The Evolution of Poverty Measurement
- with special reference to Canada

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Introduction:

      "Poverty" is a very old term, whose common language usage has long been "deprivation of necessities[1]." However, both the generic concept of poverty and its more specific aspects (e.g. "inadequate clothing") are somewhat ambiguous, and capable of differing interpretations. Furthermore, the social reality of poverty has changed over time and differs across societies. Nonetheless, statistical agencies are sometimes asked for an answer to the question: "How much poverty is there?" because there is a need for a social diagnostic – a 'macro' indicator – to assist public policy discussions and decisions.

      The purpose of poverty measurement is, therefore, to *compare* actual or hypothetical social states – in a way which is potentially relevant for public policy. To answer the question of how much poverty there is in a given social state, a specific measure of poverty is needed which *identifies* the number of people[2] who are deprived and *aggregates* the extent of their deprivation. This essay discusses the evolution of the measurement of poverty over the last thirty years and its links to the evolving debates on human rights and social exclusion – with special reference to the Canadian debate.

      Section 1 may primarily be of interest to Canadian readers. It summarizes briefly the state of the debate on poverty measurement in Canada thirty years ago – much of which centered on the issue of how and where to draw "the poverty line income" to identify poor individuals – and discusses the subsequent evolution of Canadian estimates of "the poverty line income". Section 2 then considers five other aspects of poverty measurement which have been prominent in the international literature:

1. axiomatic defensibility and the development of summary poverty statistics;
2. poverty over time – i.e. spell frequency, duration, recurrence and intergenerational impact;
3. The "capabilities" perspective, item deprivation and multi-dimensionality of poverty;
4. The 'social exclusion' discourse;
5. The links between 'poverty', 'social exclusion' and 'basic human rights'.

      Section 3 attempts a conclusion – recognizing that no single paper can pretend to summarize 'poverty' in its entirety, since the literature is far too vast and wide-ranging. This paper focuses on measurement issues, and since its context is poverty in Canada, it does not discuss the many debates on global poverty or poverty in less-developed countries. The paper also ignores micro-analytic or policy design issues (such as causal analysis of the determinants and implications of individuals' poverty or the optimal design of income support programs) – not because they are unimportant, but because they are too important to be considered casually.

      NOTE: To avoid "inflation illusion", all dollar values reported in this paper (including those reported as part of quotations) have been converted to July 2006 Canadian dollars, using the Consumer Price Index as reported in CANSIM II vector V735319.

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[1] Secondary definitions are: "scarcity or lack; inferiority, poorness, meanness" .Oxford (1998: 1135). As Saunders and others have noted, 'deprivation' carries the connotation that the lack of necessities is involuntary.

[2] Any poverty identification methodology will have some Type I (non-poor incorrectly labeled as poor) and some Type II (poor incorrectly labeled as non-poor) identification errors. For a statistical agency, it is sufficient to know that these are roughly equal – the issue is to identify the *number* of poor people. Social service delivery agencies are, of course, very much concerned with avoiding both Type I and Type II error – and typically have much more detailed client data with which to identify individual needs.

1. **Measures of Poverty in Canada – circa 1976**

Any measure of distribution has to specify: [1] of what? [2] among whom? and [3] how summarized? In evaluating the adequacy of a particular measure of 'poverty', it is also often useful to ask: [4] why is 'poverty' being measured?

Thirty years ago, the debate on poverty measurement in Canada largely centered on the linked questions of how and where to draw the "poverty line" which identifies the number of poor people. It was more or less taken for granted that the poverty line would be defined in terms of household money income and that the reference population would be all Canadian resident individuals. Aggregation was also seen as fairly straightforward – i.e. the summary statistic for poverty would be the poverty rate (the percentage of all such individuals living in households with less income than the poverty line).

The context of Canadian poverty debates during the 1970s was a political environment in which poverty reduction was on the policy agenda. Lyndon Johnson, as US President, had declared a "War on Poverty" in 1964, the UK had set up a Royal Commission on the Distribution of Income and Wealth, and the Senate of Canada had issued an influential report on poverty in 1971[3]. In its Fifth Annual Review, the Economic Council of Canada (1968:104-105) had defined poverty in general terms as "insufficient access to certain goods, services and conditions of life which are available to anyone else and which have come to be accepted as basic to a decent minimum standard of living". A burst of social activism in the late 1960s and early 1970s in Canada had brought in Medicare, the Canada Pension Plan/Quebec Pension Plan, Canada Assistance Plan and revisions to Unemployment Insurance. The economic context was a period of strong growth in household incomes – measured in 2006 dollars, median family income in Canada grew from $38,100 in 1965 to $60,700 in 1979 (an increase of 59.5% in real terms, for a compound annual real growth rate of 3.1% per annum).[4] Thirty years ago, it looked as if Canada had both the will, and the means, to do something about poverty.

In the late 1970s, several poverty lines competed for attention in Canada. The Special Senate Committee on Poverty had used budget standards established by the Department of National Health and Welfare to set the poverty line (for a four person family, expressed in 2006 dollars) at $35,400 in 1978 while the Canadian Council on Social Development used the criterion of one half of average income to set a standard of $31,700. Statistics Canada was on the low side of prevailing estimates. Jenny Podoluk's 1968 Census monograph[5] had attempted to define a statistical criterion of "low income" as "those families whose incomes fall into those income groups in which, on average, most of the income received must be spent on essentials such as food, clothing and shelter". Using the original "70% of income or more" criterion as meaning "most", in 1978 this would have placed the poverty line for a four person family at $24,500, but after 1973 'most' was revised to mean "62% or more", and allowance was made for differences in cost of living between rural and urban areas. For a four person family in a city of 500,000 or

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[3] The Senate report advocated the implementation of a Guaranteed Annual Income with a basic guarantee equivalent to 70% of their poverty line (in 2006 dollars, $19,500 for a four person family) financed and administered by the Government of Canada. They also considered "that 'full employment' must be the prime objective and responsibility of government fiscal and monetary policy". However, some staff researchers judged these recommendations insufficiently strong and resigned to author *The Real Poverty Report*.
[4] See Statistics Canada *Income distributions by size in Canada* Catalogue 13-207, 1982 Table 1
[5] reprinted in Harp and Hofley (1974: 117 to 146)

larger, this implied a 1978 poverty line of $31,800, but a much lower poverty line in rural areas, at $23,200 for the same family[6].

Despite the variation in poverty lines, all parties in this debate agreed that the poverty line should be "related to a measure of the 'average standard of living' and (be) sensitive to changes in national average incomes and family size" [Special Senate Committee, 1971:16]. The CCSD may have been the only organization to tie their poverty line directly to average household income, but Podoluk argued clearly that "poverty is a condition of possible deprivation *relative to prevailing levels of living*" (1980:281). She was quite explicit in noting that with respect to such things as indoor toilets or installed baths or showers: "Amenities which in the mid 1960s are considered to be necessities as recently as 25 years ago were not available to nearly half of Canadian households" (1974:124). There was a clear perception that a poverty criterion of having 'very little' income left over after the purchase of 'necessities' had to be revised over time to fit changing social norms. The 1973 revision of the Low Income Cut Off (LICO) occurred because: "the data showed that the percentage of income spent on these essential had dropped from an average of 50% to 42%. The decision was made to set the low income lines at the point where 62% or more of income was spent on these necessities[7], thus maintaining the 20% differential .. as a means of taking account of improvements in level of living over the (previous) decade" (Podoluk, 1980:280). This differential has been maintained through several subsequent revisions, most recently to a 1992 base.

In drawing the poverty line with reference to 'average' income Canadian researchers were being entirely consistent with the international literature – the poverty line of the US Social Security[8] had, for example, initially been set in 1963 by specific (if arbitrary) reference to the average norm (i.e. the average fraction of income spent on food) and was only 'absolute' in the sense that it was being updated for consumer price inflation, but not for changes in real average/ median incomes. However, in an era of substantial growth in average real incomes, this was a crucial issue. Having had the opportunity to observe earlier US trends, Canadian researchers saw the lack of adjustment for changes in real incomes over time as a major flaw in the US poverty line methodology, leading eventually to the appearance that "the poor will at least be statistically if not really eradicated" (Podoluk, 1980:279).

Thirty years ago, the universal acceptance of "annual family money income" as the defining dimension of poverty was based on the twin perceptions that: 1] money income represented a generalized command over resources – thereby defining the opportunity set of consumption; and 2] inequality in consumption within the family[9] was sufficiently negligible to be safely ignored.

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[6] To put these poverty lines in context, in July 2006 the minimum wage in Canada varied between $6.70 (New Brunswick) and $8.00 (British Columbia) per hour – implying an annual income somewhere between $12,562 and $15,000 (before any taxes or payroll deductions) for 50 weeks of work at 37.5 hours per week.

[7] Based on an 'Engle Curve' type regression in which the percentage of income spent on necessities was regressed on income, family size and size of urban area, the LICO was set at the income at which the conditional expectation of the percentage of income spent on necessities was 62%. For discussion of the methodology and subsequent revisions see Statistics Canada (2004) or Wolfson and Evans (1989).

[8] Based on data collected in a 1955 food expenditure survey, average family expenditure on food was estimated at one third of family income. The cost of the Department of Agriculture's Economy Food Plan for families of different sizes was therefore multiplied by three, and updated by changes in the consumer price index. see Orshansky (1965); Podoluk (1980:279). Note that at the time of initial construction in 1963 the Orshansky poverty line for a two adult, two child family was essentially equal to (i.e. within $5 of) one half of median family income – see Osberg (1984:64).

[9] The core assumption was income pooling and equality of consumption among co-resident individuals – and no income pooling among non co-resident individuals. At the time this was non-controversial – but see Phipps and Burton (1995:194) for a discussion of how much that assumption matters for child poverty. Even then it was known that an important measurement choice, in practice, is the distinction between household, economic family

Furthermore, measuring poverty by annual money income was useful at a time when income transfer programs (such as the Guaranteed Annual Income) were under serious consideration as an anti-poverty strategy.

In looking for a proxy measure of community social norms of prevailing living standards, it soon became commonly accepted in Canada that median household income was probably a better indicator than average income, because the mean of an income distribution can be quite sensitive to the inclusion or exclusion of a few very high incomes. It was always recognized that social programs (such as food stamps in the US) which delivered in kind benefits enabled greater consumption, and (particularly in the US) a long series of studies have made adjustments to money income to reflect the changing value of such transfers (e.g. Short et al, 1999). In Canada, the Podoluk methodology has also been refined in a parallel series of 'before-tax' and 'after-tax' Low Income Cut Offs[10]. "Equivalence scales" have, in the last thirty years, recognized that the income needs of families of differing size should be adjusted to reflect economies of scale in household consumption[11].

However, these adjustments to the measurement of money income were fairly minor, compared to the main event – in all the furious debates of the late 1970s over updating the poverty line to reflect increases in median real incomes, nobody foresaw that these increases were coming to an end.

Chart 1

Median after-tax income by economic family types, Canada
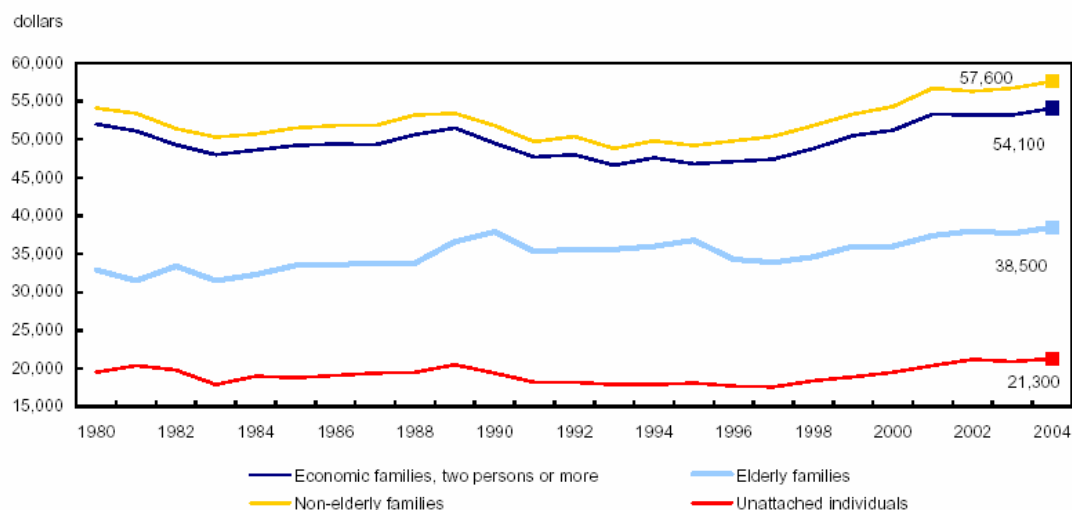
Source: Statistics Canada *Income in Canada 2004* Catalogue 75-202-XIE (2006: Chart 1, Page 9)

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and nuclear family concepts as the income pooling unit. However, because this paper cannot do everything, it will maintain the income pooling assumption and will not address the household/family unit debate – indeed the language will shift casually from "household" to "family" to underscore the fact that this debate is being ignored.

[10] Although constructed according to the same methodology, the 'after-tax LICO' consistently implies a lower poverty line and a lower poverty rate than the 'before-tax LICO'.

[11] An equivalence scale assigns to each household a number of *"Equivalent Adults"* N_{EA} which is some function of the number of household members N and, where Y_f is total household income, then calculates the equivalent income Y_i of each household member as $Y_i = Y_f / N_{EA}$. The search for simplicity in the functional $N_{EA} = f(N)$ has motivated a concentration of attention on single parameter equivalence scales of the form $N_{EA} = N^\beta$ where $0 \leq \beta \leq 1$. Since key household types, like single parents and the elderly, tend to live in small families, the properties of the equivalence scale over the range $N = 1..4$ are particularly important.

Expressed in 2006 dollars, the median total income of all economic families in Canada in 1980 was $63,500 – and twenty years later in 2000, it was virtually unchanged at $63,800[12]. The period 2000 to 2004 saw a slight (3.1%) resurgence of growth in median incomes (i.e. at one quarter the annual growth rate of 1965-1980). As a consequence, a poverty line that was drawn at one half of the median total real income of all economic families in 2004 would be set at $32,900 (in 2006 dollars) – which is actually not very different from the absolute level of the poverty lines suggested by the Senate, CCSD or Statistics Canada a generation earlier, in 1978.

1.1   Canadian Poverty Lines of the 1980s and 1990s

The Economic Council of Canada was abolished in 1992, but as virtually its last official act, the ECC published *The New Face of Poverty*, a report which began with the words: "The war against poverty stalled in the 1980s"(1992:vii). Nevertheless, even if the policy priority to reduce poverty in Canada evaporated over twenty five years ago, measurement revisions have continued. The LICO methodology has been updated periodically, based on the 1992, 1986, 1978, 1969 and 1959 Family Expenditure Surveys, to keep a 20% differential with the changing average percentage of income spent on necessities (i.e. 1986 saw a small revision, from 62% to 58.5%, which the 1992 revisions shifted to 64% as the criterion of "Low Income".) As well, the 1980s and 1990s saw a number of new proposals for Canadian poverty lines, which can be grouped by the methodology proposed.

1.1.1   Subjective Adequacy – The "Leyden School"

If it is not clear to statisticians what level of income is 'adequate', why not ask people, in a systematic way? Thirty years ago, it was well known that social norms of minimum adequacy are related to the current level of incomes. For example, from 1947 to 1977, the Gallup Poll asked Americans "what is the smallest amount of income a four person family needs to get along in this community?" – and the average answer tracked median male earnings pretty exactly (Osberg, 1984:70). During the late 1970s and through the 1980s, Dutch researchers[13] took this idea a step further and pioneered the methodology of asking a representative sample of household heads what they consider a minimal income level for their own family, and using the answers to construct a subjective poverty line. Although higher income respondents tend to give higher estimates of the minimum necessary income, for each family size there is an income level at which, on average, a respondent's actual income is equal to the stated minimum income – this level is taken as a definition of the poverty line.

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[12] The shifting proportion of unattached individuals and families meant that the median real income of all *family units* actually fell – from $51,800 to $47,700 – between 1980 and 2000. Elderly families saw increasing median incomes – but under 65 family types saw small losses. For example, over this 20 year period, married couples with one earner saw median total real income fall by 2.3%, while for two earner couples it fell by 1.3%. Since income gains were concentrated in the top half of the income distribution, *average* incomes typically rose between 1980 and 2004, even as the median stagnated – e.g. the average income of economic families grew by 11% (for family units, the average income rose by 10%). As a consequence, in Canada the median income has fallen substantially as a percentage of the average – for economic families, from 92% to 82.9% of the average (for family units, from 89.4% to 77.4% - see E-STAT Tables 202-0411 and 202-0403)

[13] See, for example, Goedhart et al (1977), van Praag et al (1982) or Hagenaars (1986, 1991). Danziger et al (1984) provide a US comparison.

In 1983, 1986 and 1987, Statistics Canada conducted a series of income satisfaction surveys and used this methodology to calculate 'subjective poverty lines'.[14] Not surprisingly, subjective estimates of need are sensitive to questionnaire wording. In one version of the survey, Canadians were asked: "How much would you have to spend to provide the basic necessities? By basic necessities I mean barely adequate food, shelter, clothing and other essential items required for daily living." Their answers were appreciably lower than when a second version of the survey asked: "To meet the expenses you consider necessary, what do you think is the minimum income, before tax, a family like yours needs, on a yearly basis, to make ends meet?" Since the former criterion of "barely adequate .. for daily living" rules out occasional expenses like school books or furniture purchases (as well as much else – like transportation costs), it is a tough criterion – but for a four person family, in the 1988 survey it implied expenditure of $24,730 (in after tax 2006 dollars) as the poverty line. The more inclusive "minimum income to make ends meet" criterion implied a four person poverty line of $39,210 (in before tax 2006 dollars).

Interestingly, the evolution of the LICO spans much the same range. The "barely adequate..for daily living" criterion was very similar to the original 1960s "70% of income or more spent on necessities" standard which in 1978 would have placed the poverty line for a four person family at $24,500. The more inclusive "minimum income to make ends meet" criterion was quite close to the 1992 base before tax LICO for a four person family in a large urban centre, of $39,790 (both expressed in 2006 dollars)[15].

Clearly, these different 'subjective' poverty lines are reflecting different constructions of how deprived individuals must be before they are judged to be 'poor' – even if 'poverty' is *relative inadequacy*, compared to current social norms, there is a wide gap between *inadequate* and *severely inadequate*.

1.1.2   Minimum Market Baskets – Sarlo and the Market Basket Method of HRDC

In thinking about strategies for drawing the poverty line, Mendelson (2005:33) argues that: "Budget cost strategies are much easier to understand …. A budget cost strategy consists of defining a basket of goods and services necessary to achieve a given standard of living, and then determining how much the basket costs." The devil, of course, is in the details, since the key problem lies in defining the "necessary" basket of goods.

In 1992, Chris Sarlo and the Fraser Institute published a market basket methodology which placed the 1988 "poverty line", for a four person family at $20,230 (in $2006). As Sarlo (1992:3) points out, drawing the poverty line at this level (roughly half the LICO or CCSD poverty line income) implies that poverty in Canada almost disappears – the poverty rate (at 2.5%) is about one fourth to one sixth the level implied by other methodologies[16]. More recently, Human Resource Development Canada (2006) has estimated the 2002 poverty line for a four person family in a variety of urban and rural settings across Canada. Expressed in

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[14] See Poulin (1988) and Morrissette and Poulin (1991)

[15] For a 4 person family in rural areas, the 1992 base before tax LICO was $27,490 (in $2006). But an important finding of the subjective estimates is that the implied economies of scale to family size in subjective estimates are much smaller than in the LICO or LIS methodology – implying a much larger divergence in estimated poverty lines for single people. The equivalence scale implicit in the before tax LICO (1992 base) implies that a four person family needs 1.88 times the income of a single person. The ratio implicit in the subjective poverty estimates is only 1.3 to 1.4 (see Morrissette and Poulin, 1991: Table 13).

[16] Since Sarlo, like others, used Survey of Consumer Finance data, the homeless and aboriginal people on reserves are not included – which implies an understatement of poverty, particularly of extreme poverty.

$2006, it is substantially higher – e.g. $28,600 in rural Newfoundland, $28,200 in Halifax, $32,000 in Toronto, $26,000 in rural Sakatchewan.

As HRDC notes: "Using the Market Basket Measure (MBM), the incidence of low income in 2002 (13.7%) was higher than that (11.6%) using Statistics Canada's post-income tax Low Income Cut-offs (LICOs-IAT). This is not because the MBM low income thresholds are higher than those for the LICOs-IAT, but because the MBM definition of family disposable income compared to those thresholds is much more stringent.[17]"

Evidently, there is nothing in the market basket methodology *per se* that implies it will necessarily produce a higher or lower poverty rate than other poverty line methodologies – it all depends on the details of the market basket identified, which are buried deep inside the methodology. As well, it is clear that the Sarlo poverty line is an outlier in the Canadian debate, and that in his work the word 'poverty' is being used in a different sense than that used by other researchers – to denote a different (i.e. greater) level of deprivation, or what the other methodologies would generally call 'extreme poverty'.

The origin of the budget standards definition of the poverty line has often been ascribed to Rowntree's work in late19[th] Century England. But even Rowntree's rule 'Nothing must be bought but that which is absolutely necessary for the maintenance of physical health, and what is bought must be of the plainest and most economical description.' contained an allowance for tea – an item of no nutritional value. As Mendelson notes, "Rowntree's poverty-level standard of living is not absolute, as it is very much rooted in its time and place. His poverty-level standard of living is unacceptable in a modern developed country, whatever one's political inclination. No one with a serious interest in public policy could propose Rowntree's standard of living as representing even a sustainable poverty level today ….Thus the citation from Rowntree nicely illustrates the relativity of the budget cost strategy." (2005:34).

Changing social norms of minimum adequacy are one reason why budget standards must be amended over time. However, later sections of this essay will discuss the 'capabilities' and 'social exclusion' approaches to measuring poverty – both of which would emphasize the concrete changes in social organization which imply that the definition of the poverty line income should change over time.

When, for example, most people did not have refrigerators, the food distribution system was organized on the basis of daily shopping at small neighbourhood stores, within walking range – but as Mendelson notes, because most consumers can now drive to large shopping centres for infrequent shopping, "These alternative systems are now gone, and anyone without refrigeration will have immense difficulty maintaining a healthy diet." (2005:34). Similarly, when most people did not have cars, towns and cities had to be organized so that workers could get to their jobs on foot or using public transit (i.e. by street car) – possibilities which often disappear when 'everybody else' can drive and urban areas become more decentralized.

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[17] See HRDC (2006:6) " MBM disposable family income is the sum remaining after deducting from total family money income the following: total income taxes paid; the personal portion of payroll taxes; other mandatory payroll deductions such as contributions to employer-sponsored pension plans, supplementary health plans and union dues; child support and alimony payments made to another family; out-of-pocket spending on child care; and non-insured but medically-prescribed health-related expenses such as dental and vision care, prescription drugs and aids for persons with disabilities.
For the LICOs-IAT, only income taxes paid are deducted from total family income before comparison to the associated low income thresholds."

The detailed costing of the market basket method has the advantage that it can illustrate some of the specific deprivations affecting the low income population. The HRDC market basket, for example, specifically costs out transportation, allowing for: "in urban areas served by public transit: 2 monthly transit passes and 12 round-taxi trips per year; in areas not served by public transit: the cost of operating a vehicle and of purchasing a five- year-old car once every five years." As they note, quite apart from poor frequency of service, public transit often does not exist at all in Canada - rural areas have virtually no coverage and less than one-third of all urban areas under 30,000 are served by public transit, though estimates vary from province to province. The HRDC transportation allowance cannot be said to be generous. [For example, it assumes, quite remarkably, that one can buy a five year old car (a Chevrolet Cavalier) and drive it for another five years without any costs for repairs or tire replacement[18]. Where public transit exists, it is assumed that the children never use it.] But even so, there is at least some attention to the income needed to attain the capability of getting around, which is essential if one is not to be effectively excluded from employment or access to public services.

The differences between the MBM and LICO in costing of 'necessities' and calculation of available income affect the distribution, as well as the level of poverty. As HRDC notes: "The share of low income children and adults living in families whose main income recipient worked for pay at least 910 hours is significantly higher using the MBM than using the LICOs-IAT because child care spending and other work-related expenses are deducted from gross family income before comparing it to the low income thresholds. The geographical distribution of the low income population is also different using the MBM instead of the LICOs-IAT. Using the MBM, a smaller share of the low income population is found in the largest urban centres while a larger share lives in rural areas."

The market basket methodology also enables researchers to perceive policy impacts that would be invisible to other methodologies – such as the impact of increased car insurance premiums (particularly in rural areas) or higher energy prices. Nevertheless, a key disadvantage of the MBM is its inability to compare the extent of poverty over time, or in a timely fashion (as of December 2006, the MBM was only available for the years 2000 to 2002). Since the details of construction are buried fairly deeply, it is also not possible to assess the sensitivity of poverty measures to alternative assumptions. Nor can one compare poverty outcomes in Canada with those elsewhere – thereby precluding the possibility that Canadians can learn from the international discourse on poverty and social policy.

1.1.3   Explicitly Relative – the Low Income Measure (LIM)

If we measure poverty in order to compare social states – to assess whether poverty is increasing or decreasing, or whether some set of policies produces more or less poverty – then international comparability is an important issue. In the European debate, there has long been a consensus that the poverty line should be drawn relative to other incomes in society. In 1975, the Council of Europe adopted a relative definition of poverty as: "individuals or families whose resources are so small as to exclude them from the minimum acceptable way of life of the Member State in which they live." (EEC, 1981). The concept of 'resources' was defined as: "goods, cash income, plus services from

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[18] One annual tune-up and two oil changes per year are allowed for – see Bishop et al (2003:19).

public and private resources" (EEC, 1981). In 1984, the European Commission extended the definition as: "the poor shall be taken to mean persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State in which they live" (EEC, 1985). As (Estivill 2003:25) notes: "It was as a result of the pressure of the Irish Presidency that …the Council adopted at its session of 19 December 1984 a second definition, stating that persons shall be regarded as poor "whose disposable income is less than half the average equivalent per capita income in their country".

Since its inception in the early 1980s, the Luxembourg Income Study has published poverty estimates using comparable micro data from a variety of countries based on the idea that "one half of median equivalent household income, after tax and after transfers". These international trends have had an impact - since 1991 Statistics Canada has published the "low income measure" (LIM), which is set at 50% of median family income, adjusted for family size[19]. Since the long term trend (1980 to 2004) has been for median income to decline as a percentage of the average (by about ten percentage points – for economic families, from 92% to 82.9% of the average and for all family units, from 89.4% to 77.4%), the LIM has fallen as a proportion of per capita GDP and of average household income, while remaining roughly constant in real terms.

1.2   Summary

Table 1 summarizes the evolution of the poverty line in Canada in approximately the last thirty years. If one takes the reference point of a two-adult, two child family living in a mid-size city (between 100,000 and 499,999) and measures in July 2006 dollars, it is clear that the poverty lines that were in existence in 1978 (the Statistics Canada before tax LICO, CCSD, Senate) spanned the range $31,700 to $35,500 – a range which has proven remarkably durable. Although the LICO moved up significantly in real value during the 1970s (due to the rebasing of the LICO), it has not changed much in real terms since.

If the CCSD and Senate lines had been updated, their methodology of updating for increases in the average income would have moved the range to $35,200 to $39,400 – but that in fact has not happened, and these methodologies have fallen into disuse. Since the late 1970s, Statistics Canada has begun to estimate a Low Income Measure (½ median income) whose value naturally depends on the income concept used – on a before tax basis (as would be comparable to the 1970s LICO) it had a value of $34,000 in 2004, and was similarly flat over time.

If the income concept used is "after tax income", the relevant LICO is fairly close (at $28,200) to the LIM ($29,600). Since the income concept used for the HRDC 'market basket' calculation takes some account of work-required child care expenses, the $27,400 poverty line reported in Table 1 should really be scaled up to be comparable with the other after tax calculations.

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[19] In the equivalence scale for both the LIM and the Market Basket Method, the oldest person is counted as 1.0, the second oldest and all other family members aged 16 and over each receive a factor of 0.4 while children under age 16 receive a factor of 0.3 – which implies that a two adult, two young children family needs 2.0 times the income of a single person (exactly the same as the LIS scale discussed in Section 2).

The subjective "Leyden" estimates of $22,700 as 'barely adequate… for daily living' was based on a *minimum consumption* concept (i.e. after all taxes, deductions and any savings) while the $36,000 subjective estimate of 'minimum income to make ends meet' was based on *before tax income*. Hence, the difference between them, if measured in comparable terms, would actually be less than Table 1 might suggest. Nevertheless, the difference does illustrate the gradation between degrees of deprivation.

With the exception of Sarlo and the Fraser Institute (whose focus can more accurately be called 'severe poverty'), estimates of the poverty line in Canada cluster within a fairly consistent range. As befits a country in which median incomes have changed fairly little, there has been little change in that range in the last quarter century. But there is less consensus on adult equivalence scales and differences in rural/urban cost of living – with significant implications for estimates of the distribution of poverty in the Canadian population.

Drawing an income based poverty line necessarily involves:
1. defining the relevant concept of 'income' – i.e. specifying the income sources counted, their measures, the period of receipt and any deductions for expenses;
2. defining the recipient unit – individual, "family" or household;
3. choosing a methodology to draw the poverty line for specific reference family/household types;
4. specifying how the poverty line should vary with family/household characteristics and circumstances at a point in time;
5. adjusting the poverty line over time – e.g. as prices and real incomes change.

All these issues matter – but context is also crucial. An important aspect of economic reality in Canada since the late 1970s has been the fact that almost all of the benefits of economic growth have been received by the top half of the income distribution – median annual family income has been nearly constant in real terms, and has fallen significantly as a percentage of average incomes. This implies that a relative poverty line based on median annual income is, similarly, nearly constant over the long term – with declines during cyclical downturns, as in the early 1980s and 1990s, and increases during the cyclical recovery.

Table 1
Poverty / Low Income Lines in Canada

Original Author	Conceptual Basis	Year	4 person Household 100-499K $2,006	ratio to rural	ratio to large urban 500K+	ratio to single person household
Statistics Canada	LICO - 1969 base	1969	29,600	1.29	0.94	2.2
Statistics Canada	LICO - 1978 base	1978	34,400	1.29	0.95	2
Statistics Canada	LICO - 1992 base (63%)	2005	34,100	1.29	0.85	2
Statistics Canada	LICO - IAT 1992 base	2005	28,200	1.29	0.85	2
CCSD	half average income (basic needs+30%)*avg	1978	31,700	1	1	2.33
Senate Committee	growth	1978	35,500	1	1	2.33
CCSD	*updated to 2004***	2004	35,200	1	1	2.33
Senate Committee	*updated to 2004***	2004	39,400	1	1	2.33
Statistics Canada	subjective -"barely adequate for daily living"	1988	22,700	1	1	1.4
Statistics Canada	subjective -"make ends meet"	1988	35,976	1	1	1.3
Statistics Canada	LIM 50% median market income	2004	29,100	1	1	2
	LIM 50% median before Tax	2004	34,000	1	1	2
	LIM 50% median after tax	2004	29,600	1	1	2
Sarlo / Fraser Institute	market basket	1988	20,320			
HRDC	market basket*	2002	27,400	0.97	0.93	2

* average of 100-499K for Ontario, Quebec, BC + St.John's + Halifax; ratio to rural for same provinces
ratio to Vancouver, Calgary, Edmonto, Toronto, Ottawa, Montreal
** growth in real average family incomes = 11% 1980-2004
Low Income Cut-offs for
2005 and Low Income Measures for 2004
by Income Statistics Division
Catalogue no. 75F0002MIE — No. 004

In the literature on poverty, the use of median income as a reference point for establishment of the poverty line has been based on the idea that the median is a relatively robust measure of the central tendency of the income distribution – and thereby indicates the monetary value of current social norms of consumption. This, however, is a hypothesis about attitude formation. Two issues to address are:

1. whether social norms of consumption actually fall, during recessions, with declines in median annual incomes or with declines in moving averages of median annual incomes[20];
2. whether social norms of 'deprivation of necessities' are in fact insensitive to changes in the top end of the income distribution.

The former issue can be called the "times are tough" conundrum. A long lasting decline in prosperity may well produce a decline in social norms of minimum adequacy, which *should* be reflected in a lower poverty line. However, it is plausible that social norms of deprivation take time to change – perhaps partly because many households can 'ride out' short term income shocks and avoid major lifestyle changes. If so, then the relevant referent for poverty line construction may be a moving average of median real incomes, rather than the current year's median income. Because year to year fluctuations in median annual income can drive changes in a "½ median" poverty line large enough to actually cut the measured poverty rate during a sharp recession, the current median annual income may be too volatile a base for the poverty line – a moving average of median income may be more appropriate.

The second issue can be called the "monster homes/homeless contrast". The concentration of income gains in Canada among the highly affluent in the last twenty years has produced many ostentatious signs of greater wealth (for some) – even as median family incomes have stagnated. Is this irrelevant to the social norms which define minimum adequacy? On principle, *should* the income gains of the very affluent be reflected in the level of the poverty line in Canada?

1.3   The Incomes of the Non-Poor and the drawing of the Poverty Line

Section 2.1 of this essay addresses the Axiomatic approach to poverty index construction – one tenet of which currently is the Focus Axiom – that: "The poverty index should be independent of non-poor population." Clearly, this is inconsistent with the European Union's idea that the poverty line be set at one half of average income, because this implies that the poverty line increases with the income gains of the affluent even if all incomes below the median are unchanged. An increase in the poverty line implies that the poverty rate and the average poverty gap of those already identified as poor will necessarily increase. Hence, changes in the income of non-poor individuals thereby directly affect all known poverty indices (e.g. the Foster-Greer-Thorbecke or Sen-Shorrocks-Thon index of poverty).

In principle, the Focus Axiom is also inconsistent with the Low Income Measure (LIM) and the general international convention that the poverty line be drawn at some

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[20] During the recession of the early 1990s, the LIM for a 4 person family dropped 4.6% in real dollars (from $33,200 to $31,700 measured in $2006) between 1990 and 1991. A moving four year average was much less volatile – declining by at most 2.0% from 1992 to 1993. See 13F0019XIB -Table 1 page 14.

fraction of the median income since the poverty line will increase if the income of the median individual rises. Since the median individual is never poor, under this methodology, a change in the income of a non-poor individual will directly change the poverty rate and will affect all known poverty indices. [However, since median family income has not changed much in recent Canadian data, this may in practice not have been a major issue.]

Because the calculation of a 'subjective' poverty line according to the Leyden methodology involves a regression of all individuals' estimates of minimum adequate income and actual income, changes in the actual income of non-poor individuals will change the poverty line calculation – although not in an easily predictable direction.

Less obviously, the LICO methodology of Statistics Canada is also inconsistent with the Focus Axiom. The "average percentage of income spent on necessities" – to which 20% is added in order to get the LICO reference percentage of income spent on necessities – is calculated as the ratio of average household expenditure on necessities to average household income. Because, at the margin, the very affluent have to spend relatively low percentages of their income on necessities, this implies that their income gains increase the denominator (average income) proportionately more than the numerator (average spending on necessities), which tends to bring down the ratio "average percentage of income spent on necessities". Hence, the LICO methodology implies that even if all persons with below median incomes have no change in their incomes, income gains among the affluent will decrease the "average consumption ratio" reference point for the LICO, raising the LICO poverty line and increasing the number of households counted as 'poor' (and also increasing the average poverty gap of households already counted as poor).

The "Focus Axiom" is therefore inconsistent with all known methodologies for setting the poverty line – other than an 'absolute' poverty line, or 'market basket' calculation. Even in this case, however, the poverty line will only be independent of the incomes of non-poor people if the price changes over time that are used to update a 'market basket' poverty line, and the composition of the 'market basket', are both unaffected by changes in the incomes of non-poor individuals. This rules out both price effects (e.g. the impact on poor households of rising inner city rents due to 'gentrification' of urban areas by the increasingly affluent) and structural interactions (e.g. the decreasing availability of mass transit, as the growing incomes of middle class households enable them to acquire automobiles). Hence, the "Focus Axiom" is really a disguised claim that the poverty line should be 'absolute' rather than 'relative' – in a very strong sense.

The fundamental question is whether the "Focus Axiom" is reasonable – i.e. whether social norms of 'deprivation of necessities' are in fact invariant to changes in the incomes of the affluent. This is basically an empirical question. To assess the importance, and the causes, of changing Canadian social norms of deprivation, there is really no good substitute for explicitly asking Canadians – e.g. by repeating the *Income Satisfaction Supplement* surveys of the 1980s, and comparing responses then and now.

2.1   Axioms and Aggregations

Specifying a 'poverty line' in annual household money income is one way of *identifying* the number of poor people and what each poor person lacks (i.e. all individuals who are part of households with income below the poverty line lack income) – but to answer the question "How much poverty is there?", one needs a measure which *aggregates* the extent of poverty in society.

Prior to Amartya Sen's 1976 article, the poverty rate was virtually the only poverty statistic used (and it remains the most commonly encountered poverty measure[21]). Only occasionally was the poverty rate supplemented by reference to the average poverty gap ratio – i.e. the average shortfall of income among poor people, expressed as a percentage of the poverty line. Sen (1976) had both a substantive and a methodological impact. Substantively, he emphasized that the poverty rate is insensitive to the depth of poverty while the average poverty gap ratio ignores the number of poor individuals and he proposed a new measure of poverty that considered both these dimensions, as well as the inequality of incomes among the poor.

However, Sen's specific proposal for a poverty index has not in fact been used all that much – and has been less influential than the method of his argument. In arguing that an ethically defensible index of poverty should satisfy ethical axioms, Sen inspired a large literature. Hagenaars (1986, 1991) and Zheng (1997) have summarized the axiomatic foundations of poverty measurement as:

Axiom 1 (Focus Axiom) The poverty index should be independent of non-poor population.

Axiom 2 (Weak monotonicity axiom for income) A reduction in a poor person's income, holding other incomes constant, must increase the poverty index.

Axiom 3 (Impartiality axiom for income) The poverty index may be defined over ordered income profiles without loss of generality.

Axiom 4 (Weak transfer axiom for income) An increase in the poverty index occurs if the poorer of two individuals involved in an upward transfer of income is poor and if the set of the poor people does not change.

Axiom 4A (Strong upward transfer axiom for income) An increase in the poverty index occurs if the poorer of two individuals involved in an upward transfer of income is poor.[22]

Axiom 5 (Continuity axiom for income) The poverty index varies continuously with incomes.

Axiom 6 (Replication invariance axiom for income) The poverty index does not change if it is computed based on an income distribution that is generated by the *k*-fold replication of an original income distribution.

The Transfer Axiom argues that an ethically acceptable index of poverty must increase if there is a pure transfer of income from a poor individual to a richer individual – it is not

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[21] Short et al (1999) have a sophisticated discussion of the appropriate measurement of income flows and consumption needs in which, however, the only statistic used to compare the implications of alternative measurement choices is the annual poverty rate.

[22] Note that the strong upward transfer axiom implies the weak transfer axiom. The two versions differ in that the strong transfer axiom rules out the idea that a transfer from a poorer person to somebody just below the poverty line, which pushes the recipient out of poverty, can reduce poverty

satisfied by the poverty rate or the poverty gap or their product (or, as originally formulated, the Sen index). In highlighting the possibility that greater inequality *among the poor* deserves the attention of poverty researchers, Sen's work influenced many subsequent researchers. The Transfer Axiom also has a substantive, and policy relevant, implication: that "cream-skimming" – pushing some people from just below to just above the poverty line by giving them resources at the expense of the very deprived – is a policy that should <u>not</u> be seen as reducing poverty.

Foster, Greer and Thorbecke (1984) represent an early, and still very influential, attempt to establish a single aggregate measure of poverty which satisfies these axioms[23]. The FGT index requires analysts to specify explicitly a key parameter α, whose value expresses the relative importance to be ascribed to more extreme deprivation (i.e. a larger poverty gap between household income and the poverty line). Following a somewhat different approach, Shorrocks (1995) proposed a modified Sen index – which, since it is identical to the limit of Thon's (1979) index, can be referred to as the Sen-Shorrocks-Thon (SST) index and can be expressed as the product of the poverty rate, average poverty gap ratio and an index of inequality in poverty gaps – see Osberg and Xu (2000). [8]

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[23] If a population of n individuals, $i = 1...n,$ each with income y_i , is ordered in increasing order of income $(y_1, y_2 ... y_n)$ and if the poverty line is defined to be equal to z, then $g_i = {}^{z-y_i}\!/_z$ is the poverty gap ratio of the ith individual and $\overline{g}$ is the average percentage shortfall of poor individuals' incomes below the poverty line. One can define q as the number of poor individuals (i.e., individuals with $y_i < z$, hence $g_i > 0$) and restrict attention to them (i.e. $g_i = 0$ if $y_i > z$). The poverty rate r is the percentage of the population whose incomes lie below the poverty line. The Foster-Greer-Thorbecke index of order α is defined as:

1) $$FGT_\infty = \frac{1}{n}\sum_{i=1}^{q} {}_1\left(\frac{z-y_i}{z}\right)^\infty = \frac{1}{n}\sum_{i=1}^{q} {}_1 g_i{}^\alpha$$

Part of the appeal of the FGT index is its generality – the fact that it subsumes, as special cases, a number of well-known measures. If $\alpha = 0$, the FGT_0 index is just the poverty rate r.

2) $$FGT_0 = \frac{1}{n}\sum_{i=1}^{q} g_i{}^0 = \frac{q}{n} = r$$

If $\alpha = 1$, the FGT_1 is the average poverty gap of poor people ($\overline{g}$) times the poverty rate *(r)* – i.e., the normalized poverty gap.

3) $$FGT_1 = \frac{1}{n}\sum_{i=1}^{q} g_i{}^1 = \frac{q}{n} \bullet \frac{\sum_{i=1}^{q} g_i}{q} = r \bullet \overline{g}$$

Foster, Greer and Thorbecke (1984:763) show that the FGT index satisfies the transfer axiom for $\alpha > 1$ and the transfer sensitivity axiom for $\alpha > 2$.

[8] Xu and Osberg (2000) note that if $G(g)$ is defined to be the Gini index of inequality in g_i among all people, one can express the SST index as:

(4) $\qquad SST = (r) (\overline{g}) (1+G(g)).$

From equation (3) above, one can see that the Sen-Shorrocks-Thon index is simply equal to the Foster, Greer and Thorbecke index ($\alpha = 1$) multiplied by a measure of the inequality of poverty gaps – i.e. $(1+G(g))$.

(5) $\qquad SST = FGT_1(1+G(g))$

From Equation (4):

(6) $\qquad \ln(SST) = \ln(r) + \ln(\overline{g}) + \ln(1+G(g)),$

where the term $\ln(1+G(g))$ is an approximate of $G(g)$ based on the first-order Taylor series expansion. When comparing poverty over time or across jurisdictions, the percentage difference in poverty intensity can be expressed as the sum of the percentage differences in the poverty rate, average poverty gap ratio (among the poor), and Gini index of inequality in the poverty gap ratios (among all people).

However, although analytically it is the presence of the inequality of poverty gaps term in the SST index which ensures that the SST index has the axiomatically desirable transfer axiom property, differences in inequality among the poor are not very important empirically. Osberg and Xu have shown that differences over time (or between countries or Canadian or Chinese provinces) in the inequality of poverty gaps are empirically small, especially when compared to differences in the poverty rate and average poverty gap[9]. Similarly, the percentage change in the SST can be quite closely approximated as the sum of the percentage changes of the poverty rate and the average poverty gap ratio. Since explicit consideration of the inequality of poverty gaps very rarely alters the relative poverty rankings of actual social states, one can question whether bringing it into the debate was an advance – given also the likelihood that an emphasis on inequality among the poor diverts attention from the very much larger inequalities between the poor and the non-poor.

On the other hand, calling attention to changes in <u>both</u> the poverty rate and the average poverty gap can often be useful – because an improvement in the poverty rate is often <u>not </u>accompanied by an improvement in the poverty gap or poverty intensity (the poverty rate times the average poverty gap ratio). In fact, using data on trends in poverty since the 1970s in Sweden, Canada, the USA and UK, Osberg (2002) demonstrated that "in about 40% of year to year comparisons, the conclusion one would draw about trends in relative poverty differs <u>qualitatively</u> if one uses the poverty rate or poverty intensity as the measure. For absolute poverty in the UK, the poverty rate and poverty intensity change in opposite directions every time".

Although poverty intensity (also sometimes called the 'normalized poverty gap') ignores the inequality in poverty gaps and so does not satisfy the transfer axiom, it does possess the socially desirable property of easy comprehensibility. One of the problems of the poverty literature after Sen has been a disconnect between academic economics and the popular debate. An enormous advantage of the "normalized poverty gap" is that it has a simple graphical interpretation. Like the volume of a box, the SST index is the product of three factors but since the inequality in poverty gaps among all persons is virtually constant in empirical work, this box can be effectively represented in two dimensions. The product of the poverty rate and the average poverty gap ratio (which can be called either the 'normalized poverty gap' or 'poverty intensity') can be graphically represented as the area of a rectangle, whose height is the average poverty gap ratio and whose width is the poverty rate.

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(7) $\Delta \ln(SST) = \Delta \ln(r) + \Delta \ln(\overline{g}) + \Delta \ln(1+G(g))$,

where $\Delta \ln(1 + G(g))$ is an approximation of $\Delta G(g)$..

[9]Across LIS countries the coefficient of variation of poverty rates is .493, and for average poverty gap ratios it is .185. However, the coefficient of variation of $(1+G(g))$ is only .014 (Osberg and Xu, 2000:72). For Canadian provinces and US states in 1997 the CV is 0.341 for the SST index, 0.384 for the poverty rate, 0.141 for the poverty gap ratio and 0.011 for $(1+G(g))$ - see also Osberg and Xu (1999a). Osberg and Xu (2005) generalize this finding to Chinese provinces. Because all non-poor individuals (80%+ of the population) are assigned $g = 0$, any variation in $G(g)$ must arise from differences in income among the poor, which are necessarily small when compared to income differences among the non-poor. The upper bound on the incomes of poor people is the poverty line. The lower bound, (leaving aside measurement error), is subsistence. The dollar value of the difference is not large, particularly when compared to the dollar differences among the non-poor population. See Osberg and Xu (2000:57) and Xu and Osberg (2000) for geometric proof.

It is therefore not entirely clear how much consideration of inequality in poverty gaps among the poor has added to poverty measurement[24]. As well, the commonly accepted axioms of poverty index construction have at least three non-trivial – and possibly objectionable – implications of their own:

1) The focus axiom implies that once the poverty line is defined, <u>any</u> change in the affluence of the non-poor is irrelevant – this may not be a good guide to social norms of deprivation and is inconsistent with all non-absolute methodologies for drawing the poverty line[25].

2) The impartiality axiom (sometimes also called the anonymity axiom) requires that a measure of poverty be unaffected if any poor and non-poor individuals trade incomes – which implies, for example, that the poverty measure must remain unchanged even if men and women (or whites and blacks) trade incomes until <u>all</u> the poor are female (or black). People who think the relative social position of *groups* to be important – perhaps because relatively greater poverty among, for example, women and minorities may shed some light on process equity norms such as equality of opportunity – are not, however, indifferent between a situation in which all the poor are from a specific social group and a situation in which the same number of poor people are randomly distributed among social groups.

3) The continuity axiom requires that there be no discontinuity in well-being at the poverty line (i.e. that there is no qualitative distinction between being just below, or just above, the poverty line) – and that there are no discontinuities in well-being at lower incomes. This is a bit odd, since the very distinction between 'poor' and 'non-poor' involves a presumed qualitative difference. It is also not clear that this perspective is compatible with the social exclusion and human rights discourses, which draw a qualitative distinction between inclusion and exclusion and between having, or not having, human rights.

   As well, the continuity axiom rules out threshold effects, or 'breaking points', at which further marginal declines in resources produce discrete adverse changes in well-being. Over some range, marginal variations in income or food consumption may perhaps imply only somewhat worse housing, or somewhat greater hunger. However, at some point, an inability to pay the rent implies eviction, and homelessness is a distinctly worse state than being poorly housed. Similarly, there is a point at which the consequence of less food (or, in Canada, less heat in winter) is death. Discrete indicators of well-being (like homelessness or joblessness or access to transportation or being disabled) are particularly important for the poor, because their lack of income means they cannot transfer purchasing power from 'something else' – so it seems inappropriate to rule out discrete changes

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[24] Higher order ($\alpha > 2$) specifications of the FGT index likewise have little impact on poverty rankings, although more exposed to problems of measurement error among very low incomes (see Osberg, 2004).
[25] If the top deciles of the income distribution become very much wealthier, but the median income is unchanged, a purely relative poverty line like "one half the median" will not change. The Focus Axiom sees this as appropriate, on the grounds that concerns about poverty and inequality can and should be distinguished. Even given an unchanged poverty line, some may well disagree. As Section 1.2.1 has argued, however, all non-absolute methodologies for drawing the poverty line will imply that the poverty line increases as non-poor incomes rise, thereby increasing both the poverty rate and average poverty gap, with unpredictable impacts on the inequality of poverty gaps.

in well-being just because continuity is a "technical requirement" (Bourguignon and Chakravarty, 2003:30)[26].

In all the discussion thus far, the deprivation of individuals has been defined in terms of some single valued measure of economic resources, y_i. Townsend has commented: "From the earliest days, poverty was related to income, and income has remained at the core of the concept's meaning. ..There are advantages in maintaining that feature of the concept. But "income" is itself no less of a problematic concept than "poverty" and has to be carefully and precisely elaborated. Once this is done, scientists come to understand why there have been temptations to stray into other features of meaning. It is a difficult and costly exercise. If the income equivalent of assets, free public services and subsidies to employment have to be added to cash income to arrive at a comprehensive but accurate measure, then the task of assembling an accurate measure becomes daunting." (2006b:16) However, over the years poverty measurement has relied mainly on survey reports of household money income.

In the 1970s, it was fairly common for y_i to be reported with separate tables prepared for families of different sizes, in rough recognition of the fact that the income needs of households depend in part on the number of mouths that have to be fed. Over the 1980s it became common practice to compute the 'equivalent income' of each individual – i.e. to adjust household income explicitly for assumed 'economies of scale' in household consumption. Equivalent income calculations continue to assume that all individuals within households share equally in household resources, and have no claim on the resources of other households, but they ask: "what income would leave this person equally well off materially if they lived alone, compared to their actual living situation (i.e. actual household size and household income[27])?"

In the literature, a number of equivalence scales have been used to account for the economies of scale of household consumption[28] but in international studies it has become

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[26] Several authors (e.g. Sen (1983), Shorrocks (1995)) have recognized that continuity at the poverty line precludes a qualitative poor/non-poor distinction that may be socially important.
In a formal sense, the continuity assumption can be "rescued" for discrete outcomes (like death) by framing the issue as an outcome probability which increases rapidly over a given range of resources (e.g. because most deaths attributable to famine happen when inadequate nutrition decreases resistance to disease), rather than as an outcome that occurs at a discrete "breaking point" of inadequacy. The substantive question is whether it is useful to do so – whether insight is obscured by ignoring substantial shifts in well-being.

[27] In less developed countries it has become common practice to use aggregate consumption, rather than total income, as a measure of economic resources – in part because most less developed countries have a high proportion of self-employed and peasant farmers, who have no single source of money income, but for whom consumption surveys can add up the value of their own account production. By contrast, in industrial societies in which most wage earners have fairly few income sources, and many different expenditures, estimating income is arguably less problematic than adding up items of consumption (especially infrequent, 'lumpy' purchases) and assigning consumption flow values to housing and consumer durables. As well, as 'potential command over resources' 'income' is conceptually closer to a capabilities approach. Nevertheless, Pendakur (2001) has argued for measures of consumption poverty for Canada.

[28] See, for example, Phipps and Garner (1994), Buhmann et al. (1988), Coulter et al. (1992), Burkhauser et al. (1996), and Figini (1998) for comparison of the LIS, OECD and other equivalence scales. Figini (1998, p. 2) notes that "OECD and other two-parameter equivalence scales empirically used show a similarity of results [in measurement of inequality] to one parameter equivalence scales with elasticity around 0.5." (The OECD scale counts the first adult as 1 and additional adults for 0.7 adult equivalents – children under 18 count as 0.5). As Table 1 in the Appendix illustrates, the number of equivalent adults in a household is, for household size n = 1..4,

common practice to use the so-called 'LIS' equivalence scale, which sets $\beta = 0.5$ in calculating the equivalent income of each household member as:

$$Y_i = Y_f / N_{EA} = Y_f / N^\beta$$

Here Y_f is total household income after tax,[29] and N is the number of persons in the household. The number of "equivalent adults" N_{EA} is set at N^β. The two polar cases of the "equivalent income" calculation $Y_i = Y_f / N^\beta$ are $\beta = 0$ (household income is assigned to each individual) and $\beta = 1$ (per capita income is assigned to all persons – i.e. zero economies of scale in consumption). When $\beta = 0.5$ is the assumption, the implication is that, in order to live at the same level of economic well-being, a four person family needs about twice as much income as a single person. The lower the value of β chosen, the less household income is assumed to be needed by large families to stay out of poverty. In general, the distribution of household size differs across demographic groups and countries. Hence, the choice of equivalence scale parameter β can matter for poverty rankings – but as Appendix A illustrates, for a cross-section of OECD countries, reversals of the poverty ranking of countries typically require big changes in equivalence scale used. In the Canadian context, As Table A1 in the Appendix illustrates, the LIS equivalence scale and the Statistics Canada equivalence scale are essentially the same over the range of family sizes (1 to 5) in which the vast majority of Canadians live. The OECD scale will tend to imply that there more poverty is perceived among large families while the subjectivist 'Leyden' school methodology implies the reverse.

Some equivalence scales (such as the 'OECD scale') also distinguish between the number of adults and children in the household, but even so, such simple adjustments for household needs clearly ignore important determinants of living costs – such as disability status or the age and gender mix of children[30]. The argument for the neglect of such other issues by a statistical agency is that when a statistical agency is charged with estimating the aggregate size of the poverty problem, classification errors that offset each other can yield an unbiased estimate. If such variables (e.g. the gender mix of children) are randomly associated with household size, they will equally often generate over-estimates and under-estimates of living costs.

All this discussion of *aggregation* presupposes the *identification* of the poor – i.e. the prior specification of a poverty line. If the purpose of poverty measurement is as a social diagnostic that may inform public discussion and policy debates, the poverty measure constructed will be used to *compare* social states– which might be two different jurisdictions, or two time periods, or the results of two alternative social policies. The natural question to ask – given that Section 1 identified a number of possible poverty lines in Canada – is: "does one

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essentially the same for the LIS and Statistics Canada methodologies – but larger families are treated quite differently – and particularly so for the OECD scale.

[29] "Disposable Personal Income" in the LIS data sets.

[30] The age and gender mix of children determines whether childrens' bedrooms can be shared and thereby has a major impact on the size (and rental cost) of apartment needed. For a two parent, two child family there is a 50% probability that the children will be of the same gender, which is presumably why the HRDC Market Basket calculations averaged the cost of renting a two bedroom and three bedroom apartment to get a "2.5 bedroom" rental price as its cost of housing.

get the same ranking of poverty outcomes regardless of *which* poverty line one chooses?". In the literature, this has been referred to as "dominance' or "stochastic dominance"[31].

If, in comparing two states A and B, one always got the unambiguous ranking that there was less poverty in A than in B, *whatever* the poverty line chosen, then one could say that A dominates B. Of course, one might think that not *all* possible poverty lines are relevant. One might think that reasonable candidates for a plausible poverty line all lie in a specific interval (e.g. the $30,000 to $35,000 before tax income range, for a four person family). If so, then Atkinson (1999:44) suggests that "restricted dominance" is the relevant criterion[32], and one should just compare measures of aggregate poverty for poverty lines in this range.

If our measure of "less poverty" in A than in B is simply the poverty rate, this has come to be referred to as "first order dominance". If our measure of "less poverty" is the cumulative deprivation (i.e. cumulative value of the poverty gap summed over all people with less income than the poverty line), the term commonly used is "second order dominance". Higher order dominance relationships can be calculated but are not often used in practice. If dominance can be established, analysts can profess agnosticism about which poverty line is appropriate, knowing that the same conclusion about poverty rankings will hold, regardless. If dominance cannot be established, analysts have to make a judgement about which poverty line is, in fact, the more appropriate.

Poverty among the elderly provides a specific example of the interaction between social context, equivalence scales and dominance relationships in poverty measurement. The elderly often live in one or two-person households, while children are always found in households of two or more persons - so the relative size of household economies of scale assumed small households can shift the perceived demographic incidence of poverty. As well, the elderly have incomes that are generated by a very different set of processes than the non elderly. Because they have retired from the labour force, often without private pensions or appreciable savings, in all the advanced countries many of the elderly depend <u>entirely</u> on social transfers[33]. The non-elderly may mix transfers and earned income and have wages and hours of work which vary with different jobs and may fluctuate over the course of a year. By contrast, because the elderly typically have no earnings, many of them have much the same income because it is derived from the same source and calculated by the same benefit formula.

Osberg (2000b) used Luxembourg Income Study data to graph the income distribution of one and two-person elderly and non-elderly households in Canada, Australia and the United States in 1994. Australia has a very significant "spike" in the income distribution of elderly persons, with 50.6% of one-person households in the modal interval. In Canada, the comparable "spike" is less pronounced, (30.1%) and in the United States less again (16.3%)[34]. These national differences are easily explained by the structure of the Old Age Security system in the three countries. Australia has historically had a flat rate,

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[31] This is a specialist literature - neither term appears in *The International Glossary of Poverty* (Gordon and Spicker, 1999) or in standard micro-economics or mathematical economics texts, such as Chiang and. Wainwright (2005).

[32] Restricted dominance also avoids the problem that since the frequency and level of very low incomes (e.g. of the homeless) is measured with great unreliability, sampling error can bedevil comparisons of poverty at very low poverty lines.

[33] Luxembourg Income Study data indicate that in 1994, among households composed of seniors the percentage whose only income was government transfers was 21.6% in Canada, 16.3% in USA, 22.0% in Australia, 50.1% in Germany, 52.9% in Luxembourg, 18.2% in France, 14.0% in the Netherlands.

[34] For persons under 65, the percentage in the comparably defined modal interval of the income distribution was in 1994 - Canada 9.4%; USA 8.0%; Australia 11.3%.

means tested pension - the "spike" in the income distribution is simply the maximum pension benefit for the elderly with no other income. The Canadian system combines a flat rate federal Old Age Security payment with income supplementation through the Guaranteed Income Supplement, but the general availability of Canada Pension Plan benefits tied to earlier earnings builds in some differentiation among those persons with an earnings history. In the US, there is no universal component, and pension entitlement under Social Security replicates in old age more of the dispersion in incomes that occurred during the working years. The common outcome is, however, a spike in the distribution of the money income of the elderly which is, in all three countries, rather close to commonly used definitions of the poverty line.

To add to the complexity, far more of the elderly own mortgage free homes than is typical for people in other age groups, and as Wolfson (1979) demonstrated many years ago, if an imputation for the value of housing services is added to cash income, the relative likelihood of poverty among the elderly falls significantly[35]. As a consequence, the elderly are a group for whom small changes in income concept or equivalence scale or the poverty line are particularly important. Because many of the elderly have similar money incomes that are in the range of reasonable specifications of the poverty line, it is fairly easy for small changes in the level of the poverty line, or in the presumed economies of scale in small households, to appear to reverse poverty rankings.

2.2   Time and Poverty

Thirty years ago, micro data panels which followed the experiences of individuals over time were in their infancy. Most research on poverty was based on cross-sectional surveys or Census data. By construction, such data can only estimate the size and characteristics of the stock of people who are poor at a particular point in time. However, poverty – like unemployment, marriage, ill health, etc. – is a state through which people flow, for various periods of time, with differing probabilities of entry, exit and recurrence. Since the 1970s, the widespread availability of many excellent panel micro-data sets (e.g. the PSID, BHPS, SOEP, ECHP, LMAS, SLID, etc.) has provided the data necessary for the development of new econometric methods enabling researchers to examine the determinants of entry and exit probability, duration and recurrence of spells of time spent in poverty – and the associated literature has exploded[36].

Any measure of a flow – like income or consumption – has to specify a time period for measurement, so poverty measurement necessarily has a time dimension, but the literature on poverty measurement still largely ignores the frequency and duration of deprivation. Overwhelmingly, an annual accounting period is used to identify poor individuals[37]. When a person is considered to be poor if their total *annual* income falls

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[35] One can also argue about whether the value of health care services received should be added to income on an annual or expected future value or a lifetime basis – but an annual income basis has the perverse implication that the very sick get very large values of care imputed to them as 'income'.

[36] For example, Economic Council of Canada (1992), Ruggles (1990), Bane and Ellwood (1986) and Tienda (1990) examined national data. More recently, Antolin, Dang and Oxley (1999) and Valetta (2005, 2006) have compared poverty transitions in Canada, Germany, the UK and the US.

[37] Jenkins, for example, (1999:7) notes that the British data which he uses actually measures income during the month prior to the interview, but is converted to an annual flow and an annual incidence of poverty.

below the *annual* income poverty line, poverty indices are unaffected by when income is received during the accounting period or by what happens to individuals before or after (see Zheng (1997)).

An annual basis for poverty measurement implicitly assumes that it makes no difference to a person's poverty status when income (or consumption) is received during a given year – i.e. a perfect "within year" capital market is implicitly assumed. In annual measures of poverty, resource flows before or after the year in question are also not considered at all – implicitly, this is equivalent to assuming a total inability to borrow or lend between years. The contrast in assuming perfect "within-year" credit markets and non-existent "between-year" credit markets is striking. If a year were really an "instant" of time, these assumptions might be reasonable, but it is more likely that they have been accepted as a data driven constraint, since much income and consumption distribution data comes in an annual format. Historically, the lack of reliable data on the shorter term flows of households undoubtedly explains much of the research focus on annual measures of poverty, but some data sets *are* now available with a finer grained observation of flows.[15]

The use of a particular accounting period for income (such as a year) implicitly averages income flows and household needs for income within that period. For some purposes of poverty measurement the optimal "granularity", or frequency of observation, of household income data may be significantly shorter. If poverty is about deprivation of needed commodities, income data on the poverty population should have a frequency which reflects the actual ability of low income households to smooth their consumption over time. Poverty statistics have often been derived from data bases, such as Surveys of Consumer Finance, whose main focus is the income distribution of the population as a whole. Because most of the population is not as limited in their access to credit as poor people are, the accounting period appropriate for such surveys is not necessarily optimal for poverty measurement.

An annual accounting period aggregates income that is received, and spent, with much greater than annual frequency – receipts are usually weekly, bi-weekly or monthly, while food shopping may be nearly continuous, rent and utility payments are typically bi-weekly or monthly[13] and clothing purchases may be seasonal. If credit markets are easily available, or if individuals can acquire sufficient transactions balances, the non-synchronicity of consumption and income may be a minor issue – and for most of the population, cash flow problems are nothing more than an occasional annoyance (two-thirds of US households have at least one credit card to finance consumption expenditures- see Black and Morgan (1999)). However, for the third of US households who do <u>not</u> have a credit card, or for the 28.7% of households with zero or negative financial wealth,[14] cash flow problems can be a more significant issue.

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[15]For example, the Survey of Income and Program Participation (SIPP) in the USA and the Survey of Labour and Income Dynamics (SLID) in Canada.

[13]As a practical matter, rent and utilities (gas, electricity, water, telephone, etc.) may have a monthly payments schedule *only for those households who can provide a sufficient deposit or credit reference.* Those with poor credit references or unable to post the required payments bond are driven into a more informal (and higher unit cost) spot market of nightly rentals, payment in advance, metered delivery, etc.

[14]Based on 1995 Survey of Consumer Finance data for US households - see Wolff (1998:36, Table 1).

The standard economist's technique for dealing with the variation over time of income flows is to assume a discount rate and calculate a present value. For some of the poor, this may be problematic. A substantial fraction of US households are quite cut off from the formal financial system – Carney and Gale (1998:14) note that "45% of black families and 49% of those on public assistance do not have basic transactions accounts". Because lenders hesitate to advance credit to individuals with low (and often uncertain) income and little if any assets to offer as security and because poor households usually cannot accumulate much by way of precautionary or transaction balances, cash flow can often be the key constraint[38]. Ruggles (1990:94) noted that in the US, the average rate of monthly income poverty was roughly 40 percent greater than the annual income poverty rate – which implies that the annual accounting framework of poverty statistics can miss a good deal. If there is no food in the pantry or no heating oil in the tank, but there is also no cash coming in, no credit available and no friends or family to beg from, even a week can seem like a very long time. Since it is in practice very difficult for many poor individuals to smooth their consumption over the course of a year, social welfare program administrators have long recognized the existence of <u>immediate</u> needs for financial assistance.

The timing of income receipt and the duration and recurrence of deprivation is not currently part of poverty measurement, but should, however, matter – for at least three reasons:

(1) The long-term poor are clearly worse off than the short-term poor, other things equal. Analysts who share the concern of Rawls (1971) for the "most disadvantaged" will therefore be most concerned with identifying the long term poor and with shifts in the distribution of poverty spell durations which increase the prevalence of long durations.

(2) Income-based measures of poverty are known to be imperfect indicators of economic deprivation, since individuals with low income can sometimes get access to credit, run down their stock of consumer durables, beg from friends and family, etc. However, the longer and/or the more frequent spells of low income are, the higher is the probability that such buffers to current consumption will be exhausted, and the greater will be the actual material deprivation that corresponds to poverty in current measured income – i.e. in aggregating deprivation over individuals and over months of each person's deprivation, even for a given number of 'person-months', the distribution of spells will matter.

(3) Much social concern with poverty – e.g. that based on 'social exclusion' (see below) – is based on a presumption that poverty has adverse long term psychological and sociological implications.. For any given set of social norms, these impacts may be relatively small for short-term deprivation (e.g. a middle class divorcee who remarries quickly) but are highly likely to increase, in a non-linear way, with the duration of an individual's poverty experience. Social norms and the social stereotypes associated with low income status may also depend heavily on the *distribution* of poverty durations. A given rate of annual income poverty may be produced by either a high turnover/short duration process or a low turnover/long duration process. The degree of social exclusion that being poor implies may depend heavily on whether a poor person lives in a society where quite a few of today's non-poor have in the past experienced a short duration poverty spell, or whether the poor live in a community in which a preponderance of long duration

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[38] Wolff (1998:45) notes that the accumulated financial reserves of families in the bottom quintile of the US income distribution in 1995 would finance 0.0 months of consumption, while the second quintile of families could support their consumption (at 125% of the poverty standard) for only 0.6 months (i.e. about 18 days).

spells, among a small minority of the population, has created a pervasive set of social stereotypes.

Although poverty duration does not explicitly enter current aggregate measures of poverty, it has long been a prominent concern in the literature surrounding those measures – which has produced suggestions for supplementary indices. Atkinson (1999), for example, has argued that reducing the percentage of the population that is "consistently" poor should become an explicit, rather than a "flexible", target of government. [In 1992, the Economic Council of Canada concluded that "some 40 per cent of the people who are poor in any year are persistently poor." (1992:53).] Adding such a supplementary index would build in a duration dimension to poverty measurement, but in a discrete way, since short-term occasional poverty would not be counted. As well, counting the percentage consistently poor focuses solely on the *rate* of consistent poverty, so the poverty gap of the consistently poor is implicitly ignored. However, there is not as yet an accepted index which aggregates depth of deprivation over both periods of time and across individuals – despite the fact that both the incidence and depth of poverty for any individual will vary over time.

Measuring poverty transitions and spells is, however, far from easy. Individuals experience poverty, but they do so because their share of *family* or *household* resources means they "lack the resources required to enjoy the basic necessities of life[39]". The household which a cross-sectional survey observes at a point in time is a snapshot of a frozen moment in time. If that moment is representative, if the time period of resources measurement is appropriate, and if the household shares resources equally, the household snapshot can provide an unbiased estimate of the extent of deprivation at that instant. However, if one wants to add some consideration of the duration of poverty, one must recognize that people are, in continuous time, joining and leaving households – taking both their needs and their incomes (if any) with them and "renegotiating" their share of household resources. For each person, poverty status and the depth of poverty can change because (1) other individuals entered or left the household, or (2) their personal incomes changed or (3) their relative within-household bargaining power changed.

Hence, measuring the probability, duration and recurrence of the poverty experience of individuals implies one must follow their access to resources as they pass through a sequence of household compositions (e.g. for families with children, divorce/separation/remarriage or for the elderly, the death of another household member). The standard method of doing this is to compute (e.g. for each month observed) the 'equivalent income' of each household member, as a function of the total household income and number of all household members, in any particular month, and assign it to each person, for that month. This procedure relies very heavily on both the equivalence scale chosen and the 'equal sharing' assumption. It also presumes that the "transactions costs" of changing household characteristics is zero[40]. Nevertheless, it remains the best available feasible alternative.

In measuring poverty, there is also the question of the welfare costs of *volatility*, in itself. Labour market risks and demographic probabilities often interact – for example, because individuals in low-wage labour markets face higher probabilities of

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[39] Economic Council of Canada (1992:19)

[40] The long term increase in divorce rates in Canada implies that; (1) support payments link the incomes of more households and (2) an increasing fraction of Canadians can judge personally the realism of the 'zero cost to divorce' assumption.

unemployment, and the probability of divorce/separation is increased by unemployment.[41] When risks compound, the implication is greater economic insecurity for many of the poor. A good deal of evidence has concluded that satisfying long-term personal relationships in a supportive community are crucial to personal well-being[42], health and much else. Since such relationships are far harder to maintain when economic life is more insecure, it is arguable that insecurity in anticipated future income is crucially important to personal well-being, as well as the average level of actual consumption in the current period. An economist's approximation to the utility loss to individuals produced by an increase in uninsurable risk can be obtained by computing the change in certainty equivalent income associated with greater income volatility[43].

If volatility of individual equivalent incomes, and the recurrence of poverty spells that implies, were constant over time, then one could perhaps argue that using annual income based measures of poverty does not imply a changing measurement bias. Trends in demographic transitions, coupled with labour market risk and the declining coverage of income security programmes such as (Un)Employment Insurance, imply this is unlikely to be the case[44].

In the evolution of analysis and discourse about poverty, the development of micro data panels has played a role similar to that played by the development of better microscopes in medical research. With this new tool, new insights can be gained on the causes and consequences of old ailments – indeed the sudden availability of massive amounts of new information creates new problems in information management, synthesis and summarization. However, this essay has argued that the new micro-econometric literature on poverty transitions and durations has not been accompanied by enough change in the measurement of poverty.

This essay has also argued the purpose of poverty measurement – i.e. the *identification* of the number of poor individuals and the *aggregation* of their deprivation – is the comparison of social states. Comparison is useful because it helps the citizens of a democracy know which social policies are likely to be "successful" – and the criterion of "success" depends on what these citizens think to be important. Hence, in thinking about whether and how to incorporate time into poverty measurement, it is useful to ask why one might want to – i.e. what types of comparisons are now thought to be socially important.

The rhetoric of the poverty discourse of the 1960s and 1970s in Canada made frequent reference to long term poverty and inequality of opportunity, but it was dominated by a straight-forward concern with the economic deprivation then currently experienced by some Canadians – and more generous transfer programmes (such as a Guaranteed Annual

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[41] See Osberg and Phipps (1993)

[42] Writing in 1931, before the development of the welfare state in the UK, R.H. Tawney argued that: "Contrasts of economic security, involving, as they do, that, while some groups can organize their lives on a settled plan with a reasonable confidence that the plan will be carried out, others live from year to year, week to week, or even day to day, are even more fundamental than contrasts of income."(1964:147). See also the studies of the determinants of self-reported happiness at Veenhoven (2004).

[43] For an example of methodology, see Osberg, Erksoy and Phipps, 1998.

[44] Since the relevant issue is income and demographic volatility for households *in the vicinity of the poverty line*, estimates of income volatility for the population as a whole do not necessarily address the problem. Measurement error – and the spurious transitions it introduces – is a huge issue for analysis of poverty transitions and spells. A measure of poverty status that is insensitive to poverty depth (such as simple entry/exit probabilities or the percentage of people who are poor for 'm' out of 'n' periods) is relatively more sensitive to small measurement errors.

Income) were then considered politically possible. If the social problem is defined as the extent of deprivation of necessities *now*, then the measurement of current actual poverty, in the short term, is the crucial issue. If so, cross-sectional snapshots can provide the needed estimates for comparisons.

However, over the last thirty years the Canadian discourse on poverty has increasingly been focussed on child poverty, intergenerational inheritance and the general themes of equality of opportunity and human capital acquisition – somehow the deprivation experienced now by adults has seemingly diminished in social importance. In this new focus on long term or inter-generational poverty[45], time is of the essence. The duration of an initial spell, the probability of recurrence and the evolution over time of transition probabilities into and out of poverty are all crucial issues – which implies that 'point-in-time' measures of poverty cannot make the desired comparisons. To date, the literature has not produced a generally accepted[46] solution which adequately aggregates the depth, duration, recurrence and incidence of spells of deprivation.

2.3   Capabilities, Multi-Dimensionality and Item Deprivation

In the international literature, 'equivalent income' (i.e. family money income adjusted for number of family members) is the most commonly used criterion for measuring poverty – largely because money income enables a general command over market commodities and because a household's size is a major determinant of its expenditure needs. However, the consumption of commodities is not an end it itself. As Sen (1983, 1985) has argued, people consume commodities because they have *characteristics* that give them the *capability* to do things that they value, and thereby *function* as humans – for example, we buy a commodity like a bicycle because we value the capability of moving about and a bicycle has the characteristic that it enables this functioning.

Earlier, Becker (1965) had similarly argued that individuals do not derive utility from commodities, but from *activities* that require both time and commodities. However, Sen's concept of capabilities is broader, and over the last thirty years it has had much more impact on poverty measurement – possibly because it more clearly opens the door to consideration of broader issues of social context. To have, for example, the capability of moving about, and thereby function effectively in society, an individual's purchase of a commodity is often, by itself, not sufficient – in order to be useful, a bicycle requires some road or path to ride on, and land use patterns that do not put desired destinations at impracticable distances[47].

Sen has therefore questioned the relationship between income poverty and "capabilities" – as he puts it (1999:87): "poverty must be seen as the deprivation of basic capabilities rather than merely as lowness of income." He has argued (1999:90) that "What the capability perspective does in poverty analysis is to enhance the understanding of the nature and causes of poverty by shifting the primary attention away from *means* (...viz.,

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[45] However, even if the focus is very long-term (e.g. intergenerational), one should never forget that events (e.g. divorce, abuse) that are triggered by 'short-term' crises may have severe long term consequences.
[46] Osberg and Xu (2000) represent one suggested approximation, which remains at the working paper stage.
[47] In a city like Amsterdam, land use patterns, urban roadway design and social norms imply that getting around by bicycle is a practical way for 'average people' to function – but owning a bicycle does not enable the same level of functioning in a city like Edmonton.

income) to *ends* that people have reason to pursue, and, correspondingly, to the *freedoms* to be able to satisfy these ends."

As Adam Smith argued more than 200 years ago, at a time when real living standards were less than a twelfth[48] of today's, social context is central to the definition of "necessities":

> "Under necessaries, therefore, I comprehend not only those things which nature, but those things which the established rules of decency have rendered necessary to the lowest rank of people."(1961:400)

Sen's idea of capabilities therefore has an elegant implication for the old question of whether poverty should be seen as "relative' or "absolute":

> *"Relative* deprivation in the space of *incomes* can yield *absolute* deprivation in the space of *capabilities.* In a country that is generally rich, more income may be needed to buy enough commodities to achieve the *same social functioning*, such as "appearing in public without shame". The same applies to the capability of "taking part in the life of the community". (1992:115)

Sen's perspective also reminds us that capabilities depend on both private resources and the "social wage" of public services in health care, education and the urban environment (e.g. mass transit) – and that the social wage is even more important to the poor than to the affluent, since the poor do not have the money with which to purchase market substitutes. It follows that a measure of poverty should in principle be sensitive to changes in such public services. Although, as a general rule, international comparisons indicate that "non-cash income reinforces the redistributive impact of conventional (cash) tax-transfer mechanisms rather than acting to offset them in any major way (Smeeding et al,1993:229)," changes over time in the "social wage" nonetheless have a major impact on the degree of real deprivation that corresponds to a given deficiency in money income.

However, although the preamble of many recent poverty studies may appeal to the rhetoric of 'capabilities', this approach is not often actually used to construct an operational measure of poverty, partly because it requires that "we need to find agreement on a list of valuable capabilities to measure the good of society" (Santibanez, 2005:91). Unlike a human rights discourse which can rely on the procedures by which democratically elected governments sign human rights treaties to establish both the legitimacy and the specific wording of "human rights," a "capabilities" approach has no authoritative source to specify what exactly should be counted. Sen has provided some compelling examples (e.g. "appearing in public without shame" - see above) but he has avoided specifying an exhaustive list of relevant capabilities[49]. As a consequence, researchers are free to adopt a variety of perspectives – some have done so, but since there is no certainty of consistency, there is little comparability across studies.

A second problem with making a measure of capabilities operational is that capabilities concern options and not observed choices. Sen explicitly rejects the idea that the alternatives that individuals do not choose are irrelevant to their well-being. If there is some

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[48] Maddison's estimates (2003:59) imply that GDP per capita in the UK was 11.8 times higher in 2001 than in 1820 – i.e. incomes in the 1770s were certainly less than 8% of UK incomes now.
[49] See, for example, the extended discussion in Sen (1999;74-99).

set of alternatives – A, B, C and D – from which I would always chose A, I am still worse off if B, C and D are no longer available to me, because I lose the possibility of choice, and the functioning of human agency (1987:36). Sen repeatedly (e.g. 1987, 1999) compares the situation of two starving people – one who is fasting voluntarily and the other who is prevented by poverty from eating – to make the point that observed outcomes do not necessarily reflect the opportunity set from which individuals choose[50]. Since human agency is crucial for Sen, some measure of opportunity set is essential, but typically the only reliable data available to researchers are the observed outcomes actually experienced.

As Tsui (2002:72) expresses it: "Capability measures the freedom to achieve certain important functionings. Thus the capability of a person is an opportunity set of bundles of functionings and not the functionings achieved. Multidimensional poverty indices, however, measure the functionings *achieved.* While one may agree with Sen that capability is the crux of the matter in poverty measurement, the practical implementation of the capability approach is inherently difficult because one has to have information on the opportunity sets of functionings."

A third issue is lags in timing. For a desired capability like literacy or good health, the observable required commodity input may be a service like schooling or medical care – but this service is typically required somewhat earlier in time. For some issues (like child poverty), the distinction between resources required earlier and capabilities achieved (or not achieved) later in life is crucial.

In one sense, the capability approach brings us back to the old issue of whether observed actual consumption or income (i.e. the flow of potential consumption) is a better indicator of poverty status. Money income – or, more broadly, income and wealth – represents a generalized command over resources, i.e. the capability of consuming commodities, while the aggregate value of consumption expenditures is a general index of observed choices, (a.k.a. *achieved functionings*) given that constraint. What the "multi-dimensional poverty" literature adds is the idea that "human deprivation is visualized *not* through income as an intermediary of basic needs but in terms of shortfalls from the basic needs themselves (Tsui, 2002:72)".

If this multi-dimensionality is to be useful, a basic presumption is that "these attributes cannot be traded one for the other. ….. If the only reason that a family is poorly housed is that they cannot afford better housing, then income is a sufficient indicator of deprivation."(Atkinson, 2003:53). In assessing the importance of constructing measures of multi-dimensional deprivation, one must therefore take a view on the relative importance of non-market constraints in determining the allocation of resources among people. If most commodities (or reasonably close substitutes) are, most of the time, available for purchase in the market, then constructing indices of multi-dimensional poverty adds relatively little to measures of family market income poverty. Non-market allocation of commodities across families might occur because governments deliver some goods and services in-kind or because discrimination prevents some households' access to market goods and services. But to the extent that this non-market allocation process is highly correlated with family income, relatively little information will be added to measures of family income poverty.

However, for multi-dimensional poverty, *family* resources are not necessarily the key issue. The past thirty years have seen increasing recognition of the social importance of

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[50] Voluntary self-denial of food may have been important in some societies, at some periods, but very, very few Americans or Canadians ever fast voluntarily nowadays. This recurring example in Sen's writings is, therefore, both logically impeccable and empirically irrelevant.

inequality within families – along gender lines, and between adults and children. A particularly important type of non-market allocation occurs within families – indeed, children and dependent adults without their own incomes rely totally on non-market transfers of resources within the family. As Burton and Phipps (1995:194) have demonstrated, the child poverty rate may have been as high as 57%, or as low as 6% in Canada in 1992, depending on the assumed degree of within family inequality in the distribution of resources.

Empirical researchers on poverty have routinely made the assumption of equality in the within family distribution of resources – not because they are unaware of structured inequality within families, but because of the unavailability of data on within household distribution. However, some indicator measures – such as the height-for-age of children – can, in some contexts, get beneath the veneer of the family and provide evidence on the well-being of individuals within households. Hence, a positive implication of the evolution of poverty measurement to consider multi-dimensional poverty is openness to measures indicative of intra-family inequality. And if measures of multi-dimensional deprivation imply, for example, that family income poverty and child health measures are poorly correlated, the implicit lesson is that cash transfers may not have as effective an impact on child health outcomes as direct service delivery (e.g. school meal programmes). In this sense, measurement exercises may help to create a broader vision of possible public policy choices.

To construct an aggregate measure of multi-dimensional poverty one must, however, specify the means of identifying the number of deprived people and aggregating their deprivation. Identification of multi-dimensional deprivation requires a specification, for each dimension of need, of a minimum norm of basic provision – in effect, the construction of a 'poverty line' level of access to each individual dimension of well-being. [And there is little reason to think that there would be any more unanimity, on each dimension considered, than there is concerning the money income poverty line[51].]

Given that such a minimum criterion is established for each dimension, the next issue is whether, in order to be counted in an aggregate measure of multi-dimensional poverty, people have to be deprived in all dimensions, or in just one or more. For example, if 10 % of people lack adequate housing, while 11 % are inadequately fed, this could be because 8 % of people are both poorly fed and poorly housed, while 2 % have poor housing, but are adequately fed, and 3 % are poorly fed, but have adequate housing. In estimating the rate of multi-dimensional poverty, it is clear that one would not want to just add together the 10% who have poor housing and the 11% who are poorly fed, because the degree of correlation in outcomes will determine the extent to which individuals might be double counted. However, there is a real question as to whether, in aggregating poverty, one should count the rate of multi-dimensional poverty as the 8 % who are deprived along both dimensions or the 13 % who are deprived along at least one dimension. As well, if the depth of their deprivation, along each dimension, is to have some weight in the aggregate index, one must form a judgement about whether any lesser deprivation on one front can balance off greater deprivation on another dimension.

The recent literature on multi-dimensional poverty includes contributions by Atkinson (2003), Bourguignon and Chakravarty (2003), Duclos et al (2006) and Tsui (2002). In all

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[51] Atkinson (2003:56) comments that first degree dominance – i.e. in terms of head-count ratios – can be calculated in the multi-dimensional case but although higher order dominance relations can be calculated "it is not easy to form an intuition about such higher derivatives". See also Duclos et al (2006:951-956). If Atkinson – a brilliant scholar with 40 years experience in the field – cannot think of an intuitive rationale, some may think it is unlikely to exist.

these cases, the continuity assumption is made – but this precludes the possibility of threshold effects[52]. Such a denial is even more problematic in the context of specific, non-substitutable basic needs (e.g. heat, food) than in the context of a general command over resources, such as income.

Fundamentally, the value of the exercise of constructing multi-dimensional poverty indicators relies crucially on the correlation among attributes. "Too high" a correlation of deprivations implies there is little information added by considering additional dimensions – but "too low" a correlation can lead an observer to wonder whether the attributes come from a common underlying social phenomenon, or whether they represent distinct social issues, with differing causes and implications. As well, any measurement error in each attribute will bias the observed correlation of attributes towards a random association. Although random measurement error in the estimation of single dimensioned deprivation may be benign (since over-estimates and under-estimates may offset), this is not the case for multi-dimensional poverty measures. Measurement error is particularly likely for the poverty population, given the volatility of their income flows and household characteristics.

2.4 Social Exclusion

"Poverty" is a word which has been used for centuries, but it is now relatively rare to hear about "anti-poverty policy". On the other hand, although "social exclusion" is a relatively new concept, it has become a popular organizing idea for a broad range of social policies[53] - as proposed, for example, by the UK government's *Social Exclusion Unit* and *Social Exclusion Task Force.* It is therefore useful to ask: "What is social exclusion?" and "What are the advantages of this new concept?" – to the former question, the UK government has proposed the rather rambling answer:

> "Social exclusion is about more than income poverty. Social exclusion happens when people or places suffer from a series of problems such as unemployment, discrimination, poor skills, low incomes, poor housing, high crime, ill health and family breakdown. When such problems combine they can create a vicious cycle[54]."

Atkinson's definition of social exclusion is more succinct: "people being prevented from participation in the normal activities of the society in which they live or being incapable of functioning" (1999:27) – which is quite close to Townsend's definition of

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[52] By "threshold effect", I mean the idea that if a desired capability Y has discrete states [$Y = (0, 1)$], and depends on a continuous input X, there exists a specific value X^*, such that [$Y= 1$ if $X \geq X^*$; $Y=0$ if $X<X^*$].

[53] In December 2006, "social exclusion" had approximately 187,000 hits on Google Scholar. It is a key organizing theme of social policy in the European Union – see, for example, http://ec.europa.eu/employment_social/social_inclusion/jrep_en.htm#joint_report

[54] Website of the Social Exclusion Task Force: http://www.socialexclusionunit.gov.uk/page.asp?id=213; see also http://www.cabinetoffice.gov.uk/social_exclusion_task_force/   One can compare this definition with that of the ILO: "*Social exclusion may therefore be understood as an accumulation of confluent processes with successive ruptures arising from the heart of the economy, politics and society, which gradually distances and places persons, groups, communities and territories in a position of inferiority in relation to centres of power, resources and prevailing values.*" ILO/ Estevill (2003:19). As the same document also notes: "it is important to warn against the use and abuse of a concept that has been qualified as a catch-all expression, a corner shop offering something of everything, a buzz word that can be used on any occasion, or as being like chewing gum in the sense that it can be stretched at will." (2003:12)

poverty: "People can be said to be in poverty when they are deprived of income and other resources needed to obtain the conditions of life—the diets, material goods, amenities, standards and services— that enable them to play the roles, meet the obligations and participate in the relationships and customs of their society." (2006a:5)

Chakravarty and d'Ambrosio (2006:379) argue that: "Three types of implicit conceptualization of social exclusion are currently available in the literature. In the first, it is interpreted as the lack of participation in social institutions; whereas the second regards the problem as the denial or non-realization of rights of citizenship. The third views social exclusion in terms of increase in social distance among population groups."

Although these various definitions are not the same, there are some common elements:

1. Multi-dimensionality – income inadequacy is correlated with social exclusion, but is seen as neither necessary nor sufficient[55];
2. Mixed types of indicators – since exclusion from "the normal activities of the society in which they live" can arise from income inadequacy, absence of physical infrastructure (e.g. wheelchair ramps), personal characteristics (e.g. deafness) or social context (e.g. racism), an eclectic mix of subjective and objective indicator variables has often been used;
3. Threshold effects – unlike the multidimensional poverty literature's concentration on purely quantitative deprivation, the social exclusion discourse is quite explicitly about the qualitative difference between states (i.e. between inclusion and exclusion, along a variety of dimensions – e.g. homelessness or lack of access to transportation);
4. Time – social exclusion is seen as a long-term state of deprivation which continues or worsens over time rather than a short-term need[56];
5. Feedback effects – the 'vicious cycle' of negative feedback from poor current outcomes to poorer future opportunities on several reinforcing dimensions;
6. Social Relativity – since exclusion or inclusion is a *relationship* between individuals and the wider society, it makes no sense to frame the issue purely in terms of personal characteristics.

The social exclusion discourse is characterized its breadth of vision, and its emphasis on the social context in which individuals have to try to function – and the example of transportation might help to make the point.

The income approach to poverty does not particularly focus on any specific issue (like transportation). Rather, an income poverty perspective would think of the transportation needs of the poor as a specific item within the general problem of insufficient income. In this perspective, the problem is that poor people do not have enough money. Hence, they are unable to buy a car or to purchase bus fare. The implicit assumption is that these commodities are available for purchase and that people could use them – i.e. either that there is a bus service, which operates with sufficient frequency and routing to be useful, and that

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[55] The accessibility of public infrastructure for wheelchairs is an example of social exclusion that is correlated with income (since the disabled are at much greater risk of income poverty), but is logically distinct.
[56] In, for example, the measurement exercise of Chakravarty and d'Ambrosio (2006), individuals are only classed as excluded, on a given dimension, if they are deprived for four or more of the last six years.

everyone could get on the bus, or that everyone could get a driver's license, if they had the money to buy a car[57].

The 'capabilities' approach emphasizes specific issues, like transportation, and has a somewhat broader perspective – it might see the capability of moving around as influenced both by financial resources (e.g. enough income to buy a car) and by personal characteristics (e.g. enough vision to get a driver's license). Capabilities can also depend on social context (e.g. whether there is a bus route, what it connects to and whether buses are wheelchair accessible). Essentially, however, "capabilities" are discussed as attributes of individuals – e.g. whether a person has low income or a disability.

By contrast, the Social Exclusion Unit sees transportation as a problem for society as a whole, and the main issue in social exclusion as 'accessibility planning' which enables access for all. The UK Social Exclusion Unit declares:

"Good transport links can help people to break out of social exclusion.
The key to success is helping connect people to jobs, schools, training, health care and healthy, affordable food. But making such key places truly accessible means more than improving train and bus links; it also means improving local and national planning decisions, providing specialist support to help people get to work and improving design[58]."

Although one can see inadequate transportation from both the 'capability' and the 'social exclusion' perspective, the latter approach places much more explicit emphasis on social context, in a broad sense. In general, the capability of individuals to participate in economic and social life depends on both their individual assets and their social context – but the income, capabilities and social exclusion perspectives differ in their emphasis and framing of the issues. Earlier poverty studies had also made the point that people cannot escape poverty by getting a job unless they can actually get to the job site, but the social exclusion literature adds explicit consideration of the other transportation needs of individuals, and frames the problem as a dimension of the transportation policy of the entire community (i.e. in urban design, transportation infrastructure, public transportation provision and pricing).

For a statistical agency which is tasked with measurement, the crucial implication of a social exclusion perspective is that analysts will want data on both the attributes of individuals and the social context in which those particular individuals have to function. In principle, geo-coding of micro-data and data linkage across surveys can go a long way towards making measures of social context possible – e.g. in linking individual and household characteristics and outcomes to the public transportation available in their community of residence. However, this will only be feasible if privacy concerns are satisfied at the data processing stage.

Chakravarty and d'Ambrosio (2006) provide a measure of social exclusion for European countries. However, like the multi-dimensional poverty literature, a problem with the social exclusion literature is the lack of an authoritative list of the crucial dimensions of

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[57] The Market Basket poverty line of HRDC recognizes, for example, the financial cost of automobile purchase in areas without bus service, but presumes the ability to drive.
[58] http://www.socialexclusionunit.gov.uk/page.asp?id=7 see also Making the Connections Final Report on Transport and Social Exclusion http://www.socialexclusionunit.gov.uk/downloaddoc.asp?id=229

social exclusion relevant for Canada[59]. In trying to construct aggregate measures of social exclusion, researchers have had to be opportunistic and use the relevant variables that happened to have been collected in existing data sets – which implies estimates are not necessarily comparable across studies. Chakravarty and d'Ambrosio (2006) construct a deprivation score (the sum of integer weighted characteristic functions) for each individual and sum over individuals to get a rate of social exclusion in different European nations – but they are limited crucially by the data set that they have available (the European Community Household Panel – ECHP).

Capellari and Jenkins (2006) argue that the methodology of using questionnaire items to assess deprivation and using correct/incorrect answers to exam questions to assess ability has much in common. In both cases, item responses are being used to assess an underlying, but not directly observed, latent variable (deprivation, ability). They compare an item response modelling (IRM) framework for deprivation scales and the use of sum-score deprivation indices. Although they favour the IRM approach over the sum-score method in principle, they find in an illustrative analysis of basic lifestyle deprivation in Britain in the mid-1990s that both approaches provide very similar pictures of households' circumstances.

In identifying poor individuals, the discourse on social exclusion in 2006 is entirely consistent with the Economic Council of Canada (1968:104-105) forty year old definition of poverty in general terms of community norms as "insufficient access to certain goods, services and conditions of life which are available to anyone else and which have come to be accepted as basic to a decent minimum standard of living." However, more recent poverty measurement efforts in Canada have moved away from the idea of community norms – as Richard Shillington has commented (2003:2):

"At the behest of the provincial ministers of social services, HRDC is developing a poverty measure which rejects the relative notion of poverty underlying Statistics Canada's Low Income Cut-offs. 'It is designed to be sensitive to the changing consumption opportunities of those at the lower end of the income scale, not to what is happening to general living or consumption standards' (HRDC). Although awkwardly expressed, the intent of the MBM is clear: the standard of living judged by officialdom as sufficient for the poor will not depend on what those same officials take for granted. What an excellent description of social exclusion."

On the other hand, by focusing so exclusively on long term deprivation and cycles of disadvantage, and by ignoring the current needs of the short-term poor, the social exclusion literature is quite consistent with the evolution of emphasis and concern in Canadian social policy in recent years. Also consistent with recent labour market policy is the strong emphasis on getting the poor into paid jobs. The ILO, for example, argues that: "enabling each person to participate, through remunerated work, in the development and welfare of society is beyond doubt the best means of combating effectively poverty and social exclusion." It is probably not quite fair to interpret the social exclusion rhetoric emphasizing the importance of employment as just "the same old workhouse mentality" that has always pervaded the discussion of poverty, since there is more attention to the importance of structural barriers to employment (e.g. transportation) than is common in the 'work incentives' paradigm.

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[59] The European Union has adopted a set of indicators of social inclusion – see Atkinson et al (2004) for a discussion.

Hence, as Estivill (2003:34) concludes:

> "despite the ambiguities of the concept of exclusion, it supplements that of poverty, facilitates a better understanding of income insecurity in the developed world and of inequality of opportunity in developing countries, focuses attention on the role of social actors and institutions in processes of inclusion, permits the application of individual, family and community relations at the micro-level, and shows the importance of local contexts, while at the macro-level it offers a new vision of globalization and of the increasing vulnerability of specific population groups and areas."

2.5 Human Rights

If poverty is "deprivation of necessities", should basic human rights be thought of as "necessities"? If poverty is better seen as deprivation of capabilities, does the idea of 'capability' include the capability of functioning as an effective citizen? If poverty is viewed as an aspect of social exclusion, could exclusion not be said to be a denial of the rights of citizenship? In sum, is there a difference between the measurement of poverty and the measurement of deprivation of economic and social human rights?

The logically prior question is, of course, "what are human rights?" More specifically, since the context is Canadian society circa 2007, what definition of human rights has Canada committed itself to in signing and ratifying a series of international covenants such as the UN Universal Declaration of Human Rights (1948) or the International Covenant on Economic, Social and Cultural Rights (1966) and in adopting a 'Charter of Rights and Freedoms' as part of the Constitution Act (1982)?

Much discussion of human rights in Canada emphasizes political and legal human rights[60]. However, for poverty measurement, Canada's obligations in international human rights law under the UN Universal Declaration of Human Rights (1948) and subsequent covenants[61] are particularly relevant. Article 25 of the Universal Declaration states:

> "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."

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[60] For example, Articles 7 to 13 of the Canada's Charter of Rights and Freedoms detail the procedural legal rights of Canadians, if charged with an offence.
[61] The International Covenant on Economic, Social and Cultural Rights (ICESCR) was, for example, ratified by Canada in 1976. Article 11 states: " The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions". A complete listing of human rights protocols can be obtained at http://www.unhchr.ch/html/intlinst.htm#develop A listing of Canada's international human rights obligations, and the date of ratification, can be obtained at http://www.unhchr.ch/tbs/doc.nsf

Canada also voted for General Assembly Resolution 32/130, which stated: "The full realization of civil and political rights, without the enjoyment of economic, cultural and social rights is impossible" and emphasized that "All human rights and fundamental freedoms are indivisible and inter-dependent." The interdependence of social, economic and legal rights is particularly important for poverty measurement because specific economic deprivations (e.g. homelessness) entail, in practice, a denial of legal and political rights.

A right to privacy (Article 12 of the Universal Declaration) is, for example, in practice empty without a right to housing (Article 25). Privacy requires control over a definable personal space, which, in a market economy, generally requires the ownership of property or the income with which to rent property. As the US courts have noted "One of the main rights attaching to property is the right to exclude others", and the homeless have no such property rights. A legal "right to privacy", or a constitutional right to protection against unreasonable search and seizure is therefore meaningless, unless an individual actually also has rights to a definable personal space. If there is an enforceable "right to shelter", individuals may get such a space from the state, but in its absence they need to purchase ownership or leasehold rights to a personal space. The homeless do not have such a space.

As the United Nations High Commissioner for Human Rights (UNHCHR) has noted:

"With the adoption of the Universal Declaration of Human Rights in 1948, the right to adequate housing joined the body of international, universally applicable and universally accepted human rights law. Since that time this right has been reaffirmed in a wide range of additional human rights instruments, each of which is relevant to distinct groups within society. No less than 12 different texts adopted and proclaimed by the United Nations explicitly recognize the right to adequate housing…...The indivisibility and interdependence of all human rights find clear expression through the right to housing. As recognized by several human rights bodies of the United Nations, the full enjoyment of such rights as the right to human dignity, the principle of non-discrimination, the right to an adequate standard of living, the right to freedom to choose one's residence, the right to freedom of association and expression (such as for tenants and other community-based groups), the right to security of person (in the case of forced or arbitrary evictions or other forms of harassment) and the right not to be subjected to arbitrary interference with one's privacy, family, home or correspondence is indispensable for the right to adequate housing to be realized, possessed and maintained by all groups in society.

At the same time, having access to adequate, safe and secure housing substantially strengthens the likelihood of people being able to enjoy certain additional rights. Housing is a foundation from which other legal entitlements can be achieved. For example: the adequacy of one's housing and living conditions is closely linked to the degree to which the right to environmental hygiene and the right to the highest attainable level of mental and physical health can be enjoyed. …

This relationship or "permeability" between certain human rights and the right to adequate housing show clearly how central are the notions of indivisibility and interdependence to the full enjoyment of all rights[62]".

In Section 2.2, this essay discussed multi-dimensional poverty, while Section 2.3 considered capabilities and functionings and in Section 2.4 the focus was on social exclusion. Inadequate housing – like inadequate food, clothing or medical care – can be analyzed from all these points of view. However, previous sections of this essay have noted how the lack of an authoritative listing bedevils measurement of the dimensions of multi-dimensional poverty or capabilities or social exclusion. By contrast, the human rights perspective has the strong advantage of specific lists of rights, and the further advantage of procedural legitimacy in how they are enumerated and specified.

A statistical agency which can expect to be asked: "How much poverty is there?" and wants to prepare a defensible answer needs some credible basis to specify the multiple dimensions of the problem. In the academic literature, social philosophers (e.g. Sen, 1985, 1999) have attempted to reason from first principles to establish the capabilities, freedoms and rights which are essential preconditions for the autonomy of all citizens, but the list of basic needs enumerated is invariably specified at a high level of abstraction, and is often consciously incomplete (i.e. generally phrased and non-exhaustive). Academic writings ultimately represent the reasoned opinion of the author alone, which may or may not be persuasive to others. It is unclear what percentage of the population needs to be convinced of the merits of a philosophical argument, whether the criterion for acceptance is popular or academic opinion or how one would know with certainty whether a philosophical argument has been generally accepted. Academic discourse offers no clear way to verify the *general* acceptance, or relative priority, of a specific list of capabilities, social inclusions or human rights. Academic discourse also has no mechanism for finding balance among possible conflicts of objectives or for interpreting general statements in a particular social context. Although, in practice, different authors have much in common, the ultimate arbiter of philosophical consensus is a reader's subjective assessment of cogency of argument.

By contrast, human rights are enumerated by a clear procedure. They have a clear legal origin in constitutional provision, legislation and international treaties – and a clear line of legitimacy through the legislative procedures of representative democracy. In thinking about how to define the basic human rights which are the primary needs of citizens, modern pluralist societies like Canada rely on constitutions, treaties, legislation, regulations, judicial interpretations and administrative decisions. These constitute a hierarchy of legal status but all ultimately derive their claim to legitimacy from a process of representative democracy.

As well, Canadian human rights legislation is part of a larger project. The UNHCHR has argued that: "At the core of United Nations action to protect and promote human rights and fundamental freedoms is the International Bill of Rights. The Bill consists of three instruments:

The Universal Declaration of Human Rights (1948);
The International Covenant on Economic, Social and Cultural Rights (1966);
The International Covenant on Civil and Political Rights (1966).

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[62] Fact Sheet No.21, The Human Right to Adequate Housing http://www.unhchr.ch/html/menu6/2/fs21.htm

These three documents define and establish human rights and fundamental freedoms. They form the foundation for the more than 50 additional United Nations human rights conventions, declarations, sets of rules and principles.

The Covenants are international legal instruments. This means that members of the United Nations, when they become parties to a Covenant or other conventions by ratifying or acceding to them, accept major obligations grounded in law.

States parties voluntarily bind themselves to bring national legislation, policy and practice into line with their existing international legal obligation."[63]

This international system of human rights also has a formal mechanism (the office of the United Nations High Commissioner for Human Rights) to weigh the validity of individual assertions of violation of human rights and to interpret any ambiguity of the wording of these documents, or their relevance to a particular real world context. In human rights, as in commercial obligations incurred under the World Trade Organization, or the North American Free Trade Agreement, Canada has formally agreed to obligations under international law which are interpreted by international institutions in which Canada has a voice, and to whose jurisdiction Canada has agreed. This does not imply that Canada has signed on to unattainable goals – since immediate attainment may not be feasible, Green (2001:1070) notes that: "The economic and social rights in both the ICESCR and the CRC[64] are subject to the limitation of "progressive realization." The obligation on states is to move as expeditiously and effectively as possible towards full realization – it is only deliberately retrogressive measures that would be a violation of human rights duties[65].

In short, in contrast to the 'capabilities' or 'multi-dimensional poverty' or 'social exclusion' literature, the human rights literature is in crucial respects quite specific, with an emerging body of case law and precedent, and it has the legitimacy that comes with enactment by representative democratic institutions.

The specificity of human rights has important measurement implications. The human rights perspective is that all humans have rights, at all times – which implies that individuals within families each individually have the right to adequate food, clothing, shelter, medical care, education, etc. It is not therefore enough just to measure the adequacy of family income, if there is also evidence of appreciable intra-family inequality in the distribution of resources. The relevant resources are mostly named as specific goods – e.g. in the Universal Declaration, Article 25 specifies food, clothing, housing and medical care while Article 26 covers education and Article 27 considers participation in cultural life.

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[63] http://www.unhchr.ch/html/menu6/2/fs21.htm

[64] International Covenant on` Economic, Social and Cultural Rights (ICESCR); Convention on the Rights of the Child (CRC)

[65]As in, for example, the introduction of the Canada Health and Social Transfer (CHST). An essential part of human rights is that they are unconditional and inalienable. (The right to "free speech" is not, for example, a reward for "good behaviour", which is only available if individuals say the "right thing" or if they are morally praiseworthy on other dimensions.) Historically, in making need the sole criterion for assistance, the Canada Assistance Plan reflected this unconditional nature of human rights. However, the introduction of the CHST in 1996 allowed provinces to make social assistance payments conditional, implying that the "undeserving" (however defined by the local legislature) have no right to assistance when in need, or as defined under the UN Universal Declaration of Human Rights, Article 25.

Deprivation at any point in time counts – i.e. short term deprivation matters, as well as long term poverty.

Although children are implicitly covered by all human rights covenants, there is also a specific *Convention on the Rights of the Child* (1989), which Canada has signed. Article 27 states: "Parties recognize the right of every child to a standard of living adequate for the child's physical, mental, spiritual, moral and social development." Other articles recognize the need for specific goods and services – e.g. Articles 24 (health care), 26(social security), 28 (Education). As part of this convention, Canada has to respond to periodic enquiries from the Committee on the Rights of the Child as to the actual fulfilment of human rights for Canadian children. In this sense, children are real agents now in the human rights discourse – in distinct contrast to their invisible status within measures of family income poverty or the 'capabilities' discourse (which is oriented to the attainment of adult functionings) and their role as 'adults in waiting' within the social exclusion literature (which emphasizes cycles of disadvantage and intergenerational inheritance of low incomes).

Green (2001:1086) has commented: "There are two directions from which to design any given human rights indicator: That of government compliance (as a means of measuring whether a government is fulfilling its obligations under a particular covenant) and that of individual enjoyment (as a means of measuring whether each person is fully enjoying the rights guaranteed to him or her by a covenant). Although compliance and enjoyment are two sides of a single coin, it is possible to approach indicators for human rights from either angle. ….. It is clear that ultimately all approaches slide together to a single point: where there is a right there is a duty, and where the duty is not met there is a violation."

The quotation illustrates nicely two aspects of the human rights approach:
1. the reciprocal nature of individual rights enjoyment and government compliance obligations – i.e. rights are inherently social in nature;
2. the discrete characterization of whether there is, or is not, a *violation* of human rights.

Atkinson (1999:49) has commented: "If a minimum income is a basic right, then the head-count measures the number deprived of that right. It is an either/or condition. A minimum rights approach to the measurement of poverty may therefore lead us to the simple head-count, despite its undesirable properties from a welfare standpoint."

If it is not so much a 'minimum income' or generalized purchasing power, but minimum levels of named commodities (i.e. food, clothing, housing and medical care and necessary social services) that should be seen as rights, then the question is whether deprivation of any specific item (the union of all sets of deprived individuals) should be used to identify the number of poor individuals. Aggregation of the extent of their poverty could follow the sort of "weighted sum index" methodology of discrete attainments urged by Chakravarty and d'Ambrosio (2006) as a measure of social exclusion.

3.   Conclusion

In the last thirty years, the literature on poverty measurement has separately become both broader and deeper – but not much broader and deeper at the same time. Answering the question: "How much poverty is there?" requires *identification* of the number of poor people, *aggregation* across all poor people of the extent of poverty and some clarity in the *comparison* of social states. Substantial advances have been made in each separately, but relatively few papers have considered all jointly, so the literature has evolved in a somewhat disconnected fashion.

Complexification of the poverty discourse may also impede clarity. For example, much has been said about the implications of ethical axioms for the aggregation of income poverty. Much has also been said about deprivation dominance and in a recent paper on the measurement of poverty. Chambers (2006:3) has also stressed the multi-dimensionality of deprivation and drawn a "web of poverty", as in Figure 3.1:

Figure
3.1

The web of poverty`s disadvantages
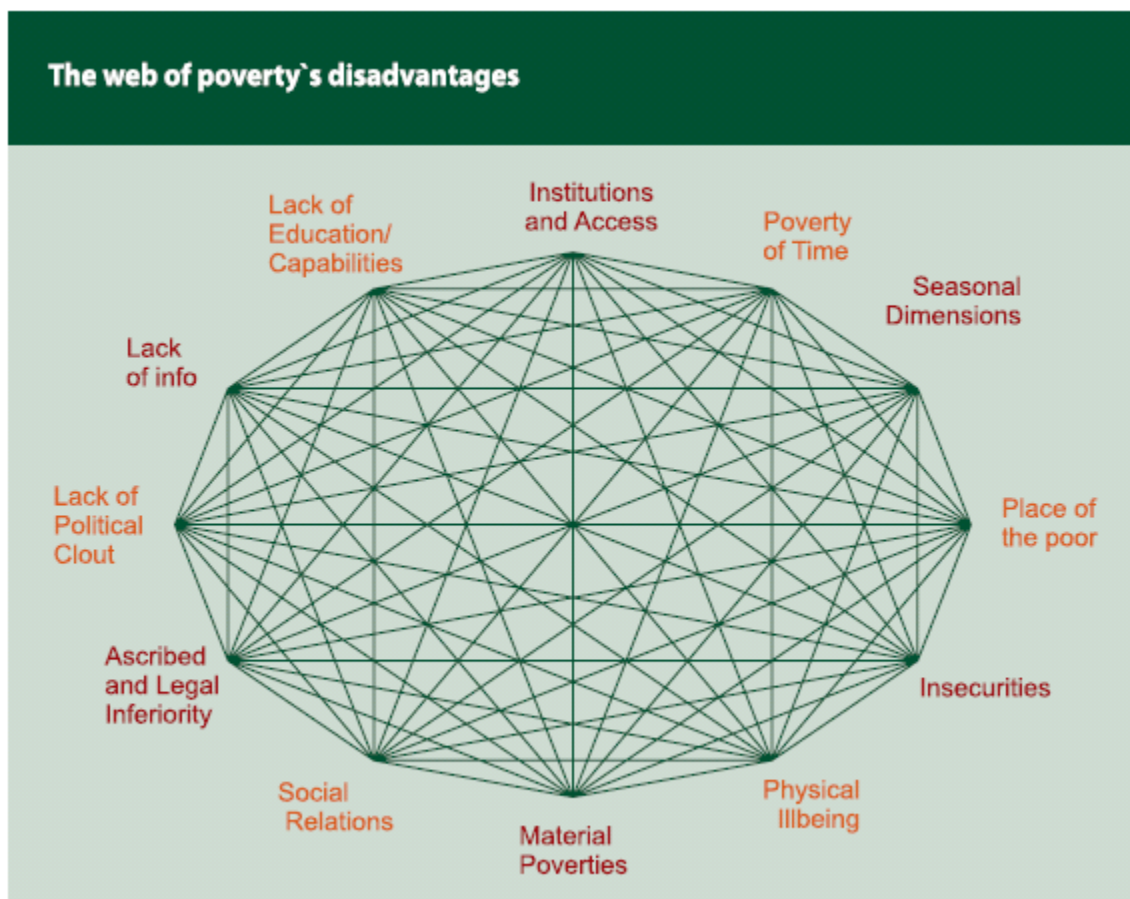
This explicit recognition of the multiplicity of deprivations associated with poverty is the product a substantial evolution of thinking about how to identify poverty – but there

is no easily communicable way that Figure 3.1 could be combined with the literature on axiomatic foundations to aggregate poverty or deprivation dominance techniques to compare poverty.

Thirty years ago, the standard way to think about poverty was straight-forward – inadequate family income. But although agreeing that: "From the earliest days, poverty was related to income, and income has remained at the core of the concept's meaning." Townsend (2006a:5) now offers a broader definition: "People can be said to be in poverty when they are deprived of income *and other resources* needed to obtain the conditions of life—the diets, material goods, amenities, standards and services— that enable them to play the roles, meet the obligations and participate in the relationships and customs of their society." (italics added)

In broadening the conception of poverty, Townsend emphasizes that this represents an evolution of the concept from its Victorian era origins in the calculation of 'subsistence' budgets, noting that "The use of "subsistence" to define poverty has been criticized because it implies that human needs are mainly physical rather than also social needs. People are not simply individual organisms requiring replacement of sources of physical energy; they are social beings expected to perform socially demanding roles as workers, citizens, parents, partners, neighbours and friends….The need for material goods, their relevance to the society of the day, and even the goods themselves, are not, after all, fixed or unvarying. And the amount and kind, and thus the cost, of food depend on work, climate and social customs. So material needs turn out to be socially determined in different ways." But this is not really much of a change from the view of the Economic Council of Canada (1968:104-105) that poverty is: "insufficient access to certain goods, services and conditions of life which are available to anyone else and which have come to be accepted as basic to a decent minimum standard of living".

Nevertheless, even if some basic ideas are familiar, the evolving literature on poverty has adopted a new set of perspectives – i.e. of capabilities, multi-dimensional deprivation, social exclusion and human rights. Although the same real world issues – like homelessness or transportation – can usually be framed within each perspective, this essay has argued that they differ along a number of dimensions:

1. Time:

    The definition of 'poverty' has always had an implicit time dimension, in the sense that an accounting period specifies the period of time within which resource flows are measured (or specific commodities are consumed, for multi-dimensional poverty measures). If the objective of measuring poverty is to compare deprivation, or unmet needs, at a point in time, then future occurrences are not as important as differences in the depth of poverty currently, and the extent of poverty is found by aggregating individual experiences at a point in time. A 'human rights' perspective, would similarly ask: 'How many people are denied their human rights now – at this point in time?' By contrast, the 'social exclusion' discourse has much in common with an earlier literature on the 'culture of poverty', in that it focuses on feedback effects and persistent deprivation, essentially ignoring the needs of the short-term poor.

2. Continuity:

    Because both consumption needs and available resources were measured in money terms, traditional measures of income poverty were constructed in terms of a variable that is inherently continuous. The development of axiomatic foundations of

poverty measurement since 1976 formalized the continuity assumption. An implication of continuity is an inherent (if limited) arbitrariness in where exactly to draw the 'poverty line' defining the discrete ideas of 'adequate' or 'inadequate' resources necessary to avoid deprivation of necessities. In the last thirty years, the 'stochastic dominance' approach has presented a methodology which has sometimes been able to resolve the potential for ambiguity in poverty rankings which the inherent arbitrariness of the poverty line creates. Multi-dimensional poverty measures have maintained the continuity assumption, but this assumption becomes increasingly hard to defend when multi-dimensionality specifies domains of deprivation (such as housing / homelessness or access to transportation) with clear threshold effects, while maintaining the assumption of non-substitutability of resources across the differing domains of deprivation. Like the conceptual distinction between 'poor' and 'non-poor', the 'social exclusion / inclusion' distinction relies on an inherent dichotomy, which is inconsistent with continuity. The human rights perspective has also, historically, relied on discrete characterizations of the fulfilment or non-fulfilment of human rights.

3. Aggregation:

When aggregating discrete variables, a simple count is appropriate – so both social exclusion and human rights perspectives presume that the incidence of deprivation (the "head-count ratio") is the appropriate statistic to aggregate poverty. If there is some uncertainty in identification – i.e. about, for example, where to divide an underlying continuum into a [0,1] identification of those who are included/excluded – then first-order stochastic dominance methods can be used to clarify any ambiguity in comparisons. Aggregating deprivation in a continuous variable (like income) across individuals requires some weighting of the average poverty gap, and (much less importantly) of the inequality in poverty gaps. Ambiguities in aggregation are even greater when deprivation is multi-dimensional, and correlated, to some degree, across dimensionalities.

4. Social Context:

Inadequate income can be seen as a characteristic of an individual or family. While the capability approach opens the door to consideration of social context, it is still framed in terms of an individual having, or not having, a particular capability. By contrast, social exclusion is quite explicitly a *relationship* between an individual and the society around them – and the definition of human rights makes no sense at all without a society which grants these rights and an agent (i.e. the state) which has the responsibility to see they are delivered. The evolving vocabularies surrounding poverty measurement therefore differ crucially in social perspective. The practical implication, for a statistical agency, is that micro-data on individual characteristics will need to be linked to data on the local context in which individuals must try to function.

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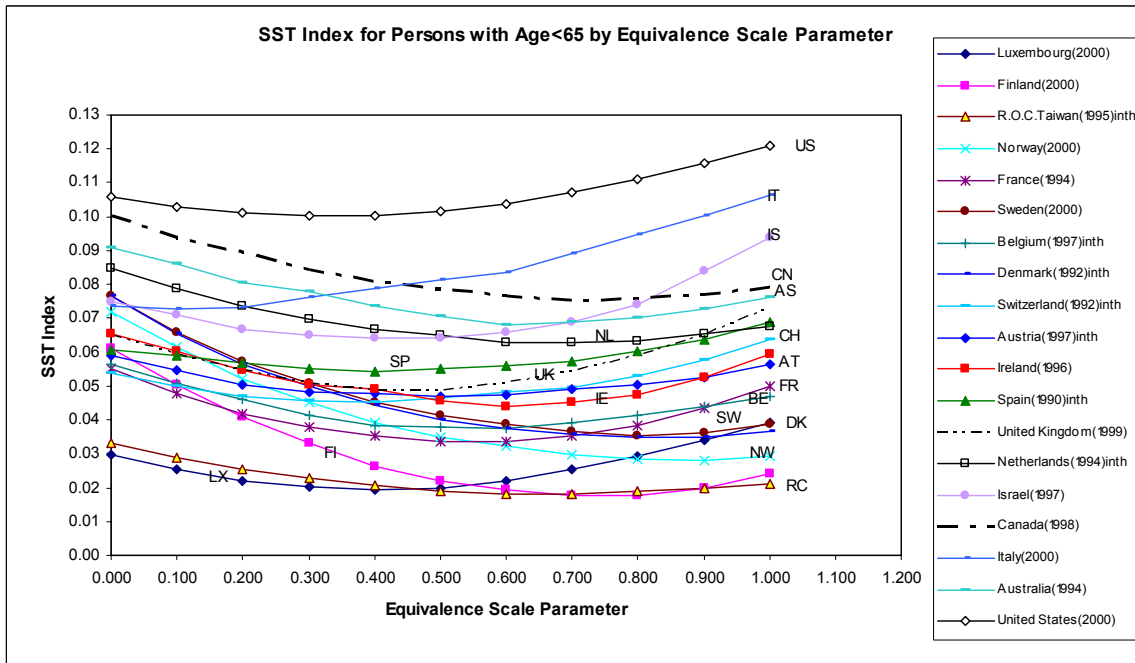
Appendix A

SST Index for Persons with Age<65 by Equivalence Scale Parameter

Table A1
Number of Equivalent Adults according to Family Size
equivalence scales

family size	LIS $\beta = 0.5$	Statistics Canada	OECD 2 adults+(n-2)kids	$\beta = 0.3$	$\beta = 0.7$
1	1.0	1	1	1.0	1.0
2	1.4	1.4	1.7	1.2	1.6
3	1.7	1.7	2.2	1.4	2.2
4	2.0	2	2.7	1.5	2.6
5	2.2	2.3	3.2	1.6	3.1
6	2.4	2.6	3.7	1.7	3.5
7	2.6	2.9	4.2	1.8	3.9
8	2.8	3.2	4.7	1.9	4.3
9	3.0	3.5	5.2	1.9	4.7
10	3.2	3.8	5.7	2.0	5.0