The Long-Run Effects of the Earned Income Tax Credit on Women’s Earnings

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Peter Shirley
ESSPRI agenda: *reorient* research on anti-poverty policies to longer-term effects

- Today: evidence from new study
- Estimation of effects turns from typical short-term effects of EITC to longer-run effects
- Overarching theme of this and other ESSPRI work: “Which policies promote economic self-sufficiency in the longer run?”
Very limited focus on long-term effects in past research: minimum wages

- Vast majority of work studies short-term employment effects
- Even short-term work tends not to focus on distributional goals of policy (evidenced by extensive focus on teens)
- Long-run focus limited to
  - Effects on training (e.g., Acemoglu and Pischke, 2003)
  - Effects on earnings near age 30 of those exposed to high MW as teen (Neumark and Nizalova, 2007; Neumark and Shupe, 2018), and on income growth of low-skilled workers (Clemens and Wither, 2014)
  - Some evidence of adverse longer-run effects
Two studies examine whether reforms focused on boosting employment or training led to higher earnings in longer-run – some evidence of positive effects (Grogger, 2009; Hotz et al., 2006)

Longer-run concern with welfare dependency – opposite of economic self-sufficiency (Murray)
Very limited focus on long-term effects on past research: EITC

Federal EITC value, 2014

- Childless
- 1 child
- 2 children
- 3+ children
The Earned Income Tax Credit

EITC value, 2014

Phase in range

Income range

Childless
1 child
2 children
3+ children
The Earned Income Tax Credit

EITC value, 2014

Plateau

Childless

1 child

2 children

3+ children
The Earned Income Tax Credit

EITC value, 2014

Phase-out range

- Childless
- 1 child
- 2 children
- 3+ children
Summary of evidence on short-run effects of EITC

- Emphasis on short-run employment effects – focus on single mothers to capture group most likely influenced by positive extensive margin labor supply incentives
  - Positive employment effects (e.g., Eissa and Liebman, 1996; Meyer and Rosenbaum, 2001)

- Some work on married mothers, who are more likely on plateau or phase-out range where there are negative intensive margin (and maybe extensive margin) incentives
  - Evidence a bit mixed (e.g., Eissa and Hoynes, 2004), but leans toward modest negative labor supply effects (but for many women)

- Some emphasis on short-term distributional effects, which are beneficial because of good targeting (Scholz and Levine, 2001)
Very limited focus on long-term effects of EITC

- *Only* long-term study is Dahl et al. (2009), who look at effect of exposure to major federal expansions in mid-90s on earnings growth up to five years
  - Evidence of positive effects

- There is work on different kinds of potential long-term effects, e.g., on children’s health and education (see ESSPRI research inventory: http://www.esspri.uci.edu/researchinventory.php)
  - E.g., via positive effects on infant health (Hoynes et al., 2015) and mothers’ health (Evans and Garthwaite, 2014)

- MW vs. EITC debate has focused to some extent on likely differences in longer-run outcomes, without much evidence
Effects of long-term exposure to more generous EITC?

- Ample evidence that EITC boosts employment of low-skilled single mothers.

- Key question: Can we find evidence that exposure to more generous EITC over longer-term boosts earnings, presumably through the accumulation of greater labor market experience and human capital more generally?
  - Also consider possible adverse effects for married women, for whom there is some evidence of negative labor supply effects in the short run.
Paper is complementary to broader work on 3 key anti-poverty policies

- Positive work incentives of EITC may provide better longer-term outcomes, compared to minimum wage or welfare, at least for some part of population
- Related paper (Neumark, Asquith, and Bass, 2018) studies impact of all three policies on longer-run evolution of disadvantaged Census tracts, over 4 decades
  - Strongest evidence from that paper:
    - More generous EITC boosted employment, and reduced poverty and public assistance in the longer run
    - Welfare time limits reduced poverty and public assistance in the longer run
- Current paper is more in-depth look at EITC, individuals
Data

- Use PSID to capture history of marriage, childbearing, work, state of residence, etc., over ages 22-40
- Combine with policy variation in EITC to try to capture history of exposure to different incentives of the EITC
  - E.g., want to allow effects to differ whether one had children, or was married, by age of children, and by age of mother
- Estimate effect of that history on labor market outcomes at (or around) age 40
- Only PSID has the lengthy longitudinal records that can cover women’s childbearing and marital history for a large number of cohorts
  - Working on accessing tax records
Empirical approach

- We use PSID data to construct measures of long-term exposure of women to variation in the federal and state EITC
- We track separately their exposure when married or unmarried, and when with or without kids
- Why?
  - Theory suggests positive employment effects for unmarried women with kids (more likely on phase-in range), and negative employment effects (maybe weaker) for married women with kids (more likely on plateau of phase-out range)
  - Confirmed in short-run evidence, but goal here is long-term evidence – effects of exposure in 20s and 30s on outcomes around age 40
Adaptation of “difference-in-differences” approach

- Estimate effects of policy by comparing changes in behavior for those exposed to a policy change – say teens hit by a high minimum wage – to changes in behavior in the same place and at the same time for those unaffected by the policy change
  - E.g., teens in other state, or high-skill workers in same state

- Idea is same here, but we compare, at around age 40, women exposed to different histories of EITC generosity, with different marital and childbearing histories

- And within these comparisons, estimate effects from low-educated vs. high-educated, since principal effects should be on the low-educated
  - High-educated serve as controls for other changes correlated with EITC changes
Federal EITC variation

Figure 1: Federal EITC Phase-In Rates (%)

- Zero children
- One child
- Two children
- Three+ children
Figure 3: State EITC Supplements (%)

State EITC variation
<table>
<thead>
<tr>
<th>Description</th>
<th>Number of Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. All PSID respondents</td>
<td>77,223</td>
</tr>
<tr>
<td>B. Number of female PSID respondents</td>
<td>39,012</td>
</tr>
<tr>
<td>C. Number of female PSID respondents potentially observed from ages 22-40</td>
<td>4,480</td>
</tr>
<tr>
<td>D. Number of female PSID respondents (from row C) potentially observed at age 40 from 1996-2014</td>
<td>3,238</td>
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<tr>
<td>E. Keep only women with a full 19-year state history back to age 22</td>
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</tr>
<tr>
<td>Number of women in D with full 19-year marital history</td>
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<td>Number of women in D with full 19-year child history</td>
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<tr>
<td>Number of women in D with non-missing earnings data (including $0 for non-working) at age 40</td>
<td>2,227</td>
</tr>
<tr>
<td>Number of women in D with non-missing births data and five or fewer births</td>
<td>2,239</td>
</tr>
<tr>
<td>F. Number of women in D who fit all the above criteria simultaneously (final sample)</td>
<td>1,836</td>
</tr>
<tr>
<td>G. Number of low-educ. (LTHS or HS) women who fit all the above criteria simultaneously</td>
<td>774</td>
</tr>
<tr>
<td>H. Number of high-educ. (beyond HS) women who fit all the above criteria simultaneously</td>
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Can we replicate prior results with PSID?

- PSID provides much smaller samples than CPS data used in past research on employment effects of EITC in short-run.

- Estimating longer-run effects poses additional challenges in terms of sample size.

- Finding no effect less interesting if we cannot detect/replicate standard effects with these data.

- We explore this for the two key papers in this literature:
  - Eissa and Liebman (1996), studying expansions of EITC in mid-1980s, which we saw were quite small.
  - Meyer and Rosenbaum (2001), studying much larger expansions of EITC in early- to mid-1990s.

- We do confirm their evidence of positive employment effects in the short-run on low-skill unmarried mothers.
## Estimated Differences from Permanent 10 Percentage-Point Increase in Two-Child Phase-In Rate

### Implied Estimates, at Age 40

<table>
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<tr>
<th>Evaluated at/for:</th>
<th>Early children (22, 24), never married</th>
<th>Early children (22, 24), always married</th>
<th>Sample averages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Employment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimate</td>
<td>0.249** (0.106)</td>
<td>0.115 (0.141)</td>
<td>0.062 (0.078)</td>
</tr>
<tr>
<td>Difference from column (2)</td>
<td>0.134 (0.152)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Difference from column (3)</td>
<td>0.187* (0.103)</td>
<td>0.053 (0.078)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>B. Log hourly wage (employed)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimate</td>
<td>0.367* (0.183)</td>
<td>-0.182 (0.231)</td>
<td>0.009 (0.121)</td>
</tr>
<tr>
<td>Difference from column (2)</td>
<td>0.549* (0.315)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Difference from column (3)</td>
<td>0.358* (0.191)</td>
<td>-0.191 (0.139)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>C. Log earnings (employed)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimate</td>
<td>0.658** (0.255)</td>
<td>-0.649** (0.306)</td>
<td>-0.188 (0.171)</td>
</tr>
<tr>
<td>Difference from column (2)</td>
<td>1.307*** (0.427)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Difference from column (3)</td>
<td>0.845*** (0.282)</td>
<td>-0.461*** (0.169)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>D. Annual Hours</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimate</td>
<td>591.96* (330.40)</td>
<td>-327.53 (227.93)</td>
<td>-123.26 (164.20)</td>
</tr>
<tr>
<td>Difference from column (2)</td>
<td>919.49** (394.99)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Difference from column (3)</td>
<td>715.22** (269.15)</td>
<td>-204.28 (147.53)</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Implied relative effects from permanent 10 percentage point EITC increase

- Employment (percentage point): Early children (22,24) never married vs. Sample averages, 18.7% increase; Early children (22,24), always married vs. Sample averages, 5.3% increase.
- Log wage (%): -19.1% decrease.
- Log earnings (%): 84.5% increase.
- Hours (level, 10s): -46.1% decrease; -20.43% decrease.

Legend:
- Yellow: Early children (22,24) never married vs. Sample averages
- Orange: Early children (22,24), always married vs. Sample averages
Are such large effects credible?

- Wage and earnings effects for never married young mothers versus other comparisons are in the range of 36-130%.
  - If return to experience is 4% per year, 5 additional years of experience increases wages/earnings by around 20 percent.
- Greater labor force attachment spurred by EITC may boost other human capital investments (increased effort in finding better jobs with prospects for more wage growth, etc.).
- % changes are on low levels (about $12.5 wage, $19k earnings).
- Estimates consistent with large positive effects on wages and earnings, which we would predict from greater accumulation of human capital associated, in part, with increased employment each year.
Results robust to…

- Identifying variation
- Model specification (age of mothers, children)
- Different age for adult/mature labor market outcomes
- Endogenous migration/endogenous state policy
- Endogenous marriage/childbearing behavior
- Alternative EITC parameterization
- Confounding with welfare reform
- Weighting
Endogenous marriage/childbearing?

- EITC creates incentives to have children, and to remain unmarried if one has children
  - Evidence from existing research suggests possible marriage effects (Michelmore, 2018), little evidence of effects on childbearing (Baughman and Dickert-Conlin, 2009)

- Our key result: women who face a more generous EITC when they have children and are unmarried have higher earnings and labor supply at age 40
  - Could reflect endogenous response: women with higher earnings, in states/years with more generous EITC, choosing to have children, or to stay unmarried if they have children
  - Example: Higher-earning woman with children, on phase-out range, could lose EITC if she marries
  - Incentives to have children more straightforward

- No evidence of effects that could make our evidence spurious
Welfare reform occurred in this period

- Waivers in some states allowed experimentation between 1992 and TANF rollout
- TANF rolled out in different months over 1996-1997
- Defined two separate variables, based on months of rollout
- Treated these as policy variables just like the EITC variable (1 for whole year, proportion < 1 for part of year)
- Also used two parametric measures: tight time limits imposed in welfare reform (<60 months), and maximum payment for family of three

Including these “competing” or “confounding” policy effects does not change the estimated effects of the EITC

- Similarly for minimum wage
<table>
<thead>
<tr>
<th>Comparisons:</th>
<th>Early children (22, 24), never married vs. Early children (22, 24), always married</th>
<th>Early children (22, 24), never married vs. Average kids and marital status</th>
<th>Early children (22, 24), always married vs. Average kids and marital status</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td><strong>A. Restrict Time Limits to &lt; 60 Months</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>1.260* (0.643)</td>
<td>0.818* (0.417)</td>
<td>-0.442 (0.338)</td>
</tr>
<tr>
<td>Log hourly wage (employed)</td>
<td>0.716 (0.880)</td>
<td>0.273 (0.672)</td>
<td>-0.443 (0.498)</td>
</tr>
<tr>
<td>Log earnings (employed)</td>
<td>0.331 (2.095)</td>
<td>0.843 (1.380)</td>
<td>-1.173 (0.982)</td>
</tr>
<tr>
<td>Annual hours</td>
<td>1851.05 (2087.20)</td>
<td>1011.21 (1367.52)</td>
<td>-839.84 (883.36)</td>
</tr>
<tr>
<td><strong>B. Reduce Maximum Benefits by 10 Percent</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td>0.054** (0.025)</td>
<td>0.035 (0.022)</td>
<td>-0.019* (0.011)</td>
</tr>
<tr>
<td>Log hourly wage (employed)</td>
<td>0.046 (0.070)</td>
<td>0.026 (0.054)</td>
<td>-0.020 (0.037)</td>
</tr>
<tr>
<td>Log earnings (employed)</td>
<td>0.072 (0.114)</td>
<td>0.036 (0.096)</td>
<td>-0.036 (0.052)</td>
</tr>
<tr>
<td>Annual hours</td>
<td>147.28** (63.99)</td>
<td>91.97 (59.96)</td>
<td>-55.31** (25.30)</td>
</tr>
</tbody>
</table>
Conclusions (I)

- Exposure to a more generous EITC when women were unmarried and had younger children leads to higher earnings and hours, and perhaps higher wages, in the longer run.

- Some evidence that exposure to a more generous EITC when women had young children but were married leads to lower earnings and hours in the longer run.

- Longer-run effects consistent with what we would expect if the short-run effects of the EITC on employment are reflected in cumulative labor market experience and skills that influence wages, labor supply, and earnings.
Conclusions (II)

- Effects larger than can be accounted for by increased labor market experience
  - Higher hours may also help explain results
  - Might be sizable role for impacts of HCl aside from experience, such as training, investment in job search for jobs with greater wage growth prospects, etc.

- We know a more generous EITC boosts employment of low-skilled, generally single, mothers in the short term

- Longer-term exposure to a more generous EITC appears to boost earnings in the longer-run

- Implies that the pro-work incentives in this anti-poverty policy have beneficial longer-run effects that can increase economic self-sufficiency
How Much Do Working Families and Individuals Benefit From the CalEITC?

Value of Federal and California Earned Income Tax Credits, 2017

More $ if kids < 6

Note: California and federal EITC figures may not sum to total EITC figure due to rounding.