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WORKING PAPER (DRAFT)

**IMPROVING THE MEASUREMENT OF POVERTY IN THE AMERICAS
HEALTH ADJUSTED POVERTY LINES:
BACKGROUND MATERIALS – A LITERATURE REVIEW**

Abstract

This literature review is about papers on conceptual and methodological issues, and on empirical results related of incorporating different aspects of health in the measurement of poverty. It includes a summary of concepts and methods for the measurement of poverty in USA, Canada, Latin America and the Caribbean. It includes an annotated bibliography of papers discussing the treatment of health needs, medical out-of-pocket expenditures, health insurance and catastrophic losses and other dimensions of health in the measurement of poverty. A final section contains a graphical presentation of different ways in which health related variables may affect the definition of resources, needs and poverty thresholds and the measurement of poverty and inequalities. The electronic version of the paper provides links to most of the papers included in this review.

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Keywords: Distribution, Health, Welfare and Poverty,
JEL Classification Numbers: D3, I1, I3,

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**IMPROVING THE MEASUREMENT OF POVERTY IN THE AMERICAS
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BACKGROUND MATERIALS – A LITERATURE REVIEW**

This literature review is about papers on conceptual and methodological issues, and on empirical results related of incorporating different aspects of health in the measurement of poverty: on the *incidence* of poverty (How many people are poor); on the measurement of relative poverty (How far are the poor from the average); *depth* of poverty (How poor are the poor); on the number of people that can be classified as poor or extremely poor or indigent; and also, the duration of poverty (How long are the poor, poor). This review covers the five broad areas discussed at the Workshop on Improving the Measurement of Poverty in the Americas: Health Adjusted Poverty Lines –HAPL, held September 29-30, 2003³:

- How to include in the measurements of poverty households and/or individual's health need, the consumption of health care services, or the benefits or costs of health care insurance services.
- How to define and estimate the minimum or adequate amount of health care expenditures needed to ensure a household minimum level of well being.
- How to adjust existing measurements of poverty to consider “nutritional losses” due to illness and diseases.
- How important health related catastrophic expenditures are in explaining the dynamics of poverty.

This literature review is organized as follows. *Section I* includes a brief review of some conceptual and methodological issues related to the measurement of poverty: definitions of resources, needs and poverty thresholds. *Section II* presents a review of the methodologies currently used in the measurement of poverty in Canada, Latin America and the Caribbean, and the USA. *Section III* includes a review of papers discussing conceptual and methodological issues regarding the treatment of medical out-of-pocket expenditures in the measurement of poverty, and of papers assessing the impact of catastrophic health expenditures and the lack of health insurance on the measurement of poverty. *Section IV* presents a review of papers dealing with other dimensions of health: the impact of nutritional losses and early mortality on the measurement of poverty. *Section V* includes a review of papers discussing the role of poor health and early mortality in explaining the dynamics of poverty: why people move into and out of poverty. The last, Section VI includes a graphical presentation of health adjusted poverty lines.

I. THE MEASUREMENTS OF POVERTY

1.1 Background: Going beyond income-essential food-needs

There are several papers discussing conceptual issues related to a precise definition of a concept of poverty that may capture different aspects of well-being and societal and economic changes during time, as well as on methodological issues on the adequacy of the source of data to evaluate those concepts⁴. There is a close relationship between the purpose

³ See: <http://www.paho.org/English/DPM/SHD/HP/hapl-workshop.htm>

⁴ For a review on this debate see: Subramanian, S (editor) **Measurement of Inequality and Poverty**. Oxford University Press, 1997.

of measurement, the concept of poverty used, and the methodology and data sources that may be used for measuring it. From a conceptual point of view, it is clear that poverty as is an indicator of individual well being is a multidimensional phenomenon, and in consequence it should capture more accurately the different dimensions of poverty.

The focus of this review is on those papers addressing conceptual and methodological issues, or presenting empirical evidence in adjusting the most commonly income-consumption or assets based indicators of poverty to include different dimensions of individual and social well being. It concentrates on papers dealing with issues related to the incorporation of different dimensions of health in the measurement of poverty.

The rationale for improving the measurement of poverty is a very practical one. A more accurate measure of poverty that incorporates multidimensional aspects will offer policy makers guidelines for designing and monitoring "dimension or sector specific" poverty alleviation programs. The type of adjustments being discussed here are aimed to better capture changes in the extent of poverty and inequality over time that result from government programs, public policies or other major societal and economic changes other than changes in the level of income and/or consumption of essential food based measurement of poverty.

In particular, we discuss how and improved measurements of poverty reflecting a broader set of dimensions or characteristics of poverty (characteristics adjusted poverty lines - CAPLIN) may be more relevant for assessing the impact of government expenditures in social programs; nutrition, health and education, or the impact of government assistance programs as basic housing, subsidized access to water and sanitation, electricity, transport and communications services, on individual and social wellbeing. Even in the case that the minimum income or basket of food consumption thresholds are used, the well being of a household with similar level of income (or consumption of basic food-needs) would be very different if some of them would have access to government free or subsidized health and educational services, or if the families is one of the countries are covered by social (public) health insurance or other social protection programs and families in other country are not.

1.2 Conceptual and Methodological Issues⁵

This section summarize the most common concepts of poverty and well-being and of methodological issues related to the measurement of these concepts discussed in the papers included in this review.

⁵ This methodological review, unless specifically mentioned, has been based on:
Subramanian, S (editor) **Measurement of Inequality and Poverty**. Oxford University Press, 1997.
Ravallion, M. **Poverty Comparisons. A Guide to Concepts and Methods**. LSMS Working Papers N^o 88,p.38 http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2000/04/28/000178830_98101902174198/Rendred/PDF/multi_page.pdf
Kahndker, Shahid et al. **Measuring Poverty**
<http://www.worldbank.org/wbi/povertyanalysis/manual/index.html>
Feres, JC, and Xavier Mancero **Enfoques para la medición de la pobreza. Breve revisión de la literatura**http://www1.ibge.gov.br/poverty/pdf/final_report.pdf

Poverty and Well-being concepts: Defining Poverty

While there is no agreement in how to define the concept of poverty, it is widely accepted that the definitions of poverty depends on what is intended to be measured: needs, standard of living, lack of resources or command, deprivation (material, physical, psychological, etc.), or social exclusion. In general, the concepts of poverty are aimed to capture the lack of command on any or a group of basic needs (*direct* method) or as the lack of resources to meet those basic needs (*indirect* method).

The first step on measurement of poverty is to choose a well defined indicator of *well-being* that allows a separation of the poor and the no-poor. Because of data availability, the well-being indicator usually chosen for measuring poverty is that of “material (economic) deprivation”, based on income or consumption expenditure levels⁶.

The poverty line: Objective, Absolute

According to the direct method; based on data obtained usually from Household Expenditure Surveys (HES)⁷, a threshold is defined to reflect the cost of a basic *bundle of goods and services*, as the minimum level (of consumption) that is necessary to meet some *basic needs*. Part of the discussion is what should be considered as *basic need*, from a material point of view: food only or should a wider concept of needs and services, including clothing, shelter, education, health care, entertainment, etc. There is no unanimous practice in this issue. A second related issue is about the use of household data instead of individual data to obtain information on actual levels of consumption. The line or threshold; a minimized expenditure function, is denominated the “*poverty line*”. Since the level of consumption necessary to satisfy basic needs varies across time and societies, poverty lines vary in time and place, and each country uses lines which are appropriate to its level of development, societal norms and values. Other related issue is that of the unit of analysis to define the threshold; thresholds will differ according to the number of adults and children in a family or household, the ways in which families or household are organized, the health status of its members, by the age of the family or household head, and/or by the changes in the composition of households over the family life cycle⁸. Once a poverty threshold is obtained, it should be compared with families' *income* or *resources*, to determine whether or not they are poor.

Dealing with differences in household composition

In practice, a poverty threshold is defined for a reference family (usually two adults and two children) and the data collected is household level. To deal with the differences in household composition (age and sex) and with economies of scale in the processing and use of resources, *equivalence scales* are used to reflect the needs of each household member and to estimate the cost for household with different size and composition to attain similar level of well-being. The most commonly used method for dealing with differences in the size and composition of households is the “adults equivalent” approach and “the ratio of costs”

⁶ For a review of the methodological discussion on using expenditure or income, see: Kahndker, Shahid et al. **Chapter 2. Measuring Poverty**
<http://www.worldbank.org/wbi/povertyanalysis/ch2.pdf>

⁷ The use of Household Expenditure Surveys is also a matter of discussion. The LSMS developed by the World Bank, tried to solve some of the weaknesses presented by regular HES. See:
<http://www.worldbank.org/html/prdph/lsmshome.html>

⁸ For simplicity reasons, the terms “family” and “household” will be used indistinctly, meaning the group of people who eat and live together.

approach. Under the adult equivalent approach each member of the household counts as some fraction of an adult male. Thus, the household size is measured as the sum of *adult equivalents*. Part of the discussion here is about the weights to be assigned to characterize a child or an elderly person. Under the *ratio of cost* approach, based on the observation of the aggregate household consumption, the estimation of a function of demand is required. Discussion here is about whether “observed” demand is a good indicator for measuring household well-being.

From an *absolute* point of view, a person is considered poor if the resources of the household he/she lives are insufficient to afford his/her basic needs. The poverty concept that underlies an absolute poverty line is that being poor means not being able to satisfy very basic needs, regardless the situation of the others members of the society.

Relative Poverty

From a *relative* point of view, a person is deemed poor if her consumption or income is below a predetermined percentage –usually 50% or 60%- of the *average* consumption or income of the population. Thus, a relative poverty line is sensitive to the variations on the average consumption or income of the society, meaning that it reflects not only changes on income itself, but on living standards of the society. Also, it could be defined in terms of the percentage of population below one or two standard deviations below the average income or consumption.

Subjective poverty: Minimum Income Question (MIQ)

An alternative method for establishing the cost of a minimum level necessary to meet basic needs, is to ask directly people about what constitutes a socially acceptable minimum standard of living. The question typically used is: “*What income level do you personally consider to be absolutely minimal? That is to say that with less you could not make ends meet.*” This methodology is also known as the “Minimum Income Question (MIQ)” and the answers are tabulated to establish the threshold (poverty line) that defines who is or is not considered poor. Variations have been applied rephrasing the question asking for consumption instead of income. Besides the concerns about how to treat or weight differences in individuals and /or household member perception about the “minimum income”, there is a concern that answers may reflect expected rather than actual needs.

Poverty Indicators

After having identified *Who* is poor, the next step on the measure of poverty is to choose the indicator or combination of indicators that better characterizes different dimensions of poverty: How many are poor?; How poor are they?. The most commonly used indicators used in the paper included in this review are:

- a) *Headcount Index*: measures the proportion of the population that is counted as poor, referred to as the *incidence* of poverty;
- b) *Poverty Gap index*: measures the extent to which individuals fall below the poverty line, and expresses it as a proportion of the poverty line. Sometimes is interpreted as how much should be given to the poor in order to move out from poverty. It is deemed as a measure of *depth* of poverty.
- c) *Sen index*: intended to combine the effects of the number of poor, the depth of poverty, and the *distribution* of poverty within the group as its main contribution

- d) *Foster, Greer and Thorbecke indexes*: are “additive” measures of the *severity* of poverty. This “additivity” property attributed to the FGT indexes allows that aggregate poverty be equal to the population weighted sum of poverty levels in the various sub-groups of the society⁹ Its main contribution is to allow the calculus of the contribution of each sub-group of population to total poverty^{10 11}.

II. POVERTY MEASUREMENT IN THE AMERICAS :

2.1 THE POVERTY MEASURE IN THE USA

The United States is one of the few developed countries with an official measure of poverty. The concept of poverty (absolute poverty) was originally developed in the early 1960s, as an indicator of the number and proportion of people with inadequate family incomes (resources) for needed consumption of food and other goods and services. The poverty thresholds were defined as the cost of a **minimum** diet (food) times three to allow for expenditures on all other goods and services¹². A set of thresholds (in dollars) is estimated and updated annually using the Consumer Price Index (CPI). Poverty thresholds differ by the number of adults and children in a family, and for one-person or two-person families, by whether the family head is over or under age 65. A family’s poverty status is established by comparing its poverty threshold to its resources: annual before-tax money income; which is obtained for the preceding calendar year from the March income supplement to the Current Population Survey (CPS).

This methodology, officially adopted in 1965, has not been changed in essence since then, despite increasing concerns about some identified limitations:

- ✓ By defining families’ resources as gross before-tax money income the current measure does not reflect the effect in the extent of poverty over time of government policies that alter the families’ disposable income (i.e. food stamp benefits, Social Security payroll taxes increase, Earned Income Tax Credit, etc.).
- ✓ It does not distinguish between the needs of families in which the parents do or do not work (i.e. child care costs).
- ✓ *It does not take account of the differences in health status and health insurance coverage that affect different population groups facing different medical costs.*
- ✓ It does not take account of the significant price variations across geographic areas.
- ✓ The family size adjustments in the poverty thresholds do not represent the changing demographic and family characteristics over time.

⁹ See: Foster, J, J. Greer, and E. Thorbecke **A Class of Decomposable Poverty Measures**. In Surbramanian, S.

¹⁰ For a brief description see Appendix B.

¹¹ For further detail, you might refer to: Kahndker, S, Chapter 5; or Ravallion, M.(1992).

¹² Orshansky, "Counting the Poor: Another Look at the Poverty Profile," *Social Security Bulletin*, Vol. 28, No. 1, January 1965, pp. 3-29; reprinted in *Social Security Bulletin*, Vol. 51, N° 10, 1980, pp. 25-51. Not available online.

For a summary see:

Fisher, Gordon. **The Development and History of the Poverty Thresholds**. *Social Security Bulletin*, Vol. 55 No 4, 1992. Available at: <http://www.ssa.gov/history/fisheronpoverty.html>

To address some of these issues, and at request of the Congress, the National Academy of Sciences (NAS) established in 1992 the Panel on Poverty and Family Assistance, in charge of reviewing the concepts and measurement of poverty in the US. The panel released a report in 1995; referred henceforth as the NAS Report, the main recommendation was to develop a new measure of poverty status by determining the adequacy of families' disposable money and near-money income for needed consumption of food, clothing, shelter and other needs¹³. Some of the specific findings and recommendations of the NAS Report are:

The current measure *needs* used in the measurement of poverty (in the USA) no longer provides neither an accurate picture of the differences in the extent of economic poverty among population groups or geographic areas of the country, nor an accurate picture of trends over time.

The definition of need; based on estimates of the needs of a family of four in 1955, was not reflecting the marked changes in the nation's economy and society and in public policies that have affected families' economic well-being.

Redefining Needs and Thresholds:

The thresholds should comprise a budget for three basic needs of food, clothing, shelter (including utilities), and a small additional amount to allow for other needs (e.g., household supplies, personal care, non-work-related transportation):

The amount should be determined as a percentage of median expenditures on food, clothing, and shelter by two-adult/ two-child families. This sum should then be increased by a modest additional amount to allow for "other necessities", intended to cover such goods and services as personal care, household supplies, and non-work-related transportation. However, it should not include such nondiscretionary expenses as taxes and childcare and other costs of working which are treated as deductions from income (see below). The resulting threshold should be updated on a yearly basis.

The reference family threshold should be adjusted for different family types by using an equivalence scale and for geographic areas by using an index of differences in the cost of housing. In the equivalence scale, children under 18 are considered consuming the equivalent to 70% an adult. Taking the number of adult equivalents and raising this number to a power on a range between 0.65 and 0.75 estimated economies of scale for larger families.

The data source recommended by the NAS panel for deriving and updating the poverty thresholds was the Consumer Expenditure Survey (CE)¹⁴.

Redefining Resources:

Family resources should be defined—consistently with the threshold concept—as the sum of money income from all sources together with the value of near-money

¹³ See Citro, Constance and Robert Michael. **Measuring Poverty. A New Approach.** 1995. Available at: <http://www.nap.edu/books/0309051282/html/index.html>

¹⁴ Since 1980, the CE is a continuing survey recently expanded for 7,700 consumer units -either a family (blood, marriage or adoption related), two or more persons living together and that share responsibility for two of three major expenses (i.e. food, housing, etc.) or a single person living alone or sharing a household with others but financially independent- which are interviewed at 3 months interval for five quarters in a row.

benefits (e.g., food stamps) that are available to buy goods and services in the budget, *minus expenses* that cannot be used to buy these goods and services. Such expenses include income and payroll taxes, *child care* and other work-related expenses, child support payments to another household, and *out-of-pocket medical care costs, including health insurance premiums*.

The Panel recommended that measures of poverty that add the value of public and private health insurance benefits to families' resources without adjusting the thresholds to account for medical care needs should be discontinued.

The data source recommended by the NAS panel for measuring income or resources was the Survey of Income and Program Participation (SIPP)¹⁵. However, in case of medical care costs, it should be imputed from medical expenditure surveys, neither CPS nor SIPP, ask sufficiently detailed questions in this area (See below).

Adjusted Poverty Estimates

To show the effects of the proposed measure the Panel estimated poverty rates for 1992 and compared the results using the official and the proposed measures, obtaining these results: i) Keeping the overall poverty rate of 14.5% the estimation showed important distribution effects. ii) Using the midpoint of the suggested range of threshold for the reference family, the estimates showed an increase of the overall poverty rate.

The identification of the weaknesses in the US official measure of poverty, as well as the subsequent recommendations of the Panel's proposal, are of particular relevance for countries of the Latin America and the Caribbean region since concepts and methods similar to the one use in the US official definition of poverty are widely used by countries of the Region, as well as in the Regional estimation of poverty produced by ECLAC; discussed below.

In 1999 and in 2001 the US Census Bureau released two reports that presented several variations of alternative methods of measuring who is poor based on the recommendations of the NAS panel and the subsequent research developed – July 1999 with results for the years 1990-97 (Short et al., 1999) and October 2001 with results from 1999 (Short, 2001a)¹⁶. The aim of these reports was to continue improving the measurement and to stimulate further discussion. The articles surveyed as well as mentioned further on are part of this subsequent research.

- Betson, D., C. Citro, and R. Michael. **Recent Development for Poverty Measurement in US Official Statistics**. 2000
<http://www.jos.nu/Articles/abstra ct.asp?article=162087>

The article summarizes the panel's evaluation of the current official measure of poverty; describe the panel's recommendations for a revised measure and place those recommendations in the context of the literature on poverty measurement; present revised empirical analysis of the effects of the proposed measure, based on revised estimates of

¹⁵ The SIPP is a longitudinal and continuing panel survey for 37,000 households in which all respondent household members are followed even if they move, every 4 months for 32 months. The reporting unit is the household with unrelated individual and families also identified. Measures to redesign it are also recommended For more detail, see Citro, et.al. Appendix B

¹⁶ See Appendix

MOOP expenditures; and briefly review research that has been stimulated by the panel's work and that may lead to a revised official US measure of poverty.

- ✓ Short Kathleen and Garner Thesia I. **Experimental Poverty Measures under Alternate Treatments of Medical Out-of-Pocket Expenditures: An Application of the Consumer Expenditure Survey.** May 28, 2002
<http://www.census.gov/hhes/poverty/povmeas/papers/mlr.pdf>

This paper, intended to encourage discussion, reports the results of research and analysis undertaken by the Bureau of Labor Statistics (BLS) and the US Census Bureau staff. It presents the difference in two of the measures that use Consumer Expenditure (CE) data to estimate medical out-of-pocket expenses: the MOOP subtracted from income method (MSI) and the MOOP in the threshold method (MIT). Both of these methods were used in the second Census report with results for 1999, but in this case, the results are estimated for the year 2000.

Poverty rates, poverty gaps, and income-to-poverty-threshold ratios are computed and compared across poverty measures for various subgroups, particularly children and the aged. Results show that alternate methods of measuring medical expenses affect our perception of the relative incidence of poverty, the depth of poverty experienced by these groups, and the number of people who are classified in extreme poverty (those with family income below one-half of the poverty threshold).

Additional literature:

- ✓ Haveman, R. and M. Mullikin. **Alternatives to the Official Poverty Measure: Perspectives and Assessment.** April 1999
<http://www.ssc.wisc.edu/irp/povmeas/havemanall.pdf>
- ✓ Institute for Research on Poverty. **Revising the Poverty Measure.** *Focus*, Spring 1998
<http://www.ssc.wisc.edu/irp/focus/foc192.pdf>
- ✓ Short Kathleen, Iceland John and Dalaker Joseph. **Defining and redefining poverty.** August 2002.
<http://www.census.gov/hhes/poverty/povmeas/papers/define.pdf>
- ✓ Short Kathleen and Garner Thesia I. **A Decade of Experimental Poverty Thresholds 1990 to 2000.** June 2002.
<http://www.census.gov/hhes/poverty/povmeas/papers/decade.pdf>
- ✓ Short, Kathleen and Shea Martina. **Beyond Poverty, Extended Measures of Well-Being: 1992.** November 1995.
www.census.gov/prod/1/pop/p70-50rv.pdf
- ✓ Short, Kathleen. **Alternative Poverty Measures in the Survey of Income and Program Participation: 1996.** January 2003.
<http://www.census.gov/hhes/poverty/povmeas/papers/sipp.pdf>

2.2 POVERTY MEASUREMENT IN CANADA¹⁷

LOW INCOME CUT-OFF (LICO'S) AND LOW-INCOME MEASURE (LIM)

Canada, like most industrialized countries excepting the United States, has no official government mandated poverty line. However, Statistics Canada has produced information on poverty; since the 1960s, using low income cutoffs or LICOs concept. In practice the LICOS estimates is used as a semi-official poverty lines.

Defining Needs

The LICOs are thresholds of income with reference to the average of what a family spends in a year on *food, shelter* and *clothing* as a proportion of their annual income. A family unit with income below the cut-off for its family size and urbanization classification is considered a “low income” family. Notice that a family’s low income status depends solely on its income, not on its spending.

Expenditure survey data is used in order to find the average spending on the three basics¹⁸. Once this percentage is defined, twenty percentage points are added to this number, on the rationale that a family spending over that total percentage of its income on these essentials would be in profound disadvantage in relation to the average. The resulting threshold is then converted to a set of low income cutoffs that varied by family size and community size. This set is composed by 35 cutoffs produced for seven family sizes and five sizes of area of residence ranging from rural areas to cities of 500,000 or more.

Originally, and in order to capture the effect of the change on spending patterns, the LICOs have been periodically “rebased” and adjusted annually for variations in the Consumer Price Index (CPI). After the second public consultation undertaken in 2000, the LICOS are annually rebased. (See below). LICOs are used to calculate low income rates that represent the income level where a family would generally spend more than a certain percentage of its before-tax income of its after-tax income on these three essentials (food, shelter and clothing).

Defining Resources (Income)

LICOs are calculated on the basis of after-tax as well as before-tax income. The former refers to market income, -meaning earnings and investment income- plus government transfers, whilst after tax-income is obtained from before-tax minus income tax. The source of data for income estimation is the Survey of Consumer Finances (SCF), conducted each April as a supplement to the Labor Force Survey.

¹⁷ The concepts reviewed here are based on different research papers presented by Statistics Canada, the Fraser Institute, the Canadian Council on Social Development and the Human Resources Development Canada (See additional literature review survey in this Section).

¹⁸ Originally, the LICOs were designed on the base of 1959 Family Expenditure Survey and were rebased four times being the last one using the 1992 Family Expenditure Survey. After the public consultation undertaken in 2000, the LICOS are annually rebased using the Survey of Household Spending (SHS) with data for 1997, while the 1992 based measure continues to be published. See below.

Criticisms were raised about the concepts and methodologies underlying the construction of LICOs as well as its appropriateness for evaluating the effectiveness of poverty-reduction policies and programs. Some of these issues are:

- ✓ LICOs are actually a “relative” measure of poverty. It rises with increases in average spending, therefore, it identifies those who are substantially worse-off than the average, but it does not mean that they are poor. Thus, LICOs could be thought as an inequality measure instead of a poverty measure¹⁹.
- ✓ Its resulting value is considered as too high as to be an “impoverishment” threshold.
- ✓ It fails in considering regional differential costs, such as housing costs, even though rent is a major proportion of people’s living costs.
- ✓ LICOs are not sensitive to age differences in income.

Proposals to improve LICOs adequacy were presented at consultations that took place in 1989 and 2000. The 1989’s consultation discuss the replacement of LICOS or addition of a more conventional relative measure of poverty; as the 50% of median family income, where the income distribution has been adjusted for family size and composition (known as the Low Income Measure or LIM). Statistics Canada start to LICO-based low income information, and expanded its reporting to estimates on LIM based on after-tax income and estimates on the *depth*²⁰ of low income. The 2000 consultation dealt with the availability of annual expenditure data from the new Survey of Household Spending, instead of the currently used FAMEX - which produced data every four years²¹. One of the issues was about how to deal with a declining share of household expenditures in the three basics (food, shelter and clothing) with an observe increase in the level of income over time.

Some of the steps that Statistics Canada adopted the deal with some of these issues were: i) to introduce a series of LICO’s based on annually updated spending data based on data from the SCF (the 1992 estimates of consumption spending were maintained); ii) to undertake further work to include payroll taxes, besides income taxes; iii) provided that no alternatives proposed have proved to be less arbitrary, it was decided to maintain the 20 percentage margin, and; iv) to keep developing research on restructuring the LICO matrix, possibly adding city-specific LICOs.

THE MARKET BASKET MEASURE: MBM AN ALTERNATIVE MEASURE?

Human Resources Development Canada (HRDC) -at the request of the federal, provincial and territorial governments of Canada, in 1997 - undertook the task to develop an alternative measure of low-income to assess the effectiveness of the Child Tax Benefit Programs. The resulting measure was the Market Basket Measure (MBM); conceptualized as a measure of a standard of living. The MBM involved the estimation of the cost of a basket of goods and services - necessary for taking part in the life of the community, and compared it to the disposable income in order to determine the low income status of families with children. In May 2003, HRDC issued a report containing the first estimation of MBM using data collected by Statistics Canada specifically for this project²² (See below).

¹⁹ See: Sarlo, C. **Measuring Poverty in Canada**. The Fraser Institute, July 2001

²⁰ Conceived as the amount of money needed, on average, to pull families out of low income.

²¹ Cotton, C., M. Webber, Y. Saint-Pierre. *Should the Low Income Cutoffs Be Updated ?* January 2000

²² Data on the cost of goods and services in the basket to calculate thresholds was collected for 19 specific communities and 29 community sizes in the ten provinces of Canada.

- ✓ Human Resources Development Canada. **Understanding the 2000 Low Income Statistics Based on the Market Basket Measure.** May 2003
<http://www.hrdc-drhc.gc.ca/sp-ps/arb-dgra/publications/research/2003docs/SP-569-03/SP569english.pdf>

This report provides an overview of the incidence and depth of low income in Canada for the year 2000 based on the Market Basket Measure and describes it in the context of other concepts of low income, with a particular emphasis on the post-income tax Low Income Cut-off (LICO-IAT). This is the first year for which data based on the MBM has been calculated.

Methodology:

The MBM is calculated for a reference family of four-persons: one male and one female aged 25-49 and two children –a girl aged 9 and a boy aged 13. For all other household compositions, equivalence scales are applied²³. The basket of goods and services, which is defined by federal and provincial officials, is composed by food, shelter, clothing, transportation costs and other necessities. A “multiplier” is used to calculate the cost of these other necessities, representing their share as a proportion of spending on food and clothing by the second decile reference family (20% of families having less income).

Once thresholds are defined, they are compared to an MBM disposable income. This is defined as the income available to purchase those goods and services and should be equal to: after payroll-tax income (as defined by LICOs), minus alimony and child support payments made to another household, and all mandatory payroll deductions or employer-sponsored pension plans, union dues and employer sponsored supplementary health plans. Also, out-of-pocket expenses on child care and medically-prescribed non-insured health-related expenses should be deducted.

Key findings:

- ✓ The overall *incidence* of low income in 2000 for the ten provinces combined using MBM was higher (13.1%) than using the post-income tax LICOs (10.9%) but lower than using the pre-income tax LICOs (14.7%).
 - ✓ By age groups, children under age 18 comprised a higher share of the low income population in 2000 using the MBM than the LICOs post-income tax (29.5% vs 25.5). Seniors 65 and over, however comprised a lower share (5.2% vs 8.1%)
 - ✓ The *depth* of low income is lower using MBM than using both the pre and post-income tax LICOs.(30.9% vs 34% and 32.5% respectively).
 - ✓ This pattern of lower depth held for most sub-categories excepting for females over 1ge 65 living alone.
- ✓ Bishop, K., C. Cotton, and S. Michaud. **Exploration of Methodological Issues in the Development of HRDC’s Market Basket Measure.** July 2003

By request of the HRDC, the Prices Division of Statistics Canada started to collect prices that would be required to calculate the MBM. Also some questions to determine

²³ The values are: First adult =1; second adult= 0.4; children under age 16=0.3.

disposable income were collected by the Survey of Labor and Income Dynamics, where as Statistics Canada started to document the methodology behind the MBM.

The purpose of this document is to describe the detailed methodology and assumptions behind the construction of the MBM, to raise some issues and to highlight some data limitations.

Key findings:

- ✓ Availability of adequate data is one of the most important limitations to the goal of obtaining accurate calculations by province. Regarding non-discretionary expenses to be deducted from income, for example, some health expenses would be subtracted from total income, even though they are not necessary expenses. This is done because they cannot be separated from other allowable medical expenses that are claimed on the tax form.
- ✓ Comparing the cost of the basket with expenditure data brings along a conceptual conflict: the basket price represent the cost of a fixed selection of goods and services, while expenditure data represent the amount actually spent and therefore reflect the behaviors and choices or spending patterns.

Additional Literature

- ✓ Canadian Council on Social Development. **Defining and Re-Defining Poverty: A CCSD Perspective**. October 2001
<http://www.ccsd.ca/pubs/2001/povertyp.htm>
- ✓ Cotton, Cathy, M. Webber, and Y. Saint-Pierre. **Should the Low Income Cutoffs be Updated? A Discussion Paper**. December 1999.
<http://www.nlc-bnc.ca/eppp-archive/100/201/301/daily/daily-h/2000/00-01/00-01-12/99009.pdf>
- ✓ Cotton, Cathy and M. Webber. **Should the Low Income Cutoffs be Updated? A Summary of Feedback on Statistics Canada's Discussion Paper**. September 2000
<http://collection.nlc-bnc.ca/100/201/301/daily/daily-h/2000/00-09/00-09-26/75F0002MIE00011.pdf>
- ✓ Hale, Alison. **Poverty and Low Income Measurement in Canada: Recent Analyses and Future Directions**. November 1999
http://www1.ibge.gov.br/poverty/pdf/alison_hale.pdf
- ✓ Hatfield, Michael. **Constructing the Revised Market Basket Measurement**. April 2002
<http://www.hrdc-drhc.gc.ca/sp-ps/arb-dgra/publications/research/2002docs/it-01-1/english/it-01-1e.pdf>
- ✓ Sarlo, Christopher. **Measuring Poverty in Canada**. The Fraser Institute. July 2001
<http://www.fraserinstitute.ca/shared/readmore.asp?sNav=pb&id=216>

2.3. POVERTY MEASUREMENT IN LATIN AMERICA AND THE CARIBBEAN (TO BE COMPLETE)

The Economic Commission for Latin America and the Caribbean -ECLAC is one of the main institutions producing statistics on poverty and inequality for countries of the Latin America and Caribbean Region -LAC. Using data from household surveys, National Accounts and administrative and technical information carries out headcount poverty and indigence estimates for 14 Latin American countries, spanning in most countries more than four years.

Defining needs - expenditures

The value of the absolute poverty line employed by ECLAC is the cost of a basket that contains a set of food and non-food items considered essential. The food basket is built as to meet minimum nutritional requirements while being representative of the population's consumption pattern. The cost of essential non-food items is added by multiplying the value of the food basket by a constant number. This poverty line is expressed in per-cápita terms, so it has to be multiplied by the number of household members before comparing it to the household income. The lines are calculated for metropolitan, urban and rural areas, and are usually updated by CPI for food. Data sources are mainly Expenditure and Income Surveys carried out approximately every ten years in the countries.

Defining resources:

Household income is defined according to the concept of the National Accounts, as monetary income derived from current account transactions, including transfers in cash from public sources. An imputed income for own house occupiers is also considered. Data sources on household income are Multi-purpose Household-Surveys and Income and Expenditure Surveys carried out in the countries. The household account of National Accounts is used to verify and adjust totals of the different sources of income from household surveys.

Feres, J.C. and Xavier Mancero, **Enfoques para la Medición de la Pobreza. Breve Revisión de la Literatura.** January, 2001

<http://www.eclac.cl/deype/publicaciones/xml/4/5954/lc11479e.pdf>

The document offers a guide to the different conceptual interpretations of poverty and a review of the methodologies used more often for the *identification* and *aggregation* processes. The trade offs between *absolute* and *relative* poverty concepts, the *direct* and *indirect* approaches, and the *objective* and *subjective* perspectives, are reviewed from a conceptual and a methodological point of view. The main conclusion stated in the report is that not any *identification* or *aggregation* methods are sufficient by itself, thus the combined use of both appears to be the correct option.

- ✓ Economic Commission for Latin America and the Caribbean -ECLAC; **Social Panorama of Latin America 2002-2003**; Santiago, Chile.

In 2002, the number of Latin Americans living in poverty reached 220 million people (43.4%), of which 95 million (18.8%) were indigents. These are among the estimates presented today by the Economic Commission for Latin America and the

Caribbean (ECLAC) in its advance version of the study, Social Panorama of Latin America.

Progress toward overcoming poverty ground to a halt in the past five years, with poverty and indigence rates remaining practically constant since 1997. The sole exception was 2000, when better economic performance brought with it a reduction in the volume of poverty by more than 4 million people.

[Social Panorama of Latin America 2002-2003.](#)

<http://www.eclac.cl/cgi-bin/getProd.asp?xml=/prensa/noticias/comunicados/6/12986/P12986.xml&xsl=/prensa/tp-l-i/p6f.xsl&base=/tp-l-i/top-bottom.xsl>

- ✓ **Pedro Sainz**; ECLAC : “Rio Group on Poverty Statistics – Fifth Meeting : Final Report”
<http://www1.ibge.gov.br/poverty/>
http://www1.ibge.gov.br/poverty/pdf/final_report.pdf

Experts from the Rio Group and ECLAC have been jointly working on establishing the basics for the elaboration of a Compendium of best practices on poverty measurement. The Group is chaired by the Brazilian Institute of Geography and Statistics (IBGE) and so far, five meetings have been carried out in order to gather the progress made by the participants.

During the last meeting, there was agreement on a set of guidelines in the elaboration of the Compendium. In general, the Compendium should mainly target statistical offices and governmental institutions that are responsible for poverty estimates as well as institutions responsible for programs of poverty alleviation. Also, it was agreed that it should be mainly useful to developing countries and poor countries.

Regarding the contents, there was agreement in three components of the Compendium:

- i) an introduction to familiarize the reader with the conceptual aspects of poverty;
- ii) a description of the five approaches used to collect the experiences: absolute poverty lines, access to basic services and capital possession, relative poverty, subjective poverty, and a fifth approach that include social and political dimensions associates to poverty (social exclusion and deprivation, empowerment, and others); and,
- iii) Finally, “transversal topics;” dealing with methodological issues related to poverty dynamics, international comparisons, international strategies, and strategies for the improvement of the quality of the information.

III. HEALTH DIMENSIONS OF POVERTY: NEEDS, RESOURCES AND THRESHOLDS

3.1 On medical expenditures and Basic Needs

The case is made that since medical care spending represents an increasing fraction of all consumption, it may be considered as a basic need for an important group of the society –i.e.

elder people, or children²⁴. Therefore many would favor including medical care in the minimal bundle of basic needs to satisfy. However, there is no general agreement on this. Some of the methodological issues are about how to define the level of health expenditure associated to “basic health needs” given the variations in the frequency of medical spending, and the household composition of needs to be used in costing health care needs. Medical care spending doesn’t have the same regularity as food consumption (everyone needs to eat throughout the year, but some people may no need medical care at all while others may need expensive or prolonged treatments²⁵). In the other, families with different compositions and health status (by size or age) do not necessarily have the same level of medical need.

A second related issue is how to measure the resources available to fund those basic health needs. One of the problems is about how to treat different ways in which resources may be available to satisfy health needs, or the different sources of funding for medical care spending: Out-of-Pocket (MOOP), by a third party insurance payment (government or employee funded), by a private health insurance (sometimes deemed as part of MOOP) or as a combination of these.

Some of these issues were addressed in the discussion of the NAS Panel; in the case of the USA, and in the discussion about the Market Base Measurement (MBM) in the case of Canada.

✓ **The Treatment of Medical Expenditures in the NAS panel proposal²⁶:**

The NAS Panel stated that trying to account for private and public medical insurance benefits would greatly complicate the poverty measure and cloud its interpretation. Hence, the proposed poverty measure does not include an allowance for medical expenses, either those that might be covered by insurance or paid for out of pocket; for consistency, the proposed resource definition does not add the value of health insurance. Also for consistency, the NAS Panel proposed definition subtracts out-of-pocket medical care expenses from income: even with insurance, many people must pay out of pocket to obtain that insurance or to receive care, and such expenses reduce disposable income.

The case was made that although the proposed poverty measure excludes medical care from both the thresholds and resources, it will reflect changes in health care policy that affect disposable income. For example, if changes in health care financing reduce out-of-pocket medical expenditures and thereby free up resources for food, housing, and other consumption, the proposed measure will show a lower poverty rate; the current measure would not show this effect. The Panel also recommended that appropriate agencies develop direct indicators of the extent to which families lack or have inadequate health insurance that puts them at risk of not being able to afford needed treatment. These “medical care risk” measures should be cross-tabulated with but kept separate from the economic poverty measure.

²⁴ In the US, medical spending in 2002 represented around 13.1 % of the gross domestic product (GDP). In Latin America, this has been calculated at 7.2 % of the GDP. The significance of Medical Out-of-Pocket expenditures; direct and indirect, as share of the total medical expenditures is very similar: around 58 % of total medical spending. See, PAHO, Health in the Americas, 2002.

²⁵ For example, in case of catastrophic illness or chronic diseases

²⁶ See Citro et.al. 1995

✓ **The Treatment of Medical Expenditures in the MBM measure²⁷:**

In the case of the MBM it was argued that MOOP expenses²⁸ should be deducted from income. The measure recognize that households must spend significant sums of money on such items so experience a lower living standard than those with the same income who do not have to bear those costs. The proposal states that Statistics Canada's estimates of spending on those items should be subtracted from gross income before that income is compared to the MBM thresholds.

However, they are not included in the cost of the basket because of it is considered that the high variability of health expenses, highly dependable on the health needs of the family members, makes difficult to set a "standard" basket component for this category of expenditure.

3.2 HEALTH NEEDS, SPENDING AND RESOURCES

- ✓ Short Kathleen and Garner Thesia I. **Experimental poverty measures: accounting for medical expenditures**. August 2002.
<http://www.bls.gov/opub/mlr/2002/08/art1exc.htm>

This article describes and compares the size and composition of the poverty population in the US under the official poverty measure and two experimental measures of poverty that use Consumer Expenditure data:

Methodology:

Two methods to adjust poverty measurement are assessed by the authors, both using CE data: i) MOOP subtracted from income (MSI), similar to the proposal of the NAS panel, but with some computational differences; and ii) MOOP added to the thresholds for the reference family (MIT), before determining poverty status. A *medical risk index* is used to estimate thresholds for other families.

Key findings:

All statistics shown in this article—poverty rates, poverty gaps, and income-to-poverty thresholds ratios—are affected by the method chosen to account for medical expenses in the measure. Results indicate that, while many groups are somewhat more likely to be classified as poor under the experimental measures, the depth of their poverty is less than is generally found under the official measure. In general, results show that alternate methods of measuring medical expenses affect our perception of the relative incidence of poverty, the depth of poverty experienced by these groups, and the number of people who are classified in extreme poverty (those with family income below one-half of the poverty threshold).

²⁷ See HRDC report, May 2003.

²⁸ Defined as non-insured health care spending recommended by a health professional, such as dental and vision care and prescription drugs plus private health insurance and aids for persons with disabilities such as hearing aids, wheelchairs and guide dogs

- ✓ Burtles, Gary. **Medical Spending, Health Insurance, and Measurement of American Poverty**. August, 2001
<http://www.brookingsinstitution.org/dybdocroot/es/dynamics/papers/poverty/poverty.pdf>

This paper examines the effects of three basic methods of including household spending on health care in the poverty thresholds. The first is the method embodied in the official poverty statistics. The other two are based, directly or indirectly, on the recommendations of the NAS' panel.

Methodology:

The author uses an estimate of "reasonable" medical spending as estimates of expected medical spending requirements faced by different classes of families, taking account of the number, age and health status of family members as well as their coverage under a health insurance plan. For those families that lack insurance coverage, the author attempts to estimate their "expected spending" to gain insurance coverage as well as to pay their medical bills after medical insurance has been obtained. As there is no evidence to calculate precise "reasonable" health spending, the author derives three estimates corresponding to "high", "medium", and "low" assessments of the medical spending needs of uninsured or partly insured families. Subsequently, it examines the sensitivity of poverty rates to these three estimates. The estimates of medical spending are derived from survey results obtained in the 1987 National Medical Expenses Survey (NMES) and updated by price changes using the medical component of the CPI.

Key findings:

- ✓ The inclusion of medical spending in the poverty definition has a large effect on the level and composition of poverty.
 - ✓ The level and composition of poverty is comparatively unaffected by the decision to add "reasonable" medical spending to poverty thresholds rather than subtract "actual" medical spending from family resources.
-
- ✓ O'Hara, Brett. **Do Medical Out-of-Pocket Expenses Thrust Families into Poverty?** August, 2003

The author estimates the impact of MOOP expenses on families' well being in the US, trying to answer if MOOP pushes families into poverty or not, and if so, what types of families are affected the most. The analysis puts special emphasis in identifying if the most affected are uninsured or underinsured.

Methodology:

MOOP are defined as the out-of-pocket costs from medical services and the family's share of health insurance premiums. Based on the official poverty measure methodology, the author redefines the concept of poverty as follows: if a family income minus total MOOP is less than the official poverty line, the family is considered in poverty. If the family was not in poverty before, but it is under the alternative definition, it is considered as "newly impoverished".

Regarding data sources, SIIP is used to estimate income and MOOP in adults, and imputed information from the Medical Expenditures Survey (MEPS) is used to account

for MOOP in children. Demographic characteristics, insurance status, and medical usage of the family are analyzed to determine which characteristics are more likely to thrust a family into impoverishment.

Key findings:

- ✓ Families impoverished because of MOPP are far more likely to have older heads of family, or at least one family member in poor health, or to have some adults without health insurance.
- ✓ Families without at least one person who worked full-time for the entire year were also likely to be impoverished.
- ✓ Children in family have little effect of the probability to become impoverished.

Additional literature:

- ✓ Acs, Gregory and J. Sabelhaus. **Trends in Out-Of-Pocket Spending on Health Care, 1980-1992.** December 1995.
<http://www.bls.gov/opub/mlr/1995/12/art4full.pdf>
- ✓ Bavier, Richard. **Updating the Poverty Thresholds with Expenditure Data.** 1997
<http://www.census.gov/hhes/poverty/povmeas/papers/povupdat.html>
- ✓ Bavier, Richard. **Medical Needs and the Poverty Threshold.** 1998
<http://www.census.gov/hhes/poverty/povmeas/papers/medinpov.html>
- ✓ Bavier, Richard. **Medical Out-of-Pocket Spending on Poverty Thresholds.** 2000
<http://www.census.gov/hhes/poverty/povmeas/papers/altmoop.html>
- ✓ Betson, David. **Response to Bavier's Critique of the NRC Panel's Recommendations.** October 2000.
<http://www.census.gov/hhes/poverty/povmeas/papers/comonbavier.pdf>
- ✓ Betson, David. **Imputation of Medical Out-of-Pocket (MOOP) Spending to CPS Records**
<http://www.census.gov/hhes/poverty/povmeas/papers/koopdb.pdf>
- ✓ Doyle, Pat. **How Do We Deduct Something We Do Not Collect? The Case of Out-Of-Pocket Medical Expenditures.** August, 1997
<http://www.census.gov/hhes/poverty/povmeas/papers/oopmedex.html>

3.2 ACCOUNTING FOR MEDICAL EXPENSES : CATASTROPHIC LOSSES AND HEALTH INSURANCE

An important issue to take account on how to treat medical care expenses on poverty measure is the characteristics of the health insurance system. The lack of universal coverage should turn the attention of any poverty measurement to that population that is unprotected either by being uninsured or underinsured, and therefore whose risk to be exposed to catastrophic health expenses is greater.

- ✓ Banthin Jessica, Garner Thesia and Short Kathleen. **Medical Care Needs in Poverty Thresholds: Problems Posed by the Uninsured.** December 2000.
<http://www.census.gov/hhes/poverty/povmeas/papers/medneeds7.pdf>

This paper compares several methods of incorporating medical care needs into a revised poverty measure. All of these measures are partially based on the recommendations of the

NAS' panel, but instead of subtracting medical care expenses from resources incorporates them directly into poverty threshold definitions.

The concept that underlies this different approach is that the author bases the analysis in an *ex ante* view of poverty measurement: the thresholds define a minimum level of basic needs that is *expected* to be sufficient, allowing an adjustment to the expenditures of the uninsured. The NAS proposal instead, is based on an *ex post* calculation of how many families could not meet their needs out of their current income in the previous year. Theoretical support to the author's proposal is found on the argument that when *uncertainty* is present -as in the case of medical care expenditures-, the consumer's expected utility rather than utility should be the focus of public policy.

Methodology:

Poverty thresholds are calculated following basically the NAS proposed methodology with some modifications consisting primarily in the addition of MOOP to the basic bundle of goods, and that family types are allowed to vary by health insurance status and by health status. All the thresholds are updated by using the medical component of the CPI.

Sensitivity tests on the final poverty rates are conducted across three sources of possible variation in the measurement of MOOP expenditures:

- iv) The source of data: CE and MEPS are used to construct six different sets of thresholds, lately compared;
- v) The central tendency of the distribution: median as well as mean MOOP estimates are used and compared;
- vi) The uninsured families: and explicit adjustment is made adding an estimate of the cost of a "standard, unsubsidized insurance package" to the reported MOOP spending.

Key findings:

- ✓ There is little difference in overall poverty rates between adding MOOP to thresholds and deducting it from resources.
 - ✓ Further sensitivity testing is needed to refine the MOOP imputation methods in terms of measures of central tendency, best data sources, and premium imputation methods.
 - ✓ Further examination of average and aggregate imputed values in comparison to privately insured families is needed, as well as in the adjustments to the expenditures of the uninsured.
- ✓ Cordero, L., J. Herrera, and G. Yamada. **Health Adjusted Poverty Lines: The Case of Peru**. September 2003

This report subscribes into the effort to sensitize monetary poverty concepts to health needs on the basis of international experience on the issue. An application to the Peruvian case is presented using National Household Survey (ENAHO) data for 2002 and the Living Standards Survey (ENNIV) for 1994, 1997 and 2000.

Methodology:

The paper is carried out in three steps. First, based on the indirect method to adjust poverty lines by health needs, medical expenses are subtracted from both, the family resources and the traditional poverty line. Then, the authors apply the direct method to adjust poverty indicators by health care expenses, including in the estimation of the food poverty line (*extreme* poverty line) an estimate of the total health need expenses based on the own perception of the households of what is needed to achieve an adequate health status. Finally, it is explored the sensitivity of the indicators obtained to the availability of health insurance and catastrophic health events.

Key findings:

- ✓ Under the indirect methodology and using ENAHO data for 2002, subtracting health care expenses from the total expenses does not have any effect on the incidence of poverty (in both cases equals 55.1%).
- ✓ Using the same methodology, but ENNIV for 2000, incidence and severity indicators are statistically no significant. However, in sub group level data, the impact of the adjustment by health expenses is increasing to the extent that these sub groups have been exposed to catastrophic health expenses.
- ✓ Applying health care expenses on the *extreme* poverty line, increases the poverty incidence indicator in two percentage points.
- ✓ Under the direct methodology and using the self assessed poverty information from ENAHO 2002, two findings are highlighted: i) regarding health expenses, these increase according to the age with augmented disparity on the insurance covered sub group of the population; ii) on the extreme poverty comparison, the incidence indicator is 13.2 percentage points higher.

Additional Literature:

- ✓ Berki, S. **A Look at Catastrophic Medical Expenses and the Poor.** Winter 1986
<http://www.healthaffairs.org/readeragent.php?ID=/usr/local/apache/sites/healthaffairs.org/htdocs/Library/v5n4/s14.pdf>
- ✓ Betson David. **Imputation of Medical Out of Pocket (MOOP) Spending to CPS Records.** January 2001.
<http://www.census.gov/hhes/poverty/povmeas/papers/moopdb.pdf>
- ✓ Betson David. **In Search of a Elusive Truth “How Much do Americans Spend on their Health Care?”.** April 1997
<http://aspe.hhs.gov/poverty/papers/!moop.pdf>
- ✓ Gertler, Paul. **Insuring the Economic Cost of Illness.** February 1999
<http://www.iadb.org/sds/doc/871eng.pdf>
- ✓ Gertler, Paul. **Insuring Consumption Against Illness.** April 1997
http://www.jcpr.org/wpfiles/gertler_gruber.pdf
- ✓ Human and Social Development Group. **Chile Health Insurance Issues. Old Age and Catastrophic Health Costs.** August, 2000
[http://wbln0018.worldbank.org/lac/lacinfoclient.nsf/0/725faf9bdb5f1c9f8525696000710527/\\$FILE/Chile%20Old%20Age.pdf](http://wbln0018.worldbank.org/lac/lacinfoclient.nsf/0/725faf9bdb5f1c9f8525696000710527/$FILE/Chile%20Old%20Age.pdf)

- ✓ Prescott, Nicholas. **Coping with Catastrophic Health Shocks.** February 1999
<http://www.iadb.org/sds/doc/860eng.pdf>
- ✓ Reinhardt, Uwe. **Is There Hope for the Uninsured?** August, 2003
<http://www.healthaffairs.org/WebExclusives/2206Reinhardt.pdf>
- ✓ Xu, K. D. Evans, K. Kawabata.et.al. **Household Catastrophic Health Expenditure: a Multicountry Analysis.** The Lancet. Vol. 362. July, 2003
- ✓ Wagstaff, Adam. **Catastrophe and Impoverishment in Paying for Health Care: With Applications to Vietnam 1993-1998.** February 2002
http://poverty.worldbank.org/files/9510_catastrophe.pdf
- ✓ Zuvekas, Samuel H., Banthin Jessica S. and Selden Thomas M. **Mental Health Parity: What Are the Gaps in Coverage?** 1998
<http://www.icmpe.org/test1/journal/issues/v1i3/v1i3text05.pdf>

IV. **OTHER DIMENSIONS OF HEALTH ON POVERTY MEASUREMENT: NUTRITIONAL LOSSES AND EARLY MORTALITY**

4.1 NUTRITIONAL LOSSES

The incidence of illness and disease could produce nutritional losses that imply adjustments to the level of food intakes required to achieve the minimum level of consumption associated with the adequate caloric intakes. They may imply temporary reduction in the diets and subsequent changes in the composition of the diet needed to restore nutritional losses. The empirical evidence from health surveys suggests that illness; particularly infectious diseases, are more frequent in low income groups. Similarly, to the case of infectious diseases, the presence of chronic diseases in one of the household members may imply changes in diets affecting the cost of the food-basket of these families. While there are some studies documenting the nutritional losses of particular diseases, we found no empirical work quantifying the likely the adjustments needed to the food-consumption baskets of different income groups associated to differences in morbidity. Nonetheless, evidence concerning the effect of specific illness and disease in nutritional levels could be found in the literature surveyed below, rising the need for further research on this topic, mainly in developing countries.

- ✓ **The Management of Acute Diarrhea in Children: Oral Rehydration, Maintenance, and Nutritional Therapy.**
<http://www.cdc.gov/mmwr/preview/mmwrhtml/00018677.htm>

This report was released on 1992 by the US Department of Health and Human Services Public Health Service Centers for Disease Control and Prevention (CDC). It reviews the proper management of diarrhea among children and particular attention is given to the use of oral therapy for rehydration and maintenance therapy for the dehydrated child and nutritional management. Evidence shows that in the United States, diarrhea remains one of the most common illnesses of children less than 5 years of age. Most hospitalizations and deaths due to diarrhea occur in the first year of life.

- ✓ Madkour, Ahmed, et.al. **Nutritional outcome of appropriate feeding during and after acute diarrhea in children.** 1995
<http://www.emro.who.int/Publications/EMHJ/0102/01.htm>

The study finds that successful nutritional management requires education and good feeding practices during diarrhea, as well as a supply of “extra energy” after diarrhea to compensate the *nutritional losses* caused by the rapid transit time and/or the cultural practice of withholding or reducing food during diarrhea. This practice of supplying extra energy will have its impact on the prevention and correction of malnutrition, and will help in breaking the vicious cycle of diarrhea and malnutrition.

- ✓ Phillips, Billy. **The Case for Cancer Nutritional support.** The Cancer Nutrition Network of Texas. May 1999
<http://www2.utmb.edu/nsights/Cancersprt.pdf>

The paper points out that one of the most fundamentals areas of need of a cancer patient is nutritional support, which can significantly improve his quality of life. Malnutrition is a significant problem for the cancer patient provided that it induces changes in metabolism that combines with suppressed appetite and reduced food consumption derived from side-effects of secondary treatment (i.e. chemotherapy). Therefore what is needed is to assure that proper nutrition be part of an integral treatment program to the cancer patient.

- ✓ **Nutrition Care and Support for Women Living with HIV/AIDS in West Africa.**
<http://www.fantaproject.org/downloads/pdfs/HIV.pdf>

The article points out the fact that once infected, malnutrition and HIV work in tandem, creating a “vicious cycle” where each condition worsens the other. HIV affects nutrition through reductions in dietary intake, nutrient malabsorption and loss, and metabolic alterations that culminate in weight loss and wasting common in AIDS. On the other hand, pre-existing malnutrition exacerbates the effects of HIV because the immune system is already compromised. Malnutrition also increases fatigue, and it decreases physical activity and work productivity of people living with HIV/AIDS, further affecting quality of life.

The case is made, and specifically in Africa, provided that additional negative economic impact on the household well-being status is derived from the evidence obtained from affected households:

- i) They tend to change from profitable and/or nutritious crops with root crops that mature quickly but are less nutritious and profitable.
- ii) They face the need to use their savings and sale their asses (livestock) for money to provide patient care or funeral expenses.
- iii) HIV affects the young and the most productive members of society.

- ✓ **Nutrition In Pediatric HIV Infection.**
<http://www.hivpositive.com/f-Nutrition/f-3-PediatricNeut/n-Zafonte.html>

The article addresses the study of malnutrition as a common complication of HIV infection and AIDS. It is pointed out that malnutrition in children is particularly

devastating because children are still growing and developing, placing even higher energy demands on their bodies and immune systems. All children, regardless of the stage of their infection, should be seen by a registered dietitian (RD) for a thorough assessment and evaluation. It has been estimated that over 90% of children with HIV infection/AIDS will experience delayed growth. The reason for this is multifactorial including poor socioeconomic situations, poor nutritional intake, malabsorption and the disease itself.

Everyone infected with HIV should see a dietitian as soon as possible after diagnosis and at intervals determined to be appropriate based on needs. It is especially important that children be followed by a dietitian as part of the medical team to be sure that oral intake is adequate to support growth and development.

Additional literature:

- ✓ National Academy Press. **Nutrition Issues in Developing Countries: Part I: Diarrhea Diseases, Part II: Diet and Activity During Pregnancy and Lactation.**
<http://www.nap.edu/catalog/1979.html>
- ✓ Wagstaff, A. and N. Watanabe. **Socioeconomic inequalities in Child Malnutrition in the Developing World.** 2000
http://econ.worldbank.org/files/1189_wps2434.pdf

4.2 EARLY MORTALITY

There is a paradox in all commonly used measures of poverty: the death of a person reduces poverty. Therefore, in the presence of premature mortality for the poorer sections of the population, standard poverty measures will show a decrease.

- ✓ Kanbur, Ravi and Diganta Mukherjee. **Premature Mortality and Poverty Measurement.** March 2003
<http://www.irc.essex.ac.uk/pubs/workpaps/2003-06.php>

The author begins the task of developing poverty measures that are not perversely mortality sensitive. A family of measures is proposed that is an intuitive modification of standard poverty measures to take into account the fact that rich live longer than the poor.

Methodology:

In this paper the author develops and characterizes a poverty measure based on the life time income profile of an individual. A normative rather than actual length of life time, L , is defined, and based on the top of the range observed in rich countries; it is set in 80 years. To define the amount of income corresponding to those prematurely dead, different income levels are defined resembling the income distribution of a society. They are assumed to remain constant over time. Also, there is no mobility across income levels. Each individual at each income level lives for a number of periods, after which time he or she is replaced by exactly one individual. The relevant set of individuals are all those who were born L years ago or less, including those had they lived the full L years. All these assumptions allow the author to build up a modified family of FGT indices to

measure poverty, which relates income and length of life. In any event, measured poverty will be affected by the income lifetime relation, over and above the distribution of income.

V. ON THE DYNAMICS OF POVERTY

Questions intended to be answered by the authors surveyed next are: i) **Why** people move into poverty; ii) **How** people move out of poverty; iii) **How long** are the poor, poor. Every approach to measuring poverty would benefit from a follow up in time of the units that at a certain moment were declared poor.

- ✓ Gordon, David. **Measuring Poverty and Social Exclusion in Britain**. May 2002
http://www.bris.ac.uk/poverty/pse/conf_pap/02budapest_dg.pdf

This paper is based on the Poverty and Social Exclusion Survey (PSE), one of the largest poverty surveys ever carried out in Britain, and that covers different aspects of poverty and social exclusion. The author concentrates on the theoretical and measurement issues, particularly where they concern the dynamics of poverty.

Methodology:

The author combines multi-variate statistical methods using cross-sectional data obtained from PSE, and validates these results using the perception of the respondents about recent changes in their circumstances. The author states that to test this poverty dynamics model, further longitudinal income and deprivation data are needed.

Key findings:

- ✓ People become “poor” in Britain after their income has dropped catastrophically, as a consequence of job loss, family break-up, retirement, severe ill health, etc.
 - ✓ When income falls people will try to delay the descent into poverty, but if the income of a poor person increases she will quickly try to improve her standard of living.
 - ✓ It is possible to identify the dynamics of poverty in a cross-sectional survey, since besides identify the non-poor and the poor (multiple deprivation and low income) it could identify those with low income and high standard of living (sinking into poverty) and those with high income but a low standard of living (moving out of poverty).
- ✓ McKernan, S. and C. Ratcliffe. **Transition Events in the Dynamics of Poverty**. September 2002
http://www.urban.org/uploadedPDF/410575_DynamicsofPoverty.pdf

The author tries to explain the fall of the official poverty rate in the United States from 15% in 1993 to 11.3% in 2000. Questions looked to be answered are: What are the dynamics behind changes in the poverty rate over time? What events increase individual’s likelihood of entering and exiting poverty? What is the likelihood of entering and exiting poverty given these different events?

Methodology:

The author uses multivariate analysis based on two longitudinal data sets: yearly data from the 1975-1997 panels on the Panel Study of Income Dynamics (PSID), and monthly data from the 1988, 1990, and 1996 panels on the Survey of Income and Program Participation (SIPP). Poverty dynamics is examined over time as well as transitions into and out of poverty using the official definition of poverty.

Key findings:

- ✓ Shifts in household structure are relatively rare events in the population, but individuals who experience these events are the most likely to transition into or out of poverty.
- ✓ Individuals who experience employment shifts are somewhat less likely to experience a poverty transition than those mentioned before. However, as shifts in employment are more common so they are associated with a larger share of transitions into and out of poverty.
- ✓ Controlling for demographic and economic factors in the multivariate analysis, the likelihood of entering or exiting poverty is highest for persons living in households with employment changes, followed by persons living in households with a shift in headship.

Additional Literature:

- ✓ Noreau, N., M. Webber, P. Giles, and A. Hale. **Crossing the Low Income Life**. July 1997
http://collection.nlc-bnc.ca/100/200/301/statcan/income_research_75f0002-e/1997/no11/75F0002MIE97011.pdf
- ✓ Poverty and Social Exclusion. Survey of Britain Homepage.
<http://www.bris.ac.uk/poverty/pse/welcome.htm>
- ✓ Townsend Centre for International Poverty Research Homepage
<http://www.bris.ac.uk/poverty/publications.htm>

Section VI Health Adjusted Poverty Lines: A Graphical Presentation

6.1 Accounting for Health Care Expenses (HCExp)

The debate on how to improve the measurement of poverty is centered in finding which methods appear to be more accurate to show how poverty indicators would be affected by accounting for different types of individual, household, and community needs. Some of the questions related to the treatment of health, health care need and health care expenditures may be summarized as follows:

- How to value HCExp? Should HCExp be treated as a *basic need* (added to a threshold) or as an *actual expense* to be deducted from resources, or both?

- Should HCExp be ignored or receive a separate treatment?
- Should HCExp include health insurance premiums or only Out-Of-Pocket
- How to treat health insurance needs and household expenditures in health insurance; Is it health insurance an actual *need* for every income level group?
- Should “actual” or “expected” values of MOOP be used?

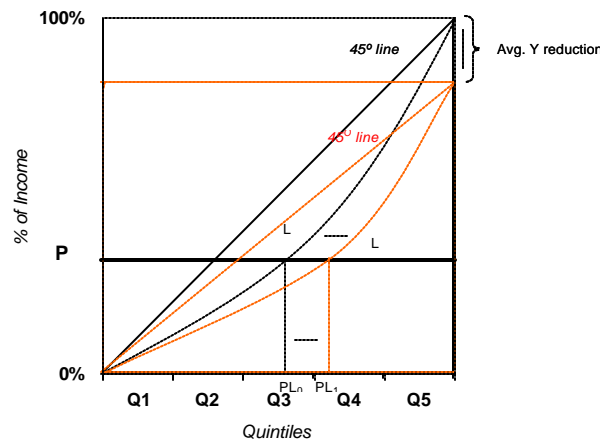
A graphic representation

This section summarizes some of the issues of the literature on the measurement of poverty: resources, needs and threshold using a simplified version of income distribution-Lorenz Curve boxes. In particular we focus in the analyzing the impact on the measurement of poverty and inequality of different approaches to the treatment of health needs, health care expenditures (HCExp) and medical out of pocket expenditures (MOOP).

On resources

Assuming the income distribution of the society, represented in figure 1 by the distribution of resources L_0 is known, and that a poverty line, PL has already been established. The level PL_0 on the axis x represents the cut-off point (threshold) to separate the poor and the non-poor. Under the assumption that HCExp is deemed *nondiscretionary* – meaning a *need*, hence is not available for consumption of other needs-, subtracting HCExp from resources (income, in this case), the curve L_1 would be a better representation of the available resources²⁹. Given this assumption, the new cut-off point (threshold) would be PL_1 . Notice that by construction, the shift from PL_0 to PL_1 would reflect an increase of the number of people on poverty, even when the income distribution may have remain unchanged (in terms of the Gini coefficient).

Figure 1.



²⁹To simplify the presentation we assume that income levels are affected proportionately; that is that the income elasticity of HCExp is equal to 1. .

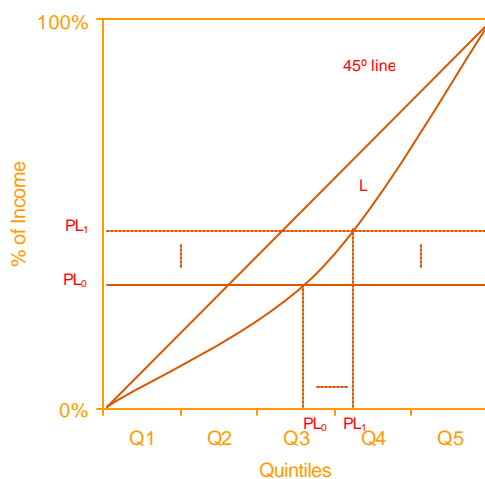
The researchers who support this point of view define resources as disposable money and near income that is available for the consumption of the basic bundle. Consequently, if HCExp have a non-discretionary nature, they do not free up resources for consumption of other basic needs, and are not considered as available resources. In the other hand, those who oppose to this treatment, argue that at least benefits obtained from medical insurance should be deemed since they do free up resources for consumption.

6.2 On Thresholds and Needs

While maintaining similar initial conditions than those in figure 1, in figure 2 we describe the impact of including the cost of a basket to satisfy some basic health care needs. In this case, the graph would show an upward shift of the poverty line to reflect the higher monetary value of the basic bundle; from PL_0 to PL_1 causing again an increase on the proportion of people on poverty.

Controversy exists on which one of these two methods to use. Since HCExp is characterized for its variation and uncertainty, not every family requires medical care in a given year, but when they do, the costs could be extraordinarily large. In this way, thresholds should be estimated for every case complicating the measurement. On the other hand, the case is made for those who are underinsured or uninsured: when ignoring HCExp on the threshold, these groups would appear better off than they really are. This is specially the case for developing countries where a great percentage of HCExp are financed by direct Out-of-Pocket; close to 50 percent of total national health care expenditures in case of the Latin American and Caribbean region.

Figure 2



As a conclusion of this tentative analysis, we would want to suggest that whichever the method be used, the inclusion of HCExp on the measurement of poverty will affect the estimates on incidence of poverty. It is not so clear what would be the result on income distribution, provided that the income elasticity of the *good* health care is not necessarily the same for every individual or unit of analysis at any income level. In other words, the good health care may not considered a *need*.

APPENDIX A

ADDITIONAL LITERATURE REVIEW

I. On Poverty Measurement

- Ravallion, M. **Poverty Comparisons. A Guide to Concepts and Methods**. LSMS Working Papers N^o 88
http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2000/04/28/000178830_98101902174198/Rendered/PDF/multi_page.pdf

Poverty assessments are typically clouded in conceptual and methodological uncertainties. How should living standards be assessed? Is a household survey necessary, and is it a reliable guide? Where should the poverty line be drawn, and does the choice matter? What poverty measure should be used in aggregating data on individual living standards? Does that choice matter?

This paper surveys the issues that need to be considered in answering these questions, and discusses a number of new tools of analysis which can greatly facilitate poverty comparisons, recognizing the uncertainties involved. Various applications in poverty assessment and policy evaluation for developing countries are used to show how these methods can be put into practice.

II. The Census Bureau Reports On Experimental Poverty Measurement:

- ✓ Short Kathleen, Garner Thesia I., Stephanie Shipp, Charles Nelson and Geoffrey Paulin. **Experimental poverty measurement for the 1990s**. March 1998.
<http://www.bls.gov/opub/mlr/1998/03/art4full.pdf>

This article, presented as a joined effort of the USCB and the Bureau of Labor Statistics (BLS), basically analyzes the NAS Panel's basic proposed procedure, and examines the additional Panel's recommendations, identified as "experimental", following the methodological procedures proposed by the panel.

Key findings

- ✓ Poverty thresholds under the NAS procedures seem to be stable over time and across various definitions of the minimum expenditure bundle.
 - ✓ Poverty rates based on these thresholds follow trends over time similar to the official poverty measure and are always higher both over time and across variously defined budgets and subgroups, than rates based on the official measure.
 - ✓ Differences across subgroups are stable over time and the poverty population looks more like the total population in terms of demographic and socioeconomic characteristics: the poor are more likely to be white, to be married, and to have a member of the family in the workforce.
- ✓ Garner, Thesia I., Short, Kathleen, Johnson David and Doyle Patricia. **Experimental Poverty Measures 1990 to 1997**. June 1999.
<http://www.census.gov/prod/99pubs/p60-205.pdf>

This report presents experimental measures of poverty in the United States as illustrative variations of the recommendations of the *Panel on Poverty and Family Assistance: Concepts, Information Needs, and Measurement Methods* of the National Research Council.¹ The report shows how estimated levels of poverty would differ from official levels as specific recommendations of the NAS panel (on poverty thresholds, family resources, on both thresholds and resources and on various methods for updating the thresholds over time) are implemented individually and how estimated trends would differ when many recommendations are implemented simultaneously. In addition the report examines the effect of experimental poverty measures on various subgroups, holding the overall poverty rates constant.

The experimental measures presented here:

- Incorporate, in a way that the official measure does not, the effects of key government policies aimed at the most needy families in the United States.
- Use an after-tax income measure.
- Add the value of in-kind benefits, such as food stamps, to income.
- Take account of variations in expenses that are necessary to hold a job and to obtain medical care.

Methodological characteristics of this report can be summarized as follows: In one hand, different treatment is used for child care expenses, including a Different Equivalence Scale (DES), meaning the use of Equivalence Scales with three parameters (while the NAS Panel uses a two parameter equivalence scale), in order to better capture economies of scale in families with different number of children³⁰. In the other hand, and unlike what was recommended by the NAS Panel, the measures of this report are mainly based on the Current Population Survey (CPS).

Key general findings:

- ✓ Considering all in-kind transfers together reduces the incidence of poverty substantially, even though the reductions from any single program are generally quite small.
- ✓ The increase in poverty rates when one accounts for necessary expenses can be substantial but depends on the method used to value those expenses.
- ✓ Because of the Earned Income Tax Credit, deducting taxes from income on balance reduces the percentage of people who are viewed as being poor.

The report closes discussing data limitations and opportunities in major surveys for more completely implementing the NAS panel recommendations, and identifying directions for future research. These, as stated in the report, should focus on refining the poverty thresholds (mainly I the adjustment for geographic differences in cost of housing, and the overall cost of living) and further examining the resource measure (mainly in work related expenses, MOOP, the treatment of cohabitants and the treatment of he flow of services from owner-occupied housing).

- ✓ Short, K. **Experimental Poverty Measures: 1999**. October 2001
<http://www.census.gov/prod/2001pubs/p60-216.pdf>

³⁰ This approach, follows Betson, 1996

Responding to the call for future research made in the first report, this report addresses measurement issues and presents alternative ways of accounting for: the calculation of work related expenses including child care; the value of housing subsidies that is added to income as a non-cash transfer; the valuation of MOOP spending; and adjustments for geographic cost-of-living differences in the threshold.

Methodological characteristics of this report to be highlighted are the use of DES as a starting point for a posterior use of the new techniques, and as well as in the first report, the use of the March 2000 Annual Demographic Supplement of the CPS.

Key general findings:

- ✓ Experimental poverty rates are more comparable in magnitude to official rates.
- ✓ Updated estimates of work-related expenses, including child care, are lower than those used in previous experimental measures, resulting in lower experimental poverty rates overall.
- ✓ Improved methods for including the value of housing subsidies result in increased imputed income for those families who benefit from these programs
- ✓ Estimates of MOOP spending that are based on more recent data and alternative techniques have a considerable smaller effect than those previously reported.
- ✓ Alternative geographic adjustments yield slightly higher experimental poverty rates but may provide better estimates of state-level poverty than those presented in the NAS and earlier Census reports.

The report closes with the acknowledgment that the measures surveyed represent methodological improvements to the NAS Panel proposal, but that they do not affect most of the previous conclusions about the relative incidence of poverty for various subgroups: that there are more elderly, more married-couple families, more families in the West and Northeast, and in suburban areas, classified as poor than are currently identified with the official measures.

Finally, two lines of further research are stressed: the treatment of cohabitants in the unit of analysis and the treatment of the flow of services from owner-occupied housing.

III. Measurement of Poverty in Canada

- ✓ Cotton, Cathy. **Recent Developments in the Low Income Cutoffs**. July 2001
<http://www.statcan.ca/english/research/75F0002MIE/75F0002MIE2001003.pdf>

This paper outlines the result of an investigation into three aspects of the low income cutoffs resulting from the feedback received in the January 2000 public consultation: the behavior of a proposed “annually updated” low income series, the addition of payroll taxes, and restructuring of the matrix of 35 cutoffs.

Methodology:

On the annually updated series, the release of the Survey of Household Spending with annual data on consumption spending allowed to synchronize the base year and the

income reference year for a set of cutoffs. The report describes the behavior of the series for 1997 and 1998.

Regarding the addition of payroll taxes, and in order to obtain a more accurate measure of disposable income, a new set of cutoffs was produced using an income concept defined as the After-payroll-tax income. This is obtained by subtracting from the after-tax income, the contributions paid to the Canadian Pension Plan or the Quebec Pension Plan, minus the contributions paid to the Employment Insurance. The thresholds were based on 1992 FAMEX data updated to 1997 and 1998 using CPI.

On restructuring the matrix of LICOs, the author produces city-specific cutoffs for Toronto, Montreal and Vancouver and for a residual group of six cities, using 1992 FAMEX data updated by the CPI to 1997 and 1998.

Key findings:

- ✓ The annually updated series showed that in a climate of decreased average spending on the three basics, thresholds and low income rates will be higher compared to a series of fixed base.
- ✓ The after-payroll-tax low income rate did not show the same results for all types of families. In groups that tend to have earnings, the income is reduce a bit more than the threshold, and a few more families fall below the cutoff, so counted as being in low income (i.e. non-elderly families). In groups that do not have much earning, the thresholds reduce a bit and the income is barely affected or not at all, so a few more families are counted above the new cutoff (i.e. elderly families).
- ✓ Restructuring the LICOs' matrix, generated higher cutoffs for Toronto and Vancouver and lower for Montreal and the group of six cities, and corresponding higher and lower low income rates.

III. Other issues related to improving the measurement of poverty:

- ✓ Garner, Thesia I. and Short, Kathleen. "**Personal Assessments of Minimum Income and Expenses: What Do They Tell Us about 'Minimum Living' Thresholds and Equivalence Scales?**" in John A. Bishop and Yoram Amiel, eds., *Inequality, Poverty and the Redistribution of Income, Research on Economic Inequality*, Vol. 10, New York: Elsevier Science, Forthcoming.
<http://www.census.gov/hhes/poverty/povmeas/approaches.html>

Economic well-being can be described using various measures. Two are examined in this study. These are based on personal or subjective assessments of *minimum income* (MIQ) to make ends meet and *minimum spending* (MSQ) for basic necessities. This work builds upon that of others, particularly the Leyden group, a team of Dutch researchers conducting research on similar measures in the early 1970s. Variations of the measures developed by that group have been used to assess economic well-being, estimate equivalence scales, income sufficiency, and poverty thresholds.

Using data from US Surveys the author found that thresholds based on the MIQ are higher than those based on the MSQ. Equivalence scales derived from the estimated subjective thresholds imply greater economies of scale than those implicit in the other measures previously noted, but are similar to behavioral scales derived from econometric

analyses of household expenditure data. The flatness of the scales suggest that personal assessment or subjective-based scales, like behavioral scales, account for the trade-offs families make to meet their minimum needs. Based on this research, and that of others, we conclude that MIQ and MSQ measures are useful complements to other measures of economic well-being. Societal norms on what constitutes a minimum standard or level of living can be assessed through the use of personal assessment questions like the MIQ and MSQ.

- ✓ Betson David. **"Is Everything Relative?" The Role of Equivalence Scales in Poverty Measurement.** March 1996.
<http://aspe.hhs.gov/poverty/papers/escale.pdf>
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<http://aspe.hhs.gov/poverty/papers/poldfolk.pdf>
- ✓ Short, Kathleen. **Where we live. Geographic differences in Poverty Thresholds.** January 2001.
<http://www.census.gov/hhes/poverty/povmeas/papers/sgepaper.pdf>
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- ✓ Short, K., M. Shea, and T.J. Eller. **Work Related Expenditures in a Measure of Poverty.** 1996
- ✓ Betson David and Michael Robert. **Why So Many Children Are Poor.** 1997
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http://www.bc.edu/centers/crr/issues/ib_5.pdf
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http://www.bc.edu/centers/crr/papers/wp_2001-03.pdf
- Bosworth Barry and Burtless Gary. **Pension Reform In The Presence Of Financial Market Risk.** July 2002.
http://www.bc.edu/centers/crr/papers/wp_2002-01.pdf
- Bavier Richard. **The impact of welfare reform on families in data from the Survey of Income and Program Participation.** June 2002
<http://www.jcpr.org/wpfiles/bavier.pdf>

See also:

<http://www.census.gov/hhes/www/povmeas.html>
<http://www.census.gov/hhes/poverty/povmeas/approaches.html>
<http://www.census.gov/hhes/poverty/povmeas/papers.html>
<http://www.census.gov/hhes/poverty/povmeas/topicpg3.html>
<http://aspe.hhs.gov/poverty/betson-papers.htm>

APPENDIX B

POVERTY INDEXES PROPERTIES

Basic axioms:

- i) *Focus* axiom: other things equal, the poverty measure should be insensitive to the increase of the income of a non poor person. In this way the well-being of the worst off shouldn't be affected by an income increases that happen above the poverty line;
- ii) *Monotonicity* axiom: other things equal, a reduction in a poor person's income should increase the value of the poverty measure;
- iii) *Transfer* axiom: other things equal, a transfer of income from a poor person to a richer poor person should raise the value of the poverty index. This means that the index must be sensitive to the income distribution below the poverty line. A weak version of this index requires only that the beneficiary of the transfer continues to remain poor after the transfer;

Without further detail we can say that: the *Headcount* index satisfies only the focus axiom; the *Poverty Gap* index satisfies both: the focus and the monotonicity axioms; while the *Sen* index satisfies the three of them. The FGT class satisfies all this requirements, plus the additional *Sub-group consistency*, that requires overall poverty should increase when, ceteris paribus, poverty in any sub-group increases.