Building a Consumption “Poverty” Measure at the BLS: Initial Results

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Bureau of Labor Statistics

Session 2: Poverty and Income Measurement
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Friday, April 1, 2022
10:30am-11:50am (paper 2)

Chair: Wenhua Di, Federal Reserve Bank of Dallas
Discussant: David Johnson, University of Michigan Virtual presentation

An earlier version of this research was presented during the 2022 ASSA-AEA Meetings
Motivation and Goal

**Motivation**
- Bureau of Labor Statistics long term interest in producing a consumption measure
  - Production of a consumption measure of poverty
  - Not to replace OPM or SPM but to serve as an additional measure

**Goal of this study**
- To go through the process of producing a consumption measure with what is currently available to us at BLS
- Provide initial results of “poverty” analysis based on various measures of spending and consumption
Requirements for a “Poverty” Measure

- Line to represent “poverty”
- What is compared to that line
Options to Define “Poverty” Line

- **Absolute deprivation**
  - A line that represents minimum spending or consumption needs (e.g., value of minimum goods and services)
  - Yes or no regarding possession of or access to “basic needs”

- **Relative deprivation**
  - One’s position in an income or consumption distribution relative to a particular point

- **Subjective deprivation**
  - Population reported minimum income, spending, consumption needs interacted with actual
Options to Define What to Compare

- Income
- Expenditures
- Consumption
- Possession or access to select goods and services (e.g., health insurance) or deprivation (e.g., food secure, housing secure)
Consumption as a Well-being Outcome: A Function of Resources and Processes

Available Resources

- Income, in-kind transfers
- Asset (financial)
- Asset (non-financial)
- Debt (access and use)
- Time

Processes

- Skills (e.g., education, financial management, efficiency in converting inputs to outcomes)
- Degree of resource allocation (power)
- Circumstances (CU composition, disability)
- Preferences

Outcomes (e.g.,)

1. Consumption
2. Health status
3. Material deprivation
4. Life satisfaction
5. Happiness

For other outcomes: https://www.oecdbetterlifeindex.org/
New BLS Initiative to Produce a Comprehensive Consumption Measure

- Designed to reflect how consumer units (CUs) use resources (e.g., income, wealth, time, in-kind benefits) to meet their consumption/material “needs”
- Key data sources: Consumer Expenditure Surveys and American Time Use Survey
- In-house research: imputation of government provided in-kind benefits and flow of services from stock of owned vehicles
- Outside research: contract on valuing home production for own consumption
BLS Comprehensive Consumption Measure Target

- Expenditures for own consumption
- In-kind benefits public and private
- Flow of services
- Home production
- Health
- Education

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ITWG Recommendation: What to Include in Consumption

- Expenditures for own consumption
- In-kind benefits public and private
- Flow of services
- Health insurance
  - Measure with
  - Measure without
Other ITWG Recommendations for Consumption Poverty Measure and BLS

Data source(s)
- Consumer Expenditure Survey Interview
- Use administrative data when available, modeling otherwise

Producer: Bureau of Labor Statistics (with funding)

Produce as soon as possible, with annual updates

Produce at the state level
ITWG Discussions Related to Poverty Measurement but No Specific Recommendations

- Thresholds
  - Determine how best to set based on research, and input from stakeholders and experts
- Price indexes for updating thresholds
  - Conduct a study regarding appropriate index
- Geographic adjustment of thresholds
  - Consult experts on whether and, if so, how to implement
- Equivalence scales
  - Conduct a study that will provide a recommendation regarding which are most appropriate
Initial BLS Research

- Data
- Measures considered
- Thresholds
- Results for population
  - “Poverty” rates
  - Demographic characteristics
- Summary and conclusions
- Future work
Data Sources

CE Data: 2015Q2-2021Q1

- Quarterly out-of-pocket spending (acquisitions value) with the exception of the following:
  - Owner-occupied housing
  - Purchase and financing of vehicles
  - Cash contributions, purchases of life and other personal insurance, allocations to retirement plans, pensions, annuities, Social Security
- Reported rental equivalence (owned housing)
- Cars and trucks: make, model, year & new or used
- Rental unit: public housing, govt assist, rent control
- Consumer unit demographic variables

NOTE: Data collected in each of 4 quarters representative of a year (e.g., data collected in 2015Q2-2016Q1 represents 2015)

Other

- CPS-ASEC (reference: 2015-2020): household data regarding receipt of government provided in-kind benefits
  - Amount of Low-Income Home Energy Assistance Program (LIHEAP) benefits
  - Receipt of National School Lunch Program (NSLP) benefits
  - Receipt of Supplementary Nutrition Program for Women, Infants, and Children (WIC) benefits

- USDA:
  - NSLP per meal rate
  - WIC benefit
    - Average monetary benefit per person
    - Average infant formula rebate per infant

Measures

- Total expenditures
- Consumption expenditures
- Consumption
- Income
  - CE defined after tax income (includes SNAP benefits)
  - In-kind transfers

## Construction of Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Variable Name</th>
<th>Base</th>
<th>Does not Include</th>
<th>Addition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Expenditures</td>
<td>tot_exp</td>
<td>Total Expenditures CE</td>
<td>Consumption ExpendituresDefinition</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Publication Definition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumption Expenditures</td>
<td>spending_consump</td>
<td>tot_exp</td>
<td>Cash contributions; allocations to and purchases of life insurance, endowments, annuities, and other personal insurance; retirement, pensions, and Social Security</td>
<td></td>
</tr>
<tr>
<td>Consumption</td>
<td>consumption_4</td>
<td>spending_consump</td>
<td>Owner expenses for primary residence; purchases of stoves, refrigerator/freezer, dishwasher, clothes washer/dryer AC window units for owners and renters; shelter expenses associated with vacation homes</td>
<td>Rental equivalence of primary residence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Expenditures for: health; education; housing while away at school; daycare centers, nursery, pre-school;</td>
<td>Rental equivalence of vacation homes (but not time shares)</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>All vehicle purchases; vehicle finance charges; motorized vehicles for entertainment</td>
<td>Flow of services from cars and trucks</td>
</tr>
<tr>
<td>Income</td>
<td>CE defined after tax income with in-kind benefits</td>
<td>CE defined after tax income</td>
<td>LIHEAP, NSLP, rental assistance, WIC In-kind transfers</td>
<td>LIHEAP, NSLP, rental assistance, WIC In-kind transfers</td>
</tr>
</tbody>
</table>
Thresholds Based on Relative Concept

- Thresholds defined in 3 different ways
  1. Purely relative as 60% of median (i.e., threshold is a function of the same “resource”)
  2. Absolute thresholds for all measures anchored to the threshold for 2015 based on consumption_4
  3. Absolute thresholds for all measures set at values such that poverty rates for all measures anchored to be the same in 2015 as rate for consumption_4 poor (i.e., 16.8% in 2015)

- Absolute thresholds adjusted by Chained Consumer Price Index for All Urban Consumers (CPI-U) for 2015-2020

- Thresholds based on ranking of adult equivalized income, spending, consumption based on 3-parameter equivalence scale as used to produce SPM)

- No geographic adjustment

➢ These thresholds DO NOT represent a level of “needs”; they represent a point in a distribution
What Is Compared to the Thresholds

- Adult equivalized income, spending, and consumption (use 3-parameter equivalence scale)
- Quarterly expenditures and consumption (not annualized)
  - To reflect a year, data collected in any of four quarters, e.g., 2015 represented by 2015Q2-2016Q1
  - Concern with seasonality so not multiplied by 4 for expenditures and consumption (unlike Meyer and Sullivan 2012)
  - Concern with representativeness if restricted to 4 complete interviews even with demographic reweighting: Are the results representative of the lower end of the distributions? (unlike Fisher, Johnson, and Smeeding 2015)
- Income/4
Results

- Medians - annualized
- Poverty rates – by year based on quarterly reference periods
- Characteristics of the “poor”
Annualized Medians in Real 2015 Dollars for All Consumers Units Equivalized to CUs with 2 Adults+2 Children (2A+2C)

<table>
<thead>
<tr>
<th>Year</th>
<th>$45,000</th>
<th>$47,000</th>
<th>$49,000</th>
<th>$51,000</th>
<th>$53,000</th>
<th>$55,000</th>
<th>$57,000</th>
<th>$59,000</th>
<th>$61,000</th>
<th>$63,000</th>
<th>$65,000</th>
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<tbody>
<tr>
<td>2015</td>
<td></td>
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<td>2016</td>
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<td>2017</td>
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<tr>
<td>2018</td>
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<td>2019</td>
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<td>2020</td>
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</tr>
</tbody>
</table>

- After tax income with in-kind benefits
- Tot_exp
- Spending_consump
- Consumption_4
Poverty Rates Based on Purely Relative Thresholds (reproduced as 60% of median each year): 2015-2020

Consumption_4: 16.8% to 14.2%
Change in Poverty Rates
Based on Purely Relative Thresholds: 2015-2020

Consumption_4: -2.6% pp
Poverty Rates Based on Absolute Thresholds that Equal 2015 Threshold for Consumption_4 Updated by C-CPI-U: 2015-2020

Consumption_4: 16.8% to 11.5%
Change in Poverty Rates for Absolute Thresholds Anchored to 2015 Threshold for Consumption_4 Updated by C-CPI-U: 2015-2020

Consumption_4: -5.3% pp
Poverty Rates Based on Absolute Thresholds for 2015 Set to Levels that Result in Same Poverty Rates as for 2015

Consumption_4 Rate (16.8%): 2015-2020

- Consumption_4: 16.8% to 11.5%
Change in Poverty Rates Based on Absolute Thresholds Set to Levels that Result in Same Rates as 2015 Consumption_4

Poverty Rate (16.8%): 2015-2020

Consumption_4: -5.3% pp
## Income Poor, Consumption Poor, or Both?

Rates Based on Thresholds Set to Levels that Result in Same Rates as 2015 Consumption_4 Rate (16.8%)

### 2015

<table>
<thead>
<tr>
<th>After Tax Income Poor</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumption_4 Poor</strong></td>
<td>7.9%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>8.9%</td>
<td>74.3%</td>
</tr>
</tbody>
</table>

Consumption Poverty Rate 16.8%

Income Poverty Rate 16.7%

### 2020

<table>
<thead>
<tr>
<th>After Tax Income Poor</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumption_4 Poor</strong></td>
<td>4.7%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>8.9%</td>
<td>79.6%</td>
</tr>
</tbody>
</table>

Consumption Poverty Rate 11.5%

Income Poverty Rate 13.6%
Demographic Characteristics of the U.S. Population Compared to Study-defined “Poor”: 2015

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>U.S. Population</th>
<th>Below Consumption_4 Threshold</th>
<th>Below After-Tax Income with In-kind Benefits Threshold</th>
<th>Below Both Income and Consumption Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White non-Hispanic</td>
<td>64.7%</td>
<td>47.7%</td>
<td>49.6%</td>
<td>45.9%</td>
</tr>
<tr>
<td>Black non-Hispanic</td>
<td>12.5%</td>
<td>20.9%</td>
<td>19.4%</td>
<td>21.7%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>16.3%</td>
<td>25.5%</td>
<td>24.2%</td>
<td>26.8%</td>
</tr>
<tr>
<td>Other</td>
<td>6.5%</td>
<td>5.7%</td>
<td>6.9%</td>
<td>5.6%</td>
</tr>
<tr>
<td><strong>Degree of Urbanization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central City</td>
<td>34.4%</td>
<td>42.4%</td>
<td>41.2%</td>
<td>43.1%</td>
</tr>
<tr>
<td>Other Urban Areas</td>
<td>46.5%</td>
<td>33.7%</td>
<td>39.8%</td>
<td>35.3%</td>
</tr>
<tr>
<td>Rural Areas</td>
<td>19.2%</td>
<td>23.9%</td>
<td>19.1%</td>
<td>21.7%</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than High School Graduate</td>
<td>13.0%</td>
<td>31.6%</td>
<td>28.4%</td>
<td>37.2%</td>
</tr>
<tr>
<td>High School Graduate</td>
<td>23.4%</td>
<td>32.2%</td>
<td>29.3%</td>
<td>30.8%</td>
</tr>
<tr>
<td>Some College</td>
<td>21.6%</td>
<td>21.7%</td>
<td>23.2%</td>
<td>20.9%</td>
</tr>
<tr>
<td>Associates Degree or Higher</td>
<td>42.0%</td>
<td>14.5%</td>
<td>19.1%</td>
<td>11.0%</td>
</tr>
</tbody>
</table>
Demographic Characteristics of the U.S. Population Compared to “Poor”: 2015

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>U.S. Population</th>
<th>Below Consumption Threshold</th>
<th>Below After-Tax Income with In-kind Benefits Threshold</th>
<th>Below Both Income and Consumption Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU Member in Age Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-17 years old</td>
<td>51.2%</td>
<td>64.6%</td>
<td>53.5%</td>
<td>62.3%</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Mother</td>
<td>5.8%</td>
<td>11.4%</td>
<td>13.4%</td>
<td>14.6%</td>
</tr>
<tr>
<td>Married Couple Only</td>
<td>17.8%</td>
<td>4.7%</td>
<td>8.8%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Married Couple with Others</td>
<td>44.0%</td>
<td>42.4%</td>
<td>30.0%</td>
<td>32.5%</td>
</tr>
<tr>
<td><strong>CU Earner Composition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reference Person OR Spouse Only</td>
<td>27.9%</td>
<td>31.4%</td>
<td>37.0%</td>
<td>36.4%</td>
</tr>
<tr>
<td>Reference Person AND Spouse Only</td>
<td>26.2%</td>
<td>10.4%</td>
<td>5.7%</td>
<td>4.2%</td>
</tr>
<tr>
<td>No Earners</td>
<td>14.7%</td>
<td>20.6%</td>
<td>34.5%</td>
<td>33.3%</td>
</tr>
</tbody>
</table>
Summary and Conclusions

- Broader consumption measure more in-line with the theoretical measurement objective than measures based on total expenditures or consumption spending alone
- Median total expenditures and consumption follow similar trends
- Relative poverty, in general, decreases from total expenditures to consumption
- For anchored poverty rate thresholds, “poverty” rate for the income poor decreases by less than the “poverty” rate for the Consumption_4 poor
  - Surprising result, given that median income increased faster than median Consumption_4
  - Possibly explained by the relative size of the poverty gaps for each measure: poverty gap for income poor is larger than poverty gap for consumption_4 poor
  - Thus, a larger level change in median income may not lead to a larger reduction in income poverty

➢ These results DO NOT reflect poverty in terms of minimum needs
Future Work

- Decompose poverty by demographic characteristics and by source, e.g.
  - Contribution of changes in household composition
  - Contribution of changes in income and consumption components (e.g.: earnings versus in-kind benefits; food at home versus rental equivalence)

- Look at the potential role of debt versus changes in assets (financial and non-financial) on changes in poverty

- For consumption measure
  - Produce a consumption measure that includes health insurance
  - Expand back to 2009 (same year for which imputed in-kind benefits are being imputed for production of SPM thresholds)

- For income measure: expand back to at least 2014 when BLS fully implemented the use of TAXSIM to estimate federal and state income taxes imputed with TAXSIM

- Compare to the consumption measures created by others
Contact

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