The EITC and the Extensive Margin: A Reappraisal

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The Extensive Margin of Labor Supply

- A consensus that extensive margin responses can be sizable, at least for some groups

- Where does this consensus originate from?
  - Early labor supply literature (Heckman 1993)
  - Macro business cycle literature (Hansen 1985; Rogerson 1988)
  - Labor supply literature studying EITC reform (Eissa & Liebman 1996; Meyer & Rosenbaum 2001)

- A meta study by Chetty et al. (2013) puts the extensive margin elasticity at around 0.3
The Earned Income Tax Credit (EITC)

- A means-tested transfer conditional on positive earnings and children
- Now the largest cash support program in the US
- A large literature studies the labor supply effects of the EITC, particularly on single mothers
  - Most of this work exploits the federal EITC expansions in the 1980s and 1990s
- Essentially everyone agrees that the EITC expansions led to sizable extensive margin responses
### EITC Schedule in 2018

<table>
<thead>
<tr>
<th>Children</th>
<th>0 children</th>
<th>1 child</th>
<th>2 children</th>
<th>3+ children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings (USD)</td>
<td>0</td>
<td>4,000</td>
<td>6,000</td>
<td>Annual Credit (USD)</td>
</tr>
<tr>
<td>0</td>
<td>2,000</td>
<td>10,000</td>
<td>20,000</td>
<td>30,000</td>
</tr>
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</table>
EITC Maximum Credit Over Time

<table>
<thead>
<tr>
<th>Children</th>
<th>Tax Reduction Act of 1975</th>
<th>TRA86</th>
<th>OBRA90</th>
<th>OBRA93</th>
<th>ARRA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 children</td>
<td>0</td>
<td>2,000</td>
<td>4,000</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>1 child</td>
<td>2,000</td>
<td>4,000</td>
<td>6,000</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>2 children</td>
<td>2,000</td>
<td>4,000</td>
<td>6,000</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td>3+ children</td>
<td>2,000</td>
<td>4,000</td>
<td>6,000</td>
<td>6,000</td>
<td></td>
</tr>
</tbody>
</table>
Why Revisit This Question?

- Have I found a new source of identifying variation? (NO)
  - I study EITC reforms in the US

- Have I gained access to better data? (NO)
  - I use Current Population Survey (CPS) data

- I reconsider these reforms and data through a different lens
  - Long-run perspective
  - All state and federal reforms
  - Event study framework
  - Confounders
The EITC and the Extensive Margin: The Long View
Data

- Current Population Survey (CPS)
  - Basic monthly files and March supplements
  - 50-year period (1968-2018)

- Measures of extensive margin labor supply:
  1. **Weekly Employment**
     - Employed last week
  2. **Weekly Participation**
     - Employed or unemployed last week
  3. **Annual Employment**
     - Positive earnings last year
  4. **Annual Participation**
     - Employed or unemployed for 1+ weeks last year
Labor Force Participation of Single Women
With and Without Children

50 years of relative stability, apart from these 5 years.
Labor Force Participation of Single Women
With and Without Children

50 years of relative stability, apart from these 5 years.

Participation (%)

Year

With Children
Without Children

50 60 70 80 90 100

68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18

14.3 pp
14.1 pp

Low Ed
Weekly Emp
Weekly Emp (Low Ed)
Annual Emp
Annual Emp (Low Ed)
Labor Force Participation of Single Women
With and Without Children

<table>
<thead>
<tr>
<th>Year</th>
<th>With Children (%)</th>
<th>Without Children (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968</td>
<td>65</td>
<td>68</td>
</tr>
<tr>
<td>1970</td>
<td>67</td>
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<td>1998</td>
<td>95</td>
<td>98</td>
</tr>
<tr>
<td>2000</td>
<td>97</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: The graph shows the labor force participation rates for single women with and without children from 1968 to 2018. Key events such as the Tax Reduction Act of 1975 (TRA86), OBRA90, OBRA93, and ARRA are marked on the graph.
Labor Force Participation of Single Women

With and Without Children

- Tax Reduction Act of 1975
- TRA86
- OBRA90
- OBRA93
- PRWORA
- ARRA

Participation (%)

Year

With Children

Without Children

Low Ed Weekly Emp Weekly Emp (Low Ed) Annual Emp Annual Emp (Low Ed)
Labor Force Participation of Single Women
With and Without Children

<table>
<thead>
<tr>
<th>Year</th>
<th>Participation (%)</th>
</tr>
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<tbody>
<tr>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>70</td>
<td>70</td>
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<td>72</td>
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<td>04</td>
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<td>10</td>
<td>80</td>
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<td>12</td>
<td>80</td>
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<tr>
<td>14</td>
<td>80</td>
</tr>
<tr>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>18</td>
<td>80</td>
</tr>
</tbody>
</table>

States Welfare Waivers

Tax Reduction Act of 1975
TRA96
OBRA90
OBRA93
ARRA
PRWORA

Low Ed Weekly Emp Weekly Emp (Low Ed) Annual Emp Annual Emp (Low Ed)
Labor Force Participation of Single Women
With and Without Children

Unemployment Rate

Participation (%)

Year

With Children
Without Children

Low Ed Weekly Emp Weekly Emp (Low Ed) Annual Emp Annual Emp (Low Ed)
Labor Force Participation of Single Women
By Number of Children

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA

Participation (%)
Year
0 children
1 child
2 children
3+ children
Low Ed
Weekly Emp
Weekly Emp (Low Ed)
Annual Emp
Annual Emp (Low Ed)
Labor Force Participation of Single Women
By Number of Children

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA

Much larger increase for those with 3+ kids

Participation (%)

Year

0 children
1 child
2 children
3+ children

Low Ed
Weekly Emp
Weekly Emp (Low Ed)
Annual Emp
Annual Emp (Low Ed)
Labor Force Participation of Single Women
By Number of Children

But no increase here for those with 3+ kids

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA

Participation (%)

Year

0 children
1 child
2 children
3+ children

Low Ed
Weekly Emp
Weekly Emp (Low Ed)
Annual Emp
Annual Emp (Low Ed)
Labor Force Participation of Single Women
By Number of Children

And no increase here either

Year

0 children 1 child 2 children 3+ children

Low Ed Weekly Emp Weekly Emp (Low Ed) Annual Emp Annual Emp (Low Ed)
Labor Force Participation of Single Women
By Number of Children

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA

Increase for those with 1 kid, despite small EITC incentive

Participation (%)

Year

0 children
1 child
2 children
3+ children
Questions and Puzzles

The extensive margin increases for single mothers in 1994-99 are massive and follows the 1993 reform, BUT:

- Why are there no clear effects of any other reform?
- How do we reconcile the puzzling patterns across family sizes?
- How do we separate EITC effects from confounders?
  - The business cycle
  - State and national welfare reform
  - Changes in social norms and stigma
The 1993 Reform
DiD Event Study

Specification:

\[
P_{imt} = \sum_j \alpha_j \cdot Year_{j=t} + \sum_k \beta_k \cdot Kids_{k=n}
\]

\[
+ \sum_j \sum_k \gamma_{jk} \cdot Year_{j=t} \cdot Kids_{k=n} + X_i \phi + \nu_{imt}
\]

Where

- \( P_{imt} \) is an indicator for weekly employment of individual \( i \) in month \( m \) of year \( t \)

- I use linked March and monthly CPS files (→ more precision and granularity)
Employment of Single Women
DiD Comparing With and Without Children

Impact on Employment (pp)

Year

OBRA1993
PRWORA
Employment of Single Women
DiD by Number of Children

Impact on Employment (pp) 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03
Year

1 vs 0 Kids

OBRA93 PRWORA

-10 0 10 20 30

Impact on Employment (pp)

Year
Employment of Single Women
DiD by Number of Children

Impact on Employment (pp)

Year

1 vs 0 Kids
2 vs 0 Kids

OBRA93
PRWORA
Employment of Single Women
DiD by Number of Children

Impact on Employment (pp)

Year

1 vs 0 Kids
2 vs 0 Kids
3 vs 0 Kids
Employment of Single Women
DiD by Number of Children

Impact on Employment (pp)

Year

1 vs 0 Kids
2 vs 0 Kids
3 vs 0 Kids
4+ vs 0 Kids

Demographics
Participation
Participation (Demographics)
Lessons: Effects by Number of Children

- A fanning-out by number of children
  - Extensive margin effects are strictly increasing in the number of children
  - The spread is relatively small between 1 and 2 children (where the EITC split is large), and very large between the other family sizes (where the EITC difference is small/zero)

- Consistent with welfare reform, but not EITC reform
The 1993 Reform: Elasticities by Number of Children
Elasticity Calculation

- Extensive Margin Elasticity:

\[ \varepsilon \equiv \frac{\Delta P/P}{\Delta (1 - \tau)/(1 - \tau)} \]

Where

- \( \Delta P/P \) is the percent change in employment
- \( \Delta (1 - \tau)/(1 - \tau) \) is the percent change in the net-of-tax rate on participation due to EITC reform
- \( \tau \) is an average tax rate on earnings when accounting for taxes paid and benefits lost upon entry into the labor market
Predicting Earnings for Non-Workers

Measurement of $\tau$ is based on a tax-benefit calculator using predicted earnings for non-workers and actual earnings for workers.

Earnings regression:

$$Y_i = \alpha_a + \beta_n + \gamma_y + \delta_e + \zeta_r + \lambda_s + \eta_{ae} + \theta_{ne} + \vartheta_{ye} + \nu_i$$

Where RHS includes fixed effects for age of the woman $a$, number of children $n$, age of youngest child $y$, education $e$, race $r$, state $s$, along with second-level interactions.
## Extensive Margin Elasticities Ignoring Confounders

<table>
<thead>
<tr>
<th></th>
<th>$\tau$</th>
<th>$\Delta(1 - \tau)$</th>
<th>$P$</th>
<th>$\Delta P$</th>
<th>$\varepsilon$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Children:</td>
<td>0.283</td>
<td>0.077</td>
<td>0.606</td>
<td>0.130</td>
<td>2.0</td>
</tr>
<tr>
<td>1 Child:</td>
<td>0.338</td>
<td>0.034</td>
<td>0.680</td>
<td>0.085</td>
<td>2.4</td>
</tr>
<tr>
<td>2 Children</td>
<td>0.280</td>
<td>0.105</td>
<td>0.610</td>
<td>0.138</td>
<td>1.6</td>
</tr>
<tr>
<td>3 Children:</td>
<td>0.192</td>
<td>0.124</td>
<td>0.474</td>
<td>0.196</td>
<td>2.7</td>
</tr>
<tr>
<td>4+ Children:</td>
<td>0.067</td>
<td>0.159</td>
<td>0.300</td>
<td>0.262</td>
<td>5.1</td>
</tr>
</tbody>
</table>
The 1993 Reform:
Simulated Responses by Number of Children
Simulated Responses

- Assume a static model with constant extensive margin elasticity $\varepsilon$

- The employment effect in year $t$, $\Delta P_t$, equals

$$\Delta P_t = \varepsilon \cdot \frac{\Delta (1 - \tau_t)}{1 - \tau_{93}} \cdot P_{93}$$

Where

- $\Delta (1 - \tau_t)$ is the EITC-induced change in the net-of-tax rate in year $t$ relative to the pre-reform year, 1993

- $\tau_{93}$ and $P_{93}$ are baseline levels in the pre-reform year
Employment of Single Women
Actual DiD vs Simulated Responses (Any Children)

Explained by EITC: 15%
\( \varepsilon = 0.3 \)

-5 0 5 10 15 20
Impact on Employment (pp)

OBRA93 PRWORA

Year

Demographics
Employment of Single Women
Actual DiD vs Simulated Responses (by Family Size)

1 vs 0 Children

2 vs 0 Children

3 vs 0 Children

4+ vs 0 Children
Lessons: Simulated Responses

- Even under sizable elasticities, the EITC explains a minor part of the extensive margin increases in the 1990s

- At an extensive margin elasticity of 0.3:
  - The EITC explains 15% across all single mothers, and much less for larger family sizes

- Any claim that most or all of the extensive margin responses in the 1990s were due to the EITC cannot be true
The 1993 Reform:
Heterogeneity by Welfare Treatment Intensity
DiD Event Study by Welfare Treatment Intensity

Specification:

\[ P_{imt} = \alpha \cdot Post_t + \sum \beta_j \cdot Welfare_{j=c} + \sum \gamma_j \cdot Post_t \cdot Welfare_{j=c} \]

\[ + \eta \cdot U_{st} + \theta \cdot U_{st} \cdot Kids_i + \lambda s + X_i \phi + \nu_{imt} \]

Where \( Welfare_{j=c} \) is an indicator for welfare treatment category \( c \):

- Age of youngest child
- Predicted AFDC probability based on demographics (age of woman, number of children, age of youngest child, education, race, state)
By Age of Youngest Child
Pre-Reform AFDC Participation Predicts Post-Reform Drop in Participation

Slope = 0.69
Effects of the EITC by Age of Youngest Child

Raw Data

With Controls

Impact on Employment (pp) vs. Age of Youngest Child

AFDC Participation (%) vs. Age of Youngest Child

3-Year Effect
10-Year Effect
Pre-Reform AFDC Participation
By Probability of AFDC Participation
Pre-Reform AFDC Participation Predicts Post-Reform Drop in Participation

Slope = 0.75
Effects of the EITC by Prob. of AFDC Participation

Raw Data

With Controls
Lessons: Effects by Welfare Treatment Intensity

▶ Extensive margin effects are closely linked to welfare treatment

▶ Age of youngest child:
  ▶ Age of youngest child is a strong predictor of welfare treatment
  ▶ No effects when youngest child is older than 13 years (9 years)

▶ Probability of AFDC participation:
  ▶ Pre-reform AFDC probability is a strong predictor of welfare treatment
  ▶ No effect in bottom two deciles (four deciles) of AFDC probability
The 1993 Reform:
Welfare-to-Work Transitions
Define the “employment-welfare rate”

- Fraction of single mothers who are employed and/or on AFDC/TANF

EITC and welfare reform affect this outcome differently:

- Welfare reform pushes people from welfare into work or into searching for work → employment-welfare rate should stay constant or decrease

- EITC reform attracts people from all non-working states → employment-welfare rate should increase
Employment of Single Women
With and Without Children

Employment Rate (%)

Year

Employment with Kids

Employment without Kids

OBRA93

PRWORA
Adding AFDC/TANF Caseloads for Single Women
With and Without Children

<table>
<thead>
<tr>
<th>Year</th>
<th>Employment Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OBRA93</td>
</tr>
<tr>
<td></td>
<td>PRWORA</td>
</tr>
<tr>
<td>89</td>
<td>89</td>
</tr>
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<td>02</td>
<td>97</td>
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<td>03</td>
<td>96</td>
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</table>

AFDC/TANF Caseload

Employment with Kids
Employment without Kids
Employment-Welfare Rate with Kids
Event Study of Employment-Welfare Rate
With 1 vs 0 Children

Impact (pp)

Year

Employment
Employment-Welfare Rate

Youngest Child
Event Study of Employment-Welfare Rate
With 2 vs 0 Children

Impact (pp) vs Year

Employment

Employment-Welfare Rate

OBRA93
PRWORA

Year

89 90 91 92 93 94 95 96 97 98 99 00 01 02 03

0 5 10 15 20

0

-5

-10

Youngest Child
Event Study of Employment-Welfare Rate
With 3+ vs 0 Children

Year

Impact (pp)

OBRA93
PRWORA

Employment
Employment-Welfare Rate

Youngest Child
Event Study of Employment-Welfare Rate
With vs Without Children Across States

AFDC/TANF Caseloads

Employment-Welfare Rates

States with Below Median Caseload Drop
States with Above Median Caseload Drop

States with Below Median Caseload Drop
States with Above Median Caseload Drop
Conclusions: Welfare-to-Work Transitions

- The year-to-year extensive margin increases correspond to the AFDC/TANF caseload reductions
  - This holds in every subsample
  - Combined employment-welfare rate does not respond

- What do we learn from this?
  - AFDC/TANF changes were large enough to explain what happened in the 1990s
  - If the EITC had any effect, it attracted women only from AFDC/TANF
  - This asymmetry is consistent with welfare reform, but puzzling under the EITC narrative
The 1993 Reform:
Welfare Waivers and Business Cycles
DiD Event Study

Specification:

\[ P_{imt} = \sum_j \alpha_j \cdot Year_{j=t} + \beta \cdot Kids_i + \sum_j \gamma_j \cdot Year_{j=t} \cdot Kids_i \]
\[ + \sum_j \delta_j \cdot Year_{j=t} \cdot W_{sj} + \sum_j \zeta_j \cdot Year_{j=t} \cdot Kids_i \cdot W_{sj} \]
\[ + \eta \cdot U_{st} + \theta \cdot U_{st} \cdot Kids_i + \lambda_s + \nu_{imt} \]

where \( W_{st} \) is an indicator for state \( s \) having a major waiver in year \( t \) and \( U_{st} \) is the unemployment rate in state \( s \) in year \( t \)

- Waiver types: termination time limits, work-requirement time limits, family caps, JOBS exemptions, JOBS sanctions, and earnings disregards
DiD Event Study

Specification:

\[ P_{imt} = \sum_{j} \alpha_j \cdot Year_{j=t} + \beta \cdot Kids_{i} + \sum_{j} \gamma_j \cdot Year_{j=t} \cdot Kids_{i} \]

\[ + \sum_{j} \delta_j \cdot Year_{j=t} \cdot W_{sj} + \sum_{j} \zeta_j \cdot Year_{j=t} \cdot Kids_{i} \cdot W_{sj} \]

\[ + \eta \cdot U_{st} + \theta \cdot U_{st} \cdot Kids_{i} + \lambda_s + \nu_{imt} \]

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DiD Event Study

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\[ + \sum_{j} \delta_j \cdot Year_{j=t} \cdot W_{sj} + \sum_{j} \zeta_j \cdot Year_{j=t} \cdot Kids_i \cdot W_{sj} \]
\[ + \eta \cdot U_{st} + \theta \cdot U_{st} \cdot Kids_i + \lambda_s + \nu_{imt} \]

where \( W_{st} \) is an indicator for state \( s \) having a major waiver in year \( t \) and \( U_{st} \) is the unemployment rate in state \( s \) in year \( t \)

- **Waiver types**: termination time limits, work-requirement time limits, family caps, JOBS exemptions, JOBS sanctions, and earnings disregards
Employment of Single Women
DiD Comparing With and Without Children

Impact on Employment (pp)

Year

OBRA1993

PRWORA
Employment of Single Women
DiD Comparing With and Without Children
(Controlling for Unemployment)

OBRA1993
PRWORA

Year
Impact on Employment (pp)

Raw Data
With Unemployment Controls
Employment of Single Women
DiD Comparing With and Without Children
(Controlling for Unemployment and Welfare Waivers)

Outcomes/Samples
- Number of Children
- Waiver Spec
- Only Waivers
Lessons: Waivers and Business Cycles

- Extensive margin increases for single mothers are correlated with welfare waivers and business cycles across states.

- Event study of 1993 reform + event studies of welfare waivers + state unemployment controls:
  - This absorbs only state-level confounders.
  - Any remaining effects include both the EITC and PRWORA.
  - No remaining effects between 1993 and PRWORA.
    → The adjusted series look like an event study of PRWORA.
State EITC Supplements
States with an EITC Supplement in 1990

- States with an EITC Supplement in 1990
- Any Supplement
- No Supplement

Map showing states with any EITC supplement in 1990.
Synthetic Control Approach

- For each state with an EITC supplement, a synthetic control state is created from those without a supplement

- Focus on state reforms:
  - Introduction of any state EITC supplement
  - Introduction of large state EITC supplements

- Match on pre-reform variables:
  - Match on outcomes in event years -5,...,-1
DiD Event Study

Specification:

\[ P_{st} = \sum_{j} \alpha_{j} \cdot Event_{j=t} + \beta \cdot Treat_{s} + \sum \gamma_{j} \cdot Event_{j=t} \cdot Treat_{s} + \nu_{st} \]

where \( Event_{j=t} \) are event time indicators and \( Treat_{s} \) is an indicator for being a treatment state

- The specification is run on a panel of states over an event window from -5 to +5
All State EITC Reforms
Treatment and Synthetic Control States (Conditional on Children)

Triple-Diff: With vs Without Children
Excluding Small State EITC Reforms
Treatment and Synthetic Control States (Conditional on Children)

Triple-Diff: With vs Without Children
Lessons: State EITC Supplements

- State EITCs create variation that does not rely on children
  - This avoids confounders that vary by children
  - But introduces confounders that vary by state
    → synthetic control approach

- Findings from state EITC reforms:
  - No evidence of any extensive margin effects
Stacked Event Studies
Stacked Event Studies

- Stack all state and federal reforms since 1975 → improves precision and identification

  - Compare single women with vs without children, except for the 2009 reform (3+ vs without children)

- Control for waivers and unemployment for the 1993 reform
Stacked Event Studies

Federal Reforms

Average effect = 1.48 (0.52, 2.45)

State Reforms

Average effect = 0.15 (-1.33, 1.63)

State and Federal Reforms

Average effect = 1.08 (0.26, 1.90)

State and Federal Reforms Adjusted for Pre-Trends

Average effect = 0.02 (-0.79, 0.84)
Conclusions
Conclusions

▶ The consensus view on the EITC and the extensive margin is fragile at best

▶ What happened with single mothers in America in the 1990s?
  ▶ A historic shift in the labor market equilibrium
  ▶ Not the EITC, but welfare reform aided by the strong economy

▶ Fits with behavioral ideas:
  ▶ EITC knowledge is very limited
  ▶ Welfare reform was very salient: Big debate, instant treatment, ordeals, enforcement

▶ Welfare culture/norms?
Appendix
Labor Force Participation of Single Women
With and Without Children
(Low Education)

All Educations

With Children
Without Children

Year
Participation (%)
50 60 70 80 90 100
68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18

85 / 169
Labor Force Participation of Single Women
With and Without Children
(Low Education)

50 years of relative stability, apart from these 5 years
Labor Force Participation of Single Women
With and Without Children
(Low Education)

50 years of relative stability, apart from these 5 years

Participation (%)

Year

All Educations
# Labor Force Participation of Single Women

## With and Without Children

### (Low Education)

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### Important Dates

- **Tax Reduction Act of 1975**
- TRA86
- OBRA90
- OBRA93
- ARRA

---

[Diagram showing labor force participation over time with and without children, highlighting key events and trends.]
Labor Force Participation of Single Women

With and Without Children

(Low Education)

Year

Participation (%)

50 60 70 80 90 100

With Children

Without Children

Tax Reduction Act of 1975

TRA86

OBRA90

OBRA93

PRWORA

ARRA

68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18

All Educations
Labor Force Participation of Single Women
With and Without Children
(Low Education)

Participation (%) with Children: 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100
Participation (%) without Children: 50, 60, 70, 80, 90, 100

Years: 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 00, 02, 04, 06, 08, 10, 12, 14, 16, 18

Key Events:
- Tax Reduction Act of 1975
- TRA86
- OBRA90
- OBRA93
- PRWORA
- ARRA

State Welfare Waivers

All Educations
Labor Force Participation of Single Women
With and Without Children
(Low Education)
Labor Force Participation of Single Women
By Number of Children
(Low Education)

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA

Participation (%)

Year
0 children
1 child
2 children
3+ children

All Educations
Labor Force Participation of Single Women

By Number of Children

(Low Education)

Much larger increase for those with 3+ kids

Year

68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18

Participation (%)

0 children 1 child 2 children 3+ children

All Educations
Labor Force Participation of Single Women
By Number of Children
(Low Education)

Year
0 children
1 child
2 children
3+ children

0 children
1 child
2 children
3+ children

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA

But no increase here for those with 3+ kids
Labor Force Participation of Single Women
By Number of Children
(Low Education)

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA

And no increase here either

Participation (%)
-1
-0.5
0
0.5
1
68
70
72
74
76
78
80
82
84
86
88
90
92
94
96
98
00
02
04
06
08
10
12
14
16
18

Year

0 children
1 child
2 children
3+ children
Labor Force Participation of Single Women

By Number of Children

(Low Education)

Increase for those with 1 kid, despite small EITC incentive.
Employment of Single Women
With and Without Children
(Weekly Employment)

Participation

Employment (%)

Year

With Children

Without Children

Participation

97 / 169
Employment of Single Women
With and Without Children
(Weekly Employment)

50 years of relative stability, apart from these 5 years

Employment (%)

Year

With Children
Without Children

Participation
Employment of Single Women
With and Without Children
(Weekly Employment)

50 years of relative stability, apart from these 5 years

Participation

14.8pp  17.3pp
Employment of Single Women
With and Without Children
(Weekly Employment)

Tax Reduction
Act of 1975

TRA86
OBRA90
OBRA93
ARRA

Employment (%)

Year

With Children
Without Children

Participation

100 / 169
Employment of Single Women
With and Without Children
(Weekly Employment)

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
PRWORA
ARRA

Participation

Employment (%)

Year

With Children
Without Children
Employment of Single Women
With and Without Children
(Weekly Employment)

Year
68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18

Employment (%) 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18

Unemployment Rate 40 50 60 70 80 90 4 6 8 10

Participation 103 / 169

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA
PRWORA

Employment (%)

State Welfare Waivers
Employment of Single Women
By Number of Children
(Weekly Employment)

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA

Employment (%) vs Year

Year
0 children 1 child 2 children 3+ children

Participation

Participation

104 / 169
Employment of Single Women
By Number of Children
(Weekly Employment)

Much larger increase for those with 3+ kids

Employment (%) of women in different years by number of children.
Employment of Single Women
By Number of Children
(Weekly Employment)

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA
But no increase here for those with 3+ kids

Employment (%)

Year

0 children
1 child
2 children
3+ children
### Employment of Single Women

**By Number of Children**

(Weekly Employment)

#### Tax Reduction Act of 1975

- Increase for those with 1 kid, despite small EITC incentive

#### Participation

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#### Year

- 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 00, 02, 04, 06, 08, 10, 12, 14, 16, 18

#### Participation

- Participation: 108 / 169
Employment of Single Women
With and Without Children
(Weekly Employment, Low Education)

Participation (All Educations)

Employment (%)

Year

With Children
Without Children
Employment of Single Women
With and Without Children
(Weekly Employment, Low Education)

50 years of relative stability, apart from these 5 years

Employment (%)

With Children
Without Children

Year

Participation (All Educations)

110 / 169
Employment of Single Women
With and Without Children
(Weekly Employment, Low Education)

With Children
Without Children

Participation (All Educations)

50 years of relative stability, apart from these 5 years

20.8pp
19.4pp
Employment of Single Women
With and Without Children
(Weekly Employment, Low Education)
Employment of Single Women
With and Without Children
(Weekly Employment, Low Education)

Participation (All Educations)
Employment of Single Women
With and Without Children
(Weekly Employment, Low Education)

Participation (All Educations)
Employment of Single Women
With and Without Children
(Weekly Employment, Low Education)

Participation (All Educations)

With Children
Without Children
Employment of Single Women
By Number of Children
(Weekly Employment, Low Education)

Participation (All Educations)
Employment of Single Women
By Number of Children
(Weekly Employment, Low Education)

Much larger increase for those with 3+ kids

Participation (All Educations)
Employment of Single Women
By Number of Children
(Weekly Employment, Low Education)

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA
But no increase here for those with 3+ kids

30 40 50 60 70 80
0 children

Employment (%)

-1 -0.5 0 0.5 1
68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18
Year
0 children 1 child 2 children 3+ children

Participation (All Educations)
Employment of Single Women
By Number of Children
(Weekly Employment, Low Education)

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- Tax Reduction Act of 1975
- OBRA90
- OBRA93
- ARRA

And no increase here either

Employment (%)

Participation (All Educations)
Employment of Single Women
By Number of Children
(Weekly Employment, Low Education)

Tax Reduction Act of 1975
TR86 OBRA90 OBRA93 ARRA
Increase for those with 1 kid, despite small EITC incentive

Employment (%)
-1 -0.5 0 0.5 1

68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18
Year

0 children 1 child 2 children 3+ children

Participation (All Educations)
Employment of Single Women
With and Without Children
(Annual Employment)
Employment of Single Women
With and Without Children
(Annual Employment)

50 years of relative stability, apart from these 5 years

Employment (%)

Year
With Children
Without Children

Weekly Participation
Employment of Single Women
With and Without Children
(Annual Employment)

50 years of relative stability, apart from these 5 years

Employment (%)

With Children
Without Children

Weekly Participation
Employment of Single Women
With and Without Children
(Annual Employment)

Weekly Participation

Employment (%)

Year

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA
Employment of Single Women
With and Without Children
(Annual Employment)

Employment (%)

Year
With Children
Without Children

Weekly Participation

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
PRWORA
ARRA
Employment of Single Women
With and Without Children
(Annual Employment)

With Children
Without Children

Weekly Participation

State Welfare Waivers

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
PRWORA
ARRA

Employment (%)

Year

50 60 70 80 90 100

67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 05 07 09 11 13 15 17

Weekly Participation
Employment of Single Women
With and Without Children
(Annual Employment)

Weekly Participation
Employment of Single Women
By Number of Children
(Annual Employment)
Employment of Single Women

By Number of Children
(Annual Employment)

Much larger increase for those with 3+ kids

Weekly Participation
Employment of Single Women
By Number of Children
(Annual Employment)

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA
But no increase here for those with 3+ kids

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Weekly Participation

130 / 169
Employment of Single Women
By Number of Children
(Annual Employment)

Weekly Participation

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
PRWORA
ARRA
And no increase here either
Employment of Single Women
By Number of Children
(Annual Employment)

Increase for those with 1 kid, despite small EITC incentive.

Weekly Participation
Employment of Single Women
With and Without Children
(Annual Employment, Low Education)

Weekly Participation (All Educations)
Employment of Single Women
With and Without Children
(Annual Employment, Low Education)

50 years of relative stability, apart from these 5 years

Weekly Participation (All Educations)
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Weekly Participation (All Educations)
Employment of Single Women
By Number of Children
(Annual Employment, Low Education)

Tax Reduction Act of 1975
TRA86
OBRA90
OBRA93
ARRA

Employment (%)

0 children
1 child
2 children
3+ children

Weekly Participation (All Educations)
Employment of Single Women
By Number of Children
(Annual Employment, Low Education)

Much larger increase for those with 3+ kids

Weekly Participation (All Educations)
Employment of Single Women
By Number of Children
(Annual Employment, Low Education)

40 50 60 70 80 90
Employment (%)

-1 -0.5 0 0.5 1

68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12 14 16 18
Year

0 children 1 child 2 children 3+ children

But no increase here for those with 3+ kids

Weekly Participation (All Educations)
Employment of Single Women
By Number of Children
(Annual Employment, Low Education)

And no increase here either

Weekly Participation (All Educations)
Employment of Single Women
By Number of Children
(Annual Employment, Low Education)

Increase for those with 1 kid, despite small EITC incentive
Employment of Single Women
With Demographic Controls

1975 Reform

1986 and 1990 Reforms

1993 Reform

2009 Reform

No Controls
Labor Force Participation of Single Women
With Demographic Controls

1975 Reform

1986 and 1990 Reforms

1993 Reform

2009 Reform

Impact on Participation (pp)

Year

With vs Without Children

Employment (No Controls)
Annual Employment of Single Women
With Demographic Controls

1975 Reform

1986 and 1990 Reforms

1993 Reform

2009 Reform

Employment (No Controls)
Employment of Single Women
DiD by Number of Children (With Demographic Controls)

Year
1 vs 0 Kids
2 vs 0 Kids
3 vs 0 Kids
4+ vs 0 Kids

Impact on Employment (pp)
OBRA93
PRWORA
-10
0
10
20
30

No Controls

148 / 169
Labor Force Participation of Single Women
DiD by Number of Children

Impact on Participation (pp)

Year

OBRA93 PRWORA

1 vs 0 Kids
2 vs 0 Kids
3 vs 0 Kids
4+ vs 0 Kids

Employment
Labor Force Participation of Single Women
DiD by Number of Children (With Demographic Controls)

Impact on Participation (pp)

Year

1 vs 0 Kids
2 vs 0 Kids
3 vs 0 Kids
4+ vs 0 Kids

Employment (No Controls)
Extensive Margin Elasticities Ignoring Confounders
With Demographic Controls

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<td>0.077</td>
<td>0.606</td>
<td>0.113</td>
<td>1.8</td>
</tr>
<tr>
<td>1 Child</td>
<td>0.338</td>
<td>0.034</td>
<td>0.680</td>
<td>0.079</td>
<td>2.2</td>
</tr>
<tr>
<td>2 Children</td>
<td>0.280</td>
<td>0.105</td>
<td>0.610</td>
<td>0.124</td>
<td>1.4</td>
</tr>
<tr>
<td>3 Children</td>
<td>0.192</td>
<td>0.124</td>
<td>0.474</td>
<td>0.164</td>
<td>2.3</td>
</tr>
<tr>
<td>4+ Children</td>
<td>0.067</td>
<td>0.159</td>
<td>0.300</td>
<td>0.211</td>
<td>4.1</td>
</tr>
</tbody>
</table>
### Distribution of Predicted Earnings and Tax Rates

<table>
<thead>
<tr>
<th>Earnings</th>
<th>Predicted Earnings Participation Tax Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.05</td>
</tr>
<tr>
<td>10000</td>
<td>0.1</td>
</tr>
<tr>
<td>20000</td>
<td>.05</td>
</tr>
<tr>
<td>30000</td>
<td>.1</td>
</tr>
<tr>
<td>40000</td>
<td>.15</td>
</tr>
<tr>
<td>50000</td>
<td>.2</td>
</tr>
<tr>
<td>60000</td>
<td>.283</td>
</tr>
</tbody>
</table>

#### Predicted Earnings

- **First EITC Kink:**
  - Earnings: 0
  - Fraction: 0.05
- **Second EITC Kink:**
  - Earnings: 10000
  - Fraction: 0.05
- **EITC Exhaustion:**
  - Earnings: 20000
  - Fraction: 0.1

#### Participation Tax Rates

- Mean = 0.283
Employment of Single Women
Actual DiD vs Simulated Responses (Any Children)
(With Demographic Controls)

Explained by EITC: 17%
$\varepsilon = .3$

No Controls
Employment of Single Women
Actual DiD vs Simulated Responses (by Family Size)
(With Demographic Controls)

1 vs 0 Children

2 vs 0 Children

3 vs 0 Children

4+ vs 0 Children

No Controls
Event Study of Employment-Welfare Rate
With vs Without Children

Youngest Child 0-7

Youngest Child 8-18

All Ages
Event Study of Employment-Welfare Rate
With 1 vs 0 Children

Youngest Child 0-7

Youngest Child 8-18

All Ages
Event Study of Employment-Welfare Rate
With 2 vs 0 Children

Youngest Child 0-7

Youngest Child 8-18

All Ages
Event Study of Employment-Welfare Rate
With 3+ vs 0 Children

Youngest Child 0-7

Youngest Child 8-18

All Ages
Employment of Single Women
Varying the Outcome and Sample

Employment, All (Baseline)

Employment, Low-Educated

Participation, All

Participation, Low-Educated

Baseline
Employment of Single Women
By Number of Children

With vs Without Kids (Baseline)

With 1 vs 0 Kids

With 2 vs 0 Kids

With 3+ vs 0 Kids

Baseline
Employment of Single Women
Varying the Specification of Waiver Controls

Baseline

Six Separate Waiver Indicators

Using Date of Implementation

Post-Waiver Indicator
Employment of Single Women
Controlling Only for Welfare Waivers

Baseline

Six Separate Waiver Indicators

Using Date of Implementation

Post-Waiver Indicator

Baseline
All State EITC Reforms
Treatment and Synthetic Control States (With vs Without Children)

Impact on Employment (pp) vs Year

- Treated States
- Synthetic Control States

Graph showing the impact on employment (in percentage points) for treated and synthetic control states over different years after an EITC reform.
Stacked Event Studies

Low-Education

Federal Reforms

Average effect = 1.60 (0.24, 2.96)

State Reforms

Average effect = 1.37 (-1.10, 3.85)

State and Federal Reforms

Average effect = 1.24 (0.03, 2.44)

State and Federal Reforms

Adjusted for Pre-Trends

Average effect = -0.30 (-1.50, 0.90)
A Picture Is Worth A Thousand Words
Use of “Welfare Queen”

Fraction of Bigrams (x 1 Million)

Year

OBRA93 PRWORA

0.01 0.02 0.03 0.04

0 0.01 0.02 0.03 0.04
Use of “Undeserving Poor” and “Deserving Poor”

![Graph showing the fraction of bigrams for undeserving and deserving poor over years with markers for OBRA93 and PRWORA]

- Undeserving Poor
- Deserving Poor

Year: 1970 to 2008

Fraction of Bigrams (x 1 Million)