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New Estimates of the Index of Economic Well-Being for Canada

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Abstract

In the late 1990s, the authors developed the Index of Economic Well-being (IEWB), which organized the idea of economic well-being into four dimensions: consumption flows, stocks of wealth, equality, and economic security. The objective of this paper is to summarize the progress that we have made on methodological issues associated with the construction of the index (in particular the adoption of a linear scaling procedure), to present new estimates of the Index of Economic Well-being and its domains and components for Canada for the 1981-2005 period and to discuss the factors behind these trends.

The main findings are that that the Index of Economic Well-being advanced at a 1.30 per cent average annual growth rate between 1981 and 2005, below the 1.68 per cent growth for GDP per capita. The consumption flow and stocks of wealth domains of the Index experienced solid advances over the period, but these developments were offset somewhat by falls in economic equality and, more importantly, in economic security. Increased income inequality accounted for the fall in economic equality while the rise in the private health expenditures, as a share of personal disposable income, accounted for all the decline in economic security.

New Estimates of the Index of Economic Well-being for Canada¹

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 eight years, 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 paper are to review these methodological changes and to present updated estimates of the Index for Canada for the 1981-2005 period. A companion paper will present new estimates for the provinces.

The paper is divided into four 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 paper 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 sub-components of the domains, in Canada over the last quarter century. The fourth part discusses briefly some lessons learned from the authors' experience in the construction of the Index of Economic Well-being.

The Index of Economic Well-being: Motivation and Framework²

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

¹ The authors would like to thank the following persons for assistance in updating the extensive database upon which the estimates in this paper are made: Sharon Qiao, Jean-Francois Arsenault, Daniel Ershov, and Simon Lapointe. The authors would also like to thank the Department of Economic Development of the Government of Alberta for financial support for the updating of the IEWB database.

² This section is largely based on Osberg and Sharpe (2005)

criterion of economic progress.

In focusing on the economic aspects of well-being in this paper 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 GDP³ 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. macro economic 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 the command over resources of individuals. 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 paper 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 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.

³ An oddity of the debate on well-being is its focus on GDP - which measures the output which occurs in Canada, while Gross National Product (GNP) measures the output produced by factors of production owned by Canadians. It is GNP that determines the market incomes of Canadians.

We think of individuals as wanting to maximize some combination of their own well-being and society's well-being – a formal index to express this idea, for the i th person, can be written as:

$$U_i = \alpha_1 (\text{own utility}) + \alpha_2 (\text{own estimate of society's well-being}).$$

Presumably individuals know more about their own preferences and their own life situation than anyone else is likely to know, so they need no real help in calculating the implications for their own utility of any given issue. However, a measure of social well-being is useful unless $\alpha_2 = 0$ for all persons, always. Research on construction of social indices depends crucially on the implicit assumption that $\alpha_2 \neq 0$, since otherwise there would really be no point to index construction.

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.

Exhibit 1 - Dimensions of Economic Well Being or Command over Resources		
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

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 that 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, 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 their personal economic future is secure.

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 paper’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, 2002, 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 includes net accumulation of tangible capital, housing stocks, net changes in the value of natural resources stocks; environmental costs, net change in level of foreign indebtedness; accumulation of human capital and R&D investment
- [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.

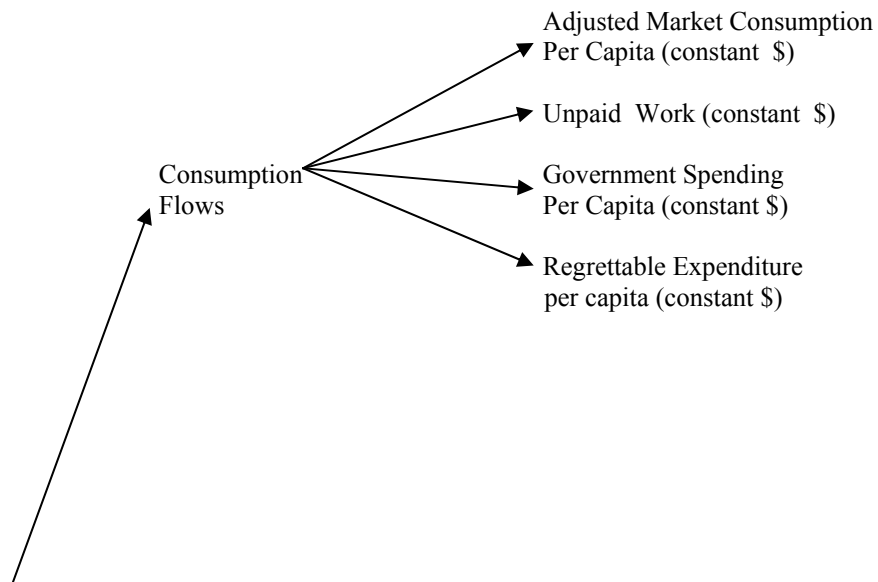
Each dimension of economic well-being is itself an aggregation of many underlying trends, on which the existing data is of variable quality. By contrast, the System of National Accounts has had many years of development effort by international agencies (particularly the UN and the IMF), and has produced 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:

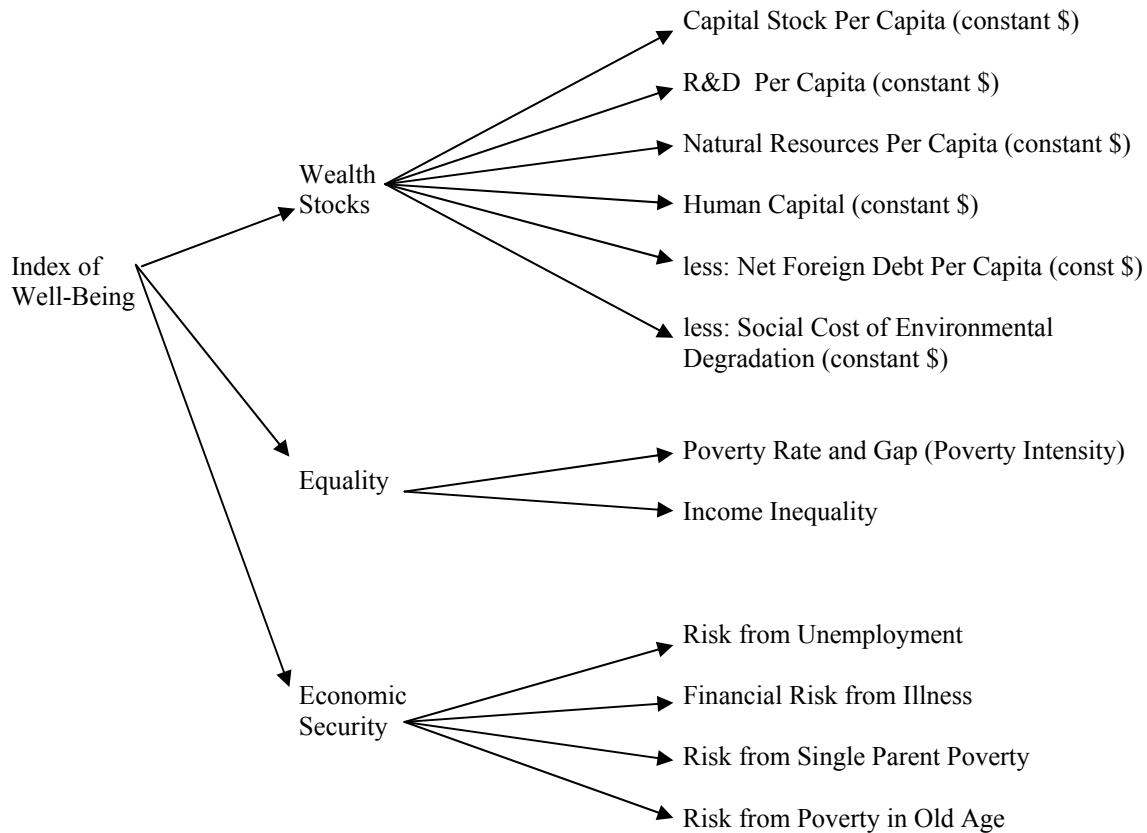
- (1) assume that the aggregate share of income devoted to accumulation (including the public capital stock, human capital, research and development and the value of unpriced environmental assets) is automatically optimal, and
- (2) set the weight of income distribution and economic insecurity to zero, by ignoring entirely their influence.

Neither assumption seems justifiable, and neither is innocuous.

Exhibit 2 presents the detailed framework of the Index of Economic Well-being, based on the four domains outlined above.

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





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 eight years of existence. This part of the paper reviews the major methodological developments that have affected the Index.

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 essential reason why it may be necessary to scale variables is that raw data can have significantly different ranges. In such cases,

without scaling, composite indices will be implicitly weighted towards variables with large ranges – which implies that small but meaningful changes in a value may insignificantly affect the composite index. An unscaled aggregation of sub-indices has an *implicit* weighting scheme – i.e. higher implicit weights are given the variables that have a large range as their percentage increases are larger.⁴

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. One can call this the directionality issue. We want to standardize variables so that an increase in the standardized score corresponds to 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 which is used in the Human Development Index (HDI) and most other published indices. The basic idea is that the empirically observed values of a variable represent the feasible range of that variable, and that movement in it can be best expressed as a fraction of the feasible range. 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 be used, or (if it is conceptually possible for the variable to increase or decrease further) some adjustment for future changes in the range may be made. The data are then scaled as a proportion of this range of values. If a variable increase corresponds to an increase in overall welfare, the variable, VALUE, is scaled according to the formula

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

⁴ Variables with low bases compared to the range of values can skew the index and cause small absolute changes in this variable to overwhelmingly affect the composite. For example, if the unemployment rate ranges from 0.5% to 5.5%, a change from 0.5% to 5.5% will be a ten fold increase. However, for a different range, say between 10% and 15%, the same absolute change, of 5% will only represent a 1.5 fold increase.

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 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 0 can have when multiplicative operations are made (multiplication by zero gives zero).

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. It provides a transparent solution to the directionality problem and it removes a major distinction in methodology between the IEWB and other indices (such as the HDI).

However, the fact that composite indices almost all use this technique does not remove its weaknesses. One must be conscious that the choice of the set of values used in the scaling procedure can affect the results. For example, we have produced IEWB estimates for Canada alone and for the provinces, which include a national average. But the results for Canada when the scaling procedure is run with only the values for Canada differ from the results for Canada when the scaling procedure uses values for Canada **and** the provinces because the range of values is much greater when the provinces are included. Since some provincial values always by definition both smaller and greater than the values for Canada, the range of the scaled values for Canada decreases when the provinces are included.

Standardization of the range of variables is intended to produce the same range (0 to 1) for all variables. Is this, in fact, desirable? If the Gini coefficient is fairly stable over time and exhibits only small percentage changes, while the unemployment rate experiences larger fluctuations, should the large per cent variations in the unemployment be given the same weight in determination of the IEWB as the small per cent variations in the Gini coefficient? Linear scaling dampens the impact of variables that exhibit large fluctuations and forces analysts to make explicit choices to whether to weigh variables more or less heavily, if they think variables in fact differ in importance.

When the Linear Scaling Technique is used in international indices such as the HDI, it faces problems when new values outside the existing range of values are added. If new countries with extreme outcomes are added to comparisons or there is an upward (or downward) trend in a time series, each new set of (MAX, MIN) values will produce new scaled values for the series, and make obsolete the old series. The standard (ad hoc)

solution to this problem is to think of currently observed values as spanning “most” of the feasible range and add an allowance for future possible changes in (MAX, MIN). As in the HDI, the calculations in this paper 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.

A serious issue with the linear scaling approach lies in whether a change should be reported as a percent change from an initial base, or as an absolute percentage point change. The scaled values abstract from the base of the scaled values (e.g. if the range of variable A were (100, 200) while the range for variable B were (1100, 1200), then linear scaling would rescale A=150 and B=1150 to the same index value of .5). When the base used for per cent point calculations varies among variables, it will influence the reported percentage change. The base also varies with the set of values included in the scaling procedure. Many comparisons in public debates (e.g. in discussion of GDP growth) are based on per cent changes of variables. In the example just used, an increase of 10 in both A and B (to 160 and 1160 respectively) corresponds to an equal increase in index value, and a 6.6% increase in A but only a 0.87% increase in B. In this paper we have included reference to percent changes in scaled values, and we remain concerned about the most accurate method of reporting and comparing changes over time.

Conceptualization of the Risk of Unemployment

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 (Osberg and Sharpe, 1998), the large downward trend in this component was an important driver of the overall economic security domain and hence the overall Index. Within the risk to unemployment component it was the fall in the EI coverage rate (the ratio of EI beneficiaries to unemployed) that was in turn driving the risk of unemployment component. The conceptual framework underlying this component was the expected value of loss. The economic risk created by unemployment was seen as a compound probability of financial loss for the “typical” labour force participant – i.e. (probability of not having a job) * (probability of not getting UI/EI benefits) * (fraction of wage not replaced by UI/EI).

This probabilistic approach could be defended as consistent with a good deal of economic theorizing theory, since it ignored any non-economic costs to non-employment and implicitly assumed that it is irrelevant which component of the compound probability of financial loss changes – all that matters is the “bottom line” of financial loss due to unemployment⁶. . As a practical matter, this methodology meant that much of the change during the 1990s in the overall risk to unemployment variable came from the large fall in the EI coverage rate over this period.

⁶ The view that the only costs associated with unemployment are monetary has been strongly criticized – e.g. by Osberg (1988).

In the eight years since the publication of our initial estimates of the Index of Economic Well-being, the economics literature has seen a spectacular growth in the number of papers using self-reported measures of happiness, life satisfaction or well-being. A consistent finding in this literature is the large negative impact on happiness of higher unemployment rates – not just for those actually unemployed, but also for the employed who become more anxious about the risk of unemployment⁷. In some specifications of the correlates of individual happiness, one can compare directly the relative magnitude of the influence on happiness of changes in the risk of unemployment and changes in unemployment compensation benefits – and the hypothesis that these are equal in impact is conclusively rejected. In this paper we therefore weight more heavily changes in the risk of unemployment, compared to changes in the financial risk of income loss, given unemployment – specifically (based on Di Tella and MacCulloch, 2003) we weight the scaled risk of unemployment four time more heavily than the scaled risk of loss of income due to unemployment..

In our new estimates for the provinces, the methodology described above produces the plausible result that in low unemployment Alberta the risk from unemployment is less than in high unemployment Newfoundland despite the fact that a much greater proportion of the unemployed in Newfoundland receive EI benefits. [Our old methodology would have produced the counter-intuitive result that the financial risk from unemployment was less in Newfoundland than Alberta, because of the much higher EI coverage (reflecting in part the less restrictive eligibility conditions) in that province. Our new methodology implies that the probability of finding a job if laid off is more important than the probability of obtaining EI benefits if unemployed in the determination of the overall financial risk arising from unemployment. Consequently, we weight the unemployment rate much more heavily than the financial protection from unemployment variable (80:20), which includes the benefits replacement rate as well as the EI coverage rate and we make the unemployment rate and the financial protection rate additive, not multiplicative, which dampens the evolution of the risk to unemployment component over time.

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. A major consideration in our construction of the IEWB was (and remains) our belief that because individuals differ in their personal values about the importance of the components of well-being, a composite index should respect those value differences and be able to accommodate differing weights for current consumption, sustainability, equality and economic security. Still, we have to present some “base case” for discussion. In the original estimates of the Index of Economic Well-being we used the weights: consumption flows (0.4), stocks of wealth (0.1), equality (0.25), and economic security

⁷ See Bruno S. Frey and Alois Stutzer, *Happiness and Economics: How The Economy and Institutions Affect Well-Being* (Princeton: Princeton University Press, 2002); Robert J. Di Tella and Raphael MacCulloch, “Income, Happiness and Inequality as Measures of Welfare,” June 18, 2003

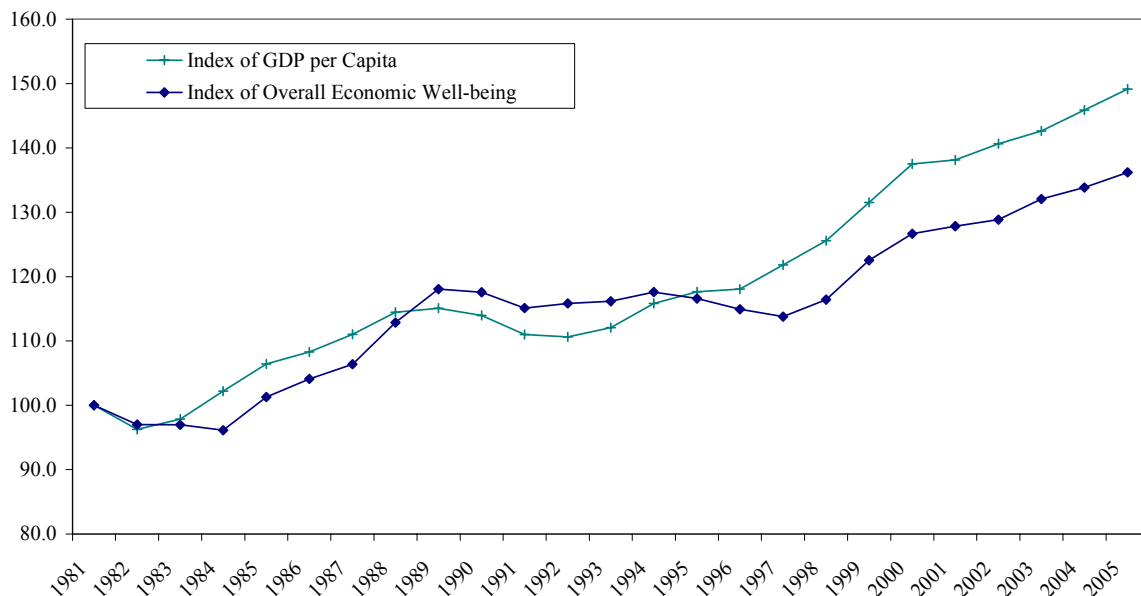
(0.25) – and we were criticized for a bias against sustainability because of the low weight for the stocks of wealth, and for a bias in favour of material goods because of the high weight given consumption. In subsequent versions of the Index we have presented a “base case” which gives equal weights to the four domains – but we also 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 for Canada, 1981-2005

Overall Trends in the Index of Economic Well-being

The scaled value of the overall Index of Economic well-being rose 0.163 points from 0.451 in 1981 to 0.614 in 2005 (Table 1). When these scaled values are indexed (100 in 1981), one obtains a 36.2 per cent total increase over the period, or an average annual rate of change of 1.30 per cent. This rate of growth is less than GDP per capita, the most widely used metric of living standards and sometimes seen as a proxy for economic well-being. Indeed, real GDP per capita in Canada over the 1981-2005 period advanced 49.2 per cent (1.68 per cent per year), 30 per cent faster than the rate of increase of the Index of Economic Well-being (Table 1 and Chart 1).

Chart 1: Trends in the Overall Index of Economic Well-being and GDP per Capita, Canada, 1981-2005
(1981 = 100)



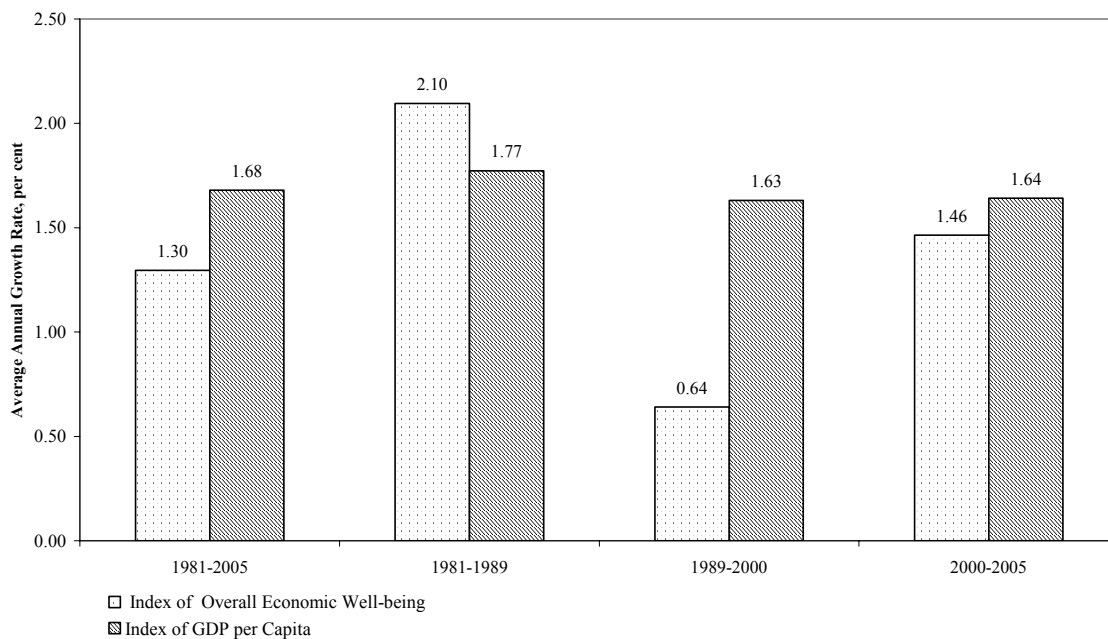
Source: Table 1.

The rate of advance of the Index of Economic Well-being was not steady over the 1981-2005 period. The Index fell in the early years of the 1980s, advanced strongly during the 1984-1989 period, then fell in the first eight years of the 1990s before picking up strongly in 1997-2000 period. Progress again stalled in 2001 and 2002, but the three most recent years (2003, 2004 and 2005) saw strong gains.

The years 1981, 1989 and 2000 were business cycle peaks. The year 2005 is not a business cycle peak, but is the most recent year for which data are available. From a peak to peak perspective, which controls for cyclical fluctuations, the Index of Economic Well-being grew at a 2.10 per cent average annual rate in 1981-1989, but only at a 0.64 per cent average annual rate in 1989-2000 (Chart 1a). The 1980s was thus a much better decade for progress in economic well-being than the 1990s. Since 2000, growth in the Index has averaged 1.46 per cent per year.

The pattern of advance and decline in the Index of Economic Well-being corresponds roughly to that of GDP per capita (Chart 1), with economic expansions characterized by growth in both the Index of Economic Well-being and in GDP per capita, and with recessions and periods of economic stagnation characterized by declines in both variables. This relationship of course reflects the fact that some components of the Index of Economic Well-being, such as consumption, are included in GDP and that other components are correlated or driven by GDP trends.

Chart 1A: Relationship Between Trends in the Index of Overall Economic Well-being and GDP per Capita, Canada



Source: Table 1.

But there can still be significant divergences between trends in the Index and GDP per capita, particularly during certain periods. The rate of advance of GDP per capita was remarkably similar in the three sub-periods of the overall 1981-2005 period: 1.68 per cent per year in 1981-1989, 1.77 per cent in 1989-2000 (although growth in the first half of the 1990s was much weaker than the second half), and 1.64 per cent in 2000-2005 (Table 1 and Chart 1A). In the first and third of these three sub-periods, GDP per capita advanced at a rate within 0.2-0.4 percentage points of the Index of Well-being (0.33 points slower in the 1980s and 0.18 points faster in the first half of the 2000s). But

in the 1990s (1989-2000), when the Index of Economic Well-being has progressing at a weak 0.64 per cent per year, GDP per capita growth has 1 percentage point faster. Thus rapid GDP per capita growth does not necessarily translate into rapid growth in economic well-being. The reasons for this will be explored later in the paper.

Overall Trends in the Four Domains of the Index of Economic Well-being

The Index of Economic Well-being is comprised of four domains or dimensions of economic well-being: consumption flows, stocks of wealth, equality, and economic security. This section examines overall trends in these four domains in Canada over the 1981-2005 period. The next four sections looks at each domain in depth, analyzing developments in the components and subcomponents of the domain.

Table 2 and Chart 2 present estimates of the four domains of the Index of Economic Well-being over the 1981-2005 period – evidently there were very significant divergence in trends in the domains. If all the various domains of economic well-being had moved in parallel, there would have been little “value added” to their separate calculation and presentation, but in fact two of the domains enjoyed very large increases while two domains experienced falls.

Progress in the domains can be measured either by the *absolute change* in the scale value of the domain, or by the *percentage change in the index of the scaled value*. Earlier, we noted how linear scaling removes the absolute base - if the range of variable A were (100, 200) while the range for variable B were (1100, 1200), then linear scaling would rescale both A=150 and B=1150 to the same index value of 0.5 . In this case, an increase of 10 in both A and B (to 160 and 1160 respectively) corresponds to an equal percentage point increase in index value, although the underlying variable A has a 6.6% increase but there is only a 0.87% increase in B.

If we now add the possibility of differences in the absolute level of the scaled value in the base year (for example, assume Domain A has scaled values of 0.2 and 0.6 in the base and end years while Domain B has values of 0.5 and 0.9) progress measured in percentage points can be the same for the two domains – 0.4 percentage points – but the index of the scaled values shows that Domain A increased by 200 per cent (i.e. $200\% = 0.4/0.2$) while Domain B advanced only 80 per cent (i.e. $80\% = 0.4/0.5$).

It is always the case (in the IEWB or the HDI) that scaled values are sensitive to the universe of values used for the scaling procedure. For Canada there are 25 data points for a time series for the 1981-2005 period, but for Canada and the provinces there are 275 data points (11*25). When Canada and the provinces are scaled together, the computed values run from 0 to 1, but because some provinces necessarily have lower and higher values for any variable than the Canadian average, the range of underlying values for Canada when scaled separately will be much less than when separate provincial values are included. This of course also means that the percentage rate of increase in the

index of the scaled values will also be considerably greater for Canada if scaled separately.

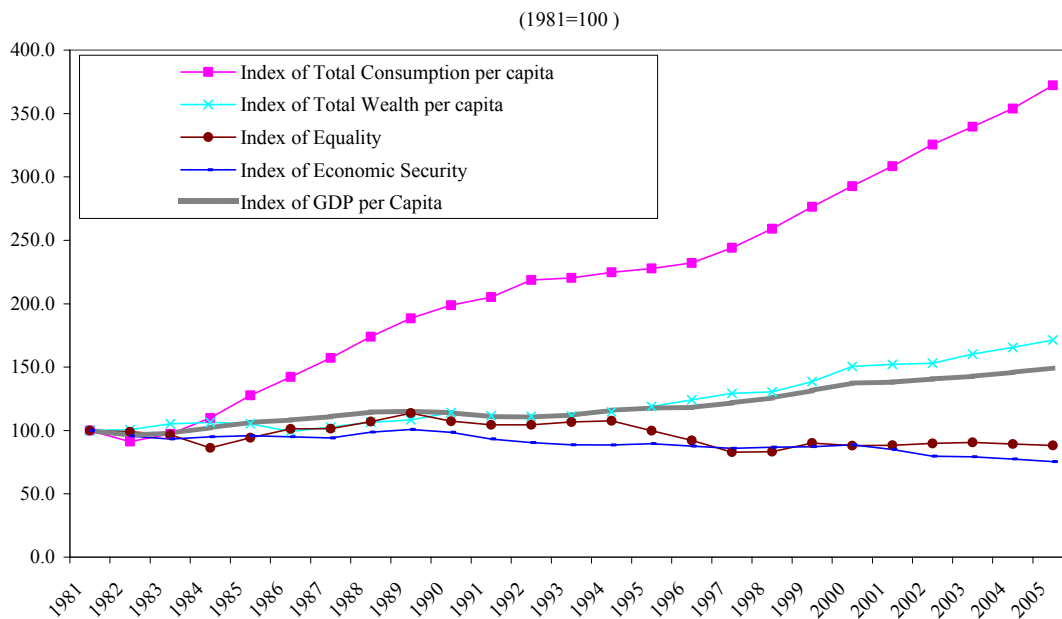
It should also be noted that domains where components are aggregated in prices (consumption and wealth) will have different percentage rates of change depending on whether these rates are based on the scaled or unscaled values of the domain.

The fact that there are different valid ways of reporting the same information creates the problem of “framing” and potential bias in reporting changes. There is no uniquely correct way to report the fact that when a $\frac{1}{2}$ glass of water is added to a $\frac{1}{4}$ full glass of water, the glass ends up $\frac{3}{4}$ full. The glass could equally well have been seen as initially $\frac{3}{4}$ empty, and the change could be expressed either as a fraction of the feasible range (50%) or relative to the initial amount (a 200% change).

In Canadian data based on absolute change in the scaled values of the domains, real total consumption flows per capita increased 0.661 percentage points between 1981 and 2005, and stocks of wealth per capita increased 0.225 percentage points, while equality fell 0.070 points and economic security dropped 0.163 points (Table 2).

Based on the index of the scaled values of the domains, real total consumption flows per capita increased 272.3 per cent, and stocks of wealth per capita 71.5 per cent (Table 2). The rates of increase of these domains when measured in constant dollars were 58.2 per cent and 42.3 per cent respectively (Tables 3 and 4). In contrast, equality fell 11.9 per cent and economic security fell 24.7 per cent (Table 2).

Chart 2: Trends in the Index of Economic Well-being for Four Components, Canada, 1981-2005



Source: Table 2.

Thus the upward overall progress in the Index of Economic Well-being over the last quarter century has been driven by increased consumption and wealth and dampened by rising inequality, and especially, by increasing economic security. The remaining sections of the paper will identify which particular aspects of these domains have contributed to these developments.

Just as the progress in the overall Index of Economic Well-being was not steady or continuous over the 1981-2005 period, the pace of advance within the cyclically neutral sub-periods for the four domains was uneven for most domains.

Except for a decline in the early 1980s, consumption has been on a more or less continuous upward trend throughout the period, although the rate of increase has varied within the three sub-periods. At 4.08 per cent per year in the 1990s (1989-2000), the index of the scaled value of per capita consumption growth was slower than for the period average (1981-2005) of 5.63 per cent and the 8.24 per cent rate of increase per cent recorded in the 1980s (1981-89) and the 4.93 per cent increase during the first half of the 2000s (2000-2005).⁸

Equally, the value of stocks of wealth per capita progressed at a steady pace of 2.27 per cent per year over the 1981-2005 period, only falling in 1986 due to the large decline in oil prices that year. At 1.02 per cent per year, the rate of increase was less in the 1980s than in the 1990s (3.02 per cent) and in the first half of the 2000s (2.64 per cent).⁹

The equality domain exhibited very pronounced fluctuations within the 1981-2005 period. Equality decreased or worsened (inequality increased) in the first half of the 1980s and then increased in the second half. After falling in 1990, the level of equality stabilized during the 1990-1994 period before dropping during the 1994-1997 period, then increased in 1997-99 period and has been stable since then. In terms of the cyclically neutral periods, equality increased at a 1.61 per cent average annual rate in 1981-89, fell at a 2.30 per cent rate in 1989-2000, then has since exhibited little change.

In contrast to the other domains, economic security has exhibited a significant trend over the 1981-2005 period. It fell in the early and mid 1980s, but picked up at the end of that decade. In the 1990s it entered a more or less continuous decline, which picked up speed as after 2000. Thus, in terms of the cyclically neutral periods, economic security has been stable in 1981-89. It then fell at a 1.16 per cent average annual rate in 1989-2000, and which accelerated to 3.18 per cent in 2000-2005. The driver of this perhaps surprising development will be examined later in the paper.

⁸ In constant dollar terms, per capita consumption advanced at a 2.19 per cent average annual rate in the 1981-89 period, 1.57 per cent in 1989-2000, and 2.30 per cent in 2000-2005. The 1981-2005 period average was 1.93 per cent. See Table 3.

⁹ In constant dollar terms, per capita wealth advanced at a 0.61 per cent average annual rate in the 1981-89 period, 1.95 per cent in 1989-2000, and 1.84 per cent in 2000-2005. The 1981-2005 period average was 1.48 per cent. See Table 4.

Trends in the Components of the Consumption Flows Domain

As noted earlier in the paper, the consumption domain consists of three main components: private or personal consumption expenditures, government expenditures on goods and services consumed either directly or indirectly by households, and the value of unpaid work.

Three adjustments are in turn made to these components.¹⁰ First, since economies of scale exist in private household consumption, private consumer expenditure is adjusted for changes in family size. Second, regrettable expenditures, that is expenditures which do not contribute to economic well-being, and defined here as commuting costs, cost of crime, costs of divorce, and household pollution abatement expenditures, are subtracted from overall consumption flows. 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.

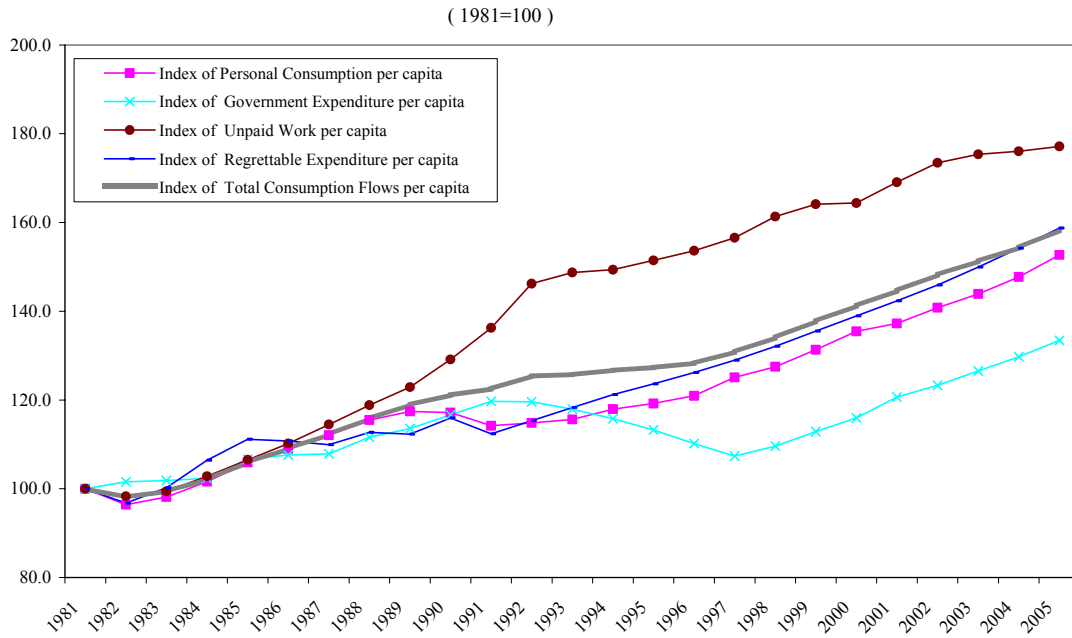
Table 3 shows the estimates of the components of total consumption flows, expressed in per capita terms in 1997 constant dollars, as well as the adjustments for the 1981-2005 period. Chart 3 plots trends in the consumption components and Chart 4 shows trends in the shares of the different components of consumption.

Private Consumption

In 2005, personal consumption per capita was \$20,845 (1997 dollars), accounting for roughly one half of total consumption flows. Personal consumption in 2005 was up 52.7 per cent from 1981, an average annual rate of increase of 1.78 per cent. Except for the recessions of the early 1980s and early 1990s, private consumption progressed steadily throughout the period (Chart 3). However, growth was somewhat slower in the 1990s (1.31 per cent per year) than in the 1980s (2.03 per cent) and the first half of the 2000s (2.42 per cent).

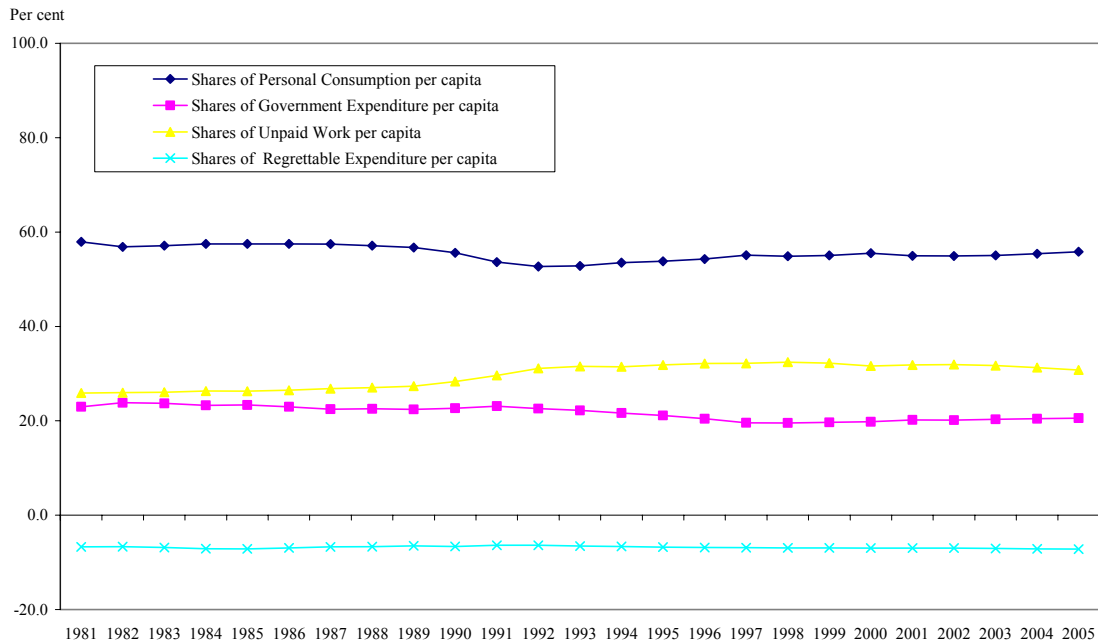
¹⁰ In the estimates of the Index of Economic Well-being for OECD countries a fourth adjustment is made to consumption flows to account for the large international differences in growth rates and levels of annual hours worked (Osberg and Sharpe, 2002 and 2006). This adjustment has not yet been introduced in this paper.

Chart 3: Trends in the Index of Total Consumption per Capita and its Components, Canada, 1981-2005



Source: Table 3.

Chart 4: Shares of Consumption per Capita Components in the Total Consumption per Capita, Canada, 1981-2005

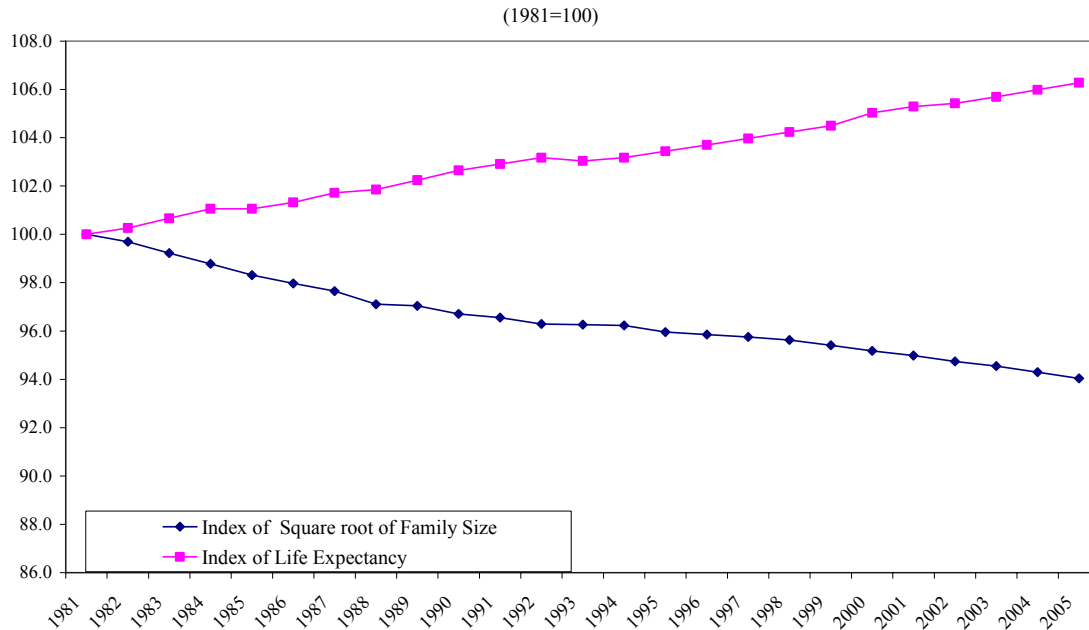


Source: Table 3.

Average household size in Canada has fallen from 2.72 persons in 1981 to 2.40 in 2005. This represents a 11.4 per cent decline, due to both fewer children per family and a

greater proportion of unattached individuals in total household units. The OECD equivalence scale to adjust for economies of scale in household consumption associated with family size, which is widely used in international studies, is the square root of family size. This gives values of 1.65 in 1981 and 1.55 in 2005, a decrease of 6.0 per cent (Table 3 and Chart 5). Thus the adjusted value of personal consumption in 2005 is 6.0 per cent less than its actual value, relative to the 1981 base when there was no adjustment.

Chart 5: Trends in the Index of Family Size and Index of Life Expectancy, Canada, 1981-2005



Source: Table 3.

Government Expenditures on Goods and Services

In 2005, government expenditures per capita on goods and services was \$7,219 (1997 dollars). Government expenditures include spending by all levels of government on current goods and services and on fixed capital and inventories, minus capital consumption allowances. Government expenditures in 2005 was up 33.4 per cent from 1981, an average annual rate of increase of 1.21 per cent. Except for the years from 1992 to 1997 inclusive, government expenditure increased ever year, although the pace of increase varied (Chart 3). Growth in per capita real government expenditures was extremely weak in the 1990s (0.19 per cent per year), fairly strong in the 1980s (1.60 per cent), and in fact robust during the first half of the 2000s (2.84 per cent).

Unpaid Work

The value of unpaid work in the Canadian economy in 2005 was \$10,804 per capita (1997 dollars), nearly one third the value of total consumption flows.¹¹ Changes in the per capita value of unpaid work reflect trends in three factors – the actual hours of unpaid work of the working age population, the rate of increase in the generalist replacement wage that is used to value unpaid work, and the rate of growth of the working age compared to the total population. Over the 1981-2005 period the value of unpaid work increased at a 2.41 per cent average annual rate (Table 3). Surprisingly, none of this increase was due to an actual increase in the number of hours of unpaid work per working age person, which was constant at 1,164 per year in both years. Rather the increased value of unpaid work reflected the rising replacement real wage rate for unpaid work (1.54 per cent) and the faster growth of the working age population (0.48 per cent). As wages are deflated with the CPI and the value of unpaid work is deflated with the GDP deflator, the faster growth of the CPI relative to the GDP deflator (0.40 per cent) also contributed to the growth rate.

In 2005, regrettable expenditures per capita were \$2,520 (1997 dollars), broken down as follows: costs of automobile accidents (\$887), costs of commuting (\$794), costs of crime costs (\$123), and costs of household pollution abatement (\$23).¹² Regrettable expenditures rose 58.8 per cent over the 1981-2005 period, an average annual rate of advance of 1.94 per cent. As estimates since 1994 are based on extrapolations, growth rate trends during this period may be misleading.

The final adjustment to consumption flows is for life expectancy, which has risen from 75.6 years in 1981 to an estimated 80.3 years in 2005, an increase of 6.3 per cent (Chart 5).¹³ The rate of growth in life expectancy advanced at a 0.25 per cent average annual rate over the 1981-2005 period and was steady within the period (0.28 per cent in 1981-89, 0.24 per cent in 1989-2000, and 0.24 per cent in 2000-2005). Total consumption flows in 2005 was therefore augmented by 6.3 per cent to reflect the additional consumption arising from increased longevity.

In 2005, total consumption flows on a per capita basis and adjusted for changes in household size, regrettables, and longevity was \$37,309 (1997 dollars), up 58.2 per cent

¹¹ Statistics Canada (1995) classifies unpaid work into five major categories: domestic work (meal preparation, cleaning, clothing care, repairs and maintenance, and other domestic work); help and care (child care and adult care); management and shopping; transportation and travel; and other unpaid work. The first four categories are called household work while the last category is non-household work better known as volunteer work. Statistics Canada (1995) provides benchmark estimates of hours of unpaid work and the value of unpaid work based on a generalist replacement cost for Canada in 1961, 1971, 1981, 1986, and 1992. The CSLS has extended these times series to 2005 based on the average annual growth rate between 1992 and 1998 of unpaid hours from the 1992 and 1998 General Social Surveys (the 1992 GSS provides slightly different results for 1992 than found in Statistics Canada (1995)) and the rate of growth of real wages for the 1992-2005 period.

¹² Estimates of regrettable expenditures for the 1981-94 period are from Messinger (1997). Post-1994 estimates are extrapolations based on the growth rate of the 1989-1994 period. The CSLS hopes to update the post-1994 estimates shortly.

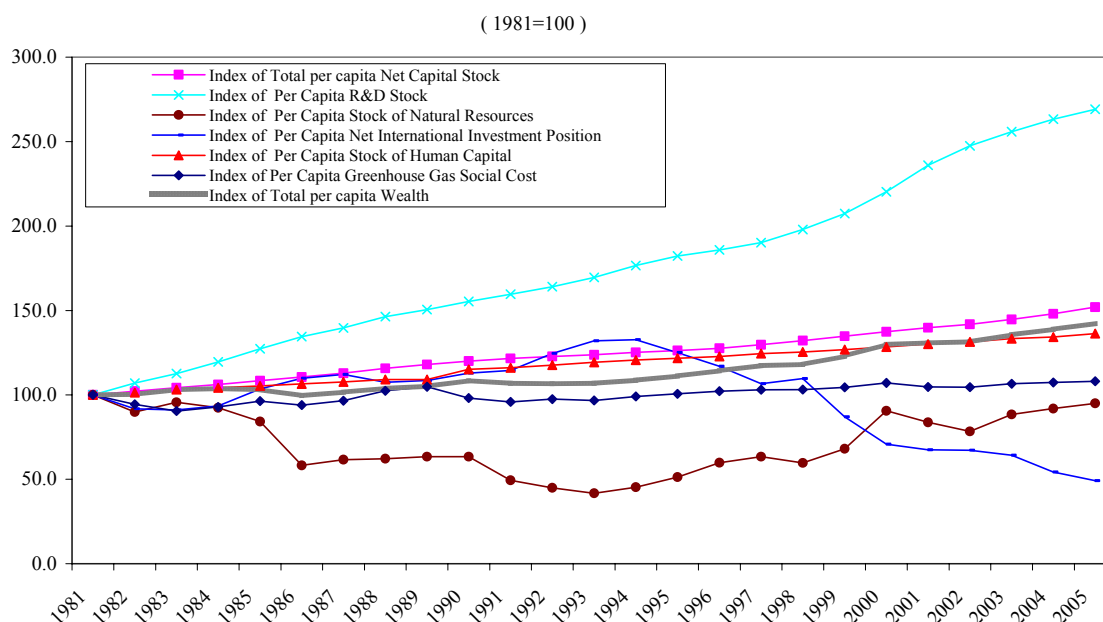
¹³ Life expectancy estimates are currently available to only 2003. The 2005 estimate is based on an extrapolation of the growth rate for the 1998-2003 period.

or 1.93 per cent per year from 1981. It is this adjusted total consumption flows series that is scaled for the calculation of the overall Index of Economic Well-being.

Trends in the Components of the Stocks of Wealth Domain

As noted earlier in the paper, the stocks of wealth domain consists of six components: the physical capital stock, the R&D capital stock, the stock of natural resources, the stock of human capital, a measure of the cost of environmental degradation as proxied by the cost of greenhouse gas emissions, and finally net international investment position.

Chart 6: Trends in the Index of Wealth per Capita and its Components, Canada, 1981-2005



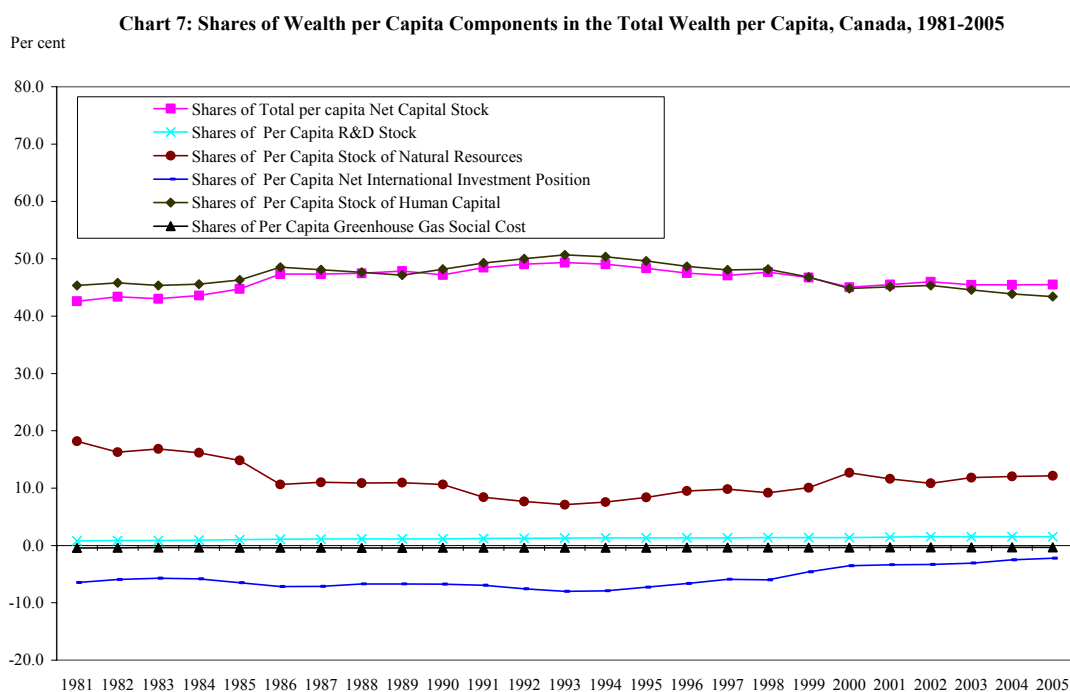
Source: Table 4.

Physical Capital

In 2005, the per capita stock of physical capital in Canada, defined as the residential and non-residential net capital stock based on geometric depreciation, was \$90,884 (1997 dollars) (Table 4). Physical capital accounted for about one half of the total wealth stocks (Chart 7). Over the 1981-2005 period, the capital stock increased 51.9 per cent, a 1.76 per cent average annual rate of growth. The rate of growth of the capital stock was continuous throughout the period (Chart 6), not even falling in recessions. The 1990s however, saw slightly slower capital stock growth (1.39 per cent per years) than the 1980s (2.09 per cent) and the first half of the 2000s (2.04 per cent).

R&D Capital

In 2005, the per capita stock of R&D in Canada was \$3,063 (1997 dollars), accounting for less than 2 per cent of the total stocks of wealth. This low share reflects both the relatively low share of GDP devoted to R&D (around 2 per cent) and the high depreciation rate of 20 per cent assumed for R&D stocks. From 1981 to 2005 R&D stocks increased 169.1 per cent or 4.21 per cent per year, much faster than the rate of advance of the other components of wealth (Chart 7). The rate of growth in R&D stocks was continuous through the period, although somewhat higher in the 1980s (5.25 per cent) than in the 1990s (3.52 per cent) and in the first half of the 2000s (4.08 per cent).



Source: Table 4.

Natural Resources

The value of natural resources per capita in Canada in 2005 was estimated by Statistics Canada at \$24,240 (1997 dollars), equivalent to only 12 per cent of total wealth stocks.¹⁴ The aggregate value of natural resources declined 5.0 per cent between 1981 and 2005, the only one of the stocks of wealth that experienced this trend (recall that 1981 was near the peak of the last oil price bubble). Short-term swings in the value of natural resources largely reflect commodity price movements as changes in the physical stock of natural resources through exhaustion and discoveries are felt slowly. For example, the 30.9 per cent fall in the value of natural resources in 1986 reflected the collapse in oil prices that year, while the 21.3 per cent increase between 2002 and 2005

¹⁴ For a detailed discussion of the methodologies used by Statistics Canada to estimate the value of natural resources, see Statistics Canada (2006).

was due to rising commodity prices. This volatility in prices makes aggregate value estimates highly uncertain.

Statistics Canada's national balance sheet account estimates that in 2005 the value of total natural resources was \$925,401 million in current dollars, with timber stocks accounting for one third of the value and subsoil resource stocks two thirds. Estimates for land, largely reflecting urban land values, are available, but are not included in the definition of natural resources used in the Index of Economic Well-being. Estimates of the value of fish stocks and water have not yet been developed by Statistics Canada.

Statistics Canada estimates in 2003 (the most recent year for which an estimate is available) placed a value of \$116,725 million (\$3,488 per capita) on established crude bitumen reserves, better known as oil sands reserves. This is based on the estimate that the oil sand contains around 5 billion barrels of oil. However, this reserve estimate is considered by some to be much too low given the advances that have been made in extraction technologies – the Canadian Association of Petroleum Producers (CAPP) estimates the oil sands potential at 175 billion barrels, placing Canada second to Saudi Arabia in terms of oil reserves.¹⁵ If this estimate is accurate, the figures of Alberta's natural resource wealth presented in this paper may be wildly underestimated. On the assumption that the price of oil remains at \$70 Canadian per barrel, and an estimated cost of extraction of around \$20 per barrel, the value of the oil sands would be \$8,750 billion (or \$8.75 trillion) Canadian under the 175 billion barrel reserve assumption. If this figure is divided by Canada's population of 32 million, it translates into natural resource wealth for Canadians from oil sands alone of \$273,437 per capita, 10 times the official estimates of total natural resource wealth.

Such an estimate is certainly far too high, given that the marginal cost of extraction can be expected to rise as lower value reserves are exploited. Nevertheless, it provides an example of reason for caution about the estimates of well-being presented in this paper, based on official estimates of natural resources wealth, which may underestimate the stocks of wealth and the future well-being of Canadians – particularly Albertans. Assuming that the price of oil stays at current levels, the wealth of the oil sands will likely contribute massively to the economic well-being of future generations.

Net International Position

Canada's net international indebtedness in 2005 was \$144.3 billion dollars (\$1997), equivalent to \$4,471 per capita. This liability to foreigners represents about a 2

¹⁵ According to the CAPP website: "Canada's oil sands deposits contain as much as 175 billion barrels of economically viable oil, or enough oil to meet the country's current energy needs for 500 years. With current technology, Canada's oil sands are second only to Saudi Arabia in global oil reserves. As technology improves, so too does the potential to produce more oil from the oil sands." http://www.capp.ca/default.asp?V_DOC_ID=1162.

per cent reduction in per capita wealth stocks. International indebtedness rose in the 1980s and early 1990s, peaking at \$12,078 per capita in 1994, up from \$9,100 in 1981. Since then it has been on a strong downward trend, reflecting Canada's large current account surpluses. Indeed, the per capita level of international indebtedness in 2005 was less than one half that one quarter century earlier.

Human Capital

Human capital in the Index of Economic Well-being is defined on a cost basis as the accumulated private and public expenditures¹⁶ on education at all levels. In 2005, the per capita value of human capital in Canada was \$86,782 (1997 dollars) representing 43 per cent of wealth stocks, the second most important component of wealth stocks just behind physical capital. Per capita human capital rose 36.3 per cent over the 1981-2005 period, an average annual rate of increase of 1.30 per cent. This rate of growth was somewhat faster in the 1990s (1.48 per cent) and slower in the 1980s (1.10 per cent).

Social Costs of Environmental Degradation

An obvious negative factor affecting the sustainability of stocks of wealth is the degradation of the environment. Placing a value of the environment or the "services provided by ecosystems" is a massive and controversial task and well beyond the scope of the current calculation 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 the framework for quantifying economic well-being developed in this paper, the Index does include estimates of the social costs of greenhouse gases, which contribute to global warming. These estimates are a flow, not a stock, and are hence subtracted from the change in wealth stock estimates.

The estimates are derived by multiplying CO₂ emissions by the social cost of such emissions, which a World Bank study estimated at \$20 US per ton in 1990 (Frankhauser, 1995). To simplify the calculation, it is assumed that all the costs of CO₂ emissions are borne in the jurisdiction in which they are produced. In reality, the effects of CO₂ cross borders and are global in nature, but the distribution of the costs throughout the world is not known.¹⁷

In 2005, emissions of greenhouse gases in Canada (primarily CO₂) were estimated at total 765 million tons, up 41 per cent from 544 million tons in 1981. Despite

¹⁶ Note that a positive internal rate of return on human capital investment implies that it has a value in excess of costs – and that the largest part of the cost of secondary and post-secondary education is the opportunity cost of student time (which we do not count in "cost of provision"). In short, our estimate of the value of human capital stocks is an understatement.

¹⁷ In the paper on the Index of Economic Well-being in OECD countries (Osberg and Sharpe, 2002), this latter approach was taken, with the total costs of CO₂ emissions calculated for the world based on world CO₂ emissions and these costs distributed in proportion to a country's share of world GDP.

the Kyoto protocol, greenhouse emissions in Canada have been on a continuous upward trend throughout the period. Based on the \$20 US per ton estimate, the social costs of greenhouse gases totaled \$651 (1997 dollars) per capita in 2005, up 8 per cent from \$602 in 1981. After growing at a 0.6 per cent average annual rate in the 1980s, the rate of increase fell to 0.2 per cent per year in the 1990s and first half of the 2000s.

Given that the total value of stocks of wealth was around \$200,000 per capita in 2005, the social costs of greenhouse gases, according to the admittedly simplistic calculations in this paper, contribute only marginally (0.3 per cent) to reduce the value of the wealth stocks.

Total Wealth Stocks

As the different components of wealth stocks are expressed in prices, total wealth stocks are the summation of the six components. In 2005, they totaled \$199,847 per capita (1997 dollars), up 42.3 per cent from 1981. The rate of growth of wealth stocks was much faster in the 1990s (1.95 per cent per year) and first half of the 2000s (1.84 per cent) than in the 1980s (0.61 per cent). This improvement reflected several developments: the falling value of natural resources in the 1980s and the rising value since 1990; the rising international indebtedness in the 1980s and early 1990s and the falling indebtedness since 1994; and the more rapid growth in human capital since 1990.

Trends in the Economic Equality Domain

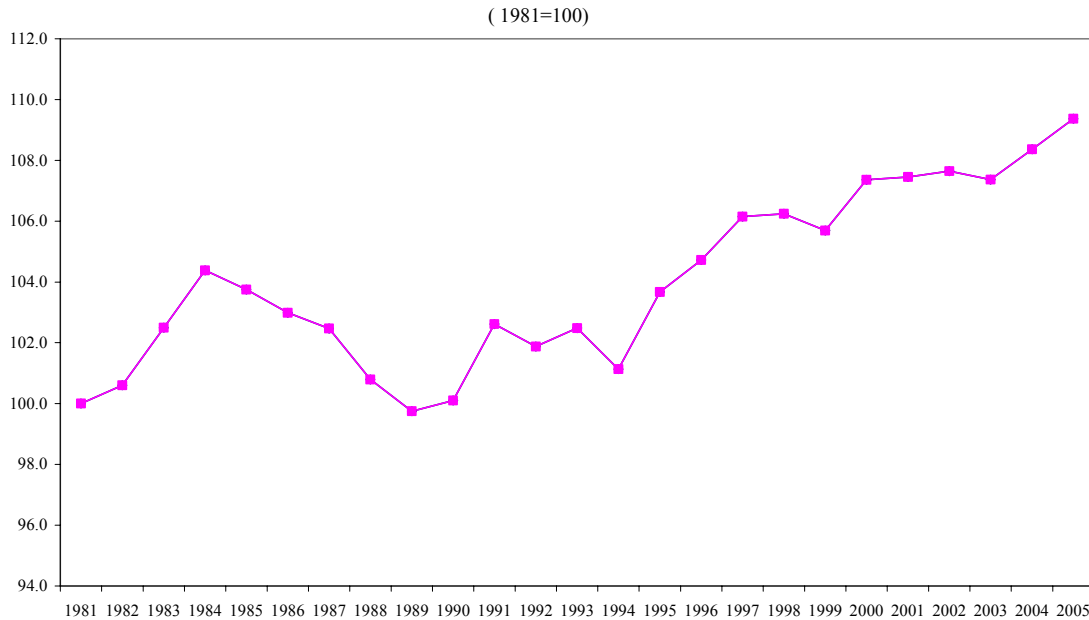
The third dimension of the Index of Economic Well-being is economic equality. At current levels, a fall in equality, (i.e. a rise in inequality), is considered to decrease economic well-being and vice versa. The equality domain consists of two components – an income distribution variable and a poverty variable for the overall population. The former is defined as the Gini coefficient and the latter as poverty intensity, which is the product of the poverty rate and the poverty gap. The poverty line is defined in the standard international way one half median equivalent disposable (i.e. after-tax) income. One important reason why people may care about income distribution in the wider society is empathy for the most disadvantaged, while another reason might be concern that they personally are always exposed to the chance they might fall on hard times. Either rationale for concern would weight more heavily poverty intensity than general inequality in the 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 of the equality domain¹⁸.

Income Distribution

¹⁸ Saez and Veal (2003) have documented the strong trend to greater shares of the top few percentiles of the income distribution. Readers should be aware that this trend receives relatively little weight in the IEWB because: (1) income inequality gets a ¼ weight in the income distribution dimension, which itself gets a ¼ weighting in the IEWB and (2) the Gini index is used – which is not very responsive to top end inequality.

In 2005, the Gini coefficient for all households based on after-tax income was estimated to be 0.325, up 9.4 per cent from 0.297 in 1981 (Table 5 and Chart 8). The Gini coefficient was stable in the 1980s, then rose at a 0.67 per cent average annual rate in the 1990s, and then continued to grow at a 0.37 per cent rate during the first half of the 2000s.

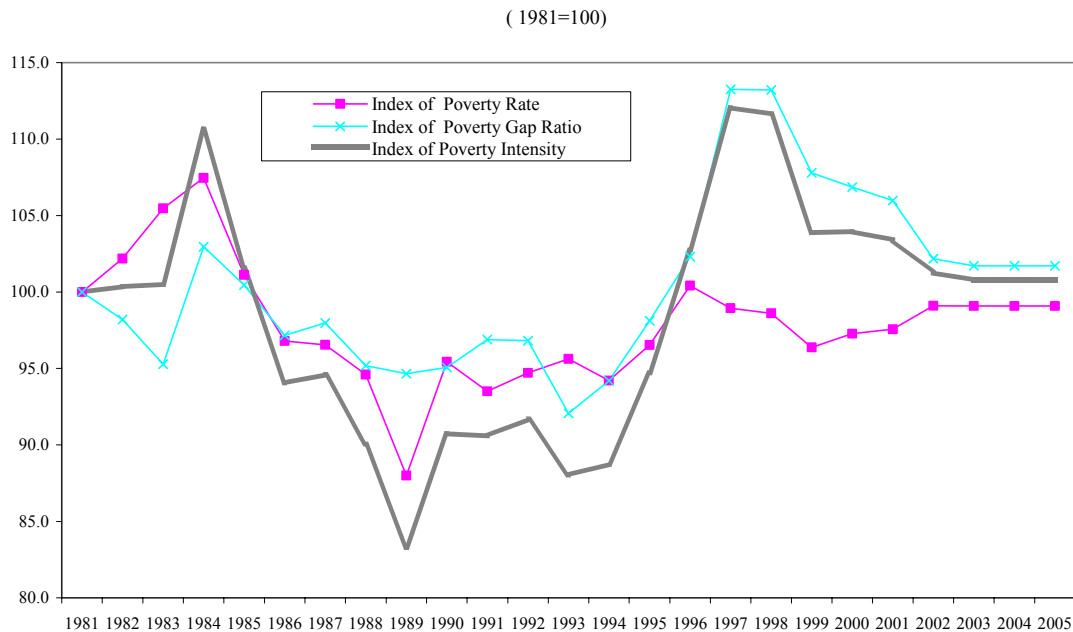
Chart 8: Trends in the Index of Gini Coefficient in Canada, 1981-2005



Source: Table 5.

In contrast to the upward trend in income inequality over the 1981-2005 period, poverty intensity has been stable, although there were movements within the period (Table 5 and Chart 9). The poverty rate was estimated at 13.7 per cent in 2005, virtually identical to the 13.8 figure in 1981. It peaked at 14.9 per cent in 1984, hit a low of 12.2 per cent in 1989, rebounded to 13.9 per cent 1996 and then remained in the 13.3-13.7 range for the next ten years.

Chart 9: Trends in the Index of Poverty Rate and Poverty Gap in Canada, 1981-2005



Source: Table 5.

The poverty gap is defined as the shortfall, in percentage terms, between the poverty line and the average income of those below the poverty line. In 2005, the poverty gap was 32.8 per cent, only slightly above the gap of 32.2 per cent in 1981. The poverty gap fell in the 1980s and then rose during the early and mid-1990s to peak at 36.5 per cent in 1997 and 1998, before falling to its current level.

Poverty intensity, the product of the poverty rate and poverty gap, also was virtually unchanged between 1981 and 2005, up 0.8 per cent. Not surprisingly, it followed the same path of the poverty rate and gap, falling in the 1980s, rising in the early and mid 1990s, and then falling in the late 1990s and first half of the 2000s.

To determine the overall value for the equality domain, the values for the Gini coefficient and the poverty intensity are separately scaled and then aggregated with the weights of one quarter and three quarters respectively. The scaled values for the equality index fell from 0.585 in 1981 to 0.515 in 2005 or from an index of 100 to 88.1 (Table 5).

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. If individuals knew their own economic futures with certainty, their welfare would depend only on their actual incomes over their lifetimes, since there would be no reason to feel anxiety about the future. However, uncertainty about what the future holds will decrease the economic welfare of risk averse individuals. Individuals can try to avoid risk through social and private insurance, but such

mechanisms do not completely eliminate economic anxieties, which have to be considered a subtraction from well-being.

In this and other papers we have adopted a “named risks” approach, and addressed the change over time in four key objective economic risks. Over fifty years ago, the United Nations’ Universal Declaration of Human Rights stated:

Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other loss of livelihood in circumstances beyond his control. [Article 25]¹⁹

We therefore construct measures of the change over time in the economic risks associated with unemployment, illness, “widowhood” (interpreted here as single female parenthood) and old age. We weight the prevalence of economic risks by the proportion of the population that it affects. The core hypothesis underlying the measure of economic insecurity we propose is that changes in the subjective level of anxiety about a lack of economic safety are proportionate to changes in objective risk.

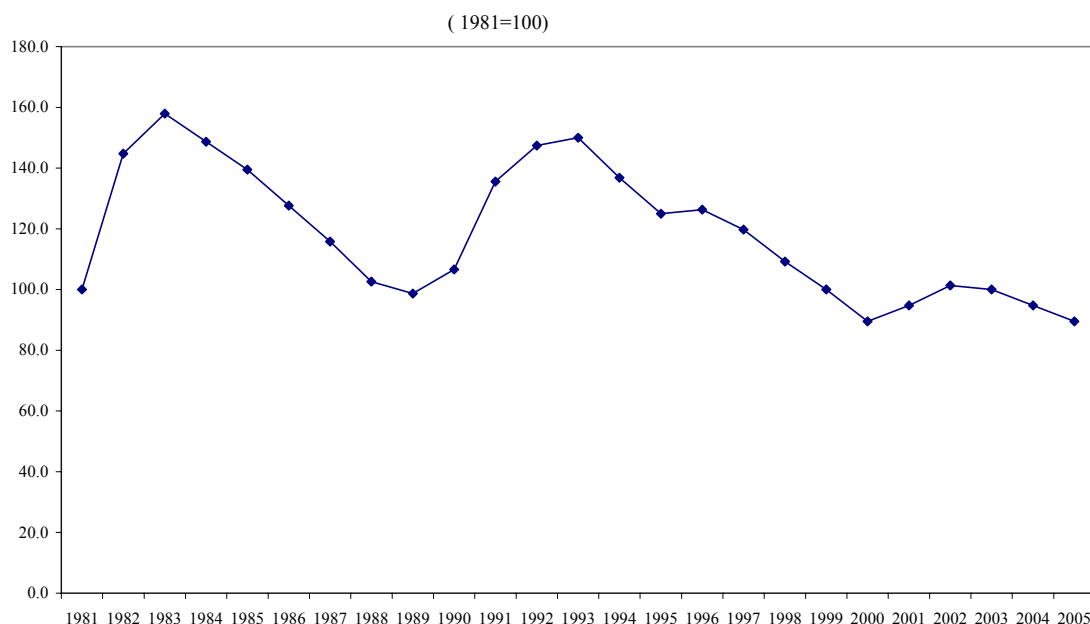
Risk from Unemployment

Risk imposed by unemployment is driven by three variables: the unemployment rate, the proportion of the unemployed receiving EI benefits, and the average proportion of earnings that are replaced by EI benefits.

The unemployment rate was 6.8 per cent in Canada in 2005, the lowest rate attained during the 1981-95 period (Table 6 and Chart 10). The unemployment rate rose in the early 1980s, peaking at 12.0 per cent in 1983 because of recession, then fell during the recovery and economic expansion during the rest of the decade. This pattern repeated itself in the 1990s, with the unemployment rate rising to 11.4 per cent in 1993 and then slowly unwinding to 6.8 per cent in 2000. Unlike the early 1980s and 1990s, the early 2000s did not experience a significant economic downturn, so the unemployment rate has been relatively stable since 2000, peaking at 7.7 per cent in 2002 before falling to its current level.

¹⁹Today, the gender specificity of the language of 1948 will strike many people as odd – but Article 2 makes it clear that all rights are to be guaranteed to male and female persons equally.

Chart 10: Trends in the Index of Unemployment Rate in Canada, 1981-2005



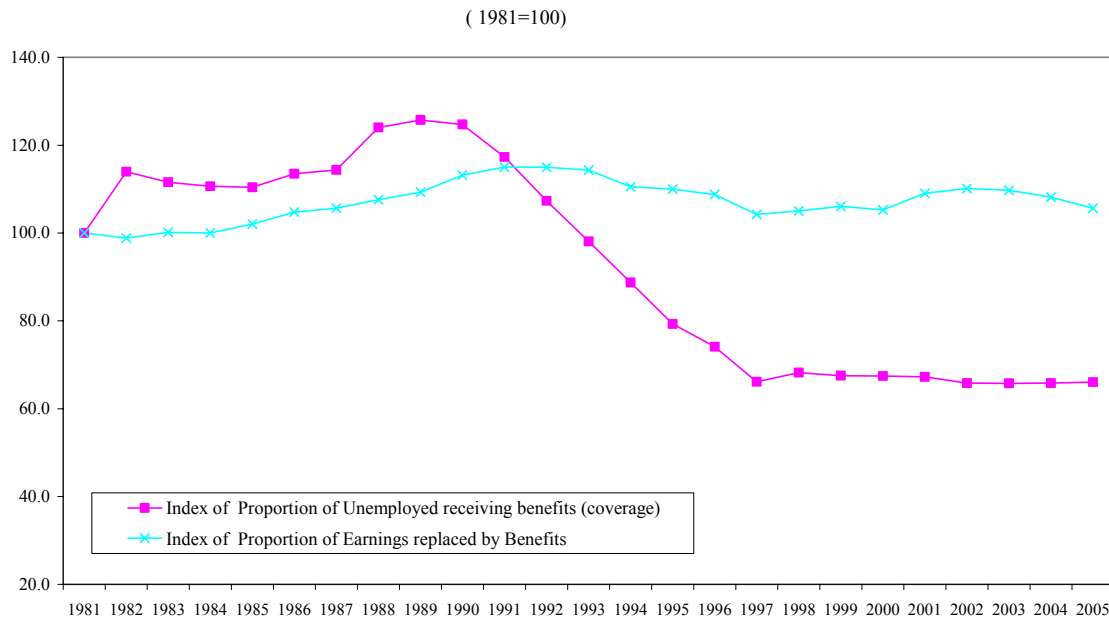
Source: Table 6.

In 2005, for Canada as a whole, proportion of the unemployed receiving EI benefits was 44.0 per cent,²⁰ down from 66.6 per cent in 1981 and 83.9 per cent in 1989 (Table 6 and Chart 11). Coverage increased in the 1980s, but fell significantly from 1989 to 1997, and has since stabilized.

In contrast to the falling coverage ratio, EI benefits as a proportion of average earnings have exhibited a high degree of stability (Chart 11). In 2005, EI benefits replaced 40.6 per cent of earnings, up only 5.7 per cent from the 38.4 per cent on 1981. The EI benefits rate peaked at 44.2 per cent in 1991.

²⁰ I.e. 44 per cent is the ratio of the number of persons receiving EI benefits to the number of unemployed. Not all EI beneficiaries are classified as unemployed by the Labour Force Survey, especially if a region where there are few job prospects – and quits, fires and new labour market entrants may be unemployed but not eligible for EI benefits.

Chart 11: Trends in the Index of EI Financial Assistance in Canada, 1981-2005



Source: Table 6.

The aggregation procedure for the variables that make up the risk of unemployment component of the economic security domain recognizes two distinct issues – the risk of unemployment and the risk of financial loss from unemployment. To obtain the latter, the EI coverage rate and the UI benefits rate are multiplied to obtain an index for the financial protection from unemployment. Nationally, this index fell 30.0 per cent between 1981 and 2005 (although there are significant regional variations). Second, both the unemployment rate and the financial protection index are scaled. Third, the scaled values of the two indexes are weighted to produce the overall index of security from the risk imposed by unemployment. The relative ease of getting a job in a low unemployment labour market provides employment security by enabling attractive options in the event of unemployment, A higher probability of getting UI/EI benefits, or higher benefits, provides security by compensating individuals for their earnings loss.

Job availability and financial insurance in the event of unemployment both contribute to a sense of security, but which matters more? In our past papers outlining the IEWB we assumed that there was no particular difference in wellbeing associated with *how* individuals got employment security, but those papers were written before the recent explosion of literature on the determinants of self-reported happiness and life satisfaction. Cross-country regressions with life satisfaction data on 271 thousand people indicate that the unemployment rate is considerably more important than the unemployment compensation system as a source of economic security for the working population²¹.

²¹ See Di Tella, MacCulloch and Oswald (2003:819), where in six different specifications of ordered probit regressions (n=271,224) predicting life satisfaction, the size of the negative coefficient on the unemployment rate was, on average, 2.13 times larger than the size of the positive coefficient on

Consequently, in the aggregation of the overall employment security index it is given a weight of four-fifths, compared to a weight of one-fifth for the financial protection variable. This methodology represents a significant change from the earlier methodologies where the unemployment rate and EI system were weighted equally.

The greater weight given the unemployment weight produces a result that the scaled value the economic security for risk from unemployment is 0.01 points (or 1.6 per cent when the scaled value is indexed) greater in 2005 than in 1981 despite the fact that the financial protection index fell 30.0 per cent and the unemployment rate only decreased 10.5 per cent.

A sensitivity analysis (Table 6) shows that if the unemployment and financial protection variables were weighted equally, the scaled value the economic security for risk from unemployment component would be 0.032 points (or 6.6 per cent when the scaled value is indexed) less in 2005 than in 1981.

Financial Risk from Illness

The second component of the economic security domain is the financial risk imposed by illness. In Canada, health care deemed medically necessary provided 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 Canada 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 medical services that have been recently delisted in Ontario). Also included would be procedures considered socially desirable even though medically unnecessary such as plastic surgery.

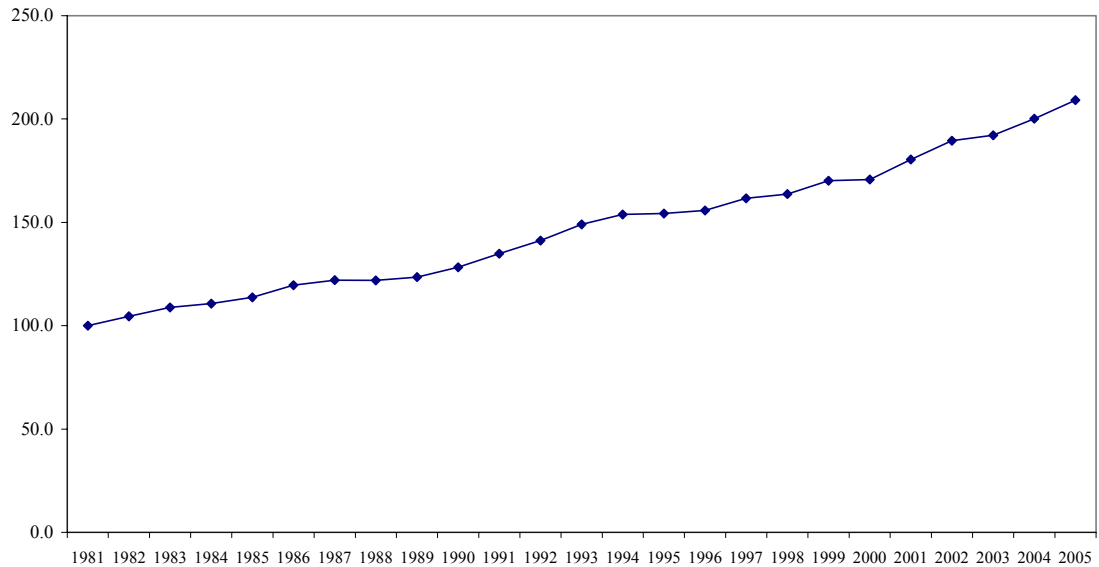
Private expenditure on health care rose from \$6.3 billion current dollars in 1981 to \$43 billion in 2005 (Table 7). This represented more than a doubling of private health spending as a share of disposable income, from 2.65 per cent to 5.55 per cent (Table 7 and Chart 12). Such a development can be considered a deterioration in the economic security of Canadians. Increased private health expenditure imposed by poor health thus represents a growing financial burden for all Canadians – particularly low income households.

The scaled value of the risk imposed by illness component of the economic security domain fell 0.55 points from 0.794 in 1981 to 0.244 in 2005. In terms of the

unemployment benefits. Since the range of unemployment benefits observed (0.003 to 0.631) was about three times greater than the range of unemployment rates (0.006 to 0.211), one should rescale regression coefficients to a common range to interpret relative size effects – hence their results could be read as implying unemployment changes are about six times more important than UI benefit changes in maintaining well-being.

index of the scales values, this represented a 69.3 per cent decrease. As will be discussed later in the paper, this development accounted for all the decline in economic security domain.

Chart 12: Trends in the Index of the Proportion of Private Expenditure on Healthcare in Personal Disposable Income in Canada, 1981-2005
(1981=100)



Source: Table 7.

Risk from Single-Parent Poverty

When the UN Universal Declaration of Human Rights was drafted in 1948, the percentage of single parent families was relatively high in many countries, partly as a result of World War II. At that point in time, “widowhood” was the primary way in which women and children lost access to male earnings. Since then, divorce and separation have become the primary origins of single parent families. However, it remains true that many women and children are “one man away from poverty”, since the prevalence of poverty among single parent families is extremely high. To model trends in this aspect of economic insecurity, we multiply (the probability of divorce) * (the poverty rate among single female parent families)²² * (the average poverty gap ratio among single female parent families).²³ The product of these last two variables is proportional to the intensity of poverty. Poverty is defined as it was for all households under the equality

²² However, $RATE = INCIDENCE \times AVERAGE \ DURATION$. Since the poverty rate among single parents is equal to the conditional probability that a single parent will enter poverty and the average duration of a poverty spell, we implicitly account jointly for the duration of poverty spells and for their likelihood. Inadequacy of data preclude examination of household dissolution among co-habiting couples.

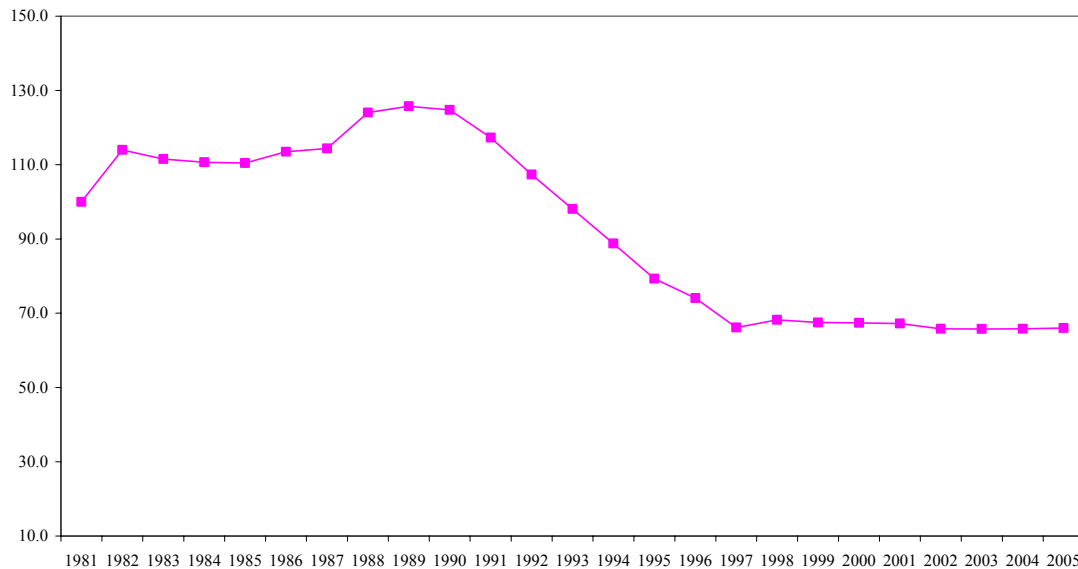
²³ This procedure effectively ignores single male parents, which can be justified on the grounds that males comprise only about 17 per cent of the single parent population, and their income loss on divorce is considerably less than that of women.

domain – in relative terms as the proportion of households below one half median income.

The divorce rate for married couples was 0.91 per cent in Canada in 2005, the lowest rate in a quarter century (Table 8). The divorce rate rose from 1.12 per cent in 1981 to a peak of 1.48 per cent in 1987 and has since been on a downward trend (Chart 13), reflecting possibly the aging of the population (the hazard of divorce declines after a certain number of years of marriage).

Chart 13: Trends in the Index of Divorce Rate in Canada, 1981-2005

(1981=100)



Source: Table 8.

The poverty rate for female lone parent families in 2005 was 46.6 per cent (Table 8) – although it fell more or less continuously over the 1981-2001 period, it has increased in recent years and is now 30.1 per cent below the 1981 level of 66.7 per cent (Chart 14).

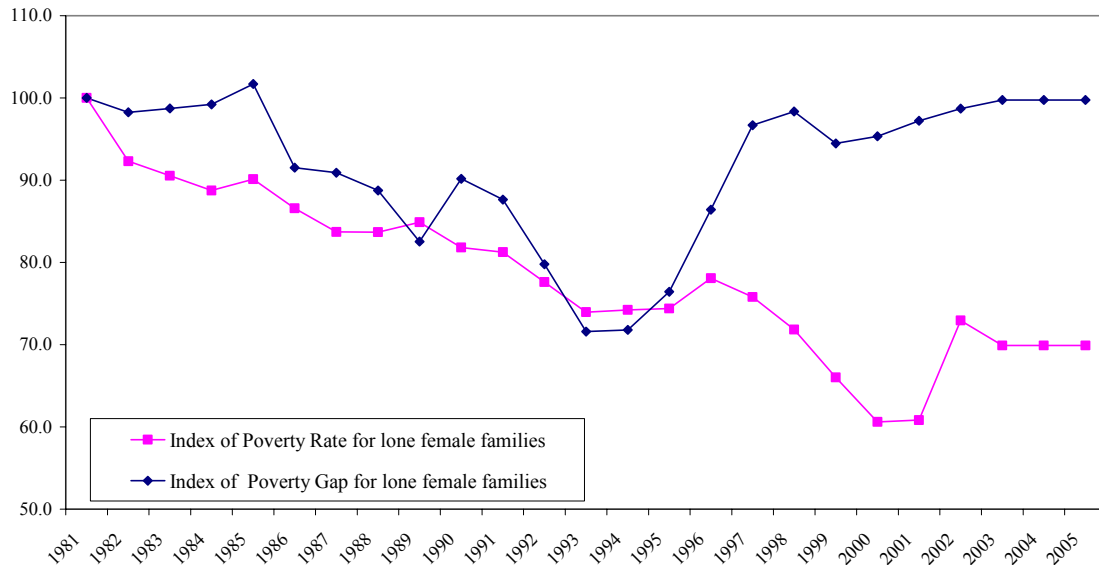
In contrast to the decline in the single parent poverty rate, the poverty gap in 2005 was virtually identical to that in 1981 (30.3 versus 30.4 per cent). But the poverty gap did fall significantly from 1981 to a trough of 22 per cent in 1993 and 1994 before giving up the gains in the 1994-2003 period (Table 8 and Chart 14).

The overall component for the risk of single parent poverty is calculated in a multiplicative manner as the product of the divorce rate, the poverty rate for single parents and poverty gap for single parents. This index had a value of 22.6 in 1981 and 12.9 in 2005, down 42.9 per cent. Because these variables interact multiplicatively, this

improvement was greater than the individual improvements for the divorce rate (-18.1 per cent) and single parent poverty rate (-30.1 per cent) The index is then scaled.

Chart 14: Trends in the Index of Poverty Rate and Poverty Gap for Lone Female Families in Canada, 1981-2005

(1981=100)



Source: Table 8.

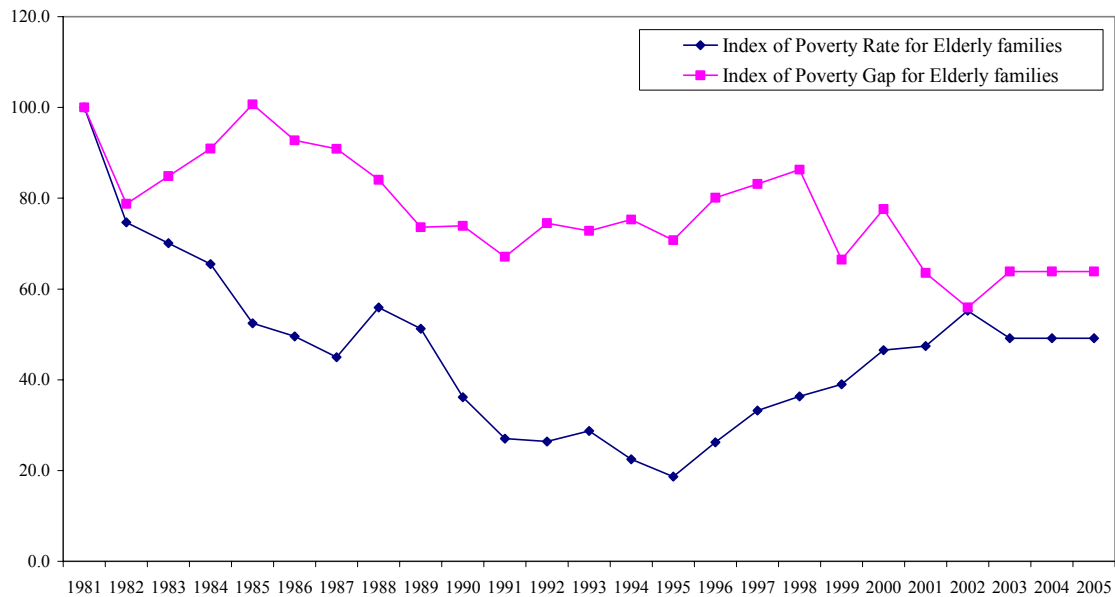
Risk of Poverty in Old Age

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

The poverty rate for the elderly in Canada has been cut in half over the last quarter century, falling from 18.7 per cent in 1981 to 9.2 per cent in 2005 (Table 9 and Chart 15). The downward trend has been uneven as the poverty rate was even lower in the mid-1990s at 3-4 per cent.

Chart 15: Trends in the Index of the Poverty Rate and Poverty Gap for Elderly Family in Canada, 1981-2005

(1981=100)



Source: Table 9.

The poverty gap of seniors has also fallen significantly over the past quarter century, from 26.9 per cent in 1981 to 17.2 per cent in 2005, a 36.2 per cent decline. Unlike the rather haphazard path of elderly poverty rate, the poverty gap has been on a more or less steady downward trajectory.

The overall component of the risk of poverty in old age, the poverty intensity, is the product of the poverty rate and gap. It stood at 0.095 in 1981 and 0.030 in 2005 (Table 9), representing a fall of 68.7 per cent. Again, this was larger than the falls of the poverty rate (50.8 per cent) and the poverty gap (36.2 per cent) taken separately because of the multiplicative effect. The poverty intensity index is then scaled.

Aggregation of the Components of Economic Security into Overall Economic Security Domain Index

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 2005, this was equivalent to 69.3 per cent of the total population (Table 10). In terms of the financial risk associated with illness, it is assumed that 100 per cent of the population is at risk. In terms of the risk of single parent poverty, it is assumed that all married women and their children who are under 18 are at

risk. In 2005, this group represented 35.5 per cent of the population. In terms of the risk to poverty in old age, it is assumed that the population 45-64 are most at risk. This group represented 26.2 per cent of the population in 2005. The component specific weights are generated by adding up all the proportions of the population subject to the four risks (231) and then standardizing to unity by dividing each proportion of the population affected by the risk by 231. The resulting weights are found in Table 10.

Because of demographic shifts, the proportion of the population affected by the different risks, and hence the weights, vary over time. With the aging of the population, the proportion of the population in the 15-64 age group has increased from 62.7 per cent in 1981 to 69.3 per cent in 2006, the proportion of the population aged 45-64 rose from 18.5 per cent to 26.2 per cent, and the proportion of married women with children under 18 fell from 56.3 per cent to 35.5 per cent.

The contribution of each component is the product of its scaled value and weight. For example, Table 11 shows that in 2005 the contribution of the risk of unemployment was 0.195 ($0.649 * 0.30$), financial risk from illness 0.106 ($0.244 * 0.433$), the risk of single parent poverty 0.105 ($0.68 * 0.154$), and the risk of poverty in old age 0.094 ($0.828 * 0.113$). Aggregating the contributions gives 0.499, which is the value of the overall economic security domain in 2005.

The overall index of economic security fell 0.160 points (or 24.2 per cent) from 0.662 in 1981 to 0.499 in 2005. The scaled values of three of the components of economic security increased between 1981 and 2005 – the financial risk from unemployment 0.010 points, the risk from single parent poverty 0.250 points, and the risk of poverty in old age 0.230 points. This means that all the decline in the overall economic security in Canada over the 1981-2005 was driven by the decrease in security from the financial risk of illness, which fell 0.55 points (or 69.3 per cent). The large weight given this risk also contributed to its preponderant role in determining the evolution of the overall economic security domain.

As was noted earlier in the paper, the fall in the economic security domain greatly dampened the overall upward trend in the Index of Economic Well-being arising from the increase in the consumption flows and stocks of wealth domains. Because the share of (private) personal disposable income going to health care more than doubled, individuals were more exposed to financial risk from illness. This had, according to the Index of Economic Well-being, a major negative effect on economic well-being in Canada in the 1981-2005 period. Whether the methodology and assumptions embedded in the Index that gives this result overestimates the contribution of the financial risk from illness is a topic for additional research.

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

The authors of this paper, through the Centre for the Study of Living Standards, have been engaged in the development of the Index of Economic Well-being for nearly a decade – what have we learned from this experience?

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 – *given* the weights associated with each component. The point of such an index is to enable observers to aggregate across conceptually dissimilar domains and thereby answer the seemingly simple question: “Is Canada better off?”

However, our approach differs from the HDI in that we have always stressed that the weights individuals will want to ascribe to the components of well-being depend on their personal values – that there is no single “objectively correct” set of weights – and we have therefore put a good deal of effort into presenting the underlying data in a way that others can test the sensitivity of our results to alternative weightings. Nevertheless, we have started with specific “base cases” – and one thing we have learned is that many people do not pay much attention to our emphasis on the subjectivity of weighting. There is a major division among social scientists about the merits of composite indicators. One side is critical of composite index construction, because of the subjectivity of the weighting of components – and sees this subjectivity as sufficient reason for rejection of the entire enterprise. The other side sees great value in composite indicators as a heuristic tool.

We fall in the second camp. We would argue that, as a practical matter, citizens are frequently called upon to evaluate policies that favour one or the other dimensions of well-being, hence individuals often have to have a way of “adding it all up” – across domains that are admittedly 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 national outcomes and public policy, *without* necessarily presuming that they all have the same values.

The hypothesis underlying our work is that public debate is likely to be improved if issues of fact, analysis and values are as clearly separated as possible.

Measurement of the current level, or trend, of economic well being can be seen as the first stage of a three stage discussion about three different types of question: (1) Where are we? (2) Do we want to go somewhere else? (3) How do we get there?

Issues of measurement, of values and of analysis may be conceptually distinct, but in current policy debates, they often become hopelessly entangled. Our hypothesis is that democratic debate will be more fruitful, if issues of measurement (question 1) can be separated from the debate on ends (issue 2) or the discussion of means (item 3). Discussions of measurement issues are of a fundamentally different nature from discussions of values – which aspect of economic well being *should* receive greatest weight.²⁴ Disaggregating a compound index enables analysts to see for themselves whether, and to what degree, a summary judgement on social outcomes actually depends on value based weightings – or not.

We readily admit that composite indicators involve subjective weighting schemes and that in most cases it would not be appropriate for official statistical agencies to produce composite indicators. Composite indicators can, however, be extremely useful in focusing attention of both 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, or policy changes to rectify an unacceptable situation, or the allocation of resources to fill data gaps identified by the composite indicator²⁵.

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.

²⁴ Although each individual may have their own personal subjective evaluation of societal outcomes, the distribution of such evaluations *among others* is an objective fact that is also often of interest – but for each person, the questions of [1] “what do I think is important?” and [2] “what do others (e.g., the median citizen/voter) think to be important?” are interesting for very different reasons.

²⁵ Examples of composite indicators that have successfully fostered public debate include the already mentioned HDI and the *MacLean's* composite ranking of Canadian universities. The Canadian Council on Learning recently released a composite indicator on learning and the motivation of this initiative was explicitly stated as to foster debate about what constitutes lifetime learning in Canada.

The Importance of Testing Results to Different Weighting Schemes

Because weighting schemes for composite indexes are controversial, it would be desirable to undertake a large survey of the population to obtain consistent estimates of public preferences on the variables in the composite index. Although such an undertaking is beyond our means, or the means of almost all composite index developers, it would help answer the important political question: “What do most Canadians think makes Canada better off?”. In recent years, the literature on subjective well-being has made enormous strides and in this paper we have incorporated some of its results in our treatment of employment security. We hope in future revisions of the IEWB to make more use of this type of data. [But we would also note that knowledge of ‘what most other people think is important’ cannot substitute for an individual’s personal responsibility to make value choices – i.e. to assess their personal view of the relative importance of current consumption, sustainability, equality and security.]

For now, our experience is that the most effective and realistic “base case” in reporting trends is to give equal weight to the main components of the composite index and to then to undertake sensitivity analysis to ascertain how sensitive the overall trends of the index are to a range of weights. In some cases²⁶, 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 have posted the time series estimates of the four domains of the Index of Economic Well-being in an Excel file on the CSL website. A visitor to the website can choose any set of weights for the four domains he wishes and then see the path of the overall Index that his 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.

Conclusion

This paper has presented new estimates of the Index of Economic Well-being for Canada for the 1981-2005 period based on what we believe are methodological improvement to the Index over earlier versions. The two main methodological changes have been the adoption of a linear scaling procedure and a greater weight on the unemployment rate over income replacement schemes in the determination of the risk from unemployment. The Index is of course a work in progress and will undoubtedly undergo further changes as our thinking evolves.

The results show that since 1981, and more particularly since 1997, the economic well-being of Canadians has improved considerably, driven by greater consumption and

²⁶ A recession is, for example, bad news for all four dimensions of economic well-being – consumption, capital accumulation, equality and security. Knowing that there is *not* a conflict in policy objectives – sometimes – is important.

stocks of wealth – but falling equality and declining economic security have dampened somewhat this upward progress in economic well-being.

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Table 1: Trends in the Overall Index of Economic Well-being and GDP per Capita, Canada, 1981-2005

	Scaled Index of Economic Well- being	Index of Overall Economic Well- being (1981=100)	GDP at basic price millions of 1997 constant \$	Population thousands of persons	GDP per Capita 1997 constant \$	Index of GDP per Capita (1981=100)
	A	A'	B	C	D= CB/C*1000	D'
1981	0.451	100.0	556,452	24,820	22,419	100.0
1982	0.437	97.0	541,930	25,117	21,576	96.2
1983	0.437	97.0	556,457	25,367	21,936	97.8
1984	0.433	96.1	586,802	25,608	22,915	102.2
1985	0.457	101.3	616,536	25,843	23,857	106.4
1986	0.469	104.1	633,521	26,101	24,272	108.3
1987	0.480	106.4	658,425	26,449	24,894	111.0
1988	0.509	112.9	687,559	26,795	25,660	114.5
1989	0.532	118.0	703,946	27,282	25,803	115.1
1990	0.530	117.6	707,670	27,698	25,550	114.0
1991	0.519	115.1	697,540	28,031	24,884	111.0
1992	0.522	115.8	703,485	28,367	24,800	110.6
1993	0.524	116.2	720,700	28,682	25,128	112.1
1994	0.530	117.6	753,118	28,999	25,970	115.8
1995	0.526	116.6	772,843	29,302	26,375	117.6
1996	0.518	114.9	783,810	29,611	26,470	118.1
1997	0.513	113.8	816,763	29,907	27,310	121.8
1998	0.525	116.4	848,963	30,157	28,151	125.6
1999	0.553	122.5	896,577	30,404	29,489	131.5
2000	0.571	126.6	946,025	30,689	30,826	137.5
2001	0.576	127.8	960,657	31,021	30,968	138.1
2002	0.581	128.8	989,337	31,373	31,535	140.7
2003	0.595	132.0	1,012,785	31,669	31,980	142.6
2004	0.604	133.8	1,045,795	31,974	32,707	145.9
2005	0.614	136.2	1,079,142	32,271	33,441	149.2
Average Annual Growth Rate						
1981-2005	1.30	1.30	2.80	1.10	1.68	1.68
1981-1989	2.10	2.10	2.98	1.19	1.77	1.77
1989-1995	-0.21	-0.21	1.57	1.20	0.37	0.37
1995-2000	1.67	1.67	4.13	0.93	3.17	3.17
1989-2000	0.64	0.64	2.72	1.08	1.63	1.63
2000-2005	1.46	1.46	2.67	1.01	1.64	1.64

Source: The overall index of economics well-being from CSLS IEWB Database: Canada and Provinces, Table 9. GDP per capita from Statistics Canada CANSIM II: v2034894 and v466668.

Table 2: Trends in the Index of Economic Well-being for Four Components, Canada, 1981-2005

	Scaled Total Consumption per Capita	Index of Total Consumption per capita (1981=100)	Scaled Total Wealth per capita	Index of Total Wealth per capita (1981=100)	Scaled Index of Equality	Index of Equality (1981=100)	Scaled Index of Economic Security	Index of Economic Security (1981=100)
	A	A'	B	B'	C	C'	D	D'
1981	0.242	100.0	0.315	100.0	0.585	100.0	0.662	100.0
1982	0.221	91.2	0.317	100.6	0.579	99.0	0.633	95.7
1983	0.236	97.2	0.332	105.3	0.565	96.6	0.617	93.2
1984	0.266	109.8	0.335	106.3	0.504	86.2	0.628	95.0
1985	0.310	127.8	0.332	105.3	0.551	94.2	0.634	95.9
1986	0.345	142.2	0.313	99.2	0.592	101.2	0.629	95.0
1987	0.381	157.2	0.323	102.7	0.593	101.4	0.622	94.0
1988	0.422	173.9	0.336	106.5	0.626	107.0	0.653	98.7
1989	0.457	188.4	0.342	108.5	0.665	113.7	0.666	100.7
1990	0.482	198.8	0.360	114.1	0.627	107.3	0.652	98.5
1991	0.497	205.2	0.352	111.6	0.610	104.4	0.617	93.3
1992	0.530	218.8	0.350	111.2	0.610	104.4	0.598	90.4
1993	0.534	220.4	0.351	111.5	0.623	106.6	0.586	88.6
1994	0.545	224.8	0.361	114.6	0.629	107.7	0.586	88.6
1995	0.552	227.8	0.375	119.0	0.584	99.8	0.593	89.6
1996	0.563	232.1	0.391	124.2	0.539	92.1	0.580	87.7
1997	0.592	244.1	0.408	129.4	0.485	83.0	0.568	85.9
1998	0.628	259.1	0.411	130.5	0.486	83.2	0.574	86.8
1999	0.670	276.4	0.437	138.6	0.527	90.1	0.577	87.2
2000	0.709	292.7	0.474	150.5	0.515	88.0	0.586	88.6
2001	0.748	308.6	0.479	152.1	0.516	88.3	0.562	85.0
2002	0.789	325.5	0.482	153.1	0.525	89.8	0.527	79.7
2003	0.823	339.6	0.505	160.1	0.529	90.5	0.525	79.3
2004	0.858	353.9	0.522	165.5	0.522	89.3	0.513	77.5
2005	0.903	372.3	0.540	171.5	0.515	88.1	0.499	75.3
Average Annual Growth Rate								
1981-2005	5.63	5.63	2.27	2.27	-0.53	-0.53	-1.17	-1.17
1981-1989	8.24	8.24	1.02	1.02	1.61	1.61	0.09	0.09
1989-1995	3.21	3.21	1.55	1.55	-2.14	-2.14	-1.93	-1.93
1995-2000	5.14	5.14	4.82	4.82	-2.49	-2.49	-0.22	-0.22
1989-2000	4.08	4.08	3.02	3.02	-2.30	-2.30	-1.16	-1.16
2000-2005	4.93	4.93	2.64	2.64	0.03	0.03	-3.18	-3.18

Source: CSLS IEWB Database: Canada and Provinces, Table 1, Table 2, Table 3 and Table 8.

Table 3: Trends in the Index of Total Consumption per Capita and its Components, Canada, 1981-2005

	Personal Consumption per capita (1997 \$)	Index of Personal Consumption per capita (1981=100)	Square root of Family size	Index of Square root of Family size (1981=1)	Government Expenditure per capita (1997 \$)	Index of Government Expenditure per capita (1981=100)	Unpaid Work per capita (1997 \$)	Index of Unpaid Work per capita (1981=100)	Regrettable Expenditure per capita (1997 \$)	Index of Regrettable Expenditure per capita (1981=100)	Index of Life Expectancy (1981=1)	Index of Life Expectancy (1981=100)	Total Consumption Flows per capita (1997 \$) G=(A*B'+C+D- E)*F	Index of Total Consumption Flows per capita (1981=100) G'
	A	A'	B	B'	C	C'	D	D'	E	E'	F	F'	E)*F	G'
1981	13,653	100.0	1.649	1.000	5,412	100.0	6,099	100.0	1,588	100.0	1.000	100.0	23,577	100.0
1982	13,160	96.4	1.644	0.997	5,494	101.5	5,997	98.3	1,536	96.7	1.003	100.3	23,135	98.1
1983	13,400	98.1	1.636	0.992	5,513	101.9	6,063	99.4	1,591	100.2	1.007	100.7	23,435	99.4
1984	13,868	101.6	1.628	0.988	5,539	102.4	6,272	102.8	1,689	106.4	1.011	101.1	24,073	102.1
1985	14,458	105.9	1.621	0.983	5,771	106.6	6,496	106.5	1,765	111.2	1.011	101.1	24,978	105.9
1986	14,885	109.0	1.615	0.980	5,822	107.6	6,720	110.2	1,758	110.7	1.013	101.3	25,703	109.0
1987	15,301	112.1	1.610	0.977	5,837	107.9	6,981	114.5	1,745	109.9	1.017	101.7	26,462	112.2
1988	15,765	115.5	1.601	0.971	6,039	111.6	7,250	118.9	1,789	112.7	1.019	101.9	27,305	115.8
1989	16,034	117.4	1.600	0.970	6,146	113.6	7,497	122.9	1,783	112.3	1.022	102.2	28,037	118.9
1990	16,000	117.2	1.594	0.967	6,313	116.7	7,877	129.1	1,840	115.9	1.026	102.6	28,558	121.1
1991	15,595	114.2	1.592	0.966	6,479	119.7	8,310	136.2	1,784	112.4	1.029	102.9	28,880	122.5
1992	15,680	114.8	1.587	0.963	6,472	119.6	8,917	146.2	1,831	115.3	1.032	103.2	29,565	125.4
1993	15,784	115.6	1.587	0.963	6,383	117.9	9,072	148.7	1,878	118.3	1.030	103.0	29,646	125.7
1994	16,103	117.9	1.587	0.962	6,267	115.8	9,111	149.4	1,924	121.2	1.032	103.2	29,868	126.7
1995	16,277	119.2	1.582	0.960	6,129	113.3	9,239	151.5	1,962	123.6	1.034	103.4	30,022	127.3
1996	16,512	120.9	1.580	0.959	5,963	110.2	9,372	153.7	2,003	126.2	1.037	103.7	30,240	128.3
1997	17,076	125.1	1.579	0.958	5,810	107.4	9,550	156.6	2,047	128.9	1.040	104.0	30,842	130.8
1998	17,407	127.5	1.576	0.956	5,931	109.6	9,840	161.3	2,097	132.1	1.042	104.2	31,602	134.0
1999	17,932	131.3	1.573	0.954	6,108	112.9	10,010	164.1	2,151	135.5	1.045	104.5	32,474	137.7
2000	18,494	135.4	1.569	0.952	6,275	116.0	10,028	164.4	2,205	138.9	1.050	105.0	33,293	141.2
2001	18,737	137.2	1.566	0.950	6,530	120.7	10,313	169.1	2,260	142.3	1.053	105.3	34,094	144.6
2002	19,225	140.8	1.562	0.947	6,674	123.3	10,580	173.5	2,316	145.9	1.054	105.4	34,950	148.2
2003	19,649	143.9	1.559	0.946	6,848	126.5	10,696	175.4	2,380	149.9	1.057	105.7	35,661	151.3
2004	20,168	147.7	1.555	0.943	7,019	129.7	10,737	176.0	2,448	154.2	1.060	106.0	36,381	154.3
2005	20,845	152.7	1.550	0.940	7,219	133.4	10,804	177.1	2,520	158.8	1.063	106.3	37,309	158.2
Average Annual Growth Rate														
1981-2005	1.78	1.78	-0.26	-0.26	1.21	1.21	2.41	2.41	1.94	1.94	0.25	0.25	1.93	1.93
1981-1989	2.03	2.03	-0.37	-0.37	1.60	1.60	2.61	2.61	1.46	1.46	0.28	0.28	2.19	2.19
1989-1995	0.25	0.25	-0.19	-0.19	-0.05	-0.05	3.54	3.54	1.61	1.61	0.19	0.19	1.15	1.15
1995-2000	2.59	2.59	-0.16	-0.16	0.47	0.47	1.65	1.65	2.36	2.36	0.31	0.31	2.09	2.09
1989-2000	1.31	1.31	-0.18	-0.18	0.19	0.19	2.68	2.68	1.95	1.95	0.24	0.24	1.57	1.57
2000-2005	2.42	2.42	-0.24	-0.24	2.84	2.84	1.50	1.50	2.71	2.71	0.24	0.24	2.30	2.30

Source: CSLS IEWB Database: Canada and Provinces, Table 1 and Appendix Table 2.

Table 4: Trends in the Index of Wealth per Capita and its Components, Canada, 1981-2005

	Total per capita Net Capital Stock (1997 \$)	Index of Total per capita Net Capital Stock (1981=100)	Per Capita R&D Stock (1997 \$)	Index of Per Capita R&D Stock (1981=100)	Per Capita Natural Resources (1997 \$)	Index of Per Capita Natural Resources (1981=100)	Per Capita International Investment Position (1997 \$)	Index of Per Capita International Investment Position (1981=100)	Per Capita Human Capital (1997 \$)	Index of Per Capita Human Capital (1981=100)	Per Capita Greenhouse Gas Cost (1997 \$)	Index of Per Capita Greenhouse Gas Cost (1981=100)	Total per capita Wealth (1997 \$)	Index of Total per capita Wealth (1981=100)
	A	A'	B	B'	C	C'	D	D'	E	E'	F	F'	G=A+B+C+D+E-F	G'
1981	59,817	100.0	1,138	100.0	25,504	100.0	-9,100	100.0	63,687	100.0	602	100.0	140,444	100.0
1982	61,136	102.2	1,218	107.0	22,912	89.8	-8,354	91.8	64,571	101.4	569	94.5	140,913	100.3
1983	62,327	104.2	1,281	112.6	24,388	95.6	-8,281	91.0	65,671	103.1	544	90.4	144,842	103.1
1984	63,485	106.1	1,361	119.6	23,546	92.3	-8,504	93.5	66,352	104.2	559	92.9	145,680	103.7
1985	64,835	108.4	1,448	127.3	21,492	84.3	-9,414	103.5	67,090	105.3	580	96.3	144,872	103.2
1986	66,142	110.6	1,531	134.5	14,858	58.3	-10,001	109.9	67,850	106.5	566	93.9	139,814	99.6
1987	67,525	112.9	1,590	139.7	15,707	61.6	-10,199	112.1	68,609	107.7	582	96.6	142,649	101.6
1988	69,201	115.7	1,665	146.3	15,855	62.2	-9,779	107.5	69,496	109.1	617	102.4	145,822	103.8
1989	70,586	118.0	1,714	150.6	16,169	63.4	-9,879	108.6	69,530	109.2	631	104.8	147,488	105.0
1990	71,809	120.0	1,767	155.3	16,163	63.4	-10,266	112.8	73,313	115.1	591	98.2	152,195	108.4
1991	72,740	121.6	1,817	159.6	12,602	49.4	-10,426	114.6	73,946	116.1	577	95.9	150,101	106.9
1992	73,444	122.8	1,867	164.1	11,473	45.0	-11,337	124.6	74,891	117.6	587	97.5	149,751	106.6
1993	74,027	123.8	1,929	169.5	10,642	41.7	-12,008	132.0	75,993	119.3	582	96.7	150,001	106.8
1994	74,867	125.2	2,010	176.6	11,554	45.3	-12,078	132.7	76,843	120.7	597	99.1	152,599	108.7
1995	75,545	126.3	2,075	182.3	13,088	51.3	-11,382	125.1	77,488	121.7	606	100.6	156,208	111.2
1996	76,291	127.5	2,115	185.8	15,257	59.8	-10,643	117.0	78,156	122.7	615	102.2	160,561	114.3
1997	77,614	129.8	2,164	190.2	16,167	63.4	-9,704	106.6	79,232	124.4	620	103.0	164,853	117.4
1998	79,022	132.1	2,253	197.9	15,238	59.7	-9,977	109.6	79,869	125.4	621	103.2	165,784	118.0
1999	80,613	134.8	2,360	207.4	17,352	68.0	-7,912	86.9	80,751	126.8	629	104.4	172,535	122.8
2000	82,171	137.4	2,508	220.4	23,105	90.6	-6,450	70.9	81,761	128.4	645	107.0	182,451	129.9
2001	83,587	139.7	2,686	236.0	21,364	83.8	-6,146	67.5	82,856	130.1	631	104.7	183,716	130.8
2002	84,854	141.9	2,816	247.4	19,980	78.3	-6,119	67.2	83,677	131.4	630	104.6	184,579	131.4
2003	86,572	144.7	2,912	255.9	22,551	88.4	-5,849	64.3	84,902	133.3	642	106.6	190,446	135.6
2004	88,572	148.1	2,996	263.3	23,452	92.0	-4,939	54.3	85,478	134.2	646	107.3	194,913	138.8
2005	90,884	151.9	3,063	269.1	24,240	95.0	-4,471	49.1	86,782	136.3	651	108.1	199,847	142.3
Average Annual Growth Rate														
1981-2005	1.76	1.76	4.21	4.21	-0.21	-0.21	-2.92	-2.92	1.30	1.30	0.32	0.32	1.48	1.48
1981-1989	2.09	2.09	5.25	5.25	-5.54	-5.54	1.03	1.03	1.10	1.10	0.59	0.59	0.61	0.61
1989-1995	1.14	1.14	3.24	3.24	-3.46	-3.46	2.39	2.39	1.82	1.82	-0.68	-0.68	0.96	0.96
1995-2000	1.70	1.70	3.87	3.87	12.04	12.04	-10.74	-10.74	1.08	1.08	1.25	1.25	3.15	3.15
1989-2000	1.39	1.39	3.52	3.52	3.30	3.30	-3.80	-3.80	1.48	1.48	0.19	0.19	1.95	1.95
2000-2005	2.04	2.04	4.08	4.08	0.96	0.96	-7.07	-7.07	1.20	1.20	0.20	0.20	1.84	1.84

Source: CSLS IEWB Database: Canada and Provinces, Table 2.

Table 5: Trends in the Index of Equality and its Components, Canada, 1981-2005

	Gini Coefficient	Index of Gini Coefficient (1981=100)	Poverty Rate	Index of Poverty Rate (1981=100)	Poverty Gap Ratio	Index of Poverty Gap Ratio (1981=100)	Poverty Intensity	Index of Poverty Intensity (1981=100)	Scaled Value of Index of Equality	Index of Equality (1981=100)
	A	A'	B	B'	C	C'	D=B*C*1.89	D'	E	E'
1981	0.297	100.0	13.822	100.0	0.322	100.0	0.084	100.0	0.585	100.0
1982	0.299	100.6	14.124	102.2	0.317	98.2	0.085	100.4	0.579	99.0
1983	0.304	102.5	14.579	105.5	0.307	95.3	0.085	100.5	0.565	96.6
1984	0.310	104.4	14.854	107.5	0.332	103.0	0.093	110.6	0.504	86.2
1985	0.308	103.8	13.978	101.1	0.324	100.5	0.086	101.6	0.551	94.2
1986	0.306	103.0	13.380	96.8	0.313	97.2	0.079	94.1	0.592	101.2
1987	0.304	102.5	13.344	96.5	0.316	98.0	0.080	94.6	0.593	101.4
1988	0.299	100.8	13.077	94.6	0.307	95.2	0.076	90.1	0.626	107.0
1989	0.296	99.7	12.164	88.0	0.305	94.7	0.070	83.3	0.665	113.7
1990	0.297	100.1	13.191	95.4	0.306	95.1	0.076	90.7	0.627	107.3
1991	0.305	102.6	12.924	93.5	0.312	96.9	0.076	90.6	0.610	104.4
1992	0.303	101.9	13.090	94.7	0.312	96.8	0.077	91.7	0.610	104.4
1993	0.304	102.5	13.217	95.6	0.297	92.1	0.074	88.0	0.623	106.6
1994	0.300	101.1	13.021	94.2	0.304	94.2	0.075	88.7	0.629	107.7
1995	0.308	103.7	13.343	96.5	0.316	98.1	0.080	94.7	0.584	99.8
1996	0.311	104.7	13.881	100.4	0.330	102.3	0.087	102.7	0.539	92.1
1997	0.315	106.2	13.676	98.9	0.365	113.2	0.094	112.1	0.485	83.0
1998	0.316	106.2	13.631	98.6	0.365	113.2	0.094	111.6	0.486	83.2
1999	0.314	105.7	13.322	96.4	0.347	107.8	0.087	103.9	0.527	90.1
2000	0.319	107.4	13.446	97.3	0.344	106.9	0.088	104.0	0.515	88.0
2001	0.319	107.5	13.485	97.6	0.342	106.0	0.087	103.4	0.516	88.3
2002	0.320	107.6	13.697	99.1	0.329	102.2	0.085	101.3	0.525	89.8
2003	0.319	107.4	13.696	99.1	0.328	101.7	0.085	100.8	0.529	90.5
2004	0.322	108.4	13.696	99.1	0.328	101.7	0.085	100.8	0.522	89.3
2005	0.325	109.4	13.696	99.1	0.328	101.7	0.085	100.8	0.515	88.1
Average Annual Growth Rate										
1981-2005	0.37	0.37	-0.04	-0.04	0.07	0.07	0.03	0.03	-0.53	-0.53
1981-1989	-0.03	-0.03	-1.58	-1.58	-0.68	-0.68	-2.26	-2.26	1.61	1.61
1989-1995	0.65	0.65	1.55	1.55	0.60	0.60	2.16	2.16	-2.14	-2.14
1995-2000	0.70	0.70	0.15	0.15	1.72	1.72	1.88	1.88	-2.49	-2.49
1989-2000	0.67	0.67	0.92	0.92	1.11	1.11	2.03	2.03	-2.30	-2.30
2000-2005	0.37	0.37	0.37	0.37	-0.98	-0.98	-0.62	-0.62	0.03	0.03

Source: CSLS IEWB Database: Canada and Provinces, Table 3, Appendix Table 17 and Appendix Table 18.

Table 6: Trends in the Index of Security from the Risk Imposed by Unemployment, Canada, 1981-2005

	Unemployment Rate (per cent)	Index of Unemployment Rate (1981=100)	Scaled Unemployment Rate (Scaled value)	Proportion of Unemployed receiving benefits (coverage) (per cent)	Index of Unemployed receiving benefits (1981=100)	Proportion of Earnings replaced by Benefits (per cent)	Index of the Proportion of Earnings replaced by Benefits (1981=100)	Financial Protection for Unemployment	Scaled Financial Protection for Unemployment (Scaled value)	Overall Index of Security from the Risk Imposed by Unemployment (I) (Scaled value)	Overall Index of Security from the Risk Imposed by Unemployment (II) (Scaled value)
	A	A'	A''	B	B'	C	C'	D=B*C	D'	E=A*0.8+D*0.2	F=(A'+D')/2
1981	7.6	100.0	0.728	66.6	100.0	38.4	100.0	0.256	0.277	0.637	0.502
1982	11.0	144.7	0.554	75.9	144.7	38.0	144.7	0.288	0.322	0.507	0.438
1983	12.0	157.9	0.503	74.3	157.9	38.5	157.9	0.286	0.319	0.466	0.411
1984	11.3	148.7	0.538	73.7	148.7	38.4	148.7	0.283	0.315	0.494	0.427
1985	10.6	139.5	0.574	73.6	139.5	39.2	139.5	0.288	0.322	0.524	0.448
1986	9.7	127.6	0.620	75.6	127.6	40.2	127.6	0.304	0.344	0.565	0.482
1987	8.8	115.8	0.666	76.2	115.8	40.6	115.8	0.309	0.351	0.603	0.509
1988	7.8	102.6	0.717	82.6	102.6	41.3	102.6	0.342	0.396	0.653	0.557
1989	7.5	98.7	0.733	83.8	98.7	42.0	98.7	0.352	0.410	0.668	0.571
1990	8.1	106.6	0.702	83.1	106.6	43.5	106.6	0.361	0.423	0.646	0.563
1991	10.3	135.5	0.589	78.2	135.5	44.2	135.5	0.345	0.401	0.552	0.495
1992	11.2	147.4	0.543	71.5	147.4	44.1	147.4	0.316	0.360	0.507	0.452
1993	11.4	150.0	0.533	65.3	150.0	43.9	150.0	0.287	0.320	0.491	0.427
1994	10.4	136.8	0.584	59.1	136.8	42.5	136.8	0.251	0.271	0.522	0.428
1995	9.5	125.0	0.630	52.8	125.0	42.2	125.0	0.223	0.232	0.551	0.431
1996	9.6	126.3	0.625	49.4	126.3	41.8	126.3	0.206	0.209	0.542	0.417
1997	9.1	119.7	0.651	44.1	119.7	40.0	119.7	0.176	0.168	0.554	0.409
1998	8.3	109.2	0.692	45.4	109.2	40.3	109.2	0.183	0.177	0.589	0.434
1999	7.6	100.0	0.728	45.0	100.0	40.7	100.0	0.183	0.177	0.617	0.452
2000	6.8	89.5	0.768	44.9	89.5	40.4	89.5	0.182	0.175	0.650	0.472
2001	7.2	94.7	0.748	44.8	94.7	41.9	94.7	0.188	0.183	0.635	0.465
2002	7.7	101.3	0.722	43.8	101.3	42.3	101.3	0.185	0.180	0.614	0.451
2003	7.6	100.0	0.728	43.8	100.0	42.1	100.0	0.185	0.179	0.618	0.453
2004	7.2	94.7	0.748	43.8	94.7	41.5	94.7	0.182	0.175	0.633	0.462
2005	6.8	89.5	0.768	44.0	89.5	40.6	89.5	0.179	0.171	0.649	0.470
Average Annual Growth Rate											
1981-2005	-0.46	-0.46	0.23	-1.71	-0.46	0.23	-0.46	-1.49	-2.01	0.07	-0.28
1981-1989	-0.17	-0.17	0.09	2.90	-0.17	1.12	-0.17	4.05	5.00	0.59	1.62
1989-1995	4.02	4.02	-2.47	-7.39	4.02	0.10	4.02	-7.30	-9.04	-3.17	-4.58
1995-2000	-6.47	-6.47	4.04	-3.20	-6.47	-0.87	-6.47	-4.04	-5.54	3.36	1.80
1989-2000	-0.89	-0.89	0.43	-5.51	-0.89	-0.34	-0.89	-5.83	-7.46	-0.25	-1.73
2000-2005	0.00	0.00	0.00	-0.41	0.00	0.08	0.00	-0.32	-0.47	-0.02	-0.09

Source: CSLS IEWB Database: Canada and Provinces, Table 4.

Table 7: Trends in the Security from the Risk Imposed by Illness, Canada, 1981-2005

	Private Expenditure on Healthcare (millions of current dollars)	Index of Private Expenditure on Healthcare (1981=100)	Personal Disposable Income (millions of current dollars)	Index of Personal Disposable Income (1981=100)	Proportion of Private Expenditure on Healthcare in Personal Disposable Income (per cent) C=A/B*100	Index of Proportion of Private Expenditure on Healthcare in Personal Disposable Income (1981=100)	Index of Security from the Risk Imposed by Illness (Scaled value)
	A	A'	B	B'	C=A/B*100	D	E
1981	6,334	100.0	238,606	100.0	2.65	100.0	0.794
1982	7,312	115.4	263,452	110.4	2.78	104.6	0.771
1983	7,959	125.6	275,529	115.5	2.89	108.8	0.750
1984	8,786	138.7	299,169	125.4	2.94	110.6	0.741
1985	9,747	153.9	322,989	135.4	3.02	113.7	0.725
1986	10,809	170.6	340,403	142.7	3.18	119.6	0.695
1987	11,734	185.2	362,185	151.8	3.24	122.0	0.683
1988	12,796	202.0	395,217	165.6	3.24	122.0	0.684
1989	14,184	223.9	432,772	181.4	3.28	123.5	0.676
1990	15,577	245.9	457,400	191.7	3.41	128.3	0.652
1991	16,907	266.9	472,509	198.0	3.58	134.8	0.619
1992	18,112	285.9	483,370	202.6	3.75	141.2	0.587
1993	19,578	309.1	494,944	207.4	3.96	149.0	0.547
1994	20,487	323.4	501,678	210.3	4.08	153.8	0.523
1995	21,285	336.0	519,588	217.8	4.10	154.3	0.520
1996	21,820	344.5	527,783	221.2	4.13	155.7	0.513
1997	23,434	370.0	546,166	228.9	4.29	161.6	0.483
1998	24,716	390.2	568,766	238.4	4.35	163.7	0.473
1999	26,918	425.0	596,227	249.9	4.51	170.1	0.441
2000	28,986	457.6	639,567	268.0	4.53	170.7	0.438
2001	32,041	505.8	669,196	280.5	4.79	180.4	0.389
2002	34,884	550.7	693,667	290.7	5.03	189.4	0.343
2003	36,692	579.3	719,553	301.6	5.10	192.1	0.330
2004	39,713	627.0	747,496	313.3	5.31	200.1	0.289
2005	43,173	681.6	777,684	325.9	5.55	209.1	0.244
Average Annual Growth Rate							
1981-2005	8.33	8.33	5.05	5.05	3.12	3.12	-4.80
1981-1989	10.60	10.60	7.73	7.73	2.67	2.67	-2.00
1989-1995	7.00	7.00	3.09	3.09	3.79	3.79	-4.27
1995-2000	6.37	6.37	4.24	4.24	2.04	2.04	-3.41
1989-2000	6.71	6.71	3.61	3.61	2.99	2.99	-3.88
2000-2005	8.29	8.29	3.99	3.99	4.14	4.14	-11.04

Source: CSLS IEWB Database: Canada and Provinces, Table 5 and Appendix Table 24, Appendix Table 25.

Table 8: Trends in the Security from the Risk Imposed by Single-Parent Poverty, Canada, 1981-2005

	Divorce Rate	Index of Divorce Rate	Poverty Rate for lone female families	Index of Poverty Rate for lone female families	Poverty Gap for lone female families	Index of Poverty Gap for lone female families	Risk Imposed by Single-Parent Poverty	Index of Security from the Risk Imposed by Single-Parent Poverty
	(per cent)	(1981=100)	(per cent)	(1981=100)		(1981=100)		(Scaled value)
	A	A'	B	B'	C	C'	D=A*B*C	E
1981	1.116	100.0	66.7	100.0	0.304	100.0	22.603	0.431
1982	1.146	102.7	61.6	92.3	0.298	98.2	21.051	0.471
1983	1.103	98.9	60.4	90.5	0.300	98.7	19.971	0.498
1984	1.037	93.0	59.2	88.7	0.301	99.2	18.505	0.536
1985	0.977	87.5	60.1	90.1	0.309	101.7	18.133	0.546
1986	1.221	109.5	57.7	86.6	0.278	91.5	19.605	0.508
1987	1.475	132.2	55.8	83.7	0.276	90.9	22.736	0.427
1988	1.260	113.0	55.8	83.7	0.270	88.7	18.959	0.524
1989	1.199	107.4	56.6	84.9	0.251	82.5	17.012	0.575
1990	1.144	102.5	54.6	81.8	0.274	90.2	17.099	0.572
1991	1.110	99.5	54.2	81.3	0.266	87.6	16.009	0.600
1992	1.129	101.2	51.8	77.6	0.242	79.8	14.172	0.648
1993	1.109	99.4	49.3	74.0	0.217	71.6	11.895	0.706
1994	1.109	99.4	49.5	74.2	0.218	71.8	11.979	0.704
1995	1.084	97.2	49.6	74.4	0.232	76.4	12.488	0.691
1996	0.992	88.9	52.1	78.1	0.263	86.4	13.557	0.663
1997	0.924	82.8	50.6	75.8	0.294	96.7	13.715	0.659
1998	0.938	84.0	47.9	71.8	0.299	98.3	13.421	0.667
1999	0.953	85.5	44.0	66.0	0.287	94.5	12.045	0.702
2000	0.947	84.9	40.4	60.6	0.290	95.3	11.085	0.727
2001	0.935	83.9	40.6	60.8	0.295	97.2	11.210	0.724
2002	0.915	82.0	48.7	73.0	0.300	98.7	13.345	0.669
2003	0.918	82.3	46.6	69.9	0.303	99.7	12.963	0.679
2004	0.916	82.1	46.6	69.9	0.303	99.7	12.936	0.679
2005	0.914	81.9	46.6	69.9	0.303	99.7	12.912	0.680
Average Annual Growth Rate								
1981-2005	-0.83	-0.83	-1.48	-1.48	-0.01	-0.01	-2.31	
1981-1989	0.90	0.90	-2.03	-2.03	-2.37	-2.37	-3.49	
1989-1995	-1.66	-1.66	-2.17	-2.17	-1.27	-1.27	-5.02	
1995-2000	-2.67	-2.67	-4.01	-4.01	4.52	4.52	-2.35	
1989-2000	-2.12	-2.12	-3.02	-3.02	1.32	1.32	-3.82	
2000-2005	-0.70	-0.70	2.89	2.89	0.91	0.91	3.10	

Source: CSLS IEWB Database: Canada and Provinces, Table 6.

Table 9: Trends in the Security from the Risk Imposed by Poverty in Old Age, Canada, 1981-2005

	Poverty Rate for Elderly Families (per cent)	Index of Poverty Rate for Elderly Families (1981=100)	Poverty Gap Ratio for Elderly Families	Index of Poverty Gap Ratio for Elderly Families (1981=100)	Poverty Intensity for Elderly Families	Index of Poverty Intensity for Elderly Families (1981=100)	Index of Security from the Risk Imposed by Poverty in Old Age (Scaled value)
	A	A'	B	B'	C=A*B*Constant	C'	D
1981	18.7	100.0	0.269	100.0	0.095	100.0	0.600
1982	14.0	74.7	0.212	78.7	0.056	58.8	0.737
1983	13.1	70.1	0.228	84.8	0.056	59.5	0.734
1984	12.2	65.5	0.244	90.9	0.057	59.6	0.734
1985	9.8	52.4	0.270	100.7	0.050	52.8	0.757
1986	9.3	49.5	0.249	92.8	0.044	46.0	0.779
1987	8.4	45.0	0.244	90.9	0.039	40.9	0.796
1988	10.5	55.9	0.226	84.1	0.045	47.0	0.776
1989	9.6	51.3	0.198	73.6	0.036	37.7	0.807
1990	6.8	36.1	0.199	73.9	0.025	26.7	0.843
1991	5.1	27.0	0.180	67.1	0.017	18.2	0.872
1992	4.9	26.4	0.200	74.5	0.019	19.7	0.867
1993	5.4	28.7	0.196	72.8	0.020	20.9	0.863
1994	4.2	22.5	0.202	75.3	0.016	16.9	0.876
1995	3.5	18.6	0.190	70.8	0.013	13.2	0.888
1996	4.9	26.2	0.215	80.1	0.020	21.0	0.863
1997	6.2	33.2	0.223	83.1	0.026	27.6	0.840
1998	6.8	36.3	0.232	86.3	0.030	31.4	0.828
1999	7.3	39.0	0.179	66.5	0.025	25.9	0.846
2000	8.7	46.5	0.209	77.6	0.034	36.1	0.812
2001	8.9	47.4	0.171	63.5	0.029	30.1	0.832
2002	10.3	55.2	0.150	55.9	0.029	30.9	0.830
2003	9.2	49.2	0.172	63.8	0.030	31.4	0.828
2004	9.2	49.2	0.172	63.8	0.030	31.4	0.828
2005	9.2	49.2	0.172	63.8	0.030	31.4	0.828
Average Annual Growth Rate							
1981-2005	-2.91	-2.91	-1.85	-1.85	-4.71	-4.71	1.35
1981-1989	-8.01	-8.01	-3.76	-3.76	-11.47	-11.47	3.78
1989-1995	-15.52	-15.52	-0.65	-0.65	-16.07	-16.07	1.62
1995-2000	20.07	20.07	1.87	1.87	22.31	22.31	-1.78
1989-2000	-0.88	-0.88	0.48	0.48	-0.40	-0.40	0.06
2000-2005	1.12	1.12	-3.83	-3.83	-2.75	-2.75	0.38

Source: CSLS IEWB Database: Canada and Provinces, Table 7.

Note: the constant parameter is 1.89.

Table 10: Weights for Index of Economic Security, Canada, 1981-2005

	% of pop. 15-64 (per cent)	Normalized weight for risk from unemployment	% of pop. at risk of illness (per cent)	Normalized weight for risk from illness	Mothers and children as a % of pop. (per cent)	Normalized weight for risk from single- parent poverty	% of pop. 45-64 (per cent)	Normalized weight for risk from poverty in old age	Total proportion at risk (per cent)
	A	B=A/I	C	D=C/I	E	F=E/I	G	H=G/I	I=A+C+E+G
1981	68.13	0.293	100.00	0.430	45.27	0.195	18.90	0.081	232.30
1982	68.28	0.295	100.00	0.431	44.64	0.193	18.90	0.082	231.82
1983	68.38	0.295	100.00	0.432	44.11	0.191	18.94	0.082	231.42
1984	68.44	0.296	100.00	0.433	43.60	0.189	18.99	0.082	231.02
1985	68.45	0.297	100.00	0.434	43.11	0.187	18.96	0.082	230.52
1986	68.50	0.298	100.00	0.435	42.59	0.185	18.95	0.082	230.05
1987	68.38	0.298	100.00	0.436	41.96	0.183	18.96	0.083	229.30
1988	68.27	0.298	100.00	0.436	41.76	0.182	19.07	0.083	229.10
1989	68.18	0.298	100.00	0.437	41.36	0.181	19.12	0.084	228.66
1990	68.04	0.298	100.00	0.438	41.09	0.180	19.21	0.084	228.33
1991	67.87	0.297	100.00	0.438	40.94	0.179	19.42	0.085	228.23
1992	67.70	0.297	100.00	0.438	40.66	0.178	19.80	0.087	228.16
1993	67.60	0.296	100.00	0.438	40.40	0.177	20.19	0.088	228.19
1994	67.60	0.297	100.00	0.439	39.79	0.175	20.59	0.090	227.97
1995	67.64	0.297	100.00	0.439	39.22	0.172	20.97	0.092	227.83
1996	67.70	0.297	100.00	0.439	38.58	0.169	21.34	0.094	227.62
1997	67.79	0.298	100.00	0.439	38.08	0.167	21.76	0.096	227.64
1998	67.89	0.298	100.00	0.439	37.52	0.165	22.25	0.098	227.66
1999	68.08	0.298	100.00	0.438	37.66	0.165	22.80	0.100	228.54
2000	68.27	0.299	100.00	0.437	36.99	0.162	23.36	0.102	228.63
2001	68.48	0.299	100.00	0.437	36.43	0.159	23.89	0.104	228.80
2002	68.70	0.300	100.00	0.437	35.71	0.156	24.47	0.107	228.88
2003	68.89	0.300	100.00	0.436	35.45	0.155	25.05	0.109	229.40
2004	69.09	0.300	100.00	0.434	35.45	0.154	25.61	0.111	230.15
2005	69.31	0.300	100.00	0.433	35.45	0.154	26.18	0.113	230.94
Average Annual Growth Rate									
1981-2005	0.07	0.10	0.00	0.02	-1.01	-0.99	1.37	1.39	-0.02
1981-1989	0.01	0.21	0.00	0.20	-1.12	-0.93	0.14	0.34	-0.20
1989-1995	-0.13	-0.07	0.00	0.06	-0.88	-0.82	1.55	1.61	-0.06
1995-2000	0.19	0.12	0.00	-0.07	-1.16	-1.23	2.18	2.11	0.07
1989-2000	0.01	0.01	0.00	0.00	-1.01	-1.01	1.84	1.84	0.00
2000-2005	0.30	0.10	0.00	-0.20	-0.85	-1.05	2.30	2.10	0.20

Source: CSLS IEWB Database: Canada and Provinces, Appendix Table 29.

Table 11: Trends in the Contributions of Four Components to the Overall Index of Economic Security, Canada, 1981-2005

	Security from Risk Imposed by Unem-employment	Contribution of the Security from Risk Imposed by Unem- employment	Security from Risk Imposed by Illness	Contribution of the Security from Risk Imposed by Illness	Security from Risk Imposed by Single-Parent Poverty	Contribution of the Security from Risk Imposed by Single- Parent Poverty	Security from Risk Imposed by Poverty in Old Age	Contribution of the Security from Risk Imposed by Poverty in Old Age	Overall Index of Economic Security
	A	A'	B	B'	C	C'	D	D'	E=A'+B'+C'+D'
1981	0.637	0.187	0.794	0.342	0.431	0.084	0.600	0.049	0.662
1982	0.507	0.149	0.771	0.333	0.471	0.091	0.737	0.060	0.633
1983	0.466	0.138	0.750	0.324	0.498	0.095	0.734	0.060	0.617
1984	0.494	0.146	0.741	0.321	0.536	0.101	0.734	0.060	0.628
1985	0.524	0.156	0.725	0.315	0.546	0.102	0.757	0.062	0.634
1986	0.565	0.168	0.695	0.302	0.508	0.094	0.779	0.064	0.629
1987	0.603	0.180	0.683	0.298	0.427	0.078	0.796	0.066	0.622
1988	0.653	0.195	0.684	0.298	0.524	0.096	0.776	0.065	0.653
1989	0.668	0.199	0.676	0.296	0.575	0.104	0.807	0.067	0.666
1990	0.646	0.193	0.652	0.285	0.572	0.103	0.843	0.071	0.652
1991	0.552	0.164	0.619	0.271	0.600	0.108	0.872	0.074	0.617
1992	0.507	0.150	0.587	0.257	0.648	0.115	0.867	0.075	0.598
1993	0.491	0.145	0.547	0.240	0.706	0.125	0.863	0.076	0.586
1994	0.522	0.155	0.523	0.229	0.704	0.123	0.876	0.079	0.586
1995	0.551	0.164	0.520	0.228	0.691	0.119	0.888	0.082	0.593
1996	0.542	0.161	0.513	0.225	0.663	0.112	0.863	0.081	0.580
1997	0.554	0.165	0.483	0.212	0.659	0.110	0.840	0.080	0.568
1998	0.589	0.176	0.473	0.208	0.667	0.110	0.828	0.081	0.574
1999	0.617	0.184	0.441	0.193	0.702	0.116	0.846	0.084	0.577
2000	0.650	0.194	0.438	0.191	0.727	0.118	0.812	0.083	0.586
2001	0.635	0.190	0.389	0.170	0.724	0.115	0.832	0.087	0.562
2002	0.614	0.184	0.343	0.150	0.669	0.104	0.830	0.089	0.527
2003	0.618	0.186	0.330	0.144	0.679	0.105	0.828	0.090	0.525
2004	0.633	0.190	0.289	0.126	0.679	0.105	0.828	0.092	0.513
2005	0.649	0.195	0.244	0.106	0.680	0.104	0.828	0.094	0.499
Average Annual Growth Rate									
1981-2005	0.07	0.17	-4.80	-4.78	1.92	0.91	1.35	2.76	-1.17
1981-1989	0.59	0.80	-2.00	-1.80	3.67	2.71	3.78	4.14	0.09
1989-1995	-3.17	-3.24	-4.27	-4.21	3.12	2.27	1.62	3.26	-1.93
1995-2000	3.36	3.48	-3.41	-3.47	1.02	-0.22	-1.78	0.30	-0.22
1989-2000	-0.25	-0.24	-3.88	-3.88	2.16	1.13	0.06	1.90	-1.16
2000-2005	-0.02	0.08	-11.04	-11.22	-1.33	-2.36	0.38	2.49	-3.18

Source: Table 6-Table 10.

Note: Contribution of the components to the overall index of economic security were calculated by the scaled index of each component multiply its nominal weight in the total population, which is available in Table 10.

