

Rethinking the Sociological Measurement of Poverty*

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Abstract

Despite serious methodological problems, quantitative studies of poverty by U.S. sociologists predominantly rely on the official U.S. measure. After reviewing the shortcomings of the U.S. measure, this article examines several theoretical and methodological advances in poverty measurement. After synthesizing literature on poverty measurement, I argue that ideal measures of poverty should: (1) measure comparative historical variation effectively; (2) be relative rather than absolute; (3) conceptualize poverty as social exclusion; (4) assess the impact of taxes, transfers, and state benefits; and (5) integrate the depth of poverty and the inequality among the poor. Next, this article evaluates sociological studies published since 1990 for their consideration of these criteria. Due to sociology's neglect of these criteria, this article advocates for three alternative poverty indices: the interval measure, the ordinal measure, and the sum of ordinals measure. Finally, using the Luxembourg Income Study, I examine the empirical patterns with these three measures, across advanced capitalist democracies from 1967 to 1997. Estimates of these poverty indices are made available for future research.

In the first few pages of his classic *The Truly Disadvantaged* (1987), William Julius Wilson lamented the paucity of poverty scholarship by sociologists in the 1970s and early 1980s. Reacting, in part, to the climate surrounding Moynihan's (1965) study of the African American family and Wilson's earlier book, *The Declining Significance of Race*, many scholars avoided the study of

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poverty during this period. Fortunately, Wilson's 1987 book triggered an enthusiastic resurgence in the study of poverty, and sociological research subsequently proliferated. Since 1990, 53 empirical, quantitative studies published in prominent and relevant sociological journals have featured poverty as the dependent variable or as a key independent variable. Many other articles, and far more scholarly books, analyze poverty with a qualitative or theoretical approach. Sociologists have answered Wilson's call, and poverty research has experienced a vibrant reinvigoration.

Sociology's revitalization of poverty research has produced significant empirical findings, theoretical contributions, and policy applications. At the same time, several conventional methodological practices have become widely accepted. Though these conventions demonstrate effective scientific replication, this consensus has simultaneously obscured one very crucial methodological concern. On the whole, the *measurement* of poverty has not received the scrutiny it deserves. Most sociologists of poverty rely on estimates of the official U.S. measure of poverty — presuming that such statistics are both valid and reliable. In a few cases, sociologists modestly augment the U.S. measure with slight alterations or by supplementing it with other indicators. However, most archival quantitative data sets supply researchers with dichotomous variables identifying respondents as below or above the official level. Typically, scholars use these simple dummy variables and hope that measurement issues are resolved. As a result, the vast majority of sociological studies of poverty use a seriously problematic measure of poverty.

Despite these problems, sociologists' measurement of poverty would be somewhat acceptable if no feasible alternatives existed. To the contrary, however, a wealth of scholarship focuses on this very issue. Several social scientists have devoted their entire careers to devising innovative and useful techniques for the measurement of poverty.¹ Though a few of these techniques are impractical and/or flawed, significant methodological and theoretical advances have been made. Unfortunately, despite the relevance of this research and its popularity across the social sciences, sociologists have not sufficiently integrated these advances.

Of course, these alternatives would not warrant sociologists' attention if different measures of poverty produced identical or even similar empirical conclusions and policy implications. This is, however, far from the case. Hagenars (1991:134) explains, "Both the population of poor and the extent of their poverty appear to depend to a large extent on the definition chosen." Betson and Warlick (1998) convincingly demonstrate that the number, composition, and trends in U.S. poverty significantly depend on the particular measure chosen. In fact, simply ascertaining whether poverty has increased in the last thirty years elicits dramatically different answers with contrasting measures of poverty (see Jorgenson 1998; Triest 1998). Thus, poverty measurement decisions have very real, substantive, and policy consequences

that potentially affect the scientific inferences of research (Hill & Michael 2001; Iceland et al. 2001).

Overall, this article attempts to provide a guide for sociologists while facilitating a stronger connection between sociology and the theoretical and methodological advances in the measurement of poverty. First, I revisit the shortcomings of the official U.S. poverty measure. Second, I discuss several emerging theoretical and methodological advances in the measurement of poverty, and advocate five criteria for the measurement of poverty: (1) measure comparative historical variation effectively; (2) be relative rather than absolute; (3) conceptualize poverty as social exclusion; (4) assess the impact of taxes, transfers, and state benefits; and, (5) integrate the depth of poverty and inequality among the poor. Third, I evaluate sociological research since 1990 for its application of these criteria. Fourth, I advocate for three alternative indices that resolve the problems of sociological measures of poverty while adhering to these criteria: the interval measure, the ordinal measure, and the sum of ordinals measure. Finally, with the Luxembourg Income Study (LIS), this article empirically examines these indices across advanced capitalist democracies from 1967 to 1997.

Shortcomings of the Official U.S. Measure

In recent years, many scholars, journalists and policy makers have criticized the official U.S. measure of poverty (e.g., Ruggles 1990). Betson and Warlick (1998:351) emphasize that the U.S. measure “is commonly acknowledged to be inadequate for measuring poverty.” Wilson (1991:3) argues that the U.S. measure “does not capture the real dimensions of hardship and deprivation, it also does not reflect the changing depth or severity of poverty.” The Family Support Act of 1988 called for a scientific review of the U.S. measure. In 1995, the National Research Council (NRC), and specifically the Panel on Poverty and Family Assistance, published the results of this scientific review (Citro & Michael 1995). In this report, the NRC panel, which included many of America’s most influential poverty researchers, broadly concluded that the U.S. measure is outdated and should not be retained.²

Mollie Orshansky (1965), of the Social Security Administration under President Johnson, constructed the measure in 1963. Johnson reportedly sought a measure that was sufficiently conservative to render the eradication of poverty as an attainable goal of his War on Poverty (Betson & Warlick 1998; Katz 1989). Orshansky used family consumption data from 1955 (Wilson 1991) and what she called a “crude” calculus of family budgets.³ Though seemingly logical, Wilson (1991:2) stresses that the U.S. measure “represents arbitrary income thresholds” which have little relevance to contemporary American society. The

dubious origins and significant elapsed time since the measure's inception, at a minimum, warrant regular review and updating. The NRC panel went one step further, arguing, "Our major conclusion is that the current measure needs to be revised" (Citro & Michael 1995:1). In turn, poverty analysts increasingly conclude that the antiquated official poverty line is no longer appropriate.⁴

Moreover, many analysts fault the U.S. measure's *lack of reliability* because it obscures differences in the extent of poverty among population groups and across geographic contexts and provides an inaccurate picture of trends over time (Citro & Michael 1995; Haveman 1987). Because the measure remains unchanged after thirty years, significant demographic, economic, and policy changes are ignored (Blank 1997). Specifically, the NRC noted the increased labor force participation of mothers, the related escalating need and expenses for child care and health insurance, differences in health status, and the inappropriateness of antiquated family size adjustments (Betson & Warlick 1998; Citro & Michael 1995). Lichter (1997) laments the unsophisticated equivalence scale (see below), which does not reliably measure poverty across family sizes and forms. Also, Ruggles (1990) explains that the relative share of family budgets devoted to different goods and services has changed.⁵ Foster (1998) adds that over time the U.S. measure has depreciated from its value in 1963 and become unreflective of what a family really needs to avoid poverty. Because of rising consumption and living standards, the NRC concluded that updating the poverty threshold solely with inflation is increasingly inadequate (Citro & Michael 1995). In short, the U.S. measure lacks reliability due in large part to the limited and weak means of adjusting the measure since its inception.

Similarly, many scholars (e.g., Jorgenson 1998; Slesnick 1993) argue that the U.S. measure *lacks validity* because it fails to capture the complex nature of poverty. Many increasingly burdensome family expenses (such as health and child care) are not encompassed in the U.S. measure. In addition, the measure ignores cash, near-income, and in-kind public assistance, as well as the taxes that effectively alter a family's disposable income (Betson & Warlick 1998; Citro & Michael 1995; Lichter 1997). Neglecting these government benefits, the U.S. measure violates the transfer axiom (A. Sen 1976; see below), fails to grasp the financial reality of poor families, and significantly underestimates the extent of poverty in the U.S. (Ruggles 1990).

Because these validity problems have varied over time and place, reliability is also compromised. Taxes, such as the Social Security payroll tax, have varied across the U.S. and have increased enormously since the measure's inception (Betson & Warlick 1998; Lichter 1997). Moreover, future policy initiatives (e.g., the extension of Medicaid, and the Children's Health Insurance Plan) will not be captured by the measure (Citro & Michael 1995). In sum, the U.S. measure lacks both validity and reliability and warrants revision.

Though the construction of a flawless measure is unlikely, the NRC and others suggest important revisions to improve poverty measurement. First, many scholars argue for a more significant temporal revision to the measure as living standards and consumption rise. Second, many analysts argue simply that the threshold should be raised to include those just above or near the poverty line. Third, a rising consensus argues for a reorientation toward a relative standard. While the U.S. measure purports to delineate a family's absolute level of minimum needs, the NRC recommended that the threshold be explicitly refocused on the relative consumption of contemporary U.S. families. With the NRC's proposed alternative measure, analysts have demonstrated significantly different historical trends in U.S. poverty (Betson & Warlick 1998; Triest 1998); much higher poverty rates (Hill & Michael 2001); smaller gaps between child and adult poverty rates (Iceland et al. 2001); and, importantly, different social consequences of child poverty (Hill & Michael 2001).⁶ Unfortunately, despite these scholars' efforts, the government has not implemented significant changes to its measure. While a lack of political will probably explains the inaction of the U.S. government, sociologists have no such justification. It is time that sociologists moved away from this flawed measure.

Measuring Comparative Historical Variation in Poverty

For decades, sociologists have sustained interest in the comparative patterns and historical trends in poverty and inequality (e.g., Alderson & Nielsen 1999; Brady & Wallace 2001; Casper, McLanahan & Garfinkel 1994; Firebaugh 2000). Unfortunately, however, the discipline's reliance on the U.S. measure has limited our contribution to the understanding of these dynamics. For research on poverty to advance, measures must be developed to gauge carefully the comparative historical variation in poverty.

Many analysts document that the paramount variations in poverty are *cross-national* (e.g., Atkinson 1998a). Hence, explaining these significant cross-country differences is essential to understanding poverty in contemporary societies (Cantillion 1997). In addition, a comparative perspective provides leverage in assessing the influence of causal factors such as economic change, public policy, and demographic shifts. Given these benefits, several methodological concerns emerge when comparing poverty across nations. Several analysts note that different measures of poverty produce small but important differences in the rank ordering of nations (Atkinson 1998a; Hagenaars 1991). Therefore, scholars must guard against noncomparability and measurement error when observing these sensitive cross-national differences (Atkinson 1990). Also, cultural differences in the definitions of family units often obscured some of the national differences in poverty. Until recently, the scarcity of high-quality data needed for such comparisons compounded these issues (Cantillion 1997). Hence, these

methodological and data concerns must be carefully addressed in order to advance the comparative analysis of poverty.

Though cross-national differences are probably larger, *historical differences* remain important to the study of poverty as well. For example, assessing the trends in U.S. poverty remains a highly controversial issue (Betson & Warlick 1998; Jorgenson 1998). Understanding historical trends in poverty is also important for separating the effects caused by sheer demographic shifts versus other causal factors such as social policy and long-run economic changes (Danziger & Weinberg 1994; Ruggles 1990). Though some research finds that poverty levels remain relatively stable over time within nations of the Organization for Economic Cooperation and Development (OECD), significant temporal variation does occur (Cantillon 1997). Fortunately, recent advances in data collection allow analysts to use more sophisticated measures to scrutinize over-time comparisons (Ravallion 1998).

Assessing comparative historical variation in poverty levels offers a great deal to the sociology of poverty. To maximize our contribution, two issues bear careful consideration. First, given the difficulty in comparing poverty across societies and across time, to make general inferences about causal processes, scholars need measures that grasp the same phenomena in each society. Second, given the diverse meanings, nature, and content of poverty in various societies, scholars need to broaden the very definition of poverty. To assess what are essentially culturally specific and historically contextualized phenomena, scholars need a broad conceptualization of poverty. Though seemingly contradictory, the next two sections argue that we need to embrace both concerns simultaneously.

Relative Versus Absolute Poverty Measures

For many years, a vigorous debate persisted over relative versus absolute definitions of poverty (see A. Sen 1979, 1983; Madden 2000). Relative and absolute definitions of poverty tap into fundamentally divergent notions of difference and deprivation (Shanahan & Tuma 1994). Also, absolute and relative standards produce different policy implications and accounts of the experience of poverty, and somewhat differ in the extent of poverty determined (Townsend 1980). Despite this historically contentious debate, poverty scholars increasingly conclude that in *advanced capitalist democracies*, a relative definition is more appropriate (Atkinson 1998a; Gordon 1972; Hagenaaars 1991; Madden 2000; Ravallion 1998; A. Sen 1992). Relative measures usefully capture changes in necessities over time and place, which is particularly relevant to such nations. Scholars also conclude that a relative measure more effectively gauges comparative historical variation across comparable nations in a historical period. Alternatively, absolute measures of “basic needs” are most

useful in *developing countries* vulnerable to famine and underdevelopment. By reviewing the strengths and weaknesses of absolute and relative measures, this section establishes a relative standard as a criterion for an ideal measure of poverty.

ABSOLUTE MEASURES OF POVERTY

Absolute measures involve a cross-nationally and historically constant and fixed threshold, which distinguishes poor from nonpoor. For example, except for inflationary adjustments, the U.S. measure is absolute over time, regions, and family types. Absolute measures assume that a certain material level purchases an essential bundle of goods necessary for well-being. For example, the World Bank defines poverty absolutely as living on less than one dollar per day. Thus, in developing countries, absolute measures can also be tied to absolute definitions of well-being, such as infant mortality, life expectancy, and caloric intake (see Y. Bradshaw et al. 1993). A. Sen (1992, 1999) argues that when studying developing countries, absolute measures should be retained. Nevertheless, absolute measures suffer from serious limitations that render them inappropriate for advanced capitalist democracies.

Importantly, scholars have grown skeptical about whether a fixed bundle of goods or absolute threshold of well-being can capture the complexity of poverty. This is exacerbated when an absolute standard is employed regardless of historical and national contexts (Atkinson 1998a; Smeeding, O'Higgins & Rainwater 1990).⁷ Smeeding, the director of LIS, and his colleagues (1993:246) avoid an absolute measure because it "conveys an unwarranted objectivity." Further, they argue that it has become the "widely held view among scholars working in this arena that a poverty standard cannot be established independently of the economic and social context within which needs arise and are defined" (247). Due to these reasons, poverty measurement debates have moved away from absolute measures. Though absolute measures effectively assess poverty in developing countries, relative measures are more appropriate in advanced capitalist democracies. Relative poverty measures cannot capture the absolute deprivation of households but more accurately grasp the notion of relative deprivation.

RELATIVE MEASURES OF POVERTY

Relative measures generate specific poverty thresholds for each society in each time period from patterns in the income distribution. Typically, relative measures begin with a threshold of 50% of the median income. People below such a threshold are considered too far down on the queue of the scarce resource of income to be fully integrated into society (Shanahan & Tuma 1994). Hence, relative measures reflect the difference in living conditions between the

poor and the majority of society, rather than some abstract standard. Though relative measures emerge from the distribution within a particular society, “using a relative line does not amount to measuring inequality nor does it imply that poverty is by definition ‘always with us.’” (Foster 1998:337).

A relative measure’s greatest theoretical virtue is that it is entirely grounded in national and historical context (Townsend 1980). Relative measures advantageously measure deprivation according to a particular society’s cultural norms and customary, prevailing standards of necessities (A. Sen 1979). As Adam Smith ([1776] 1937) argued, poverty is a lack of those necessities that “the custom of the country renders it indecent for creditable people, even of the lowest order, to be without” (quoted in Ruggles 1990:xv). Scholar and activist Michael Harrington often argued that poverty should be gauged according to the living standards of the mainstream of contemporary society.⁸ Thus, relative measures frame poverty as a social and, hence, sociological condition.⁹

Theory aside, relative measures are also superior because they provide leverage for policy analysis and sociology. In fact, several European poverty scholars argue for nation-specific relative measures over Europe-wide standards (see Atkinson 1998a). Even U.S. policy makers have long conceded that as a society’s standard of living rises, more expensive consumption is forced on the poor to remain integrated into society (President’s Commission on Income Maintenance Programs 1969). For example, arguably the most important trends in children’s poverty entail relative deprivation, since massive relative deprivation is what disadvantages children in human development, human capital, and life chances.¹⁰ Relative measures are embedded in the social context and thus are far more valuable for sociological research on the causes and trends in poverty.

Although a growing consensus of poverty analysts prefers a relative measure, the debate between absolute and relative measures persists. Advocates of absolute measures concentrate on basic needs, because if those are unmet — in terms of physiological subsistence and safety — poverty is truly present. Despite the persuasiveness of this claim, advocates of relative measures respond that the concept of “need” is actually relative itself — reflecting contextual norms of what is a “need” (Harrington 1981:188). Ruggles (1990) argues that consumption patterns have changed so dramatically over the past 40 to 50 years that defining the basic needs of American families is quite elusive. Other scholars go even further in problematizing the concept of basic needs. Ravallion (1998:21) notes that perceptions of “well-being” are contingent on the reference group’s circumstances and argues, “There is an inherent subjectivity and social specificity to any notion of ‘basic needs.’” Hagenars (1991:141) stresses that even nutritionists cannot agree about levels of calories needed for various ages, sexes, occupations and living conditions, and contends “the resulting estimates are not as absolute and objective as they are claimed to be.”

While most scholars agree that a desperate absolute level of deprivation does exist under which families are definitely poor, discerning an appropriate standard above that level remains ambiguous. Because such a minimal standard has limited utility in advanced capitalist democracies, most scholars argue that basic needs standards are less useful. Townsend (1980:300) argues, "any rigorous conceptualization of the social determination of need dissolves the idea of 'absolute' need." Overall, relative measures emerge as superior.

While most scholars now agree on the use of a relative measure in operationalizing poverty, much theorizing and debate continues about the conceptualization of poverty itself. Arguably, the most promising theoretical direction for the analysis of poverty is the literature on social exclusion. Though debates on social exclusion are prominent in Europe, the concept has not been fully integrated into the sociology of poverty in the U.S.

Conceptualizing Poverty as Social Exclusion

Recently, poverty analysts have grown dissatisfied with narrow theoretical conceptualizations and measures of poverty. In fact, narrow perceptions of poverty may fundamentally underestimate the extent and severity of poverty (Townsend 1980). European scholars have advanced the concept of social exclusion as an attempt to broaden the conceptualization of poverty and to facilitate measurement innovations (Cantillon 1997; Ormerod 1998; Paugam 1998; Procacci 1998; Wacquant 1995). Conceptualizing poverty as social exclusion can provide a novel and beneficial direction for the U.S. sociology of poverty. Potentially, the concept of social exclusion will suggest new sets of interesting sociological questions and provide different theoretical interpretations of old findings. Therefore, conceptualizing poverty as social exclusion is a criterion for an ideal measure of poverty.

Social exclusion is polysemic, having multiple meanings in different contexts and for different purposes (Silver 1994, 1995), but we can identify important common elements. Social exclusion is the antithesis of the Durkheimian concept of solidarity and connotes marginalization and irrelevance. Theorists characterize social exclusion to entail "the multi-dimensional character of disadvantage and exclusion in modern market economies" (Cantillon 1997:30); multiple deprivation or "cumulative misery" (Schuyt & Tan 1988:14); those "who suffer from an accumulation of disadvantage which cannot be reached by macro-policies" (Dahrendorf 1990:151); and those difficult to reach with social policy (Engbersen 1991). The notion of social exclusion echoes Harrington's (1981:11) classic concern that "the poor are losing their links with the greater world." In addition, social exclusion is consistent with Wilson's (1991) concept of social dislocation, which he describes as limited differential opportunities for economic resources, political privileges, organizational

influence, and cultural experiences (see also Rankin & Quane 2000). Social exclusion can be understood as “people being prevented from participation in the normal activities of the society in which they live or being incapable of functioning” (Atkinson 1998a:27). In sum, social exclusion means incomplete citizenship and unequal access to the status, benefits, and experiences of typical citizens in society (Gore 1995).

Though social exclusion has multiple meanings, the concept can also be reduced to one central notion. If an individual is socially excluded, that person has a limited *capability* to effectively participate in society. Capability refers to the ability to function effectively in society and have the freedom to participate fully and equally with the mainstream. Capability offers a promising link between poverty and social exclusion, as social exclusion defines the lack of the basic capabilities that make one poor (A. Sen 1999).¹¹ A. Sen (1992) has formulated his arguments about inequality and poverty around people’s substantive freedom of choice to achieve valuable functionings and well-being. A functioning member of society must have basic freedoms (or capabilities) to participate in society’s main institutions (Barry 1973, 1998). Thus, the concepts of social exclusion and capability present an engaging, broadening direction for analysts of social inequality. To date, however, the connection to poverty measurement has not been fully articulated. I argue that social exclusion, and hence capability, facilitate the reconceptualization of poverty in two main ways.

First, these concepts explicitly and implicitly necessitate a relative measure of poverty. Explicitly, policy debates for relative poverty measures have been influenced by the concept of social exclusion (Barry 1998; Gore 1995). The notion of social exclusion has been deployed in the European debate about the community- and society-specific nature of poverty. In 1984, when the European Commission constructed measures of poverty, the Council of Ministers overtly linked their measures to social exclusion by defining poverty as “persons whose resources are so limited to exclude them from the minimum acceptable way of life in the Member State in which they live” (Atkinson 1998a:2). Silver (1994) explains that the European Union’s statistical service, Eurostat, and the Luxembourg Income Study use relative measures of poverty due to a theoretical interest in relative deprivation and social exclusion. Atkinson (1998b) adds that using an absolute deprivation standard of poverty — with its emphasis on economic circumstances in isolation from others — has no relevance to social exclusion. Last, the empirical reality of “new” poverty within Europe explicitly corresponds to what French scholars label “exclusion,” with its relative deprivation, insecurity, and displacement (Silver 1994).

Implicitly, relative measures are theoretically consistent with social exclusion. Social exclusion theorists have also been influenced by Rawls’s difference principle. Atkinson (1987) explains that a Rawlsian theory of poverty is concerned with the “least fortunate group in society” and this group is the

socially excluded who could be defined as poor. Rawls (1971) even suggested that this group could be defined as those with less than half of the median income and wealth, and noted that this could form a meaningful poverty standard. Finally, a theoretical interest in social exclusion necessitates an appreciation of its cultural and historical context. In turn, cross-nationally operationalizing poverty or social exclusion is quite difficult and requires a relational measure that is grounded in social context (Silver 1994).

Second, social exclusion and the economic market are strongly connected. Because poverty is primarily an economic phenomenon and social exclusion is multifaceted and complex, the two may seem incompatible. It may even seem inappropriate to treat social exclusion as a market phenomenon rather than as a cultural, institutional, and social concept. However, the economic market is one of several main mechanisms triggering social exclusion. In postindustrial welfare states, a low level of economic resources is a principal precursor to social exclusion (Barry 1998). In effect, an interest in social exclusion demands an interest in economic inequality; as Barry (1998:22) puts it, "A government professing itself concerned with social exclusion but indifferent to inequality is, to put it charitably, suffering from a certain amount of confusion." The essence of social exclusion thus involves the dual marginalization by society's institutions and, especially the market (Gore 1995; Rodgers 1995).¹²

The link between social exclusion and the market, and hence poverty, is made even more clear by returning to capability. A. Sen (1992:110) asserts that "poverty is not a matter of low well-being, but of the inability to pursue well-being precisely because of the lack of economic means." Even with the nuanced concept of capability, a basic level of economic means is essential for escaping poverty. While this basic level of capability almost implies an absolute definition of poverty, this need not be the case. Though poverty is absolute in terms of capabilities, it is plausible, and even appropriate, that poverty is relative in terms of economic resources (A. Sen 1983; Ravallion 1998). Therefore, capability can be an absolute concept entailing basic levels of social functioning, while being measured as a relative economic standing.¹³ Thus capability and social exclusion, as attributes of poverty, emerge from a relative measure of poverty.

Taxes, Transfers, and State Benefits

One of the most persuasive critiques of the U.S. measure of poverty is that it neglects taxes, financial transfers, and in-kind benefits. Of course, taxes and transfers make a significant impact on a family's finances. In fact, the deteriorating value of transfers is the main reason for the worsening of child poverty in recent decades in the U.S. (Lichter 1997). Further, taxes on poor families in the U.S. have steadily risen, making their financial standing actually

weaker than that of prior equivalent families. This neglect of taxes and transfers in configuring income violates A. Sen's (1976:219) Transfer axiom, "Given other things, a pure transfer of income from a person below the poverty line to anyone who is richer must increase the poverty measure." Ignoring these financial costs and benefits when measuring poverty is a fundamental theoretical and empirical problem (Ravallion 1998). Thus, ideal poverty measures must incorporate taxes and transfers and measure poverty before and after taxes and transfers (Danziger, Haveman & Plotnik 1981).

Though taxes and transfers most often are financial, the contribution of in-kind and near-cash benefits like housing assistance and food-stamps is essential (Townsend 1980). Poverty analysts often ignore state benefits when assessing family income because problems in measurement, valuation, and imputation of near- and non-cash income to individual households are quite formidable. This is troubling since these benefits affect the distribution of well-being between households; and ignoring these benefits yields misleading inferences about the relative well-being of various types of households (Smeeding et al. 1993).

Under the assumption that the most comprehensive definition of income is optimal for assessing familial welfare, the LIS analysts have made significant strides in incorporating taxes and transfers into their measures of income. Smeeding and his colleagues (1993) have assessed the value of, and imputed near-cash income to a variety of benefits. These benefits provide significant resources for families; and cumulatively, they have significant equalizing consequences by raising living standards and reducing poverty. While national differences exist in the nature and extensiveness of these benefits, their importance to the income distribution is universal.

Importantly, these benefits accrue from both the government and the private sector. Though government benefits typically provide larger consequences for the overall income distribution, private benefits are nontrivial. To be most effective, poverty should be examined both as it is generated in the private sector, and as it is mediated by the state.¹⁴ To the extent possible, private benefits should be considered as part of market income, and state benefits should be considered as part of ultimate state-mediated income. Both types of income — before and after taxes and transfers — are important to understanding the complex nature of poverty.

The Ordinalist Revolution

Following Sen's (1976) pioneering work, "The Ordinalist Revolution" (Hagenaars 1991) fundamentally redirected debates on poverty measurement. While only minimally impacting public policy (Osberg & Xu 2000), consideration of Sen's contribution is essential for any serious evaluation of

TABLE 1: Alternative Poverty Measures Emerging from the Ordinalist Revolution

	Symbol	Definition	Advantages	Disadvantages
Headcount	H	Percentage of population below 50% of median income	Simple, dichotomous measure of the percentage of the population socially excluded	Ignores the depth of poverty among the poor
Income Gap	I	Difference between population's median income and mean income of poor with H, standardized by population's median income	Continuous variable of the average depth of poverty among the poor	Ignores the quantity of poor people
Interval	HI	Product of H and I	Simple, parsimonious measure combining quantity and depth of poverty	Does not weight index with income distribution among the poor
Ordinal	O	$HI \cdot (1+CV)$, where CV is coefficient of variation	Weights measure so the deeply poor have more impact than the barely poor	May add unimportant information or unneeded complexity
Sum of Ordinals	SO	Sum of H for 60%, 50%, 40%, 30%, 20%, 10%, and 5% of median income	Provides clear, interpretable graphical representation	Less precise information about distribution of the poor than HI or O

poverty measurement. The contribution can best be explained by considering a series of measures that build on one another. Table 1 displays each measure that is relevant to this explanation. All of the measures discussed can be defined relatively.

First, poverty is measured commonly with a *Headcount* (denoted by H), the percentage of the population that is below a certain threshold of income. H is a simple dichotomous measure of poverty, offering an either/or account of who is denied the basic minimum rights of citizenship or social inclusion (Atkinson 1998a). Despite its useful simplicity, H has received mounting criticism (Atkinson 1987). Sen (1976:219) calls H "crude" because it ignores the income

distribution of the poor and contains no information on the depth of poverty. A. Sen (1976:219) articulated this basic criticism of *H* as the “Monotonicity Axiom: Given other things, a reduction in income of a person below the line must increase the poverty measure.”¹⁵ Though it still has utility for describing the proportion of the population that is socially excluded, *H* is generally considered an imperfect measure of poverty (Myles & Picot 2000).

To address these concerns, we can estimate the depth of poverty of the poor. Conventionally, depth is measured as the poor’s average difference from either the median of income or the threshold of poverty (Kakwani 1993). This average deprivation, the *Income Gap* (denoted by *I*), is normally standardized by the median income or threshold of poverty to render it comparable across populations. By considering *I*, rather than simply *H*, scholars more realistically capture the continuous quality of poverty. In reality, poverty is not a discrete condition that is immediately acquired or shed by crossing any particular income line (Watts 1968). Rather, poverty is an interval variable, as the desperately poor with zero income are worse off than the poor just below the poverty threshold.

Still though, *I* is imperfect as well. While *H* offers information on the percentage of the population that is poor, *I* details the depth of poverty of this sub-population. *H* is insensitive to the depth of poverty, while *I* is insensitive to the quantity of poor (A. Sen 1976). As a result, scholars have created new poverty measures by simply taking the product of *H* and *I*, that is *HI* (Atkinson 1987). Because it treats poverty as continuous, unlike the dichotomous *H*, *I* label *HI* the *Interval Measure*. Both *H* and *I* are equally important components because neither individually tells the whole story about poverty intensity (Osberg and Xu 2000).¹⁶

At this point, A. Sen (1976) offered his key contribution. He imposed Axiom R, that the poverty gap (*I*) should be weighted to correspond to the rank order in the interpersonal welfare ordering of the poor (see also Shorrocks 1995). A. Sen argued that *HI* should be weighted such that the income gaps of the poorest of the poor had more influence. In effect, *HI* should add a weight for the income inequality among the poor. The Interval Measure was augmented to form the *Ordinal Measure* of poverty (denoted by *O*), with the following formula:

$$O = H * I * (1 + CV),$$

where *CV* is the inequality among the poor.¹⁷

While more mathematically complicated versions of this formula exist (e.g., Kakwani 1993; P. K. Sen 1986), several scholars have demonstrated that *O* can be reduced in this way (Myles & Picot 2000; Osberg & Xu 2000). Additionally, with this formula, *O* is easily decomposed into three parts that can be analyzed separately to understand their specific changes and relative influence.

As a final alternative, I have created the *Sum of Ordinals Measure* of poverty (SO). SO is simply the sum of head counts for seven different thresholds, and thus builds on relational distribution measures of inequality (Handcock & Morris 1998). Specifically, I calculated H for 60, 50, 40, 30, 20, 10 and 5% of the median income, and summed the values. The SO measure mimics the properties of HI, and can be easily converted to something similar to O by weighting the lower thresholds (5, 10, and 20%) more greatly.

Overall, A. Sen's work provoked a fundamental rethinking of poverty measurement. In addition to the Headcount (H) or Income Gap (I), scholars can now use three more sophisticated measures of poverty: the Interval (HI), Ordinal (O) and Sum of Ordinals (SO). Each offers fruitful direction for sociological research on poverty.¹⁸ As Table 1 displays, each measure has advantages and disadvantages, which upon consideration assist measure selection. If an analyst seeks a simple, parsimonious measure that incorporates both the quantity and depth of poverty, HI is preferred. By contrast, if one decides that the deeply poor should disproportionately affect the index, O should be used. Unlike HI, O weights the index with the inequality among the poor and reflects the judgment that the deeply poor are more important than those near the threshold. Of course, many analysts may not agree with this judgment. Additionally, some evidence exists that the variation in O not captured by HI is empirically unimportant (Myles & Picot 2000; Osberg & Xu 2000). Hence, O often adds unneeded complexity that may obscure national comparisons of poverty (Atkinson 1987; Hagenaars 1991). Therefore if one seeks a sufficient yet parsimonious measure and prefers to avoid the complexity and assumptions of O, HI may be the best alternative. Finally, if one seeks to graphically represent descriptive analyses of the poor, SO offers advantages. Unlike HI or O, SO provides a clear, interpretable display of patterns in the distribution of the poor (see Figure 1 below). Of course, SO has the disadvantage of being a less precise measure than HI or O. In sum, analysts gain much by considering these multiple measures of poverty. Depending on a scholar's theoretical interests, each measure carries certain advantages and disadvantages. Generally, though, an ideal measure of poverty should integrate the depth of poverty and the inequality of the poor.

To summarize, this discussion provides five criteria for ideal measures of poverty. Each of these criteria emerges from an existing theoretical literature that has fully established their relevance to poverty measurement. Table 2 displays these criteria in summary form.

U.S. Sociology and The Measurement of Poverty

Given the influence of these methodological advances across the social sciences and internationally, it seems plausible that sociologists would incorporate them as well. Certainly, as the sociology of poverty grows, these techniques potentially offer leverage for research on poverty. But have sociologists used these advances

TABLE 2: The Criteria for Ideal Measures of Poverty

-
1. Measure comparative and historical variation effectively.
 2. Be relative rather than absolute.
 3. Conceptualize poverty as social exclusion.
 4. Assess the impact of taxes, transfers, and state benefits.
 5. Integrate the depth of poverty and the inequality among the poor.
-

in their work? Specifically, what are the patterns in the sociological literature regarding the measurement of poverty? I answer these questions with a content analysis of major U.S. sociology journals. As Table 3 displays, I analyzed every quantitative sociological study published from 1990 through 2001 in seven relevant journals: *American Journal of Sociology*, *American Sociological Review*, *Demography*, *Research in Social Stratification and Mobility*, *Social Forces*, *Social Problems*, and *Social Science Research*. In sum, I examined 53 articles that featured poverty as a dependent or key independent variable.

The vast majority (69.8 %) of sociological studies use the official U.S. measure. This is surprising given that several important critiques of this measure were published prior to or in 1990 (for example, Ruggles 1990), and since Wilson's 1990 American Sociological Association Presidential address (published as Wilson 1991) criticized the U.S. measure and called on sociologists to conceptualize poverty as social dislocation. Unfortunately, sociologists continue to use the measure despite its problems and prominent calls for change. Particularly problematic, some studies attempt to analyze historical variation in poverty with the U.S. measure, despite its temporal unreliability (e.g., Eggers & Massey 1992). Six studies (11.3%) made modest alterations to the U.S. measure, including measuring the percentage of the population below 125% of the official threshold. Five studies (9.4%) included a broader scale where the U.S. measure was one of several indicators (e.g., South & Crowder 1999). Also, a few studies examined the U.S. measure in combination with other measures of poverty (e.g., Eggebeen & Lichter 1991). Though these last few studies provide some improvement to the flawed U.S. measure, they are few and far between. Plausibly, it might be better to change our measurement strategies altogether rather than attempting to modify this flawed indicator.

While my approach departs from their strategies, some sociologists have produced innovative alternatives to the U.S. measure. Twelve studies (22.6%) examine reciprocity of welfare programs (such as AFDC) as a proxy for poverty (e.g., Harris 1993; McLeod & Shanahan 1993). Four studies (7.6%) examine severe poverty, including families with less than half of the U.S. measure. A slightly larger percentage (15.1%) assessed long-term poverty (e.g., Devine, Plunkett & Wright 1992; Quillian 1999). Finally, eight studies (15.1%) avoid criticisms of poverty measures by simply measuring income, as an ordinal or interval variable, and studying low-income families (e.g., Brooks-Gunn et al.

TABLE 3: Content Analysis of Empirical, Quantitative Sociological Research and the Measurement of Poverty between 1990 and 2001

	Frequency	(Percentage of Total)
Total studies	53	
U.S. official measure	37	(69.81%)
Augmentation of U.S. measure (e.g., 150%)	6	(11.32%)
Broader scale, including U.S. measure	5	(9.43%)
Recipients of assistance (e.g., AFDC)	12	(22.64%)
Deep or severe poverty (e.g., 40% U.S. threshold)	4	(7.55%)
Persistent or long-term poverty (e.g., length of time under U.S. measure)	8	(15.09%)
Low income	8	(15.09%)
Relative measure (e.g., 50% of median income)	5	(9.43%)
Examine Comparative/International Variation in Poverty	4	(7.55%)
Include post-tax or post-transfer measure	5	(9.43%)
Measure inequality among the poor	0	(0.00%)

Note: Table includes all studies in *American Journal of Sociology*, *American Sociological Review*, *Demography*, *Research in Social Stratification and Mobility*, *Social Forces*, *Social Problems*, and *Social Science Research* in which poverty was the dependent variable or the key independent variable.

1993; Duncan et al. 1998; Huff-Corzine et al. 1991; Lichter & Eggebeen 1993; Wu 1996). Compared to most sociological studies, these more effectively embrace issues of relative deprivation, social exclusion, and capability. Still, I would argue that these studies do not quite sufficiently incorporate advances in the measurement of poverty.

A smaller number of articles incorporate some of the aforementioned theoretical advances. Five studies (9.4%) use a relative measure of poverty. Not surprisingly, three of the four papers that examine comparative international variation in poverty also use a relative measure (e.g., Casper et al. 1994; Kenworthy 1999). The sheer paucity of sociological studies examining comparative international variation is unfortunate. The U.S. remains the predominant case of study for U.S. sociologists of poverty, despite its relatively unique and potentially anomalous position in the global economy. Just under 10% of sociological studies include a posttax or posttransfer measure of poverty (e.g., Butler 1996; Duncan & Rodgers 1991). It is equally problematic that more sociologists do not examine posttax and posttransfer income since this is the prime criticism of the validity of the U.S. measure. Last, unfortunately, no sociological study uses a measure that incorporates inequality among the poor. The complete neglect of A. Sen's Ordinal Revolution is a serious omission in sociological research.

Overall, there is a fair amount of diversity in the sociological measurement of poverty, with several scholars incorporating innovative and useful techniques. Further, several studies acknowledge important advances in poverty measurement and make note of the many conceptual and methodological limitations of the U.S. measure (e.g., Eggebeen & Lichter 1991). However, on the whole, sociological research has not sufficiently integrated the theoretical and methodological advances in poverty measurement. While it is unlikely that this content analysis is fully exhaustive of all sociological research on poverty, the coverage of seven journals and twelve years provides an illustration of the dominant patterns in the sociology of poverty. By and large, U.S. sociologists too often rely on the problematic U.S. measure.¹⁹ Despite the very important contributions of sociological research, our collective potential for scholarly and policy debates is probably limited by these measurement deficiencies.

Data and Methods

Selecting poverty measures has consequences for social policy priorities and theoretical conclusions (Atkinson 1998a; Hagenaars 1991; Haveman 1987). My efforts center around establishing criteria and developing measures that are accessible, statistically defensible, and methodologically feasible (Atkinson 1987; Citro & Michael 1995). To further evaluate these measures, I conducted a series of analyses with the LIS. The LIS provides cross-nationally and historically comparable individual-level data sets. Cumulatively, LIS provides almost standardized data — what the LIS staff call “Lissified” data with similar variables across data sets, similar samples, and equalizing weights, which all allow for population estimates (Cantillon 1997). Of course, the LIS data is not perfect and has important methodological limitations (see the LIS Web page: www.lisproject.org). However, the advantages outweigh the disadvantages, and the LIS has great capability to advance the comparative historical scholarship of inequality and poverty. To get estimates of poverty, I first conducted analyses with 74 different data sets to compute a poverty statistic in a given country in a given year. This analysis generated data on 18 countries with between one and seven time points each, resulting in an unbalanced sample of 72–73 cases.²⁰

The LIS contains data on income, but not wealth or consumption. However, for theoretical (see Hagenaars 1991) and practical (see A. Sen 1992) purposes, income may be preferable to wealth for this type of analysis. People have reasonably good records of income because of taxation; however, less high-quality data exists on wealth, and people simply do not have good records of consumption (Ruggles 1990).²¹ Following the practices of other LIS analysts (e.g., Smeeding et al. 1993), two measures of income: market-generated and state-mediated income. Market-generated income includes all sources of

TABLE 4: Descriptive Statistics for Alternative Poverty Measures Based on Luxembourg Income Study Data, 1967–1997

	Mean	Std. Dev.	Coef. of Variation
Market generated (N = 72)			
Headcount (H)	31.743	4.387	.138
Poverty income gap (I)	.879	.048	.054
Interval poverty (HI)	28.050	4.867	.174
Inequality among poor (CV)	1.360	.544	.400
Ordinal poverty (O)	67.748	2.735	.365
Sum of ordinals (SO)	181.469	35.890	.198
State mediated (N = 73)			
Headcount (H)	9.711	3.846	.396
Poverty income gap (I)	.681	.065	.095
Interval poverty (HI)	6.616	2.674	.404
Inequality among poor (CV)	.478	.202	.422
Ordinal poverty (O)	9.818	4.133	.421
Sum of ordinals (SO)	38.958	13.961	.358

income prior to government taxes and transfers, and state-mediated income includes all sources of income after taxes and transfers (DPI in LIS).²² Also, LIS assigns value to near-cash benefits to provide a more comprehensive measure of income.²³

Following convention in poverty research (Atkinson 1987; Townsend 1980) and among LIS analysts, I standardize the income threshold for poverty by family size with an “equivalence scale.” While there is much debate over different scales (see Triest 1998), the LIS staff examined the statistical behavior of over 30 different scales and concluded that one simple formula reasonably approximates all others (see Buhmann, Rainwater, Schumans & Smeeding 1988). Accordingly, I use this equivalence scale, which was adopted by the Organization for Economic Cooperation and Development (OECD) (Atkinson 1998a). The OECD scale weights the head of the household as one, additional adults as .5, and children as .3, owing to the differential demands on a household’s resources that heads, other adults, and children require.

Empirical Analyses

The following empirical analysis explores the consequences of different poverty measurement decisions. By demonstrating that different measures of poverty result in different empirical patterns, this analysis illustrates how more sophisticated measures of poverty provide new and plausibly more accurate information on poverty (Ruggles 1990).

Table 4 displays the descriptive statistics for the poverty measures and their related components for 72–73 observations. Besides the mean and standard deviation, I also list the coefficient of variation (CV). For all poverty measures and components, I report market-generated and state-mediated poverty.

Consistent with past research and the European Union's threshold of 50% of the mean income (Atkinson 1998a), the headcount (H) is computed as 50% of the median income. Unsurprisingly, market-generated H is considerably higher than state-mediated H. Owing to the vast comparative-historical variation in the generosity of welfare states, the CV for H is also much larger for state-mediated poverty, indicating greater variation in H after considering taxes and transfers. The poverty income gap (I) is computed by subtracting the average poor household's income from the median, and standardizing over the median. Like H, state-mediated I is smaller than market-generated I, and again the state-mediated CV of I is larger than the market-generated CV of I for MG. Because H and I are smaller for state-mediated poverty, it is clear that the welfare state reduces the number of poor and the depth of poverty. In turn, state-mediated Interval Poverty (HI) is much smaller than market-generated Interval Poverty (HI), since HI is simply the product of H and I separately. As with the two components, the CV of state-mediated HI is much larger than the CV of market-generated HI. While state-mediated HI poverty is significantly smaller than market-generated HI, greater variation exists across countries and years, in state-mediated HI than market-generated HI.

To calculate the Ordinal Measure of poverty (O), I estimated the inequality among the poor. After censoring the sample above 50% of the median income, I calculated the CV of income for the sub-sample of the population that was poor. Thus, CV in this case refers to the dispersion of income among the poor. Since many people have no market income, market-generated CV of income is much larger than state-mediated CV of income. To calculate O, I synthesized CV of income for poor households with HI. Consistent with the components, market-generated O is much greater than state-mediated O, and the CV of state-mediated O is slightly larger than market-generated O. Whether utilizing H, I, HI, or O, state-mediated poverty is more dispersed yet smaller than market-generated poverty. As with the others, market-generated SO is much larger than state-mediated SO, despite more dispersion in state-mediated SO relative to market-generated SO.

Table 5 displays statistics on market-generated poverty and the comparative ranking of 16 nations circa 1995 (ranked such that 1 has the most poor, and 16 has the least poor). Nations like Belgium, Denmark, and Italy consistently have more poverty, while countries like Finland, Switzerland, and Canada have markets that generate less poverty. Importantly, the ranking of countries substantially changes depending on the measure. For example, though Sweden has the third most poverty according to the simple headcount measure (H), it

TABLE 5: Patterns in Market-Generated Poverty with Different Measures across 16 Western Nations, circa 1995

County	Year	Headcount (H)	Poverty Income Gap (I)	Interval Poverty (HI)	Inequality among Poor (CV)	Ordinal Poverty (O)	Sum of Ordinals (SO)
Australia	1994	34.3 (8)	.919 (3)	31.508 (8)	1.505 (5)	78.934 (5)	205.4 (7)
Belgium	1997	40.1 (1)	.947 (1)	37.984 (1)	2.167 (1)	120.296 (1)	257.3 (1)
Canada	1994	29.9 (13)	.842 (14)	25.174 (14)	1.025 (12)	50.973 (14)	157.7 (14)
Denmark	1995	38.9 (2)	.903 (7)	35.109 (2)	1.420 (6)	84.954 (3)	230.3 (2)
Finland	1995	30.1 (14)	.811 (16)	24.405 (15)	.847 (16)	45.070 (15)	148.7 (15)
France	1994	36.2 (6)	.895 (8)	32.404 (5)	1.301 (8)	74.577 (6)	212.6 (5)
Germany	1994	36.2 (6)	.917 (4)	33.192 (4)	1.660 (2)	88.277 (2)	220.5 (3)
Italy	1995	36.8 (4)	.919 (2)	33.820 (3)	1.390 (7)	80.823 (4)	217.2 (4)
Luxembourg	1994	29.1 (15)	.916 (5)	26.661 (12)	1.637 (3)	70.303 (9)	178.4 (12)
Netherlands	1994	33.9 (10)	.879 (10)	29.805 (9)	1.163 (10)	64.458 (10)	190.4 (9)
Norway	1995	34.3 (8)	.848 (12)	29.081 (10)	.981 (13)	57.603 (12)	181.9 (11)
Spain	1990	31.3 (11)	.908 (6)	28.435 (11)	1.583 (4)	73.459 (7)	188.2 (10)
Sweden	1995	37.9 (3)	.851 (11)	32.246 (6)	.949 (14)	62.851 (11)	199.3 (8)
Switzerland	1992	24.2 (16)	.839 (15)	20.315 (16)	.918 (15)	38.959 (16)	123.9 (16)
U.K.	1995	36.3 (5)	.882 (9)	32.024 (7)	1.248 (9)	71.989 (8)	209.4 (6)
United States	1994	31.1 (12)	.846 (13)	26.302 (13)	1.053 (11)	53.995 (13)	165.6 (13)
Index correlation							
with H (N = 72)			.671	.974	.416	.682	.933
Rank correlation							
with H (N = 16)			.542	.929	.347	.711	.884

Note: The numbers in parentheses are relative rankings, with 1 being the greatest amount of poverty with a particular measure and 16 being the least.

drops to having the sixth most poverty upon considering the income gap (I) and using the interval measure (HI). Further, they fall to having the eleventh most poverty according to the Ordinal Measure (O), owing to the small inequality among the poor (CV). In another example, Luxembourg has the fifteenth most poverty with H, but slides to having the twelfth most poverty with HI, and the ninth most poverty with O.

Though some consistencies exist, the rank ordering of market-generated poverty is sensitive to the measure employed. Table 5 also includes the correlation coefficients between H and the other measures for the full sample of cases. While H is highly correlated with HI and SO, it is less highly correlated with I, the CV, and O. Even though high correlations exist, this is mostly due to the limited dispersion in Income Gap (CV of .054; see Table 4). Because H is only modestly correlated with I and CV, it is important that scholars use HI or O if they are interested in the depth or inequality among the poor. Finally,

TABLE 6: Patterns in State-Mediated Poverty with Different Measures across 16 Western Nations, circa 1995

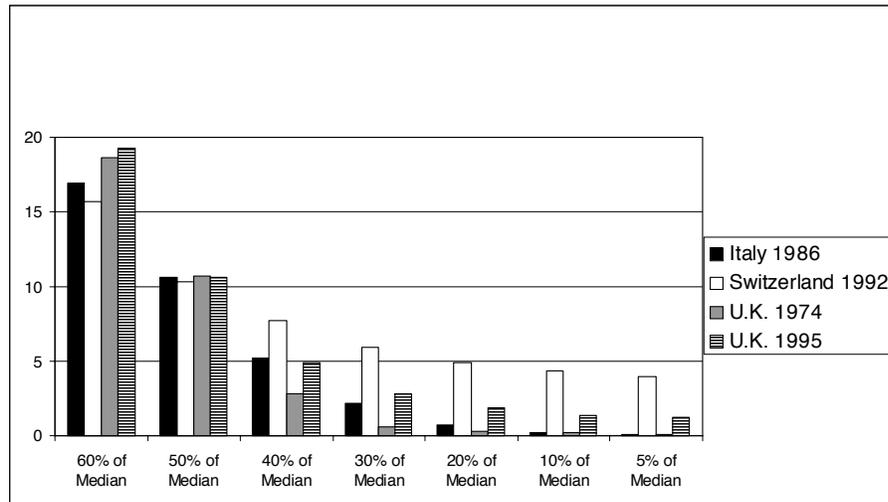
	Year	Headcount (H)	Poverty Income Gap (I)	Interval Poverty (HI)	Inequality among Poor (CV)	Ordinal Poverty (O)	Sum of Ordinals (SO)
Australia	1994	13.7 (2)	.745 (5)	10.210 (2)	.612 (5)	16.454 (2)	63.1 (2)
Belgium	1997	7.7 (14)	.652 (11)	5.020 (14)	.467 (7)	7.365 (13)	30.3 (13)
Canada	1994	11.1 (4)	.650 (12)	7.214 (6)	.327 (15)	9.572 (9)	39.6 (7)
Denmark	1995	9.1 (9)	.776 (3)	7.063 (8)	.820 (2)	12.853 (5)	45.5 (5)
Finland	1995	4.7 (15)	.638 (14)	3.000 (15)	.811 (3)	5.432 (15)	18.6 (15)
France	1994	8.5 (11)	.623 (15)	5.300 (12)	.438 (11)	7.619 (12)	30.4 (12)
Germany	1994	7.8 (13)	.658 (10)	5.132 (13)	.383 (13)	7.100 (14)	30.0 (14)
Italy	1995	13.3 (3)	.695 (6)	9.240 (3)	.451 (8)	13.405 (4)	52.1 (4)
Luxembourg	1994	3.5 (16)	.593 (16)	2.075 (16)	.230 (16)	2.553 (16)	16.1 (16)
Netherlands	1994	8.7 (10)	.882 (1)	7.672 (5)	.647 (4)	12.638 (5)	39.2 (9)
Norway	1995	8.5 (11)	.669 (9)	5.688 (11)	.447 (10)	8.229 (10)	34.7 (11)
Spain	1990	9.4 (7)	.640 (13)	6.017 (10)	.345 (14)	8.092 (11)	35.3 (10)
Sweden	1995	9.3 (8)	.748 (4)	6.956 (9)	.540 (6)	10.713 (7)	39.5 (8)
Switzerland	1992	10.3 (6)	.787 (2)	8.110 (4)	.911 (1)	15.499 (3)	52.8 (3)
U.K.	1995	10.6 (5)	.674 (8)	7.143 (7)	.449 (9)	10.348 (8)	42.1 (6)
United States	1994	18.2 (1)	.680 (7)	12.368 (1)	.418 (12)	17.538 (1)	67.5 (1)
Index correlation with H (N=73)			.018	.980	-.082	.889	.954
Rank correlation with H (N=16)			.479	.927	.037	.844	.927

Note: The numbers in parentheses are relative rankings, with 1 being the greatest amount of poverty with a particular measure and 16 being the least.

Table 5 reveals weaker but similar patterns in the correlation between the rankings of the 16 nations with H, and the other measures.

Table 6 displays state-mediated poverty data for 16 nations circa 1995. Again, the rank ordering of nations is equally sensitive to particular measures. Consistent with previous research, countries like the U.S. and Australia have the most poverty, and Finland and Luxembourg have the least. However, important departures from this pattern appear. Though having the tenth most headcount (H) poverty, the high income gaps and inequality among the poor significantly elevate Denmark and the Netherlands in terms of Interval (HI) or Ordinal (O) poverty. Also, Canada and Spain have much less poverty with HI or O than with the simple H. It is commonly asserted that liberal nations like the U.S., Australia, and Canada have much more state-mediated poverty and much less market-generated poverty, whereas European welfare states like the Netherlands, Sweden, and Denmark exhibit the opposite pattern (Smeeding et al. 1993; Korpi & Palme 1998). However, upon close examination of more

FIGURE 1: Comparison of State Mediated Poverty With Various Thresholds for Four Western Nations



sophisticated measures of poverty, this simple pattern is considerably more complex.

Also, Table 6 reports the correlation coefficients between H and other measures, with the entire sample, and the correlation in ranking between H and other measures, with the subsample of 16 nations. For state-mediated poverty, H is highly correlated with HI and SO , is less but strongly correlated with O , and is not correlated with I and CV . Though the measures follow similar patterns, the stark noncorrelation between H and I and CV suggests that if a scholar is interested in the depth and inequality among the poor, it is wise to utilize HI , O , or SO . With the rank ordering of nations, the correlation between H and other measures is less strong but similar.

Some readers may contend that these differences in ranking are small and that given the high correlations among measures, the simple H is still an adequate measure of poverty. To further consider this matter, I display in Figure 1 four cases with similar state-mediated H poverty. Italy at 10.6 in 1986, Switzerland at 10.3 in 1992, and the United Kingdom at 10.7 in 1974 and at 10.6 in 1995 have practically indistinguishable rates of poverty. However, a closer examination of one higher and five lower thresholds — to construct SO and thus include similar information to HI and O — reveals much greater variation. Switzerland has much deeper and more poverty than Italy and the United Kingdom, while poverty increased considerably between 1974 and 1995 in the United Kingdom. Further, although according to H , the United Kingdom

TABLE 7: Trends in U.S. Poverty with Official U.S. Measure and Interval, Ordinal and Sum of Ordinals Measures, 1974–1997

	Official U.S.	Market-Generated Interval (MGI)	State-Mediated Interval (SMI)	State-Mediated Ordinal (SMO)	State-Mediated Sum of Ordinals (SM SO)
1974	11.2 (6)	23.756 (6)	11.665 (5)	16.821 (5)	63.8 (5)
Percentage change	+4.464	+9.60	-1.312	-2.848	-1.724
1979	11.7 (5)	23.984 (5)	11.512 (6)	16.342 (6)	62.7 (6)
Percentage change	+19.658	+2.769	+9.147	+6.902	+6.858
1986	14.0 (3)	24.800 (4)	12.565 (1)	17.470 (2)	67.0 (2)
Percentage change	+1.429	+2.677	-3.191	-2.536	-1.642
1991	14.2 (2)	25.464 (2)	12.164 (3)	17.027 (4)	65.9 (4)
Percentage change	+2.113	+3.291	+1.677	+3.001	+2.428
1994	14.5 (1)	26.302 (1)	12.368 (2)	17.538 (1)	67.5 (1)
Percentage change	-8.276	-3.608	-3.064	-2.623	-2.074
1997	13.3 (4)	25.353 (3)	11.989 (4)	17.078 (3)	66.1 (3)
Percentage change, 1974–97	+18.750	+6.723	+2.778	+1.528	+3.605

Note: The numbers in parentheses are relative rankings, with 1 being the greatest amount of poverty with a particular measure and 6 being the least. “Percentage change” is the rate of change between the previous and following years, defined as: $((X_{t_2} - X_{t_1}) / X_{t_1}) * 100$.

in 1974 would have the most poor and Switzerland would have the least, these countries reverse with a more sophisticated measure (that is, the United Kingdom’s SO is 33.3 and Switzerland’s SO is 52.8). Such vivid cases illustrate the potentially important role that HI, O, or SO would serve in capturing the complexity and depth of poverty ignored by H. If scholars are interested in the poverty rankings of countries, it is essential that more rigorous measures be used and that multiple measures are evaluated (Atkinson 1987; Cantillion 1997).

While cross-national variation in poverty is greater, historical trends are important as well. The U.S. provides an informative case to explore historical trends in poverty (see Table 7). With the official U.S. measure, poverty increased 18.8% between 1974 and 1997. This trend included small increases between the years 1974 and 1979, 1986 and 1991, and 1991 and 1994. This trend also included a dramatic increase between 1979 and 1986, and a large decrease between 1994 and 1997. However, with more sophisticated measures, the trends in U.S. poverty are more complex. Because the U.S. measure does not fully include taxes and transfers, a comparison with market-generated HI is useful. With this measure, poverty increased a more modest 6.7% over the

period. Also, while the years with the most and least poverty remain the same, the third and fourth worst years reverse with the market-generated **HI** measure. In short, a relative measure incorporating the income gap has different trends than the U.S. measure.

As discussed above, the U.S. measure is flawed because it ignores taxes and transfers, so a comparison with the state-mediated **HI** measure is also valuable. Within the U.S., poverty increased an even more modest amount of 2.8% with state-mediated **HI** over the period. In addition, contrary to the U.S. measure, with **SM HI**, poverty actually declined between 1974 and 1979 and between 1986 and 1991. Owing to differences in the depth of poverty and taxes and transfers, factors unobserved with the U.S. measure, state-mediated **HI** exhibited very different trends. If interested in the inequality among the poor (**CV**), one should also consider the state-mediated **O**. With this measure, poverty increased only a very small 1.5% between 1974 and 1997. Again, with state-mediated **O**, poverty actually declined between 1974 and 1979 and between 1986 and 1991. As an alternative, one can examine the state-mediated Sum of Ordinals (**SO**) and find similar patterns to state-mediated **HI** and state-mediated **O**, with some shuffling of which years had more poverty. Clearly, the perceived dramatic increase in U.S. poverty observed by the U.S. measure is an artifact of measurement error. More realistically, the increase was much smaller, somewhere between 1.5 and 6.7%. Replicating the decline in poverty between 1974 and 1979 and 1986 and 1991 with three measures establishes these trends as actual, and vividly demonstrates the problems with the U.S. measure. Different historical patterns emerge with different measures, and a false understanding emerges with the U.S. measure.

As one final example of the problems of the U.S. measure, we can compare the quantity of households that would be misclassified with the U.S. measure. As mentioned earlier, studies have demonstrated sizable differences between the rates of poverty with the U.S. measure and the NRC's alternatives (Hill & Michael 2001; Uchitelle 1999). With the measures proposed in this article, important differences materialize as well. As Table 7 indicates, 13.3% of the U.S. population was officially classified as poor in 1997. With the market-generated **H**, 30.1% of the population would be poor. This rate, which is more than twice as high, provides the closest comparison since the U.S. measure does not consider taxes and transfers fully. Considering the impact of taxes and transfers on household income, a state-mediated **H** provides a more realistic picture of familial income. The state-mediated **H** for the U.S. in 1997 was 17.6%; hence the official U.S. measure inappropriately classified 4.3% of U.S. households as not poor. With a more theoretically and methodologically defensible measure, the U.S. rate of poverty in 1997 would have been 4.3% higher. Overall, the official U.S. measure provides inaccurate trends over time and clearly underestimates the extent of poverty in the U.S.

TABLE 8: Results of Market-Generated and State-Mediated Interval Poverty in Western Countries, 1969–1997

Country	Year	Market-Generated Interval	State-Mediated Interval	Market-Generated Sum of Ordinals	State-Mediated Sum of Ordinals	Market-Generated Ordinal	State-Mediated Ordinal
Australia	1981	25.285	7.844	165.3	47.0	58.171	11.002
Australia	1985	27.660	8.006	181.0	48.0	63.778	11.108
Australia	1989	26.538	8.084	172.2	47.6	59.437	11.216
Austria	1987	—	4.085	—	21.8	—	4.945
Austria	1995	—	7.833	—	47.3	—	12.498
Belgium	1985	33.020	3.350	227.3	20.7	146.120	4.807
Belgium	1988	33.886	3.568	232.8	23.4	130.562	5.506
Belgium	1992	36.189	3.973	250.6	27.5	154.035	6.578
Canada	1971	25.090	15.101	159.8	84.8	55.945	23.728
Canada	1975	22.737	12.165	142.4	66.2	46.160	17.800
Canada	1981	21.007	9.474	130.7	52.5	41.132	13.299
Canada	1987	21.818	7.662	134.1	42.5	41.548	10.241
Canada	1991	23.547	7.816	145.4	43.7	45.949	10.771
Canada	1997	24.643	7.860	154.9	44.2	50.152	12.260
Denmark	1987	32.106	6.919	206.6	43.7	73.487	11.072
Denmark	1992	34.051	5.738	219.8	35.5	78.970	9.334
Denmark	1997	35.016	6.641	230.1	42.8	84.414	11.400
Finland	1987	18.236	4.006	106.0	23.7	29.810	5.126
Finland	1991	17.152	4.317	99.9	25.7	27.839	5.921
France	1979	27.455	6.146	178.9	35.5	66.425	11.967
France	1981	13.272	5.972	80.8	35.3	23.252	8.269
France	1984	28.603	5.199	186.9	32.8	69.212	7.967
France	1989	32.191	7.288	218.7	44.0	98.449	14.257
Germany	1973	27.040	6.215	172.4	35.7	57.176	9.751
Germany	1978	31.287	5.517	198.9	31.0	66.308	7.997
Germany	1981	32.095	4.225	219.0	25.7	107.797	5.460
Germany	1983	28.975	3.925	181.3	23.4	56.538	4.800
Germany	1984	32.486	4.267	221.0	24.4	92.360	5.222
Germany	1989	29.473	4.126	198.3	24.9	78.668	5.655

Implications for Future Research

These advances in the measurement of poverty potentially offer much for sociological research on poverty. Plausibly, sociologists have not incorporated these advances for a number of reasons. Myles and Picot (2000) argue that these advances have not received wider circulation in part because of the highly technical, mathematical quality of the literature. Further, others may mistakenly presume that these measures are not replicable or comparable with different data sets or contexts. Many analysts probably avoid these measures in order to

TABLE 8: Results of Market-Generated and State-Mediated Interval Poverty in Western Countries, 1969–1997 (Cont'd)

Country	Year	Market-Generated Interval	State-Mediated Interval	Market-Generated Sum of Ordinals	State-Mediated Sum of Ordinals	Market-Generated Ordinal	State-Mediated Ordinal
Ireland	1987	32.357	5.938	208.8	36.5	80.231	9.147
Italy	1986	29.590	6.564	198.1	35.9	79.378	8.331
Italy	1991	27.955	6.049	187.1	35.9	68.276	8.059
Luxembourg	1985	28.228	3.310	193.9	20.9	103.096	4.384
Luxembourg	1991	25.204	2.167	165.1	17.3	61.149	2.566
Netherlands	1983	31.454	5.877	209.8	38.7	87.371	12.806
Netherlands	1987	31.608	5.108	212.5	33.3	89.523	10.479
Netherlands	1991	28.119	5.149	180.9	32.4	60.685	8.588
Norway	1979	28.811	4.237	184.7	31.2	64.275	6.479
Norway	1986	26.338	5.258	169.4	32.7	56.061	7.154
Norway	1991	26.185	4.540	164.8	30.0	51.270	6.758
Spain	1980	26.240	7.893	173.9	44.5	68.528	10.537
Sweden	1967	30.681	7.740	208.6	47.2	90.429	12.004
Sweden	1975	29.675	5.016	191.7	33.6	67.419	7.591
Sweden	1981	31.335	4.069	196.8	23.9	63.954	6.030
Sweden	1987	31.525	6.846	198.9	38.1	63.460	10.278
Sweden	1992	34.540	6.214	217.9	34.6	71.462	9.124
Switzerland	1982	21.447	7.127	130.6	40.9	39.402	9.788
U.K.	1969	20.265	4.152	132.2	26.9	44.802	5.026
U.K.	1974	21.595	6.221	130.1	33.3	37.738	7.389
U.K.	1979	29.295	5.024	194.2	32.6	71.776	6.645
U.K.	1986	32.819	5.085	212.9	33.2	77.435	8.512
U.K.	1991	30.612	8.207	198.2	46.7	68.816	10.763
U.S.	1969	21.030	—	131.1	—	40.893	—
U.S.	1974	23.756	11.665	148.5	63.8	48.626	16.821
U.S.	1979	23.984	11.512	149.8	62.7	47.979	16.342
U.S.	1986	24.800	12.565	155.4	67.0	50.146	17.470
U.S.	1991	25.464	12.164	159.2	65.9	50.916	17.027
U.S.	1997	25.353	11.989	158.8	66.1	51.522	17.078

Note: Cases were excluded from this table that were included in Tables 5 and 6.

avoid arguing first principles and justifying what reviewers might view as controversial. Ultimately, I presume that the official U.S. measure maintains legitimacy for sociological readers and convenience for sociological analysts. None of these concerns, however, need prohibit sociologists from developing and using more sophisticated measures of poverty.

In pursuit of this goal, I advocate for three alternative measures of poverty. These three measures, the Interval (HI), Ordinal (O) and Sum of Ordinals (SO), emerge directly from the recent literature on poverty measurement and

meet the aforementioned criteria. Unlike much of the previous literature, my discussion has been intentionally less technical in order to disseminate these advances to a wider audience. As mentioned earlier, each of the measures carries certain advantages depending on one's research interests. To adhere to A. Sen's Axiom R, analysts should use **O**; for graphical representations, analysts should use **SO**; and, for a simple, parsimonious adherence to the five criteria, analysts should use **HI**. Utilizing these measures, sociologists of poverty can proceed in a number of directions.

First, for additional analyses of the amount of societal poverty, I have supplied further data on different poverty measures. Table 8 displays estimates on the remaining cases available with the LIS as of May 2002. I have calculated the market-generated **HI**, state-mediated **HI**, market-generated **SO**, state-mediated **SO**, market-generated **O** and state-mediated **O** measures for 74 total observations. This data set includes 18 OECD nations and covers the historical period 1967 to 1997. Hopefully, with the publication of these results, other scholars will utilize these estimates for analyses of the causes and consequences of comparative historical variation in poverty. Second, other individual-level data sets can easily produce these measures of poverty. Analysts can easily calculate these measures with basic descriptive statistics on the entire sample and the sub-sample of households that are below 50% of the median income.²⁴ Future analysts should replace the U.S. measure with a relative measure that incorporates the depth of poverty.²⁵ Of course, though not all data sets will have the detailed information on income that the LIS provides, analysts can estimate relative measures of poverty with as much information as possible. Overall, analysts will find that constructing and using these more sophisticated measures of poverty is quite simple. Because these measures are easy to incorporate, sociologists should use them in future research.

Conclusion

This article seeks to advance the sociological measurement of poverty. Unfortunately, much of sociology still relies on the U.S. measure despite serious methodological problems. These methodological limitations are crucial and probably limit sociology's collective contribution to the understanding of the causes and effects of poverty. As an alternative, I argue that scholars should cultivate measures of poverty that meet five criteria. First, scholars should use measures of poverty that effectively gauge comparative historical variation. Second, analysts should measure poverty as relative rather than absolute. Third, poverty should be conceptualized as social exclusion. Fourth, poverty indices should measure the depth and inequality among the poor. Finally, analysts should incorporate taxes, transfers, and state benefits when calculating household resources. These criteria reflect theoretical and methodological

developments that will be useful for sociology. For sociological research on poverty to advance, it is essential that scholars embrace and incorporate these developments.

This article also provides an empirical analysis of patterns with three alternative measures: the Interval, Ordinal, and Sum of Ordinals. The empirical analysis with the LIS data demonstrates that the amount and the cross-national ranking of poverty fluctuate with the particular measure used. Further, simple headcount measures produce limited and potentially less accurate information about comparative and historical variation in poverty. In an analysis of poverty in the United States since the early 1970s, the U.S. measure clearly provides inaccurate results about trends. With state-mediated poverty, the Interval, Ordinal, and Sum of Ordinals measures display important declines in poverty that are not captured with the U.S. measure. Further, the U.S. measure misdiagnoses the increase in poverty since the early 1970s. To understand the causal mechanisms driving poverty, it would be valuable for scholars to consider multiple measures and utilize one of these more sophisticated measures.

If sociologists seek to make scientific inferences and inform public policy, it is imperative that new measures of poverty be developed and integrated into the discipline. At present, the contribution of U.S. sociology is probably limited by the reliance on the U.S. measure and, in the few comparative studies, on a simple headcount measure. While the sociology of poverty has grown considerably over the past few decades, the discipline remains unfortunately out of step with advances in poverty measurement. Further, in the 1990s, the sociology of poverty cultivated increasingly sophisticated statistical analyses of poverty, yet left the more fundamental issue of measurement largely neglected. Plausibly, the sociology of poverty would benefit more by first scrutinizing the basic and primary methodological concern of measurement before proceeding with increasingly sophisticated statistical analyses of the causes and consequences of poverty.

Altogether, these criteria and alternative measures of poverty create a potentially fruitful new direction for research in sociology. With this redirection, it is possible that sociology could experience a second reinvigoration of research on poverty. This article seeks to facilitate this second reinvigoration and to encourage sociology to benefit from more sophisticated measures of poverty that are grounded in theoretical and methodological advances.

Notes

1. In fact, Amartya Sen received a Nobel Prize in Economics in 1998 for work that included his revolutionary "ordinal approach" to measuring poverty (Malakoff 1998).
2. The panel wrote, "The current poverty measure has weaknesses both in the implementation of the threshold concept and in the definition of family resources.

Changing social and economic conditions over the last three decades have made these weaknesses more obvious and more consequential. As a result, the current measure does not accurately reflect differences in poverty across population groups and across time. We conclude that it would be inadvisable to retain the current measure for the future” (Citro & Michael 1995:xvi)

3. Orshansky used the Department of Agriculture (DOA) “low-cost food budget” and multiplied the dollar amount by three, assuming food amounted to one-third of a family’s expenses. Importantly, Orshansky developed the line as a research tool, never intended it as a policy instrument, and quickly repudiated it. Contrary to her intentions, Johnson’s Office of Economic Opportunity adopted it, using the DOA’s “economy food plan,” which was about 25% below the low-cost plan. Over time, the measure was further modified to become even more conservative and to sever the food-income link (Katz 1989:115-17).

4. As Watts (1986) observes, “Our (official) measures are not grounded in some self-evident principle or expert consensus but are simply a collection of more or less arbitrary and eminently vulnerable rules. Their most remarkable feature is their widespread and persistent acceptance by the public and by those who make and criticize public policies” (52).

5. For example, food no longer amounts to one-third of a family’s budget; it is more accurately about one-sixth. Ruggles (1990) also notes that inflationary adjustments are based on the cost of a basket of goods for the entire U.S. population (or at least all urban consumers) — which may not represent price changes for poor families and underestimates changes in rising standards of living.

6. Hill and Michael (2001) write, “If one expects poverty status to be negatively associated with school grades, math achievement, and expectations of completing college and avoiding pregnancy, and to be positively associated with school suspension, then the NRC poverty measure yields a larger estimate of those associations” (743). Notably, the Census Bureau is currently experimenting with new measures in response to the NRC’s recommendations. With one of these experimental measures, the threshold for a family of four in 1999 would have risen from \$16,600 to \$19,500. As a result, the poverty rate would have risen from 12.7% to about 17% in the U.S. (Uchitelle 1999).

7. While the argument is not new (see Friedman 1982), several scholars provide evidence of a historical decline in poverty measured as absolute consumption and contend that the U.S. poor are more affluent than the middle class in previous decades (Cox & Alm 1999; Jorgenson 1998; Slesnick 1993). Though methodological limitations should be noted (see Hagenaars 1991; Kakwani 1993; Lichter 1997; Triest 1998), the greatest concern with this approach is that it conceptualizes and measures poverty absolutely and divorced from cultural and historical context.

8. Harrington (1981: 18, 187) emphasized,

What shall we tell the American poor, once we have seen them? Shall we say to them that they are better off than the Indian poor, the Italian poor, the Russian poor? . . . In the nineteenth century, conservatives in England used to argue against reform on the grounds that the British worker of the time had a longer life

expectancy than a medieval nobleman. This is to say that a definition of poverty is, to a considerable extent, a historically conditioned matter. Indeed, if one wanted to play with figures, it would be possible to prove that there are no poor people in the U.S., or at least only a few whose plight is as desperate as that of the masses in Hong Kong. There is starvation in American society, but it is not a pervasive social problem as it is in some of the newly independent nations. There are still Americans who literally die in the streets, but their numbers are comparatively small.

9. Townsend (1962: 219, 225) elaborates,

Poverty is a dynamic, not a static concept. Man is not a Robinson Crusoe living on a desert island. He is a social animal entangled in a web of relationships at work and in family and community which exert complex and changing pressures to which he must respond, as much in his consumption of goods and services as in any other aspect of this behavior. . . . Our general theory, then, should be that individuals and families whose resources over time fall seriously short of the resources commanded by the average individual or family in the community in which they live . . . are in poverty.

10. Lichter (1997:130) explains,

Absolute increases in child poverty are arguably less important than several other relative dimensions of the current poverty problem. . . . Today's poverty among children must be judged against the living conditions and consumption levels of society as a whole and other advantaged groups — current and past. It is with regard to this relative dimension that implies increasing social and cultural differentiation in the future as the current generation of poor children enters adulthood.

11. Notions of capability emerge from Rawls's (1971) political philosophy. Many scholars follow his prioritization of basic liberties in defining capability, social exclusion, and hence poverty (Atkinson 1987; 1998b). Despite his influence on poverty and inequality debates (see A. Sen 1992), Rawls (1971) made very few overt references to poverty. Atkinson (1987:760) notes that the word "poverty" does not even appear in Rawls' extensive index.

12. Cantillon (1997:131) suggests, "There is probably not a single characteristic that the 'socially excluded' have in common, except perhaps, not having a stable well-paying job." Atkinson (1998b:20) exemplifies social exclusion as lacking a telephone in the home, arguing, "A person unable to afford a telephone finds it difficult to participate in a society where the majority have telephones." While owning a telephone or lacking a job clearly reflects a person's market standing, these simple conditions also suggest complex social processes of dislocation and marginalization.

13. Sen (1992:115) explains further,

In a country that is generally rich, more income may be needed to buy enough commodities to achieve the same social functioning, such as 'appearing in public without shame.' The same applies to the capability of 'taking part in the life of the community.'

These general social functionings impose commodity requirements that vary with what others in the community standardly have.

14. For example, to investigate the direct impact of the market, poverty before taxes and transfers is preferable. If one is interested in the direct impact of the welfare state, poverty after taxes and transfers is preferable.

15. For example, societies A and B, with equal rates of poverty with **H**, would be considered equivalent. However, while the poor in A may cluster close to the threshold, the poor in B may cluster close to zero income. **H** would be unable to detect this difference in depth and income distribution. Further, if the income distributions in A and B were identical at one point in time, **H** would be unable to detect if the poor in A suffered severe income loss and fell to zero income, while the poor in B were unchanged.

16. One advantage of **HI** over **H** manifests in economic recessions. A relative **H** may be criticized because during a recession the median may decline, and households with stable income will suddenly be considered poor and will count equally as a household with no income. While the household would still be poor with **HI**, since **H** is a component, the **I** component would decline, and the overall effect on **HI** would be less significant than with **H**.

17. In **O**, **CV** is conventionally measured with the Gini coefficient of inequality. However, research on inequality demonstrates that the Gini index can be replaced with the simpler Coefficient of Variation (**CV**), which is substantively identical and easier to compute (Allison 1978; Firebaugh 2000).

18. One criticism of these more sophisticated measures raised by scholars unaware of this debates, is that one is basically measuring inequality. Though poverty is a component of patterns at the bottom of the income distribution, a close empirical examination finds important differences between inequality and these poverty measures. In analyses with the LIS data, I found that the Gini coefficient of inequality has a correlation of about .7 with either **H**, **HI**, **O**, or **SO**. These empirical results are available from the author upon request. Osberg and Xu (2000:68) stress, "Although there is a positive correlation between income inequality and poverty intensity, the relationship is far from perfect." Given that inequality and poverty indices measure different phenomena, poverty and inequality are better understood as complementary but theoretically distinct concepts and measures.

19. These criticisms apply mainly to U.S. sociology. Often, prominent European sociological journals include articles with more rigorous measures of poverty (see J. Bradshaw 2000).

20. At a maximum, the U.S., Canada, and Germany contribute seven cases, and at a minimum, Ireland contributes one, while Austria, Spain, and Switzerland contribute two. For Austria in 1987 and 1995, data on income before taxes and transfers (market-generated) was unavailable. For the United States in 1969, data on income after taxes and transfers (state-mediated) was unavailable. Given the unavailability of these cases, my sample is 72 for market-generated and 73 for state-mediated poverty.

21. Actually, this author is not aware of cross-national data on wealth or consumption that even approaches the extensiveness or standardization of LIS. As the NRC suggested, however, relative measures like these could easily be applied to wealth or consumption in the event that such data became available (Citro & Michael 1995).

22. Market-generated income sums the variables: gross wages and salaries (V1), farm self-employment income (V4), non-farm self-employment income (V5), private pensions (V32), other regular private income (V34), and other cash income (V35). For Spain, all market-generated estimates are based on income after taxes but before transfers. I have replicated all analyses with Spain excluded, and the results are almost identical.

23. On rare occasions, cases will have negative values of income in the LIS — largely due to losses in self-employment. I have coded these cases as zero income to minimize any disproportionate bias on the Interval and Ordinal measures of poverty. In a few of the earlier data sets, the LIS is unable to determine if zero values for income variables are due to missing data or actual zero values. As a result, some analysts simply drop these cases from the sample, and I have done so for Sweden (1967) and Switzerland (1982). With all other cases, I chose to keep these cases in the sample and allow zero values for income to be a possibility. Both the negative and zero values represent a very small (maybe negligible) proportion of any sample within the LIS. While my strategy for zero values may very modestly overestimate the quantity and depth of poverty, this seems preferable to the common problem of poverty measures that underestimate poverty.

24. Command files for statistical packages (e.g., SPSS, STATA) to calculate these measures of poverty are available on the LIS web site and from the author upon request. Also, data on the median U.S. household income is available on the U.S. Census Bureau web page (www.census.gov). Analysts can estimate thresholds (for example, 50% of median) and average poverty gaps with this data and apply these thresholds to other data sets.

25. One interesting possibility would be for analysts to construct poverty measures contextualized by regional, state, or metropolitan area. Since poverty is relative and costs of living and median incomes vary across the U.S. significantly, a single national poverty rate may obscure the internal heterogeneity of nations as large and diverse as the U.S. In fact, multiple local relative poverty indices would be easy to compute out of the Census data and might be useful for examining spatially varying outcomes like racial inequality, crime rates, and infant and adult mortality.

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