

Updating the Poverty Thresholds with Expenditure Data

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The National Research Council recommendations

The National Research Council (NRC) panel that recommended a new measure of poverty placed great importance on creating a poverty measure that would rise in real terms as the overall standard of living in the nation increased. The panel's report, Measuring Poverty, A New Approach,⁽¹⁾ states:

- The major reason, in our view, to revise the threshold concept for the U.S. poverty measure is its implications for updating the thresholds over time. If one believes that it is appropriate to have an absolute poverty line that is updated solely for price changes, there is little need to revisit the threshold concept. (pp.102-3)
- The general point is easy to grasp with examples. One-hundred years ago in the United States, indoor plumbing and electric service would not have been regarded as necessities of a minimally adequate standard of living. Today they would.
- Moreover, the point can be buttressed by references to the practices of some other nations, which use relative measures of poverty that rise over the long-run with the overall standard of living. (pp.126-8) And answers to a Gallup Poll question about the minimal amount necessary for a family of four to "get along" in the local community have been presented as evidence that Americans' sense of where the poverty line should be drawn has risen along with the nation's standard of living. (pp.134-140)
- Two central elements of the panel's recommendations derive from the generalization that a society's sense of a minimally adequate standard of living rises along with the average standard of living. First, the panel concludes that if the poverty thresholds were about right when they were adopted in the middle 1960s, they must be too low now. To set new thresholds, the panel recommends identifying a reference family type - a couple with two children and no other family members - and picking a reasonable point on the distribution of spending by such reference families on food, clothing, shelter, and utilities. The panel suggests the 30th to 35th percentiles as a reasonable range. (p.149) An additional 15-25 percent should be added for other necessities. (p.152) The suggested threshold would represent an increase of between 14 and 33 percent in economic well-being over the current official threshold. (p.154) The panel regarded this as a conservative increase, because it fell toward the lower end of the range of thresholds recommended by various experts and methods.
- Second, the panel recommends that the new thresholds be updated each year using a three-year moving average of median expenditures of the reference family type on food, clothing, shelter, and utilities. This method would reflect both inflation and real increases in spending for these basics, and so would raise the thresholds in real terms as the nation's standard of living increased.

Plan of this paper

This paper explores the empirical basis of the panel's recommendations and suggestions about setting and updating the poverty thresholds. It takes no position concerning whether such recommendations and suggestions should be adopted.

Changes in spending on basics by the panel's reference family type over two decades are examined. The results are used to answer the question, How much would the poverty thresholds have increased in real terms if the panel's method for updating had been employed all along?

As rationale for its choice of a couple with two children as a reference family, the panel notes that, although a couple with two children is not the modal household type, it is the type with the largest number of persons. (p.101) However, the reference family type represents only about 9 percent of all households and only about 14 percent of all persons. Does the experience of this small minority reflect the standard of living of society as a whole? The paper compares changes over time in spending on basics by several household types.

Another approach to assessing changes in living standards that does not rely on the experience of a single family type is explored. Equivalence scales allow income or spending of the entire population to be converted to comparable levels. The paper employs an equivalence scale recommended by the panel to test how spending on basics by the whole population changed from the early 1970s to the present.

In all these comparisons of spending over time, the price index employed to adjust for inflation should be as accurate as possible. The paper attempts to create a consistent consumer price index from 1967 to the present that incorporates improvements adopted along the way or currently planned for the official CPI-U. Specifically, the paper employs the CPI-U-X1 experimental index that adopts a consistent rental-equivalence approach to housing costs, and further adjusts the annual changes of that index to simulate subsequent improvements in the CPI-U.

The official poverty thresholds have been updated by the official CPI-U. To the extent that the official index overstated inflation, the official poverty thresholds did too. The paper estimates how much the official poverty thresholds have increased in real terms if the alternative price index described above is regarded as a more accurate inflation measure.

Finally, the paper compares proportional increases in spending on basics by the reference family type and the whole population to the proportional increase in the official poverty thresholds. Since the early 1970s, it appears that spending on basics by the reference family and by the population as a whole has increased only slightly more than the real increase in the official poverty thresholds caused by overstatement of the effects of inflation.

Spending on basics by the reference family over time

To show that expenditures on basics by the reference family have increased over time, the panel compares spending on the basics by the reference family type in the 1960-61 Consumer Expenditure Survey (CE) to spending by the reference family in the 1991 survey. (pp.154-157) However, before making that comparison, the panel raises spending in the 1991 CE to correct for what it believes is a deterioration in reporting of expenditures in the more recent survey. The report does not explain the adjustment, but refers to articles by Daniel T. Slesnick and Raymond Gieseman. Slesnick found that aggregate CE expenditures on nondurables and services that represented about 90 percent of NIPA amounts for these categories in 1960-61 had fallen to 52 percent by 1989.

⁽²⁾ Gieseman found less difference between CE and NIPA when it comes to spending on the basics than the NRC panel proposed to use to adjust the thresholds. ⁽³⁾ In the 1980s, food in CE amounted to about three-fourths of food in Personal Consumption Expenditures accounts. CE found around 90 percent of the rent and utilities expenditures in PCE, and slightly more personal care services, but only half the spending on apparel.

The choice of reference family type and the adjustment for under-reporting are crucial for what the quotation above states to be the panel's major reason for seeking a revised threshold concept. The choices should be among those, such as setting the threshold level, that the panel acknowledges to involve judgment and values. The following table displays reported expenditures on food, clothing, shelter, and utilities by various household types from CE. Only households with complete reporting are shown. The values represent the mean of the middle quintile when households are ranked by their spending on these basics.

To make comparisons over time, reported values must be converted to constant dollars. In the following tables, the index used to inflate dollars to 1995 levels starts with the CPI-U-X1 index, then adjusts year-by-year increases downward to approximate an index that includes other improvements in the CPI implemented or planned. ⁽⁴⁾

Table 1.

Expenditures on food, clothing, shelter, and utilities, in 1995 dollars				
	couples with two children	aged couples	single parent two children	one-person age < 50
72-73	14,393	8,081	10,050	8,081
80-81	15,039	8,551	10,345	8,220
88-89	16,565	9,407	9,967	8,948
93-94	16,784	9,870	9,804	8,666
change from 1972-73				
80-81	4%	6%	3%	2%
88-89	15%	16%	-1%	11%
93-94	17%	22%	-2%	7%

After adjusting for inflation, spending by the reference family type stood 17 percent higher in 1993-94 than 1972-73. The panel's recommended poverty thresholds would have increased in real terms by that amount over those two decades.

As Table 1 also shows, the increase in spending on basics varied considerably by family type. Aged couples saw a larger 22 percent increase in their spending on these basics. People under age 50 living alone stood about 7 percent above where they were in 1972-73. As the panel notes, the one-adult household is the modal type. Spending on basics by single parents with two children was about 2 percent lower than in 1972-73.

Comparisons across time with equivalence scales

Another approach is possible that does not require selecting a single household type to represent the whole population. By definition, the income and spending of households of different compositions are directly comparable when adjusted by equivalence scales. (pp.159-160) So, if spending on food, clothing, shelter, and utilities by all households is converted with equivalence scales, values representing the whole population should be comparable across years.

Household types representing growing shares of the population would tend to have increasing effects on spending of the population as a whole. However, if the premise is that poverty levels should change with the economic status of the larger society, changes in poverty levels due to compositional change in the population would be appropriate.

Table 2 illustrates spending on basics by the entire non-institutionalized population. For each year, all consumer units in the CE with complete reporting were ranked by their expenditures on food, clothing, shelter, and utilities, first adjusted by a version of the panel's recommended equivalence scale. ⁽⁵⁾ The means of the middle quintiles of all consumer units then were converted to 1995 dollars using the index described above.

Table 2.

Spending on food, clothing, shelter and utilities by all consumer units adjusted by equivalence scale (A+(.7*K))⁶⁵		
change from 72-73		
72-73	6,239	
80-81	6,602	6%
88-89	7,193	15%
93-94	7,239	16%

The results show an overall increase of 16 percent in median spending on basics for the population as a whole, about the same percentage increase experienced by the reference family. As would be expected based on what we know about income inequality over this period, the lower the quintile, the lower the percentage increase. In the bottom quintile, the increase was only 12 percent. In the top quintile it was 36 percent.

Changes in the real value of the official poverty thresholds

Because the official poverty thresholds are supposed to be adjusted each year only for inflation, it is taken for granted that they represent the same level of economic well-being now that they did in 1972-73. (p.17) So Table 2 appears to warrant a 16 percent real increase in the official poverty thresholds over their 1972-73 values (if we accept that a change in median spending on these basics is a good index for our sense of a minimally adequate living standard).

However, the price index used to increase the official poverty thresholds each year to allow for inflation has been criticized and corrected over time. Because the official thresholds were increased every year by an index now believed to overstate inflation, the thresholds already stand higher than they would have if a more accurate inflation adjustment had been used.

Table 3 compares the increase in the official CPI-U over time to the increase in the composite price index described in an earlier footnote and used to inflate expenditures in Tables 1 and 2.

Table 3.

Price indices			
	official CPI-U	composite index	official/composite
72-73	1.0	1.0	
80-81	2.01	1.85	1.09
88-89	2.81	2.52	1.12
93-94	3.40	2.99	1.13

If the composite index used above to adjust spending amounts for inflation represents a more accurate picture of consumer inflation, then the official thresholds have already increased in real terms as shown in Table 4.

Table 4.

Official poverty thresholds for a couple with two children			
	nominal	1995 dollars	real change
72-73	4,373	13,585	
80-81	8,785	14,776	9%
88-89	12,286	15,114	11%
93-94	14,842	15,396	13%

Comparison of increases in spending and the poverty thresholds

If spending on food, clothing, shelter, and utilities by middle-class households in the CE had been used to update the poverty thresholds each year, the 1993-94 thresholds would be about 16-17 percent higher, in constant dollars, than the 1972-73 thresholds (depending on whether the experience of all households or the NRC

reference family were used). That increase is toward the lower end of the range suggested by the NRC panel as being conservative.

However, because the official poverty thresholds were updated each year by a price index that is generally believed to have over-stated inflation in several ways, the official thresholds themselves were about 13 percent higher in real terms in 1993-94 than they were in 1972-73. To reflect the 16-17 percent increase in spending on basics, an additional increase of 3-4 percent in the official poverty threshold levels might be warranted, but not the 14-33 percent suggested by the NRC panel. ⁽⁶⁾

Remaining issues

This paper attempts to inform consideration of the NRC panel's recommendations. No position is taken about whether the poverty thresholds should be increased in real terms, or by how much. The paper's contribution is to note that, if the official CPI-U overstated inflation, the official thresholds already have increased in real terms. The analysis above might be extended in several ways. Measurements of change from the early 1970s to the present were made. However, the official poverty thresholds date from the mid-1960s. To the degree that data from the 1960-61 CE are comparable to later years, similar analysis could be performed and the change in spending on basics could be measured in a similar way over a longer period.

Second, to provide an empirical justification for setting new poverty thresholds more than 3-4 percent higher than the current thresholds converted to the appropriate budget concept, deterioration of reported expenditures for food, clothing, shelter, and utilities at the median must be shown. Subsequent to the panel's report, E. Raphael Branch compared 1989-1992 data from the CE to PCE benchmarks. ⁽⁷⁾

Over that period, it appears that the CE averaged about 84 percent of aggregate spending on food, clothing, shelter, and utilities in PCE. This is somewhat higher than the 77 percent Gieseman found with data from the early 1980s.

Furthermore, under-reporting and any change in under-reporting may not be distributed evenly. We know that under-reporting of income occurs more at the top and bottom of the distribution than it does around the middle. Third, thoughtful discussion of the elasticity of median spending on basics and our sense of a minimally adequate standard of living still needs to occur.

The panel's recommended basic needs measure varies proportionally with median spending on food, clothing, shelter, and utilities. The logic is that any change in spending at the median on categories of items we think of as necessities should indicate a proportional change in society's sense of a minimally adequate standard of living. Increased spending on housing is responsible for most of the increase in spending on the basic bundle since the early 1970s. In 1970, median square footage of new single-family homes was 1,385. By 1990, it had risen to 1,905. (During the same period, household size dropped.) In 1970, only around one-third of new single-family homes were air-conditioned. In 1990, only one-fourth were not. ⁽⁸⁾

As noted above, the simplest and most persuasive examples of how our sense of a minimally adequate standard of living can change point to introduction of new products that come to be regarded as necessities, such as indoor plumbing, electric service, and antibiotic drugs. Do improvements in features such as floor-space and air-conditioning constitute an expanded consensus on "basics" the way indoor plumbing, electric service, and the telephone came to?

ENDNOTES

1/ Citro, Constance F. and Robert T. Michael (eds), National Academy Press, Washington DC, 1995.

Parenthetical references to page numbers appearing in the text refer to this volume.

2/ Daniel T. Slesnick, "Gaining Ground: Poverty in the Postwar United States," Journal of Political Economy, Vol. 101, No.1, February 1993, pp.10-1.

3/ Raymond Gieseman, "The Consumer Expenditure Survey: quality control by comparative analysis," Monthly Labor Review, March 1987, pp.8-14.

4/ To this point, BLS has not published an historical experimental index, like the CPI-U-X1, extending subsequent CPI-U improvements backward to the 1960s. To calculate such an index, the author sought advice from BLS staff. However, the method followed here should not be construed to be the method BLS would use. The annual CPI-U-X1 increases were adjusted by the following percentage points for each subsequent CPI improvement. The years shown are believed to be the years affected by the flaws the improvements were designed to correct.

1967-1998 -.15 for geometric weighting of some items

-.03 for sample rotation by item

1978-1994 -.04 for seasoning procedures to eliminate upward bias in setting of base period prices of newly initiated food-at-home items

1978-1996 -.10 for application of seasoning procedures to other commodities and services

1983-1994 -.10 for owners equivalent rent formula modification to eliminate upward drift

+ .03 for 6-month chain rent composite estimator

Several improvements of arguably comparable magnitude were not reflected, primarily due to the year-to-year variation in estimated impacts they would entail. These include improvements in the hospital services index and in costs of personal computers.

The December 1996 Monthly Labor Review was devoted to articles on the 1998 CPI improvements. The overview discusses some of the improvements in the list above, and other articles provide more detail. The estimate for the effect of introducing a sample rotation by item rather than location originated with the Congressional Budget Office, but is here adjusted downward.

5/ $(A + (.7 * K))^{.65}$ where 'A' represents the number of persons in the consumer unit aged 18 or older and 'K' is the number under 18. (pp.160-2)

6/ Alternately, if the official CPI-U is used to adjust for inflation, the poverty thresholds have not increased at all in real terms, and spending on basics at the median is up around 3-4 percent.

7/ The Consumer Expenditure Survey: a comparative analysis." Monthly Labor Review. December 1994. pp.47-55.

8/ U.S. Bureau of the Census, Statistical Abstract of the United States: 1996 (11th edition) Washington, DC, 1996. No.1180.