

May 2012



151 Slater Street, Suite 710  
Ottawa, Ontario K1P 5H3  
613-233-8891, Fax 613-233-8250  
[csls@csls.ca](mailto:csls@csls.ca)

CENTRE FOR THE  
STUDY OF LIVING  
STANDARDS

## MEASURING ECONOMIC INSECURITY IN RICH AND POOR NATIONS

CSLS Research Report 2012-03

Lars Osberg and Andrew Sharpe

May 22, 2012

Centre for the Study of Living Standards

# Measuring Economic Insecurity in Rich and Poor Nations

---

## Abstract

In both rich and poor nations, worrying about future economic dangers subtracts from the present well-being of individuals, which is why affluent societies have complex systems of private insurance and public social protection to reduce the costs of economic hazards. However, the citizens of poor nations (i.e. most of humanity) typically find both private insurance and public social protection to be largely unavailable – their lives are both poorer and riskier. How can one measure economic insecurity in these very different contexts?

Because rich nations have better, more easily available data, Section 2 illustrates the measurement of economic insecurity and its importance to trends in relative economic well-being in four affluent OECD countries between 1980 and 2009. Section 3 then uses available data to estimate the level of economic security in approximately 2008 in a comparable way in a broader sample of countries. To reflect better the reality of developing countries, it: (1) includes the volatility of food production in the risk of loss of livelihood; (2) adjusts the risks of health care costs to consider the proportion of household spending on food (which is non-discretionary, and large in poor countries) and (3) adds adult male mortality to the risk of divorce in calculation of the risk of single parent poverty. Section 4 discusses some implications and concludes.

# Measuring Economic Insecurity in Rich and Poor Nations

---

## Table of Contents

Introduction.....	5
I. The Human Rights and Social Welfare Function Perspectives.....	6
II. Measuring Economic Insecurity in Affluent Nations .....	9
A. The IEWB Index of Security in the Event of Unemployment.....	9
B. The IEWB Index of Security in the Event of Sickness .....	10
C. The IEWB Index of Security in the Event of Widowhood .....	11
D. The IEWB Index of Security in the Event of Old Age .....	12
E. Aggregation of the Components of Economic Security into the IEWB Index of Economic Security .....	13
III. Measuring Economic Insecurity in Poor and Rich countries.....	15
A. Unemployment and the Risk of Loss of Livelihood.....	16
B. Security in the Event of Sickness.....	17
C. Security in the event of “Widowhood” .....	20
D. Security in the Event of Old Age.....	22
E. The IEWB Index of Economic Security.....	23
IV. Discussion and Conclusions .....	26
References.....	28
Appendix A: Weights Used for the Index of Economic Security.....	33

# Measuring Economic Insecurity in Rich and Poor Nations

---

## List of Charts and Tables

### Charts

Chart 1: Security from Unemployment.....	10
Chart 2: Security from Financial Cost of Illness .....	11
Chart 3: Security from Single Parent Poverty.....	12
Chart 4: Security from Poverty in Old Age .....	13
Chart 5: The IEWB Index of Economic Security .....	14
Chart 6: IEWB Index of Economic Security .....	23
Chart 7: IEWB Index of Economic Security - Sensitivity to Alternative Weights .....	24

### Tables

Table 1: Security from Loss of Livelihood.....	19
Table 2: IEWB Index of Security from Health Care Costs .....	19
Table 3: IEWB Index of Security from Widowhood.....	21
Table 4: IEWB Index of Security in Old Age.....	22
Table 5: Estimates of the Components in IEWB Index of Economic Security (Brazil, Canada, Denmark, Germany, South Africa, United States, Vietnam .....	23
Table 6: Estimates of the Components Index in Economic Security (Ranked by Overall Index) .....	24

# Measuring Economic Insecurity in Rich and Poor Nations<sup>1</sup>

---

## Introduction

In analyzing economic well-being, economics has tended to start from the utility of present consumption, but the present is really a very short period – just the moving split-second of direct experience which separates the remembered past from the anticipated future. Nevertheless, many people spend part of their present time worrying about their economic future – which subtracts from their enjoyment of the present. This paper thinks of such worries as “economic insecurity” – specifically defined as: “the anxiety produced by a lack of economic safety – i.e. by an inability to obtain protection against subjectively significant potential economic losses” (Osberg, 1998:17).

In both rich and poor nations, fears about what the economic future may hold are important for two main reasons – they subtract from individuals’ enjoyment of the present and they influence behaviours. To avoid anxieties about the future, people may acquire insurance (either public or private), choose less risky options in their decision making or build formal or informal networks of social support – but the options of public or private insurance are much less commonly available in poor countries and the risks which individuals face differ greatly across nations. Because economic insecurity is important everywhere for predicting both behaviour and well-being, but the risks and choices which individuals face differ greatly in different societies, this paper addresses the question: how can one compare the level of economic security in the very different social context of rich and poor countries?

Section 1 of this paper starts with a brief conceptual discussion of why one might want to measure economic security at the national level. However, to actually make comparisons between nations one needs comparable data, and data availability differs greatly across countries. Because rich nations have better, more easily available data, Section 2 illustrates the measurement of trends in economic insecurity in four affluent OECD countries between 1980 and 2009. In poor countries, similar time series do not exist but micro-data from representative surveys in specific years are sometimes available. Osberg (2010) used such micro-data to estimate the level of economic security in the very different context of a very poor nation (Tanzania in 2006-07). Widening the set of comparisons, as in this paper, requires the use of currently available secondary data sources – Section 3 discusses the compromises that this entails and provides some tentative comparisons. Section 4 concludes.

---

<sup>1</sup> Lars Osberg is a Professor in the Department of Economics at Dalhousie University; Andrew Sharpe is the Executive Director of the Centre for the Study of Living Standards. This report is a revised version of a paper presented at the International Conference of Economic Insecurity (November 22-23, 2011, OECD Conference Centre, Paris, France). Brendon Andrews of the Centre for the Study of Living Standards did outstanding work on this project and deserves much of the credit for the calculations. The comments of Marco Mira d’Ercole (OECD) are much appreciated. Errors remaining are our sole responsibility.

## I. The Human Rights and Social Welfare Function Perspectives

What do we mean by Economic (In)Security?<sup>2</sup> Why might this concept be useful – and what does that mean for how a social index to measure economic security should be constructed?

Individuals do not need to build social indices to assist their own private decision making, since they know their particular personal situation already. The main reason to construct a social index is to assist collective decisions, and a motivating assumption might be the idea that the objective of public policy is to maximize ‘Social Welfare’. In economics,<sup>3</sup> the ‘Social Welfare Function’ is usually thought of as a weighted sum of individual utilities, in which the relative size of the weights attached to the utilities of low-income individuals reflect the degree of inequality aversion in society. In this conception, individuals have diminishing marginal utility of consumption and are therefore risk-averse. Risk-averse individuals will be worse off if they have to face uninsured economic hazards, but complete insurance protection may create incentive and moral hazard problems. As a result, neither complete coverage nor complete risk exposure is optimal. The crucial issue for public policy then is *how much* risk and loss mitigation is desirable. Measuring the actual current level of insecurity or vulnerability or social protection in a society may thus be useful as an intermediate step in the design of public policy to maximize social welfare.

Another motivation starts from the perception that "Necessitous men are not free men."<sup>4</sup> – that individuals must actually be in possession of their basic human rights if they are to exercise meaningful free will in their economic and political choices. Because individuals’ choices must be meaningfully free if policy makers are to have an ethical basis for wanting to maximize the (weighted) sum of individual utilities resulting from individual outcomes, the achievement of basic human rights for all citizens can be seen as the primary responsibility of government. Achieving this objective enables autonomous individuals to pursue freely their personal conceptions of the good life, and maximization of the social welfare to be obtained from production and consumption is then the secondary objective of public policy.<sup>5</sup>

In this ‘human rights’ perspective, national constitutions, international human rights covenants and the systems of jurisprudence they establish are what give concrete meaning to the

---

<sup>2</sup> In affluent countries, the ‘economic insecurity’, ‘social protection’ and ‘social security’ literatures have used different terms to discuss a similar set of issues while in poor nations the ‘vulnerability’ concept has framed similar discussions – but these literatures rarely cross-reference each other. For example, in their otherwise excellent survey paper on social protection, Norton, Conway and Foster (2001) do not reference Dercon’s work on vulnerability – and Dercon’s 2005 survey of vulnerability similarly omits reference to them. Both papers ignore Osberg’s (1998) paper on economic insecurity and are in turn not referenced in Bossert and D’Ambrosio’s 2009 paper on that subject.

<sup>3</sup> Equal weights for all individual utilities (the original utilitarian position) and a linear utility function implies zero aversion to income inequality while maximal weight on the lowest utility is the strict Rawls criterion. The textbook presentation of Lambert (1989 – especially Chapters 4 and 5) is particularly clear.

<sup>4</sup> Roosevelt, (1936). See also Sen (1999).

<sup>5</sup> Rawls (1982:162), for example, states clearly that his ‘maxi-min’ social welfare criterion is a secondary criterion of ‘social justice’ – i.e. subject to the prior attainment of the first principle of ‘equal basic liberties for all’.

term ‘human rights’. Specifically, for present purposes, Article 22 of the United Nations’ Universal Declaration of Human Rights stated in 1948 that: "Everyone, as a member of society, has a right to social security". Article 25 of the United Nations’ Universal Declaration of Human Rights declared:

Everyone has the right to a standard of living adequate for the health and well being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.<sup>6</sup>

The human rights approach identifies specific primary goods (in Article 25, “food, clothing, housing and medical care”) – which are meant to be available to all citizens, in sufficient amounts (by local social standards) – and specific contingencies (“security in the event of unemployment, sickness, disability, widowhood, old age”). A crucially important dimension of this tradition is the fact that the texts articulating human rights are legal documents produced by legislatures and constitutional conventions which can claim democratic legitimacy. Because lists of human rights claim to reflect universal societal preferences, it is not good enough for a single author to simply assert a right. The credibility of distinctions between what is considered to be, and what is not considered to be, a human right depends heavily on the legitimacy of the process by which rights are articulated. Because academic books or articles are the product of individual authors, they cannot, whatever their wisdom, credibly claim “Process Legitimacy” – except by making specific reference to human rights treaties.<sup>7</sup>

This ‘human rights’ conception implies that the anxieties of all citizens should be considered.<sup>8</sup> It also implies that it is desirable for the measurement of economic insecurity to articulate the link between empirical measures and specific human rights. Consistent with this perspective, the ‘named risks’ with which Osberg (1998) operationalized the general concept of ‘economic insecurity’ were explicitly drawn from the contingencies specified in Article 25 of the UN Universal Declaration of Human Rights.

---

<sup>6</sup> Today, the gender specificity of the language of 1948 will strike many people as very odd – but Article 2 makes it clear that all rights are to be guaranteed to male and female persons equally.

<sup>7</sup> The “Economic Security Index” of Jacob Hacker and his Yale colleagues (see <http://economicsecurityindex.org/>) emphasizes the hazards of experiencing major income decline or large medical expenses in the U.S. without the buffer of adequate financial wealth – but there is no mention of human rights documents. The ILO’s Socio-Economic Security (SES) Programme comes closer to the human rights discourse, affirming that “Access to an adequate level of social protection is...a basic right of all individuals” (see <http://www.ilo.org/public/english/protection/secsoc/>). Nevertheless, the issues identified by the ILO go well beyond those specifically identified as human rights in international covenants – see <http://www.ilo.org/public/english/protection/ses/download/docs/definition.pdf>

<sup>8</sup> The “Vulnerability” discourse, by contrast, typically concerns only those individuals with a risk of poverty or destitution, defining “vulnerability” as “the existence and the extent of a *threat* of poverty and destitution; the danger that a socially unacceptable level of wellbeing may materialise.” Dercon (2005a); Naudé et al (2008).

“Economic (In)Security” has most often been studied in the context of affluent nations.<sup>9</sup> Arguably, however, poor countries are the places where accurate measurement and analysis of insecurity matters more. In these countries, individuals face many dangers (e.g. famine due to drought, or illnesses such as cholera) which have largely disappeared in rich nations. Moreover, individuals are repeatedly faced with potentially extreme outcomes from hazards that might elsewhere be thought ‘minor’.<sup>10</sup> Because they lack access to the welfare state social programs or private sector risk-pooling financial mechanisms which might cushion the impact of such hazards, these dangers can be expected to have much larger impacts on behaviour and on well-being than in affluent countries.

---

<sup>9</sup> Dominitz and Manski (1997), Scheve-Slaughter (2004) and Anderson and Gascon (2007) define economic insecurity as “an individual’s perception of the risk of economic misfortune” . The United Nations Department of Economic and Social Affairs (2008, p.vi) define it as “the exposure of individuals, communities and countries to adverse events, and from their inability to cope with and recover from the costly consequences of those events.” Bossert and d’Ambrosio (2009:1) chose the definition: “economic insecurity is the anxiety produced by the exposure to adverse events and the inability to recover from them.”

<sup>10</sup> For example, in a poor country, the daily task of splitting firewood carries the repeated risk of putting an axe in the foot. Poor medical care may then imply, if an infected wound produces lameness, permanently lower lifetime earnings. Both the risk and its possible consequences are far smaller in affluent nations.



## II. Measuring Economic Insecurity in Affluent Nations

As in Osberg and Sharpe (2002, 2005, 2009), we follow a “named risks” approach and examine four key objective economic risks named in Article 25, (i.e. unemployment, sickness, widowhood and old age) assuming that changes in the subjective level of anxiety about a lack of economic safety are proportionate to changes in objective risk.<sup>11</sup> Because our index of economic security is one of the four components of the Index of Economic Well-Being (IEWB) we refer to it as “The IEWB Index of Economic Security”.

### A. The IEWB Index of Security in the Event of Unemployment

The IEWB index of security in the event of unemployment is conceptually driven by the probability of unemployment and the size of financial loss it can produce, as indicated by the unemployment rate and the average proportion of earnings that are replaced by unemployment benefits.<sup>12</sup> Nevertheless, the economics literature on happiness and well-being in affluent nations has consistently found that the large negative impact of unemployment is stronger than the mitigating effect of unemployment compensation (see Di Tella, MacCulloch and Oswald 2003:819). The psychological and social impacts of unemployment (Jahoda, 1979) doubtless explain much of this – and there is also the impact of job loss on the long run wages of displaced workers (Ruhm, 1991; Chan and Stevens, 1999). Hence, the employment security index gives unemployment a weight of four-fifths, compared to a weight of one-fifth for the financial protection variable. The relative ease of obtaining a job provides employment security by enabling attractive options (in a low unemployment labour market) in the event of unemployment. A higher probability of obtaining unemployment benefits, or higher benefits, provides security by compensating individuals for their earnings loss.<sup>13</sup> Both the unemployment rate and the financial protection index are scaled, using the linear scaling procedure (see Sharpe and Salzman, 2003)<sup>14</sup> and then weighted to produce the overall index of security from the risk imposed by unemployment.

Chart 1 presents estimates for Canada, Denmark, Germany and the United States, for the period 1980-2009. The general methodological point to underline is that “security from

---

<sup>11</sup> Green et al (2000:1) report that “subjective employment insecurity tracks the unemployment rate,” while Dominitz and Manski (1997) report that “Expectations and realizations of health insurance coverage and of job loss tend to match up closely” for the United States.

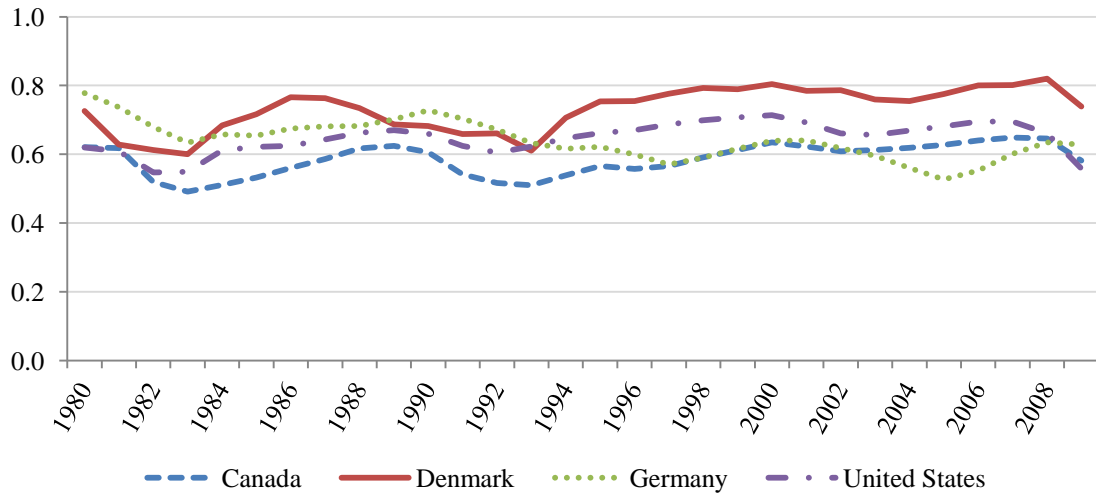
<sup>12</sup> This paper uses the average percentage of lost earnings replaced by unemployment benefits (i.e. the “Gross Replacement Rate”) for two earnings levels and three family situations. Source: OECD, Tax-Benefit Models [http://www.oecd.org/document/3/0,3343,en\\_2649\\_34637\\_39617987\\_1\\_1\\_1\\_1.00.html](http://www.oecd.org/document/3/0,3343,en_2649_34637_39617987_1_1_1_1.00.html)

<sup>13</sup> Making the unemployment rate and the financial protection rate additive in weighted impacts, not multiplicative, dampens the evolution of the risk to unemployment component over time. This also implicitly assumes no interdependence of the marginal impacts of changing unemployment or unemployment benefits.

<sup>14</sup> In Linear Scaling, where  $r_{\max}$  is the highest risk jurisdiction and  $r_{\min}$  is the lowest, a specific *risk* ( $r_i$ ) is translated into an index of *security* by calculating  $I_i = (1.05 * r_{\max} - r_i) / [1.1 * (r_{\max} - r_{\min})]$ . This procedure essentially asks, for a given observed range, where a country sits compared to the worst observed outcome. In this section, 10%, is added to the observed range to allow for possible change at the extremes.

unemployment” is a compound probability, which mingles the chances of the hazard (unemployment) and the probability of benefitting from insurance against that hazard. Assessment of trends depends partly on the relative weight ascribed to each component. However, in all four countries examined, the decline in security from unemployment since the Great Recession of 2008 is notable.

Chart 1: Security from Unemployment



## B. The IEWB Index of Security in the Event of Sickness

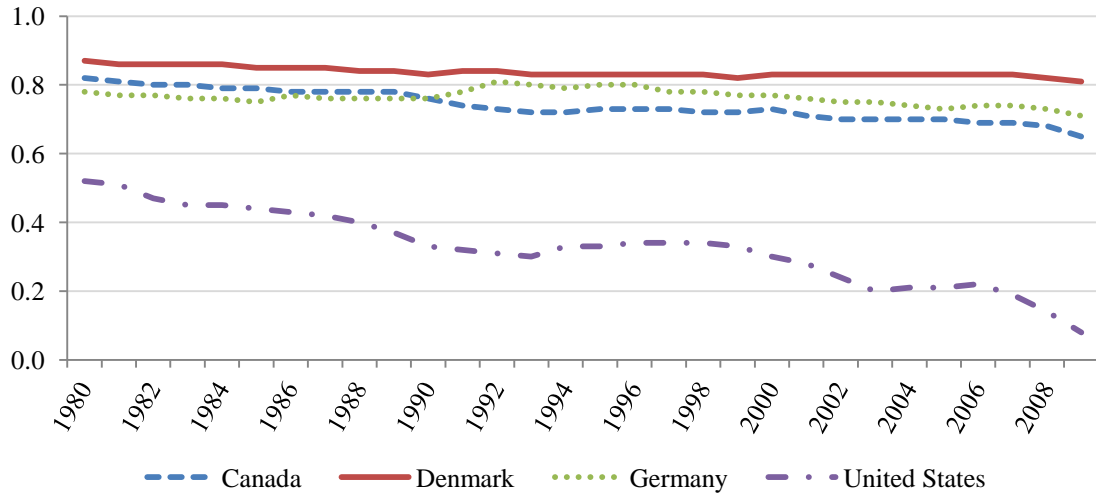
Our measure of this component focusses on the financial risk imposed by illness, which in international comparisons is dominated by the coverage of public health care. In all the affluent countries, except the United States, publicly financed health insurance programs pay for medically necessary health care – but with different mixes of public and private services, and varying combinations of co-pay<sup>15</sup> for services rendered.<sup>16</sup>

The IEWB uses the percentage of disposable household income spent by households on health care services that is not reimbursed by public or private health insurance as its indicator of the financial risk raised by illness. Chart 2 illustrates how Canada, Germany and Denmark are clustered in a fairly narrow band, and also illustrates the much lower level of, and larger deterioration in, security in the event of illness in the United States, relative to other countries.

<sup>15</sup> E.g. in Canada, unlisted medical services (such as acupuncture), dental care and most drugs taken outside hospitals are not covered. These costs have been rising rapidly, which implies increased risk exposure.

<sup>16</sup> We assume that unreimbursed medical expenses are proportionate to unreimbursed medically necessary medical expenses, as a fraction of disposable income. See Osberg, 2009, Appendix 1, which also discusses the risk of medical bankruptcy.

Chart 2: Security from Financial Cost of Illness



### C. The IEWB Index of Security in the Event of Widowhood

Illness, unemployment or old age happen directly to individuals, but the hazard of “widowhood” arises because the underlying event (death) happens to somebody else – i.e. the husband with whom the widow had linked her economic fortunes by marriage. When the UN Universal Declaration of Human Rights was drafted in 1948, the implicit social context in signatory nations was the nuclear family in an industrial economy – specifically, the “male bread-winner model” of a single earner household with a non-employed spouse. At that time, the percentage of single parent families was relatively high (partly as a result of the casualties of World War II) and “widowhood” was therefore the primary way in which women and children lost access to male earnings.

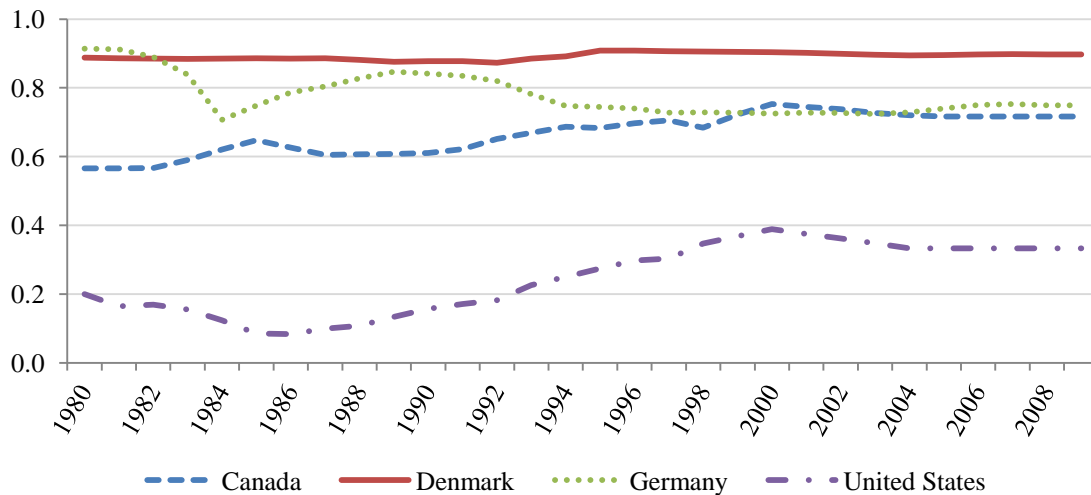
Since 1948, the two-earner family has become the social norm in affluent countries, and divorce and separation have become the primary origins of single parent families. However, it is still often true in affluent nations that many women and children are “one man away from poverty.” The prevalence of poverty among single parent families is much higher than in the general population, and family break-up is an important determinant of entry into poverty.<sup>17</sup> We model the risk of becoming poor because of family breakup in an ‘expected value’ sense – i.e. we multiply (the probability of divorce) \* (the poverty rate among single female parent families) \* (the average poverty gap ratio among single female parent families).<sup>18</sup> The product of these last two variables is proportional to the intensity of poverty. Poverty is defined in relative terms as the proportion of households below one half median equivalent income.

<sup>17</sup> We do not attempt to model the emotional impacts and transactions costs (e.g. in legal bills) of divorce – or the social benefits of the termination of abusive or dysfunctional relationships.

<sup>18</sup> This effectively ignores single male parents. In Canada, males comprise only about 17 per cent of the single parent population, and have substantially smaller increases in poverty probability following separation.

The divorce rate per thousand was 2.2 in Canada in 2007, not so different from Germany or Denmark (2.3), but less than the United States (4.2). The United States was also an outlier in the poverty gap for single parent families at 42.7 per cent, compared to a range for other nations from to 32.3 per cent in Germany. Canada (43.4 per cent) and the United States (43.7 per cent) were quite similar in the rate of poverty for single female headed households with children – well above Germany (34.9 per cent) and very different from Denmark. Hence, the United States is an outlier on all dimensions, Because other countries were sometimes relatively high, and sometimes relatively low, on particular dimensions, Chart 3 shows the product of these influences to be clustered in a fairly narrow band. Empirically, the moral is that similar aggregate levels of risk and insecurity can be the result of offsetting differences in component hazards – but an outlier on all components is sure to be an outlier in the aggregate.

Chart 3: Security from Single Parent Poverty



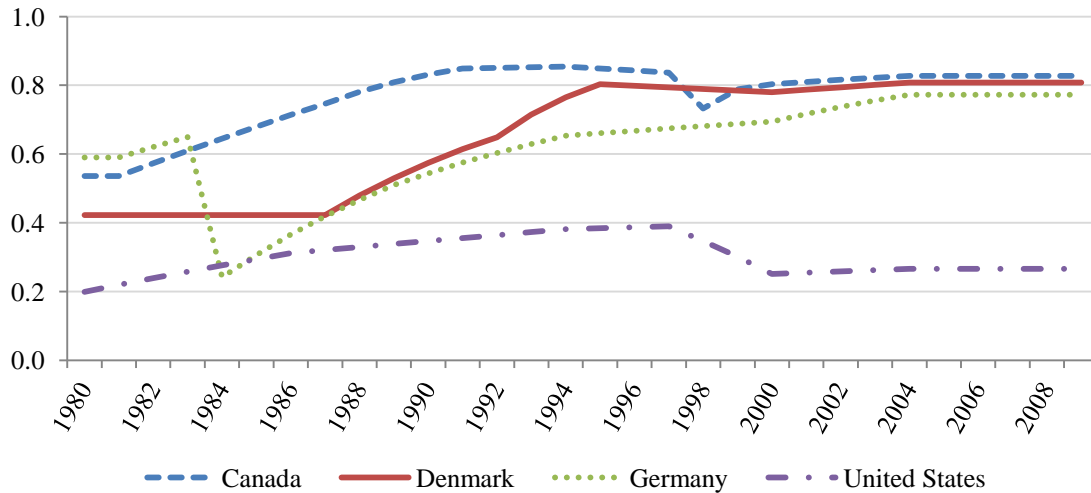
#### D. The IEWB Index of Security in the Event of Old Age

In our perspective, feelings of economic insecurity about old age are driven by fears of a worst case outcome, and the likelihood of that worst case outcome. Hence, the fourth component of the IEWB economic security domain is the risk of poverty in old age, which is proxied by the poverty intensity (= poverty rate \* average poverty gap ratio) experienced by households headed by a person 65 and over.

Chart 4 indicates fluctuations over time in poverty intensity among senior citizens – e.g. in Germany – which sometimes seem to follow a “saw-tooth” type of pattern. In affluent countries there is often a “spike” in the incomes of the elderly at the minimum income base defined by the structure of the country’s old age security system, a spike which is often quite close to the ‘one half median income’ poverty line. Since the elderly, in all countries, often do not have significant private pensions or income from capital, in affluent nations many depend entirely on public pensions. For the elderly poor, the incomes from pension entitlements are

often much the same, because they are determined by the same formula for the minimum income base defined by pension legislation. When the resulting spike in the income distribution is close to the poverty line, and the formula is only occasionally adjusted for inflation, ‘saw-tooth’ fluctuations in the elderly poverty rate result.

Chart 4: Security from Poverty in Old Age



## E. Aggregation of the Components of Economic Security into the IEWB Index of Economic Security

To aggregate the scaled values of the four components of the economic security domain into an overall index, we must choose weights for each component risk. Equal weighting implicitly assumes that all the named risks are of equal importance, although the number of people facing each type of risk may not be equal. Arguably, it is more ethically defensible to weight each risk by the relative size of the populations affected.

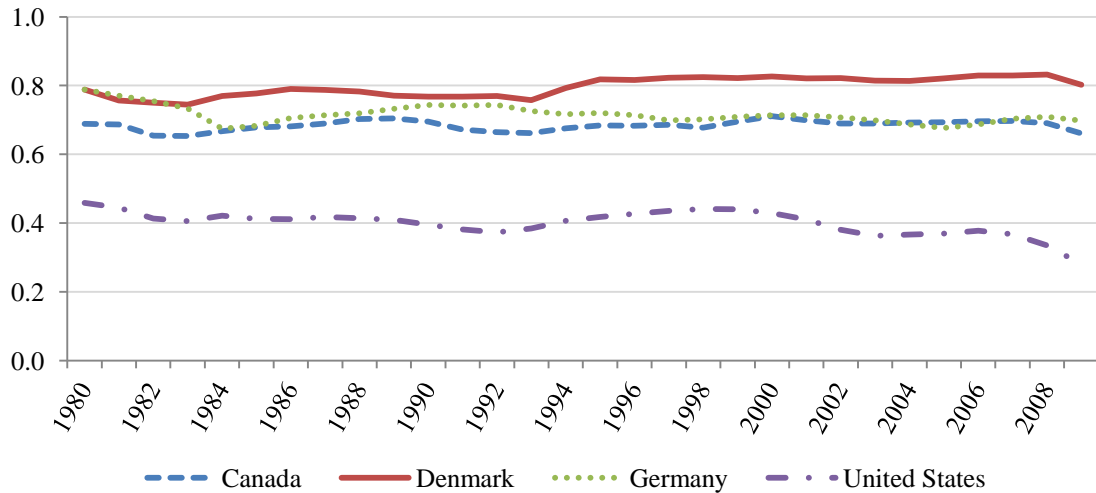
We assume that the population of working age (i.e. 15 to 64 years) either is, or could be, employed and is thus affected directly by the risk of unemployment, but for illness risk directly affects everyone. We assume that all married women and their children who are under 18 are at risk of single parent poverty. We suppose that individuals only really start to worry about poverty in old age as their retirement years start to near, and therefore assume that the population 45-64 are most at risk. The component specific weights are generated by adding up all the proportions of the population subject to the four risks and then standardizing to unity by dividing each proportion of the population affected by the risk by that total.

The contribution of each component is the product of its scaled value and weight. Because the demographic structure of each country differs, and shifts over time, the proportion of the population affected by the different risks, and hence the weights, varies by country and over time. This cross-country and over-time variation implies that changes in the aggregate index of economic security may be partly driven by shifting population weights rather than by changes

in the underlying components of economic security – an issue which becomes more acute, the greater the differences across countries in demographic structure and in demographic change.

Chart 5 presents the summary IEWB Index of Economic Security for all four countries. The immediately obvious finding is the much lower level, and downward trend, of economic security in the United States – well before the advent of the current recession. During 1980 to 2009, the U. S. was not an outlier in security from the risks of unemployment, but in all the other three dimensions of economic security it falls well short of the comparator nations.

**Chart 5: The IEWB Index of Economic Security**



### III. Measuring Economic Insecurity in Poor and Rich countries

Poor countries typically do not have long time series of reliable micro-data statistics of the type which Section 2 has relied on – but most of humanity lives in such places. If comparisons are central to the interpretation of measurement, and if discussions of economic insecurity across jurisdictions or over time rely on comparable measurements, is it possible to meaningfully compare the economic insecurity of the world’s population – i.e. including those who live in poor countries?

Osberg (2010) used Tanzania as a case study of the possibility of calculation of a meaningful index of economic insecurity for people who live in a very different context than that of Section 2. In that study, international data bases (e.g. from the World Health Organization, the FAO and the World Bank) were used in conjunction with the 2007 Household Budget Survey of the Tanzania’s National Bureau of Statistics – henceforth HBS2007).<sup>19</sup> As Section 2 noted, the risk and depth of poverty for specific demographic groups (single parents and the elderly) was explicitly part of two of the four calculations of ‘economic security’ (i.e. security in the event of old age and ‘widowhood’). Osberg (2010) had the micro-data from the HBS2007, and only had to calculate these dimensions of poverty for one country – but making similar micro-data calculations for a large number of countries requires resources that are not available to us, so compromises were inescapable.<sup>20</sup>

For the calculations of insecurity which depend on a measure of poverty, the vast differences in living standards around the world imply that one must also ask if the poverty line should be drawn: [1] relative to local standards of living or [2] with reference to a minimum absolute standard of living. In section 2, the poverty line criterion used was explicitly relative – one half the median equivalent income of individuals in each country. Within affluent OECD nations, this criterion is commonly used in the literature on poverty comparisons because of its conceptual consistency across countries and its concordance with generally accepted local norms of poverty within countries.<sup>21</sup> In a global context, advocates of an ‘absolute’ poverty line methodology argue that the poverty line, as an objective criterion of deprivation for all humans, should be set at the cost of the bundle of commodities necessary for subsistence – for example, the \$2 per day per person, measured in PPP terms, standard used in the Millennium Development Goals. This criterion implies that in very poor countries, a large percentage of the population are considered deprived,<sup>22</sup> but in rich countries the poverty rate is miniscule.

<sup>19</sup>HBS2007 randomly sampled 10,466 households. Expenditures, and other data, were recorded for 28 days.

<sup>20</sup> The data underlying all the calculations of Section 2 are available, as an Excel file, for these four countries and for ten other OECD nations, at [www.csls.ca](http://www.csls.ca) – see <http://www.csls.ca/iwbtool.asp>. The data used in this section are available at [www.csls.ca/data/eirpn2011.asp](http://www.csls.ca/data/eirpn2011.asp)

<sup>21</sup> For an extended discussion see Osberg (2007).

<sup>22</sup> In Tanzania, the \$1.25 PPP US per day poverty line implied 89% were poor in 2000 and a further 8% had incomes between \$1.25 and \$2 per day – see WDI Online series SI.POV.DDAY and SI.POV.2DAY.

Osberg and Xu (2008) argued that the rapid pace of economic development in some countries (e.g. China) in recent years is making the absolute \$1 or \$2 per day criteria increasingly irrelevant to their new circumstances. They noted that the technical uncertainties involved in PPP calculations, and their enormous impact on poverty measurements, are a strong argument for the use of a relative income criterion of the poverty line, measured in own currency units—on the grounds of transparency and robustness. Furthermore, when Adam Smith was writing, roughly 230 years ago, about how the “established rules of decency” depended on prevailing standards of consumption, the absolute living standard of Europe was not very different from the average income in some less developed countries – e.g. India – in recent years, so poverty lines always have been relative to prevailing income norms.

Given these differing perspectives, this paper adopts the compromise position between poverty line relativism and absolutism that if  $Z_A$  is the \$2 per day PPP “absolute” poverty line, and  $Z_R$  a “relative” poverty line, the poverty line  $Z$  in a given country should be  $Z = \max[Z_A, Z_R]$ . Absolute poverty matters hugely in very poor countries but several developing countries (such as China) are clearly moving rapidly from the group of nations in which absolute poverty might be the key concern to the group of countries in which relative poverty is the socially relevant issue for poverty line definition. Because calculation of the median household income requires access to micro-data on the distribution of income, estimates of mean income are much more commonly available than estimates of median income. Hence, we adopt “one half the mean income” as our “relative” poverty line criterion ( $Z_R$ ).

## A. Unemployment and the Risk of Loss of Livelihood

In 1948, the signatories of the UN’s Universal Declaration of Human Rights were, overwhelmingly, industrialised nations, in which the vast majority of the population depended on money earnings from formal employment in the labour market to enable household consumption. In this context, unemployment insurance systems may mitigate the hazard of being unable to exchange labour time for commodities when paid employment is unavailable, but the reason for writing “security in the event of unemployment” as a basic human right in Article 25 was the fact for most people, involuntary unemployment and loss of livelihood were synonymous.

In poor countries, there is often no social welfare or unemployment insurance system to support the jobless. Most people there depend either on farming their own land or on working in the informal sector of petty trading and self-employment.<sup>23</sup> Growth and urbanization are changing the relative proportions of these sectors, but they are likely to remain important for the foreseeable future. This suggests that a plausible index of risk of loss of livelihood in the global

---

<sup>23</sup> In Tanzania, for example, 89.6% of people over age 15 were economically active in 2006. The National Bureau of Statistics adds those with marginal attachment to employment and those available for work to those “without work and looking for work” and gets an estimate of 11% unemployment. Three quarters of the employed (75.1%) worked in agriculture (67.2% worked on their own farm while 7.9% were unpaid family helpers). The non-agricultural sector was split between informal and household employment (13.2%) and paid jobs with government, parastatal and other private employers (11.6%). See United Republic of Tanzania, 2007: Pages 7, 19, 30, 36, 38, 56;



context might be a population weighted average of the risks of loss of livelihood associated with agricultural and non-agricultural employment.

If the objective is to measure insecurity as a component of economic well-being, one can phrase the issue as constructing an “Index of Livelihood Security”.

$$\begin{aligned} \text{IEWB Index of Livelihood Security} &= P_E * I_E + P_A * I_A \\ &= (\% \text{ of employed population in non-agricultural employment}) * (\text{Index of Security from Unemployment}) \\ &+ (\% \text{ of employed population in agriculture}) * (\text{Index of Agricultural Livelihood Security}) \end{aligned}$$

Section 2a of this paper reported calculations of the first component – the IEWB Index of Security from Unemployment. In affluent nations, generalizing its implications to the entire population of working age can be defended as a reasonable approximation since agricultural employment is a very small percentage of the population. This is not reasonable in the poor countries of this world.

Columns A and C of Table 1 report the unemployment rates and unemployment benefit replacement rates which were used to calculate the Index of Security from Unemployment in Section 2. Columns B, D and E use Linear Scaling to calculate the IEWB Index of Security from Unemployment.<sup>24</sup> Column F shows the very different percentages of the workforce who are directly affected by variability in the agricultural sector.

As a ‘reduced form’ estimate of the riskiness of agriculture, Column G calculates the percentage deviation from ten year trend of the gross per capita Food Production Index of the FAO, which is the basis of Column H, the sub-index of Agricultural Variability. Column I reports the population weighted average of Columns E and H. For the affluent countries whose agricultural labour force is around 2% of the total, adding consideration of agricultural variability clearly makes little difference – but for many other countries, it is central.

## B. Security in the Event of Sickness

In many nations, the health care system combines for-profit and non-profit private facilities, with a residual care role for an overburdened public network of dispensaries and hospitals, within which individuals must often pay for some services and pharmaceuticals. Health care costs are thus a significant worry to people in poor nations. As Gertler, Levine and

---

<sup>24</sup> See footnote 14 above for benefit calculations. Note that since Table 1 includes the maximum and minimum nations from the larger list of nations enumerated in Table 6, the range is the same. However, although it is straightforward to use the unemployment rates as reported by the ILO for different countries, an important area for further research is the international comparability of reported unemployment rates. Even among very similar nations which ostensibly use the same ‘search’ criterion (e.g. the U.S. and Canada), the fine details of survey design and administration have been shown (e.g. by Riddell, 2005) to be important. In developing countries which lack any financial supports for the unemployed, the ‘search’ criterion is also less clearly appropriate, so one can question the meaning of, for example, the 2.4% unemployment rate reported for Vietnam in Table 1.

Moretti (2003) noted: “Families in developing countries face enormous financial risks from major illness both in terms of the cost of medical care and the loss in income associated with reduced labor supply and productivity.” When asked what their “main problem” was during the past year, the most common (16.7%) response of Tanzanian respondents in 2007 was “sickness,” while 11.4% mentioned “shortage of drinking water” and 11.2% said “cost of medical treatment.”<sup>25</sup>

This paper focuses on the financial risks which health care costs impose on households, and the economic insecurity that this implies. Columns B and C of Table 2 are included to show the variation across countries in the percentage of health care costs that are borne by the private sector and the percentage of those costs that are not reimbursed by private insurance, respectively. Column D puts those two elements together and compares the risk exposure of households to a given level of health care spending (i.e. Out of pocket costs as a percentage of the total spent) and Column F expresses it as a fraction of GDP per capita.

Out of pocket spending as a percentage of GDP per capita is conceptually similar to the index of health care cost risk used in the IEWB, and the relative magnitudes of that measure of risk, across the affluent nations of Table 1, align with the ranking of those nations in Chart 3 of Section 2. However, in rich countries there is much more discretionary income available to be spent on health care, if necessary. The IEWB has used out of pocket health care costs as an indicator of health care cost risk, and Section 2 expressed it as a percentage of disposable household income,<sup>26</sup> because the impact of health care costs on well-being depends on ability to pay. But what we would really like to measure is out of pocket costs as a percentage of household discretionary income, since even if illness strikes a household, food must be found, even before medicines. In the rich countries considered in Section 2, spending on food is a small enough share of total household consumption that its neglect can perhaps be justified. But in poor countries ability to pay is really better measured by income net of food expenditures than by total income, so direct comparison of the share of out of pocket health care costs in total income arguably distorts the impact of health care cost risk.

The FAO, as part of its mandate to monitor world food security, maintains a comparative database of the share of food consumption expenditure in total household expenditure (Column G of Table 2).<sup>27</sup> This is used to calculate out of pocket health care costs as a percentage of GDP per capita after adjustment for food expenditure share (Column H). Column I is the linearly scaled value corresponding to Column H.

---

<sup>25</sup> REPOA’s “Views of the People Survey” of 2007 randomly selected a primary respondent from among adults over age 25 within 4,987 sampled households. Calculations by author.

<sup>26</sup> This variable is not available in the World Development Indicators data set – hence the use of GDP per capita.

<sup>27</sup> <http://www.fao.org/economic/ess/food-security-statistics/en/>

**Table 1: Security from Loss of Livelihood**

	Unemployment Rate	Scaled Unemployment Rate	Replacement Rate (%)	Scaled GRR	Index of Security from Unemployment	Per Cent Agricultural Employment	FAO Food Production Index Per Cent Deviation from Trend, 2007	Index of Agricultural Deviation	Index of Livelihood Security
	A	B = Scaled from A	C	D = Scaled from C	$E = (0.8*B) + (0.2*D)$	F	G	H = Scaled from G	$I = \frac{H*(F/100)+E*(1-(F/100))}{1}$
Brazil	8.3	0.765	0.0	0.000	0.612	19.3	43.2	0.405	0.572
Canada	8.3	0.765	11.7	0.222	0.656	2.5	4.4	0.628	0.656
Denmark	6	0.830	47.7	0.909	0.846	2.7	-0.3	0.654	0.841
Germany	7.7	0.782	23.7	0.451	0.716	2.2	0.0	0.652	0.714
Mexico	5.2	0.853	0.0	0.000	0.682	13.5	16.0	0.561	0.666
South Africa	23.8	0.326	0.0	0.000	0.261	8.8	2.8	0.637	0.294
United States	9.3	0.737	13.6	0.258	0.641	1.4	1.0	0.647	0.641
Vietnam	2.4	0.932	0.0	0.000	0.746	57.9	36.5	0.444	0.571

Column A: KILMnet, International Labour Organization: Key Indicators of the Labour Market, 7th Edition, <<http://kilm.ilo.org/kilmnet/>>, 2008 or most recent year

Column C: The OECD summary measure of benefit entitlements, 1961-2007, <[www.oecd.org/dataoecd/52/9/42625593.xls](http://www.oecd.org/dataoecd/52/9/42625593.xls)>, 2007

Column F: KILMnet, International Labour Organization: Key Indicators of the Labour Market, 7th Edition, <<http://kilm.ilo.org/kilmnet/>>, 2004 or most recent year

Column G: FAOSTAT, Food and Agriculture Organization of the UN, <<http://faostat.fao.org/site/612/default.aspx#ancor>>, 2007

**Table 2: IEWB Index of Security from Health Care Costs**

	Per Capita Total Health Spending (\$)	Private Expenditures on Health as % Total on Health (2008)	Out of Pocket Expenditure on Health as % Private Expenditure on Health	Out of Pocket on Health as % Total on Health Spending	GDP per capita PPP US Current \$	Out of Pocket on Health as % GDP per Capita	Food as % of Household Spending	Out of Pocket Health Costs as % of Income After Food Spending	Index of Security from Cost of Illness
	A	B	C	$D = 100*(B/100)*(C/100)$	E	$F = (A*(D/100)/E)*100$	G	$H = (F/(100-G))*100$	I = Scaled from H
Brazil	875	56.0	57.1	32.0	10,416	2.69	20.8	3.389	0.808
Canada	3,867	30.5	50.9	15.5	39,459	1.52	18.0	1.855	0.895
Denmark	3,814	15.3	89.0	13.6	38,525	1.35	17.1	1.626	0.908
Germany	3,922	22.0	53.9	11.9	37,352	1.25	20.0	1.556	0.912
Mexico	837	53.1	92.9	49.3	14,186	2.91	34.0	4.410	0.750
South Africa	843	60.3	29.7	17.9	10,280	1.47	25.0	1.958	0.889
United States	7,164	52.2	24.4	12.7	47,131	1.94	13.6	2.242	0.873
Vietnam	201	61.5	90.2	55.5	2,791	3.99	50.1	8.004	0.546

Column A, B, C, E: World Health Statistics 2011; footnotes below are replicated from the source: [http://www.who.int/whosis/whostat/EN\\_WHS2011\\_Full.pdf](http://www.who.int/whosis/whostat/EN_WHS2011_Full.pdf), 2010

Column G: "Share (%) of food consumption expenditure in total consumption expenditure." Food and Agriculture Organization of the UN, <[www.fao.org/fileadmin/templates/ess/.../food.../ShareOfFood\\_en.xls](http://www.fao.org/fileadmin/templates/ess/.../food.../ShareOfFood_en.xls)>2000 or most recent

### C. Security in the event of “Widowhood”

Security in the event of “Widowhood” is the most clearly gendered component of the IEWB. In all countries, most people live in families because although market income is typically received by individuals, it is pooled within households for consumption purposes. Hence, the economic well-being of most people, around the world, depends on both the risk of interruption of individual income flows (e.g. from loss of livelihood – see (a) above) and on the risk of shocks to the composition of the household. The gendered dimension of this risk arises from the fact that males typically have higher individual earnings than females, but women usually retain responsibility for the care of children, even if male earnings are no longer available to the family. When the Universal Declaration of Human Rights included ‘security in the event of widowhood’ as a basic human right in 1948, it recognized a right that was especially relevant for women – protection against the risk of poverty of women and children due to loss of male earnings.

The UN Universal Declaration arguably interpreted the risk of widowhood within the implicit framework of the nuclear family. Although, even in affluent countries, voluntary sharing within the extended family in hard times is common, one must distinguish between voluntary acts of generosity and the enforceable rights of the recipient and obligations of the donor. It is only in countries governed by sharia law that the teachings of the Koran on the duty of men to care for their brother’s widows and nieces and nephews may have legal force. Because our objective is to measure economic security, certainty of access to resources is the crucial issue, and ‘generosity’ is by its nature uncertain. Although in many poor countries, social norms of sharing within the extended family are strong, these norms are not rights and cannot be legally enforced (and relatives are also often poor themselves). Hence the focus here is on the nuclear family and enforceable claims to resources.

The methodology of Section 2 was based on the assumption that in affluent nations, the main source of the risk of loss of male earnings is now divorce/abandonment, rather than male death. In poor countries, male mortality is often more important than family breakup – e.g. South Africa (reported divorce rate at 0.68, male mortality of 11.58). In sub-Saharan Africa,<sup>28</sup> HIV/Aids has rightly been emphasized as a cause, but other sources of mortality are also very significant (e.g. traffic or industrial accidents, malaria, etc.). However, in some rich countries,

---

<sup>28</sup> Because Tanzania does not report internationally comparable divorce rate data, this paper does not report the Index of Economic Security for Tanzania. To estimate Tanzanian divorce rates, Osberg (2010) calculated the probability (annualized and averaged) of divorce and no remarriage within 5 years, for 5 year intervals ages 24 to 44 based on survey self-reports using HBS2007 micro-data. In Tanzania, HBS2007 micro-data indicate that 22.2 % of Tanzanian households with a head under 60 were female-headed in 2007. Of those, about three in ten (29.2%) were headed by widows and slightly fewer (27.3%) by (self-reported) separated or divorced women. It was not feasible to do similar calculations for all countries – but it would probably be desirable, since the official reports of divorce rates are so low in some countries (e.g. Peru 0.09 or Guatemala 0.15) as to be scarcely credible. A more likely possibility is that in some countries family breakup produces single parent families who never manage to legally formalize separation and thus remain statistically invisible.

male mortality is far from negligible as a cause of loss of male earnings compared to divorce (e.g. the U.S. with a divorce rate of 3.7 and male mortality of 2.98).

In Table 3, the annualized risk of adult male mortality (Column B) is therefore added to the probability of divorce (Column A) to produce the annual hazard of loss of male earnings due to either death or divorce (Column C). One lesson of Table 3 is the non-negligible continuing importance of male mortality in the hazard of loss of male earnings, even in affluent nations – in concentrating solely on divorce, the calculations of Section 2 may have prematurely ignored the level, and the international variation, in traditional widowhood.

Column H of Table 3 calculates the risk of single parent poverty as the product of the Poverty Rate (Column F), the average poverty gap (Column G) and the annual hazard of loss of male earnings (Column C). To calculate an index of security, rather than a risk of poverty, Column I uses Linear Scaling to report the relative level of security from the compound hazard.

**Table 3: IEWB Index of Security from Widowhood**

	Annual Divorce Rate per 1,000	Annualized Adult Male Mortality Rate	Annual Hazard (Divorce + Widowhood)	Poverty Rate	Poverty Gap	Risk of Single Parent Poverty	Index of Security from Widowhood
	A	B	C = A + B	F	G	H = C*F*G/1000	I = Scaled from H
Brazil	0.87	4.56	5.43	42.89	44.49	10.35	0.77
Canada	2.21	1.93	4.14	19.76	31.45	2.58	0.94
Denmark	2.68	2.38	5.05	7.44	30.13	1.13	0.97
Germany	2.34	2.20	4.54	14.85	25.01	1.69	0.96
Mexico	0.77	3.49	4.26	39.84	41.21	6.99	0.84
South Africa	0.68	11.58	12.26	61.57	53.37	40.27	0.09
United States	3.70	2.98	6.68	27.07	36.99	6.69	0.85
Vietnam	0.21	3.84	4.06	25.08	22.17	2.26	0.95

Column A: UN Demographic Yearbook 2008 (Table 25)

<http://unstats.un.org/unsd/demographic/products/dyb/dyb2008.htm>

UN World Marriage Data 2008

[http://www.un.org/esa/population/publications/WMD2008/WP\\_WMD\\_2008/Data.html](http://www.un.org/esa/population/publications/WMD2008/WP_WMD_2008/Data.html)

Column B: A: World Health Statistics 2011 [http://www.who.int/whosis/whostat/EN\\_WHS2011\\_Full.pdf](http://www.who.int/whosis/whostat/EN_WHS2011_Full.pdf)

Column F,G: Primary Source: "PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the

World Bank": <http://iresearch.worldbank.org/PovcalNet/povcalSvy.html>

Secondary Source: LIS Datacenter (for Canada, Denmark, Germany and United States)

Index of Security from Widowhood Scaled from H

It is not surprising that South Africa's very high male mortality rate means a high risk of loss of male earnings – in this respect it is sadly representative of much of sub-Saharan Africa. However, one lesson from the Tanzanian micro data is that in poor countries, male earnings can often be very low. In this case, loss/departure of the husband may make much less of a difference to the probability and depth of female poverty than in rich countries. An unfortunate

consequence of being unable to access micro-data for each country is that we cannot calculate the difference in poverty rate and depth associated with a woman being married and living in a male-headed household or being the head of household for all these eight countries.<sup>29</sup> To maintain consistency, this paper therefore applies the national rate and depth of poverty (using one half mean income as the poverty line).

#### D. Security in the Event of Old Age

Around the world, countries differ hugely in percentage elderly. Among the eight countries examined here, the ‘medium variant’ population projection of the UN estimates that in 2035 those over 65 will comprise 8.2% of the South African population but 30.6% of the German, with Mexico (13.8%), Vietnam (15.4%), Brazil (15.7%), the U.S. (20.6%), Denmark (23.6%), and Canada (24.1%) in between.

In countries without public pension systems, where many of the elderly live with their extended families, and continue to work like younger cohorts (because they have to, in order to survive), there may not actually be much difference between poverty among the elderly and poverty among younger cohorts.<sup>30</sup> Table 4 calculates the ‘Index of Security in the Event of Old Age’ using the national average rate and depth of poverty.

**Table 4: IEWB Index of Security in Old Age**

	Poverty Rate	Poverty Gap	Poverty Intensity	Index of Security in Old Age
	A	B	$C = A*B/100$	D = Scaled from C
Brazil	42.9	44.5	19.080	0.470
Canada	19.8	31.5	6.215	0.827
Denmark	7.4	30.1	2.243	0.938
Germany	14.9	25.0	3.714	0.897
Mexico	39.8	41.2	16.420	0.544
South Africa	61.6	53.4	32.860	0.087
United States	27.1	37.0	10.015	0.722
Vietnam	25.1	22.2	5.560	0.846

Column C, D: Primary Source: "PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the World Bank": <http://iresearch.worldbank.org/PovcalNet/povcalSvy.html>  
 Secondary Source: LIS Datacenter (Canada, Denmark, Germany and United States)

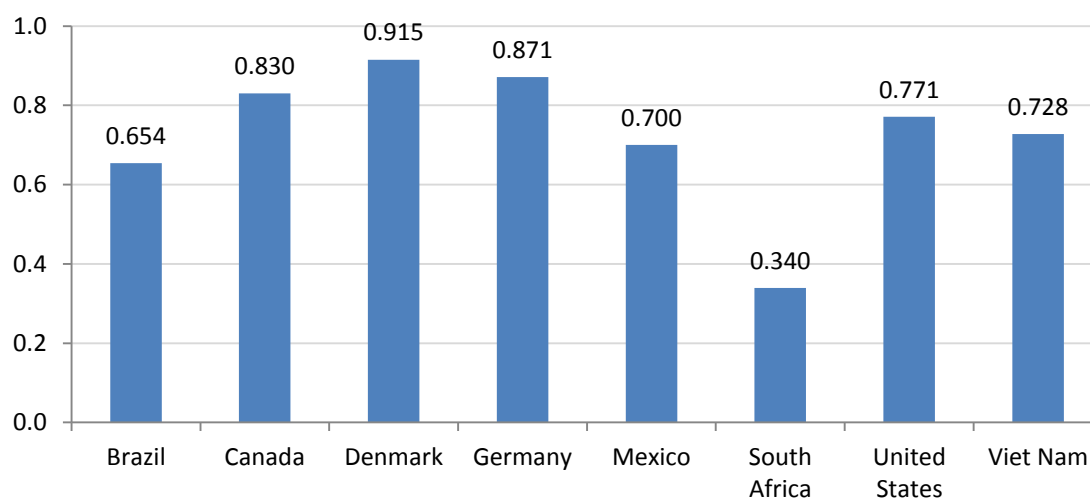
<sup>29</sup> Cross-sectional micro-data like the HBS2007 do not enable distinction between extended family households which have expanded to accommodate widows and their children. Hence, there may be a selection bias effect in such data if it is women with better earnings options who choose not to move in with relatives after the loss/departure of their spouse.

<sup>30</sup> See Mboghoina and Osberg (2010a, 2010b) for discussion of the Tanzanian example.

## E. The IEWB Index of Economic Security

Chart 6 and Table 5 put the pieces together, weighting the four sub-indices of economic security equally. As discussed earlier, weighting by relevant population size has some conceptual advantages but implies that comparative rankings may be driven by population weightings rather than by differences in component measures of security – so Chart 6 emphasizes equal weightings, while Chart 7 illustrates the sensitivity of the aggregate index to population weightings.

**Chart 6: IEWB Index of Economic Security – Equal Weights**



**Table 5: Estimates of the Components in IEWB Index of Economic Security (Brazil, Canada, Denmark, Germany, South Africa, United States, Vietnam)**

	Overall Index Equal Weights	Index of Livelihood Security	Index of Security from Cost of Illness	Index of Security from Widowhood	Index of Security in Old Age
Brazil	0.654	0.572	0.808	0.766	0.470
Canada	0.830	0.656	0.895	0.942	0.827
Denmark	0.915	0.841	0.908	0.974	0.938
Germany	0.871	0.714	0.912	0.962	0.897
Mexico	0.700	0.666	0.750	0.842	0.544
South Africa	0.340	0.294	0.889	0.089	0.087
United States	0.771	0.641	0.873	0.849	0.722
Vietnam	0.728	0.571	0.546	0.949	0.846

Chart 7 examines the potential impact of alternative population weightings: (1) equal weighting; (2) U.S. population weights and (3) Tanzania weights (See Appendix A). Because the demography of South Africa, with a relatively high birth rate, differs from the other comparator nations, changing population weights matters for South Africa, while having relatively small impacts for other nations.

Chart 7: IEWB Index of Economic Security – Sensitivity to Alternative Weights

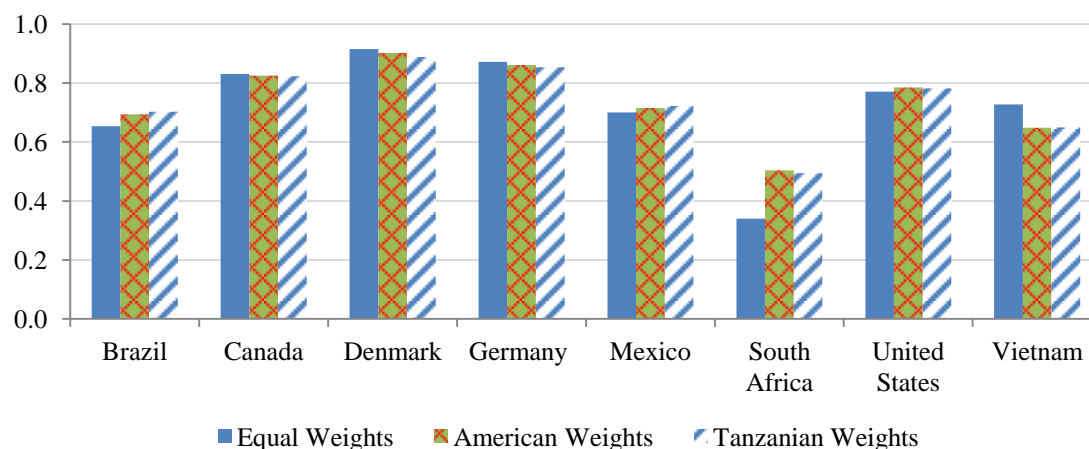


Table 6 expands the list of comparator nations to the 70 on which we have data for all four dimensions.

Table 6: Estimates of the Components Index in Economic Security (Ranked by Overall Index)

	Overall Index Equal Weights	Index of Livelihood Security	Index of Security from Cost of Illness	Index of Security from Widowhood	Index of Security in Old Age
Denmark	0.915	0.841	0.908	0.974	0.938
Norway	0.913	0.851	0.911	0.973	0.916
Netherlands	0.909	0.848	0.963	0.960	0.864
Luxembourg	0.894	0.785	0.941	0.962	0.888
Austria	0.890	0.804	0.888	0.964	0.904
Sweden	0.887	0.735	0.899	0.979	0.934
Finland	0.884	0.739	0.888	0.973	0.937
Czech Republic	0.880	0.674	0.909	0.980	0.959
France	0.877	0.742	0.940	0.952	0.875
Belgium	0.871	0.772	0.847	0.960	0.906
Germany	0.871	0.714	0.912	0.962	0.897
Slovenia	0.863	0.670	0.919	0.966	0.897
Ireland	0.856	0.681	0.908	0.967	0.866
Switzerland	0.849	0.826	0.754	0.953	0.863
Romania	0.846	0.659	0.893	0.942	0.890
Italy	0.840	0.743	0.872	0.956	0.788
Republic of Korea	0.839	0.749	0.832	0.937	0.838
Croatia	0.839	0.605	0.899	0.959	0.890
United Kingdom	0.836	0.684	0.929	0.928	0.802
Hungary	0.834	0.629	0.862	0.940	0.903
Poland	0.831	0.655	0.869	0.934	0.867
Canada	0.830	0.656	0.895	0.942	0.827
Slovakia	0.815	0.565	0.855	0.945	0.895
Iraq	0.810	0.456	0.915	0.948	0.921
Syrian Arab Republic	0.803	0.616	0.785	0.949	0.863



	Overall Index Equal Weights	Index of Livelihood Security	Index of Security from Cost of Illness	Index of Security from Widowhood	Index of Security in Old Age
Thailand	0.802	0.672	0.933	0.851	0.753
Algeria	0.802	0.527	0.914	0.941	0.827
Kazakhstan	0.801	0.528	0.836	0.920	0.918
Spain	0.790	0.536	0.851	0.939	0.834
Sri Lanka	0.787	0.625	0.812	0.901	0.808
Ukraine	0.783	0.587	0.661	0.942	0.942
Estonia	0.775	0.492	0.902	0.886	0.821
Egypt	0.773	0.574	0.616	0.969	0.932
United States of America	0.771	0.641	0.873	0.849	0.722
Trinidad and Tobago	0.771	0.671	0.845	0.841	0.726
Greece	0.771	0.640	0.657	0.952	0.834
Turkey	0.763	0.557	0.907	0.891	0.695
Israel	0.760	0.627	0.841	0.904	0.667
Jordan	0.753	0.510	0.743	0.916	0.842
Peru	0.744	0.623	0.885	0.901	0.568
Russian Federation	0.739	0.605	0.882	0.720	0.748
Venezuela	0.737	0.626	0.787	0.861	0.674
Tunisia	0.734	0.487	0.777	0.922	0.750
Iran	0.730	0.546	0.660	0.922	0.791
Vietnam	0.728	0.571	0.546	0.949	0.846
Jamaica	0.722	0.565	0.787	0.859	0.679
Latvia	0.722	0.418	0.780	0.869	0.822
Yemen	0.720	0.520	0.586	0.932	0.841
Bulgaria	0.716	0.661	0.716	0.825	0.664
Azerbaijan	0.716	0.491	0.544	0.945	0.884
Maldives	0.713	0.502	0.690	0.865	0.795
Panama	0.712	0.665	0.859	0.831	0.494
Chile	0.709	0.577	0.800	0.902	0.559
Ecuador	0.708	0.636	0.780	0.833	0.583
Costa Rica	0.705	0.671	0.775	0.819	0.557
Mexico	0.700	0.666	0.750	0.842	0.544
Ethiopia	0.697	0.514	0.809	0.732	0.733
Armenia	0.692	0.120	0.764	0.961	0.924
Republic of Moldova	0.681	0.674	0.399	0.840	0.811
Saint Lucia	0.672	0.412	0.696	0.881	0.699
Albania	0.672	0.530	0.290	0.968	0.898
Dominican Republic	0.671	0.483	0.786	0.818	0.599
Colombia	0.657	0.536	0.964	0.791	0.337
Brazil	0.654	0.572	0.808	0.766	0.470
The former Yugoslav Republic of Macedonia	0.631	0.165	0.757	0.906	0.694
Guatemala	0.621	0.687	0.663	0.704	0.429
Nicaragua	0.621	0.590	0.574	0.791	0.527
Georgia	0.564	0.592	0.088	0.861	0.714
Botswana	0.491	0.480	0.952	0.190	0.344
South Africa	0.340	0.294	0.889	0.089	0.087

## IV. Discussion and Conclusions

Economic insecurity affects well-being both directly and indirectly. Using panel micro-data, Smith *et al.* (2009:15) have been able to show that “economic insecurity is an important cause of weight gain” for US males between 1988 and 2000. Motivated in part by the observation that the upward trend in US obesity and its sharply higher level compared to other affluent nations matches the differentials in economic security presented in Section 2, Offer *et al.* (2010) have used the IEWB Index of Economic Security to argue that:

Economic insecurity and ‘market-liberal’ welfare regime are the two strongest determinants of the level of obesity. The gap between the survey with the lowest level of security and the one with the highest level is 26 percentage points of obesity prevalence. Of this, economic insecurity would explain about 12 percentage points, and market liberalism another 5, i.e. together about two thirds.

Over-eating may be a feasible (if dysfunctional) individual response to economic insecurity in high income countries where food is abundant, but low incomes mean that this option is not as readily available to most people in poor countries. Das *et al.* (2009: 44) instead argue that micro-data from Indonesia, India and Tonga “provide strong evidence that while income and poverty are not strong predictors of mental health status, shocks that affect the economic or demographic nature of the household may have significant influences on mental health.” For both the rich and the poor nations of this world, insecurity has both direct and indirect impacts on well-being – but the pathways of impact depend heavily on economic context.

Section 1 of this paper began with a discussion of the human rights perspective’s emphasis on the anxieties of all citizens about the hazards of uninsurable economic dangers. Section 2 presented a summary of recent trends in economic security in a sample of affluent nations to illustrate the methodology of calculation of the IEWB Index of Economic Security. Section 3 then used a broader sample of countries to examine the changes needed to make this measure relevant to the very different context of poor nations.

Economic insecurity is driven by fears of the uninsured hazards of an uncertain future – something which is conceptually distinct from (although correlated with) current poverty and current inequality. Somebody who knows their future real income with certainty is not ‘insecure’ about that future income (e.g. a retiree with a secure, inflation-indexed pension). If their known future income is miserably low, then they will be certain of their level of future poverty. However, a poor pensioner at least knows that their real income in future will not be worse than the present, so they can plan their future, and they are better off than people who are both currently poor *and* anxious about the possibility of losing the little they now have.

As well, economic insecurity is distinct from economic inequality. Although, *ex post*, the total variation in individual incomes can perhaps be decomposed into the sum of permanent and transitory variations in income, insecurity is about *ex ante* anxieties. Job loss and unemployment will, for example, certainly contribute to short-term volatility in income, but individuals cannot typically know, *ex ante*, whether or not a shock is transitory misfortune (i.e. another job will soon be found at comparable wages) or the start of a transition to a lower long term earnings trajectory. As they contemplate their futures, individuals' *ex ante* anxieties about the hazards they face are partly about transitory income variations but they are also about the possibility of losses in permanent income, and the chance that short term losses can morph into permanent disadvantages.

In affluent countries, private insurance and capital markets are well developed and the welfare state provides a set of transfers and services that help shield citizens from many hazards. In poor nations these mechanisms of risk mitigation are typically much less available, but one should not assume that this means that people are unconscious of the dangers that they face.

In this paper we have tried to enlarge the set of nations for which we can measure the level of economic security – but we are very conscious that the very poorest, and arguably most insecure, nations do not have the easily available statistics that we need. Although Botswana and South Africa come at the bottom of Table 6, they are considerably more affluent, and have more of the protections that affluence brings, than the other nations of sub-Saharan Africa. These countries are in Table 6 because their statistics are more complete, but the fragmentary data that is available would indicate that their neighbours in sub-Saharan Africa are more insecure.

Nevertheless, the core argument of this paper is that it is possible to measure economic security in a comparable way across countries – including both some very poor countries and the most affluent. Among the eight countries examined in Section 3 of this paper, economic security broadly correlated with national income but it is not least in the poorest of the eight countries (Vietnam) and not greatest in the nation with highest GDP per capita (the United States). Economic security is therefore a dimension of economic well-being that deserves to be analyzed in its own right – and one which can be measured in a conceptually comparable way.

## References

- Anderson, Richard and Charles Gascon (2008) "Offshoring, Economic Insecurity and the Demand for Social Insurance," Working Paper 2008-003A, Federal Reserve Bank of St. Louis, January.
- Bossert, Walter and Conchita D'Ambrosio (2009) "Measuring Economic Insecurity," mimeo, March 15.
- Chan, Sewin and Ann Huff Stevens (1999) "Employment and Retirement Following a Late-Career Job Loss," *The American Economic Review*, Vol. 89, No. 2, Papers and Proceedings of the One Hundred Eleventh Annual Meeting of the American Economic Association, pp. 211-216.
- Christiaensen, Luc and Kalanidhi Subbarao (2005) "Towards an Understanding of Household Vulnerability in Rural Kenya," *Journal of African Economies*, Vol. 14, No. 4, pp. 520-558.
- Christiaensen, Luc, Vivian Hoffmann and Alexander Sarris (2007) "Gauging the Welfare Effects of Shocks in Rural Tanzania," Policy Research Working Paper 4406, The World Bank.
- Das, Jishnu, Quy-Toan Do, Jed Friedman, and David McKenzie (2009): "Mental Health Patterns and Consequences: Results from Survey Data in Five Developing Countries," *World Bank Economic Review*, Vol. 23, No. 1, pp. 31-55.
- Dercon, Stefan (1996) "Risk, Crop Choice and Savings: Evidence from Tanzania," *Economic Development and Cultural Change*, pp. 485-513.
- Dercon, Stefan (2002) "Income Risk, Coping Strategies and Safety Nets," *World Bank Research Observer*, Vol. 17, No 2, pp. 141-166.
- Dercon, Stefan (2005a) "Vulnerability: a micro perspective," paper first presented at the ABCDE for Europe World Bank conference in Amsterdam, May.
- Dercon, Stefan (2005b) "Risk, Poverty and Vulnerability in Africa," *Journal of African Economies*, Vol. 14, No. 4, pp. 483-488.
- Devereux, Stephen and Simon Maxwell (2001) (eds.) *Food Security in Sub-Saharan Africa*, University of Natal Press, Institute of Development Studies.
- Di Tella, Rafael, Robert MacCulloch, and Andrew Oswald (2003) "The Macroeconomics of Happiness," *The Review of Economics and Statistics*, Vol. 85, No. 4, pp. 809-827.
- Dominitz, Jeff and Charles F. Manski (1997) "Perceptions of Economic Insecurity: Evidence From the Survey of Economic Expectations," *The Public Opinion Quarterly*, Vol. 61, No. 2, pp. 261-287.

- Gamanou, Gisele and Jonathan Morduch (2002) "Measuring Vulnerability to Poverty," Research Paper, World Institute for Development Economic Research (UNU-WIDER).
- Gertler, Paul, David I. Levine and Enrico Moretti (2003) "Do Microfinance Programs Help Families Insure Consumption against Illness?" Working Paper No. C03-129, Center for International and Development Economics Research, Berkeley, California.
- Glewwe, Paul and Gillette Hall (1998) "Are some groups more vulnerable to macroeconomic shocks than others? Hypothesis tests based on panel data from Peru," *Journal of Development Economics*, Vol. 56, No. 1, pp. 181-206.
- Green, Francis, Alan Felstead, and Brendan Burchell (2000) "Job Insecurity and the Difficulty of Regaining Employment," *Oxford Bulletin of Economics and Statistics*, Vol. 62, Special Issue, pp. 855 – 883.
- Guha-Khasnabis, Basudeb, Shabd Acharya, and Benjamin Davis (eds.) (2007) *Food Insecurity, Vulnerability and Human Rights Failure*, Palgrave-MacMillan in association with United Nations University – World Institute for Development Economics Research.
- Guillaumont, Patrick (2008) "An Economic Vulnerability Index: Its Design and Use for International Development Policy," Research Paper No. 2008/99, United Nations University – World Institute for Development Economics Research, November.
- ILO (2008) "Can low-income countries afford basic social security?" Social Security Policy Briefings, International Labour Office, Social Security Department.
- Jahoda, Marie (1979) "The Psychological Meanings of Unemployment," *New Society*, Vol. 6., pp. 422-425.
- Lambert, Peter (1989) *The Distribution and Redistribution of Income: A Mathematical Analysis* Basil Blackwell, Cambridge and Oxford.
- Langendonck, Jef Van (ed.) (2007) *The Right to Social Security*, Social Europe Series Volume 12 (Cambridge: Intersentia Press).
- Mares, Isabela (2004) "Economic Insecurity and Social Policy Expansion: Evidence from Interwar Europe," *International Organization*, Vol. 58, pp. 745-774.
- Maxwell, Simon (2001) "The Evolution of Thinking about Food Security," Chapter 1 (pp. 13-31) in Stephen Devereux and Simon Maxwell (eds.) *Food Security in Sub-Saharan Africa* University of Natal Press, Institute of Development Studies.
- Mboghoina, Thadeus and Lars Osberg (2010a) "Social Protection of the Elderly in Tanzania: Current Realities and Future Implications," Research on Poverty Alleviation (REPOA), Dar es Salaam, Tanzania.

- Mboghoina, Thadeus and Lars Osberg (2010b) "The Hunger of Old Women: How Sensitive Are Poverty Measures?" Research on Poverty Alleviation (REPOA), Dar es Salaam, Tanzania.
- McCulloch, Neil and Michele Calandrino (2003) "Vulnerability and Chronic Poverty in Rural Sichuan," *World Development*, Vol. 31, No. 3, pp. 611-628.
- Minsky, Hyman and Charles Whalen (1997) "Economic Insecurity and the Institutional Prerequisites for Successful Capitalism," *Journal of Post Keynesian Economics*, Vol. 19, No. 2.
- Naudé, Wim, Amelia U. Santos-Paulino, and Mark McGillivray (2008) "Vulnerability in Developing Countries," Research Brief No 2, United Nations University, Helsinki, 2008.
- Norton, Andy, Tim Conway and Mick Foster (2001) "Social Protection Concepts and Approaches: Implications for Policy and Practice in International Development," Working Paper 143, Centre for Aid and Public Expenditure.
- Offer, Avner, Rachel Pechey, and Stanley Ulijaszek (2010) "Obesity: The Welfare Regime Hypothesis," *British Academy Review*, No. 15, pp. 31-33.
- Osberg, Lars (1988) "The 'Disappearance' of Involuntary Unemployment," *Journal of Economic Issues*, Sept. 1988. Vol. 22, No. 3, pp. 707-728.
- Osberg, Lars (1998) "Economic Insecurity," SPRC Discussion Paper No. 88, Social Policy Research Centre, University of New South Wales, Sydney, Australia, October.
- Osberg, Lars (2007) "The Evolution of Poverty Measurement – with Special Reference to Canada," Workshop on Low Income, Poverty and Deprivation, Statistics Canada, February 12, Ottawa. <http://myweb.dal.ca/osberg/>
- Osberg, Lars (2010) "Measuring Economic Insecurity and Vulnerability as part of Economic Well-being: Concepts and Context," 31<sup>st</sup> General Conference of IARIW August 27, St-Gallen, Switzerland.
- Osberg, Lars and Andrew Sharpe (2002) "An Index of Economic Well-Being for Selected OECD Countries," *The Review of Income and Wealth*, Vol. 48, No. 3, pp. 291-316.
- Osberg, Lars and Andrew Sharpe (2005) "How should we Measure the 'Economic' Aspects of Well-Being?" *The Review of Income and Wealth*, Vol. 51, No. 2, pp. 311-336.
- Osberg, Lars and Andrew Sharpe (2009a) "New Perspectives on the Economic Security Component of the Index of Economic Well-Being," Canadian Economics Association 43rd Annual Conference, Toronto May 31.

- Osberg, Lars and Andrew Sharpe (2009b) "New Estimates of the Index of Economic Well-being for Selected OECD Countries, 1980-2007," Centre for the Study of Living Standards Research Report 2009-11. <http://www.csls.ca/reports/csls2009-11.pdf>
- Osberg, Lars and Kuan Xu (2008) "How Should We Measure Poverty in a Changing World? Methodological Issues and Chinese Case Study," *Review of Development Economics*, Vol. 12, No. 2, pp. 419-441.
- Rawls, John (1982) "Social Unity and Primary Goods," pp. 159-185 in Amartya Sen and Bernard Williams (eds.) *Utilitarianism and Beyond* (Cambridge: Cambridge University Press).
- Riddell, W. Craig (2005) "Why Is Canada's Unemployment Rate Persistently Higher than in the United States?" *Canadian Public Policy*, Vol. 31, No. 1, pp. 93-100.
- Roosevelt, Franklin D. (1936) "A Rendezvous with Destiny," Speech before the 1936 Democratic National Convention Philadelphia, Pennsylvania June 27. <http://www2.austincc.edu/lpatrick/his2341/fdr36acceptancespeech.htm>
- Ruhm, Christopher J. (1991) "Are Workers Permanently Scarred by Job Displacements?" *American Economic Review*, Vol. 81, No. 1, pp. 319-324.
- Scheve, Kenneth F. and Matthew J. Slaughter (2002) "Economic Insecurity and the Globalization of Production," National Bureau of Economic Research Working Paper No. 9339.
- Sen, Amartya (1999) *Development as Freedom* (New York: A. A. Knopf).
- Sharpe, Andrew and Julia Salzman (2003) "Methodological Choices Encountered in the Construction of Composite Indicators," paper presented to the annual meeting of the Canadian Economics Association, Carleton University, Ottawa, Ontario, May.
- Smith, Trenton G., Christiana Stoddard, and Michael G. Barnes (2009) "Why the Poor Get Fat: Weight Gain and Economic Insecurity," *Forum for Health Economics & Policy*, Vol. 12, No. 2, Article 5. <http://www.bepress.com/fhep/12/2/5>
- United Nations (2008) "World Economic and Social Survey 2008: Overcoming Economic Insecurity," Department of Economic and Social Affairs, E/2008/50/Rev.1 ST/ESA/317.
- United Nations Department of Economic and Social Affairs (2008) "World Economic and Social Survey 2008 – Overcoming Economic Insecurity." <http://www.un.org/esa/policy/wess/>
- United Republic of Tanzania (2007a) "Analytical Report for Integrated Labour Force Survey (ILFS) 2006," National Bureau of Statistics, Dar es Salaam, Tanzania, November.

- United Republic of Tanzania (2007b) "Poverty and Human Development Report 2007," Research and Analysis Working Group, MKUKUTA Monitoring System, Ministry of Planning Economy and Development, Dar es Salaam, Tanzania, December.
- United Republic of Tanzania (2008) "Household Budget Survey 2007," National Bureau of Statistics," Dar es Salaam, Tanzania.
- United Republic of Tanzania (2009) "Poverty and Human Development Report 2009," Research and Analysis Working Group, MKUKUTA Monitoring System, Ministry of Planning Economy and Development, Dar es Salaam, Tanzania, December.
- Verdin, James and Robert Klaver (2002) "Grid-cell-based crop water accounting for the famine early warning system," *Hydrological Processes*, Vol. 16, pp. 1617-1630.
- Verdin, James, Chris Funk, Gabriel Senay, and Richard Choularton (2005) "Climate Science and Famine Early Warning," *Philosophical Transactions of the Royal Society Biological Sciences*, Vol. 360, pp. 2155-2168.
- Webb, Patrick and Andrew Thorne-Lyman (2007) "Entitlement Failure from a Food Quality Perspective: The Life and Death Role of Vitamins and Minerals in Humanitarian Crises," Chapter 10 (pp. 243-265) in Basudeb Guha-Khasnobis, Shabd Acharya and Benjamin Davis (eds.) *Food Insecurity, Vulnerability and Human Rights Failure*, Palgrave-MacMillan in association with United Nations University – World Institute for Development Economics Research.
- Wuyts, Marc (2006) "Developing Social Protection in Tanzania within a Context of Generalised Insecurity," Special Paper Number 06.19, Research on Poverty Alleviation, Dar es Salaam, Tanzania.



## Appendix A: Weights Used for the Index of Economic Security

	<b>Equal</b>	<b>United States</b>	<b>Tanzania</b>
Working Age as % of Total Population	n.a.	64.8	56.1
Sickness	n.a.	100.0	100.0
Women & Kids at Risk of Widowhood	n.a.	33.4	51.3
45-64 as % Population	n.a.	26.7	12.6
Sum	n.a.	224.9	220.0
Livelihood	0.25	0.288	0.249
Health Care	0.25	0.445	0.445
Widowhood	0.25	0.149	0.228
Old Age	0.25	0.119	0.056