Redefining Poverty Measurement in the U.S.: Examining the Impact on Inequality and Poverty

Kathleen Short, Thesia I. Garner, David Johnson, and Martina Shea

Bureau of the Census and Bureau of Labor Statistics

25th Conference of the IARIW, Cambridge, UK
28 August 1998
Outline

- Poverty Status
- Poverty concepts
- Why a new poverty measure
- Recent literature
- Thresholds
  - how defined
- Resources
  - how defined

Impact on:
Inequality
Poverty
Findings

- With New Resource Measure
  - Inequality decreases
  - Poverty becomes more of a problem

- What matters?
  - Definition of resource and thresholds
  - Treatment of zero and negative values
  - Choice of inequality and poverty measures
  - Equivalence scales
  - “Standardization” of thresholds
Determining Poverty Status

- Determine costs of meeting basic needs
- Measure resources that are available to meet basic needs
- If resources are inadequate to meet basic needs this person is POOR
Poverty Concepts

- **ABSOLUTE:** reflects some standard below which basic needs are assumed cannot be met

- **RELATIVE:** reflects relative position within a distribution such as income, expenditures, or consumption

- **SUBJECTIVE:** reflects opinions of people about their own situation
Current U.S. Official Poverty Threshold

- Established in 1963: $3,100 for a 2-adult/2-child family
- Based on 1955 Household Food Consumption Survey and USDA Economy Food Plan
- Multiplied economy food plan by three (families with 3 or more persons spent 1/3rd of after-tax income on food)
- Adjusted for inflation each year
- 1996: $15,911 for a 2-adult/2-child family
Why Do We Need a New Poverty Measure?

- **Current threshold** does not reflect social and economic changes, nor changes in expectations and perceptions about necessities in the last 30 years.

  The current threshold does not account for:

  - Higher levels of living (purchases, expenditures, expectations)
  - Child care expenditures
  - Change in composition of families
  - Geographic differences in prices
  - Increase in medical care costs and benefits
Why Do We Need a New Poverty Measure? (cont.)

Current income does not account for resources from near-money benefits nor expenses that cannot be used to buy goods and services.

The current measure of income does not account for:

- Provision of near-money benefits (e.g., food stamps, EIC)
- Increased tax burden for low-income households
Recent Detailed Examination

*Measuring Poverty: A New Approach*
Connie Citro & Robert Michael (eds.),
National Academy of Sciences
Panel on Poverty and Family Assistance
1995

“THE REPORT”

“THE PANEL”
Poverty Measures Should Be:

- understandable and broadly acceptable to the public
- statistically defensible
- operationally feasible
Defining the Poverty Threshold

- Hybrid of absolute and relative measures
- Reflect different family types
- Reflect geographic variations
- Updating
Thresholds Based on Expenditures

- Food and non-alcoholic beverages
  - food at home
  - food away from home

- Clothing
  - apparel, upkeep, related

- Shelter
  - rent for renters
  - mortgage interest for owners, property taxes
  - maintenance, repairs insurance, other

- Utilities
Poverty Threshold

\[ T = \left[ \frac{(M1 \cdot P1 \cdot \text{median}) + (M2 \cdot P2 \cdot \text{median})}{2} \right] \]

\[ = \left[ \frac{(1.15 \cdot 0.78) + (1.25 \cdot 0.83)}{2} \right] \cdot \text{median} \]

- \( T \) = reference unit poverty threshold,
- \( M_1, M_2 \) = multipliers for smaller and larger additional amounts,
- \( P_1, P_2 \) = higher and lower percentages,
- \( \text{median} \) = median expenditures for the basic bundle of food, clothing, shelter, and utilities of two-adult with two children reference units

\[ T = 0.96725 \cdot \text{median} \]
Two-Parameter Equivalence Scale

Scale value

\[(A + PC)^F = (A + 0.7C)^{0.65 to 0.75}\]

A = number of adults
C = number of children

Accounts for:
– Differing needs of children and adults
– Economies of scales
U.S. Consumer Expenditure Survey

- Interview
- Quarterly expenditures (rotating sample)
- Consumer units:
  - members of household who related
  - living alone
  - some sharing of expenditures with others in terms of housing, food, and other living expenses
# Assumptions for Experimental Thresholds

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“Family”</strong></td>
<td>2 adults with 2 children consumer unit</td>
</tr>
<tr>
<td>** Restriction on quarters**</td>
<td>Independent</td>
</tr>
<tr>
<td><strong>Periods of data</strong></td>
<td>Most recent three years: 1989-91 for 1991 thresholds</td>
</tr>
<tr>
<td><strong>Expenditures</strong></td>
<td>Out-of-pocket</td>
</tr>
<tr>
<td><strong>Equivalence scale</strong></td>
<td>P=0.7, F=0.65</td>
</tr>
<tr>
<td><strong>Geographic adjustment</strong></td>
<td>Panel’s approach: 1990 Census data on gross rents for apartments</td>
</tr>
<tr>
<td><strong>Updating</strong></td>
<td>1992-96 CPI-U applied to 1991 thresholds</td>
</tr>
</tbody>
</table>
Poverty Thresholds for 2 Adults and 2 Children
(not adjusted for geographic price differences)

<table>
<thead>
<tr>
<th></th>
<th>Census Family Official CPI-U adjusted</th>
<th>CU Experimental CPI-U adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>$13,812</td>
<td>$13,891</td>
</tr>
<tr>
<td>1992</td>
<td>14,228</td>
<td>14,309</td>
</tr>
<tr>
<td>1993</td>
<td>14,654</td>
<td>14,738</td>
</tr>
<tr>
<td>1994</td>
<td>15,029</td>
<td>15,115</td>
</tr>
<tr>
<td>1995</td>
<td>15,455</td>
<td>15,543</td>
</tr>
<tr>
<td>1996</td>
<td>15,911</td>
<td>16,002</td>
</tr>
</tbody>
</table>
New Resource Measure Should Be Based On

- Gross Money Income from all Public and Private Sources
- Plus the Value of In-kind Government Subsidies
- Minus Taxes Paid
- Minus Child Support Paid
- Minus Other Work Expenses including Child Care
- Minus Medical Out-of-Pocket Expenditures
Basic Data for Resources

CPS
- Cross section
- Annual income
- Program participation

SIPP
- Longitudinal
- Monthly income
- More programs
- Supplementary questionnaires
**Assumptions for Experimental Resources**

<table>
<thead>
<tr>
<th>“Family”</th>
<th>Persons living together related by blood, marriage, or adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference period</td>
<td>Previous calendar year</td>
</tr>
<tr>
<td>Data</td>
<td>CPS March supplement 1992 and 1997</td>
</tr>
<tr>
<td></td>
<td>SIPP 1991 Panel</td>
</tr>
<tr>
<td>Resources</td>
<td>Cash income + value of inkind transfers - necessary expenses</td>
</tr>
</tbody>
</table>
Income in CPS - Annual

- Earnings
- Unemployment
- Workers comp
- Social Security
- Supplemental Security Income
- Public Assist
- Veterans payments
- Alimony
- Disability benefits
- Pensions
- Interest
- Dividends
- Rents, royalties
- Educational assist
- Child support
- Regular private transfers
### Income in SIPP - monthly

<table>
<thead>
<tr>
<th>Earnings</th>
<th>WIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Security/RR</td>
<td>Child support</td>
</tr>
<tr>
<td>SSI/fed and state</td>
<td>Alimony</td>
</tr>
<tr>
<td>UI</td>
<td>Pension, military retirement</td>
</tr>
<tr>
<td>Supplementary unemployment insurance</td>
<td>Paid up life insurance policies</td>
</tr>
<tr>
<td>Veterans comp</td>
<td>Annuities</td>
</tr>
<tr>
<td>Black lung</td>
<td>Estates and trusts</td>
</tr>
<tr>
<td>Worker compensation</td>
<td>Other retirement/survivor</td>
</tr>
<tr>
<td>State temp disability</td>
<td>GI bill</td>
</tr>
<tr>
<td>Employer or union temp</td>
<td>Educational assistance</td>
</tr>
<tr>
<td>Payments from insurance</td>
<td>Charitable income</td>
</tr>
<tr>
<td>AFDC/TANF/GA</td>
<td>Private transfers</td>
</tr>
<tr>
<td>Indian/Cuban or refugee assist</td>
<td>Lump sums</td>
</tr>
<tr>
<td>Foster child care</td>
<td>National guard or reserve</td>
</tr>
</tbody>
</table>
Income from SIPP - continued

- Interest income from
  - savings accounts
  - money market deposit accounts
  - certificates of deposit
  - interest earning checking accounts
  - money market funds
  - U.S. government securities
  - municipal or corporate bonds

- Dividends from stocks or mutual funds
- Rental property income
- Mortgages
- Royalties
- Other financial investments
Adding Non-cash Transfers

- Food Stamps
- School lunch and breakfast
- WIC
- Housing subsidies
- Energy Assistance
Subtract Necessary Expenses

- Taxes
- Work related expenses including child care
- Medical out of pocket expenses
- Child support paid
To Evaluate Measure: Questions Addressed

- How does the new poverty measure change our view of who is poor?
- How does the new poverty measure affect poverty rates over time?
How does the distribution of the experimental resource measure compare with that based on official income?

What does the experimental measure say about the distribution of ‘resources’ among people in the U.S.?

How do more comprehensive poverty statistics, beyond the head count ratio, compare when we change our basic measure of poverty?
Answering the Questions

- Compute basic descriptive statistics of income and resources
- Compute various inequality statistics and compare to official measures
- Compute more complex poverty statistics using both experimental and standardized thresholds
Data for this Study

- Survey of Income and Program Participation: 1991 panel with topical modules
### Inequality Measures

**Gini coefficient**

**Theil General Entropy Measures**

- Mean log deviation: $I_{\alpha=0}$
- Theil coefficient: $I_{\alpha=1}$
- Half the coefficient of variation squared: $I_{\alpha=2}$
Poverty Measures

- Official poverty measure
- Experimental poverty measure - implements the Panel’s recommendations with slight modifications
- Standardized poverty measure - adjusts the experimental thresholds in order to match the official poverty rate for all persons in a given year: 1991 and 1996
Head Count Ratio \[= \frac{q}{n}\]

- \(q\) = number of poor persons (or families)
- \(n\) = total number of persons (or families)

Average Poverty Gap \[= \frac{1}{q} \sum_{i=1}^{q} (z_i - y_i)\]

- \(z_i\) = family poverty threshold
- \(y_i\) = family income

Foster-Greer-Thorbecke (FGT) Measures

\[P_\alpha (y, z, \alpha) = \frac{1}{n} \sum_{i=1}^{q} \left( \frac{z_i - y_i}{z_i} \right)^\alpha\]

= measure of poverty aversion (larger \(\alpha\) gives greater emphasis to poorest), \(\alpha \geq 0\)
Summary and Conclusions

- With New Resource Measure
  - Inequality decreases
  - Poverty becomes more of a problem

- What matters?
  - Definition of resource and thresholds
  - Treatment of zero and negative values
  - Choice of inequality and poverty measures
  - Equivalence scales
  - “Standardization” of thresholds