Impressionistic Realism: The Europeans Focus the U.S. on Measurement
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In the art of communicating impressions lies the power of generalizing without losing that logical connection of parts to the whole which satisfies the mind.

—Camille Pissaro

Viewed from afar, the picture is clear. As one examines more closely, the details are blurred. Inequality and poverty measurement require focusing on the details—the "logical connection of parts"— while examining the overall picture. It is this attention to measurement that the U.S. can learn from the European research and experience.

At the Joint OECD/University of Maryland Conference held in Paris on "Measuring Poverty, Income Inequality, and Social Exclusion: Lessons from Europe," many of the conference papers focused on alternative measures of income, evaluating their impacts on inequality and poverty. The conference papers highlight the impact of making detailed changes that affect measurement. These details, in turn, provide insight for the larger context of determining the "best" resource measure to use for poverty and inequality measurement. In many cases, the details do not change our picture of the trend in poverty, or even the comparisons across countries (see OECD, 2008), but they often change the composition of the poor. Examining the details helps to logically connect the parts to form a satisfactory whole or picture. As it is often difficult to clarify all of the details and obtain the "best" measure, the main focus should be on obtaining a sufficient statistic that reflects a country's poverty or inequality and that can be compared over time and across countries. To evaluate how the logical connection of parts affect the overall picture of poverty, one must answer the *Who*, *What*, *Where*, *When*, *Why*, and *How* of poverty measurement: Who is the unit of analysis (and the choice of equivalence scale); What resource measure will be used; Where is poverty measured (and does it differ by geographic location); When is poverty measured (and does it change over time); Why is poverty measured and what is the purpose; How is the poverty threshold constructed and used?

THE U.S. EXPERIENCE

As in Europe, the U.S. continues to evaluate alternative income measures and thresholds in determining a head-count poverty measure. Thirty-one years ago in the U.S., the Office of Management and Budget issued Statistical Directive 14, prescribing the method for estimating official poverty statistics.[11] Since then there have been a number of evaluations of the poverty measure, including suggestions for changes and improvements. In 1995, the National Academy of Sciences (NAS) issued a report, "Measuring Poverty: A New Approach" (Citro & Michael, 1995) that recommended making significant changes to the methods used to measure poverty in the U.S. Over the past decade, the Census Bureau, other federal agencies, and the poverty research community have examined virtually every aspect of the NAS recommendations and in many cases have updated them. Recently, there has been renewed interest in the poverty measure recommended by the NAS report (see Blank, 2008; Blank & Greenberg, 2008; CEO, 2008).

The Census Bureau has been producing NAS-type measures for a number of years.[12] For these measures, the poverty thresholds are constructed using the expenditures on a basic bundle of food, clothing, shelter, utilities, and a "little more" (the *How*). These thresholds are based on families and are modified for various family types using a three-parameter equivalence scale (the *Who*), adjusted for differences in the cost-of-living across states using a geographic adjustment (the *Where*) that depends on the cost of housing, and updated over time using the change in median expenditures on the basic bundle (the *When*).

Table 1. Official and NAS-type poverty rates: 1999 to 2007.

Poverty Measure (percent)	1999	2000	2001	2002*	2003*	2004*	2005*	2006	2007
Official measure	11.9	11.3	11.7	12.1	12.5	12.8	12.6	12.3	12.5
MSI-GA-CE**	12.1	12.3	12.9	13.2	13.4	13.4	13.3	13.6	15.3***
MSI-GA-CPI**	12.1	12.0	12.2	12.1	12.3	12.5	12.5	12.2	12.6

Source: U.S. Census Bureau, Current Population Survey, 2000 to 2008, Annual Social and Economic Supplements.
* The Census Bureau changed the way it modeled taxes and other items, which affects annual comparisons. For further information see http://www.census.gov/hhes/www/povmeas/altmeas07/nas_measures_ historical.xls.
** MSI-GA-CE means medical out-of-pocket expenses (MOOP) subtracted from income; geographic adjustment (of poverty thresholds); thresholds were recomputed since 1999 using data from the Consumer Expenditure Survey. MSI-GA-CPI means medical out-of-pocket expenses (MOOP) subtracted from income; geographic adjustment (of poverty thresholds); thresholds were adjusted since 1999 using the CPI-U.
*** See footnote 14.

The calculation of resources (the *What*) for this measure starts with current money income, which is used to calculate official poverty statistics. This includes cash income received on a regular basis, such as income from earnings, any cash transfers, and property income.[13] Federal and state income taxes (along with social security taxes) are subtracted to obtain after-tax income. Taxes are estimated using a tax calculator, and to improve the estimate of taxes, net realized capital gains are simulated and added to income. Added to after-tax income are the near-cash benefits that are available to meet spending needs defined in the thresholds (such as food stamps and housing subsidies), and necessary expenses, such as work-related expenses (including child care), are subtracted. Finally, to account for differences in healthcare needs, medical out-of-pocket (MOOP) expenses are subtracted to obtain the final resource measure used in determining the NAS-type poverty measure. By constructing both sides of the NAS-type poverty measure together, we ensure that the thresholds and resources are consistent and logically connect the parts to the whole.

Table 1 shows the overall poverty rates using the NAS-type measure of MSI-GA-CE as compared to the official poverty measure. In 2007, this measure is much higher than the official measure (15.3 percent, compared to 12.5 percent).[14] This table also demonstrates the importance of the updating method (the *When*) and the impact of using a quasi-relative updating method. Using the CPI to update the thresholds, the MSI-GA-CPI measure is 12.6 percent in 2007, compared to the official measure of 12.5 percent. Results also suggest that while the geographic adjustments affect the relationship of state poverty rates, the other adjustments (the *What*, *Who*, and *How*) taken separately do not substantially change the comparison between state poverty rates. The most dramatic effects occur in the changes in the composition of the poor (see Short, 2001; Blank & Greenberg, 2008; CEO, 2008).

ALTERNATIVE MEASURES OF INCOME (THE WHAT)

Many of the income definitions presented in the conference use components of income recommended by the Canberra Group (an international group of household income experts convened under the auspices of the United Nations Statistics Division). The Canberra Group's definition of adjusted disposable income includes the standard cash money income components, in-kind government transfers, cash value of fringe benefits, imputed rent, value of home production, and excludes taxes paid (see Table 2.1 in Canberra, 2001). However, none of the papers follow a strict implementation of this income definition.

Most papers begin with a measure of after-tax cash income, and include some inkind transfers. The main issues for the NAS poverty measure are the measurement of health-care expenditures and benefits and the imputed services from homeownership. Other issues include the methodology for calculating taxes and imputing in-kind benefits, the inclusion of employer-provided noncash benefits, and

the inclusion of realized capital gains. As shown at this conference, most studies do not include all employer-provided benefits (see Gilbert, 2009), many do not include imputed rent, and none include the value of home production.

Using an after-tax income measure, the OECD report, *Growing Unequal?* (OECD, 2008; Förster & D'Ercole, 2009), examines the impact of including various alternative income sources (e.g., in-kind transfers, imputed rent). This report, together with conference papers, demonstrates that most additions to income (such as education, housing, health benefits, and imputed rent) decrease inequality and poverty, whereas sales taxes and capital income increase inequality. However, many of the impacts discussed are similar over time and across countries. In examining the U.S. income distribution, many of the income components change inequality and poverty in ways similar to that shown in the OECD report. In addition, the changes do not affect the trends over time.[15] With similar effects, one wonders whether all of these components need to be taken into account, especially since many are difficult to measure and are not available in all countries.[16]

Sutherland and Tsakloglou (2009) specifically evaluate the effects of the in-kind social benefits of housing, education, and health care. Each of these components is added to after-tax income, and their results confirm those from the OECD report that public benefits are equalizing (and poverty reducing). These benefits, however, do not change the ranking across countries. The authors suggest that the different benefit structures across countries needs to be considered when comparing poverty and inequality across countries. If health-care services are provided in one country but privately paid for in another, this could affect the cross-country comparisons of poverty. In addition, the composition of the poor can be impacted by different benefits, such as education for children versus health care for the elderly.

The in-kind benefits examined in Sutherland and Tsakloglou (2009) (and included in the Canberra report and the NAS poverty measure) must be imputed using additional information (and data). These imputations can impact not only the level of poverty, but also the composition of the poor, depending on which demographic variables are included in the imputation. Similar to Sutherland and Tsakloglou (2009), the NAS income measure includes housing subsidies (as they are directed specifically to households); however, it does not include the social benefits of education and health care (and the Canberra report suggests including all social benefits in kind). As discussed above, the NAS poverty measure actually subtracts MOOP from the resources, and does not include the social benefit as imputed in Sutherland and Tsakloglou (2009). The different treatment of MOOP and health care benefits can have a substantial impact on the level and composition of poverty.

With regard to housing, the NAS poverty measure does not include imputed rent. However, there have been discussions about how to handle homeownership in a poverty measure (see Citro & Michael, 1995; Blank & Greenberg, 2008). The Census Bureau does produce an "imputed rent" calculation using the net return on home equity. Using this measure decreases poverty, especially elderly poverty. Garner and Short (2001) further describe the alternative effects of measures of imputed rent. Frick and Grabka (2009) further examine capital income and housing, showing that imputed rent is equalizing and poverty reducing, while capital income increases inequality. They highlight one of the problems with using relative poverty in comparing various income definitions: The inclusion of capital income actually increases poverty in some years. This is mainly due to the capital income for the elderly, suggesting that the key issue is the composition of the poor. While Frick and Grabka (2009) focus on capital income, they do not discuss the inclusion of realized capital gains.

Finally, Decoster et al. (2009) evaluate the distribution of indirect (or sales) taxes. The Canberra Group, however, does not include these taxes in their subtractions from income. Taxes on particular commodities can be viewed as an increase in price, which obviously affects welfare (through an income and substitution effect). For U.S. poverty measurement, it would seem that these sales taxes would be included in the threshold cost of goods and would not need to be subtracted from income. However, if a

country moved from a complete income to a complete consumption tax, it would be clear that the income distributional analysis would include a measure of disposable income that excluded taxes paid.

Similar to the OECD report, Decoster et al. (2009) find that sales taxes increase inequality. Their analysis, however, raises a key measurement question about the *What*. They find that sales taxes are progressive when using consumption and regressive when using income, implying that different measures of resources yield different conclusions. In addition, they suggest that different taxes on different types of goods imply that sales taxes have different effects for different demographic groups, which could affect the composition of the poor.

As the conference papers demonstrate, changes in measurement affect various demographic groups (e.g., children and elderly) in different ways. Since the main impacts are on the composition of the poor, this should be the focus of the evaluation of alternative income measures. In order to more fully examine these effects, the Census Bureau has released a Web-based table creator so that users can create their own poverty measures. This table creator can assist in evaluating each component of income or it can show the changes in composition between the official U.S. poverty measure and alternatives. Most important, it can provide the impact on the composition of the poor by the inclusion of various income components.[17] Sutherland and Tsakloglou (2009) use a more sophisticated modeling program to evaluate their impacts—EUROMOD.[18] A program like this would be useful for the U.S. and would allow more detailed examinations of the impact of changes on the composition of the poor.

VARIATIONS ON EQUIVALENCE SCALES (THE WHO)

Sutherland and Tsakloglou (2009) also raise important measurement issues regarding the *Who*— do we need different equivalence scales for medical care and education, which are important for U.S. poverty measurement? They construct an alternative scale for health care, and they evaluate allowing educational benefits to vary for different households. Since most of the in-kind benefits are imputed to households, and these imputations vary by household composition, this creates an interaction between the income component and the equivalence scales—the *What* and the *Who*. The NAS measure uses an imputation for MOOP that depends on family types and sizes. This causes an interaction between the imputation and the equivalence scale. An alternative method presented in Short (2001) modifies the threshold and creates an additional equivalence scale adjustment for health-care needs, similar to the method discussed in Sutherland and Tsakloglou (2009).

Most studies use common arbitrary scales (like the square root of household size), and fix them to be the same for all analyses—whether it be the choice of income, choice of country or time period (that is, use the same *Who* for the *What*, *Where*, and *When*). As with changes in the components of income, the main impact of using various equivalence scales is on the composition of the poor, and not the overall level and trend in poverty (see Short et al., 1999). As suggested above, however, there can be interactions between the *Who* and the *What*, and this could extend to interactions with the *Where* and *When*.

Given the difference in "conditions" across countries, a "conditional" equivalence scale may need to be different for different countries.[19] Just as there may be reasons to alter the scale for health care, it may be useful to alter the scale over time. As the OECD report shows, the falling of average household size is one of the main drivers of changes in inequality. It could be that the "true scale" actually changes over time to reflect these choices, which could change our picture of the trend in inequality (or poverty).

The framework discussed in Sutherland and Tsakloglou (2009) can be applied to almost any in-kind benefit program. They suggest that including many of these benefits in an augmented income distribution means that they are like private commodities that households need, and hence, equivalence scales should be modified accordingly.

Gilbert (2009) also raises some interesting measurement issues regarding the interaction of the *What* and the *Who* in his examination of employer benefits, and accounting for the noncash employer

benefits, such as paid vacations, sick days, and telework. Many of these benefits could affect different family types in different ways, again demonstrating the interaction between the *What* and the *Who* and suggesting alternative equivalence scales for these types of benefits.

CONNECTING THE LOGICAL PARTS

While examining the alternative components of an income measure is important, the main focus should be on obtaining a sufficient measure that reflects a country's poverty and can be compared over time and across countries. One issue is whether after-tax cash income tracks change and differences across states or countries similar to the other measures presented in the conference papers. Another issue is whether there should be multiple measures for multiple purposes. While the Canberra Group recommends one measure for income distribution, it could be that there is also an income measure for poverty (as in the NAS measure) and another income measure for program evaluation.

The impressionistic picture of poverty measurement may look complete from a distance, but as one examines the details, many measurement issues remain. In particular, we need to examine the impact that changes in the income measure have on poverty rates of various demographic groups. We need to evaluate the "logical connection of the parts to the whole" to ensure that the composition of the picture "satisfies the mind." While there may not be sufficient information to make all of the details clear, research in the U.S. and Europe must examine these details to understand if and how they change the picture of poverty. We must work together to maintain the big picture of comparability and determine a sufficient measure that provides enough information to measure poverty consistently over time, across countries (and states), and between demographic groups.

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[10] The views expressed in this article, including those related to statistical, methodological, technical, or operational issues, are solely those of the author and do not necessarily reflect the official positions or policies of the Census Bureau or the views of other staff members. This paper is released to inform interested parties of ongoing research and to encourage discussion of work in progress.

[11] This directive stated that the basis of these measures is ". . . the classification of income data collected by the Bureau of the Census in accordance with a definition of poverty developed by the Social Security Administration and revised by a Federal Interagency Committee in 1969."

[12] See Table 1 for MSI-GA-CE; for details see Short (2001) and Garner and Short (2008). More tables can be found at http://www.census.gov/hhes/www/povmeas/tables.html.

[13] Before-tax income, regularly received, does not include net realized capital gains, gifts, lump sum inheritances, or insurance payments.

[14] The Bureau of Labor Statistics implemented questionnaire improvements about expenditures on food away from home and type of mortgage in the Consumer Expenditure Interview Survey (CE) beginning in the second quarter of 2007, which substantially increased the 2007 threshold. Consequently, comparisons with earlier years for the MSI-GA-CE measure may be affected.

[15] See tables at http://www.census.gov/macro/032008/rdcall/1_001.htm.

[16] See Table 2 in Smeeding and Weinberg (2001) for an inventory of income components for various countries.

[17] See Johnson et al. (2008) for a description. The table creator can be accessed at http://www.census.gov/hhes/www/cpstc/apm/cpstc_altpov.html.

[18] For information of EUROMOD, see http://www.iser.essex.ac.uk/research/euromod.

[19] For example, using a constant elasticity equivalence scale (e.g., square root of household size), one could choose the scale elasticity that minimizes inequality within a country and then make inter-country comparisons

REFERENCES

Blank, R. M. (2008). How to improve poverty measurement in the United States. Journal of Policy Analysis and Management, 27, 233–254.

Blank, R. M., & Greenberg, M. H. (2008). Improving the measurement of poverty. Hamilton Project Discussion Paper 2008–17. Washington, DC: Brookings Institution.

Canberra Group. (2001). Expert group on household income statistics: Final report and recommendations. Ottawa, Canada: Statistics Canada.

Center for Economic Opportunity (CEO). (2008). The CEO poverty measure. Working Paper, New York City Center for Economic Opportunity, August 2008.

Citro, C. F., & Michael, R. T. (1995). Measuring poverty: A new approach. Washington, DC: National Academy Press. Decoster, A., Verwerft, D., Leuven, K. U., O'Donoghue, C., & Loughrey, J. (2009). Incidence and welfare effects of indirect taxes. Manuscript, Paris Conference.

Förster, M., & D'Ercole, M. (2009). The OECD approach to income distribution and poverty: Strengths, limits, and statistical issues. Manuscript, Paris Conference.

Frick, J., & Grabka, M. (2009). Accounting for imputed and capital income flows in inequality analyses. Manuscript, Paris Conference.

Garner, T., & Short, K. (2001). Owner-occupied shelter in experimental poverty measures. Poverty Measurement Working Paper, Census Bureau (November 1, 2001).
Garner, T., & Short, K. (2008). Creating a consistent poverty measure over time using NAS procedures: 1996–2005. Poverty Measurement Working Paper, Census Bureau (April 2008).

Gilbert, N. (2009). Accounting for employee benefits: Issues of measurement, valuation, and social equivalencies. Manuscript, Paris Conference.

Johnson, D., Nelson, C., Short, K., & Stern, S. (2008). Progress toward improving the U.S. poverty measure. Paper prepared for the Annual APPAM Research Conference, November 2008. U.S. Census Bureau.

Organisation for Economic Co-operation and Development (OECD). (2008). Growing unequal? Income distribution and poverty in OECD countries. Report.

Short, K. (2001). Experimental poverty measures: 1999. U.S. Census Bureau, Current Population Reports, Consumer Income, P60–216. Washington, DC: U.S. Government Printing Office.

Short, K., Garner, T., Johnson, D., & Doyle, P. (1999). Experimental poverty measures: 1990 to 1997. U.S. Census Bureau, Current Population Reports, Consumer Income, P60–205. Washington, DC: U.S. Government Printing Office.

Smeeding, T., & Weinberg, D. (2001). Toward a uniform definition of household income. Review of Income and Wealth, 47, 1–24.

Sutherland, H., & Tsakloglou, P. (2009). Accounting for the distributional effects of in-kind public benefits. Manuscript, Paris Conference.
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