What is the Federal EITC?

- It is a refundable tax credit directed primarily at low-income working families.
- There is a small credit available to childless taxpayers.
- There are three ranges to the credit: the phase-in (or subsidy), flat; and phase-out (or clawback) ranges.
- EITC is a large program: $31.5 billion in FY2000 (larger than the combined federal spending on food stamps and TANF).

Coincident Trends: Are They Related?

- Expansion of the Earned Income Tax Credit
- Between 1990 and 1999
  - Real EITC spending increased from $9.6 billion to $31.9 billion (in 1999 dollars)
Spending on Cash and Near-Cash Means Tested Transfers, 1999 Dollars

Coincident Trends (cont.)
- Employment Rates of Single Women with Children
  - Employment rates of single women with children rose from 55.2% to 73.9%.
  - Rates for female-headed households on AFDC/TANF in previous year also went up during 1990s (see graph)

Coincident Trends (cont.)
- Standard labor-leisure model:
  - Expansions of (wage) subsidy like EITC should generate increases in employment of low-wage workers.

- Question: Did EITC play a substantial role in increases in employment of single women with children?
Previous Work on Relationship between EITC & Employment

- Fairly Large Number of Papers on this Issue

- All find Positive, Large EITC effects on employment.
  - Employment elasticities with respect to net income of 0.69 to 1.16.
  - See Hotz & Scholz, 2003 for full survey of these results.

- All but first two papers use “Diff-in-Diff” approach.
  - Use episodic “expansions” in EITC and compare changes between groups who were “eligible” and “not eligible” for EITC (e.g., single mothers vs. single women).

Potential Concerns about Inferences drawn from Previous EITC – Employment Studies

- Use of national episodic expansions of EITC to explain national trends vulnerable to possibility that other things changed.
  - Secular Changes in
    - Welfare programs (AFDC/TANF, Food Stamps, Child Care subsidies)
    - Aggregate labor market conditions could be driving changes in employment rates.

### Graphs

**Spending on Cash and Near-Cash Means Tested Transfers, 1999 Dollars**

- Y-axis: Dollars
- X-axis: Year
- Categories: AFDC TANF, EITC, SSI, Food Stamps

**Annual Real Earnings per Worker in Service Sector in California, 1992-2000**

- Y-axis: Dollars
- X-axis: Year
- Categories:
  - Bay Area Counties
  - Central Valley Counties
  - Central & Southern Farm Counties
  - Los Angeles County
  - Southern Calif. Counties, Other Non LA
  - All Counties
Potential Concerns about Inferences (cont.)

a. Use of “Second Diff” in “Diff-in-Diff” strategy requires composition of “comparison group” doesn’t change over time.
   - Previous studies use Repeated Cross-Sectional data – typically from CPS – in Diff-in-Diff analyses.
   - Population we analyze – single mothers on welfare in California during 1990s –
     - Sizeable changes in racial composition, family structure and other characteristics.

b. If EITC expansion truly caused increases in employment rates of single mothers, should see “similar” systematic changes in rates of EITC take-up, i.e., claiming EITC on tax returns
   - Analogous to studies of effects of welfare & other social programs on employment
     - Look for changes in program participation to corroborate program effects on employment.
   - Systematic examination of relationship between EITC expansions & differences in EITC take-up rates between “treatment” & “comparison” groups has not been done.
Contributions of this Paper

1. We use data from a single state (California) to mitigate influence of secular changes in social policies & local labor market conditions.
   - Over period we examine, low-income populations subject to limited set of policy changes.
   - Better able to control for changes in state policy, some of which vary at county level.
   - Also control for detailed set of county-level measures of labor market conditions to capture local conditions more accurately.

Contributions of Paper (cont.)

2. We exploit longitudinal data on households and focus on temporal “within” household changes to control for potential “composition bias” problem in “Diff-in-Diff” estimation strategy.
   - Use longitudinal data on households in estimation.

3. Use different “Diff-in-Diff” identification strategy than in most previous work.
   - Compare differential behavior of families with 2+ children vs. 1-child families before & after EITC expansion in 1990s.
   - EITC expansion in 1994 substantially increased generosity of EITC for 2+ children vs. 1-child households.

---

**Table 1: Earned Income Tax Credit Parameters, 1987-2000 (in nominal dollars)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Phase-In Rate</th>
<th>Phase-In Range</th>
<th>Max. Credit</th>
<th>Phase-Out Rate</th>
<th>Phase-Out Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>14.5</td>
<td>[0.00, 9.07]</td>
<td>11.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
</tr>
<tr>
<td>1998</td>
<td>11.0</td>
<td>[0.00, 9.07]</td>
<td>9.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
</tr>
<tr>
<td>1999</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
</tr>
<tr>
<td>2000</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
</tr>
<tr>
<td>2001</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
</tr>
<tr>
<td>2002</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
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<td>6.8</td>
<td>[9.11, 11.12]</td>
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<tr>
<td>2003</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
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<tr>
<td>2004</td>
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<td>[0.00, 9.07]</td>
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<td>6.8</td>
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<td>2005</td>
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<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
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<td>2006</td>
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<td>2007</td>
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<td>6.8</td>
<td>[9.11, 11.12]</td>
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<tr>
<td>2008</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
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<td>[9.11, 11.12]</td>
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<tr>
<td>2009</td>
<td>10.0</td>
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<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
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<td>2010</td>
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<td>[9.11, 11.12]</td>
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<td>2011</td>
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<td>6.8</td>
<td>[9.11, 11.12]</td>
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<tr>
<td>2012</td>
<td>10.0</td>
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<td>[9.11, 11.12]</td>
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<td>2013</td>
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<td>[0.00, 9.07]</td>
<td>10.0</td>
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<td>[9.11, 11.12]</td>
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<td>2014</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
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<tr>
<td>2015</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
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<tr>
<td>2016</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
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<tr>
<td>2017</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
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<td>2018</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
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<td>2019</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
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<td>2020</td>
<td>10.0</td>
<td>[0.00, 9.07]</td>
<td>10.0</td>
<td>6.8</td>
<td>[9.11, 11.12]</td>
</tr>
</tbody>
</table>
Contributions of Paper (cont.)

1. We use a different “Diff-in-Diff” identification strategy (cont.)
   - We systematically “assess” the validity of implication of this identification strategy
   - EITC policy “treated” all households with 2 or more children the same (i.e., same credit).
   - So, we should expect to see no difference in outcomes of interest (e.g., employment) between 2+ and 3+ child households.

2. Focus on effects of EITC on employment for important population.
   - Female-Headed households on welfare sometime during 1990s.
   - Look at behavior of these households both on & off of welfare.
   - Estimating effects of EITC for this population is particularly relevant from public policy perspective.

3. Most Novel Feature of Paper: Examine differential effects (2+ vs. 1-Kid households) of EITC on incidence of claiming EITC.
   - Exploit access to data on federal tax returns for households in sample over 1990s.
   - If our “Diff-in-Diff” identification strategy is isolating EITC effects on employment, should see differential rates of EITC claiming by 2+ vs. 1-Kid households before & after expansion.

Our Data Combine Several Administrative Sources

- Monthly AFDC/TANF case records.
- Demographic information and benefit receipt.
- Prior information starting in 1987 on benefits come from Medicaid data.
- Quarterly data from UI system.
- Measure employment starting in 1986
- Federal tax return information.
- Data from CA Franchise Tax Board beginning in 1990.
Our Data Combine Several Administrative Sources

- County-level (local) local labor market data
- County-level policy data (from county welfare & training program implementation)
- Sample exclusions:
  - Child-only cases
  - Cases with more than 2 adults in household
- We focus most of analyses on AFDC-FG cases.

Sampling

- Start random stratified sample of all assistance units on Welfare in California between 1987 & 2000.
  - Drawn by Rand for another evaluation.
  - Sample includes ~ 50% of all cases.
- Define a “sampling date” = 4th quarter of a household’s spells on welfare.
  - We determine number & ages of children when household on welfare.
  - All cases, on and off welfare, are treated symmetrically.
  - Avoid “overweighting” long-term welfare recipients in our sample.

Sampling (cont.)

Utilize two samples of households in our analyses

- Cross sectional:
  - Employment in year following sampling date.
  - This sample mimics repeated cross-section data used in previous studies.
- Longitudinal:
  - Employment in periods -3, -2, -1, and 0 (sampling).
  - Longitudinal data on households allow control for household-specific fixed effects, so focus on within household changes to identify EITC effects.

<table>
<thead>
<tr>
<th>Year</th>
<th>All Cases</th>
<th>Cases with One Child</th>
<th>Cases with 2+ Children</th>
<th>Difference (2+ - One)</th>
<th>Median (1990-91-92 Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>27.58</td>
<td>30.94</td>
<td>24.065</td>
<td>-6.5</td>
<td>0.34</td>
</tr>
<tr>
<td>1992</td>
<td>31.76</td>
<td>24.065</td>
<td>30.94</td>
<td>-6.5</td>
<td>0.34</td>
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<tr>
<td>1993</td>
<td>32.3</td>
<td>29.532</td>
<td>30.94</td>
<td>-6.5</td>
<td>0.34</td>
</tr>
<tr>
<td>1994</td>
<td>37.12</td>
<td>30.94</td>
<td>30.94</td>
<td>-6.5</td>
<td>0.34</td>
</tr>
<tr>
<td>1995</td>
<td>41.64</td>
<td>31.184</td>
<td>31.184</td>
<td>-6.5</td>
<td>0.34</td>
</tr>
<tr>
<td>1996</td>
<td>45.07</td>
<td>30.94</td>
<td>30.94</td>
<td>-6.5</td>
<td>0.34</td>
</tr>
<tr>
<td>1997</td>
<td>41.64</td>
<td>31.184</td>
<td>31.184</td>
<td>-6.5</td>
<td>0.34</td>
</tr>
<tr>
<td>1998</td>
<td>41.64</td>
<td>31.184</td>
<td>31.184</td>
<td>-6.5</td>
<td>0.34</td>
</tr>
<tr>
<td>1999</td>
<td>41.64</td>
<td>31.184</td>
<td>31.184</td>
<td>-6.5</td>
<td>0.34</td>
</tr>
<tr>
<td>2000</td>
<td>41.64</td>
<td>31.184</td>
<td>31.184</td>
<td>-6.5</td>
<td>0.34</td>
</tr>
</tbody>
</table>

Table 2a: Employment Rates (in Percentages) by Family Size, 1991 – 2000, Cross-Sectional Sample
Table 2b: EITC Claiming (as Percentages) by Family Size, 1991 - 2000, Cross-Sectional Sample

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>22.78</td>
<td>20.94</td>
<td>24.63</td>
<td>-1.65</td>
<td>22.23</td>
</tr>
<tr>
<td>1992</td>
<td>22.98</td>
<td>23.80</td>
<td>22.94</td>
<td>-0.92</td>
<td>22.63</td>
</tr>
<tr>
<td>1993</td>
<td>22.08</td>
<td>21.87</td>
<td>23.07</td>
<td>-1.90</td>
<td>22.24</td>
</tr>
</tbody>
</table>

Econometric Specifications (Diff-in-Diff)

\[ Y_{ict} = \delta + \sum_{j=1}^{t} \alpha_j \text{Year}_j + \sum_{k=1}^{K} \beta_k \text{Kids}_k + \sum_{j=1}^{J} \gamma_j \text{KidsAge}_j + \mu_{ij} + \varepsilon_{ict} \]

where \( Y_{ict} \)

\[ \text{Emp}_{ict} = \left\{ \begin{array}{ll} 1, & \text{if at least 1 adult in } \text{household in county } c \text{ is employed in year } t \\ 0, & \text{otherwise} \end{array} \right. \]

\[ \text{ClaimEITC}_{ict} = \left\{ \begin{array}{ll} 1, & \text{if } \text{household in county } c \text{ files tax return and claims EITC in year } t \\ 0, & \text{otherwise} \end{array} \right. \]

In some regressions for “testing” we also include an (exactly) 2 children indicator variable:

\[ 2+ \text{Kids}_{ict} = \left\{ \begin{array}{ll} 0, & \text{if Kids}_{ict} < 2 \text{ or Kids}_{ict} \geq 3 \\ 1, & \text{if Kids}_{ict} = 2 \end{array} \right. \]

Covariates

- **Demographic characteristics**
  - Number of kids & number of kids by age.
- **Local labor markets**
  - Year dummies, employment share by sector, avg. income by sector
- **Welfare rules**
  - Proportion of population in GAIN program
- **Time-invariant covariates** (in OLS Cross-Sectional Models).
  - Race/ethnicity, county dummies, gender, age, timing of entry onto welfare.
Empirical Strategy for Understanding the EITC’s Effect

- Our strategy for assessing validity of estimated EITC’s effect on employment:
  1. Does employment of families with 2+ children increase relative to 1-Kid families? (They should)
  2. Does employment of 2+Kid families differ from effects for 3+Kid families? (They should not)
  3. Do temporal patterns of EITC claiming mirror employment patterns in #1 and #2? (They should)
  4. Do see any differences in employment btw. 2+Kid and 1-Kid households not filing tax return? (We should not)

- Similar strategy for #1 - #3 should apply to Claiming EITC.

### Table 3: Estimates of EITC Effects on Household Employment

<table>
<thead>
<tr>
<th>Variable</th>
<th>OLS, Cross-Sectional Sample</th>
<th>Household Fixed Effects, Panel Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2+ Kids in 1994</td>
<td>(0.0065)</td>
<td>(0.0041)</td>
</tr>
<tr>
<td>2+ Kids in 1995</td>
<td>-0.0063</td>
<td>0.0072</td>
</tr>
<tr>
<td>2+ Kids in 1996</td>
<td>0.0040</td>
<td>0.0123**</td>
</tr>
<tr>
<td>2+ Kids in 1997</td>
<td>0.0092</td>
<td>0.0261***</td>
</tr>
<tr>
<td>2+ Kids in 1998</td>
<td>0.0382**</td>
<td>0.0324**</td>
</tr>
<tr>
<td>2+ Kids in 1999</td>
<td>0.0278**</td>
<td>0.0343**</td>
</tr>
<tr>
<td>2+ Kids in 2000</td>
<td>0.0425**</td>
<td>0.0295**</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>527,125, 1,637,855</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4: Estimates of EITC Effects on Whether Household Claimed the EITC on Tax Return

<table>
<thead>
<tr>
<th>Variable</th>
<th>OLS, Cross-Sectional Sample</th>
<th>Household Fixed Effects, Panel Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2+ Kids in 1994</td>
<td>(0.0058)</td>
<td>(0.0038)</td>
</tr>
<tr>
<td>2+ Kids in 1995</td>
<td>-0.0032</td>
<td>0.0065</td>
</tr>
<tr>
<td>2+ Kids in 1996</td>
<td>0.0103*</td>
<td>0.0168***</td>
</tr>
<tr>
<td>2+ Kids in 1997</td>
<td>0.0050</td>
<td>0.0190***</td>
</tr>
<tr>
<td>2+ Kids in 1998</td>
<td>0.0249**</td>
<td>0.0170*</td>
</tr>
<tr>
<td>2+ Kids in 1999</td>
<td>0.0283**</td>
<td>0.0239**</td>
</tr>
<tr>
<td>2+ Kids in 2000</td>
<td>0.0449**</td>
<td>0.0194</td>
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<tr>
<td>No. of Observations</td>
<td>527,125, 1,637,855</td>
<td></td>
</tr>
<tr>
<td>P-Value for Test of 2+ Kids in 1994-2000 = 0</td>
<td>0.0000</td>
<td>0.0353</td>
</tr>
</tbody>
</table>
Sensitivity Analyses (cont.)

- Examine EITC effects on household employment and EITC Claiming for two-parent households on welfare (AFDC-UP cases).
- Do not find any evidence of positive employment effects for AFDC-UP households.
- Perhaps employment barriers are larger for the subset of UP households with no workers.

Conclusions

- We find robust effects of the differential expansion of EITC btwn. 2+Kid vs. 1-Kid households on employment rates & rates of EITC claiming.
- Our identification strategy for identifying EITC effects is validated several different ways.
Conclusions (cont.)

- EITC increased employment for families with 2+ kids by as much as 3.4 percentage points relative to 1-Kid families.
  - Illustration:
    - 11.8% of 31 percentage point employment increase for families with two or more children between 1991 and 2000.
    - But, another way to look at this is that 77 percent of the differential gain in employment for families with two or more kids.

- Implied Elasticity of Employment w.r.t. household disposable income:
  - Average EITC differential for families with two or more children was $439 in 1998.
  - Average disposable income (including transfers) was around $10,000.
  - The EITC increased disposable income around 4.4 percent.
  - Employment rates in 1998 were around 60 percent.
  - The EITC increased the relative employment of families with two or more children 3.2 percentage points, or 5.6 percent.
  - The implied employment elasticity with respect to disposable income is 1.3, which is at upper end of estimates in EITC-Effects-on-Employment Literature.

Figure 1: Quarterly Earnings Reported to AFDC Administrators and to the UI System