow the convention that increases in the sub-components of the index of economic security are improvements; we want an index of "security" and not an index of "insecurity". Hence we multiply the risk of elderly poverty by –1. A negative sign therefore indicates that an increased negative value represents a decline in well being (and a decreased negative value an increase in well being).

2.4.5 Overall Index of Economic Security

The four risks discussed above have been aggregated into an index of economic security (Table 9). The aggregation weights are the relative importance of the four groups in the population, which are also in Table 9.

- For unemployment, the proportion of the 15-64 population in the total population.

- For illness, the proportion of the population at risk of illness, which is 100 per cent.

- For single parent poverty, the proportion of the population comprised of married women with children under 18.

- For old age poverty, the proportion of the population in immediate risk of poverty in old age, defined as the proportion of the 45-64 population in the total population.

The above proportions have been normalized for all years to one. For example the weights for Canada in 1997 were the following: unemployment (0.2779), illness (0.4160), single parenthood (0.2158), and old age (0.0904).[32]

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[32] In order that the base year for the indexes of all risks of economic security be the same at 1.000 in Table 9, the constant 2 has been added to the indexes of risk of illness, single parenthood, and old age, whose original base was –1.

Based on the above weights, the overall index of economic security for seven LIS countries are given in Table 9. Appendix B presents data for seven other countries but given the limited number of years for which LIS data are available, these estimates cannot be seen as being of the same order of reliability.

2.5. Estimates of trends in the Overall Index of Economic Well-being
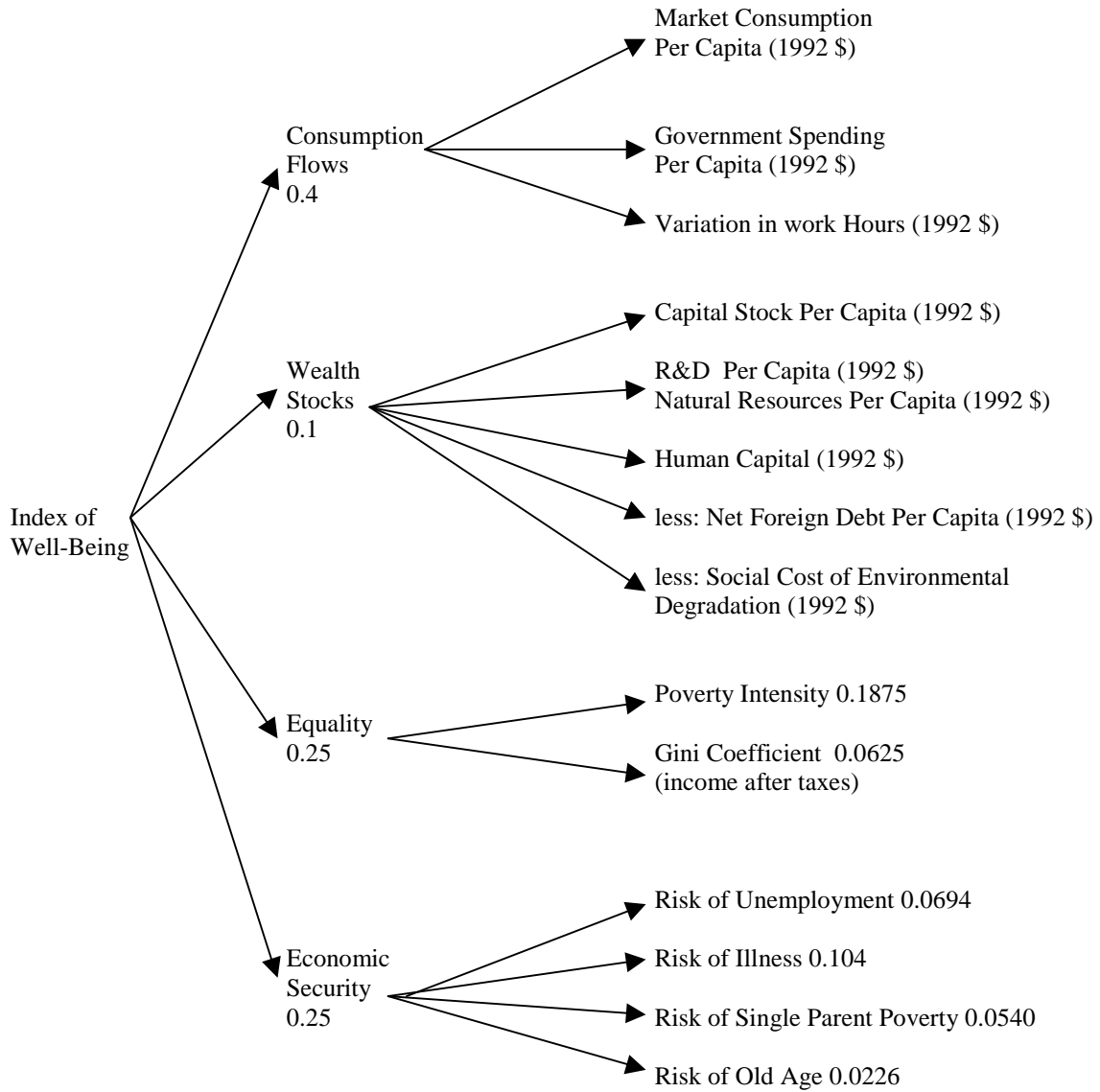
2.5.1 Weighting of components

Trends in any index are determined by the choice of variables that are included in the index, the trends in those variables and the weights these variables receive. Since the four main dimensions of average consumption, intergenerational bequest, inequality/poverty and insecurity are separately identified, it is easy to conduct sensitivity analyses of the impact on perceived overall trends of different weighting of these dimensions. For discussion purposes, our "standard" weighting gives consumption flows a weight of 0.4, wealth stocks a weight of 0.1, and equality and economic security have each been given weights of 0.25.

As the sub-components of the consumption flows and wealth stocks are expressed in dollars, there is no need for explicit weighting. Their dollar values represent implicit weights. In terms of the inequality/poverty subcomponents, a somewhat Rawlsian perspective would assign greater importance to poverty than to overall inequality trends. On this basis[33], and a weight of 0.1877 or (=0.25*0.75) has therefore been given poverty intensity and 0.0625 (=0.25*0.25) to the Gini coefficient. In other words, poverty is given three times the weight of inequality. The subcomponents of the economic security index are weighted by the relative importance of the specific population at risk in the total population.

The "standard" weighting of components and subcomponents of the economic well-being index are shown below and in Chart 1.

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[33] A pure Rawlsian would put all the weight on the wellbeing of the least well off.

Chart 1: Weighting Tree

"Standard" Weighting of the Index of Economic Well-being
(Weights of total index in brackets)

<u>Basic Component</u>	<u>Sub-components</u>
Consumption Flows (0.40)	Real total consumption (NCU per capita)
	Real current government spending on goods and services excluding debt service (NCU per capita)
	Adjustment for changes in leisure
Stocks of Wealth (0.10)	real capital stock (including housing) (NCU per capita)
	Real R&D stock (NCU per capita)
	Real net foreign debt (NCU per capita)
	Real social cost of environmental degradation (CO2 emissions) (NCU per capita)
Equality (0.25)	poverty intensity
	Income inequality (Gini coefficient)
Security[34] (0.25)	risk of unemployment
	Risk of illness
	Risk of single parenthood poverty
	Risk of poverty in old age

The formula for the overall index follows:

IEWB= (0.4)[C+G+UP]+ (0.1)[K+ R&D+-D-ED]+[(0.1875 (LIM)+(0.0625)Gini]+ [(0.0694)UR+(0.1040)ILL+(0.0540)SP+ (0.0226)OLD]

where

IEWB= index of economic well-being

C= real per capita adjusted personal consumption

G= real per capita current government spending excluding debt charges

UP= real value of per capita unpaid labour

K= real per capita capital stock (including housing)

R&D= real per capita stock of research and development

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[34]The weights are for 1997. The actual weights used vary by year.

NR= real per capita stock of natural resource wealth

HC= real per capita stock of human capital

D= real per capita net foreign debt

ED= real per capita social costs of environmental degradation (CO2 emissions)

LIM= poverty intensity

Gini= Gini coefficient for after tax income

UR= risk of unemployment

ILL= risk of illness

SP= risk of single parenthood poverty

OLD= risk of poverty in old age

Table 10 shows the indexes for all four components of the index of economic well being and the overall index. To put all the sub-components to a common base of 1, the constant 2 has been added to the index of inequality (Table 4) to convert it to an index where an increase corresponds to a rise in economic well being.

3. Trends in the overall index of economic well-being

We are acutely conscious that the data sources available to us are far from what we would like. We know that restricting ourselves to internationally comparable data series has meant that we have neglected issues (such as the decline in UI coverage in Canada) which are important for some countries. We also know the reliance on interpolation between the data points available in the Luxembourg Income Study implies, necessarily, that we cannot detect year to year fluctuations in some components of our index. However, we hope that enough data remains to give a preliminary indication of trends in economic well being, from a broader perspective than that provided by GDP accounting.

Since we want to examine the sensitivity of a measure of economic well being to alternative possible weightings of accumulation, income distribution and insecurity, Figures 1 to 7 present both our "standard" and an "alternative" weighting. The "alternative" is much more heavily weighted to average consumption (0.7), has the same weighting on accumulation (0.1) and less heavily emphasizes income distribution (0.1) and insecurity (0.1). For each country, we compare trends in the "standard" and "alternative" indices with trends in GDP per capita.

For all countries, consideration of bequest, inequality/poverty and insecurity reduces the measured rate of growth of economic well being, compared to use of the GDP per

capita index. Generally, the more heavily current average consumption is emphasized, the closer our index comes to GDP per capita. However, in every instance the consideration of a wider range of issues than those recognized in GDP accounting reduces the measured increase in economic well being.

In some countries, the change in perception of trends in well being that a broader measure produces is striking. In the United States, GDP per capita increased by approximately 30% over the 1980 to 1997 period, but our "standard" index is essentially flat, with a total increase of 4% over the period. In the UK, increases in per capita GDP were even larger (39.8%), but our "standard" weighting (which has a heavy emphasis on economic inequality and insecurity) shows a decline of about 9%. Both the US and UK have been marked by a substantial increase in economic inequality over this period and increases in money income have been limited to the top end of the income distribution (see Osberg, 1999). As well, increases in money income in the US have been obtained at the cost of substantial increases in working hours. Hence, this is not an unreasonable finding.

For the UK and Sweden, GDP per capita rose, while our "standard" index of economic well being declined. In both cases, however, this qualitative result is quite sensitive to the relative weighting of current consumption compared to distribution and insecurity - the "alternative" index does not actually decline[35] (although it is almost flat in Swedish data). As Osberg and Xu (1997,2000) note, recent years have seen an increase in Swedish poverty intensity, hence it is not surprising that an index which weights heavily trends in income distribution and insecurity should show a deterioration.

Norway is a country where trends in economic well being are, more or less, scaled down versions of the trend in GDP per capita. In this case, our current estimates of trends in the Index of Economic Well Being could be said to provide relatively little "value added", compared to trends in GDP per capita, since each index moves in much the same way over time (albeit showing much stronger growth in GDP per capita than in economic well being).

However, Australia and Canada - whose economies share a relative dependence on raw materials production - are noteworthy in showing a greater cyclical sensitivity in GDP per capita than one finds in either measure of economic well being, or in GDP per capita in other countries. In Canada and Australia, the recessions of both the early 1980s and early 1990s show up clearly in per capita GDP fluctuations - to a much greater degree than Germany or Norway (the early 1980s recession is hard to find in UK or Swedish GDP per capita data). However, in both countries the trend in economic well being indices is much smoother, because changes in current income can be much more rapid than changes in wealth stocks, income distribution and insecurity. Canadian trends in economic well being are also quite similar for "standard" and "alternative" weightings

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[35] As well, we would caution that because we have not been able to get, for this paper, estimates of the income replacement provided under unemployment insurance in these countries, we may be over estimating the importance for economic insecurity of the rise in unemployment in these countries.

of the index[36].

4. Level Comparisons of Economic Well-being

Comparisons of the level of well being across countries are inherently much more problematic than comparisons of the trends in various components of economic well being within countries. In across country comparisons, the institutional context of economic data differs to a far greater extent than in within country, over time comparisons. Calculations of purchasing power parity equivalence across several countries have greater uncertainty than comparisons of within country consumer price levels. Statistical agencies in different countries differ in their data availability and data gathering practices to a greater degree than they change those practices over time in the same country. For all these reasons, this paper avoids direct commentary on comparative levels of economic well being.

5. Conclusion

This paper has developed an index of economic well-being based on four dimensions or components of economic well-being for selected OECD countries, with the weight given each component in brackets- consumption flows, stocks of wealth including physical capital and natural resources, income distribution, and economic security.

We argue that providing explicit weights of these components of well being is important in enabling other observers to assess whether, by their values of what is important in economic well-being, they would agree with this assessment of trends in the modern economy. Some events - like a major recession - may have adverse impacts on all four dimensions of well being, producing lower average consumption, more inequality, more insecurity and less accumulation of capital for the benefit of future generations. In such a case, values as to the relative weights to be assigned to the components of well being are of secondary concern. However, in other instances (such as environmental policy concerning global warming) the relative weights assigned to different dimensions of well being may be crucial. A major reason for being explicit about the weights to be assigned to dimensions of well being is to be clear about when there is, and when there is not, a conflict of fundamental values in the assessment of social trends.

In general, however, a key finding of this paper is that economic well-being, for at least two different sets of relative weights, has increased at a much slower rate over the last 25 years than real GDP per capita, a widely-used indicator of economic well-being.

In Norway, trends in economic well being are qualitatively, if not quantitatively, similar to trends in GDP per capita. However, in two countries (Australia and Canada) trends in well being are cyclically dissimilar to GDP per capita trends. In the US and UK the secular trend one perceives in economic well being depends heavily on whether one uses GDP per capita or a broader index of economic well being which includes consideration of income distribution and economic insecurity- and the same is even more true of

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[36] But this paper does not capture the rise in economic insecurity produced by declining UI coverage.

Germany and Sweden. In some countries (e.g. Sweden) the trend one perceives in economic well being is very sensitive to the relative weighting of consumption, accumulation, distribution and insecurity - but in others (e.g. Canada) this sensitivity is much less pronounced. In short, even with the highly imperfect data available for this study, there is a good deal of information content in using a broader measure of economic well being than GDP per capita.

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