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NEW ESTIMATES OF THE INDEX OF ECONOMIC WELL-BEING FOR SELECTED OECD COUNTRIES, 1980-2007

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Abstract

This report presents new estimates of the Index of Economic Well-being (IEWB) and its four domains (consumption flows, stocks of wealth, economic equality, and economic security) for 14 OECD countries for the 1980-2007 period. It finds that in 2007 Norway had the highest level of economic well-being and Spain the lowest. Canada ranked ninth among the fourteen countries. Over the 1980-2007 period Denmark enjoyed the most rapid increase in economic well-being, and the Netherlands the slowest. In all 14 countries rate of advance of the IEWB was less than that of GDP per capita. The IEWB addresses most of the recommendations of the recently released report from the Commission for the Measurement of Economic Performance and Social Progress (the Stiglitz report) on what aspects of economic reality an index of economic well-being should capture.

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Executive Summary

In 1998, the Centre for the Study of Living Standards (CSLS) released the first estimates of the Index of Economic Well-being for Canada (Osberg and Sharpe, 1998). The Index of Economic Well-being (IEWB) is a composite index based on a conceptual framework for measuring economic well-being developed by Osberg (1985). Over the past decade, the CSLS has extended the geographical coverage of the Index to the Canadian provinces and to major OECD countries and has made a number of changes to the methodology used to construct the Index.

This report has two main objectives. The first is to outline the methodology underlying the IEWB, with emphasis on improvements since 1998. The second is to present updated estimates of the IEWB for selected OECD countries over the 1980-2007 period. The report also discusses trends in the four domains of economic well-being that make up the Index – current consumption, wealth, economic equality, and economic security – as well as an analysis of the sensitivity of our results to the subjective choice of weights assigned to those four domains.

The Index of Economic Well-being: Motivation and Conceptual Framework

The conceptual framework underlying the Index of Economic Well-being is based on two main ideas. First, economic well-being has multiple dimensions and an index should reflect that fact by aggregating measures of the various domains of economic well-being. Second, an index of economic well-being should facilitate public policy discussion by aggregating across the domains of economic well-being in a way that respects the diversity of individual values. Individuals differ (and have a moral right to differ) in the relative weights they assign to different dimensions of economic welfare, and an index should be useful to all individuals irrespective of those value differences.

The most frequently cited indicator of economic well-being is per-capita GDP. GDP measurement is essential for many important public policy purposes such as macroeconomic demand management and public finance. However, GDP accounting omits consideration of many issues – leisure time, longevity of life, depletion or accumulation of asset stocks, income inequality, economic security, etc. – that are important to individuals' economic welfare. Implicitly, per-capita GDP assigns zero weight to these dimensions of well-being. It assumes that these issues do not matter.

In accordance with the conceptual framework developed by Osberg (1985), the IEWB is a composite index comprised of four domains of economic welfare:

- **Per-capita consumption**
- **Per-capita wealth**
- **Economic equality**
- **Economic security.**

These four domains reflect economic well-being in both the *present* and the *future*, and account for both *average* access to economic resources and the *distribution* of that access among members of society. In basing the IEWB on data that reflect each of these domains, we are constructing an index that captures the multiplicity of dimensions of economic well-being.

We recognize that there are many non-economic aspects of human welfare. In focusing on *economic* well-being, we do not mean to downgrade their importance. Instead, we are motivated by the idea that a better measure of "access to resources needed for a decent standard of living" is needed if economic and social trends are to be combined into an index with larger ambitions.

Indices of economic and social well-being are constructed because societies have to make public policy choices and the members of a society are therefore, from time to time, faced with questions of the form: Would public policy X make 'society' better off? Since some policies may favour one dimension of well-being over another, to answer this class of question citizens need a way of 'adding it all up' – a way of coming to a summative judgment about impacts across the different, conceptually dissimilar domains of economic welfare. One of the aims of index construction is therefore to facilitate public policy discussion by providing a transparent means of aggregating across different dimensions of well-being.

'Adding up' across the domains of well-being necessarily requires an explicit or implicit value judgment about the relative importance of the domains. Since individuals have morally legitimate differences in their values, there can be no single, objectively correct way of aggregating across the domains of well-being. We argue that most indices of economic well-being (such as per-capita GDP) make important value judgments, but they do so implicitly rather than explicitly.

The IEWB addresses this issue by making value judgments as explicit and transparent as possible. Our hypothesis is that indices of societal well-being can best help individuals to come to reasonable answers about social choices if information is presented in a way that highlights the objective trends in major dimensions of well-being and thereby helps individuals to come to summative judgments – but also respects potential differences in values. In constructing the IEWB, individuals can select weights for the four domains in accordance with their own values. The IEWB is therefore capable of facilitating summative judgments and of clarifying why such judgments may sometimes diverge. If disagreement about policy decisions occurs, it is useful to know

whether such disagreement comes from differing empirical assessment of objective data or differing values about their relative importance.

Thus, the IEWB achieves its two major aims: to aggregate across different dimensions of economic well-being, and to allow for such aggregation even in the presence of morally legitimate value differences.

Methodological Developments in the IEWB

In past papers, we have described the details of the construction of the IEWB (Osberg and Sharpe, 1998, 2002a, 2005). Interested readers may consult those references. In this section, we describe only the significant methodological improvements that the IEWB has undergone since its initial publication in 1998. The following is an outline of the three major changes:

- **A linear scaling technique was introduced.** The linear scaling technique is a method of standardizing the ranges of different variables so that they all take values between zero and one. This serves two purposes. First, it prevents the IEWB from being dominated by a few underlying variables that take on very large range of values. Second, it standardizes variables in such a way that an increase is always good for economic well-being and a decrease is always bad. We note that the values of a scaled variable are always sensitive to the range of values that the scale assumes. The linear scaling technique presumes that the observed range of any variable is a reasonable starting point for the feasible range that can be taken by the variable, and this makes it sensitive to that observed range.

- **The risk of unemployment component of the IEWB was reconceptualized.** In measuring the risk from unemployment, early versions of the IEWB used an expected financial value approach that implicitly gave equal weight to changes in the unemployment rate and changes in the financial protection that Unemployment Insurance provides to the unemployed (Osberg and Sharpe, 1998). Based on recent evidence on the disutility of being unemployed relative to the disutility of the income loss from unemployment, it was decided to weight the unemployment rate much more heavily than the financial protection from unemployment variable (80:20).

- **The baseline weights assigned to the four domains were adjusted.** In the original estimates of the Index of Economic Well-being the following weights were chosen: consumption flows (0.4), stocks of wealth (0.1), equality (0.25), and economic security (0.25). These weights were motivated partly by the observed proportions of consumption and aggregate savings in affluent nations, but the authors were criticized for a bias against sustainability (because of the low weight for the stocks of wealth) and for a bias in favour of material goods because of the high weight given consumption. In all our papers we have stressed the subjectivity of value judgments and have provided access to Microsoft Excel

spreadsheets so that readers can assess for themselves the implications of differing value judgments. Nevertheless, the 'base case' estimates of subsequent versions of the Index give equal weights to the four domains. Although this embodies the value judgment that the domains are equally important, it gives the appearance of being even-handed and balanced. However, we provide estimates of the Index based on alternative weighting schemes to show the sensitivity of the results to the weights chosen.

Trends in the Index of Economic Well-being, 1980-2007

This section reports our main empirical results. The study examines economic well-being in fourteen OECD countries: Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, the United Kingdom, and the United States. The key results are:

- Among the fourteen countries covered in the study, Norway had the highest overall Index of Economic Well-being in 2007, followed by Denmark and the Netherlands. Spain and the United States had the lowest overall IEWB values in 2007. Canada ranked ninth among the fourteen countries.

- Over the 1980-2007 period, the Index of Economic Well-being increased in all fourteen countries. Denmark experienced the largest growth of 1.71 per cent per year. The Netherlands had the least growth (0.58 per cent per year). In Canada, the Index increased 1.18 per cent per year.

- Norway ranked first in both the IEWB and per-capita GDP in 2007. However, aside from Norway, the IEWB and per-capita GDP produce completely different rankings of countries. For example, Canada was fourth in terms of GDP per capita in 2007, while it was only ninth in terms of the Index of Economic Well-being.

- IEWB growth was slower than per-capita GDP growth in all countries over the 1980-2007 period. In particular, Norway grew by 3.46 per cent per year in terms of GDP per capita, but only by 1.59 per cent per year in terms of its IEWB.

- The United States had the highest score in the index of the consumption domain in 2007, with second-place Norway well behind. Finland had the lowest score in the consumption domain. Canada ranked eighth.

- Finland did have the fastest growth in the consumption domain over the period, at 6.28 per cent per year. The slowest growth was 2.11 per cent per year in Belgium. Canada ranked twelfth with annual growth of 2.40 per cent.

- Norway had the highest score in the index of the wealth domain in 2007, while Spain had the lowest. Canada ranked seventh among the fourteen countries.

- Spain and Canada enjoyed the largest per cent increases in their wealth scores over the period; Spain's score grew 5.17 per cent per year and Canada's grew 4.21 per cent per year. Finland had the slowest growth in the wealth domain, at 2.01 per cent per year.

- On the index of the economic equality domain, Sweden had the highest score among the fourteen countries in 2007. Denmark was second. The United States had by far the lowest score. Canada ranked eleventh.

- The index of the economic equality domain declined in eleven of the fourteen countries over the 1980-2007 period. The largest decline by far was in the United States, where economic security fell 2.31 per cent per year. Economic equality increased in Denmark, France, and Sweden, with Denmark's 1.07 per cent annual growth rate leading the way. Canada ranked fifth among all the countries with an annual decline of 0.36 per cent.

- Norway had the highest score in the economic security domain in 2007, followed by Denmark. The United States had by far the lowest. Canada ranked eighth in economic security.

- Economic security declined in ten of the fourteen countries over the 1980-2007 period. The largest decline was in the United States, where economic security fell 1.08 per cent per year. Denmark, Australia, Norway and Canada all experienced rising economic security over the period, led by Denmark at 0.40 per cent per year.

Sensitivity of Results to Value Judgments

The overall Index is the weighted sum of the four domains, and individuals may have different opinions about the relative weighting of those domains. An important objective of the Index of Economic Well-being is to make explicit the value judgments that underlie composite indicators of well-being by making the choice of weights as transparent as possible. By testing the sensitivity of our results against changes in the weights assigned to the four domains, we can see whether or not value judgments make a significant difference in the measurement of trends in economic welfare.

Sensitivity analysis shows that our key baseline results are robust to the use of different weights for the four domains. Economic well-being increased in every country over the 1980-2007 period under all four of the weighting schemes we use. Norway and Denmark had the highest levels of economic well-being in 2007, while Spain ranked near the bottom. This reflects the fact that Norway has high index scores in all four of the

domains of economic well-being, particularly in wealth and economic security, while Spain's scores are below the OECD average in all four domains. The results for the United States are particularly sensitive to the weights on economic equality and security relative to those on consumption and wealth; the greater the relative weights on equality and security, the worse the United States performs.

Projecting Economic Well-being to 2010

The IMF has referred to the recent financial crisis and the global recession it engendered in 2008 and 2009 as the most severe international financial crisis of the post-war period, so one must expect that the downturn has affected the economic well-being of people across the world. Using recent consumption and unemployment projections published by the OECD, we estimate the Index of Economic Well-being for the 2008-2010 period for the fourteen OECD countries.

Private consumption growth is expected to slow down in most countries as a result of the recession, with some countries experiencing a decline in consumption. More importantly, the unemployment rate is projected to increase in all fourteen countries. By far the largest projected increase is in Spain; there, the unemployment rate is expected to rise from 8.3 per cent in 2007 to 19.6 per cent in 2010, an increase of 11.3 percentage points. The next largest projected increase is 5.5 percentage points – from 4.6 per cent in 2007 to 10.1 per cent in 2010 – in the United States.

In combination, the cessation of per-capita consumption growth and the increase in the unemployment rate cause the IEWB to decline in every country between 2008 and 2010. The sharpest projected decline is 8.7 per cent in Spain – no surprise, given that Spain has both the largest projected consumption decline and the largest projected unemployment increase among the fourteen countries. In every country, declines in the index of the economic security domain are the major driver of the projected deterioration of overall economic well-being.

The IEWB and the Recommendations of the Sarkozy Commission

This report is being released at a time in which concern about the measurement of economic well-being is growing in the policy community. In September, 2009, the Commission on the Measurement of Economic Performance and Social Progress delivered its final report (Commission, 2009). Initiated by French President Nicolas Sarkozy and written by Nobel Prize-winning economists Joseph Stiglitz and Amartya Sen along with Jean-Paul Fitoussi, the Commission has drawn the attention of the academic and public policy communities toward the problem of appropriately measuring well-being and social progress. For the first time, the government of a major country has taken the explicit position that per-capita GDP growth is an inadequate measure of economic and social progress, and that policymaking should be oriented toward a broader conceptualization of public welfare.

The Commission made twelve recommendations in its final report. Although the Index of Economic Well-being precedes the Commission report by over a decade, it anticipates the Commission's recommendations. The Index addresses most of the Commission's recommendations with regard to what an index of economic well-being should capture, and its framework is potentially capable of incorporating additional concerns such as wealth inequality and risk of environmental catastrophe. Indeed, in its discussion of composite indices of well-being, the Commission report recognizes the Index of Economic Well-being as "more elaborated [than other composite indices] and relatively well-known" (Stiglitz *et al.*, 2009:237). The Index is a work in progress and there are further improvements to be made, but we consider the Commission's report to be an indication that the development of the IEWB is on the right track.

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New Estimates of the Index of Economic Well-being for Selected OECD Countries, 1980-2007[1]

In 1998, the Centre for the Study of Living Standards (CSLS) released the first empirical estimates for Canada of the Index of Economic Well-being (Osberg and Sharpe, 1998), a composite index based on a conceptual framework for measuring economic well-being developed by Osberg (1985). In the past decade, the CSLS has extended the geographical coverage of the Index to the Canadian provinces and to major OECD countries and has made a number of changes to the methodology used to construct the Index. The dual objectives of this report are to review these methodological changes and to present updated estimates of the Index for Canada and the provinces for the 1981-2008 period.

The report is divided into seven main parts. The first part provides a discussion of the motivation for the development of the Index of Economic Well-being (IEWB) and the potential contributions of the Index to the debate on the measurement of economic well-being. It also outlines the basic framework of the measure. The second part of the report discusses major methodological changes incorporated into the index, namely the switch to a scaling methodology, the reconceptualization of the risk from unemployment component of the economic security domain, and the move to equal weighting for the four domains. The third part, by far the longest, provides a detailed discussion of trends in the Index of Economic Well-being, and in the four domains and the sub-components of the domains, in fourteen OECD countries over the 1980-2007 period. The fourth part tests the sensitivity of our results to alternative assumptions regarding the relative weights assigned to the four domains of the Index. The fifth part provides projections of the Index through to 2010 on the basis of unemployment rate and aggregate consumption forecasts. In the sixth part, we discuss the recommendations of the recent Stiglitz Report on the measurement of economic well-being and social progress, commissioned by French President Nicolas Sarkozy. We argue that the Index of Economic Well-being addresses nearly all of the report's recommendations. The seventh part discusses some lessons learned from the authors' experience in the construction of the Index of Economic Well-being. The eighth part concludes.[2]

[1] This report is a revised version of a paper presented at the annual meeting of the Canadian Economics Association at the University of Toronto, May 29-31, 2009. The authors would like to thank the following persons for assistance in updating the extensive database upon which the estimates in this paper are based: Patrick Alexander, Jean-Francois Arsenault, Daniel Ershov, and Simon Lapointe, and Sharon Qiao. The authors would also like to thank Alexander Murray for excellent editing of the report, and Alberta Finance and Enterprise of the Government of Alberta for financial support for the updating of the IEWB database.

[2] The tables referred to throughout this report are located at the end of this document. We also make frequent reference to appendix tables containing the underlying data; these are available at the CSLS web site at http://www.csls.ca/iewb2009/IEWB_OECD_AppendixTables.pdf. The database is also available in Microsoft Excel format at http://www.csls.ca/iewb2009/IEWB_OECD.xls.

I. The Index of Economic Well-being: Motivation and Framework[3]

A frequent refrain in the social indicators literature is the (true) statement that there is more to "well-being" than economics, but it is also widely recognized that a key component of overall well-being is economic well-being or "access to economic resources." Although there are good grounds for thinking that national income accounting measures may not necessarily be a good guide to popular perceptions of trends in economic well-being, GDP per capita is probably the single most often mentioned criterion of economic progress.

In focusing on the economic aspects of well-being in this report we do not intend to downgrade the importance of non-economic issues. Instead, we are motivated by the idea that a better measure of "access to resources needed for a decent standard of living" is needed if economic and social trends are to be combined into an index with larger ambitions.

In focusing on the economic component of societal well-being, our particular emphasis is on the sensitivity of measures of aggregate "command over resources" to the omission or inclusion of measures of income distribution and economic security.

In contrasting GDP and the IEWB as measures of command over resources, we do not intend to denigrate the importance of obtaining an accurate count of the total money value of goods and services produced for sale in the market in a given country in a given year (i.e. GDP). Clearly, GDP measurement is essential for many important public policy purposes (e.g. macroeconomic demand management, public finance). However, GDP accounting does omit consideration of many issues (for example, leisure time, longevity of life, asset stock levels) which are important to individuals' command over resources. Although the compilers of the national accounts may protest that their attempt to measure the aggregate money value of marketed economic output was never intended as a full measure of economic well-being, it has often been used as such. The question the critics of GDP have to answer is whether alternative measures of command over resources are possible, plausible, and make some difference.

In developing an Index of Economic Well-Being for Canada based on four dimensions of economic well-being – consumption, accumulation, income distribution, and economic security – this report attempts to construct better measures of effective consumption and societal accumulation. However, an important point of difference with other indices is that we argue that "society's well-being" is not a single, objective number (like the average altitude of a country).

It is more accurate, in our view, to think of each individual in society as making a subjective evaluation of objective data in coming to a personal conclusion about society's well-being. Well-being has multiple dimensions and individuals differ (and have the moral right to differ) in their subjective valuation of the relative importance of each

[3] This section is largely based on Osberg and Sharpe (2005).

Exhibit 1: Conceptual Framework for the Index of Economic Well-being

Concept	Present	Future
"Typical Citizen" or "Representative Agent"	Average flow of current income	Aggregate accumulation of productive stocks
Heterogeneity of Experiences of All Citizens	Distribution of potential consumption -- income inequality and poverty	Insecurity of future incomes

dimension of well-being. But because all adults are occasionally called upon, in a democracy, to exercise choices (e.g. in voting) on issues that affect the collectivity (and some individuals, such as civil servants, make such decisions on a daily basis), citizens have reason to ask questions of the form: "Would public policy X make 'society' better off?" Presumably, self-interest plays some role in all our choices, but unless self-interest is the sole criterion, an index of society's well-being is useful in helping individuals answer such questions.

Although conceptually there may be no way to measure some of the different dimensions of well-being in directly comparable units, as a practical matter citizens are frequently called upon to choose between policies that favour one or the other. Hence, individuals often have to come to a summative decision – i.e. have a way of "adding it all up" – across domains that are conceptually dissimilar. From this perspective, the purpose of index construction should be to assist individuals – e.g. as voters in elections and as bureaucrats in policy making – in thinking systematically about public policy, without necessarily presuming that all individuals have the same values.

Our hypothesis is that indices of social well-being can best help individuals to come to reasonable answers about social choices if information is presented in a way that highlights the objective trends in major dimensions of well-being and thereby helps individuals to come to summative judgments – but also respects differences in values. Although it may not be possible to define an *objective* index of societal well-being, individuals still have the problem (indeed, the moral responsibility) of coming to a *subjective* evaluation of social states, and they need organized, objective data if they are to do it in a reasonable way.

The logic of our identification of four components of well being is that it recognizes both trends in average outcomes and in the diversity of outcomes, both now and in the future, as Exhibit 1 illustrates.

When an average flow like GDP per capita (or an alternative, such as the average personal income) is used as a summative index of well-being, the analyst implicitly is stopping in the first quadrant – assuming that the experience of a representative agent can summarize the well-being of society and that the measured income flow optimally weights consumption and savings, so that one need not explicitly distinguish between

present consumption flows and the accumulation of asset stocks which will enable future consumption flows.

However, if society is composed of diverse individuals living in an uncertain world who typically "live in the present, anticipating the future," each individual's estimate of societal economic well-being will depend on the proportion of national income saved for the future. GDP is a measure of the aggregate market income of a society. It does not reveal the savings rate, and there is little reason to believe that the national savings rate is automatically optimal. Indeed, if citizens have differing rates of time preference, any given savings rate will only be "optimal" from some persons' points of view. Hence, a better estimate of the well-being of society should allow analysts to distinguish between current consumption and the accumulation of productive assets (which determines the sustainability of current levels of consumption), and thereby enable citizens to apply their differing values.

As well, individuals are justifiably concerned about the degree to which they and others will share in prosperity – there is a long tradition in economics that "social welfare" depends on both average incomes and the degree of inequality and poverty in the distribution of incomes. If the future is uncertain, and complete insurance is unobtainable (either privately or through the welfare state), individuals will also care about the degree to which the economic future is secure for themselves and others.

These four components therefore have a logical rationale and a manageable number of headings. If the objective of index construction is to assist public policy discussion, one must recognize that when too many categories have to be considered simultaneously, discussion can easily be overwhelmed by complexity. We therefore do not adopt the strategy of simply presenting a large battery of indicators. However, because reasonable people may disagree in the relative weight they would assign to each dimension – e.g. some will argue that inequality in income distribution is highly important while others will argue the opposite – we argue that it is preferable to be explicit and open about the relative weights assigned to components of well-being, rather than leaving them implicit and hidden. (An additional reason to distinguish the underlying components of economic well-being is that for policy purposes 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.) We specify *explicit* weights to the components of well being, and test the sensitivity of aggregate trends to changes in those weights, in order to enable others to assess whether, by their personal values of what is important in economic well-being, they would agree with an overall assessment of trends in the economy.

The report's basic hypothesis – that a society's economic well-being depends on total consumption and accumulation, and on the individual inequality and insecurity that surround the distribution of macroeconomic aggregates – is consistent with a variety of theoretical perspectives. We do not present here a specific, formal model**.** In a series of papers (Osberg and Sharpe, 1998, 2002a, and 2005) we have described the details of the calculation of the four components or dimensions of economic well-being:

- [1] effective per capita consumption flows – which includes consumption of marketed goods and services, government services, and adjustment of effective per capita consumption flows for household production, changing household economies of scale, leisure and life expectancy;

- [2] net societal accumulation of stocks of productive resources – which consists of net accumulation of physical capital, the value of natural resources stocks, net international investment position, accumulation of human capital, and R&D stocks, as well as an adjustment for costs associated with environmental degradation;

- [3] income distribution - the intensity of poverty (incidence and depth) and the inequality of income;

- [4] economic security from job loss and unemployment, illness, family breakup, and poverty in old age.

Each dimension of economic well-being is itself an aggregation of many underlying trends, on which the existing data is of variable quality. By contrast, the System of National Accounts has had many years of development effort by international agencies (particularly the UN and the IMF), and has produced an accounting system for GDP that is rigorously standardized across countries. However, using GDP per capita as a measure of "command over resources" would implicitly:

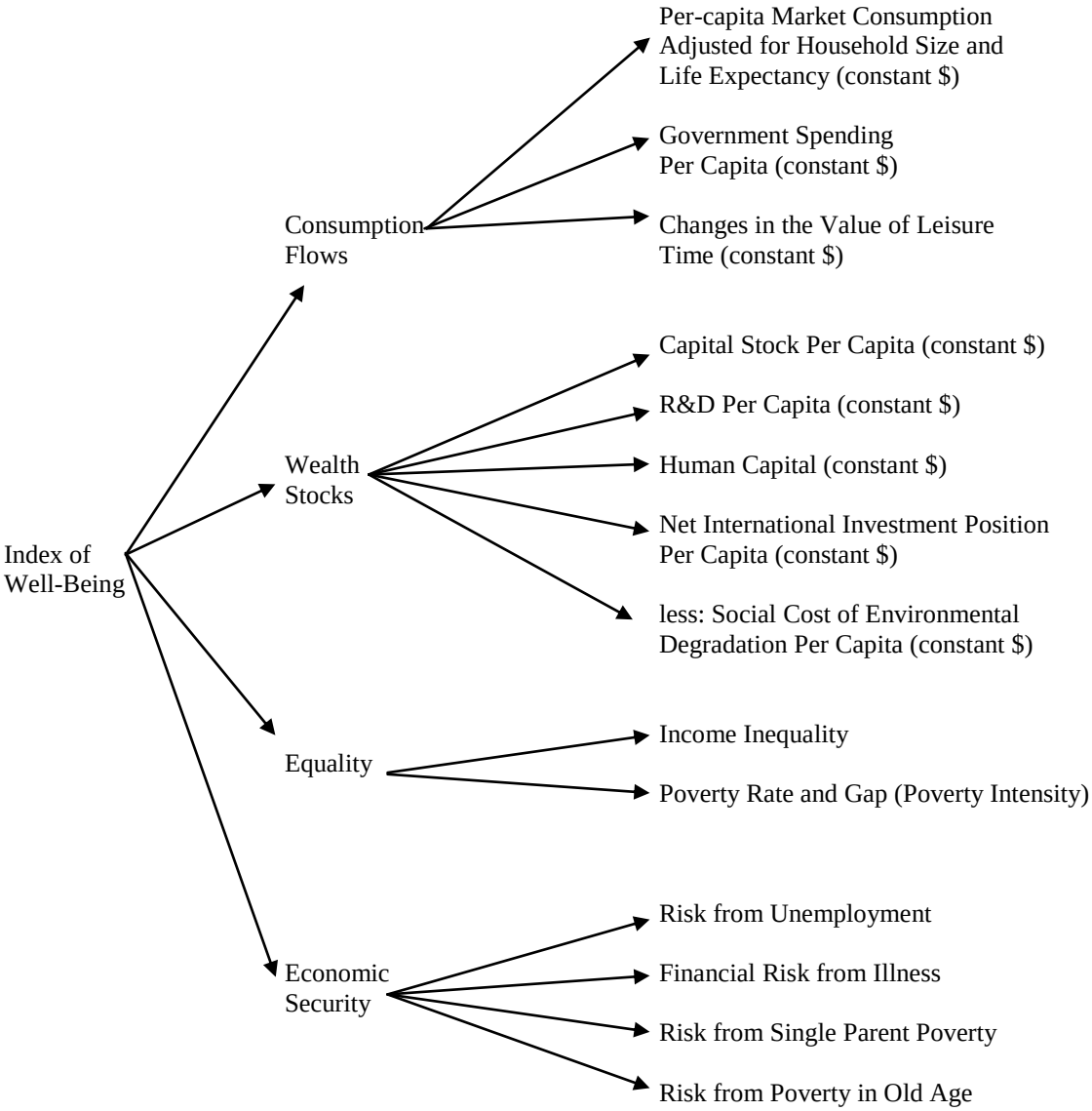
(1) assume that the aggregate share of income devoted to accumulation (including the public capital stock, human capital, research and development and the value of unpriced environmental assets) is automatically optimal, and

(2) set the weight of income distribution and economic insecurity to zero, by ignoring entirely their influence.

Neither assumption seems justifiable, and neither is innocuous.

Due to data limitations, estimates of the Index of Economic Well-being computed for different countries may differ in the number of variables that can be included in the calculations. Exhibit 2 illustrates the components that are used in our estimates of the Index of Economic Well-being for OECD countries, based on the four domains outlined above.

Exhibit 2: The CSLS Index of Economic Well-being: Weighting Tree for OECD Countries



II. Methodological Developments in the Index of Economic Well-being

The Index of Economic Well-being is a work in progress and has been subject to a number of changes in methodology during its decade of existence. This part of the report reviews the major methodological developments that have affected the Index.

A. Introduction of Linear Scaling

An essential question that underlies discussions of index methodology is: Should a single variable be scaled, and if so, what is the meaning or interpretation of a scaled variable (Sharpe and Salzman, 2003)? The key reason why it may be necessary to scale variables is that raw data have significantly different proportional ranges. In a standard index number approach, a raw variable is normalized to 100 in a base year and changes over time represent per cent changes in the underlying variable. The problem with this is that trends in the overall composite index will be dominated by variables with large proportional ranges because their per cent changes are larger.

As a hypothetical example, suppose the unemployment rate ranges over time between one and ten per cent, while per-capita consumption ranges between $25,000 and $45,000. The unemployment rate has a proportional range of 900 per cent (900 = 100*(10-1)/1), while per-capita consumption has a proportional range of 80 per cent (80 = 100*(45,000-25,000)/25,000). In a composite index, the unemployment rate would dominate per-capita consumption because the unemployment rate would experience much larger per cent changes over time. Meaningful changes in per-capita consumption would have a much smaller impact on the overall index, simply because they are proportionally smaller.

Thus, an unscaled aggregation of sub-indexes has an implicit weighting scheme. When the variables are aggregated without scaling, higher implicit weights are assigned to the variables that have large proportional ranges because their percentage increases are larger.[4] Linear scaling addresses this problem by standardizing the range of every variable. All the scaled variables have an identical absolute range (the [0,1] interval), and thus the same proportional range.

An additional motivation for the standardization of variables is the fact that increases in some variables, such as consumption flows, correspond to increases in overall well-being, whereas increases in other variables, such as unemployment, correspond to decreases in overall well-being. We call this the directionality issue. We want to standardize variables so that an increase in the standardized score corresponds to

[4] Another way of seeing this problem is to note that a variable with a low base compared to the range of values can skew the composite index and cause small absolute changes in this variable to overwhelmingly affect the composite. For example, if the unemployment rate ranges from 0.5 per cent to 5.5 per cent, a change from 0.5 per cent to 5.5 per cent will be a ten-fold increase. However, for a different range, say between 10 per cent and 15 per cent, the same absolute change, of 5 percentage points, will only represent a 1.5-fold increase.

increase in overall well-being. The procedure of linear scaling, which produces a scaled variable as the standardized variable, provides a methodologically consistent way to standardize variables so that their increases correspond to increases in well-being. The procedures used to handle the directionality originally used in the Index of Economic Well-being had shortcomings.[5]

The Linear Scaling Technique (LST) is a procedure used to standardize the range of a variable. To do this, an estimate is made for the high and low values which represent the possible range of a variable for all time periods and for all countries, and denoted Min and Max, respectively. The actual range of values may also be used. The data are then scaled according to these values. If a variable increase corresponds to an increase in overall welfare, the variable, VALUE, is scaled according to the formula

$$(1)\ \frac{\text{Value-Min}}{\text{Max-Min}}$$

In this case, we see that increases in the VALUE correspond to increases in scaled VALUE. Notice that if the Min is equal to zero, the formula above reduces to VALUE/Max.

If, in contrast, an increase in VALUE corresponds to decrease in overall welfare, the VALUE is scaled according to the complementary formula,

$$(2)\ \frac{\text{Max-Value}}{\text{Max-Min}}$$

In this case, we see that increases in the VALUE correspond to decreases in the scaled VALUE. In both cases, the range of values is 0-1, and 0 corresponds to the lowest level of welfare, and 1 corresponds to the highest. Note that this formula reduces to (Max-Value)/Max when Min is set to 0. This technique is used to scale all variables in many indices, including the Human Development Index.

Overall the linear scaling procedure has worked fairly well in the Index of Economic Well-being, particularly in resolving the directionality problem. However, there are certain weaknesses to this approach. First, the choice of the set of values used in the scaling procedure affects the results. For example, we have produced IEWB estimates for Canada alone and for Canada and the provinces together. The results for Canada when the scaling procedure is run with only the values for Canada differ significantly

[5] The first procedure used was to take the reciprocal of the index values of the series. Thus a doubling, and then a tripling of the unemployment rate, from 4 to 8 to 12 per to cent (or in index form from 1.0 to 2.0 to 3.0), results in a series of 1, 0.5, and .33. The weakness of this procedure is that it is not a linear transformation, which can skew the results. The second procedure used was to apply a linear transformation to the series by multiplying the series by -1 and then adding 2. The index values of the unemployment rate (1, 2, 3) would be transformed into 1, 0, and -1. Disadvantages of this procedure include a lack of transparency, the introduction of negative numbers into the time series, which confuses readers, and the perverse effects that a time series which includes a value of zero can have when multiplicative operations are made (multiplication by zero gives zero).

from the results for Canada when the scaling procedure uses values for Canada *and* the provinces, because the range of the values (e.g. for the unemployment rate) is much greater when the provinces are included. By definition, some provincial values must always be smaller than the average values for Canada and some must always be greater. Thus, the range of the *scaled* values for Canada is much smaller when the provinces are included because the denominator is equations (1) and (2) is larger.

Second, it is not always clear that the same linear range (0 to 1) for all variables is in fact desirable. For example, the Human Development Index (HDI) of the UNDP is another well-known index that uses the linear scaling technique. The HDI contains, as one of its three components, an index of the length of life. Because the index is linear, the implicit assumption is that a marginal additional year of life always has the same value, whether life expectancy is increasing from 38 to 39 or from 88 to 89.[6] It is not obvious that this is appropriate.

Third, the linear scaling method presents problems when new values outside the existing range of values are added. If there is an upward trend in a time series, each new scaling procedure will produce new scaled values for the series, and make obsolete the old series. An adjustment to the minimum and maximum values can in the short run resolve this problem when the range of actual values is used for scaling. For example, the calculations in this report subtracted 10 per cent of the value from the minimum value and added 10 per cent to the maximum value to create the range used in the scaling procedure. However, when new values exceed these adjusted minimums and maximums, rescaling will be needed.

Fourth, the linear scaling approach implies that percent changes in the scaled values, unlike absolute percentage-point changes, are not easily comparable across variables because the range of values used for per cent calculations varies among variables and it forms the base that determines the percentage change. A lack of comparisons based on per cent changes of variables, and only based on percentage-point changes, would impoverish the analysis of trends in variables. In this report we have included reference to per cent changes in scaled values, although further research on the appropriateness of this may result in their exclusion.

B. Conceptualization of the Risk to Unemployment

[6] Income inequality indices provide a subtler example of the problems of linearity. An index like the Gini can only range over a subset of values on the real line. Although the conceptual maximum for the Gini is 1.0 (where one individual has all the income), this is not a practical possibility because people without income do not survive. The 'practical maximum' for the Gini corresponds to a state of affairs in which everybody except a small elite (in the limit, one person) gets only a subsistence income, and the elite gets all the rest; it depends on the ratio of average income to subsistence income. A given change in the Gini index (e.g. by 0.02) might reflect the sort of change (from 0.26 to 0.28) we have seen in Denmark recently, or it could reflect a change (e.g. from 0.85 to 0.87) in which the last few non-elite to have above-subsistence incomes are driven down to bare subsistence. These changes differ significantly in social implications, but the linearity assumption rules out differing marginal values for the same index change and also rules out a dependence on the average level of income.

Undoubtedly the most controversial aspect of the Index of Economic Well-being has been the risk of unemployment component of the economic security domain. In the first version of the Index for Canada (Osberg and Sharpe, 1998), it was the large downward trend in this component that was driving the overall economic security domain and hence the overall Index. The risk of unemployment component was in turn being driven by the fall in the unemployment insurance coverage rate (the ratio of beneficiaries to unemployed). The modeling of the risk of unemployment was done from an "expected value of financial loss" perspective. This motivated a probabilistic approach where the probability of obtaining a job (proxied first by the employment rate and currently by the unemployment rate) was multiplied by the probability of receiving unemployment benefits if unemployed. This methodology amplified changes in the overall risk to unemployment variable from the large fall in the unemployment benefit coverage rate.

In the recent work updating Index of Economic Well-being estimates, the methodology described above has been changed to reflect recent work on self-reported happiness that assesses the disutility implied by unemployment *per se* compared to the disutility from the financial loss arising from unemployment (Di Tella, MacCulloch, and Oswald, 2003). The probability of finding a job if laid off is more important than the probability of obtaining unemployment benefits if unemployed in the determination of the overall risk arising from unemployment. Consequently, our revised estimates weight the unemployment rate much more heavily than the financial protection from unemployment variable (80:20). It was also decided to make the unemployment rate and the financial protection rate additive, not multiplicative. This change had the effect of dampening the evolution of the risk of unemployment component over time.

C. Weighting of four domains

Probably the most controversial issue in the construction of composite indexes is the weighting scheme. Results can indeed be very sensitive to the choice of weights. In the original estimates of the Index of Economic Well-being the following weights were chosen: consumption flows (0.4), stocks of wealth (0.1), equality (0.25), and economic security (0.25). Although these weights reflected observed aggregate proportions for consumption and savings, the authors were criticized for a bias against sustainability because of the low weight for the stocks of wealth. We were also criticized for a bias in favour of material goods because of the high weight given consumption. In subsequent versions of the Index the baseline estimates give equal weights to the four domains. Although this reflects the value judgment that the domains are equally important, it gives the appearance of being even-handed and balanced. However, we provide estimates of the Index based on alternative weighting schemes to show the sensitivity of the results to the weights chosen.

III. Trends in the Index of Economic Well-being for Selected OECD Countries, 1980-2007

This section of the report examines the level of the Index of Economic Well-being and its various components in 2007 in 14 OECD countries and developments since 1980. The focus is on changes over the 1980-2007 period, with little attention given to trends within the period. Due to data limitations, values for some of the variables underlying the Index had to be extrapolated for 2007 based on past data. Such cases are identified in footnotes; in all other cases, the Index is based on actual 2007 data.

A. Overall Level and Trends in the Index of Economic Well-being

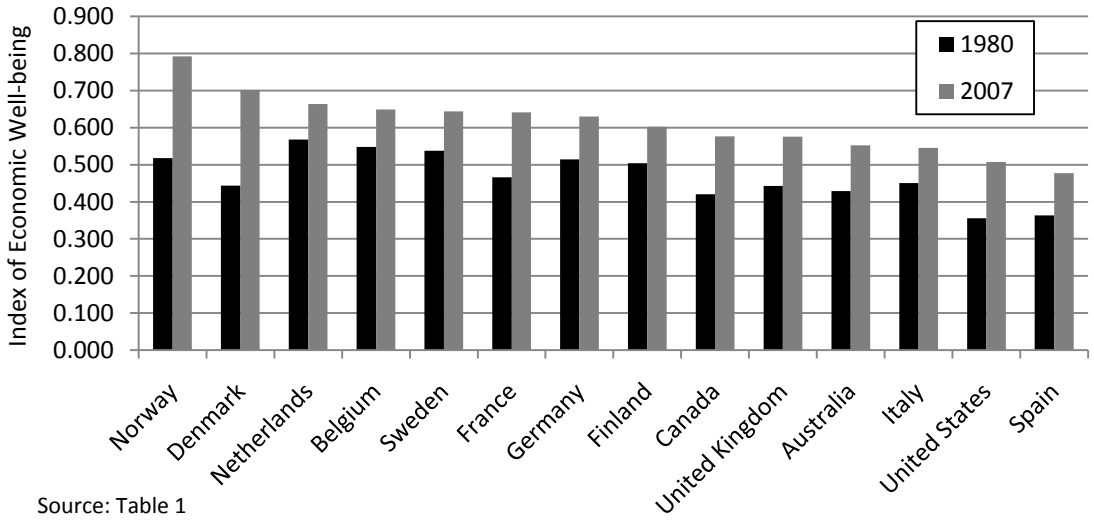
i. Levels

In 2007, the country with the highest level of economic well-being among the 14 countries covered was Norway, which had a scaled index value of 0.793 points (Table 1, Chart 1). Norway was followed by Denmark, which had a scaled index value of 0.701 points. The country which had the lowest level of economic well-being was the Spain, with an index value of 0.477 points, followed by the United States (0.508 points). Canada ranked ninth out of fourteen countries, with an index value of 0.577 points.

ii. Trends

There are two ways to measure progress in the Index of Economic Well-being: the absolute change in the scaled value of the Index, and the per cent change (either the total change or the compound annual rate of change) in the scaled value of the Index. This latter method is influenced by the initial level of the scaled value. For example,

Chart 1: Index of Economic Well-being, Selected OECD Countries, 1980 and 2007



Source: Table 1

suppose that Country A has scaled values of 0.2 and 0.6 in the base and end years while Country B has values of 0.5 and 0.9. In terms of index points, both countries experienced the same improvement in well-being – 0.4 points. In proportional terms, however, Country A increased 200 per cent while Country B advanced only 80 per cent.

During the 1980-2007 period, the Index of Economic Well-being grew in all countries (Chart 1 and Chart 2). Note, however, that how we choose to measure the magnitude of the growth – in absolute or proportional terms – affects the ranking of countries in terms of growth. Exhibit 3 provides the rank order of the fourteen countries according to both measurement approaches.

In absolute terms, Norway's 0.275 point growth was the fastest among the countries over the 1980-2007 period. Norway was followed by Denmark and France, with growth of 0.258 and 0.175 points. The smallest growth was 0.095 points, in Italy.

In proportional terms, the greatest growth occurred in Denmark; there, the Index increased 1.71 per cent per year over the period. Norway and the United States followed, with annual growth rates of 1.59 per cent and 1.33 per cent. The slowest growth was 0.58 per cent in the Netherlands.

Growth rates varied across countries and across time. From 1980 to 1990, all countries except Netherlands and Sweden experienced progress in their well-being (Table 1). Particularly notable were Spain, Canada, Italy and Denmark, which grew by over 1.40 per cent per year during the period. During the following decade of 1990-2000, several countries experienced impressive acceleration in the growth of their index levels. Most

Exhibit 3: Ranking of Countries by Absolute and Proportional Growth, Selected OECD Countries, 1980-2007

	Absolute (points)	Proportional (per cent per year)
1	Norway	Denmark
2	Denmark	Norway
3	France	United States
4	Canada	France
5	United States	Canada
6	United Kingdom	Spain
7	Australia	United Kingdom
8	Germany	Australia
9	Spain	Germany
10	Sweden	Italy
11	Belgium	Sweden
12	Finland	Finland
13	Netherlands	Belgium
14	Italy	Netherlands

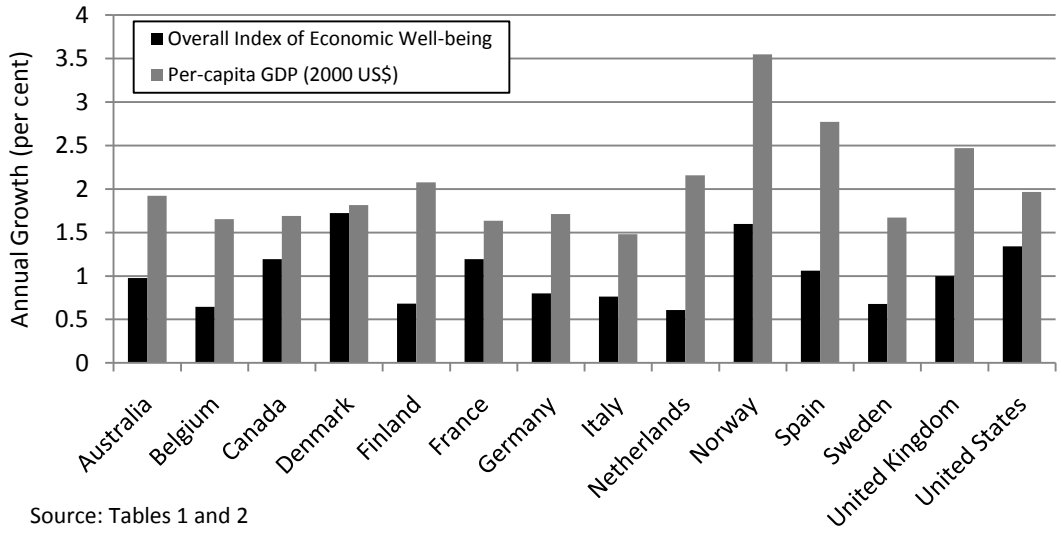
notably, the United States went from growth of 0.56 per cent per year during the 1980s to growth of 2.04 per cent per year during the 1990s. Finland and Italy, however, moved the other way and experienced declines in their levels of well-being in the 1990s. From 2000 to 2007, all countries except Belgium experienced positive growth in their levels of well-being. Norway led the way, with its overall index growing 2.85 per cent per year.[7]

As Exhibit 3 illustrates, the choice between absolute and proportional growth measurement does make a difference in the ranking of countries. (Note that in this particular case the differences are not large; there is no country that has one of the largest growth rates in absolute terms and one of the smallest in proportional terms, or vice versa. Such discrepancies are possible in principle, however.) Throughout this report, we often provide changes over time in both absolute and proportional terms. In general, however, we consider proportional growth to be a better measure of changes in well-being because it takes account of countries' starting points. If a country improves its Index score from 0.1 to 0.2, it has doubled its well-being; this is much more significant than another country improving its score from 0.8 to 0.9. Proportional growth captures that difference, whereas absolute changes do not.

iii. Comparing the IEWB to Per-capita GDP

Comparing the Index of Economic Well-being with Gross Domestic Product (GDP) per capita, the measure used most often as an indicator of economic well-being, shows that Norway was first in both rankings in 2007 (Tables 1 and 2 and Exhibit 4).

Chart 2: Average Annual Growth of the Overall Index of Economic Well-being and GDP per Capita, OECD, 1980-2007



Source: Tables 1 and 2

[7] We do not address the 1980-1990, 1990-2000, and 2000-2007 sub-periods in our discussion of the four domains of well-being and their components in subsequent sections of this report. However, the growth rates for the sub-periods can be found in the tables and appendix tables.

Exhibit 4: Ranking by Level and Growth of Per-capita GDP and the Index of Economic Well-being, Selected OECD Countries, 1980-2007

	Level in 2007 (points)		Growth Rate, 1980-2007 (per cent per year)	
	GDP Per Capita	**Index of Economic Well-being**	**GDP Per Capita**	**Index of Economic Well-being**
1	Norway	Norway	Norway	Denmark
2	**United States**	Denmark	Spain	Norway
3	Netherlands	Netherlands	United Kingdom	United States
4	**Canada**	Belgium	Netherlands	France
5	Australia	Sweden	Finland	Canada
6	Sweden	France	United States	Spain
7	Denmark	Germany	Australia	United Kingdom
8	United Kingdom	Finland	Denmark	Australia
9	Belgium	**Canada**	Germany	Germany
10	Finland	United Kingdom	Canada	Italy
11	Germany	Australia	Sweden	Sweden
12	France	Italy	Belgium	Finland
13	Spain	**United States**	France	Belgium
14	Italy	Spain	Italy	Netherlands

However, except for Norway, the rank positions for all countries are different between the two indicators. For example, Canada was fourth in terms of GDP per capita level in 2007, while it was only ninth in terms of the level of the Index of Economic Well-being. Even more strikingly, the United States ranked second in per-capita GDP and second-to-last in terms of the Index.

Growth of GDP per capita was greater than the growth of the IEWB in all countries over the 1980-2007 period (Chart 2). In particular, Norway grew by 3.46 per cent per year in terms of GDP per capita, but only by 1.59 per cent per year in terms of its IEWB. Spain also had a difference of almost 2 percentage points between the growth rates, as it grew by 2.76 per cent per year in terms of GDP per capita, but only 1.02 per cent per year in terms of its overall well-being. As Exhibit 4 shows, it was not generally true over the 1980-2007 period that countries with fast per-capita GDP growth also experienced fast IEWB growth and vice versa. This divergence shows that certain aspects of the Index of Economic Well-being, which are not included in the measurement of GDP per capita, have grown slower and thus dampened growth of overall economic well-being relative to GDP per capita growth.

B. Summary of Trends in the Four Domains of the Index of Economic Well-being

The Index of Economic Well-being is constructed from four domains: consumption flows, wealth stocks, economic equality and economic security. The following four sections examine in detail the trends in the domains in the fourteen OECD countries over the period of 1980 to 2007.

It should also be noted that domains where components are aggregated in prices (consumption and wealth) will have different percentage rates of change depending on whether these rates are based on the scaled or unscaled values of the domain. For example, total adjusted consumption in Canada grew 1.37 per cent per year in dollar terms over the 1980-2007 period, while the index of the consumption domain (the scaled value of total adjusted consumption) grew 2.40 per cent per year.

As the next four sections show, the consumption flows domain and the wealth stocks domain increased for all countries, but the growth of overall economic well-being was dampened by declines in the economic security and equality domains. This was mainly due to changes such as the general increase in the poverty rate, the growth of inequality in income distribution, and the increased share of private disposable income going to healthcare-related expenses.

Summary Table 1 provides a brief overview of the four domains in 2007.

Summary Table 1: Index of Economic Well-being and its Domains, Selected OECD Countries, 2007

	Total Consumption per capita, 2000 US$	Scaled Total Consumption per capita	Total per capita Wealth, 2000 US$	Scaled Total per capita Wealth	Index of Economic Equality	Index of Economic Security	Overall Index of Economic Well-being
	A	B	C	D	E	F	G = (B+D+E+F)/4
Australia	27,165	0.662	131,137	0.383	0.476	0.690	0.553
Belgium	26,424	0.635	169,702	0.580	0.703	0.679	0.649
Canada	26,142	0.625	165,252	0.557	0.444	0.682	0.577
Denmark	24,357	0.559	182,626	0.646	0.780	0.821	0.701
Finland	20,911	0.432	146,862	0.464	0.752	0.763	0.602
France	26,283	0.630	150,323	0.481	0.727	0.726	0.641
Germany	23,314	0.520	183,202	0.649	0.678	0.673	0.630
Italy	24,379	0.560	147,259	0.466	0.420	0.738	0.546
Netherlands	27,798	0.686	183,760	0.652	0.660	0.658	0.664
Norway	28,668	0.718	235,600	0.917	0.701	0.835	0.793
Spain	23,414	0.524	119,757	0.325	0.431	0.629	0.477
Sweden	23,308	0.520	150,465	0.482	0.791	0.781	0.644
United Kingdom	26,788	0.648	136,581	0.411	0.464	0.780	0.576
United States	34,069	0.917	180,917	0.637	0.159	0.319	0.508

Source: Tables 1 and 3-6.

C. Trends in the Components of the Consumption Flows Domain

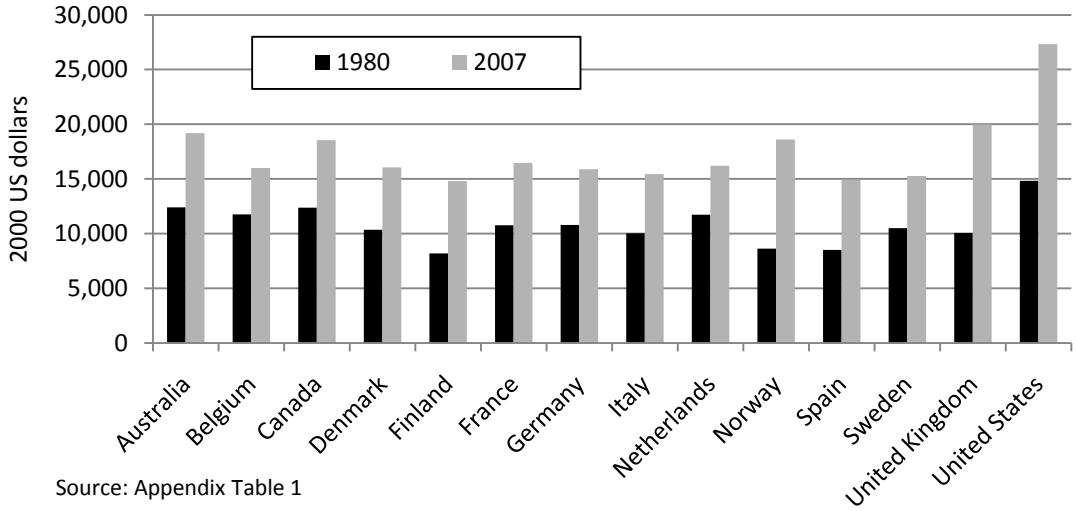
As noted earlier in the report, the consumption domain consists of two main components: private consumption expenditures and government expenditures on goods and services consumed either directly or indirectly by households.

Three adjustments are in turn made to these components. First, since economies of scale exist in private household consumption, private consumer expenditure is adjusted for changes in family size. Second, an adjustment is made to consumption flows to account for the large international differences in growth rates and levels of annual hours worked. Third, an adjustment for the positive impact of increased life expectancy on well-being is made by adjusting total consumption flows by the percentage increase in life expectancy.[8]

i. Private Consumption

In 2007, personal consumption was greatest in the United States, where it had a per capita value of $27,319 in 2000 US dollars (Appendix Table 1 and Chart 3). The United States was well ahead of all the other countries, as the second highest per capita personal consumption was in the United Kingdom at $19,970. Finland had the lowest per capita private consumption for 2007 at $14,797, about one half of the US value. Personal consumption accounted for over 50 per cent of total consumption flows in all countries, the single largest contributor to total consumption flows.

Chart 3: Private Consumption Per Capita, Selected OECD Countries, 2000 US Dollars, 1980 and 2007



Source: Appendix Table 1

[8] In our estimates of the Index of Economic Well-being for Canada and the provinces (Osberg and Sharpe, 2009), the consumption domain also includes the value of unpaid work and regrettable expenditures. Data limitations currently prevent us from including these concepts in our international estimates.

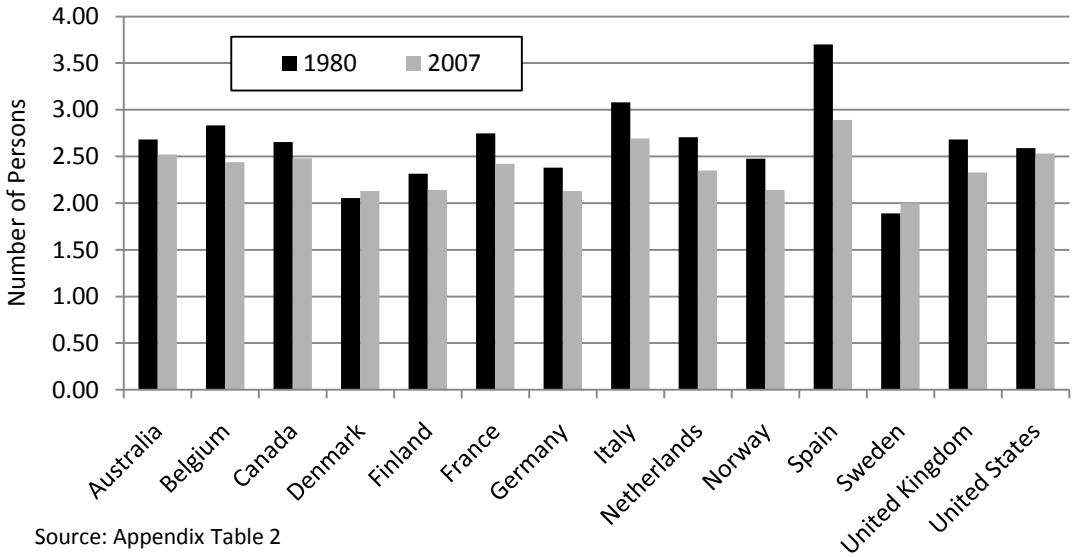
From 1980 to 2007, the greatest growth in private consumption was 2.88 per cent per year in Norway. Personal consumption grew the least in Belgium, at 1.15 per cent per year. Canada ranked tenth with growth of 1.51 per cent per year.

ii. Average Family Size

It is important to adjust the dollar value of per-capita personal consumption to reflect the fact that there are economies of scale in household consumption. When people live together in groups, they can achieve greater effective consumption than they could if they lived alone as individuals; for instance, they can cooperate in household production (e.g. one person can cook for everyone) and share fixed costs (e.g. they can share one refrigerator rather than each person having to buy one).

To account for this issue, we use the Luxembourg Income Study equivalence scale, which is the square root of family size. For a given country in a given year, we compute the square root of family size in that country and year *relative to the square root of family size in the United States in 1980.* This ratio is then multiplied by the per-capita private consumption value to produce an estimate of private consumption adjusted for family size. Changes in our equivalence scale from year to year capture changes in average family size both within countries over time and across countries relative to the United States in 1980.[9]

Chart 4: Average Family Size, Selected OECD Countries, Persons, 1980-2007



Source: Appendix Table 2

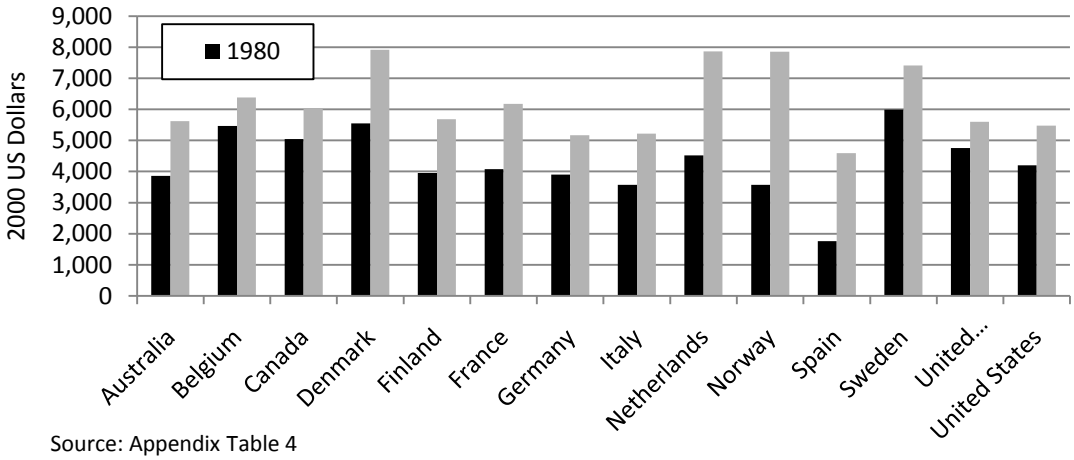
[9] The rationale for this approach is that the equivalence scale would take a value of 1.0 in 1980 in every country if we simply used within-country changes in family size over time. We would not be accounting for cross-country differences in family size in the base year (1980). Measuring family size relative to the baseline of the United States in 1980 solves that problem. The choice of the United States as the baseline country is arbitrary.

Average family size was greatest in Spain in 2004, with 2.89 persons per household (Appendix Table 2 and Chart 4).[10] It was followed by Italy and the United States with 2.69 and 2.53 persons per household, respectively. Sweden had the smallest family size, with 2.00 persons per family. Over the 1980-2007 period, the size of families in all but two country declined considerably. The only countries where the family size increased were Sweden and Denmark, which experienced growth of 5.8 and 3.6 per cent, respectively, over the period. However, both countries had a remarkably small family size in 1980 (1.9 and 2.1 persons per family, respectively), and over the period they merely approached the average. Similarly, Spain, the country with the largest average family size in 1980 at 3.7 persons per family, experienced the greatest decline among the countries; Spain's average family size fell 21.9 per cent.

iii. Government Expenditures on Goods and Services

Government expenditures include spending by all levels of government on current goods and services. These expenditures are part of social consumption and therefore contribute to increased well-being.[11] The largest government expenditures for 2007 were in Denmark, Netherlands and Norway, all three following a very progressive form of social democracy. Their per-capita government expenditures were $7,917, $7,860, and

Chart 5: Per-capita Government Expenditures on Current Goods and Services, Selected OECD Countries, 2000 US Dollars, 1980 and 2007



Source: Appendix Table 4

[10] Average family size is computed from the Luxembourg Income Study database. The most recent year for which data are available varies across countries as follows: the Netherlands (1999); Belgium, France, Germany, Italy and Spain (2000); Australia (2003); Canada, Denmark, Finland, Norway, the United Kingdom and the United States (2004); and Sweden (2005). Data for subsequent years are assumed to be equal to the most recent available value.

[11] Some might wish to argue that government expenditures actually reduce economic well-being because the private sector would likely have put those funds to more productive or welfare-enhancing uses had the government not taxed them away in the first place. Whether or not this argument is valid, the fact remains that government expenditures on goods and services form a component of total consumption, and therefore total economic welfare as measured by the Index of Economic Well-being. The Index makes comparisons of well-being across time and space, not between factual and counterfactual worlds.

$7,857 respectively (Appendix Table 4 and Chart 5). Norway, Belgium and France, which are also welfare states, followed. It is interesting to note that Germany, which is traditionally thought of as a welfare state, in effect spent less per capita than relatively libertarian United States and Australia. Spain had the lowest government expenditures in 2007, at $4,595 per capita.

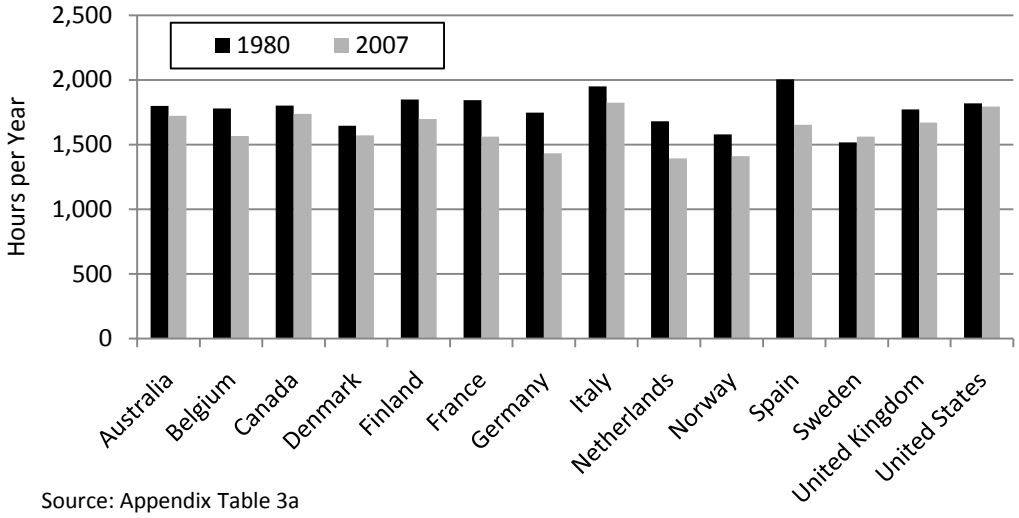
Over the 1980-2007 period, the government expenditures of Spain grew at the highest rate, 3.62 per cent per year, although that is unsurprising considering that in 1980 Spain had per capita expenditures which were never more than half of the expenditures of other OECD countries. The weakest growth in government expenditures occurred in Denmark.

iv. Adjusted Relative Cost (Benefits) of Leisure

One potential benefit of economic progress is that people may be able to take more leisure time. A measure of economic welfare should account for time spent on leisure, but the value of leisure time is difficult to estimate. Our approach is based on the idea that if a person takes an additional hour of leisure time, then he or she values that leisure time at least as much as the next best alternative use of the time. We assume that the next best alternative use of leisure time is paid work in the labour force, the value of which is the total labour compensation (that is, after-tax wages and benefits) that could have been earned during that time.

Our estimate of the marginal opportunity cost of not being employed is calculated using estimates of average after-tax labour compensation and average number of hours of leisure. Note, however, that we are putting a money value on *differences* in time use (both changes over time and differences across countries), not on total leisure hours themselves. We standardize leisure hours as number of hours of leisure relative to a benchmark – namely, the United States in 1980. Ours is a *relative* cost measure. When leisure hours exceed the benchmark, we add to measured money income the value of leisure relative to the benchmark; if leisure hours fall short of the benchmark, we subtract from measured money income the cost in foregone leisure. The adjusted relative cost of leisure measures the foregone income that people could have earned in the labour force if they had worked the benchmark hours instead of taking more leisure. By the reasoning outlined in the preceding paragraph, this *cost* measure can be taken as an

Chart 6: Average Annual Hours Worked per Employed Person, Selected OECD Countries, Hours, 1980 and 2007



Source: Appendix Table 3a

estimate of the value (or, at least, a lower bound on the value) of the *benefits* of the leisure time itself.

For each country in each year, we compute the average annual number of hours worked per working-aged person, to which we add an estimate of the average annual hours of unemployment per working-age person.[12] This gives a measure of average hours spent in the labour force. We then take the difference between these values and the value of the United States in 1980. That difference represents the country's leisure hours (that is, time not spent in the labour force) *relative* to those of the United States in 1980.

Trends in the value of leisure (relative to the United States in 1980) are determined by a number of factors: average hours worked per employed person, employed persons as a proportion of the working-age population (the employment rate), and average hours of unemployment per working-age person. Chart 6 illustrates average annual hours worked per employed person in the fourteen countries. This average actually declined in all countries except Sweden between 1980 and 2007, but the declines were greater in the European countries than in the United States and Canada. However, average hours worked per *working-age* person increased in the United States because employment rates increased over the period.

In 2007, all European countries had a positive relative cost of leisure, showing that they spent more time on leisure than the United States did in 1980. By contrast, two of the non-European countries, Canada and the United States, experienced falls in the value of leisure due to increased hours spent in the labour force relative to the United

[12] Average annual hours of unemployment are estimated by multiplying average hours worked per employed person by the proportion of working-aged persons who are unemployed. We assume that if they were employed, unemployed persons would work the average number of hours worked by those who are currently employed.

States in 1980. Australia had the smallest positive adjusted relative cost of leisure per capita of all the fourteen countries at $44.50 (2000 US dollars). Belgium had the highest adjusted relative cost, $2,495 (2000 US dollars), with Netherlands following closely at $2,292 per capita (Appendix Table 3). The lowest adjusted cost of leisure was in the United States, a negative $370 per capita. Canada had the second lowest cost of leisure, negative $339 per capita. The time devoted to leisure clearly decreased in both countries.

Observing the change in the relative cost of leisure from 1980 to 2007, the benefit of leisure increased for most European countries. The most dramatic change was experienced by France, where the relative cost or benefit of leisure increased significantly, from $306 per capita to $1,753. Finland, which was the only European country to experience a lengthy period of negative leisure costs in the 1980s, also experienced significant growth, moving from negative $206 per capita in 1980 to positive $185 in 2007. The United States experienced continual falls in the value of leisure over the period.

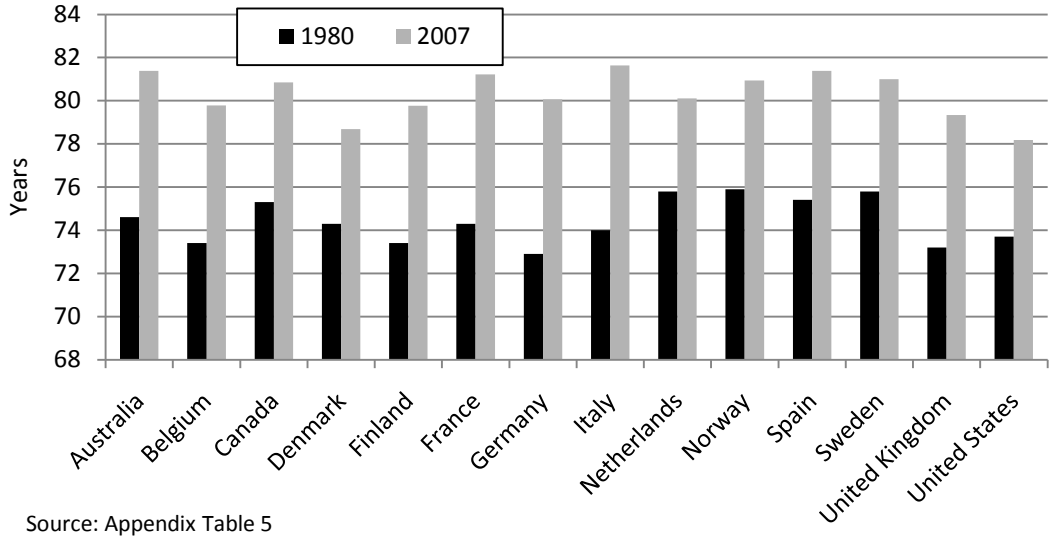
v. Life Expectancy

The final adjustment to consumption flows is to account for the increase in consumption arising from rising life expectancy. Life expectancy for each country was converted into a relative index where the value for the United States in 1980 equals 1.00. This index is multiplied by total consumption flows in order to adjust consumption for life expectancy. Thus, the adjustment captures changes in life expectancy both over time within countries and across countries relative to the United States in 1980.

The country with the highest life expectancy in 2007 was Italy, which had an average life expectancy of 81.6 years (Appendix Table 5 and Chart 7).[13] The lowest life expectancy, 78.2 years, was in the United States. Over the entire period of 1980-2007, life expectancy in Italy grew the most, from 74.0 years to 81.6 years, a total increase of 10.3 per cent. Germany experienced the second largest increase in average life expectancy of 9.8 per cent. The life expectancy of the Netherlands grew the least, at only 5.7 per cent over the entire period. Life expectancy increased almost equally during the 1980s and the 1990s, and it never seemed to decline for more than a year in any country. Growing life expectancies, and the additional consumption arising from that, increased consumption flows in all the OECD countries covered in this report.

[13] Data on life expectancy are from the OECD Health Statistics database. The most recent year for which data are available varies by country as follows: Italy (2004); Canada and the United States (2005); and all other countries (2006). Values for subsequent years are extrapolated based on the compound annual growth rate of life expectancy over the most recent five years of data availability (i.e. 1999-2004 for Italy).

Chart 7: Life Expectancy at Birth, Selected OECD Countries, Years, 1980 and 2007

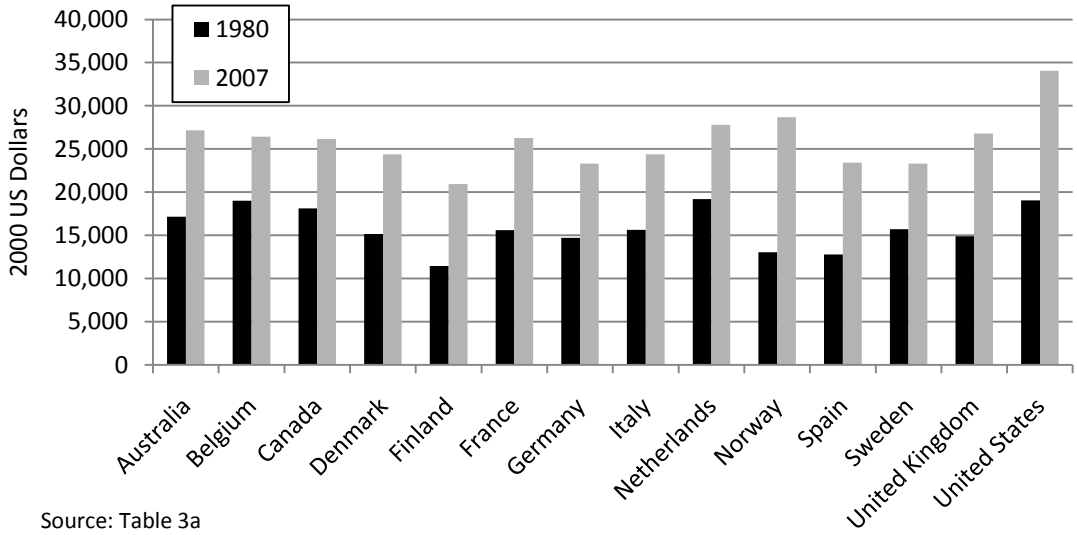


Source: Appendix Table 5

vi. Total Adjusted Consumption Flows

Total adjusted consumption is computed by summing family size-adjusted private consumption, government expenditures, and the value of leisure, and then multiplying the total by the life expectancy index. The country with the highest level of consumption flows per capita in 2007 was the United States, with $34,069 in 2000 US dollars (Table 3a and Chart 8). The United States was significantly ahead of second placed Norway, which had consumption flows of $28,668 per capita. Finland was last with $20,911 per capita, greatly trailing the United States. Canada was eighth, with $26,142 per capita.

Chart 8: Total Adjusted Consumption Per Capita, Selected OECD Countries, 2000 US Dollars, 1980 and 2007



Source: Table 3a

Norway had the fastest consumption growth over the 1980-2007 period, at 2.96 per cent per year. Spain ranked second with growth of 2.27 per cent per year. The slowest consumption growth was 1.23 per cent per year in Belgium. In Canada, total adjusted consumption grew 1.27 per cent per year over the period; this was the second lowest rate of increase among the fourteen countries.

D. Trends in the Components of the Sustainability/Stocks of Wealth Domain

A society's stock of wealth – both man-made and naturally occurring – determines how sustainable its current level of consumption really is. The measure used in this report contains, as explained earlier, four components: the physical capital stock, the R&D stock, the stock of human capital, and net international investment position.[14] One adjustment is made to the sum of these components: to account for the social costs of environmental degradation, we subtract the estimated annual cost of greenhouse gas emissions.

i. Physical Capital

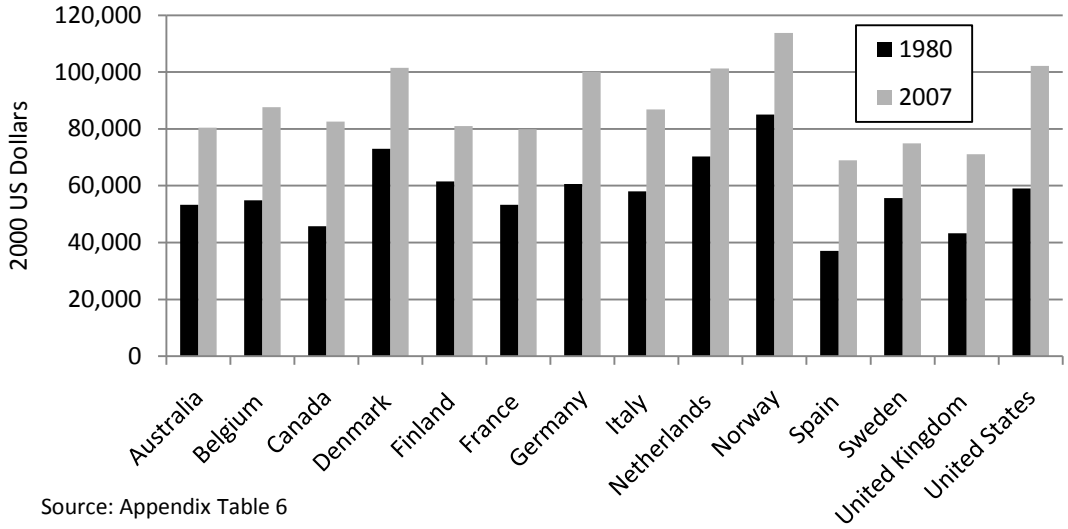
The stock of physical capital per capita, defined as residential and non residential capital stock based on geometric depreciation, was greatest in Norway in 2007 at $113,791 in 2000 US dollars (Appendix Table 6 and Chart 9).[15] The United States, Denmark and Netherlands followed with $102,186, $101,517 and $101,256, respectively. The lowest stock of net capital was in Spain, $68,977 per capita. Physical capital was the largest component of total wealth stocks – over 50 per cent for most countries.

The greatest growth in the per-capita physical capital stock was experienced by Spain, at 2.33 per cent per year. Canada experienced the second largest growth rate, 2.21 per cent per year. The extremely rapid growth of capital in Spain over the period is understandable considering that the country's initial stock of capital was very small, leading to significant returns from investment in physical capital. The slowest growth rate was in Finland, 1.03 per cent per year.

[14] In our estimates of the Index of Economic Well-being for Canada and the provinces (Osberg and Sharpe, 2009), the wealth domain also includes the value of natural resource stocks. Data limitations prevent us from including natural resources in our international estimates.

[15] Data on physical capital are from the Kiel Institute for the World Economy Database on Capital Stocks in OECD Countries. For all countries, the most recent year for which data are available is 2002. Values for 2003-2007 are extrapolated based on the compound annual growth rates from the 1997-2002 period.

Chart 9: Physical Capital Stock Per Capita, Selected OECD Countries, 2000 US Dollars, 1980 and 2007



Source: Appendix Table 6

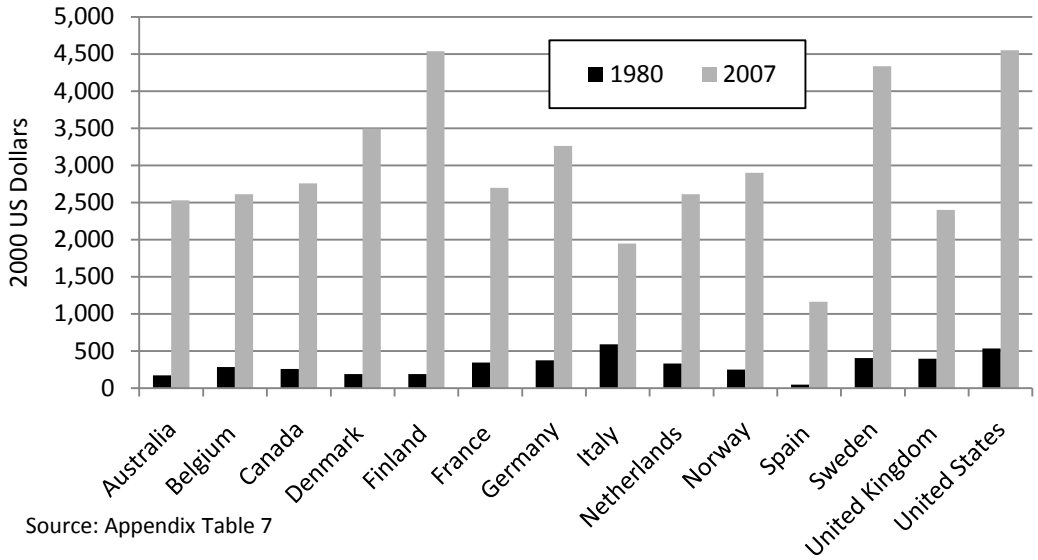
ii. R&D Capital

In 2007, the stock of total business enterprise expenditures on R&D per capita was greatest in the United States at $4,550 in 2000 US dollars (Appendix Table 7 and Chart 10).[16] Finland had the second largest stock of R&D expenditures, $4,538 per capita.[17] Spain had the lowest stock of R&D expenditures per capita, at $1,162. Many countries experienced extremely rapid increases in R&D over the 1980-2007 period, with the growth rates in Spain, Denmark, Australia and Finland each reaching over 10 per cent per year. R&D expenditures grew over the entire period for all fourteen countries.

[16] We compute the stock of R&D using data on gross annual R&D expenditures (from the SourceOECD Science and Technology database) and convert the estimates to 2000 US dollars using GDP deflators and PPP values, also from the OECD. We assume a depreciation rate of 20 per cent per year. Thus, in a given year, the accumulated stock of R&D is that year's gross R&D expenditures plus 80 per cent of the previous year's accumulated stock. The question of how to measure R&D has challenged researchers for some time. Under the SNA 1993 accounting system (the current international standard for national accounting), R&D expenditures are counted as intermediate inputs for businesses or as current consumption for government and non-profit organizations. The new SNA 2008 recommends the capitalization of R&D, so that annual R&D expenditures represent a form of investment in an R&D capital stock. Our approach is consistent with that recommendation.

[17] The most recent year for which data on gross R&D expenditures are available varies by country as follows: Australia, Italy, Spain, and the United Kingdom (2006); and all other countries (2007). Where necessary, 2007 values are extrapolated based on the compound annual growth rate from the 2001-2006 period.

Chart 10: Per-capita Stock of R&D, Selected OECD Countries, 2000 US Dollars, 1980 and 2007



Source: Appendix Table 7

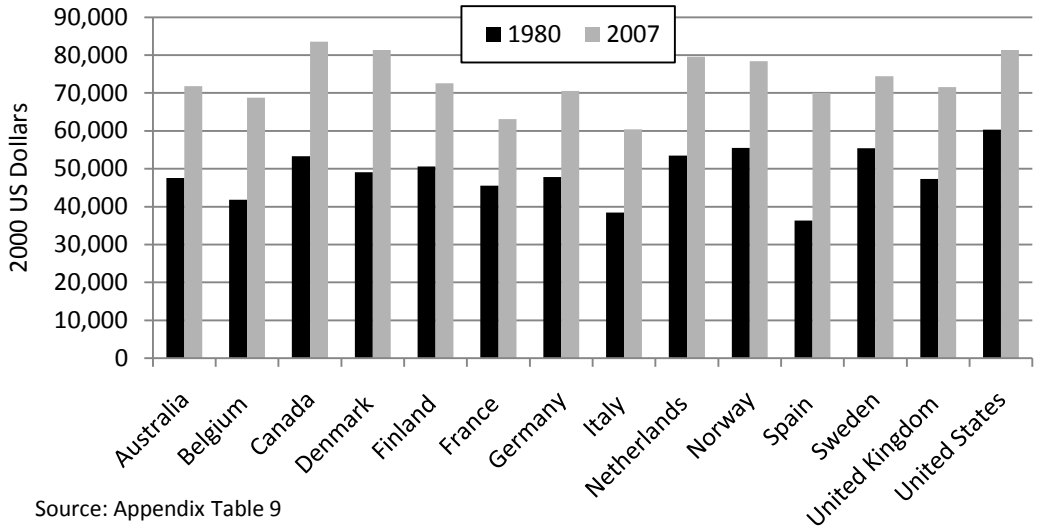
iii. Human Capital

The value of human capital in 2007, defined in the Index of Economic Well-being as the accumulated private and public expenditures on all levels of education, was highest for Canada at $83,506 (2000 US dollars) per capita (Appendix Table 9 and Chart 11).[18] Canada barely edged out the second and third placed United States and Denmark, which had human capital levels of $81,373 and $81,341 respectively. The lowest human capital levels belonged to Italy and France, at $60,409 and $63,108 per capita, respectively. Per capita human capital was the second most important contributor to total wealth stocks per capita, contributing between 30 to 50 per cent of the total value.

Spain and Denmark experienced the greatest improvement in human capital over the 1980-2007 period, growing by 2.46 and 1.89 per cent per year, or 93 and 66 per cent overall, respectively. By contrast, the United States, starting from the highest level of per capita human capital in 1980, experienced one of the lowest annual average growth rates, 1.1 per cent, and increased overall by only 35 per cent. The lowest growth was in Sweden, at 35 per cent over the entire period.

[18] Human capital values are based on education cost estimates for 2004 and estimates of population proportions by level of educational attainment for which the most recent year of data availability is 2006. Values for 2007 were extrapolated using the compound annual growth rates for the 2001-2006 period.

Chart 11: Human Capital Stock Per Capita, Selected OECD Countries, 2000 US Dollars, 1980 and 2007

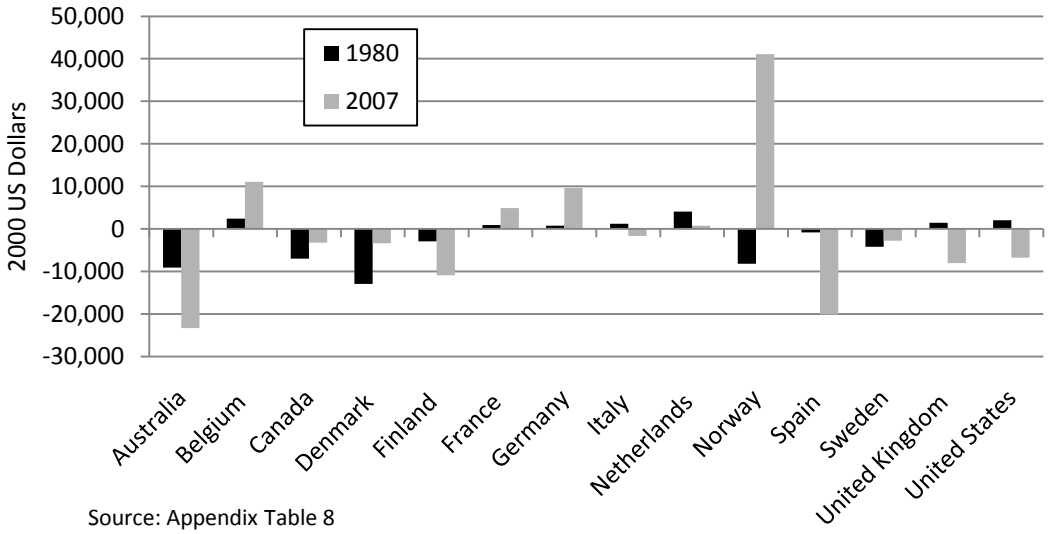


Source: Appendix Table 9

iv. Net International Investment Position

Five countries had positive net international investment positions in 2007. Norway had the best net international investment position, with a per-capita investment surplus of $41,109 (2000 US dollars) (Chart 12 and Appendix Table 8). The other four countries were Belgium, Germany, France and the Netherlands. Out of the countries with negative investment positions, the highest deficit of $23,359 per capita belonged to Australia. It was only slightly higher than the second largest international investment deficit of $20,096 per capita, belonging to Spain.

Chart 12: Net International Investment Position Per Capita, Selected OECD Countries, 2000 US Dollars, 1980 and 2007



Source: Appendix Table 8

The net international investment position declined over the 1980-2007 period in seven of the fourteen countries, reflecting faster growth in foreign liabilities than in foreign assets. The largest decline was in Spain, where the net international investment position declined $19,284 per capita in 2000 US dollars from -$812 to -$20,096 per capita (Appendix Table 8). Among the countries in which the net foreign asset position increased over the period, the largest increase was $49,283 per capita (from an $8,175 net debt to a $41,109 net asset position) in Norway.

v. Social Costs of Environmental Degradation

Degradation of the environment negatively affects the sustainability of stocks of wealth. Placing a value on the environment or the "services provided by ecosystems" is a massive and controversial task and is beyond the scope of the Index of Economic Well-being. But to highlight the importance of the environment for economic well-being, and to show that environment issues can be accommodated in our framework for quantifying economic well-being, the Index does include estimates of the social costs of greenhouse gases (GHGs), which contribute to global warning. In each year, we adjust the total wealth stock estimates by subtracting the social costs of greenhouse gas emissions in that year.

Although it is emitted from a particular location, a given tonne of a GHG (especially emissions of CO_2) imposes damages at the global level. In measuring well-being, then, it is the global level of GHG emissions that matters. Our approach is to estimate the total social costs of global GHG emissions, and then allocate those costs across countries in proportion to each country's share of world GDP.[19] The estimates are derived by multiplying global GHG emissions (measured in tonnes of CO_2-equivalent emissions, or tCO_2-e) by the per-tonne social cost of such emissions. In a recent review of 211 published estimates of the social cost of carbon, Tol (2007) finds that the average estimate from peer-reviewed studies is approximately $\$21/tCO_2$-e in 2000 US dollars.[20] We take this as our estimate of the social costs of GHG emissions.

[19] An alternative approach is to use country-specific GHG emissions data and assume that the social costs of GHG emissions are entirely borne by the country in which the emissions occur. We use this approach in another paper in which we estimate the IEWB for Canada and its provinces (Osberg and Sharpe, 2009). Neither approach is obviously better than the other, but the choice does affect the estimates. GHG emissions are affected by the composition of national output as well as the volume, so some countries (such as Australia and Canada) emit more GHGs than their share of global GDP would imply while others (such as Norway and Sweden) emit less. If we used the country-specific emissions approach rather than the global emissions approach, the measured social costs of GHG emissions would be higher in countries like Australia and Canada and lower in countries like Norway and Sweden.

[20] It is also common to express estimates of the social cost of carbon in dollars per tonne of carbon ($/tC) rather than per tonne of carbon dioxide ($/$CO_2$-e). Our assumed social cost of $\$21/tCO_2$-e roughly corresponds to $76/tC. See Sharpe, Arsenault, Murray, and Qiao (2008) for a detailed discussion of the appropriate assumptions regarding the social cost of greenhouse gas emissions in the context of the valuation of the Alberta oil sands.

Norway had the highest social cost associated to greenhouse gasses in 2007, $516 (2000 US dollars) per capita (Appendix Table 10).[21] The second highest social cost was $448 per capita in the United States. The country with the lowest total in 2007, Spain, had greenhouse gas costs of $294 per capita. In general, greenhouse gas costs made almost no impact on the total stock of wealth per capita; their negative contribution was between 0.18 per cent (for Germany) and 0.27 per cent (for Australia). On the other hand, greenhouse gas costs are only a small part of the total environmental costs that every country faces (such as water pollution, other forms of air pollution, nuclear pollution etc.), which are likely to have a much greater negative effect on total wealth stocks.

Over the 1980-2007 period, greenhouse gas emissions, and therefore the social costs associated with greenhouse gasses, increased in all fourteen countries. Norway experienced the fastest growth, with costs increasing by 1.0 per cent per year over the period. France experienced the lowest growth in cost, with growth of 0.13 per cent per year.

vi. Total Wealth Stocks

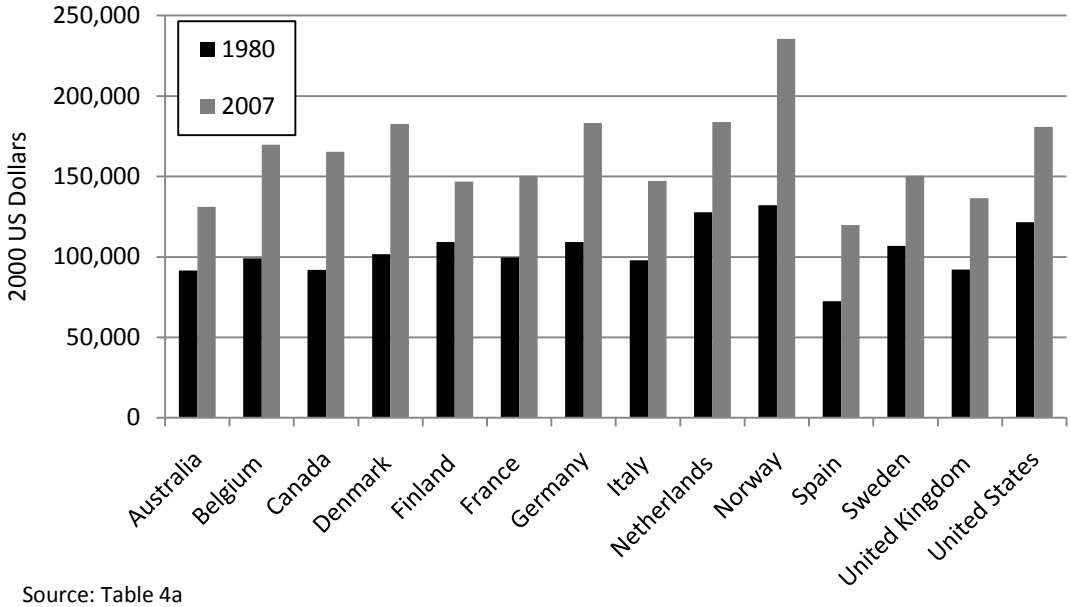
Total wealth stocks are computed by summing physical capital, human capital, R&D stock, and net international investment position, and then subtracting the social costs of GHG emissions. In 2007, Norway had the greatest total stock of wealth, at $235,600 per capita in 2000 US dollars (Chart 13 and Table 4a). The second-place country, the Netherlands, was well behind with $183,760 in wealth. The smallest stock of wealth, with a value of $119,757, belonged to Spain. Canada ranked seventh out of the fourteen countries, with wealth valued at $165,252 per capita.

Canada and Denmark had the fastest growth in total wealth over the 1980-2007 period, at 2.19 per cent per year. The slowest growth was 1.10 per cent per year in Finland.

The index of the wealth domain is obtained by applying the linear scaling procedure to the total wealth stock data for all countries over the 1980-2007 period. This does not affect the cross-country rankings in terms of levels (though it can affect rankings in terms of growth rates).

[21] Data on global greenhouse gas emissions are from the Energy Information Administration and are available to 2006. The value for 2007 is extrapolated based on the compound annual growth rate for the 2001-2006 period.

Chart 13: Total Wealth Stocks Per Capita, Selected OECD Countries, 2000 US Dollars, 1980 and 2007



Source: Table 4a

E. Trends in the Economic Equality Domain

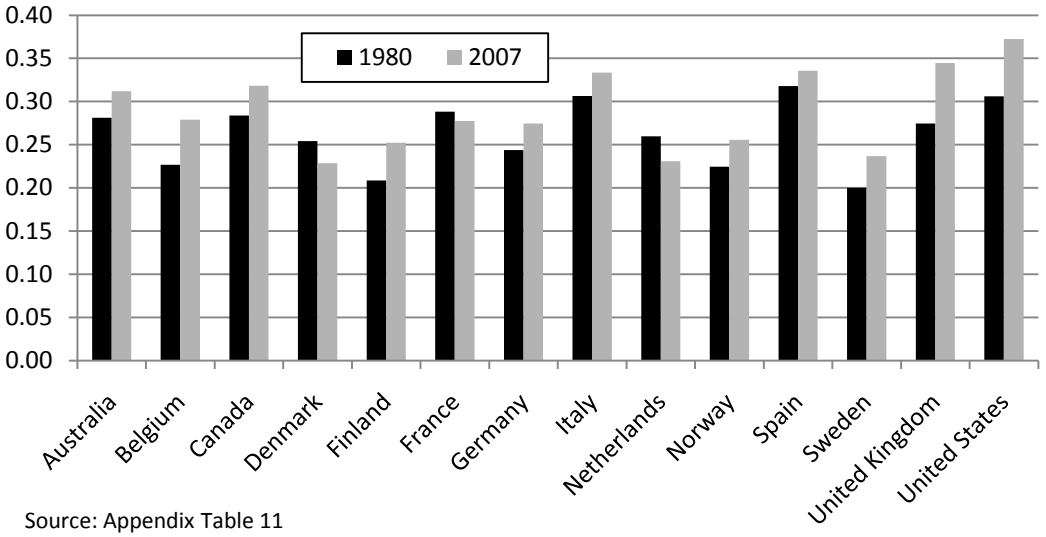
The third domain of the Index of Economic Well-being is economic equality. At current levels, a fall in equality, or rise in inequality, is considered to decrease economic well-being and vice versa. The equality domain consists in two component concepts: income inequality and poverty. We measure income inequality using the Gini coefficient, which we compute for the total population of family units based on family after-tax equivalent income data from the Luxembourg Income Study (LIS). To measure poverty, we use poverty intensity, which is the product of the poverty rate and the poverty gap. The poverty rate and gap are also based on LIS family after-tax equivalent income, with the poverty line defined as fifty per cent of the median family income. The poverty rate is the proportion of persons whose income is below the poverty line, and the poverty gap is the average *per cent* difference between the poverty line and the incomes of those whose incomes fall below it.

High poverty intensity is considered more detrimental to economic well-being than an unequal income distribution. Consequently, poverty intensity is given a weight of three quarters, and income distribution a weight of one quarter, in the determination of the overall index for the equality domain.

i. Inequality

In 2007, the Gini coefficient was greatest for the United States at 0.372 and followed by the United Kingdom and Spain at 0.345 and 0.336, respectively (Appendix

Chart 14: Gini Coefficient Based on Family After-tax Equivalent Income, Selected OECD Countries, 1980 and 2007



Source: Appendix Table 11

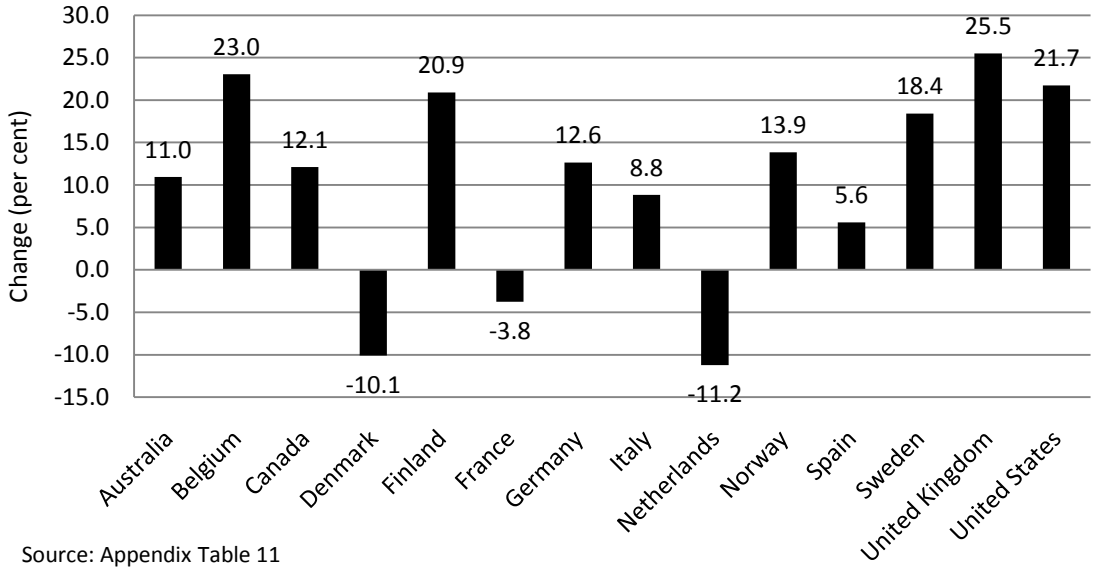
Table 11 and Chart 14).[22] The Scandinavian social democracies had the lowest measured inequality; Denmark had a Gini coefficient of 0.229, followed by the Netherlands with a coefficient of 0.231. Sweden and Finland were third and fourth with coefficients of 0.237 and 0.252, respectively.[23] Canada had the fifth most unequal income distribution in 2007, with a Gini coefficient of 0.318.

Over the 1980-2007 period, only two countries – the Netherlands and Denmark – achieved substantial reductions in economic inequality. The Gini coefficient of the Netherlands declined by 0.029 points, a total decrease of 11.2 per cent, and that of Denmark declined by 0.026 points or 10.1 per cent overall (Chart 15). France was the only other country in which inequality declined over the period, but the change was just 3.8 per cent. The United Kingdom experienced the greatest increase in the income gap, with its Gini coefficient growing by 0.07 points or 25.5 per cent. In Canada, the Gini coefficient increased 12.1 per cent over the period.

[22] Data on inequality and poverty are computed from the Luxembourg Income Study database. The most recent year for which data are available varies across countries as follows: the Netherlands (1999); Belgium, France, Germany, Italy and Spain (2000); Australia (2003); Canada, Denmark, Finland, Norway, the United Kingdom and the United States (2004); and Sweden (2005). Data for subsequent years are assumed to be equal to the most recent available value.

[23] It is important to mention that 2007 Gini coefficient values for all countries equal their Gini coefficient values from 2000, due to the lack of more recent data.

Chart 15: Total Change in the Gini Coefficient, Selected OECD Countries, Per Cent, 1980-2007



Source: Appendix Table 11

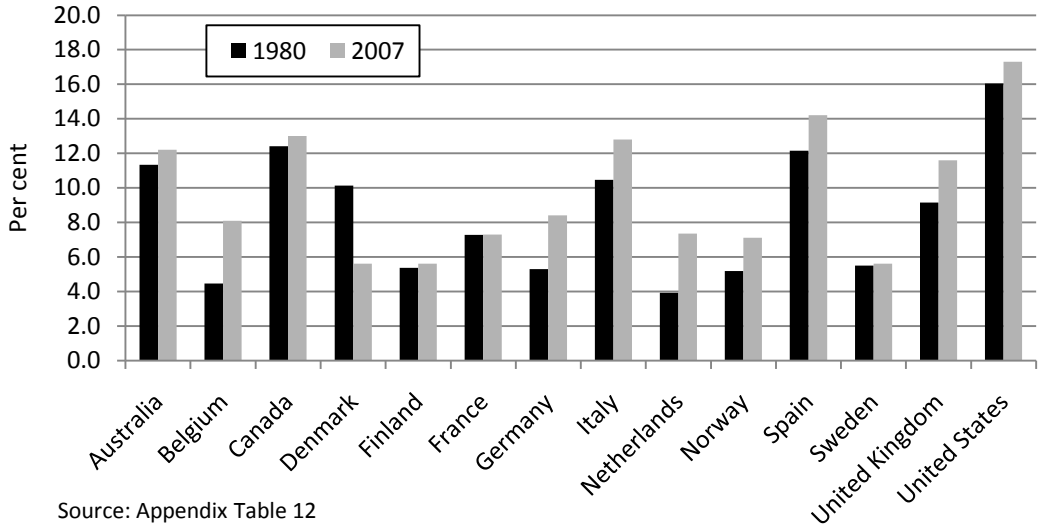
ii. Poverty

The United States had the highest poverty rate in 2007, with 17.3 per cent of the total population defined as poor (Appendix Table 12 and Chart 16). Spain and Canada followed, with poverty rates of 14.2 and 13.0 per cent, respectively. Considering the fact that the United States had the highest per-capita income and consumption flows, its high poverty rate has to be attributed to very unequal distribution of income (as reflected in its high Gini coefficient). This is supported by the fact that the Scandinavian countries, which had the lowest Gini coefficient values, also had the lowest poverty rates, over 10 percentage points lower than the poverty rate of the United Sates. The lowest poverty rates belonged to Finland, Denmark and Sweden, which all had rates of 5.6 per cent.

Over the 1980-2007 period, all countries but one experienced growing poverty rates; Denmark's poverty rate declined by 4.5 percentage points (or 44.7 per cent). However, the Netherlands and Belgium led the vast majority of countries increasing 3.4 and 3.64 percentage points, or 87.9 and 81.5 per cent over the period, respectively. As the poverty rate depends not only on the distribution of income but also on economic growth which increases income, the growth of poverty rates over the sub-periods greatly varied with the changing economic conditions in the countries.

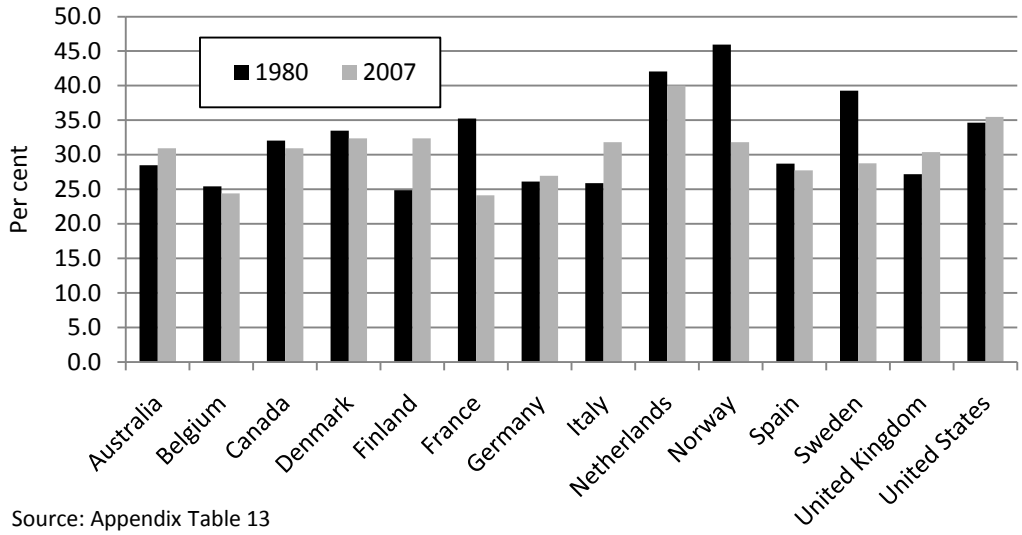
The poverty gap is the average difference between the poverty line and the incomes of individuals living below the poverty line. In this report, we express it as a percentage of the poverty line. In 2007, the poverty gap was greatest in the Netherlands, at 40.0 per cent (Appendix Table 13 and Chart 17). The United States followed with a poverty gap of 35.5 per cent. The smallest poverty gaps were in France and Belgium, at 24.1 per cent and 24.4 per cent, respectively. Changes in the poverty gap between 1980

Chart 16: Poverty Rate for All Persons, Selected OECD Countries, Per Cent, 1980 and 2007



Source: Appendix Table 12

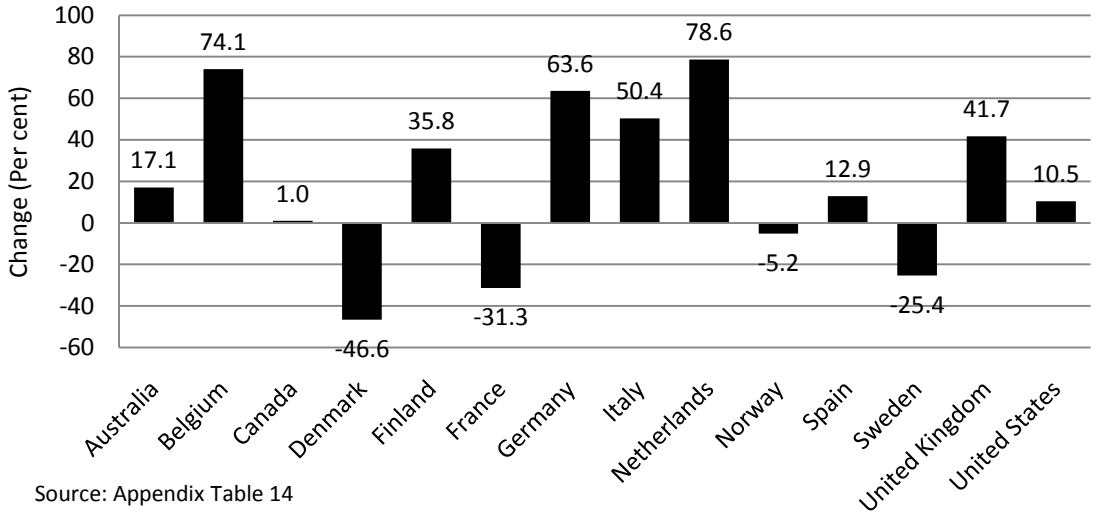
Chart 17: Poverty Gap for All Persons, Selected OECD Countries, Per Cent, 1980 and 2007



Source: Appendix Table 13

and 2007 show that all but six countries experienced increases in their poverty gaps. The greatest increase was experienced by Finland, where the poverty gap grew by 7.49 percentage points, or 30.1 per cent, over the period. Among countries in which the poverty gap declined, the greatest improvement was 14.2 percentage points, or 30.8 per cent, in Norway. France's poverty gap also decreased impressively, with negative growth of 31.5 per cent or 11.1 percentage points.

Chart 18: Changes in Poverty Intensity, Selected OECD Countries, Per Cent, 1980-2007



Source: Appendix Table 14

Poverty intensity is defined as the product of the poverty gap and the poverty rate (also multiplied by a constant). Due to its extremely high poverty rate, and its moderately high poverty gap, the United States had the highest poverty intensity in 2007 (Appendix Table 14). Conversely, Sweden was among the countries with the lowest poverty gap and poverty rate, and therefore had the lowest poverty intensity in 2007.

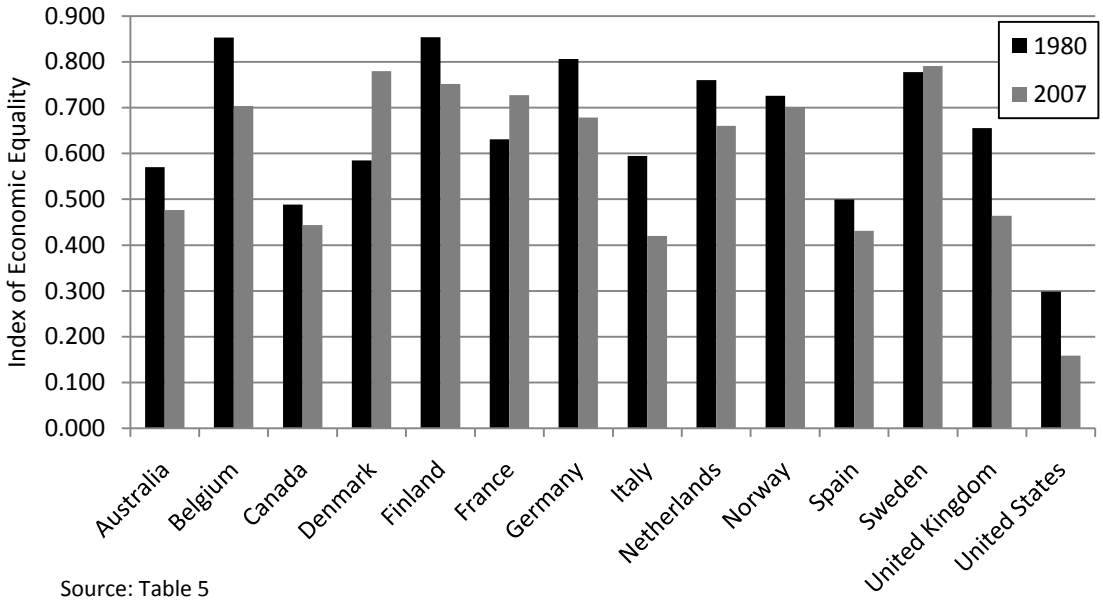
The trend of poverty intensity for the 1980-2007 period was the sum of the two trends of the constituent parts. Due to the considerable fall in its poverty gap, Denmark's poverty intensity declined by 46.6 per cent (Chart 18). On the other hand, due to its considerable increase in both the poverty rate and the poverty gap, Italy's poverty intensity grew by 50.4 per cent.

iii. Overall Economic Equality Domain

The index of the economic equality domain is the weighted sum of the scaled Gini coefficient and the scaled poverty intensity, with poverty intensity receiving three quarters of the weight. In 2007, Sweden had the highest economic equality score, at 0.791 (Table 5 and Chart 19). The United States was the country with the least equality by far; its index score of 0.159 was 62.2 per cent below the next lowest score, Italy's 0.420. Canada ranked eleventh among the fourteen countries with a score of 0.444.

Economic equality increased in only three countries over the 1980-2007 period: Denmark, France, and Sweden. The most progress among them was made by Denmark, where the index of equality grew 0.195 points, or 33.3 per cent. The United States, Italy and the United Kingdom experienced the greatest setbacks in terms of equality, with the United States falling by 0.139 points (or 46.8 per cent), Italy by 0.174 points (or 29.3 per cent) and the United Kingdom by 0.191 points (or 29.2 per cent) over the period.

Chart 19: Index of the Economic Equality Domain, Selected OECD Countries, 1980 and 2007



Source: Table 5

F. Trends in the Economic Security Domain

The economic security domain is the most complex domain of the Index of Economic Well-being and the methodologies used in its construction have evolved since the Index was first released in 1998.[24] The domain consists of four components called risks to economic well-being facing the population, namely the risk imposed by unemployment, the financial risk from illness, the risk from single parent poverty, and the risk of poverty in old age. Three of these components are in turn composed of more than one variable.

i. Risk from Unemployment

Risk imposed by unemployment is determined by two variables: the unemployment rate and the proportion of earnings that are replaced by unemployment benefits.[25] Each of these measures is scaled, and then summed with weights of 0.8 and 0.2, respectively. This weighted sum is the unemployment component of the security index.

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[24] For a discussion of the role of economic security in an index of economic well-being and an assessment of the CSLS approach to the measurement of economic security, see Heslop (2009).

[25] In our estimates of the Index of Economic Well-being for Canada and the provinces (Osberg and Sharpe, 2009), security from unemployment is also determined by the unemployment insurance coverage rate (the proportion of the unemployed who receive unemployment insurance benefits). The unemployment component of the economic security domain is a weighted sum of the scaled unemployment rate and the scaled product of the unemployment insurance coverage and replacement rates, with eighty per cent of the weight assigned to the unemployment rate. Data limitations prevent us from using the coverage rate in our international estimates.

a. Unemployment rate

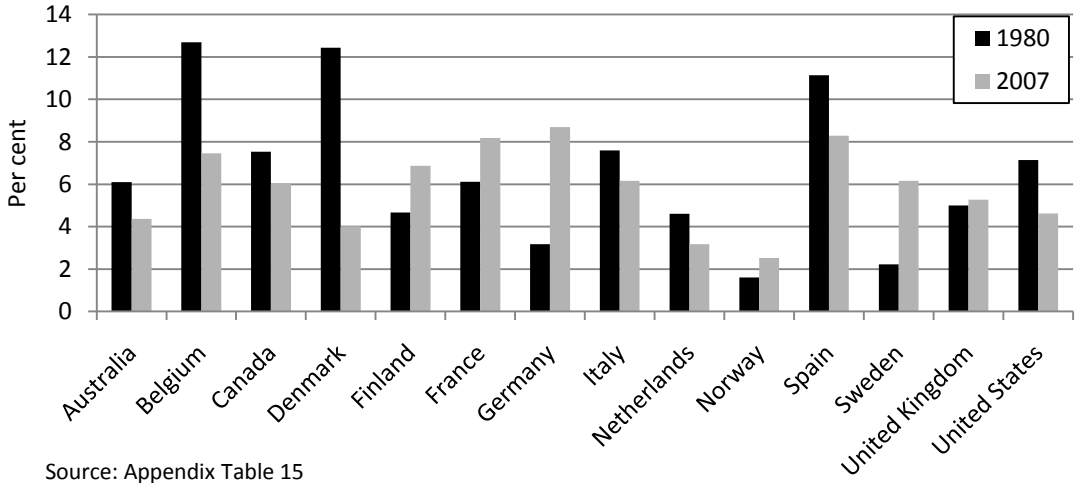
In 2007, the lowest unemployment rate was in Norway, where 2.53 per cent of the labour force was unemployed (Appendix Table 15 and Chart 20). Norway was followed by the Netherlands and Denmark, which had unemployment rates of 3.18 and 4.01, respectively. Germany had the highest unemployment rate of 8.69 per cent.

Over the 1980-2007 period, the unemployment rate decreased most significantly for Denmark. There, the unemployment rate fell by 8.4 percentage points, or 67.8 per cent. The two countries to experience the greatest increase in their unemployment rates were Germany and Sweden. Germany experienced positive growth of 5.5 percentage points, or 173.4 per cent, while Sweden's unemployment rate increased by 3.9 percentage points, or 176.7 per cent.

b. Unemployment insurance replacement rate

The unemployment insurance replacement rate is defined as the share of labour earnings replaced by unemployment insurance. It is computed as an average replacement rate for two earnings levels, three family situations, and three durations of unemployment (Martin, 1996). The proportion of income replaced by unemployment benefits was greatest in the Denmark in 2007, at 48.9 per cent (Appendix Table 16 and Chart 21).[26] Denmark was followed by Belgium, which had a replacement rate of 40.9 per cent. Canada had the lowest replacement rate at 11.7 per cent, less than one quarter of Denmark's rate.

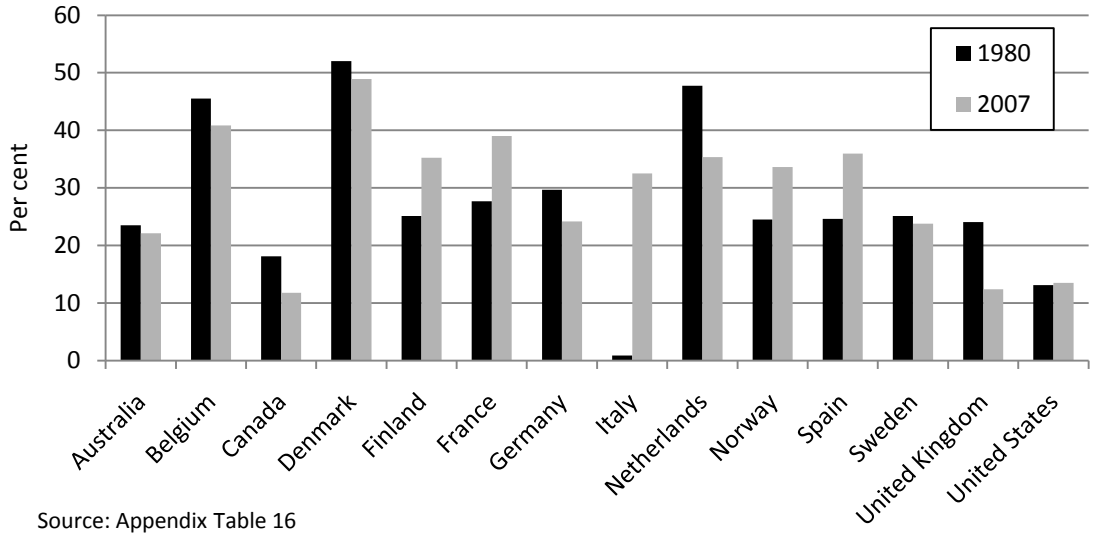
Chart 20: Unemployment Rate, Selected OECD Countries, Per cent, 1980 and 2007



Source: Appendix Table 15

[26] Data on the unemployment insurance replacement rate are available to 2005. Values for 2006 and 2007 are assumed to be equal to the 2005 values.

Chart 21: Unemployment Insurance Gross Replacement Rate, Selected OECD Countries, Per Cent, 1980 and 2007



Source: Appendix Table 16

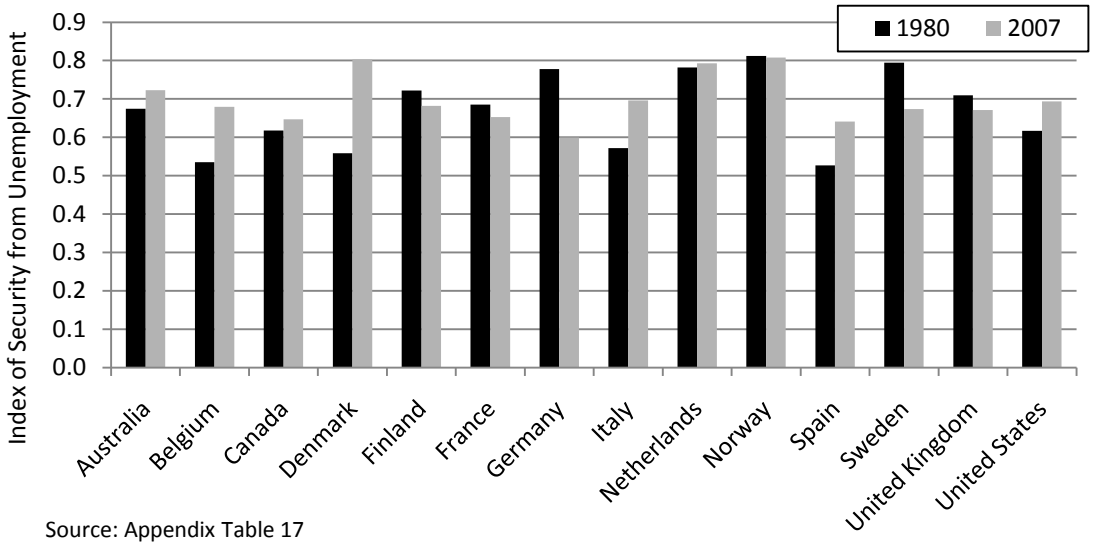
Over the 1980-2007 period, the replacement rate increased in six of the fourteen countries. By far the greatest positive growth occurred in Italy, where the replacement rate grew by 31.7 percentage points from an insignificant 0.8 per cent in 1980 to 32.5 per cent in 2007 (an increase of 3,736 per cent). The next largest increase was 46.1 per cent in Spain. The largest proportional decline was in the United Kingdom, where the rate fell by 48.7 per cent from 24.1 per cent in 1980 to 12.3 per cent in 2007. Canada's 38.3 per cent decline, from 18.1 per cent to 11.7 per cent, was the second largest over the period.

c. Overall security from unemployment

In order to obtain the measures of scaled unemployment protection, the replacement rates and the unemployment rates of all countries are scaled, then multiplied by 0.2 and 0.8 respectively, and finally added together. Due to the fact that it had a high replacement rate and a low unemployment rate, Norway had the highest scaled level of protection from unemployment in 2007, at 0.808 points, followed closely by Denmark at 0.803 (Appendix Table 17 and Chart 22). On the opposite end, mostly due to its high unemployment rate, Germany had the lowest scaled level of protection from unemployment, 0.599 points.

Between 1980 and 2007, the scaled unemployment protection index fell for several countries. Germany experienced the greatest decline, 0.179 points, or 23.0 per cent. Denmark, on the other hand, saw its index grow by 0.244 points, or 43.7 per cent. The growth pattern of the index over the sub-periods also very closely followed the growth of the unemployment rate.

Chart 22: Index of Security from the Risk of Unemployment, Selected OECD Countries, 1980 and 2007

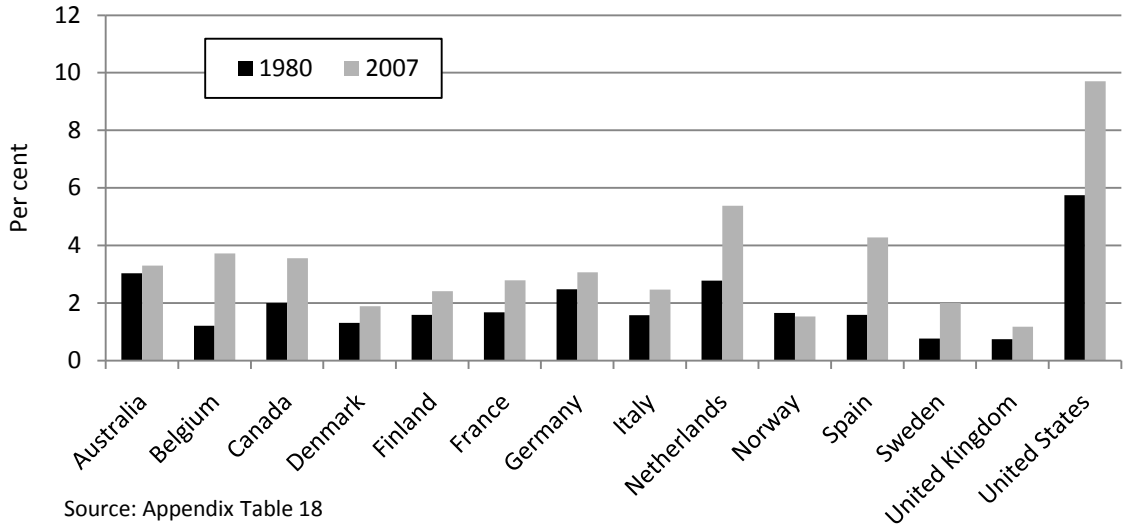


Source: Appendix Table 17

ii. Financial Risk from Illness

The second component of the economic security domain is the financial risk imposed by illness. In some countries such as Canada, health care deemed medically necessary by hospitals and doctors' offices is provided free of charge to all citizens through public medicare programs. In this sense the financial risk imposed by illness is much less than in countries without such universal coverage, like the United States. But there is still significant private expenditure on health care in public medicare countries, and these expenditures have been rising rapidly. Included are spending for dental care, drugs taken outside hospitals, unlisted medical services such as acupuncture, and delisted medical services (physiotherapy and vision care are examples of various medical services that have been recently delisted). Also included are procedures considered socially desirable though medically unnecessary, such as plastic surgery. An increase in the share of expenditures on healthcare of personal disposable income will be considered as deterioration in economic security, as increased private health expenditures are usually brought about by poor health and thus represent a growing financial burden for low income persons.

Chart 23: Private Health Care Expenditures as a Proportion of Personal Disposable Income, Selected OECD Countries, Per Cent, 1980 and 2007



Source: Appendix Table 18

In 2007, the highest share of private expenditure on healthcare in personal disposable income was 9.70 per cent in the United States, giving it the smallest scaled protection from illness value of 0.083 points (Appendix Tables 18 and 19 and Chart 23).[27] The United States, being the only country without a comprehensive universal medical coverage program, was far ahead of all other studied countries in terms of private expenditures on healthcare. The United Kingdom had the lowest medical expenses as a share of personal disposable income, 1.17 per cent, giving it a scaled index value of 0.876 points.

From 1980 to 2007, the share of medical expenses in personal disposable income grew for all countries but Norway. There, the share declined by 0.12 percentage points, or 7.3 per cent. In absolute terms, the share of the United States increased the most, growing by 3.96 percentage points, or 69.0 per cent (leading to an 81.5 per cent decline in its scaled security from illness index). However, in proportional terms this was not the greatest growth, as Spain's 2.68 percentage-point increase represented growth of 168.7 per cent.

iii. Risk from Single-Parent Poverty

The third component of the economic security domain is the risk of single parent poverty. This component consists of three variables: the divorce rate (as divorce throws many women into poverty), the poverty rate for lone female-headed families and the

[27] Data on private health care expenditures are from OECD Health Data. The most recent year of data availability varies across countries as follows: the Netherlands (2002); Belgium (2005); and all other countries (2006). Values for subsequent years are extrapolated based on the compound annual growth rates over the five most recent years of data availability (i.e. 1997-2002 for the Netherlands).

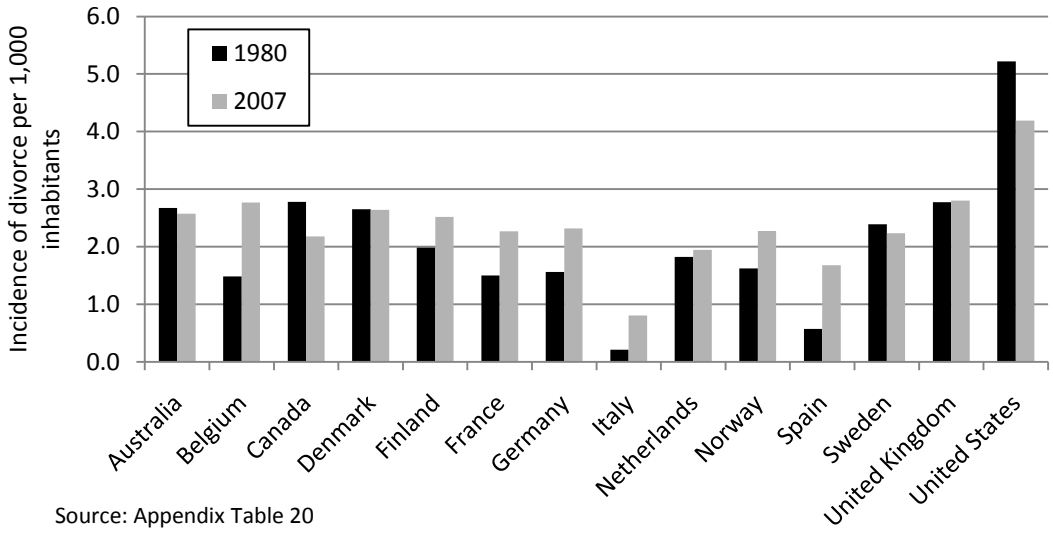
poverty gap for these families. As in the economic equality domain, the poverty line is defined as fifty per cent of median after-tax equivalent income. The poverty rate is the proportion of single women with young children whose income is below the poverty line. the poverty gap is the average per cent difference between the poverty line and the incomes of the single mothers whose incomes are below the poverty line.

a. Divorce rate

In 2007, the United States had the highest divorce rate for married couple, 4.19 per 1,000 inhabitants (Appendix Table 20 and Chart 24).[28] The United Kingdom followed the United States with a divorce rate of 2.8 per 1,000. The lowest divorce rate was in Italy (perhaps due to more traditional or religious values), 0.8 per 1,000, less than one fifth of the US rate. The divorce rate in Canada was 2.2 per 1,000 inhabitants in 2007, fourth lowest among the fourteen countries.

Over the 1980-2007 period, divorce rates grew in nine of the countries. The largest proportional increases were 282.2 per cent in Italy and 194.5 per cent in Spain; these were the countries with the two lowest divorce rates in 1980, so it is unsurprising that they experienced the largest per cent increases. The largest decline over the period was 21.7 per cent in Canada, which had one of the highest divorce rates in 1980.

Chart 24: Divorce Rate, Selected OECD Countries, Incidence per 1,000 Inhabitants, 1980 and 2007



Source: Appendix Table 20

[28] Data on divorce rates are from the UN Demographic Yearbook. The most recent year of data availability varies across countries as follows: the United States (1998); the United Kingdom (2003); Canada (2004); Australia and Italy (2005); and all other countries (2006). Subsequent values are assumed to be equal to the value in the most recent year of data availability.

b. Poverty

The poverty rate for single women with children under 18 in 2007 was greatest for the United States at 43.7 per cent (Appendix Table 21 and Chart 25).[29] Canada had the second highest poverty rate, at 43.4 per cent. Much like the general poverty rate, the poverty rate for single women with children was lowest in Denmark (at 7.4 per cent), Sweden (at 9.7 per cent) and Finland (at 11.5 per cent).

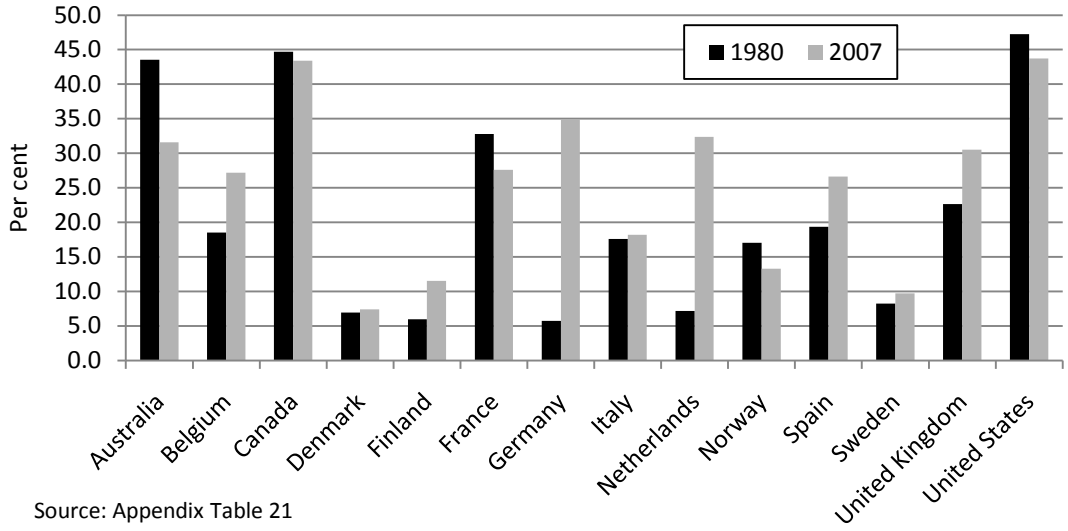
The poverty rates for single women with children under 18 increased in 9 of the 14 countries over the 1980-2007 period. The greatest growth was experienced by Germany, where the poverty rate increased by an amazing 29.2 percentage points, from 5.7 per cent in 1980 to 34.9 per cent in 2007 – growth of over 500 per cent. The Netherlands also experienced significant growth here. Among the countries in which the poverty rate fell, the greatest decline – in both proportional and percentage-point terms – was in Australia; its poverty rate fell by 12.0 percentage points (27.4 per cent). Although they had the two highest single-mother poverty rates in 2007, both Canada and the United States experienced declines in the rate (by 2.9 and 7.5 per cent, respectively) over the 1980-2007 period.

The 2007 poverty gap for female headed families with children under 18 was greatest in Italy, at 47.5 per cent, followed by the United States at 42.7 per cent (Appendix Table 22 and Chart 26). The lowest poverty gaps were 17.5 per cent in France and 17.6 per cent in Finland. Canada had the sixth highest rate, at 28.9 per cent.

Over the 1980-2007 period, the single-mother poverty gap fell in nine of the fourteen countries. The largest decline was 23.1 percentage points (or 57.0 per cent) in France. Out of the five countries that experienced positive growth in their poverty gaps, the largest increase was 11.9 percentage points (or 58.5 per cent) in Germany. In Canada, the poverty gap fell 9.4 percentage points (or 24.6 per cent); this was the fourth largest percentage-point decline among the fourteen countries.

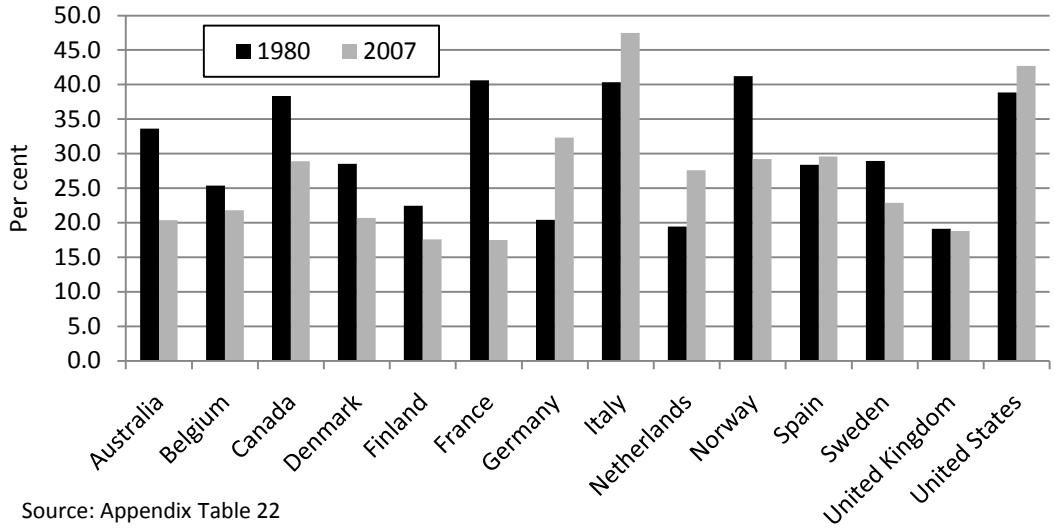
[29] Data are from the Luxembourg Income Study. See Footnote 22.

Chart 25: Poverty Rate for Single Women with Children Under 18, Selected OECD Countries, Per Cent, 1980 and 2007



Source: Appendix Table 21

Chart 26: Poverty Gap for Single Women with Children Under 18, Selected OECD Countries, Per Cent, 1980 and 2007



Source: Appendix Table 22

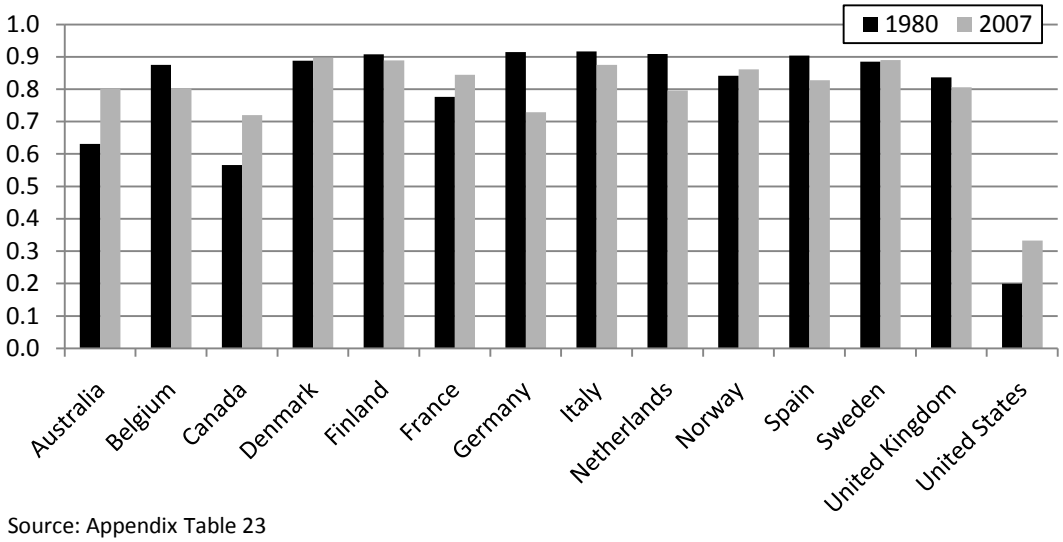
c. Overall security from single-parent poverty

The overall measure of the risk imposed by single parent poverty is calculated as the product of the divorce rate, the poverty rate for lone female-headed families, and the poverty gap for single female-headed families. That measure is then converted into a scaled index. Due to its very low poverty rate, Denmark was the country where single parents were safest from poverty in 2007, with a scaled index value of 0.897 points (Appendix Table 23 and Chart 27). The United States had the lowest index score by a

wide margin; its score of 0.333 was 53.7 per cent below the next lowest score, Canada's 0.720.

Despite having the lowest index level for 2007, the United States showed the most improvement, in proportional terms, over the entire 1980-2007 period; its index grew by 66.9 per cent (or 0.134 points). Canada's 27.3 per cent increase was the second largest. Security from single-parent poverty decreased in seven of the countries, with the largest declines occurring in Germany (20.2 per cent) and the Netherlands (12.4 per cent).

Chart 27: Index of Security from Single-parent Poverty, Selected OECD Countries, 1980 and 2007



Source: Appendix Table 23

iv. Risk of Poverty in Old Age

The fourth component of the economic security domain is the risk of poverty in old age. This component is proxied by the poverty intensity experienced by the households headed by a person 65 and over.

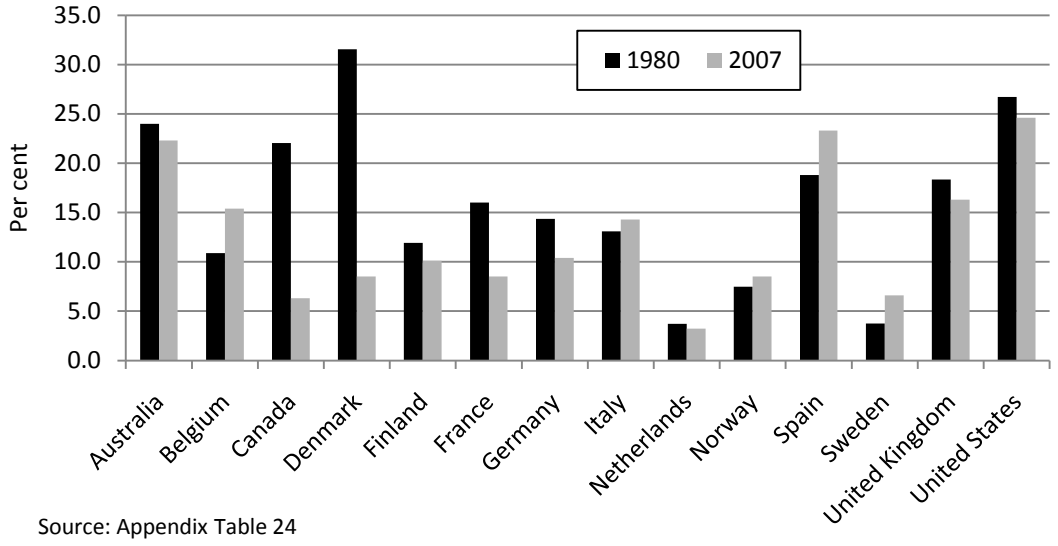
a. Poverty

In 2007, the elderly poverty rate was greatest in the United States, at 24.6 per cent (Appendix Table 24 and Chart 28).[30] Spain had the second highest rate, at 23.3 per cent. The lowest elderly poverty rates were 3.2 per cent in the Netherlands and 6.3 per cent in Canada.

Over the 1980-2007 period, five of the selected fourteen countries experienced increasing elderly poverty rates. In absolute terms they were led by Belgium, the poverty rate of which grew by 4.51 percentage points (41.4 per cent). In proportional terms, their leader was Sweden, which grew by 75.8 per cent (as a result of an increase of 2.85

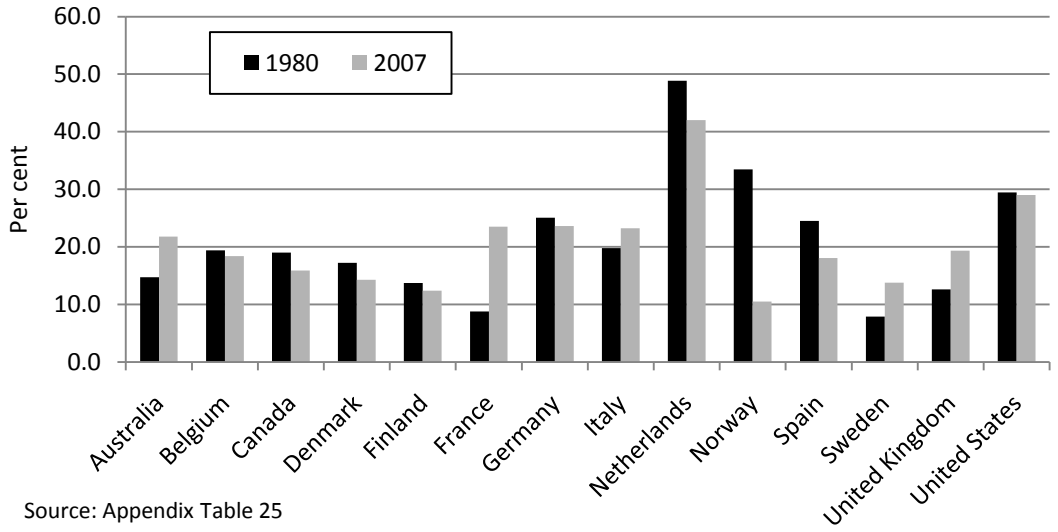
[30] Data are from the Luxembourg Income Study. See Footnote 22.

Chart 28: Poverty Rate for Elderly Families, Selected OECD Countries, Per Cent, 1980 and 2007



Source: Appendix Table 24

Chart 29: Poverty Gap for Elderly Families, Selected OECD Countries, Per Cent, 1980 and 2007



Source: Appendix Table 25

percentage points from a very low rate in 1980). Denmark and Canada had the largest improvements, with declines of 23.0 and 15.8 percentage points (or 73.1 and 71.4 per cent), respectively.

The elderly poverty gap ratio was highest in the Netherlands in 2007, at 42.0 per cent (Appendix Table 25 and Chart 29). The United States followed with a poverty gap ratio of 29.0 per cent. The lowest gap, 10.5 per cent, belonged to Norway. Canada's elderly poverty gap of 15.9 per cent was the fifth lowest among the fourteen countries.

In terms of changes in the poverty gap over the 1980-2007 period, the greatest absolute increase of 14.7 percentage points was experienced by France (equal to proportional growth of 167.1 per cent). Of the nine countries that experienced negative growth in the elderly poverty gap, the largest decline was 23.0 percentage points (or 68.7 per cent) in Norway.

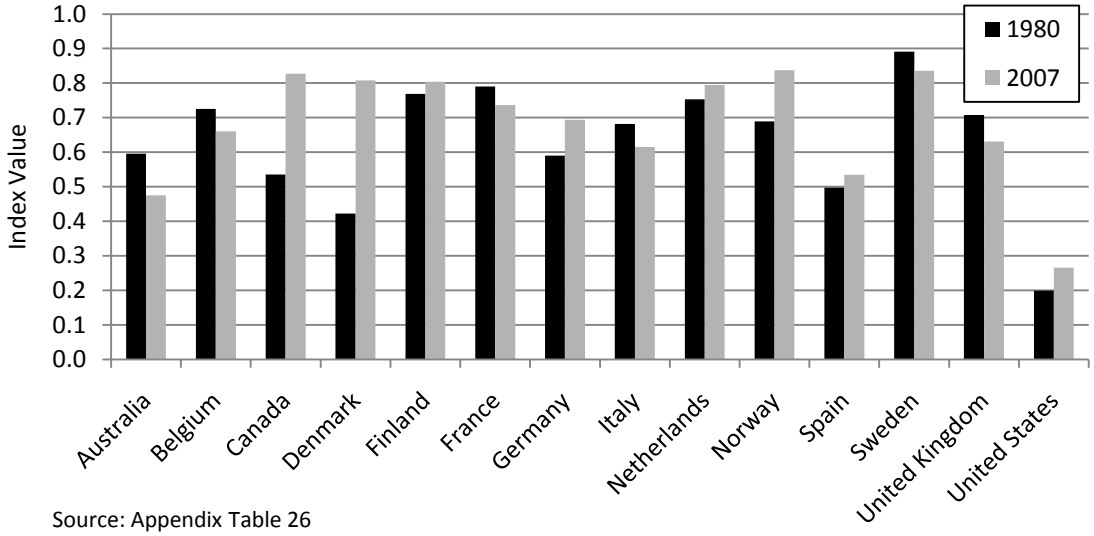
b. Index of security from poverty in old age

To compute the index of security from the risk of poverty in old age, we calculate poverty intensity (the product of the poverty gap and the poverty rate) and then convert it into a scaled index using the linear scaling procedure.

Citizens of the United States were least secure from poverty due to old age in 2007, with the lowest scaled index level of 0.266 (Appendix Table 26 and Chart 30). This is unsurprising, since the United States had the highest elderly poverty rate and the second-highest elderly poverty gap in 2007. As in the case of security from single-parent poverty, there was a considerable gap between the United States and the country with the next lowest score; the US score was 44.0 per cent below the next lowest score, Australia's 0.475. The country with the greatest security from elderly poverty was Norway, which had a scaled index level of 0.837. Sweden and Canada followed, with scores of 0.835 and 0.827, respectively.

Australia was the country that experienced the sharpest drop in its index during the 1980-2004 period, losing 20.3 per cent of its 1980 index level, or 0.121 points. Most likely due to their declining poverty rates, Denmark and Canada experienced the most significant improvements in the index of security from old-age poverty: 0.385 and 0.292 points (91.1 and 54.5 per cent), respectively.

Chart 30: Index of Security from Poverty in Old Age, Selected OECD Countries, 1980 and 2007



Source: Appendix Table 26

v. Weighting of the Components in the Index of the Economic Security Domain

The scaled values of the four components of the economic security domain are aggregated to obtain an overall scaled index for the domain. The weights used for this aggregation procedure are constructed from the relative sizes of the populations subject to each risk.

In terms of the risk of unemployment, it is assumed that the entire population aged 15 to 64 years is subject to this risk. In 2007, this ranged between 63 per cent in France, to 68 per cent in Canada (Appendix Table 27). The total population (i.e. 100 per cent) is assumed to be subject to financial risk associated with illness. In terms of the risk of single parent poverty, it is proxied by the share of married women with children under 18. As a proportion of the population in 2007, this group ranged from 28.4 per cent in Spain to 39.3 per cent in the United States. Finally, it is assumed that the population aged 45 to 64 is most likely to feel anxiety regarding the risk from poverty in old age. In 2004, this age group constituted between 24.0 per cent (in Spain) and 28.4 per cent (in Finland) of the population.

The component-specific weights are generated by summing the four proportions of the population subject to the four risks and then standardizing to unity by dividing each proportion by that sum.

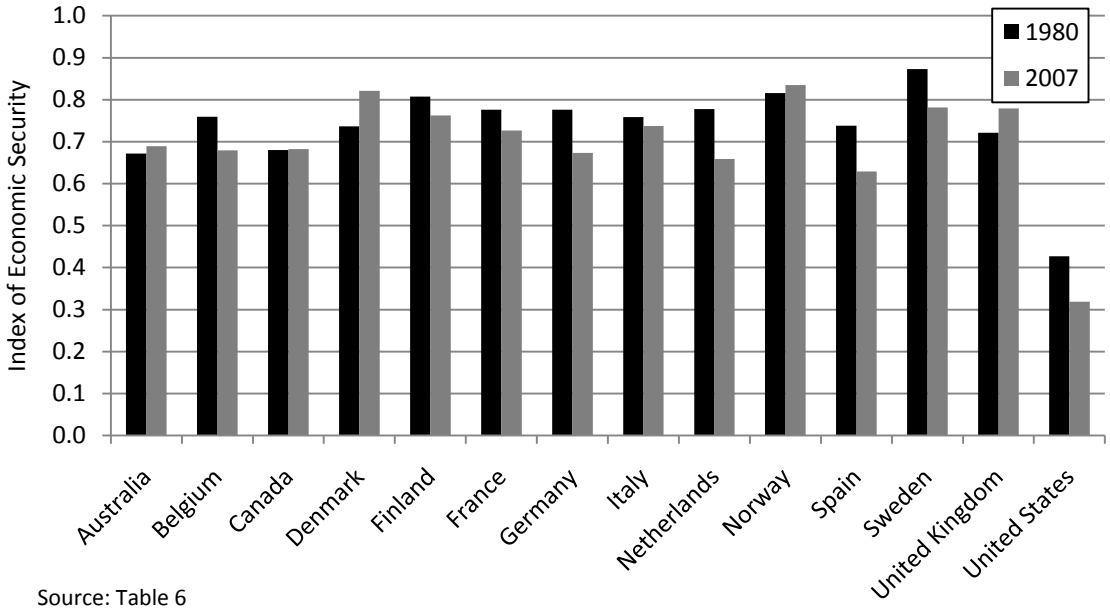
As a result of demographic shifts, the proportion of the population affected by various risks changed over time. With the aging of the population, the proportion of the population aged 15-64 and the proportion of the population aged 45-64 increased for almost all countries, while the proportion of married women with children under 18 declined over the 1980-2007 period.

The contribution of each component of the security domain index is the product of its scaled value and weight. For example, for Canada in 2007, the weighted scaled security from risk imposed by unemployment was 0.193 (0.647*0.298), the weighted scaled security from risk imposed by illness was 0.287 (0.65*0.438), risk of single parent poverty was 0.105 (0.720*0.146) and risk of poverty from old age was 0.097 (0.827*0.117). The sum of the four components was 0.682, the index value of the overall security domain for Canada in 2007.

vi. Overall Index of the Economic Security Domain

Economic security was greatest in Norway, with a value of 0.835 points in 2007 (Table 6 and Chart 31). Norway was followed by Denmark with a value of 0.821 points. The United States had by far the lowest score for economic security, at 0.319; the next lowest was 0.424 in the United Kingdom. Canada ranked eighth with a score of 0.682.

Chart 31: Index of Economic Security, Selected OECD Countries, 1980 and 2007



Source: Table 6

Ten of the fourteen countries experienced a decline in economic security over the 1980-2007 period. The United States and the United Kingdom fell the most in proportional terms, with declines of 25.4 per cent (or 0.108 points) and 18.2 per cent (or 0.094 points), respectively. The overall trend of the index was clearly negative across the fourteen countries, as even the country that experienced the greatest positive growth, Denmark, increased by only 11.5 per cent (or 0.084 points) over the period. The only other countries that experienced positive growth in security were Australia (2.9 per cent), Norway (2.4 per cent), and Canada (0.3 per cent).

IV. Sensitivity Analysis

In this section, we explore the sensitivity of our results to the choice of the weights that are assigned to the four domains of well-being. In the literature, most composite indices assign equal weight to each component; the best known example is probably the Human Development Index, which assigns equal weight to sub-indices of education, health and access to resources (i.e. the log of GDP per capita). The main baseline results we report continue in this tradition, but there is no objective sense in which this weighting scheme is preferable to all others. The choice of weights is a value judgment, and the IEWB is designed to make that judgment as transparent as possible. There are defensible alternative weighting schemes, and we would like to know the robustness of our qualitative findings to changes in the weights.[31]

We compute the Index of Economic Well-being under three alternative weighting schemes. They are outlined in Exhibit 5 below. The baseline results are those reported in earlier sections of this report, with each domain given equal weight. Alternative 1 keeps the weights for equality and security unchanged, but shifts some of the weight from wealth stocks to consumption flows. This is reasonable if it is believed that people value current consumption more than accumulated stocks of wealth. Note that these were the weights that we used in the original estimates of the Index (Osberg and Sharpe, 1998); although these weights do not exactly reflect the proportion of national income that Canadians collectively choose to invest rather than consume in a typical year, the implied 4:1 ratio of the value of consumption relative to savings is far closer than the 1:1 ratio in the baseline IEWB. Alternative 2 assigns zero weight to distributional concerns; the weight placed on the economic equality domain, which includes both income inequality and poverty, is set to zero.[32] Alternative 3 was recently suggested by the French business magazine *L'Expansion* (Dedieu, 2009). It assigns high weights to economic equality and security and low weights to consumption and wealth.

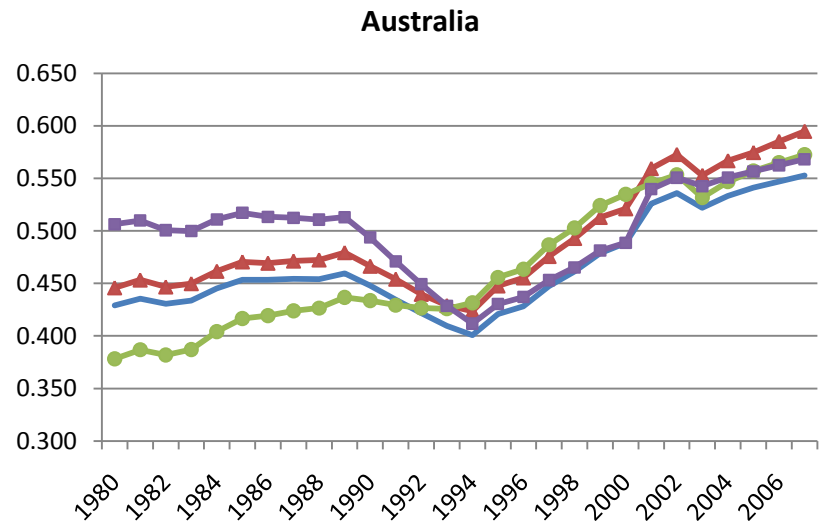
Exhibit 5: Weighting Schemes for Sensitivity Analysis

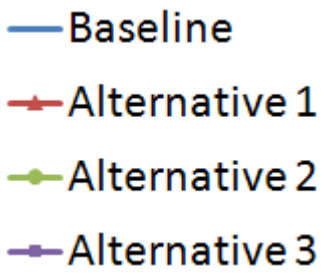
	Weights			
	Consumption	Wealth	Equality	Security
Baseline (Alternative 0)	0.25	0.25	0.25	0.25
Alternative 1	0.40	0.10	0.25	0.25
Alternative 2	0.33	0.33	0.00	0.33
Alternative 3	0.20	0.10	0.40	0.30

[31] Again, we invite readers to download the data tables in Microsoft Excel format at the CSLS web site (http://www.csls.ca/iwb/Weights_OECD.xls) and build versions of the Index of Economic Well-being with their own preferred weights for the four domains.

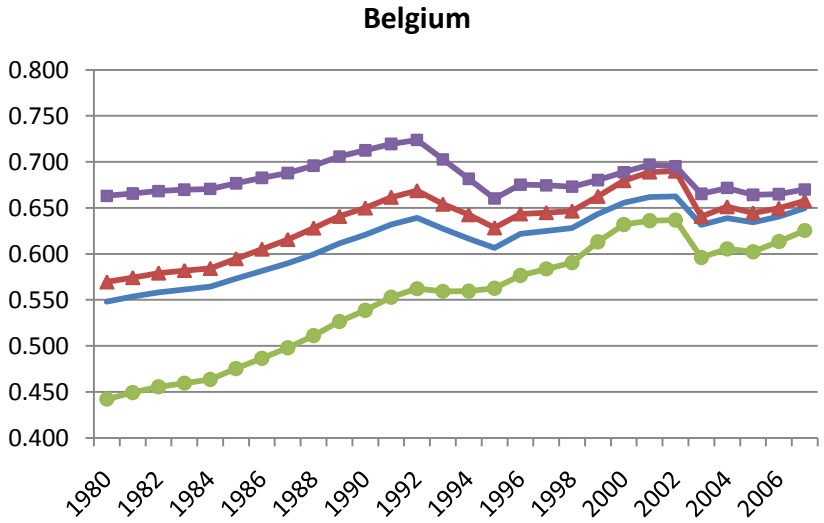
[32] If it is thought to be 'left-wing' to emphasize distributional issues, then putting zero weight on such issues might be thought to be an extreme 'right-wing' perspective.

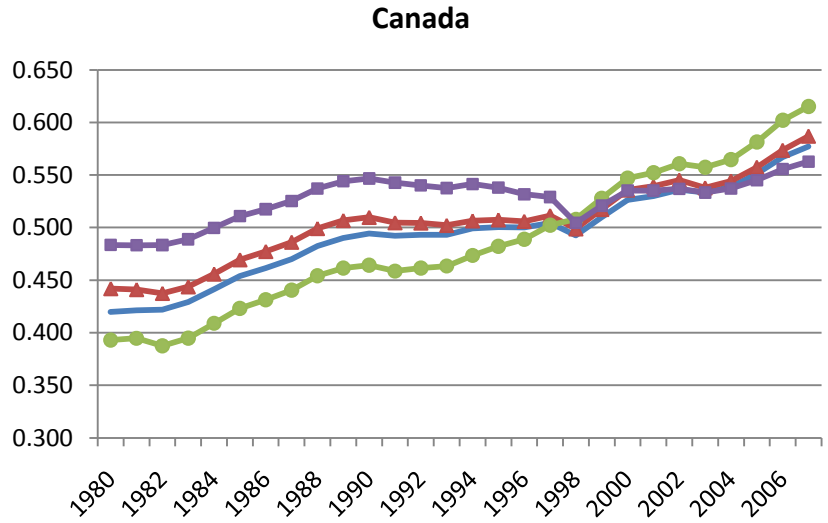
Chart 32: Index of Economic Well-being under Alternative Weighting Schemes, Selected OECD Countries, 1980-2007

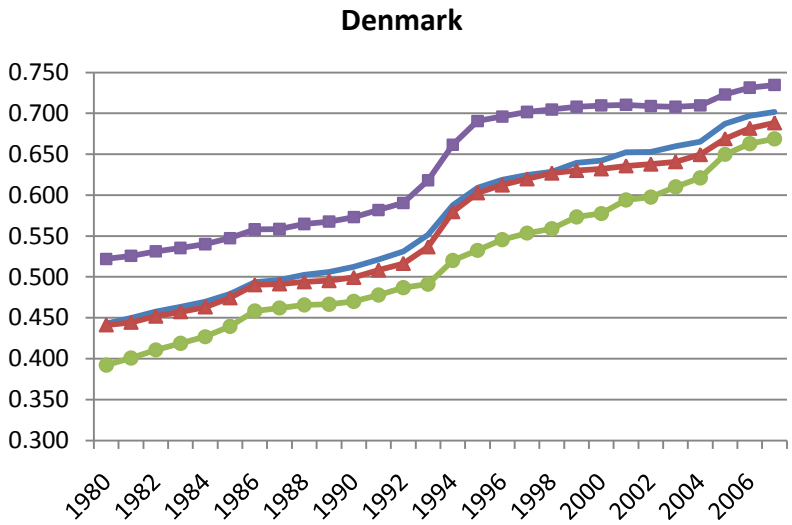




Source: Table 1 and Appendix Tables 28-30



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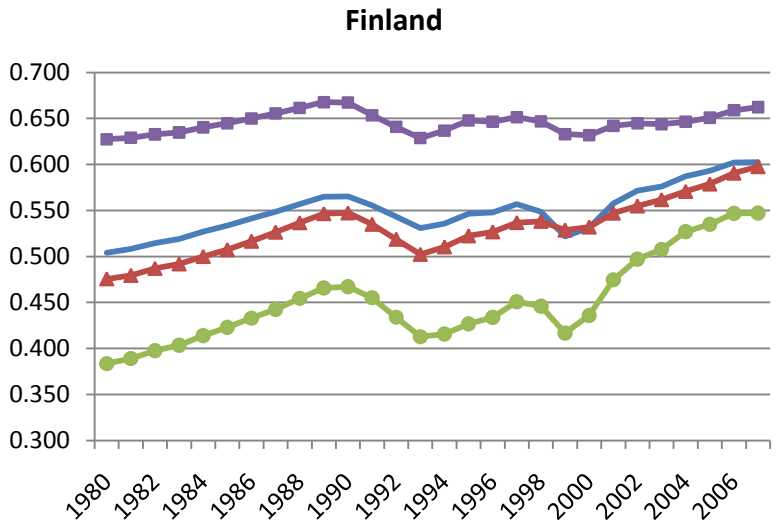
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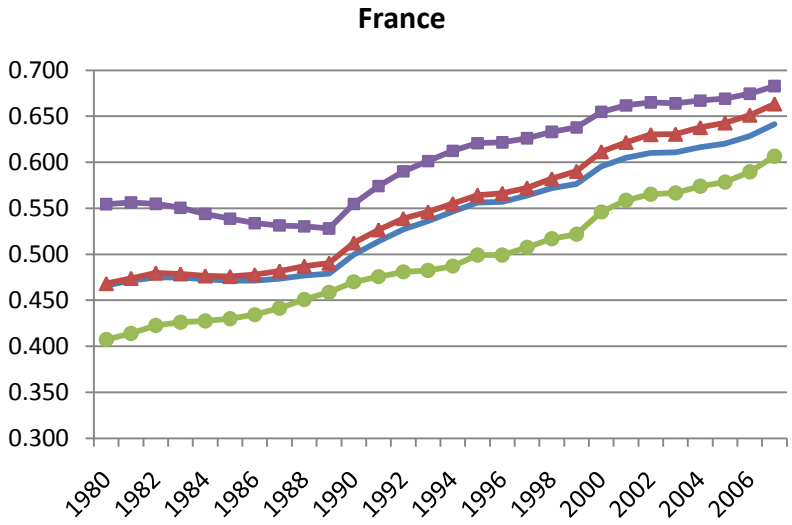
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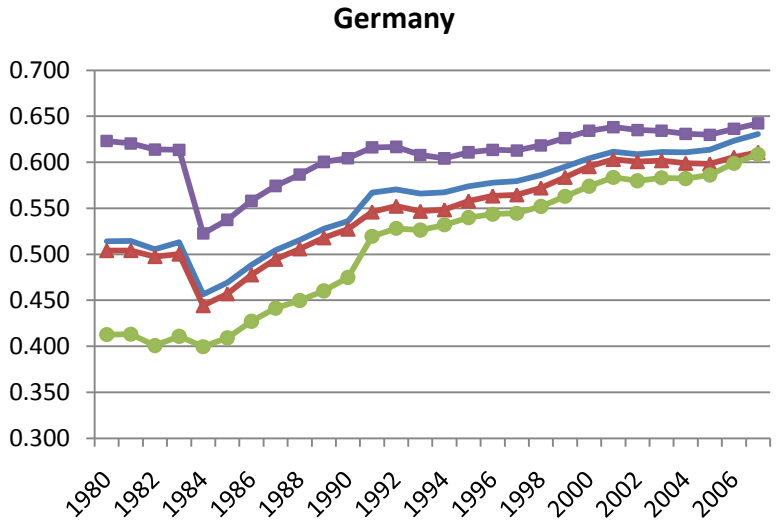
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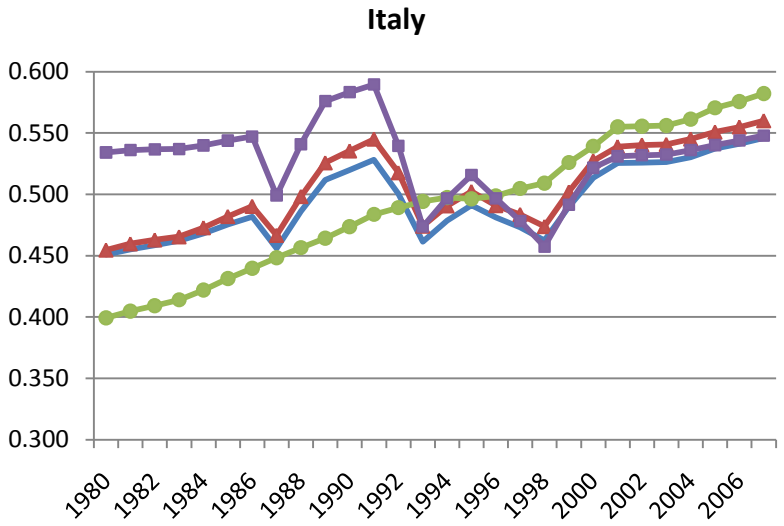
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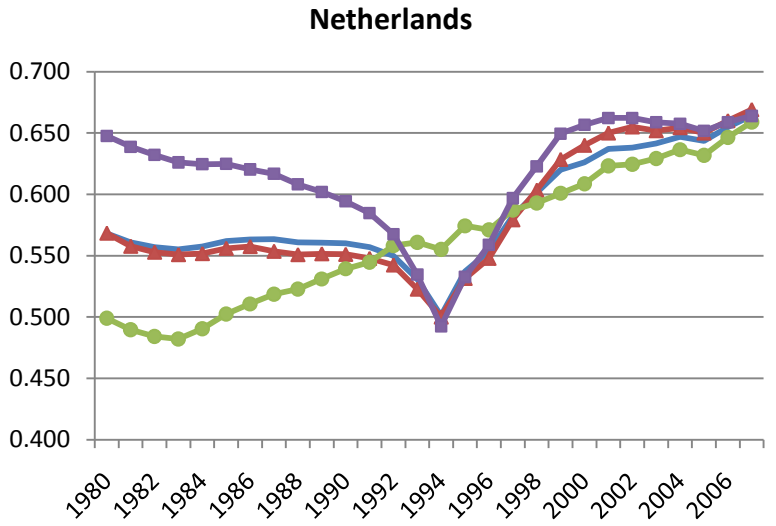
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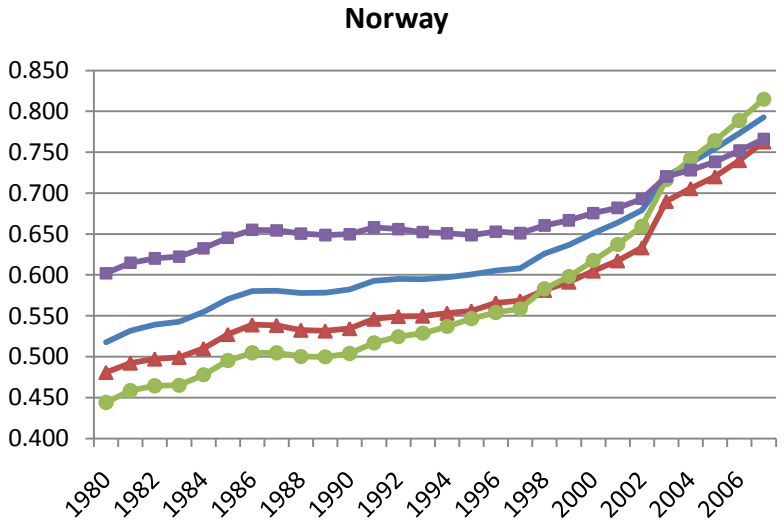
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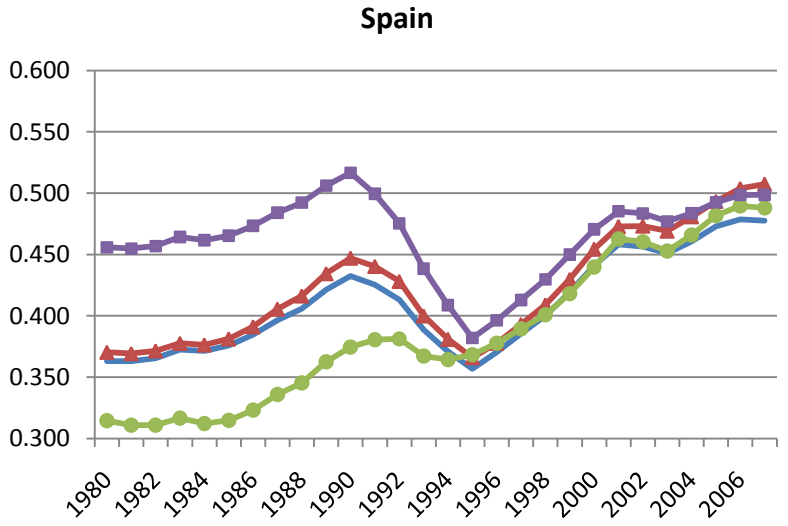
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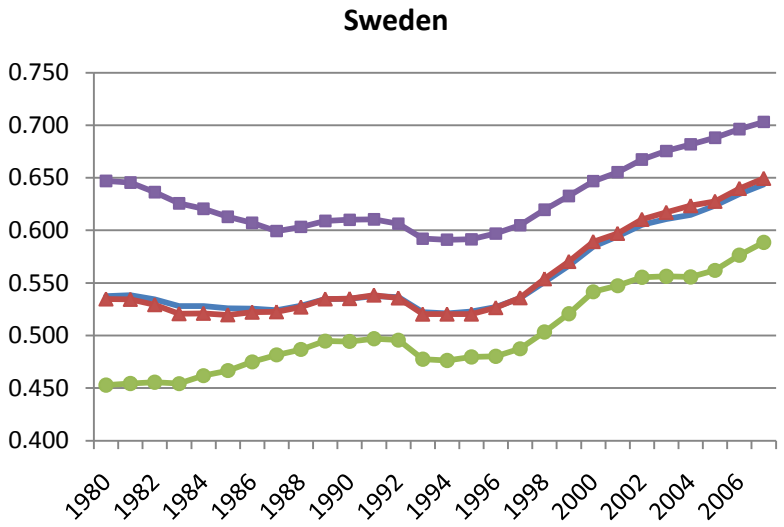
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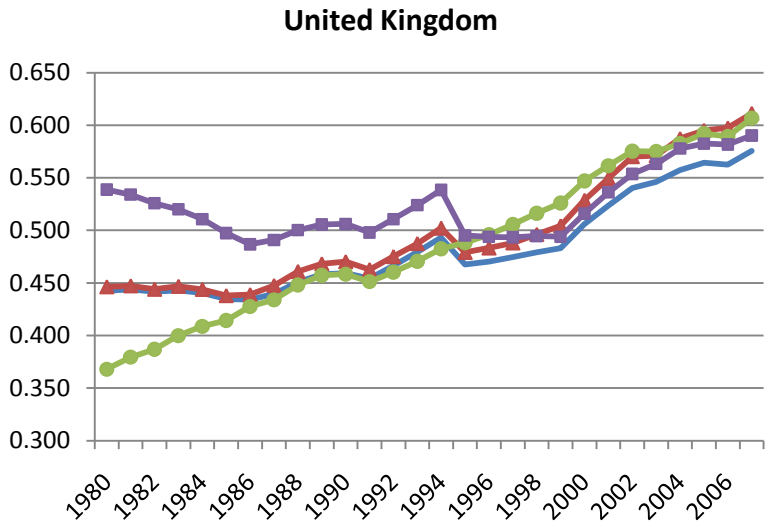
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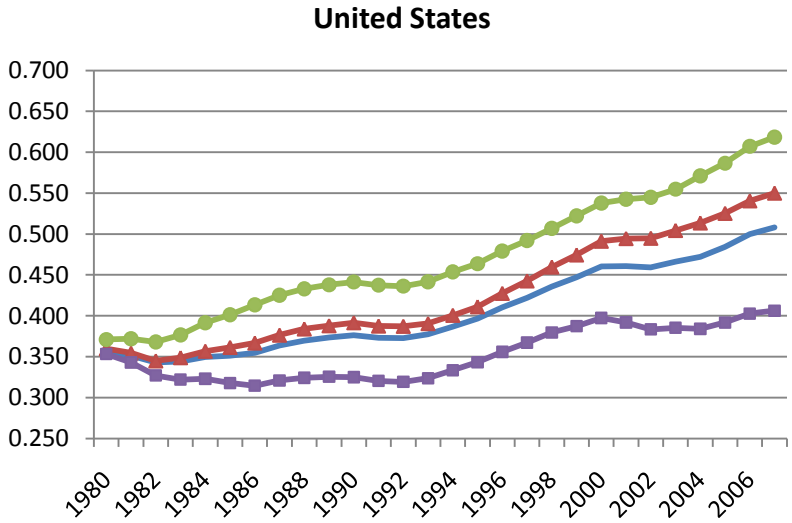
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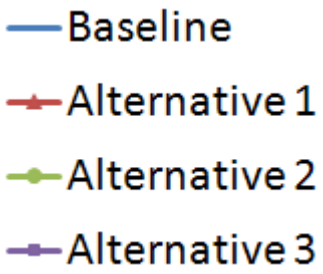

Baseline
Alternative 1
Alternative 2
Alternative 3

A. Alternative 1: Consumption Weighted More Heavily than Wealth

Under Alternative 1, the weights are 0.4 for consumption, 0.1 for wealth, and 0.25 for each of economic equality and economic security. Thus, relative to the baseline, weight is shifted from the wealth domain to the consumption domain. Nearly all of the fourteen countries fall into one of two categories: countries for which the change of weights increases measured well-being *in all years*, and countries for which the change of weights lowers measured well-being *in all years*. This is illustrated in Chart 32; in nearly every country, the line representing Alternative 1 is either shifted upward or shifted downward for all years between 1980 and 2007, relative to the line representing the baseline results. The former group includes Australia, Belgium, Canada, France, Italy, Spain, the United Kingdom, and the United States; the latter includes Denmark, Finland (except for a brief time around the year 2000), Germany, and Norway. The two remaining countries, the Netherlands and Sweden, fit into neither category. In the Netherlands, the shift of weight from wealth to consumption lowers well-being before the mid-1990s but raises it thereafter. In Sweden, the shift has virtually no effect on measured well-being; the baseline and Alternative 1 lines in Sweden's panel of Chart 32 overlay each other almost exactly.

These changes reflect the relative magnitudes of the indices of the consumption and wealth domains within each country. Intuitively, countries with higher scores in the consumption domain than the wealth domain have higher measured well-being when the consumption domain receives higher weight, and vice versa for countries with higher wealth scores than consumption scores.

Exhibit 6 provides the rankings of the countries according to the levels and growth rates of their overall Index scores under the baseline and alternative weighting schemes, while Table 7 summarizes the IEWB estimates themselves under the different weighting schemes. The shift from the baseline weights to Alternative 1 has no substantial effect on the ranking of the countries. In both cases, the top three countries are Norway, Denmark, and the Netherlands; respectively, their Index values for 2007 are 0.793, 0.701 and 0.664 under the baseline weights and 0.763, 0.688, and 0.669 under Alternative 1. The bottom three countries are also the same under both weighting schemes. The lowest scores belong to Spain, the United States, and Italy, with scores of 0.477, 0.508 and 0.546 under the baseline weights and 0.507, 0.550, and 0.560 under Alternative 1. Note that shifting weight from wealth to consumption raises the IEWB scores of the bottom countries and reduces the scores of the top countries, but not by enough to change their ranks.

For ten of the countries, countries, the IEWB grew faster over the 1980-2007 period under Alternative 1 than under the baseline weights. However, the differences are small. The largest difference in growth is in the United States, where the compound annual growth rate of the IEWB for 1980-2007 is 0.3 percentage points higher under Alternative 1 than under the baseline weights (1.6 per cent per year versus 1.3 per cent per year). Compound annual growth of the Index is slower under Alternative 1 in

Exhibit 6: Ranking of Countries According to Economic Well-being under Baseline and Alternative Weights, 2007

Level, 2007

	Baseline	Alternative 1	Alternative 2	Alternative 3
Highest well-being	Norway	Norway	Norway	Norway
	Denmark	Denmark	Denmark	Denmark
	Netherlands	Netherlands	Netherlands	Sweden
	Belgium	France	Belgium	France
	Sweden	Belgium	United States	Belgium
	France	Sweden	Canada	Netherlands
	Germany	United Kingdom	Germany	Finland
	Finland	Germany	United Kingdom	Germany
	Canada	Finland	France	United Kingdom
	United Kingdom	Australia	Sweden	Australia
	Australia	Canada	Italy	Canada
	Italy	Italy	Australia	Italy
	United States	United States	Finland	Spain
Lowest well-being	Spain	Spain	Spain	United States

Growth Rate, 1980-2007

	Baseline	Alternative 1	Alternative 2	Alternative 3
Fastest IEWB Growth	Denmark	Norway	Norway	Denmark
	Norway	Denmark	Denmark	Norway
	United States	United States	United States	France
	France	France	United Kingdom	Canada
	Canada	Spain	Canada	United States
	Spain	United Kingdom	Spain	Australia
	United Kingdom	Australia	Australia	United Kingdom
	Australia	Canada	France	Spain
	Germany	Finland	Germany	Sweden
	Italy	Italy	Italy	Finland
	Sweden	Sweden	Finland	Germany
	Finland	Germany	Belgium	Italy
	Belgium	Netherlands	Netherlands	Netherlands
Slowest IEWB Growth	Netherlands	Belgium	Sweden	Belgium

Belgium, Canada, Denmark, and Germany, but the largest change is 0.1 percentage points in Canada (1.1 per cent per year under Alternative 1, versus 1.2 per cent per year in the baseline results).

Although the changes in the compound annual growth rates are small, they do affect the ranking of countries in terms of Index growth because several countries had similar growth rates under the baseline results. In most cases, the change to the Alternative 1 weights does not affect a country's rank by more than one place; for example, Denmark and Norway switch places in first and second place in the ranking (Exhibit 4). Exceptions are Canada (which falls from sixth to eighth place under Alternative 1), Germany (which falls from ninth to twelfth), and Finland (which rises from twelfth to ninth).

Overall, however, shifting emphasis from wealth stocks to current consumption does not change rankings much. There are no cases in which the change in weights moves a country from a low rank to a high rank or vice versa. The results are robust to the change from the baseline weights to Alternative 1. The cross-country patterns are essentially the same under both weighting schemes, as are the general trends over time within each country.

B. Alternative 2: No Weight Given to Economic Equality

Under Alternative 2 it is assumed that inequality and poverty do not matter to national economic well-being; no weight at all is given to this domain and a weight of 0.33 is given to each of the remaining three domains. The new time series based on these weights are plotted in Chart 32. Australia, Canada, Italy, Norway, Spain, and the United Kingdom share a common pattern: relative to the baseline results, Alternative 2 lowers measured well-being early in the 1980-2007 period but raises it late in the period. This reflects the fact that these countries initially had high scores in the equality domain relative to the other domains (particularly consumption and wealth), but their consumption and wealth scores grew quickly over the period while their inequality scores stagnated or declined.

By contrast, a second group of countries – Belgium, Denmark, Finland, France, Germany, Sweden, and (except for a brief period in the mid-1990s) the Netherlands – share a different pattern. In those countries, deemphasizing economic equality leads to lower measured well-being in all years. These are countries that have high scores in the economic equality domain and have maintained that performance over time.

The United States is unique in that deemphasizing poverty and inequality improves its measured well-being in every year between 1980 and 2007. In addition, the Index for the United States exhibits faster growth over the 1980-2007 period when poverty and inequality are given zero weight. The IEWB for the United States grew by 1.9 per cent per year from 0.371 to 0.618 under Alternative 2; under the baseline weights, it grew by 1.3 per cent per year from 0.355 to 0.508 (Table 7). This reflects the very poor

performance of the United States in the economic equality domain over the full 1980-2007 period.

The sensitivity of the US results to the weight of the economic equality domain is also illustrated in the ranking of the countries under Alternative 2 (Exhibit 6). In the baseline results, the United States ranks second-to-last in measured well-being in 2007; under Alternative 2, it jumps to fifth place among the fourteen countries.

As in the baseline results, the top four countries under Alternative 2 are Norway, Denmark, the Netherlands, and Belgium. Norway's 2007 Index score increased from 0.793 under the baseline weights to 0.815 under Alternative 2; Norway had high values in all four domains for 2007, and its equality score was the lowest of the four. For the other three countries, deemphasizing the equality domain slightly reduces economic well-being.

Spain remains the country with the lowest measured well-being for 2007; its score is 0.488 under Alternative 2, compared to 0.477 under the baseline weights. The second-lowest score under Alternative 2 belongs to Finland, at 0.547. In the baseline results, Finland ranks eighth out of fourteen countries with an IEWB score of 0.602. This reflects the fact that Finland scores well in the equality domain, while its scores in the consumption and wealth domains are relatively low.

Overall, omitting consideration of the economic equality domain alters the results substantially. Countries vary significantly in their economic equality performances. For countries with relatively high levels of economic equality, Alternative 2 leads to lower measured well-being. The opposite is true for the United States, a country characterized by high economic inequality throughout the 1980-2007 period. In addition, for the countries in which the index of the equality domain declined substantially over the period, the Alternative 2 weights alter the pattern of overall well-being over time. Relative to the baseline results, measured economic well-being is lower in the 1980s and higher in the 2000s under Alternative 2. This implies faster growth in economic well-being over the period in those countries, as illustrated by the steep lines for Alternative 2 in Chart 32 for the United States, Canada, and the United Kingdom.

C. Alternative 3: High Weights Given to Economic Equality and Security

In contrast to Alternative 2, Alternative 3 gives much greater weights to economic equality and security relative to consumption and wealth. Under Alternative 2, the equality and security domains receive weights of 0.4 and 0.3, while consumption and wealth are assigned weights of 0.2 and 0.1 (Exhibit 5). It represents the judgments of the French business magazine *L'Expansion* (Dedieu, 2009), and it is an example of how our data can be used to test the implications of differing value judgments on the relative importance of the dimensions of economic well-being. As one might have expected, the qualitative results under Alternative 3 are in essence the opposite of the results under

Alternative 2. For the countries with high scores in the equality domain relative to the other three domains – Belgium, Denmark, Finland, France, Germany, Sweden, and (except for a brief period in the mid-1990s) the Netherlands – see their IEWB scores improve in all years under Alternative 3 relative to the baseline. This pattern also characterizes measured well-being in Spain and the United Kingdom under Alternative 3. These countries has relatively high scores in the economic equality and security domains early in the 1980-2007 period, so the shift of weight to those domains at the expense of consumption and wealth increases Spain's overall Index values. Although their equality scores fall slightly by the end of the period, overall measured well-being is kept above its baseline level by large increases in consumption and wealth.

For Australia, Canada, Italy, and Norway, shifting weight from consumption and wealth to equality and security raises measured well-being (relative to the baseline results) in the early years of the 1980-2007 period and lowers it in the later years. This reflects the fact that these countries initially had high scores in the equality domain relative to the other domains (particularly consumption and wealth), but their consumption and wealth scores grew quickly over the period while their inequality scores stagnated or declined.

Once again, the United States is unique. Shifting weight from consumption and wealth to equality and security reduces measured well-being in the United States (relative to the baseline results) in every year in the 1980-2007 period. This is unsurprising, given the results from Alternative 2. The United States' scores in consumption and wealth are high and increasing over 1980-2007, while its scores in equality and security are low and decreasing.

Under the Alternative 3 weights, the United States ranks last among the fourteen countries in overall economic well-being in 2007 (Exhibit 6). Its score for 2007 is 0.406 under Alternative 3, compared to 0.508 in the baseline results. Spain ranks second-last with an IEWB score of 0.499 under Alternative 3, although this score is actually higher than its baseline result of 0.477.

Norway and Denmark remain the top two countries in the ranking; respectively, their scores are 0.766 (down from 0.793 under the baseline weights) and 0.735 (up from 0.701 under the baseline weights). Sweden rises to third from its position of fifth in the baseline results; the increased emphasis of economic equality and security raises Sweden's measured well-being from 0.644 to 0.703.

Between 1980 and 2007, all fourteen countries experienced slower growth in measured economic well-being under Alternative 3 than under the baseline weights. This reflects the fact that the indices of the consumption and wealth domains experienced robust growth in every country over the period, while those of the equality and security domains either grew slowly or declined. The largest difference in the growth of well-being between the baseline and Alternative 3 results was in the United States. There, the IEWB grew by 0.5 per cent per year under Alternative 3, from 0.353 in 1980 to 0.406 in 2007; under the baseline weights, it grew by 1.3 per cent per year from 0.356 to 0.508.

Nevertheless, the ranking of countries by IEWB growth was remarkably similar under the baseline and Alternative 3 weights (Exhibit 6). Even the United States fell only two places, from third to fifth. There were no cases in which a high-ranking country moved to a low rank or vice versa.

Overall, the effects of the Alternative 3 weights mirror those of the Alternative 2 weights. Countries that perform well in the economic equality and security domains have higher measured well-being under Alternative 3 than under the baseline weights, and vice versa.

D. Summary

Value judgments regarding the importance of the different domains of economic well-being can matter, but in the alternative scenarios presented here, they have no significant effect on the rankings of countries according to the Index of Economic Well-being. Our main results are fairly robust to changes in the relative weights of the domains, but other results are highly sensitive. Norway and Denmark have the highest Index values under all four weighting schemes, while Spain is always in the bottom two. The results for the United States are particularly sensitive to the weights on economic equality and security relative to those on consumption and wealth.

Although economic well-being increases between 1980 and 2007 in every country under all four weighting schemes, the magnitudes of the increases vary dramatically with the weights. In general, consumption and wealth have increased faster over time than economic equality and security (if the latter two increased at all), so economic well-being grows faster when the consumption and wealth domains are weighted heavily relative to the equality and security domains. In all fourteen countries, the Index grows faster over the 1980-2007 period under Alternative 2 (in which equality is given zero weight) than under Alternative 3 (in which equality and security receive the highest weights among the domains). The United States has high consumption and wealth scores, but very low equality and security scores (with a negative trend), so it follows that the relative ranking of the United States depends heavily on how important inequality and security are judged to be.

V. Projecting Economic Well-being for 2008-2010

The IMF has referred to the recent financial crisis and the global recession it engendered in 2008 and 2009 as the most severe international financial crisis of the post-war period, so one must expect that the downturn has affected the economic well-being of people across the world. The aim of this section is to provide rough projections of economic well-being in selected OECD countries, as measured by the IEWB, for 2008, 2009 and 2010.[33] We do not attempt to project the future values of all the variables that comprise the Index of Economic Well-being. Rather, we focus on two key variables likely to be affected by the recession and to drive changes in well-being: consumption and unemployment.

Projections of consumption and unemployment are drawn from the most recent biannual *OECD Economic Outlook* report, released in June 2009 (OECD, 2009). The global recession is expected to lead to slower aggregate private consumption growth across the OECD, with most countries experiencing negative growth. Indeed, of the fourteen countries examined in this report, only three – Australia, France, and Germany – are projected to see positive growth in aggregate private consumption expenditures in 2009. Australia has the best expected private consumption growth in 2009, at 1.3 per cent. Among the countries with negative expected consumption growth in 2009, Spain and the United Kingdom have the largest expected declines: 4.4 and 3.4 per cent, respectively.

OECD private consumption growth is expected to be somewhat better in 2010 than in 2009, but growth rates will remain low and in some cases negative. Australia again has the highest projected growth in 2010, at 1.5 per cent. Among countries in which private consumption is expected to fall in 2010, the largest projected decline is 1.1 per cent in Spain.

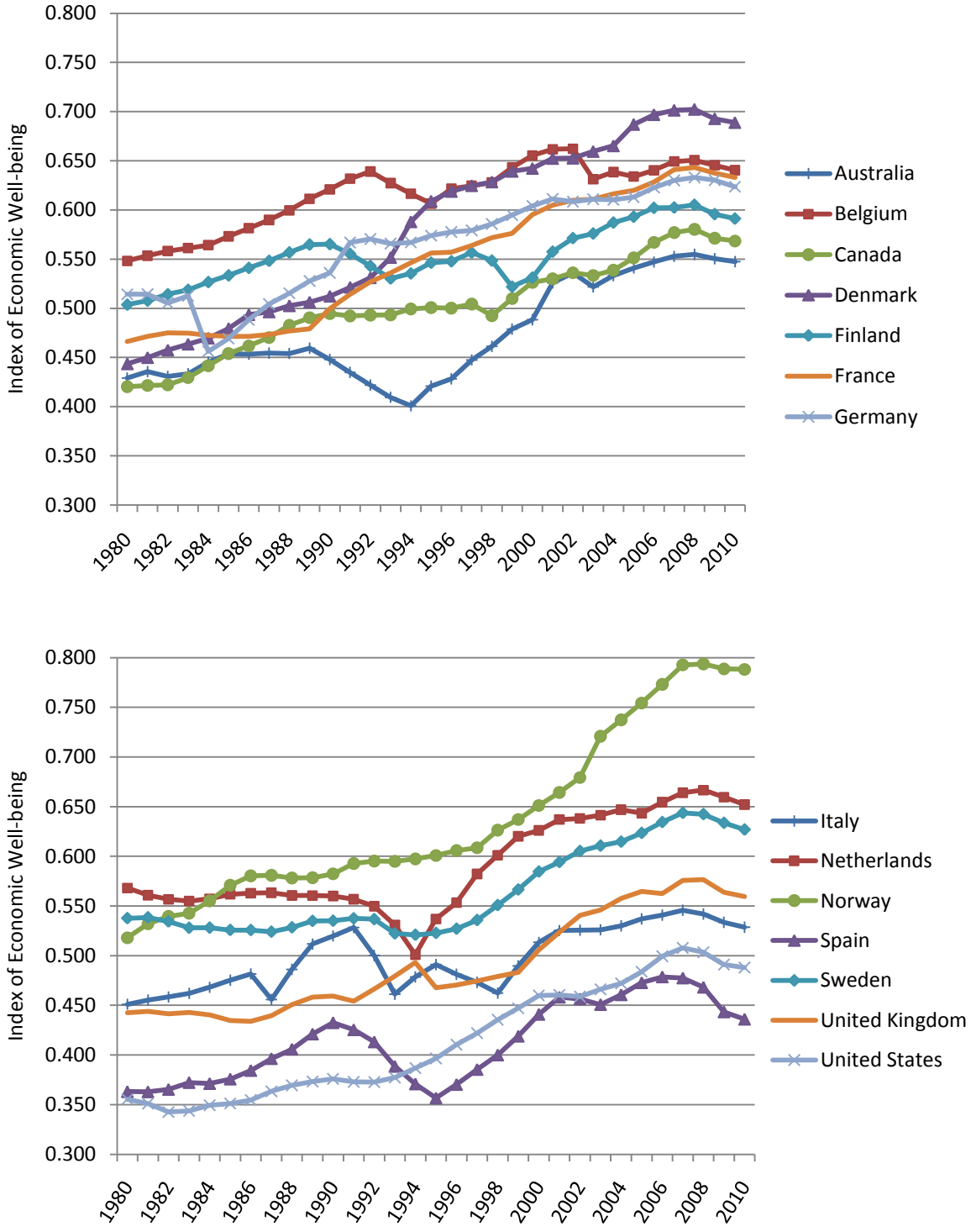
The unemployment rate is projected to increase in all fourteen countries. By far the largest projected increase is in Spain; there, the unemployment rate is expected to rise from 8.3 per cent in 2007 to 19.6 per cent in 2010, an increase of 11.3 percentage points. The next largest projected increase is 5.5 percentage points – from 4.6 per cent in 2007 to 10.1 per cent in 2010 – in the United States.

In addition to the projections of aggregate private consumption growth and unemployment rates from the OECD, we assume that each country will experience population growth at its average annual population growth rate over the 2000-2007 period. *All other variables are assumed to maintain their 2007 values throughout 2009 and 2010.*[34] We are not arguing that this assumption is "realistic" – we know already that increases in government spending in the coming years will partially offset the decline in personal consumption expenditures, while rising unemployment will lead to a more poverty. R&D spending and physical capital investment are likely to fall, and financial market turmoil may reduce the security of elderly persons' retirement savings (Osberg,

[33] Of course 2008 is already past. Nevertheless, since many of the data series underlying the IEWB for OECD countries are not yet available for 2008, we cannot compute Index values for that year. We therefore include it in our projections.

[34] We also assume that the maximum and minimum values used in the scaling procedure do not change.

Chart 33: Index of Economic Well-being, Selected OECD Countries, 1980-2010



2009). All of these changes are important, but at this stage of our work we are unable to model them explicitly. We therefore focus on the two variables with the largest net effect on economic well-being: personal consumption and the unemployment rate, both of which receive significant weight in the Index of Economic Well-being.

Chart 33 illustrates the time path of the Index of Economic Well-being for the fourteen OECD countries, with the projection for 2008 to 2010 included. Even in this very simple analysis, the impact of the recession on economic well-being is visible. In combination, the cessation of per-capita consumption growth and the increase in the unemployment rate cause the IEWB to decline in every country after 2008. The sharpest projected decline is in Spain; the IEWB falls from 0.478 in 2007 to 0.436 in 2010, a decline of 8.7 per cent. This is no surprise, given that Spain has both the largest projected consumption decline and the largest projected unemployment increase. Even in Australia, where aggregate personal consumption is expected to continue growing at over one per cent per year through to 2010, the IEWB is projected to decline 1.0 per cent from 0.553 to 0.547 between 2007 and 2010.

In every country, declines in the index of economic security are the major driver of the projected deterioration of measured well-being. The declines in economic security are, in turn, entirely driven by rising unemployment (since all other components of the domain are assumed to remain constant at their 2007 levels). Chart 34 illustrates the declines in economic security across the fourteen countries. There is significant variation in the severity of the expected declines, which reflects the variation in the size of the unemployment increases. Spain is projected to experience the largest decline in economic security; its score on the index of the security domain is expected to fall from 0.629 in 2007 to 0.525 in 2010, a decline of 16.6 per cent. The second-largest proportional decline in economic security is expected to occur in the United States; there, the domain's index is projected to fall by 14.6 per cent from 0.319 to 0.272 between 2007 and 2010. This is noteworthy because the United States already has the lowest measured economic security among the fourteen countries. In contrast, the smallest projected decline in economic security is 1.8 per cent in Norway, one of the countries with the highest level of economic security.

Falling per-capita consumption flows are also expected to contribute to the decline in measured well-being in some countries. Chart 35 shows the trends in the index of the consumption domain from 1980 to 2010. Australia is the only country with positive projected growth in the index of the consumption domain over the 2007-2010 period; Australia's score in the consumption domain is expected to grow by 1.2 per cent over the period, from 0.662 in 2007 to 0.670 in 2010. The consumption index is projected to decline in all other countries, though in some cases, such as Germany and Canada, the magnitude of the expected change is virtually zero. In general, the consumption domain is not as important as the security domain as a driver of projected declines in well-being.

In summary, the global recession has a noticeable impact on measured well-being in the 2008-2010 period. Economic security had been increasing in some countries and decreasing in others in the few years leading up to 2007, but Chart 34 shows that it is

expected to fall in all countries after 2007. This fall in economic security will be the main driver of declines in the Index of Economic Well-being.

Chart 34: Index of the Economic Security Domain, Selected OECD Countries, 1980-2010

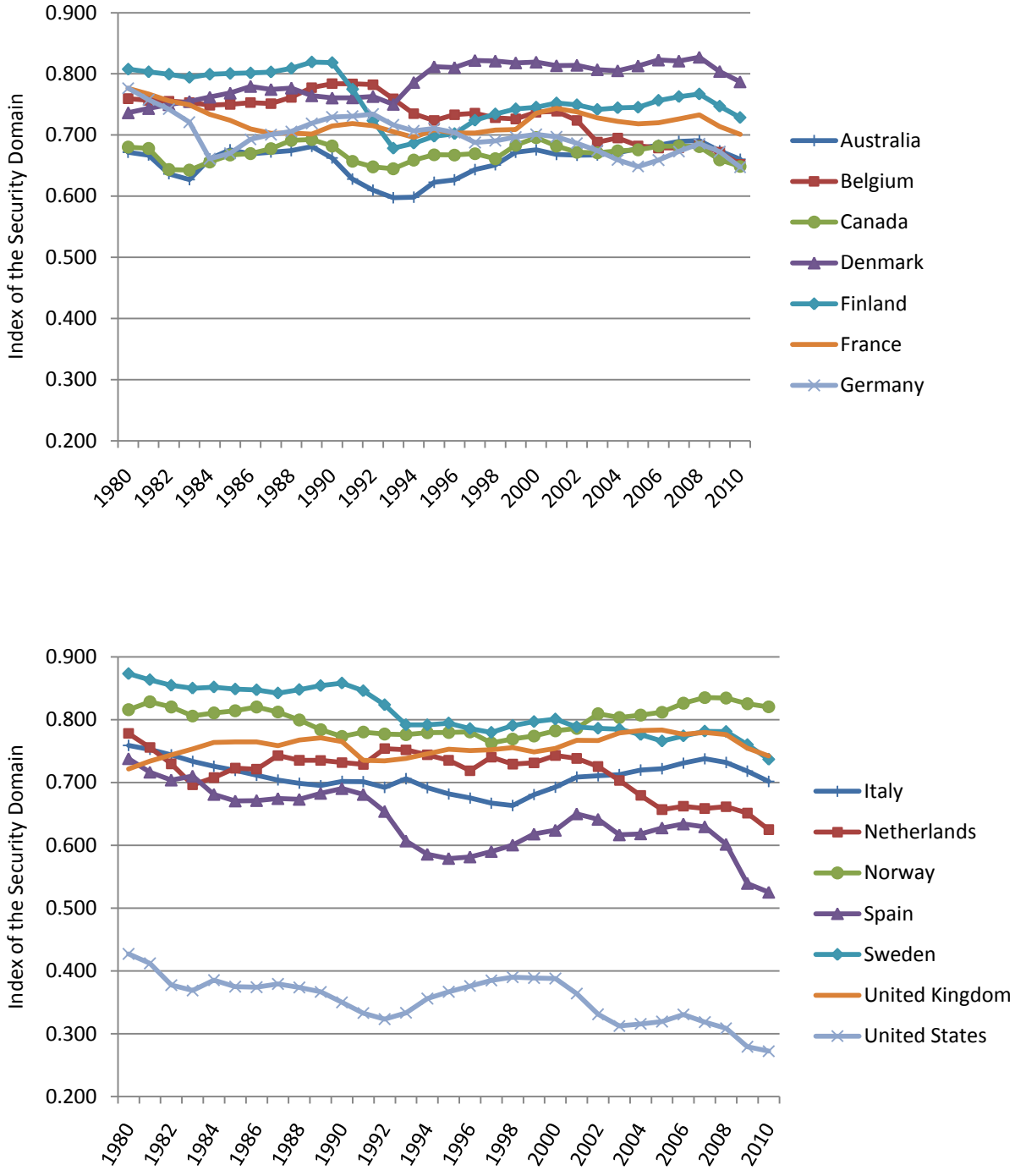
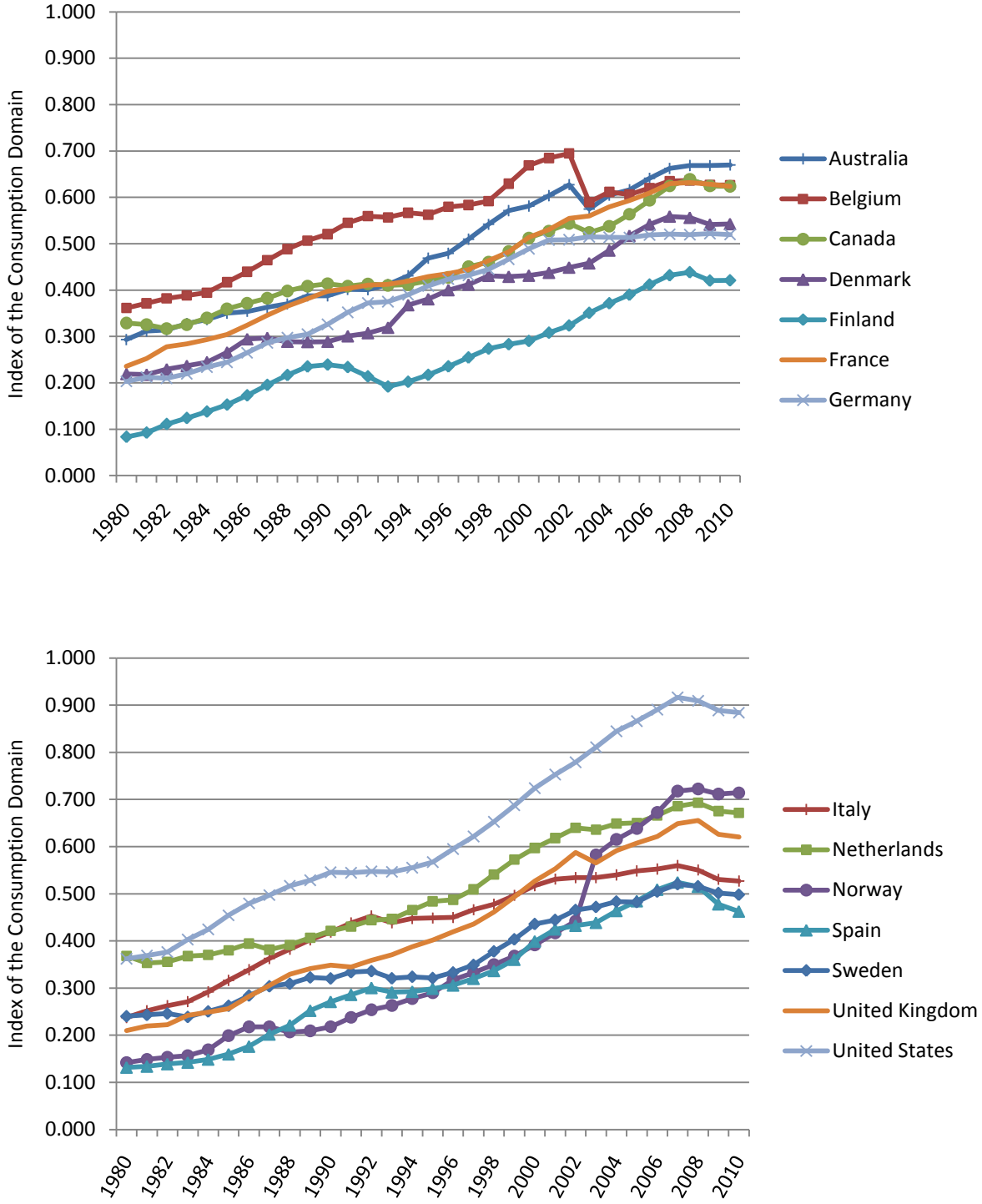


Chart 35: Index of the Consumption Domain, Selected OECD Countries, 1980-2010



VI. The Index of Economic Well-being and the Recommendations of the Sarkozy Commission

In September, 2009, the Commission on the Measurement of Economic Performance and Social Progress (hereafter the Commission) delivered its final report (Commission, 2009). Initiated by French President Nicolas Sarkozy and authored by Nobel Prize-winning economists Joseph Stiglitz and Amartya Sen along with Jean-Paul Fitoussi, the Commission has drawn the attention of the academic and public policy communities around the world toward the problem of the appropriate measurement of well-being and social progress. For the first time, the government of a major country has taken the explicit position that per-capita GDP growth is an inadequate measure of economic and social progress, and that policymaking should be oriented toward a broader conceptualization of public welfare. As President Sarkozy noted in his speech upon the release of the Commission report, the statistics we collect both reflect our shared values and influence our actions:

> Statistics reflect our aspirations and the value we assign to things. They cannot be uncoupled from our view of the world, of the economy, of society, of the idea of a person and his relationships with others. To think of statistics as being objective, exterior to ourselves, incontestable and indisputable, is no doubt comfortable and reassuring, but it is dangerous. It is dangerous because from that perspective, we do not ask questions about the finality of what we do, about what we are really measuring, or about the lessons we must learn.[35] (Sarkozy, 2009)

The same points were reinforced by Professor Stiglitz in his remarks at the same event:

> In an increasingly performance-oriented society, metrics matter. What we measure affects what we do. If we have the wrong metrics, we will strive for the wrong things. In the quest to increase GDP, we may end up with a society in which citizens are worse off. (Stiglitz, 2009)

The principles expressed by President Sarkozy and Professor Stiglitz are remarkably similar to those underlying the Index of Economic Well-being. As we noted in the first section of this report, the Index is designed to account for both the variety of outcomes that people value and the variety of philosophical frameworks through which people interpret the world. The Index reflects multiple dimensions of economic well-being; per-capita GDP reflects only one, namely the average amount of output per person a society produces. Further, the Index explicitly acknowledges that individuals differ

[35] This passage was translated by the CSLS. The original French is: "La statistique, la comptabilité reflètent nos aspirations, la valeur que nous accordons aux choses. Elles sont indissociables d'une vision du monde, de l'économie, de la société, d'une idée de l'homme, de son rapport aux autres. Les prendre comme des données objectives, extérieures à nous-mêmes, incontestables et indiscutables, c'est sans doute rassurant, confortable, mais c'est dangereux. C'est dangereux parce que l'on en vient à ne plus se poser de questions ni sur la finalité de ce que l'on fait, ni sur ce que l'on mesure réellement, ni sur les leçons qu'il faut en tirer."

(and have a moral right to differ) in their values by making the underlying values judgments (for instance, the choice of the weights for the four domains) as transparent as possible. Per-capita GDP involves such values judgments – it assigns zero weight to asset accumulation, economic equality, economic security, and all conceivable dimensions of well-being other than per-person output – but it does so implicitly rather than explicitly. By making value judgments explicit, the Index of Economic Well-being invites us to ask questions about what we are measuring, what we think it is important to measure, and how we approach measurement methodologically-speaking.

If people disagree about policy evaluation, it is important for the democratic debate to know *why*. When strong value judgments are implicitly built into an index, it is unclear whether people disagree about the ranking of social choices implied by that index because they have different subjective values or because they have differing cognitive assessments of objective data. The Index of Economic Well-being attempts to disentangle value judgments from objective data by making value choices clear and explicit.

In its report, the Commission makes twelve specific recommendations regarding how statisticians and policymakers should approach the measurement of well-being. The Index of Economic Well-being incorporates, either in total or in part, ten of the twelve.

Recommendation 1: When evaluating material well-being, look at income and consumption rather than production.

We agree that individuals' command over resources is better described by data on their consumption rather than their production, and that human well-being is influenced by a broader conception of consumption than the purely monetary measure now captured as part of GDP. That is why one of the four domains of the Index of Economic Well-being is entirely based on adjusted per-capita consumption flows rather than per-capita GDP.

Recommendation 2: Emphasize the household perspective.

Two of the four key domains that comprise the Index of Economic Well-being are based on household-level data. The economic equality domain is based on household measures of both income distribution (Gini coefficient) and poverty (both the poverty rate and poverty gap). In the economic security domain, the Index incorporates household-level data on the poverty rate among the elderly, as well as the poverty gap for single-parent households. In that sense the Index takes seriously the household as the fundamental social unit whose perspective is most relevant for the measurement of well-being.

However, households live in societies, so an index of national economic performance should reflect both the potential resources available to the aggregate of all households and the actual realization of resource access by individual households. The consumption and wealth domains are based entirely on aggregate data expressed in per-capita terms because those domains represent the aggregate consumption potential and

wealth acquisition of society as a whole. They do not exclusively reflect the household perspective; for instance, the consumption domain includes total government consumption rather than government expenditures that represent household consumption (transfer payments, education subsidies, and so on). The Index therefore strikes a balance between aggregation of societal outcomes and disaggregation to household outcomes.

Recommendation 3: Consider income and consumption jointly with wealth.

Current wealth represents the potential for future consumption, so a good measure of well-being should account for it. The Index of Economic Well-being devotes one of the four domains entirely to changes over time in wealth stocks, and it adopts a wider conception of wealth than is captured in the GDP perspective (including, for example, environmental degradation, natural resource wealth, human capital wealth and the present value of research and development). The 'wealth' component of the IEWB could equally well be labeled the 'sustainability' component, since it attempts to measure the aggregate stock of productive resources (man-made and naturally occurring) that is necessary for future consumption.

Recommendation 4: Give more prominence to the distribution of income, consumption, and wealth.

Economic equality comprises one of the four domains of the Index. The inclusion of the Gini coefficient directly quantifies economic inequality, while the poverty gap measures economic deprivation. Poverty is a distributional matter to the extent that deprivation is particularly objectionable where it exists in the context of an affluent society; when people are poor in a rich society, it is an indicator of possible distributional injustice.

The economic equality domain addresses only inequality of income, but in principle this domain can be expanded by explicit consideration of other dimensions of inequality that are relevant for economic well-being, including wealth inequality, unequal access to credit, and so on. These areas may be explored in the future.

Recommendation 5: Broaden income measures to non-market activities.

The consumption domain of the Index of Economic Well-being incorporates estimates of the market value of non-market activities, including consumption flows that arise from unpaid work or household production and change over time in the value of leisure (more specifically, changes in the value of leisure relative to the United States in 1980). Although estimates of "regrettable necessities" – for instance, the cost of expenditures, like commuting or crime prevention, that do not add to utility – are often not available, the Index also includes such data when it is possible to do so.

Recommendation 6: Quality of life depends on people's objective conditions and capabilities. Steps should be taken to improve measures of people's health, education,

personal activities and environmental conditions. In particular, substantial effort should be devoted to developing and implementing robust, reliable measures of social connections, political voice, and insecurity that can be shown to predict life satisfaction.

The Index of Economic Well-being addresses some of these concerns. Changes in health are reflected in the adjustment of consumption for changes in life expectancy. An entire domain is devoted to the measurement of economic risk, and that domain includes a component that addresses health-related financial risk. The condition of the natural environment is explicitly incorporated through the environmental degradation adjustment to the wealth stocks domain.

However, the Index of Economic Well-being is consciously limited to an *economic* focus, on the theory that one index should not try to do everything and that there are many dimensions of life – broad sociopolitical conditions, freedom of speech and religion, and so on – that probably should be part of a separate set of indices. It may be fruitful to explore such measures, to the extent that they influence well-being mainly through economic channels.

Recommendation 7: Quality-of-life indicators in all dimensions covered should assess inequalities in a comprehensive way.

In terms of economic determinants of well-being, this is similar to Recommendation 4. As noted above, the Index of Economic Well-being contains an entire domain devoted to economic equality.

Recommendation 8: Surveys should be designed to address the links between various quality-of-life domains for each person, and this information should be used when designing policies in various fields.

The IEWB methodology is based on the premise that the weights individuals place on the dimensions of well-being differ across individuals. We take this recommendation to be a recommendation for empirical research on the actual patterns of value weightings in different societies.[36]

Recommendation 9: Statistical offices should provide the information needed to aggregate across quality-of-life dimensions, allowing the construction of different indexes.

The Index of Economic Well-being is an example of an index that aggregates across dimensions of well-being. In another sense, however, the Index reflects the principle that multiple indices can be useful. The Index of Economic Well-being can be examined as four separate sub-indices, and the transparent nature of the weighting choices effectively allows for the construction of many aggregate indices depending on the values of the index-maker.

[36] In Section 4.1 on sensitivity analysis, for example, we evaluated four alternative possible sets of weights. We would like to know how relatively popular each might be.

We also agree that the primary responsibility of official statistical agencies is to provide the high-quality basic data necessary to construct aggregate indices of well-being. Such data should be made freely available for Index construction by outside researchers.

Recommendation 10: Measures of both objective and subjective well-being provide key information about people's quality of life. Statistical offices should incorporate questions to capture people's life evaluations, hedonic experiences and priorities in their own survey.

The relative weights assigned to components of the Index are explicitly subjective aspects of measurement. One way to generate baseline weights for the domains of the Index would be via surveys of public opinion on the relative importance of different aspects of well-being.

Public opinion polls do not relieve individual citizens of the moral responsibility of making personal judgments. Knowing what other citizens think is certainly interesting as an ingredient in predicting political trends, but each citizen in a democracy still has the responsibility of voting for the alternative that he or she personally thinks is best for society. We construct indices of well-being as ways of summarizing the information people need to fulfill such a responsibility.

With respect to the raw data underlying the Index, we think it important not to meld together different types of data. Although measurement of subjective attitudes is a hugely important area of research, it is crucial to distinguish clearly between subjective opinion polling and objective measurement of economic data. For this reason, the Index does not include any measures of subjective well-being such as self-assessed happiness. While such measures are undoubtedly important for measuring overall quality of life, it is not clear that they outperform 'hard data' as indicators of the *economic* aspects of well-being.

Recommendation 11: Sustainability assessment requires a well-identified dashboard of indicators. The distinctive feature of the components of this dashboard should be that they are interpretable as variations of some underlying "stocks." A monetary index of sustainability has its place in such a dashboard but, under the current state of the art, it should remain essentially focused in economic aspects of sustainability.

The "Wealth" component of the Index could equally well be labeled the "Sustainability" component, since it measures the net accumulation of productive stocks broadly conceived. Negative accumulation – depletion of wealth stocks over time – is clearly not sustainable. By summing over the values of different types of wealth stock, the Index assumes one type of wealth can be substituted for another.[37] As the Commission report notes, sustainability deals with whether and for how long given states of affairs may be maintained, while assessment of current well-being is an attempt to

[37] This is sometimes called the Hartwick rule for sustainability.

rank states of affairs at a point in time. Nevertheless, voters care about both present and future outcomes (although to differing degrees) and are from time to time faced with choices that require assessing trade-offs between current well-being and long-run sustainability. Such choices are facilitated by an index that can 'sum up' changes in well-being and changes in sustainability.

The Index of Economic Well-being aggregates over both man-made and natural forms of wealth, and accounts explicitly for environmental degradation in the form of greenhouse gas emissions. The wealth/sustainability component could easily be "opened up" so as to be more explicit about the values of the components, and to make it easier to incorporate differing judgments, for example, about the appropriate shadow price of CO_2 emissions. The Index is therefore fully capable of incorporating sustainability concerns, though data constraints prevent a full treatment of those concerns at this time.

Recommendation 12: The environmental aspects of sustainability deserve a separate follow-up based on a well-chosen set of physical indicators. In particular there is a need for a clear indicator of our proximity to dangerous levels of environmental damage (such as associated with climate change or the depletion of fish stocks).

In using the idea of "proximity to dangerous levels of environmental damage," Recommendation 12 asks for both measurement of the current level of physical environmental indicators and a specification of "dangerous levels" of damage. It has an implicit 'risk of environmental catastrophe' perspective, and a full treatment of this issue would require some specificity as to what "dangerous levels" is meant to imply. The security component of the IEWB provides a natural way for such considerations to be incorporated into the measurement of well-being.

The IEWB currently includes the value of natural resource stocks (whenever such data are available), as well as the social costs of greenhouse gas emissions. These do not really measure the risk of catastrophe; they measure the dollar values of the levels of resources and emissions costs, without reference to *optimal* or *sustainable* levels. As noted above, risk/security, current consumption, and sustainability are conceptually distinct components of well-being.

The Index of Economic Well-being precedes the Commission report by over a decade, but it anticipates most of the Commission's recommendations. The Index addresses most of the Commission's recommendations with regard to what an index of economic well-being should capture, and its framework is potentially capable of incorporating additional concerns such as wealth inequality and risk of environmental catastrophe. Indeed, in its discussion of composite indices of well-being, the Commission report recognizes the Index of Economic Well-being as "more elaborated [than other composite indices] and relatively well-known" (Stiglitz *et al.*, 2009:237). The Index is a work in progress and there are further improvements to be made, but we consider the Commission's report to be an indication that the development of the Index is on the right track.

VII. Lessons Learned in the Development of the Index of Economic Well-being

The authors of this report, through the Centre for the Study of Living Standards, have been engaged in the development of the Index of Economic Well-being for more than a decade.[38] This section of the report discusses this experience. We first outline the history of the IEWB and briefly discuss its impact. We touch upon the methodological developments mentioned earlier in the report, and we summarize the data limitations and conceptual challenges we have encountered. Finally, we highlight what we believe are three of the lessons learned from this experience.

A. History of the IEWB

In 1997, the Centre for the Study of Living Standards (CSLS) received a contract valued at $50,000 CAD from Human Resources Development Canada (HRDC) to construct the IEWB based on the conceptual framework for measuring economic well-being developed by Lars Osberg in 1985 (Osberg, 1985). The Index was first released in October 1998 at a CSLS conference "The State of Living Standards and Quality of Life in Canada"[39] and subsequently published by Human Resources Development Canada as an Applied Research Branch research report (Osberg and Sharpe, 1998).

A key IEWB finding was that the economic well-being of Canadians was falling despite the economic growth of the mid and late 1990s. This development was due to the decline in the economic security component of the index. In turn, economic security was falling in large part because of the increased financial risk from unemployment. This indicator is determined by the unemployment rate, the employment insurance (EI)

[38] In addition to its work on the IEWB, the CSLS is currently involved in a number of other projects on well-being. These include:

- the Canadian Index of Wellbeing (CIW) project spearheaded by the Atkinson Charitable Foundation where the CSLS is responsible for the living standards domain (Sharpe and Arsenault, 2009);
- the Levy Institute Measure of Economic Well-being (LIMEW) project where the CSLS is developing estimates for Canada (Evans and Sharpe, 2010);
- the OECD Measuring the Progress of Societies project where CSLS Executive Director Andrew Sharpe is a member of the coordinating committee;
- the Vital Signs project coordinated by Community Foundation of Canada where the CSLS has responsibility for developing and maintaining a large database of community well-being indicators;
- a benchmarking project for the National Aboriginal Economic Development Board where the CSLS is developing indicators to track the economic development of Aboriginal Canadians in a number of areas;
- a research project on the determinants of subjective well-being in Canada in collaboration with the Institute for Competitiveness and Prosperity;
- a project to develop a new measure of well-being for Canada called the Good Life Time (GLT) Index, with Michael Wolfson from Statistics Canada; and

the coordination of an International Working Group on Methodology for Composite Index Construction for the International Society for Quality of Life Studies (ISQOLS).

[39] Papers from the conference are posted at http://www.csls.ca/events/october.asp.

replacement rate and the EI coverage rate. It was this latter variable that was responsible for the increase because of major cuts to the EI program during the first half of the 1990s. Thus the fall in the IEWB in the 1990s was largely driven by public policy, in particular the cuts to the EI programs.

HRDC, the financer of the IEWB, was the department responsible for the EI program. It did not welcome the message that it was directly responsible for the fall in economic well-being in Canada. It was felt that too much weight was being given to this one variable. Perhaps not surprisingly, HRDC decided to provide no additional financial support to the CSLS for work on the IEWB.

The loss of financial support from HRDC was a major setback to the development of the IEWB. Other sources of funding were approached, but none were found. This meant that work by the CSLS on the IEWB had to be financed by cross-subsidization from CSLS funded projects. As the CSLS is a small economic research organization with no core funding, there were limited resources from cross-subsidization so the work on the IEWB has proceeded at a much slower pace than originally anticipated or planned. It should be noted that the option of changing the IEWB to make it more palatable to HRDC was never considered. It was felt that the independence of the project from funder influence was paramount, and from a long-run perspective more important than short-term financial support.

In the early 2000s the CSLS devoted significant energy to the IEWB. Papers were presented at national and international conferences,[40] presentations were made to many difference audiences, and the IEWB was published in a number of outlets, including two papers in the *Review of Income and Wealth* (Osberg and Sharpe, 2002a and 2005).[41] Since 2004, the CSLS has devoted less energy to the IEWB due to the lack of funding and the time demands from income-generating projects. The number of papers, presentations, and publications by the CSLS on the IEWB is down from that of the early 2000s and a planned book on the IEWB has not been completed. In 2009, the CSLS redirected energies toward the IEWB and released revised estimates.

B. Factors Limiting the Impact of the IEWB

There is great interest in measures of economic well-being that go beyond GDP, even among orthodox economic organizations such as the OECD.[42] The IEWB has

[40] For example, the IEWB was presented at the 1998, 2000 and 2002 General Conferences of the International Association for Research in Income and Wealth, the 2000, 2003, 2006, and 2009 annual meetings of the Canadian Economics Association, the 2000 annual meeting of the American Economic Association, and the 1998, 2000, and 2006 international conferences of the International Society for Quality of Life Studies.

[41] Other publications include Osberg and Sharpe, 2001, 2002a, 2002b, 2004a, 2004b, and 2006.

[42] A research paper from the OECD Economics Department (Boarini, Johansson and D'Ercole, 2006) concluded that while measures of GDP per capita and economic growth remain critical for any assessment of well-being, they need to be complemented with measures of other dimensions of well-being to obtain a comprehensive picture of well-being. The authors found that calculations to extend measures of economic resources to include leisure, sharing of income within households and distributional concerns suggest that

certainty received significant attention, particularly outside Canada and especially in France.[43] Nevertheless, we believe that the Index could become even more well-known. In our view, three major factors have prevented the IEWB from becoming a household name like the Human Development Index (HDI).

The first and most important factor is the lack of resources that the CSLS has put into its communication strategy. This of course reflects the lack of funding for the IEWB as well as a lack of expertise in self-promotion.

A second factor has been the focus on academic outlets for the IEWB instead of more accessible publications, which has limited the public profile of the Index. This choice has reflected the desire to obtain academic credibility for the IEWB. It was also related to the objective of the CSLS for developing the IEWB, namely to assess actual trends in economic well-being of societies in a dispassionate, objective, balanced manner. As the CSLS is an economic research organization, the advancement of a particular advocacy objective through the promotion of a composite index is not part of its mandate.[44]

A third and final factor that has limited the use of IEWB is its complexity, both conceptually in terms of the specification of the components and empirically in terms of data requirements. For example, instead of using the poverty rate, the IEWB uses the concept of poverty intensity, which requires estimates of poverty from micro-data sets, a major undertaking. This complexity means that an investment of time and effort is required to fully understand the various components of the IEWB and the interrelationships between the variables. It also means that efforts (e.g. Perez-Mayo and Jurado, 2008) to replicate the IEBW beyond the set of 14 OECD countries for which it has been originally estimated generally run up against data constraints, at least for a complete replication.

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cross-country rankings based on these indicators and GDP are similar, although they have evolved differently over time. It also found that levels of most measures of specific social conditions are significantly correlated to GDP per capita, while changes over time are not. But it found that survey-based data on happiness and life satisfaction are weakly correlated with GDP per capita.

[43] On the interest of the IEWB in France, see Gadrey and Jany-Catrice (2004), the symposium in Travail et emploi in January-February 2003 and the summary of the IEWB prepared for the French Senate (Osberg and Sharpe (2004). The French business magazine *L'Expansion* featured the IEWB in August 2009 (Dedieu, 2009).

[44] In contrast to the non-advocacy approach of the CSLS, the London-based New Economics Foundation has used its composite index, the Happy Planet Index (HPI) as an effective advocacy tool (NEF, 2006 and 2009). However, the HPI results may be suspect. The United States ranks 114th out of 143 on this index , while the Dominican Republic ranks 2nd, Jamaica 3rd, Guatemala 4th, Vietnam 5th, Columbia 6th, Cuba 7th, and El Salvador 8th. Given the migration flows from these countries to the United States, such a massive gap in well-being against the United States seems improbable. Of course, these results reflect the small ecological footprint of the Latin American countries (and the large footprint of the United States), which in turns reflect the low level of development and income. Poor countries have small footprints and hence to well on the index especially if their life satisfaction and life expectancy are average or above.

C. Changes in Methodology

Like the national accounts, the IEWB is a dynamic construct subject to changes in methodology over time as new knowledge and understanding is incorporated. As noted earlier in this report, there have been four major methodological changes in the IEWB since 1998. To recapitulate:

- In 2003, we abandoned an index number approach in favour of the linear scaling approach.

- In 2006, we reconceptualized the risk of unemployment component of the economic security domain. The weights of the unemployment rate variable and the financial protection from unemployment variable were altered, so that the unemployment rate now receives a much higher weight than the financial protection from unemployment variable.

- We also adjusted the weights of the four economic security domain. These weights are proportionate to the population affected by the risk, and we made two small changes to the definitions of those populations. First, the risk from single parent poverty was extended to all persons in two-parent families (with children under 18) as an increasing proportion of single-parent families are headed by men. Second, the risk from old age poverty was extended to the population 65 and over, the group directly affected by this risk.

- The baseline weighting scheme for the four domains of the IEWB was changed, so that the four domains now receive equal weight.

There is no need to repeat the discussion of these methodological developments here. We simply note that the Index of Economic Well-being remains a work in progress, and we will continue to improve the methodology whenever possible.

D. Data Limitations

The data requirements for the IEWB are huge, and data gaps have been a major obstacle to the construction of the IEWB, particularly at the international level. Indeed, there are in fact two IEWB data sets, one for Canada and the provinces and another for selected OECD countries. This reflects the availability of certain variables for Canada, such as time series estimates of the value of natural resources and unpaid work, for which comparable data are unavailable from international data sources such as the OECD.[45]

Nearly thirty countries are members of the OECD, but the CSLS has produced estimates of the IEWB for only fourteen countries. The reason for this is that the micro-

[45] Such estimates may of course be available from certain national statistical agencies. However, taking data on a piecemeal basis from national statistical agencies will not result in consistent estimates across countries so such a strategy of data gathering has been avoided.

data sets based on comparable definitions are required to calculate poverty rate and gaps as well as the Gini coefficients. The only source of such micro-data is the Luxembourg Income Study (LIS). Unfortunately, the LIS maintains suitable datasets (that is, datasets spanning the period from the early 1980s to the late 2000s) for only fourteen countries, with one dataset for approximately every five year period. This means that estimates for the IEWB cannot be produced for countries for which LIS micro-data sets are not available.

In the conceptual development of the IEWB a number of variables were identified for inclusion for which official data proved unavailable, especially at the international level. For certain variables such as human capital, R&D stocks, the value of increased life expectancy, and the costs of environmental degradation, the CSLS was able to develop its own estimates. For other variables, it was not possible for the CSLS to do so. The international data gaps are highlighted below:

- a time series on the value of unpaid work, both household work and volunteer work;
- a time series on the value of regretables, including the cost of commuting, and auto accidents;
- a time series on the value of natural resources; and

It is hoped that these data gaps can be filled in the future.

E. Conceptual Challenges

In constructing the Index of Economic Well-being, we have confronted conceptual challenges that lie at the heart of economics. These challenges are largely related to the valuation of non-market economic activity and the modeling of risk. Some of these challenges are discussed below.

i. Modeling the financial risk from illness

The financial risk from illness is currently modeled in the IEWB by the proportion of unreimbursed medical expenses in disposable income. But whether this variable adequately captures the financial risk from illness across countries, or over time in one country, is unclear. The real financial risk from illness manifests itself mainly from bankruptcy. In countries with universal health coverage, which include all developed OECD countries except the United States, it is very difficult for one to be forced into bankruptcy because of catastrophic medical costs (although lost income due to illness could precipitate bankruptcy). In the United States, on the other hand, many persons go bankrupt for medical reasons. For example, Himmelstein *et al.* (2009) report that: nearly two thirds of the one million bankruptcies in the United States in 2007 were linked to illness; that three quarters of the families who filed for bankruptcy due to medical reasons

were insured; that medical bankruptcies have increased 50 per cent since 2000; and that overall risk of medical bankruptcy was 0.6 per cent in 2007, or 6 per cent over a decade.[46]

Consequently, a time series on medical bankruptcy may be a better indicator of the financial risk from illness than the proportion of unreimbursed medical expenses in disposable income. The CSLS is exploring the availability of such a series for OECD countries.

ii. Estimating the costs of environmental degradation

The IEWB explicitly recognizes the importance of the environment for economic well-being by reducing the annual estimates of stocks of wealth by an annual estimate of costs of environmental degradation. This sub-component of the IEWB is admittedly underdeveloped. The only aspect of environment degradation currently included is the social cost of greenhouse gases, which are valued at $21 per tonne of CO_2-equivalent emissions (or $76 per tonne of carbon) in 2000 US dollars. The CSLS has produced a research report that discusses the issue of the valuation of greenhouse gases (Sharpe, Arsenault, Murray and Qiao, 2008), but much work of both a conceptual and empirical nature remains to be done on this topic. We also hope to make it easier in future for analysts who believe in different shadow costs for carbon emissions to see the sensitivity of estimates of well-being to such assumptions.

The CSLS also wants to add estimates of additional types of environmental degradation (e.g. loss of wetlands) to the IEWB, but has not yet had the opportunity to explore the conceptual issues involved in the construction of such estimates. Other composite indexes, such as the Genuine Progress Indicator and the Happy Planet Index, do make estimates of different types of environment degradation, but these estimates often seem extremely large. The expansion of the environmental degradation component of the wealth domain of the IEWB is a priority for future work.

iii. Valuation of natural resources

The IEWB for Canada and the provinces includes, as part of the wealth component, official estimates of the value of natural resources produced by Statistics Canada. But there remain many conceptual issues associated with these estimates, including the discount rate, the definition of reserves, and the time path of the exploitation of the resource. Motivated by what we saw as the undervaluation of the Alberta oil sands in official estimates, due to too narrow a definition of reserves, the CSLS produced a detailed report on conceptual and empirical issues related to natural resource valuation in 2008 ((Sharpe, Arsenault, Murray and Qiao, 2008). Perhaps not surprisingly, a key finding was the interaction of the time path of exploitation of the reserves and the discount rate for the valuation of natural resources. Resources that are

[46] Given the economic downturn and the upward trend in medical bankruptcies experienced over the 2001-2007 period due to health care inflation, which will likely continue, the proportion of US families experiencing medical bankruptcies may be considerably higher than 6 per cent over the next decade.

expected to be exploited well into the future have little present value under assumptions of high, or even a moderate, discount rates. In any case, much more work remains to be done in this area, particularly at the international level to produce consistent and comparable estimates of natural resources.

iv. Happiness and weighting schemes

It has been noted that the IEWB has already been influenced by recent research on happiness. Because surveys of subjective well-being have revealed the serious negative effect of unemployment in well-being, the unemployment rate was been assigned a much greater weight relative to the generosity of unemployment insurance protection (0.8 instead of 0.5), in the risk from unemployment sub-component of the economic security component of the IEWB.

It is possible that the weighting scheme for the four components of the IEWB (as well as the weighting scheme for the four risks in the economic security component and the income distribution and poverty sub-components of the equality component) could be developed as a function of their impact on happiness. For example, if happiness studies consistently show that increased consumption has minimal effect on economic well-being, there may be a strong case for reducing the weight of this component of the IEWB.

v. Valuation of increased life expectancy

The IEWB already values increased life expectancy by boosting consumption by the per cent rise in life expectancy. But this is a crude approximation and more sophisticated methodologies may yield a more accurate (and likely larger) estimates of the contribution to economic well-being from longer lives.[47] More work is need on this issue.

vi. Valuation of leisure

The IEWB also includes an adjustment to consumption flows for reductions in hours worked. But the estimate is based only on changes in hours work relative to a benchmark and does not capture the overall value of leisure to well-being, which is very large.[48] Such a valuation exercise is difficult, but merits a place in the long-term development of the IEWB.

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[47] For example, Nordaus (2003) found that that the economic value of increases in longevity in the last 100 years is about as large as the value of measured growth in non-health goods and services. Over the 1900-1995 period, the value of improved health or health income grew at between 2.2 and 3.0 per cent per year in the United States, compared to only 2.1 per cent for consumption. Over the 1980-1990 period, the increase in expenditure on health care was one half the increase in the value of health income. Indeed, Nordhaus (2003:35) states that "The medical revolution over the last century appears to qualify, at least from an economic point of view, for Samuel Johnson's accolade as 'the greatest benefit to mankind.'"

[48] For example, Nordhaus and Tobin (1972:12) estimated that in the United States in 1965 the absolute value of leisure exceeded that of GDP!

vii. Middle class insecurity related to retirement

One of the four risks of the economic security component is the risk of poverty in old age. This risk is currently captured by the poverty intensity rate for persons 65 and over. But the current economic crisis and stock market crash has greatly increased anxiety over the retirement plans of the middle class. Instead of focusing on only the risk of poverty in old age, consideration is being given to broaden the risk to a lower than expected living standards in old age (Osberg, 2009). Variables such as pension coverage, particularly from defined benefit plans, the likelihood of pension plan defaults, and the size of individual retirement funds could be included in a new formulation of the financial risks associated with old age.

F. Lessons Learned

This section highlights three lessons that have been learned from the CSLS experience in developing the Index of Economic Well-being.

i. Composite Indicators Focus Debate

The Index of Economic Well-being, like the well-known Human Development Index developed by the United Nations Development Program, is a composite indicator that produces a single number bottom line. There is a major division among social scientists about the merits of composite indicators. One side is critical because of the nature of composite index construction, particularly the weighting issues. The other side sees great value in composite indicators as a heuristic tool.

Our experience resonates with the second perspective. We readily admit that composite indicators involve assumptions about the relative importance of different aspects of welfare – but so does the real world of public policy choices. Although in most cases it would not be appropriate for official statistical agencies to produce composite indicators, such indicators can be extremely useful in focusing the attention of the research and policy communities, as well as the media and the general public, on a particular trend or variable that is driving the composite index. This attention can lead to actions, such as research aimed at understanding the trend identified, policy changes to rectify an unacceptable situation, or the allocation of resources to fill data gaps identified by the composite indicator. Examples of composite indicators that have successfully fostered public debate include the already mentioned Human Development Index and the *MacLean's* composite ranking of Canadian universities. The Canadian Council on Learning recently released a composite indicator on learning and the explicit purpose of this initiative was to foster debate about what constitutes lifetime learning in Canada.

ii. Sensitivity of Composite Indicators to Methodological Choices

Many different methodologies can be used in the construction of a composite index and the results are very dependent on the choice of methodology. There is no one

methodology that is appropriate for all situations. Experts disagree about the best way to deal with many thorny index construction issues.

A situation where composite indexes are highly sensitive to methodological choices can be potentially abused. Unscrupulous composite index constructors can in principle choose the methodology that gives them the results they seek. Such a danger requires a high degree of transparency in index construction (straightforward methodologies are preferable *a priori* to complicated methodologies, everything else being equal). In addition, it is very important that composite index developers provide clear rationales for their choice of one methodology over competing methodologies.

iii. The Importance of Testing Results to Different Weighting Schemes

As noted earlier in the report, weighting schemes for composite indexes are very controversial. The ideal way to approach the baseline weighting is to undertake a large survey of the population to obtain consistent preferences on all variables in the composite index. Such an undertaking is beyond the means of almost all composite index developers.

In our experience, the most effective and realistic way to deal with this issue is to give equal weight to the main components of the composite index and then to undertake sensitivity analysis to ascertain how sensitive the overall trends of the index are to a range of weights. In some cases, the path of a composite index is robust to any set of weights while in others the path varies significantly with the set of weights chosen.

We conducted sensitivity analyses based on three alternative weighting schemes in this report. In addition, we have posted the time series estimates of the four domains of the Index of Economic Well-being in a Microsoft Excel file on the CSLS website.[49] Visitors to the website can choose any set of weights for the four domains they wish and then see the path of the overall Index that their set of weights generates. We believe that such testing of the results to different weighting schemes is an essential element of the transparency of any composite index construction exercise.

[49] The CSLS web site for the Index of Economic Well-being is located at http://www.csls.ca/iwb.asp.

VIII. Conclusion

This report presents new estimates of the Index of Economic Well-being for fourteen OECD countries for the 1980-2007 period based on what we believe are methodological improvements to the Index. The results reveal that there were significant differences across countries in terms of economic well-being in 2007. Norway and Denmark had the highest levels of economic well-being in 2007, while Spain and the United States had the lowest levels. Canada ranked ninth among the fourteen countries. However, all fourteen countries experienced an increase in economic well-being over the 1980-2007 period.

Across the OECD, rising economic well-being was driven by growth in consumption and stocks of wealth. In most of the countries, however, the growth of economic well-being was hindered by declines in economic equality and security. These trends were driven by rising income inequality and increased private expenditures on health care in most countries.

An important objective of the Index of Economic Well-being is to make explicit the value judgments that underlie composite indicators of well-being by making the choice of weights for the four domains as transparent as possible. We test the sensitivity of our baseline results to three alternative weighting schemes and find that our key baseline results are robust. Economic well-being increased in every country over the 1980-2007 period under all four of the weighting schemes. Norway and Denmark always had the highest levels of economic well-being in 2007, while Spain ranked near the bottom.

We also estimate the Index of Economic Well-being for the fourteen OECD countries over the 2008-2010 period, using recent consumption and unemployment projections published by the OECD. The IMF has referred to the recent financial crisis and the global recession it engendered in 2008 and 2009 as the most severe international financial crisis of the post-war period, so one must expect that the downturn has affected the economic well-being of people across the world. We find that the cessation of per-capita consumption growth and the increase in the unemployment rate cause the IEWB to decline in every country between 2008 and 2010. The sharpest projected decline is 8.7 per cent in Spain – no surprise, given that Spain has both the largest projected consumption decline and the largest projected unemployment increase among the fourteen countries. In every country, declines in the index of the economic security domain are the major driver of the projected deterioration of overall economic well-being.

This report is being released at a time in which concern about the measurement of economic well-being is growing in the policy community. The Commission on the Measurement of Economic Performance and Social Progress, which delivered its final report in September 2009, has drawn the attention of the academic and public policy communities throughout the world toward the problem of the appropriate measurement of well-being and social progress. The Commission made twelve recommendations in its

final report, and although the Index of Economic Well-being precedes the Commission report by over a decade, it anticipates the Commission's recommendations in many respects. Indeed, in its discussion of composite indices of well-being, the Commission report recognizes the Index of Economic Well-being as "more elaborated [than other composite indices] and relatively well-known" (Stiglitz *et al.*, 2009:237).

The Index remains a work in progress. It will undoubtedly undergo further modifications as research on the conceptualization of economic-well-being, and ways to capture these concepts empirically, evolves. We consider the Commission's report to be an indication that the development of the Index is on the right track.

Bibliography

Boarini, Romina, Asa Johansson and Marco Mira D'Ercole (2006) "Alternative Measures of Well-being," Working Paper No. 476, Economics Department, OECD.

Dedieu, Franck (2009) "Le bonheur, ça compte et ça se compte" *L'Expansion*, no. 774, September.

Di Tella, Rafael, Robert MacCulloch and Andrew Oswald (2003) "The MacroEconomics of Happiness" *Review of Economics and Statistics* Vol. 85, No. 4, November, pp.809-827.

Evans, Benjamin and Andrew Sharpe (2010) "Estimates of the Levy Institute Measure of Economic Well-being for Canada," CSLS research report, forthcoming.

Gadrey, Jean and Florence Jany-Catrice (2004) "Prendre la mesure du progress : quels indicateurs?" *Informations sociales*, no. 114, fevrier, pp. 46-55.

Heslop, Helen (2009) "Economic Security in an Index of Economic Well-being: An Assessment of the CSLS Approach," CSLS Research Report 2009-13, December. http://www.csls.ca/reports/csls2009-13.pdf.

Himmelstein, David, Deborah Thorne, Elizabeth Warren and Steffie Woodhandler (2009) "Medical Bankruptcy in the United States, 2007: Results of a National Study," *American Journal of Medicine* Vol. 122, No. 8, pp. 741-746.

Martin, John P. (1996) "Measures of Replacement Rates for the Purpose of International Comparisons: A Note," *OECD Economic Studies* No. 26, pp. 99-115.

New Economic Foundation (2006) *The (Un)happy Planet Index: An index of human well-being and ecological impact* (London).

New Economic Foundation (2009) *The (Un)happy Planet Index 2.0: Why good lives don't have to cost the Earth* (London).

Nordhaus, William (2003) "The Health of Nations: The Contribution of Improved Health to Living Standards" in Murphy, Kevin M. and Robert H. Topel (eds.) *Measuring the Gains from Medical Research: An Economic Approach* (Chicago: University of Chicago Press).

Norhaus, William and James Tobin (1972) "Is Growth Obsolete?" in *Economic Growth: Fifth Anniversary Colloquium V*, (New York: National Bureau of Economic Research).

OECD (2009) *OECD Economic Outlook* No. 85, June 2009. Available online at: http://www.oecd.org/oecdEconomicOutlook.

Osberg, Lars (1985) "The Measurement on Economic Well-being," in David Laidler (ed.) *Approaches to Economic Well-being*, Volume 36, MacDonald Commission (Toronto: University of Toronto Press). http://www.csls.ca/iwb/macdonald.pdf.

Osberg, Lars (2009) "Measuring Economic Security in Insecure Times: New Perspectives, New Events, and the Index of Economic Well-being," CSLS Research Report 2009-12. http://www.csls.ca/reports/csls2008-12.pdf.

Osberg, Lars and Andrew Sharpe (1998) "An Index of Economic Well-being for Canada," Research Report, Applied Research Branch, Human Resources Development Canada, December. http://www.hrsdc.gc.ca/eng/cs/sp/hrsd/prc/publications/research/1998-000129/r-99-3e.pdf.

Osberg, Lars and Andrew Sharpe (2001) "Trends in Economic Well-being in Canada in the 1990s," in *Review of Economic Performance and Social Progress: The Longest Decade: Canada in the 1990s*, edited by Keith Banting, Andrew Sharpe and France St-Hilaire (Montreal: Institute for Research in Public Policy and Ottawa: Centre for the Study of Living Standards).

Osberg, Lars and Andrew Sharpe (2002a) "An Index of Economic Well-being for Selected OECD Countries," *Review of Income and Wealth*, 48 (3), September, pp. 291-316. http://www.roiw.org/2002/291.pdf.

Osberg, Lars and Andrew Sharpe (2002b) "The Index of Economic Well-being," *Indicators: The Journal of Social Health*, Vol. 1, No. 2, Spring, pp. 24-62. http://www.csls.ca/iwb/iwb2002-p.pdf.

Osberg, Lars and Andrew Sharpe (2002c) "International Comparisons of Trends in Economic Well-being," *Social Indicators Research* vol. 58, pp. 349-382. Available at http://myweb.dal.ca/osberg/wellbeingindex.htm.

Osberg, Lars and Andrew Sharpe (2004a) "Trends in Economic Well-being in Canada and the United States," in *What Has Happened To The Quality Of Life In The Advanced Industrialized Nations?* Ed Wolff, ed. (Edgar Elgar in association with the Levy Economics Institute).

Osberg, Lars and Andrew Sharpe (2004b) "De la bonne analyse des politiques publiques: le role de l'indice du bien-être économique," Groupe de prospective du Senate, Paris, France. http://www.csls.ca/iwb/frenchsenate-f.pdf.

Osberg, Lars and Andrew Sharpe (2005) "How Should We Measure the 'Economic' Aspects of Well-being?" *Review of Income and Wealth*, 51 (2) June, pp. 311-336. http://www.roiw.org/2005/2005-12.pdf.

Osberg, Lars and Andrew Sharpe (2006) "Changing Trends in Economic Well-being in OECD countries: What Measure Is Most Relevant for Health," in *Healthier Societies: From Analysis to Action* edited by Jody Heymann, Clyde Hertzman, Morris Barer and Robert Evans (New York: Oxford University Press).

Osberg, Lars and Andrew Sharpe (2009) "New Estimates of the Index of Economic Well-being for Canada and the Provinces," CSLS Research Report number 2009-10. http://www.csls.ca/reports/csls2009-10.pdf.

Perez-Mayo, Jesus and Antonio Jurado (2008) "An Index of Multidimensional Economic Well-being for the Spanish Regions," paper presented at the 30th IARIW General Conference, Portoroz, Slovenia, August 24-30.

Sarkozy, Nicolas (2009) "Discours de M. le Président de la République," Conférence international de présentation des conclusions du rapport de la Commission de mesure de la performance économique et du progrès social, Paris, France, 14 September.

Sharpe, Andrew and Julia Salzman (2003) "Methodological Choices Encountered in the Construction of Composite Indicators," paper presented to the annual meeting of the Canadian Economics Association, Carleton University, Ottawa, Ontario, May. http://www.csls.ca/events/cea2003/salzman-typol-cea2003.pdf.

Sharpe, Andrew, Jean-Francois Arsenault, Alexander Murray, and Sharon Qiao (2008) "The Valuation of the Alberta Oil Sands," CSLS Research Report number 2008-07, November. http://www.csls.ca/reports/csls2008-7.pdf.

Stiglitz, Joseph E. (2009) "Introductory Remarks by Joseph E. Stiglitz, Chairman," speech, Conférence international de présentation des conclusions du rapport de la Commission de mesure de la performance économique et du progrès social, Paris, France, 14 September 2009.

Stiglitz, Joseph E., Amartya Sen and Jean-Paul Fitoussi (2009) *Report by the Commission on the Measurement of Economic Performance and Social Progress*. http://www.stiglitz-sen-fitoussi.fr/en/index.htm.

Tol, R. (2007) "The Social Cost of Carbon: Trends, Outliers and Catastrophes," Economics Discussion Papers, No. 2007-44. Available online at http://www.economicsejournal.org/economics/discussionpapers/2007-44.

Table 1: Overall Index of Economic Well-being, OECD, 1980-2007

	Australia	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Nether-lands	Norway	Spain	Sweden	United Kingdom	United States
1980	0.429	0.548	0.420	0.443	0.504	0.466	0.514	0.451	0.568	0.518	0.363	0.538	0.443	0.355
1981	0.436	0.554	0.422	0.450	0.508	0.471	0.514	0.455	0.561	0.532	0.363	0.538	0.444	0.351
1982	0.431	0.558	0.422	0.457	0.514	0.475	0.505	0.458	0.557	0.539	0.365	0.534	0.442	0.343
1983	0.433	0.561	0.429	0.463	0.519	0.475	0.513	0.462	0.555	0.543	0.372	0.528	0.443	0.344
1984	0.445	0.564	0.442	0.470	0.527	0.473	0.456	0.468	0.557	0.555	0.371	0.528	0.440	0.349
1985	0.454	0.573	0.454	0.479	0.533	0.471	0.469	0.475	0.562	0.571	0.376	0.526	0.435	0.351
1986	0.453	0.581	0.462	0.493	0.541	0.471	0.488	0.482	0.563	0.580	0.384	0.526	0.434	0.355
1987	0.454	0.590	0.470	0.496	0.548	0.473	0.504	0.456	0.563	0.581	0.396	0.524	0.439	0.363
1988	0.454	0.600	0.483	0.503	0.557	0.477	0.515	0.486	0.561	0.578	0.406	0.528	0.451	0.369
1989	0.459	0.611	0.490	0.506	0.565	0.479	0.528	0.512	0.560	0.578	0.421	0.535	0.458	0.373
1990	0.448	0.621	0.495	0.512	0.565	0.500	0.536	0.520	0.560	0.582	0.432	0.535	0.459	0.376
1991	0.435	0.632	0.492	0.521	0.555	0.514	0.567	0.528	0.557	0.593	0.425	0.537	0.454	0.373
1992	0.422	0.639	0.493	0.531	0.543	0.527	0.570	0.500	0.550	0.595	0.413	0.537	0.466	0.373
1993	0.409	0.627	0.493	0.552	0.530	0.536	0.566	0.461	0.531	0.595	0.389	0.522	0.479	0.377
1994	0.401	0.616	0.499	0.588	0.535	0.546	0.567	0.479	0.501	0.597	0.371	0.521	0.493	0.387
1995	0.421	0.607	0.501	0.609	0.546	0.556	0.574	0.491	0.537	0.601	0.357	0.523	0.468	0.397
1996	0.428	0.622	0.500	0.619	0.548	0.557	0.578	0.481	0.553	0.606	0.370	0.527	0.470	0.410
1997	0.447	0.625	0.504	0.625	0.557	0.564	0.579	0.473	0.582	0.609	0.385	0.536	0.474	0.422
1998	0.461	0.628	0.492	0.628	0.549	0.572	0.586	0.462	0.601	0.626	0.400	0.551	0.479	0.436
1999	0.479	0.643	0.510	0.639	0.522	0.576	0.595	0.490	0.620	0.637	0.419	0.566	0.483	0.447
2000	0.488	0.655	0.526	0.642	0.531	0.595	0.604	0.513	0.626	0.651	0.441	0.585	0.506	0.460
2001	0.526	0.662	0.530	0.652	0.558	0.605	0.611	0.525	0.637	0.664	0.458	0.594	0.524	0.460
2002	0.536	0.662	0.536	0.653	0.571	0.610	0.609	0.526	0.638	0.679	0.456	0.605	0.540	0.459
2003	0.522	0.631	0.533	0.659	0.576	0.611	0.611	0.526	0.641	0.721	0.451	0.611	0.546	0.466
2004	0.533	0.638	0.539	0.665	0.587	0.616	0.610	0.530	0.647	0.737	0.461	0.615	0.557	0.472
2005	0.541	0.634	0.551	0.687	0.593	0.620	0.613	0.537	0.643	0.754	0.473	0.623	0.565	0.484
2006	0.547	0.640	0.567	0.697	0.602	0.628	0.623	0.541	0.654	0.773	0.479	0.634	0.563	0.499
2007	0.553	0.649	0.577	0.701	0.602	0.641	0.630	0.546	0.664	0.793	0.477	0.644	0.576	0.508
Absolute Change in Points														
80-07	0.124	0.101	0.157	0.258	0.099	0.175	0.116	0.095	0.096	0.275	0.114	0.106	0.133	0.152
80-90	0.019	0.073	0.074	0.069	0.061	0.033	0.022	0.069	-0.008	0.064	0.069	-0.003	0.017	0.020
90-00	0.041	0.034	0.032	0.130	-0.034	0.096	0.068	-0.006	0.066	0.069	0.008	0.050	0.047	0.084
00-07	0.064	-0.006	0.050	0.059	0.071	0.046	0.026	0.032	0.038	0.142	0.037	0.059	0.070	0.048
Per Cent Change														
80-07	28.8	18.4	37.3	58.2	19.6	37.5	22.5	21.0	16.9	53.0	31.5	19.7	30.1	42.9
80-90	4.4	13.3	17.7	15.5	12.2	7.1	4.2	15.2	-1.4	12.4	19.1	-0.5	3.8	5.7
90-00	9.0	5.5	6.4	25.4	-6.0	19.1	12.7	-1.2	11.8	11.8	1.9	9.3	10.2	22.4
00-07	13.2	-0.9	9.6	9.2	13.4	7.7	4.3	6.3	6.1	21.7	8.3	10.1	13.8	10.4
Compound Annual Growth Rate														
80-07	0.94	0.63	1.18	1.71	0.66	1.19	0.76	0.71	0.58	1.59	1.02	0.67	0.98	1.33
80-90	0.43	1.25	1.64	1.45	1.16	0.69	0.41	1.43	-0.14	1.18	1.76	-0.05	0.37	0.56
90-00	0.87	0.54	0.63	2.29	-0.62	1.77	1.20	-0.12	1.12	1.12	0.19	0.89	0.97	2.04
00-07	1.79	-0.13	1.32	1.27	1.81	1.06	0.60	0.88	0.84	2.85	1.15	1.39	1.86	1.42

Source: CSLS Index of Economic Well-being Database for OECD Countries, Table 9

Table 2: GDP per Capita, Using PPP, OECD, 1980-2007 (2000 US dollars)

	Australia	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Nether-lands	Norway	Spain	Sweden	United Kingdom	United States
1980	18,857	19,038	20,563	18,553	16,840	17,673	18,192	17,129	18,500	17,793	12,646	19,639	15,470	22,518
1981	19,428	18,986	21,023	18,395	16,983	17,736	18,262	17,250	18,281	18,007	12,552	19,578	15,238	22,857
1982	18,418	19,096	20,181	19,087	17,392	18,053	18,203	17,305	17,661	17,957	12,636	19,827	15,708	22,193
1983	18,909	19,160	20,525	19,608	17,798	18,171	18,539	17,501	17,945	18,593	12,799	20,176	16,270	22,986
1984	19,425	19,630	21,514	20,437	18,242	18,352	19,130	18,062	18,495	19,632	12,974	21,017	16,677	24,425
1985	20,113	19,951	22,338	21,251	18,764	18,574	19,620	18,562	18,829	20,618	13,227	21,444	17,233	25,203
1986	20,442	20,310	22,652	22,272	19,194	18,933	20,063	19,092	19,349	21,379	13,615	22,005	17,883	25,831
1987	21,240	20,755	23,305	22,306	19,820	19,300	20,337	19,699	19,614	21,655	14,335	22,690	18,659	26,458
1988	21,717	21,661	24,148	22,261	20,772	20,073	20,984	20,516	20,157	21,505	15,033	23,190	19,560	27,299
1989	21,860	22,331	24,339	22,380	21,818	20,786	21,646	21,195	20,926	21,627	15,728	23,674	19,950	27,998
1990	21,147	22,967	24,020	22,677	21,739	21,221	22,586	21,612	21,654	21,971	16,298	23,729	20,049	28,200
1991	20,806	23,300	23,237	22,945	20,268	21,331	23,556	21,921	22,004	22,541	16,683	23,305	19,700	27,773
1992	21,315	23,560	23,163	23,285	19,403	21,517	23,898	22,083	22,212	23,205	16,799	22,889	19,679	28,321
1993	21,878	23,243	23,445	23,183	19,133	21,230	23,536	21,873	22,332	23,708	16,589	22,287	20,071	28,707
1994	22,677	23,922	24,302	24,384	19,728	21,622	24,089	22,339	22,857	24,762	16,954	23,003	20,877	29,514
1995	23,426	24,441	24,726	25,017	20,425	22,002	24,473	22,970	23,449	25,674	17,396	23,792	21,452	29,907
1996	23,853	24,337	24,865	25,676	20,584	22,212	24,613	23,274	24,171	27,801	17,832	24,160	22,353	30,667
1997	24,618	24,986	25,658	26,489	22,008	22,806	24,727	23,682	25,269	29,324	18,557	24,559	23,514	31,681
1998	25,564	25,232	26,488	27,102	23,485	23,634	25,143	24,600	26,417	28,424	19,587	25,156	24,163	32,636
1999	26,698	25,851	27,727	27,513	24,202	24,130	25,690	24,724	27,520	30,450	20,257	26,363	24,778	33,713
2000	27,233	27,540	28,447	28,789	25,638	25,232	25,919	25,565	29,371	36,084	21,295	27,726	26,041	34,574
2001	27,616	27,767	28,644	28,752	26,011	26,017	26,230	26,495	30,071	36,228	22,065	27,313	26,936	34,477
2002	28,417	28,739	28,688	29,516	26,449	26,652	26,475	25,723	30,656	35,558	23,096	27,834	27,723	34,688
2003	29,260	28,327	29,357	28,604	26,006	25,756	26,855	25,511	29,803	36,004	23,265	28,261	28,061	35,227
2004	29,621	28,348	29,971	29,516	27,281	25,855	27,322	25,052	30,345	38,613	23,720	29,301	28,998	36,180
2005	30,042	28,362	30,961	29,364	27,106	26,323	27,757	24,876	31,057	41,856	24,216	28,569	28,920	36,902
2006	30,565	28,802	31,594	29,884	27,920	26,614	28,139	25,158	31,820	44,664	25,298	29,528	29,255	37,569
2007	31,349	29,528	32,130	30,011	28,959	27,278	28,701	25,355	32,735	44,629	26,360	30,547	29,767	37,963
Compound Annual Growth Rate														
80-07	1.90	1.64	1.67	1.80	2.03	1.62	1.70	1.46	2.14	3.46	2.76	1.65	2.45	1.95
Per Cent Change														
80-07	66.3	55.1	56.3	61.8	72.0	54.4	57.8	48.0	76.9	150.8	108.5	55.5	92.4	68.6

Source: OECD Statistics, National Accounts/Main Aggregates, GDP per Head.
See the CSLS Index of Economic Well-being Database for OECD Countries, Appendix Table 21.

Table 3: Scaled Index of Total Consumption Flows per Capita, OECD, 1980-2007

	Australia	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Nether-lands	Norway	Spain	Sweden	United Kingdom	United States
1980	0.293	0.361	0.329	0.219	0.083	0.235	0.203	0.238	0.368	0.142	0.132	0.240	0.210	0.362
1981	0.312	0.371	0.326	0.218	0.092	0.252	0.212	0.252	0.353	0.149	0.134	0.243	0.219	0.369
1982	0.314	0.382	0.317	0.229	0.111	0.277	0.210	0.263	0.356	0.153	0.139	0.246	0.222	0.376
1983	0.328	0.388	0.325	0.237	0.124	0.284	0.219	0.271	0.368	0.157	0.142	0.239	0.242	0.403
1984	0.336	0.394	0.340	0.245	0.138	0.293	0.234	0.292	0.370	0.169	0.149	0.250	0.249	0.424
1985	0.350	0.417	0.360	0.265	0.153	0.304	0.244	0.316	0.380	0.199	0.160	0.262	0.257	0.454
1986	0.354	0.440	0.371	0.294	0.173	0.324	0.265	0.339	0.394	0.218	0.176	0.284	0.282	0.480
1987	0.363	0.465	0.383	0.297	0.195	0.345	0.286	0.363	0.381	0.218	0.202	0.304	0.305	0.497
1988	0.370	0.488	0.398	0.289	0.217	0.365	0.297	0.383	0.391	0.207	0.221	0.309	0.329	0.517
1989	0.388	0.507	0.408	0.288	0.235	0.382	0.305	0.402	0.407	0.209	0.252	0.322	0.341	0.529
1990	0.387	0.521	0.414	0.289	0.239	0.398	0.326	0.419	0.421	0.218	0.271	0.320	0.349	0.546
1991	0.401	0.545	0.408	0.301	0.234	0.403	0.352	0.438	0.431	0.238	0.286	0.334	0.345	0.544
1992	0.401	0.559	0.413	0.307	0.214	0.411	0.372	0.453	0.444	0.254	0.300	0.336	0.359	0.548
1993	0.412	0.557	0.410	0.319	0.192	0.412	0.375	0.439	0.447	0.263	0.291	0.321	0.371	0.546
1994	0.431	0.567	0.412	0.368	0.202	0.419	0.390	0.448	0.465	0.278	0.292	0.324	0.388	0.555
1995	0.469	0.563	0.420	0.381	0.217	0.429	0.409	0.449	0.484	0.290	0.299	0.321	0.402	0.567
1996	0.479	0.580	0.427	0.400	0.235	0.436	0.424	0.450	0.487	0.318	0.306	0.333	0.419	0.595
1997	0.510	0.583	0.451	0.412	0.255	0.444	0.432	0.466	0.509	0.332	0.320	0.349	0.436	0.621
1998	0.542	0.592	0.460	0.431	0.274	0.463	0.445	0.478	0.541	0.350	0.337	0.378	0.461	0.653
1999	0.572	0.629	0.483	0.429	0.283	0.482	0.467	0.497	0.572	0.368	0.360	0.403	0.493	0.687
2000	0.581	0.669	0.512	0.431	0.290	0.513	0.489	0.517	0.597	0.391	0.399	0.436	0.527	0.724
2001	0.604	0.685	0.527	0.438	0.308	0.530	0.508	0.531	0.618	0.417	0.425	0.444	0.553	0.753
2002	0.627	0.695	0.544	0.449	0.323	0.555	0.509	0.534	0.640	0.442	0.432	0.465	0.588	0.779
2003	0.575	0.590	0.524	0.458	0.351	0.560	0.515	0.534	0.636	0.583	0.439	0.472	0.566	0.811
2004	0.604	0.612	0.538	0.486	0.371	0.580	0.514	0.540	0.649	0.615	0.464	0.483	0.591	0.845
2005	0.617	0.606	0.564	0.517	0.390	0.593	0.513	0.548	0.650	0.638	0.484	0.482	0.608	0.866
2006	0.641	0.620	0.593	0.542	0.412	0.610	0.519	0.553	0.666	0.672	0.509	0.504	0.621	0.890
2007	0.662	0.635	0.625	0.559	0.432	0.630	0.520	0.560	0.686	0.718	0.524	0.520	0.648	0.917
Absolute Change in Points														
80-07	0.369	0.274	0.296	0.340	0.349	0.394	0.317	0.322	0.318	0.576	0.392	0.280	0.439	0.555
80-90	0.094	0.159	0.085	0.070	0.156	0.162	0.123	0.181	0.053	0.076	0.139	0.080	0.139	0.183
90-00	0.194	0.148	0.099	0.142	0.051	0.116	0.163	0.099	0.176	0.173	0.128	0.115	0.178	0.179
00-07	0.081	-0.034	0.112	0.128	0.142	0.116	0.031	0.042	0.088	0.326	0.125	0.084	0.121	0.193
Per Cent Change														
80-07	125.7	75.7	89.8	154.9	418.2	167.4	156.2	135.6	86.3	405.3	297.5	116.5	209.3	153.1
80-90	32.0	44.1	25.8	31.7	187.0	68.8	60.5	76.2	14.4	53.5	105.6	33.4	66.3	50.6
90-00	50.0	28.4	23.8	49.3	21.3	29.2	50.1	23.6	41.8	79.5	47.2	36.0	51.2	32.7
00-07	14.0	-5.1	21.9	29.6	48.9	22.6	6.4	8.2	14.8	83.4	31.4	19.4	23.0	26.6

Source: CSLS Index of Economic Well-being Database for OECD Countries, Table 1

Table 3a: Total Consumption Flows per Capita, OECD, 1980-2007 (2000 US dollars)

	Australia	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Nether-lands	Norway	Spain	Sweden	United Kingdom	United States
1980	17,155	19,000	18,122	15,141	11,453	15,582	14,704	15,638	19,180	13,046	12,769	15,711	14,880	19,019
1981	17,650	19,273	18,026	15,099	11,697	16,039	14,954	16,030	18,778	13,221	12,826	15,786	15,141	19,201
1982	17,709	19,563	17,794	15,411	12,203	16,721	14,883	16,317	18,840	13,348	12,966	15,869	15,224	19,400
1983	18,084	19,734	18,023	15,612	12,553	16,897	15,146	16,553	19,175	13,445	13,051	15,670	15,761	20,121
1984	18,318	19,892	18,412	15,827	12,929	17,153	15,538	17,113	19,238	13,777	13,231	15,986	15,950	20,705
1985	18,689	20,507	18,951	16,395	13,336	17,447	15,815	17,773	19,507	14,591	13,530	16,311	16,153	21,517
1986	18,796	21,119	19,270	17,176	13,880	17,994	16,378	18,391	19,893	15,103	13,973	16,901	16,850	22,207
1987	19,033	21,798	19,575	17,243	14,491	18,567	16,957	19,038	19,540	15,096	14,670	17,433	17,475	22,684
1988	19,237	22,447	19,999	17,030	15,069	19,107	17,254	19,574	19,814	14,799	15,192	17,583	18,125	23,222
1989	19,712	22,943	20,277	17,015	15,569	19,546	17,464	20,110	20,230	14,873	16,035	17,941	18,447	23,536
1990	19,707	23,324	20,423	17,030	15,681	19,980	18,037	20,551	20,620	15,107	16,546	17,886	18,651	23,997
1991	20,081	23,982	20,274	17,349	15,534	20,131	18,744	21,076	20,876	15,645	16,951	18,246	18,543	23,965
1992	20,077	24,372	20,410	17,532	14,991	20,335	19,295	21,480	21,238	16,083	17,343	18,305	18,932	24,052
1993	20,370	24,300	20,320	17,849	14,393	20,380	19,370	21,099	21,309	16,334	17,091	17,894	19,253	24,019
1994	20,886	24,570	20,367	19,170	14,675	20,575	19,774	21,341	21,823	16,731	17,129	17,981	19,713	24,255
1995	21,915	24,457	20,581	19,518	15,080	20,834	20,289	21,365	22,324	17,060	17,303	17,909	20,089	24,585
1996	22,196	24,920	20,786	20,048	15,576	21,017	20,688	21,394	22,413	17,810	17,490	18,228	20,566	25,332
1997	23,027	25,023	21,419	20,370	16,098	21,244	20,917	21,839	23,016	18,214	17,875	18,663	21,014	26,055
1998	23,893	25,253	21,683	20,889	16,618	21,768	21,266	22,158	23,869	18,681	18,327	19,442	21,711	26,902
1999	24,701	26,274	22,306	20,834	16,872	22,283	21,857	22,668	24,727	19,178	18,969	20,137	22,584	27,846
2000	24,961	27,342	23,097	20,896	17,064	23,127	22,466	23,228	25,399	19,812	20,019	21,017	23,493	28,843
2001	25,571	27,775	23,503	21,066	17,549	23,588	22,972	23,604	25,967	20,514	20,713	21,252	24,202	29,621
2002	26,219	28,045	23,951	21,369	17,968	24,245	22,994	23,688	26,552	21,186	20,925	21,823	25,140	30,326
2003	24,794	25,191	23,413	21,620	18,709	24,386	23,158	23,690	26,449	25,000	21,092	21,998	24,539	31,197
2004	25,596	25,793	23,783	22,368	19,272	24,920	23,133	23,846	26,799	25,888	21,776	22,307	25,237	32,111
2005	25,923	25,636	24,485	23,229	19,772	25,292	23,115	24,076	26,834	26,516	22,335	22,279	25,679	32,697
2006	26,586	26,018	25,298	23,891	20,367	25,734	23,279	24,187	27,273	27,439	22,996	22,882	26,054	33,356
2007	27,165	26,424	26,142	24,357	20,911	26,283	23,314	24,379	27,798	28,668	23,414	23,308	26,788	34,069
Compound Annual Growth Rate														
80-07	1.72	1.23	1.37	1.78	2.25	1.96	1.72	1.66	1.38	2.96	2.27	1.47	2.20	2.18
80-90	1.40	2.07	1.20	1.18	3.19	2.52	2.06	2.77	0.73	1.48	2.63	1.31	2.28	2.35
90-00	2.39	1.60	1.24	2.07	0.85	1.47	2.22	1.23	2.11	2.75	1.92	1.63	2.33	1.86
00-07	1.22	-0.49	1.78	2.21	2.95	1.84	0.53	0.69	1.30	5.42	2.26	1.49	1.89	2.41
Per Cent Change														
80-07	58.4	39.1	44.3	60.9	82.6	68.7	58.6	55.9	44.9	119.7	83.4	48.4	80.0	79.1
80-90	14.9	22.8	12.7	12.5	36.9	28.2	22.7	31.4	7.5	15.8	29.6	13.8	25.3	26.2
90-00	26.7	17.2	13.1	22.7	8.8	15.8	24.6	13.0	23.2	31.1	21.0	17.5	26.0	20.2
00-07	8.8	-3.4	13.2	16.6	22.5	13.6	3.8	5.0	9.4	44.7	17.0	10.9	14.0	18.1

Source: CSLS Index of Economic Well-being Database for OECD Countries, Table 1

Table 4: Scaled Index of Total Stocks of Wealth, OECD, 1980-2007

	Australia	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Nether-lands	Norway	Spain	Sweden	United Kingdom	United States
1980	0.181	0.219	0.183	0.233	0.271	0.223	0.271	0.213	0.366	0.389	0.083	0.259	0.184	0.335
1981	0.194	0.233	0.194	0.253	0.283	0.236	0.281	0.222	0.375	0.413	0.092	0.270	0.196	0.345
1982	0.207	0.243	0.215	0.266	0.294	0.247	0.262	0.233	0.381	0.434	0.099	0.280	0.206	0.360
1983	0.218	0.251	0.229	0.278	0.304	0.258	0.304	0.249	0.396	0.447	0.107	0.288	0.216	0.369
1984	0.227	0.261	0.244	0.287	0.317	0.268	0.315	0.261	0.408	0.469	0.115	0.297	0.225	0.376
1985	0.237	0.273	0.256	0.298	0.327	0.275	0.325	0.271	0.419	0.489	0.123	0.303	0.234	0.386
1986	0.247	0.282	0.267	0.315	0.337	0.282	0.336	0.282	0.431	0.493	0.131	0.308	0.249	0.398
1987	0.250	0.293	0.275	0.329	0.342	0.289	0.351	0.291	0.447	0.501	0.141	0.314	0.251	0.411
1988	0.248	0.299	0.288	0.346	0.351	0.297	0.360	0.302	0.457	0.511	0.152	0.318	0.261	0.421
1989	0.254	0.311	0.298	0.361	0.357	0.307	0.370	0.309	0.467	0.522	0.163	0.323	0.274	0.431
1990	0.264	0.328	0.312	0.375	0.358	0.313	0.383	0.315	0.481	0.537	0.174	0.320	0.276	0.441
1991	0.272	0.347	0.325	0.387	0.370	0.320	0.491	0.327	0.491	0.549	0.186	0.327	0.288	0.448
1992	0.282	0.362	0.338	0.405	0.377	0.331	0.493	0.337	0.493	0.559	0.201	0.342	0.301	0.450
1993	0.281	0.379	0.350	0.419	0.380	0.344	0.502	0.353	0.501	0.564	0.215	0.334	0.317	0.458
1994	0.278	0.393	0.364	0.423	0.370	0.360	0.515	0.367	0.473	0.571	0.225	0.328	0.328	0.463
1995	0.289	0.418	0.374	0.422	0.377	0.375	0.515	0.373	0.521	0.588	0.237	0.337	0.325	0.471
1996	0.299	0.434	0.388	0.443	0.376	0.374	0.518	0.386	0.524	0.582	0.257	0.337	0.333	0.480
1997	0.322	0.449	0.403	0.444	0.387	0.390	0.530	0.396	0.530	0.599	0.270	0.348	0.345	0.484
1998	0.331	0.468	0.418	0.441	0.343	0.394	0.536	0.401	0.526	0.649	0.277	0.357	0.347	0.493
1999	0.345	0.501	0.433	0.490	0.238	0.389	0.541	0.416	0.517	0.671	0.288	0.377	0.352	0.506
2000	0.363	0.508	0.450	0.499	0.285	0.405	0.548	0.424	0.504	0.699	0.309	0.404	0.376	0.517
2001	0.380	0.503	0.464	0.549	0.378	0.419	0.562	0.441	0.532	0.729	0.327	0.426	0.381	0.526
2002	0.382	0.510	0.483	0.548	0.433	0.420	0.561	0.438	0.527	0.748	0.321	0.431	0.389	0.540
2003	0.369	0.527	0.494	0.583	0.445	0.428	0.577	0.437	0.567	0.787	0.317	0.429	0.398	0.557
2004	0.382	0.527	0.499	0.590	0.481	0.437	0.591	0.440	0.600	0.826	0.329	0.425	0.392	0.569
2005	0.393	0.536	0.522	0.638	0.485	0.441	0.613	0.457	0.607	0.866	0.348	0.455	0.403	0.591
2006	0.388	0.559	0.549	0.644	0.488	0.456	0.635	0.460	0.630	0.892	0.340	0.468	0.388	0.618
2007	0.383	0.580	0.557	0.646	0.464	0.481	0.649	0.466	0.652	0.917	0.325	0.482	0.411	0.637
Absolute Change in Points														
80-07	0.202	0.361	0.374	0.413	0.192	0.258	0.378	0.252	0.286	0.528	0.242	0.223	0.227	0.303
80-90	0.083	0.109	0.129	0.142	0.087	0.089	0.112	0.101	0.115	0.148	0.091	0.061	0.092	0.107
90-00	0.100	0.180	0.138	0.124	-0.072	0.093	0.165	0.109	0.023	0.162	0.136	0.084	0.101	0.075
00-07	0.020	0.072	0.108	0.147	0.178	0.076	0.101	0.042	0.148	0.218	0.016	0.078	0.035	0.121
Per Cent Change														
80-07	111.7	164.5	204.1	177.1	71.0	115.7	139.4	118.2	78.0	135.9	290.1	85.8	123.3	90.5
80-90	45.8	49.5	70.1	60.9	32.0	40.1	41.3	47.5	31.4	38.1	108.6	23.3	49.7	31.9
90-00	37.7	54.8	44.2	33.0	-20.3	29.6	43.0	34.6	4.8	30.3	78.0	26.4	36.6	17.1
00-07	5.4	14.3	23.9	29.4	62.4	18.8	18.4	9.9	29.3	31.1	5.1	19.2	9.2	23.4

Source: CSLS Index of Economic Well-being Database for OECD Countries, Table 2

Table 4a: Total Per-capita Stocks of Wealth, OECD, 1980-2007 (2000 US dollars)

	Australia	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Nether-lands	Norway	Spain	Sweden	United Kingdom	United States
1980	91,549	99,053	91,992	101,754	109,170	99,775	109,199	97,886	127,826	132,193	72,417	106,894	92,138	121,626
1981	94,007	101,794	94,060	105,690	111,449	102,242	111,217	99,553	129,440	136,992	74,034	109,065	94,549	123,751
1982	96,555	103,617	98,147	108,177	113,625	104,474	107,456	101,711	130,801	141,096	75,406	110,904	96,460	126,666
1983	98,854	105,185	101,011	110,451	115,640	106,627	115,559	104,877	133,603	143,639	76,981	112,407	98,372	128,302
1984	100,604	107,283	103,922	112,341	118,124	108,545	117,789	107,196	135,944	147,946	78,699	114,293	100,215	129,685
1985	102,441	109,540	106,200	114,544	120,211	109,903	119,725	109,257	138,092	151,784	80,215	115,477	101,974	131,692
1986	104,534	111,286	108,328	117,873	122,105	111,277	121,923	111,269	140,549	152,571	81,821	116,394	104,831	134,087
1987	105,032	113,510	110,030	120,514	122,997	112,721	124,744	113,167	143,533	154,154	83,718	117,489	105,268	136,534
1988	104,599	114,638	112,435	123,876	124,852	114,312	126,567	115,211	145,531	156,089	85,841	118,412	107,254	138,512
1989	105,934	117,032	114,545	126,764	125,982	116,178	128,649	116,669	147,464	158,288	88,096	119,329	109,663	140,519
1990	107,784	120,334	117,166	129,573	126,166	117,298	131,134	117,742	150,322	161,174	90,143	118,746	110,061	142,525
1991	109,293	124,007	119,754	131,874	128,520	118,717	152,199	120,063	152,244	163,615	92,569	120,140	112,459	143,758
1992	111,281	126,970	122,214	135,345	129,857	121,005	152,715	122,150	152,651	165,656	95,416	123,155	115,090	144,313
1993	111,128	130,288	124,599	138,076	130,454	123,488	154,483	125,232	154,111	166,522	98,143	121,540	118,148	145,766
1994	110,565	133,147	127,456	138,911	128,517	126,652	156,849	128,062	148,643	167,963	100,239	120,301	120,409	146,784
1995	112,771	138,003	129,376	138,672	129,975	129,550	157,030	129,229	158,026	171,292	102,605	122,157	119,677	148,241
1996	114,568	141,089	131,986	142,916	129,761	129,268	157,615	131,650	158,714	170,124	106,381	122,019	121,315	150,158
1997	119,091	144,076	134,926	143,009	131,893	132,488	159,789	133,686	159,815	173,412	108,874	124,307	123,606	150,846
1998	120,913	147,838	137,864	142,536	123,186	133,244	161,137	134,692	159,133	183,203	110,338	126,007	124,100	152,639
1999	123,578	154,262	140,947	152,088	102,657	132,358	162,119	137,490	157,325	187,587	112,561	130,006	125,074	155,091
2000	127,270	155,506	144,182	153,850	111,977	135,423	163,434	139,065	154,840	192,992	116,685	135,275	129,807	157,278
2001	130,543	154,618	146,928	163,507	130,073	138,067	166,211	142,515	160,225	198,759	120,089	139,426	130,736	159,125
2002	130,940	156,035	150,741	163,314	140,892	138,362	165,933	141,873	159,372	202,583	118,896	140,476	132,292	161,850
2003	128,311	159,382	152,783	170,260	143,335	140,007	168,992	141,725	167,112	210,235	118,107	140,098	134,022	165,187
2004	130,815	159,316	153,880	171,694	150,235	141,639	171,738	142,331	173,530	217,767	120,551	139,279	132,861	167,542
2005	133,091	161,076	158,358	180,986	151,107	142,467	176,166	145,655	174,974	225,613	124,173	145,145	135,016	171,810
2006	132,013	165,620	163,608	182,115	151,681	145,455	180,443	146,159	179,403	230,842	122,773	147,753	132,117	177,079
2007	131,137	169,702	165,252	182,626	146,862	150,323	183,202	147,259	183,760	235,600	119,757	150,465	136,581	180,917
Compound Annual Growth Rate														
80-07	1.34	2.01	2.19	2.19	1.10	1.53	1.93	1.52	1.35	2.16	1.88	1.27	1.47	1.48
80-90	1.65	1.97	2.45	2.45	1.46	1.63	1.85	1.86	1.63	2.00	2.21	1.06	1.79	1.60
90-00	1.68	2.60	2.10	1.73	-1.19	1.45	2.23	1.68	0.30	1.82	2.61	1.31	1.66	0.99
00-07	0.43	1.26	1.97	2.48	3.95	1.50	1.64	0.82	2.48	2.89	0.37	1.53	0.73	2.02
Per Cent Change														
80-07	43.2	71.3	79.6	79.5	34.5	50.7	67.8	50.4	43.8	78.2	65.4	40.8	48.2	48.7
80-90	17.7	21.5	27.4	27.3	15.6	17.6	20.1	20.3	17.6	21.9	24.5	11.1	19.5	17.2
90-00	18.1	29.2	23.1	18.7	-11.2	15.5	24.6	18.1	3.0	19.7	29.4	13.9	17.9	10.4
00-07	3.0	9.1	14.6	18.7	31.2	11.0	12.1	5.9	18.7	22.1	2.6	11.2	5.2	15.0

Source: CSLS Index of Economic Well-being Database for OECD Countries, Table 2

Table 5: Scaled Index of Equality Measures, OECD, 1980-2007

	Australia	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Nether-lands	Norway	Spain	Sweden	United Kingdom	United States
1980	0.570	0.853	0.489	0.585	0.853	0.631	0.806	0.594	0.760	0.725	0.499	0.778	0.655	0.298
1981	0.570	0.853	0.489	0.585	0.853	0.631	0.806	0.594	0.760	0.738	0.510	0.777	0.626	0.277
1982	0.566	0.853	0.514	0.585	0.853	0.619	0.807	0.594	0.760	0.750	0.520	0.757	0.594	0.256
1983	0.561	0.853	0.520	0.585	0.853	0.608	0.807	0.594	0.760	0.761	0.530	0.736	0.560	0.235
1984	0.557	0.853	0.527	0.585	0.853	0.596	0.615	0.594	0.744	0.772	0.540	0.713	0.523	0.212
1985	0.552	0.853	0.533	0.585	0.853	0.583	0.638	0.594	0.725	0.782	0.550	0.689	0.483	0.190
1986	0.543	0.852	0.539	0.585	0.853	0.570	0.659	0.594	0.705	0.791	0.559	0.664	0.440	0.166
1987	0.533	0.850	0.545	0.585	0.853	0.556	0.679	0.465	0.682	0.793	0.568	0.636	0.443	0.166
1988	0.524	0.849	0.554	0.598	0.851	0.541	0.699	0.561	0.659	0.796	0.577	0.638	0.445	0.167
1989	0.514	0.850	0.562	0.611	0.848	0.526	0.716	0.640	0.633	0.799	0.586	0.640	0.447	0.167
1990	0.478	0.851	0.571	0.624	0.846	0.574	0.705	0.644	0.606	0.802	0.595	0.642	0.448	0.167
1991	0.438	0.852	0.579	0.637	0.843	0.615	0.694	0.647	0.577	0.804	0.549	0.643	0.450	0.167
1992	0.395	0.853	0.573	0.649	0.858	0.651	0.682	0.519	0.508	0.791	0.498	0.645	0.471	0.169
1993	0.347	0.814	0.568	0.718	0.872	0.682	0.669	0.347	0.424	0.777	0.442	0.643	0.492	0.171
1994	0.296	0.771	0.563	0.775	0.883	0.709	0.657	0.407	0.322	0.761	0.380	0.640	0.511	0.173
1995	0.302	0.722	0.541	0.822	0.893	0.712	0.660	0.460	0.408	0.745	0.312	0.638	0.391	0.182
1996	0.309	0.740	0.518	0.822	0.878	0.715	0.664	0.414	0.483	0.743	0.337	0.653	0.379	0.190
1997	0.315	0.730	0.495	0.821	0.861	0.718	0.668	0.363	0.550	0.740	0.362	0.666	0.366	0.198
1998	0.321	0.723	0.431	0.820	0.843	0.721	0.671	0.307	0.608	0.737	0.386	0.678	0.352	0.207
1999	0.327	0.716	0.440	0.820	0.825	0.724	0.675	0.366	0.660	0.735	0.409	0.688	0.339	0.207
2000	0.333	0.708	0.448	0.819	0.804	0.727	0.678	0.420	0.660	0.732	0.431	0.697	0.367	0.211
2001	0.451	0.720	0.447	0.810	0.792	0.727	0.678	0.420	0.660	0.725	0.431	0.718	0.393	0.198
2002	0.467	0.720	0.446	0.800	0.780	0.727	0.678	0.420	0.660	0.718	0.431	0.738	0.418	0.185
2003	0.476	0.720	0.445	0.790	0.766	0.727	0.678	0.420	0.660	0.710	0.431	0.757	0.442	0.184
2004	0.476	0.720	0.444	0.780	0.752	0.727	0.678	0.420	0.660	0.701	0.431	0.775	0.464	0.159
2005	0.476	0.712	0.444	0.780	0.752	0.727	0.678	0.420	0.660	0.701	0.431	0.791	0.464	0.159
2006	0.476	0.703	0.444	0.780	0.752	0.727	0.678	0.420	0.660	0.701	0.431	0.791	0.464	0.159
2007	0.476	0.703	0.444	0.780	0.752	0.727	0.678	0.420	0.660	0.701	0.431	0.791	0.464	0.159
Absolute Change in Points														
80-07	-0.094	-0.149	-0.045	0.195	-0.101	0.096	-0.128	-0.174	-0.100	-0.024	-0.068	0.013	-0.191	-0.139
80-90	-0.092	-0.002	0.082	0.039	-0.008	-0.057	-0.101	0.050	-0.154	0.076	0.095	-0.136	-0.207	-0.131
90-00	-0.144	-0.143	-0.123	0.195	-0.041	0.153	-0.027	-0.224	0.054	-0.069	-0.163	0.056	-0.082	0.044
Per Cent Change														
80-07	-16.5	-17.5	-9.2	33.3	-11.9	15.3	-15.9	-29.3	-13.2	-3.3	-13.6	1.7	-29.2	-46.8
80-90	-16.2	-0.2	16.8	6.7	-0.9	-9.0	-12.5	8.4	-20.2	10.5	19.1	-17.5	-31.5	-44.0
90-00	-30.2	-16.8	-21.5	31.2	-4.9	26.7	-3.9	-34.8	8.8	-8.7	-27.5	8.7	-18.2	26.6

Source: CSLS Index of Economic Well-being Database for OECD Countries, Table 3

Table 6: Scaled Index of Economic Security, OECD, 1980-2007

	Australia	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Nether-lands	Norway	Spain	Sweden	United Kingdom	United States
1980	0.672	0.759	0.680	0.736	0.808	0.776	0.776	0.759	0.778	0.816	0.738	0.873	0.518	0.427
1981	0.667	0.757	0.678	0.743	0.803	0.767	0.758	0.753	0.756	0.828	0.716	0.863	0.525	0.412
1982	0.637	0.755	0.643	0.750	0.799	0.756	0.742	0.744	0.730	0.820	0.704	0.854	0.517	0.377
1983	0.627	0.753	0.643	0.755	0.794	0.749	0.721	0.734	0.696	0.806	0.710	0.850	0.520	0.369
1984	0.661	0.749	0.656	0.762	0.799	0.734	0.661	0.726	0.708	0.810	0.681	0.852	0.533	0.385
1985	0.676	0.750	0.667	0.769	0.800	0.724	0.670	0.719	0.723	0.814	0.670	0.848	0.528	0.375
1986	0.669	0.753	0.670	0.779	0.801	0.710	0.693	0.712	0.721	0.820	0.671	0.847	0.525	0.374
1987	0.672	0.751	0.678	0.775	0.803	0.703	0.701	0.704	0.743	0.812	0.674	0.842	0.517	0.379
1988	0.675	0.762	0.691	0.777	0.809	0.703	0.706	0.699	0.735	0.799	0.673	0.848	0.512	0.374
1989	0.681	0.777	0.692	0.764	0.819	0.702	0.719	0.695	0.735	0.784	0.683	0.854	0.502	0.367
1990	0.662	0.784	0.682	0.761	0.818	0.715	0.729	0.702	0.732	0.773	0.690	0.858	0.475	0.350
1991	0.628	0.784	0.657	0.761	0.775	0.719	0.731	0.701	0.729	0.780	0.681	0.846	0.438	0.333
1992	0.610	0.782	0.648	0.763	0.723	0.715	0.734	0.692	0.754	0.777	0.654	0.823	0.431	0.323
1993	0.598	0.759	0.645	0.750	0.678	0.705	0.716	0.706	0.752	0.776	0.607	0.792	0.429	0.333
1994	0.598	0.735	0.659	0.786	0.687	0.696	0.707	0.692	0.744	0.779	0.586	0.792	0.452	0.356
1995	0.623	0.724	0.668	0.812	0.698	0.708	0.711	0.682	0.735	0.780	0.579	0.794	0.466	0.367
1996	0.627	0.733	0.667	0.810	0.702	0.703	0.704	0.675	0.719	0.781	0.581	0.786	0.468	0.376
1997	0.644	0.736	0.669	0.822	0.724	0.703	0.688	0.667	0.740	0.763	0.590	0.780	0.478	0.385
1998	0.651	0.728	0.661	0.821	0.734	0.708	0.691	0.663	0.729	0.769	0.600	0.791	0.477	0.390
1999	0.672	0.726	0.683	0.818	0.743	0.709	0.697	0.681	0.731	0.774	0.618	0.797	0.468	0.389
2000	0.676	0.737	0.696	0.819	0.745	0.736	0.701	0.692	0.743	0.782	0.624	0.801	0.472	0.388
2001	0.668	0.739	0.682	0.813	0.752	0.743	0.697	0.709	0.738	0.786	0.650	0.788	0.464	0.364
2002	0.667	0.724	0.672	0.814	0.749	0.738	0.687	0.711	0.725	0.809	0.641	0.786	0.440	0.331
2003	0.667	0.688	0.671	0.807	0.742	0.728	0.674	0.712	0.703	0.803	0.617	0.785	0.428	0.312
2004	0.671	0.695	0.674	0.805	0.744	0.722	0.659	0.720	0.679	0.807	0.618	0.776	0.433	0.316
2005	0.678	0.682	0.676	0.813	0.745	0.718	0.648	0.722	0.657	0.812	0.628	0.766	0.433	0.319
2006	0.683	0.679	0.682	0.823	0.757	0.720	0.659	0.731	0.662	0.826	0.634	0.774	0.435	0.331
2007	0.690	0.679	0.682	0.821	0.763	0.726	0.673	0.738	0.658	0.835	0.629	0.781	0.424	0.319
Absolute Change in Points														
80-07	0.018	-0.080	0.002	0.084	-0.045	-0.050	-0.104	-0.021	-0.120	0.019	-0.108	-0.092	-0.094	-0.108
80-90	-0.009	0.025	0.002	0.024	0.011	-0.061	-0.047	-0.057	-0.046	-0.043	-0.048	-0.015	-0.043	-0.077
90-00	0.013	-0.047	0.014	0.059	-0.073	0.021	-0.028	-0.009	0.011	0.009	-0.066	-0.057	-0.003	0.038
00-07	0.014	-0.058	-0.014	0.002	0.017	-0.009	-0.028	0.045	-0.084	0.053	0.006	-0.019	-0.048	-0.069
Per Cent Change														
80-07	2.6	-10.6	0.3	11.5	-5.6	-6.4	-13.3	-2.8	-15.4	2.4	-14.7	-10.5	-18.2	-25.4
80-90	-1.4	3.2	0.3	3.3	1.3	-7.9	-6.1	-7.5	-6.0	-5.2	-6.5	-1.7	-8.4	-18.0
90-00	2.0	-6.0	2.0	7.7	-8.9	2.9	-3.9	-1.3	1.6	1.1	-9.6	-6.7	-0.6	10.8
00-07	2.1	-7.9	-2.0	0.2	2.3	-1.3	-4.0	6.5	-11.4	6.8	0.9	-2.4	-10.3	-17.9

Source: CSLS Index of Economic Well-being Database for OECD Countries, Table 8

Table 7: Summary of the Effects of Alternative Weighting Schemes on the Index of Economic Well-being, Selected OECD Countries, 1980-2007

Country	Baseline				Alternative 1				Alternative 2				Alternative 3			
	1980	2007	Change in Points	Compound annual growth	1980	2007	Change in Points	Compound annual growth	1980	2007	Change in Points	Compound annual growth	1980	2007	Change in Points	Compound annual growth
Norway	0.518	0.793	0.275	1.59	0.481	0.763	0.282	1.72	0.444	0.815	0.371	2.27	0.602	0.766	0.164	0.90
Denmark	0.443	0.701	0.258	1.72	0.441	0.688	0.247	1.66	0.392	0.669	0.276	2.00	0.522	0.735	0.213	1.27
Netherlands	0.568	0.664	0.096	0.58	0.568	0.669	0.101	0.61	0.499	0.659	0.160	1.03	0.648	0.664	0.016	0.09
Belgium	0.548	0.649	0.101	0.63	0.570	0.658	0.088	0.53	0.442	0.625	0.183	1.29	0.663	0.670	0.007	0.04
Sweden	0.538	0.644	0.106	0.67	0.535	0.649	0.115	0.72	0.453	0.589	0.136	0.98	0.647	0.703	0.056	0.31
France	0.466	0.641	0.175	1.19	0.468	0.663	0.195	1.30	0.407	0.606	0.199	1.49	0.554	0.683	0.128	0.77
Germany	0.514	0.630	0.116	0.76	0.504	0.611	0.107	0.72	0.413	0.608	0.195	1.45	0.623	0.642	0.019	0.11
Finland	0.504	0.602	0.099	0.66	0.476	0.598	0.122	0.85	0.383	0.547	0.164	1.32	0.627	0.662	0.035	0.20
Canada	0.420	0.577	0.157	1.18	0.442	0.587	0.145	1.06	0.394	0.615	0.222	1.67	0.484	0.563	0.079	0.56
United Kingdom	0.443	0.576	0.133	0.98	0.446	0.611	0.165	1.17	0.368	0.607	0.239	1.87	0.539	0.590	0.051	0.34
Australia	0.429	0.553	0.124	0.94	0.446	0.595	0.149	1.07	0.378	0.573	0.194	1.55	0.506	0.568	0.062	0.43
Italy	0.451	0.546	0.095	0.71	0.455	0.560	0.105	0.77	0.399	0.582	0.182	1.41	0.534	0.548	0.014	0.09
United States	0.355	0.508	0.152	1.33	0.360	0.550	0.190	1.58	0.371	0.618	0.247	1.91	0.353	0.406	0.053	0.52
Spain	0.363	0.477	0.114	1.02	0.370	0.507	0.137	1.17	0.314	0.488	0.173	1.64	0.456	0.499	0.043	0.33

Source: CSLS Index of Economic Well-being database for the OECD, Tables 1, A27, A28, and A29.
Note: The four weighting schemes are as follows:
Baseline: 0.25 Consumption + 0.25 Wealth + 0.25 Equality + 0.25 Economic Security
Alternative 1: 0.40 Consumption + 0.10 Wealth + 0.25 Equality + 0.25 Economic Security
Alternative 2: 0.33 Consumption + 0.33 Wealth + 0.00 Equality + 0.33 Economic Security
Alternative 3: 0.20 Consumption + 0.10 Wealth + 0.40 Equality + 0.30 Economic Security