Using Census Microdata to Simulate Effects of Potential Changes to California’s State EITC

SARA KIMBERLIN, SENIOR POLICY ANALYST

ASSOCIATION OF PUBLIC POLICY ANALYSIS & MANAGEMENT – ANNUAL CONFERENCE
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calbudgetcenter.org
Twenty-nine States and DC Have Enacted EITCs, 2017

States with refundable* EITCs (24)
States with non-refundable EITCs (6)

*Refundable EITCs give working households the full value of the credit they earn even if it exceeds their income tax liability.
Source: CBPP analysis
Presentation Outline

I. Comparison of models for constructing tax units and simulating income taxes in ACS data
   • Do more complex approaches produce a better match to IRS administrative data?

II. Simulation of hypothetical expansions of California’s state EITC, the CalEITC
   • Addressing minimum wage and work incentive effects
   • Estimating impacts of interest to policy stakeholders
I. Comparing Income Tax Simulation Models in ACS Data
Attractive features of ACS data for income tax simulation

- Detailed income and family relationship data
- Sample allows for single-year state estimates and sub-state-level estimates (unlike CPS)
- Includes data for individuals not required to file taxes (not available in datasets based on tax returns)
- Includes demographic data not reported on tax returns (e.g., gender, race/ethnicity, occupation)
- Used for state and local SPM-like poverty measures, which account for income taxes in family resources
Key challenge is tax unit construction

- To calculate income tax amounts, use a public-use tool – NBER’s TAXSIM calculator, via Stata interface
- But tax calculator requires income and dependents summed to each tax unit, and these are not directly reported in ACS
- Correct allocation of individuals into tax units can be ambiguous, especially in complex families
  - Family units do not always correspond to tax units
  - IRS rules allow some flexibility in who may claim dependents for EITC and dependent exemption
  - In practice, individuals do not always strictly follow IRS guidelines in claiming EITC dependents
Accounting for unauthorized immigrants

- Unauthorized immigrants comprise an estimated 6% of total California population
- Unauthorized immigrants are not eligible to claim EITC or be counted as EITC qualifying children
  - But they are likely to be members of low-income working families, who would otherwise be eligible for EITC
- Important to account for this ineligibility for accuracy of California EITC estimates
Comparing three models for constructing tax units and calculating income taxes

- **Model 1: Simple tax units, simple income**
  - Tax unit is smaller of family or subfamily
  - Qualifying children are all children age 0-17 (following Census child definition) in tax unit
  - Income is total income of all individuals in tax unit, entered into tax calculator as “earnings”
  - Account for unauthorized immigrants by excluding EITC after tax calculation for all filers flagged as unauthorized
    - Using unauthorized flag developed for California Poverty Measure
Comparing three models for constructing tax units and calculating income taxes

- **Model 2: Intermediate complexity of tax units and income**
  - Initial tax unit is smaller of family or subfamily
  - Qualifying children are all children age 0-18 (following IRS child age definition) in tax unit
  - If subfamily tax unit is not required to file and not EITC-eligible, children are reassigned to tax unit of head of household
  - Income is total for designated filer plus spouse, entered into tax calculator in detailed categories
  - Account for unauthorized immigrants by excluding EITC after tax calculation
Comparing three models for constructing tax units and calculating income taxes

- **Model 3 (used for California Poverty Measure): More complex tax units, same income**
  - Initial tax unit is smaller of family or subfamily
  - Qualifying children follow IRS definition for age, student status, unauthorized status for EITC
  - EITC qualifying children strategically assigned among filers within household to maximize household EITC, accounting for ineligibility of unauthorized filers
  - Non-child dependents allocated per IRS support test
  - Income is total for designated filer plus spouse, entered into tax calculator in detailed categories
  - Exclude unauthorized EITC after tax calculation
## Preliminary results compared to IRS totals

<table>
<thead>
<tr>
<th></th>
<th>IRS SOI</th>
<th>Model 1: Simple</th>
<th>Model 2: Intermediate</th>
<th>Model 3: Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aggregate tax filers</strong></td>
<td>17.760</td>
<td>17.557</td>
<td>13.665</td>
<td>16.467</td>
</tr>
<tr>
<td>as % of IRS SOI</td>
<td>99%</td>
<td>77%</td>
<td>93%</td>
<td></td>
</tr>
<tr>
<td><strong>Aggregate AGI</strong></td>
<td>$1,381,947</td>
<td>$1,236,052</td>
<td>$1,088,493</td>
<td>$1,142,635</td>
</tr>
<tr>
<td>as % of IRS SOI</td>
<td>89%</td>
<td>79%</td>
<td>83%</td>
<td></td>
</tr>
<tr>
<td><strong>Total filers AGI $1-$24,999</strong></td>
<td>6.232</td>
<td>4.759</td>
<td>3.212</td>
<td>5.208</td>
</tr>
<tr>
<td>as % of IRS SOI</td>
<td>76%</td>
<td>52%</td>
<td>84%</td>
<td></td>
</tr>
<tr>
<td><strong>Total filers AGI $25,000-$49,999</strong></td>
<td>4.074</td>
<td>3.668</td>
<td>3.336</td>
<td>3.967</td>
</tr>
<tr>
<td>as % of IRS SOI</td>
<td>90%</td>
<td>82%</td>
<td>97%</td>
<td></td>
</tr>
</tbody>
</table>
Preliminary results compared to IRS totals

<table>
<thead>
<tr>
<th></th>
<th>IRS SOI</th>
<th>Model 1: Simple</th>
<th>Model 2: Intermediate</th>
<th>Model 3: Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total dependents claimed</td>
<td>13.005</td>
<td>8.998</td>
<td>8.665</td>
<td>10.870</td>
</tr>
<tr>
<td>as % of IRS SOI</td>
<td></td>
<td>69%</td>
<td>67%</td>
<td>84%</td>
</tr>
<tr>
<td>Filing status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>48%</td>
<td>51%</td>
<td>45%</td>
<td>49%</td>
</tr>
<tr>
<td>Married joint</td>
<td>35%</td>
<td>37%</td>
<td>43%</td>
<td>36%</td>
</tr>
<tr>
<td>Head of household</td>
<td>15%</td>
<td>12%</td>
<td>12%</td>
<td>15%</td>
</tr>
</tbody>
</table>
### Preliminary results compared to IRS totals

<table>
<thead>
<tr>
<th>Total EITC amount - excluding unauthorized immigrants</th>
<th>IRS SOI</th>
<th>Model 1: Simple</th>
<th>Model 2: Intermediate</th>
<th>Model 3: Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$7,655.742</td>
<td>$4,792.610</td>
<td>$4,891.945</td>
<td>$6,336.312</td>
</tr>
<tr>
<td>as % of IRS SOI</td>
<td></td>
<td>63%</td>
<td>64%</td>
<td>83%</td>
</tr>
<tr>
<td>Total EITC filers - excluding unauthorized immigrants</td>
<td>3.263</td>
<td>2.549</td>
<td>2.286</td>
<td>2.982</td>
</tr>
<tr>
<td>as % of IRS SOI</td>
<td></td>
<td>78%</td>
<td>70%</td>
<td>91%</td>
</tr>
<tr>
<td>Total EITC amount - not excluding unauthorized immigrants</td>
<td>n/a</td>
<td>$6,311.144</td>
<td>$6,522.494</td>
<td>$7,280.596</td>
</tr>
<tr>
<td>as % of IRS SOI</td>
<td></td>
<td>82%</td>
<td>85%</td>
<td>95%</td>
</tr>
<tr>
<td>Total EITC filers - not excluding unauthorized immigrants</td>
<td>n/a</td>
<td>3.104</td>
<td>2.844</td>
<td>3.299</td>
</tr>
</tbody>
</table>
Conclusions

• More complex tax unit approach produces substantially closer match to IRS data for EITC claims for California

• Accounting for ineligibility of unauthorized immigrants for EITC significantly alters aggregate EITC estimates for California
II. Simulating CalEITC Expansions Using ACS Data
CalEITC Context

- Refundable state earned income tax credit established in 2015 (first implemented for tax year 2015)
  - Ongoing interest among policy stakeholders in expanding reach and size of credit
- Unlike most state EITCs, structure does not directly parallel federal EITC – e.g., only targets lowest-income earners, no plateau, no larger income limits for married filers
- Changes adopted in 2017 state legislative session will make self-employment earnings eligible and extend income eligibility for parents and childless filers through second phase-out range
- Distinct structure requires direct modeling in data (estimates cannot be derived from federal EITC estimates)
Simulation of baseline credit and two hypothetical expansions

- Data: IPUMS ACS California sample for 2015 (n= 374,973)

- CalEITC baseline and expansions simulated as if implemented in tax year 2015, with parameters adjusted for inflation where applicable

- ACS income tax simulation (Model 3 above, from CPM) used to construct tax units and calculate EITC dependents, tax unit income

- Then CalEITC calculated based on policy parameters

- Baseline CalEITC = credit incorporating changes adopted in 2017
Expansion 1: Link income eligibility limit to minimum-wage salary

- California recently approved a significant minimum wage increase, which steps up gradually to $15/hr by 2023
- Recent 2017 CalEITC change pegs income limit for parents to current minimum wage
- Simulated expansion assumes CalEITC income limit for both parents and childless filers set at full-time minimum wage salary, simulated when full phase-in of state minimum wage increase has taken effect
Expansion 1: Link income eligibility limit to minimum-wage salary

Structure of existing CalEITC as of 2017 and Expansion 1 (shown for tax filer with two children only, in 2017 dollars)
Incorporating dynamic employment effects

- **Expansion 1: Account for wage increase and disemployment due to minimum wage increase**
  - Assume 1.3% disemployment rate in affected worker population per 10% increase in minimum wage; for all other workers in affected population, assume hourly wage increases to new minimum, with no change in hours worked
  - Challenges in identifying pool of affected workers: imprecise reporting of weeks worked, “under the table” workers
  - Process: Randomly assign disemployment (assume $0 earnings), assign increased earnings to remaining workers, re-run tax unit and income tax program for affected households
  - Then calculate expanded CalEITC
Expansion 2: Double credit and extend age range for childless filers

- Tax filers without dependent children receive substantially smaller credits than filers with child dependents for CalEITC (and federal EITC)

- CalEITC follows federal age range for childless EITC, limited to filers age 25-64

- Simulated expansion assumes current CalEITC credit for childless filers is doubled, and age range expanded to 21+

- No change to current CalEITC structure for filers with dependent children
Expansion 2: Double credit and extend age range for childless filers

Structure of existing CalEITC as of 2017 and Expansion 2 (shown for childless tax filer only, in 2017 dollars)
Incorporating dynamic employment effects

- *Expansion 2: Account for employment incentive of newly available CalEITC*
  - Debatable how and whether to account for labor supply effect of earned income tax credit for childless filers
  - Minimal change in employment observed when federal childless EITC introduced, but also apparently little EITC labor supply research with primary focus on this population
  - Credit size threshold required for labor supply effect? Consider total of state plus federal EITC?
Incorporating dynamic employment effects

- **Expansion 2: Account for employment incentive of newly available CalEITC**
  
  - For purpose of exercise, assume effect similar to that found for single mothers with less than college degree (Hoynes & Patel, 2015) – using reported relative increase in employment rate of 8.7% per $1,000 EITC
  
  - Process: Randomly assign new employment, assign earnings corresponding to maximum CalEITC credit, re-run tax unit and income tax program for affected individuals
  
  - Then calculate expanded CalEITC
## Preliminary results

<table>
<thead>
<tr>
<th>COST</th>
<th>Baseline CalEITC</th>
<th>Expansion 1 (minimum wage)</th>
<th>Expansion 2 (childless)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cost (millions)</td>
<td>$455.740</td>
<td>$470.936</td>
<td>$612.767</td>
</tr>
<tr>
<td>Relative percent increase in cost from baseline</td>
<td>3%</td>
<td></td>
<td>34%</td>
</tr>
<tr>
<td>Dollar increase in cost from baseline (millions)</td>
<td>$15.197</td>
<td>$157.027</td>
<td></td>
</tr>
</tbody>
</table>
## Preliminary results

<table>
<thead>
<tr>
<th>FILERS</th>
<th>Baseline CalEITC</th>
<th>Expansion 1 (minimum wage)</th>
<th>Expansion 2 (childless)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of tax filers receiving credit (millions)</td>
<td>1.929</td>
<td>2.897</td>
<td>2.518</td>
</tr>
<tr>
<td>Relative percent increase in number of recipient tax filers from baseline</td>
<td></td>
<td>50%</td>
<td>31%</td>
</tr>
<tr>
<td>Number increase in recipient tax filers from baseline (millions)</td>
<td></td>
<td>0.969</td>
<td>0.590</td>
</tr>
<tr>
<td>Filing status of recipient tax filers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>48%</td>
<td>56%</td>
<td>59%</td>
</tr>
<tr>
<td>Married joint</td>
<td>14%</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td>Head of household</td>
<td>38%</td>
<td>30%</td>
<td>29%</td>
</tr>
<tr>
<td>Mean credit for newly eligible filers</td>
<td></td>
<td>$26</td>
<td>$150</td>
</tr>
</tbody>
</table>
## Preliminary results

<table>
<thead>
<tr>
<th>BENEFICIARIES</th>
<th>Baseline CalEITC</th>
<th>Expansion 1 (minimum wage)</th>
<th>Expansion 2 (childless)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of beneficiaries</strong> <em>(individuals in families that include a recipient tax filer)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(millions)</em></td>
<td>5.383</td>
<td>7.363</td>
<td>6.398</td>
</tr>
<tr>
<td><strong>Relative percent increase in number of beneficiaries from baseline</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>37%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td><strong>Age of beneficiaries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child <em>(0-17)</em></td>
<td>27%</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>Working-age adult <em>(18-64)</em></td>
<td>67%</td>
<td>70%</td>
<td>68%</td>
</tr>
<tr>
<td>Senior <em>(65+)</em></td>
<td>6%</td>
<td>6%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Discussion

- ACS microsimulation of income taxes is useful for producing estimates of state and local policy effects that are of interest to policy stakeholders and poverty researchers.

- Comparison of ACS income tax models shows tax estimates are sensitive to assumptions used to construct tax units.
  - IRS-Census data matching studies would be helpful to inform methods for imputing tax units.

- Simulations of CalEITC expansions highlight potential and challenges of incorporating dynamic effects into simulation.
  - Need for research findings reported in format that can be applied to microsimulation.
  - Assumptions are often required in order to apply existing findings to simulation of novel policies.
Acknowledgments

Alissa Anderson, California Budget & Policy Center

California Poverty Measure collaborators:
Sarah Bohn, Caroline Danielson, Jonathan Fisher, Marybeth Mattingly, Chris Wimer
Sara Kimberlin
skimberlin@calbudgetcenter.org

1107 9th Street, Suite 310
Sacramento, California 95814
916.444.0500
@skimberCA
@CalBudgetCenter

calbudgetcenter.org