Presence and Persistence of Poverty in U.S. Tax Data

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Background

Administrative tax data are important for accurately measuring income distributions

Most tax-based research has focused on the upper tail of the distribution\(^1\)

This paper focuses on the lower tail of the distribution, estimating poverty trends in tax data:

- During and after the Great Recession
- Duration of poverty over that time

\(^1\)Piketty and Saez (2003), Auten and Gee (2009)
Preview of results

1. Pre-tax and after-tax poverty trends differ greatly:
   • Tax policies during the Great Recession alleviated much of the pre-tax increase in poverty
   • Focusing on after-tax income shrinks the gap between child poverty and working-age/elderly poverty

2. A sizeable minority experience poverty at some point:
   42 percent spent at least one year in after-tax poverty between 2007 and 2018

3. Many exit poverty each year, although many remain, and some exit only to return
   • One-third of those in poverty in 2007 were poor for at least half of the dozen years (2007-2018)
Potential limitations of using tax data

• Non-filers
  • About 10-15% adults do not file a tax return\(^1\)

• Narrow “tax-unit” sharing unit
  • Young adults in higher-income families may appear poor if looking just at their tax return if filing separately

• Missing non-taxable cash income

\(^1\)Molloy, Smith, & Wozniak (2011)
Solution to these limitations

Solution to Non-filers

• Use information return incomes, consistent with Chetty and Hendren (2018)\(^1\)

Solution to tax-unit sharing unit

• The Tax Household Sample
  • Previously completed for 2010,
  • Extended here to cover 2007-2018\(^2\)
• Link all individuals with the same physical address on tax forms into the same household

Solution to missing non-taxable income

• Anchor 2007 poverty rates to preserve poverty level despite different income definition
• Excluding taxes actually matters more for trends than excluding non-taxable cash income

\(^1\)Includes Forms W-2, SSA-1099, 1099-DIV/MISC/K/R, 5498 & K-1 \(^2\)Larrimore, Mortenson, & Splinter (Forthcoming)
Zero-income households

• Most people appear in IRS data
  • Tax returns (Form 1040) or information returns (Form W-2)
  • IRS population is almost always within 2 percent of ACS

• Reasons individuals might not appear:
  • No income
  • Only black-market income
  • Invalid data: missing date of birth or addresses

• How to account for them:
  • Our upper bound assumption: assume the CPS count of people in zero-income households is correct
  • Impute 4 to 5 million additional people in zero-income households each year to match CPS zero counts
  • Consistent with Chetty and Hendren (2018) who assume people not in tax data are true zeros
Household Creation

- IRS (Tax units)
- CPS
- IRS (Households)
- ACS
Poverty Measurement: Resources

Tax return income: both pre-tax and after-tax income
  • Note: misses non-taxable cash transfers (matters for levels, not trends)

Measure at the household level
  • Consistent with approach of PSID researchers

Adjust for household size using square-root of size equivalence scale
Poverty Measurement: Needs

- IRS captures more income at the bottom of the distribution than the CPS
- Policy question whether this should change rate of poverty
- Anchor thresholds such that our poverty rate matches the official rate in 2007
  - Similar approach to Burkhauser et al. (2019)
  - Consistent with Citro and Michael (1995) suggestion to change resources and needs together
- Adjust threshold in subsequent years using CPI-U (consistent with the Official Poverty Measure)
Poverty Thresholds (pre-tax taxable income)

4-person HH poverty thresholds (pre-tax income)

$20,994 (CPS)

CPS
IRS + zeros
IRS (unadjusted)

Percent with income at or below income level

Size-adjusted annual pre-tax income (2007 dollars)
Poverty Thresholds (pre-tax taxable income)

4-person HH poverty thresholds (pre-tax income)

- $20,994 (CPS)
- $21,884 (IRS + zeros)

CPS
IRS + zeros
IRS (unadjusted)
One-Year Poverty Rates (pre-tax income)
One-Year Poverty Rates

Poverty Rate (percent)


Official Poverty Rate
CPS pre-tax
IRS pre-tax
IRS after-tax
Pre-tax and After-tax Poverty Rates by Age

Poverty Rate (percent)

- Pre-tax
- After-tax

0–17 year olds
18–64 year olds
65+ year olds

Frequency of ever experiencing poverty by age and marital status (2007-2018)

Share in poverty at least once in 12 years from 2007–2018

<table>
<thead>
<tr>
<th>Age</th>
<th>Family Status</th>
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<tbody>
<tr>
<td>Overall</td>
<td>42</td>
</tr>
<tr>
<td>0–17</td>
<td>45</td>
</tr>
<tr>
<td>18–24</td>
<td>54</td>
</tr>
<tr>
<td>25–54</td>
<td>39</td>
</tr>
<tr>
<td>55–64</td>
<td>29</td>
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<tr>
<td>65+</td>
<td>36</td>
</tr>
<tr>
<td>Married, no kids</td>
<td>27</td>
</tr>
<tr>
<td>Married with kids</td>
<td>34</td>
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<tr>
<td>Single, no kids</td>
<td>52</td>
</tr>
<tr>
<td>Single with kids</td>
<td>57</td>
</tr>
</tbody>
</table>
Poverty Persistence: Share of those in poverty in 2007 who are poor in later years

![Graph showing poverty persistence over years after 2007.](image-url)
Poverty Persistence
## Poverty Persistence: Years in poverty through 2018 if poor in 2007

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Share by years in poverty 2007–2018 if in poverty in 2007</th>
<th>Average years</th>
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</thead>
<tbody>
<tr>
<td>All Individuals</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>19 15 33 24 9</td>
<td>4.5</td>
</tr>
<tr>
<td>Age (2007)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–17</td>
<td>15 15 37 27 6</td>
<td>4.5</td>
</tr>
<tr>
<td>18–24</td>
<td>20 17 37 22 4</td>
<td>3.9</td>
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<tr>
<td>25–54</td>
<td>19 15 33 24 9</td>
<td>4.5</td>
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<tr>
<td>55–64</td>
<td>21 14 27 23 16</td>
<td>5.0</td>
</tr>
<tr>
<td>65+</td>
<td>23 13 25 21 17</td>
<td>5.0</td>
</tr>
<tr>
<td>Family Status (2007)</td>
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<td></td>
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<tr>
<td>Married, No Children</td>
<td>20 15 31 23 11</td>
<td>4.3</td>
</tr>
<tr>
<td>Married, Children</td>
<td>21 17 35 22 6</td>
<td>4.6</td>
</tr>
<tr>
<td>Single, No Children</td>
<td>16 14 33 26 10</td>
<td>4.1</td>
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<tr>
<td>Single, Children</td>
<td>17 16 38 25 5</td>
<td>4.8</td>
</tr>
</tbody>
</table>
Conclusions

1. Extended the Tax Household Sample: 2007-2018
   • Household Identifiers now available in the IRS’ CDW for researchers with access to those data

2. Taxes matter for poverty trends – especially during periods (like the Great Recession) with temporary tax provisions.
   • After-tax poverty increased by 0.3 percentage points from 2007 through 2011, compared to 1.5 percentage points for pre-tax poverty in the tax data

3. Forty-two percent of people spent at least one year in after-tax poverty between 2007 and 2018

4. Among those in poverty in 2007, 40 percent were non-poor in 2008 and 19 percent were never poor again through 2018. However, one-third of those in poverty in 2007 were poor for at least half of the dozen years
Appendix Slides
Unanchored poverty rates

![Graph showing the comparison of poverty rates across different tax adjustments and years from 2007 to 2017. The graph includes lines for CPS pre-tax, Official Poverty, IRS pre-tax (+zeros), and IRS pre-tax. The y-axis represents the poverty rate (percent) ranging from 0 to 16, and the x-axis represents the years 2007 to 2017.]
Unanchored poverty rates

![Diagram showing poverty rates over time with different tax adjustments: CPS pre-tax, Official Poverty, IRS after-tax (+zeros), IRS after-tax. The graph displays the trend from 2007 to 2017.]