Single Mothers, the Earned Income Tax Credit and the Child Tax Credit: Insurance Without Disincentives?

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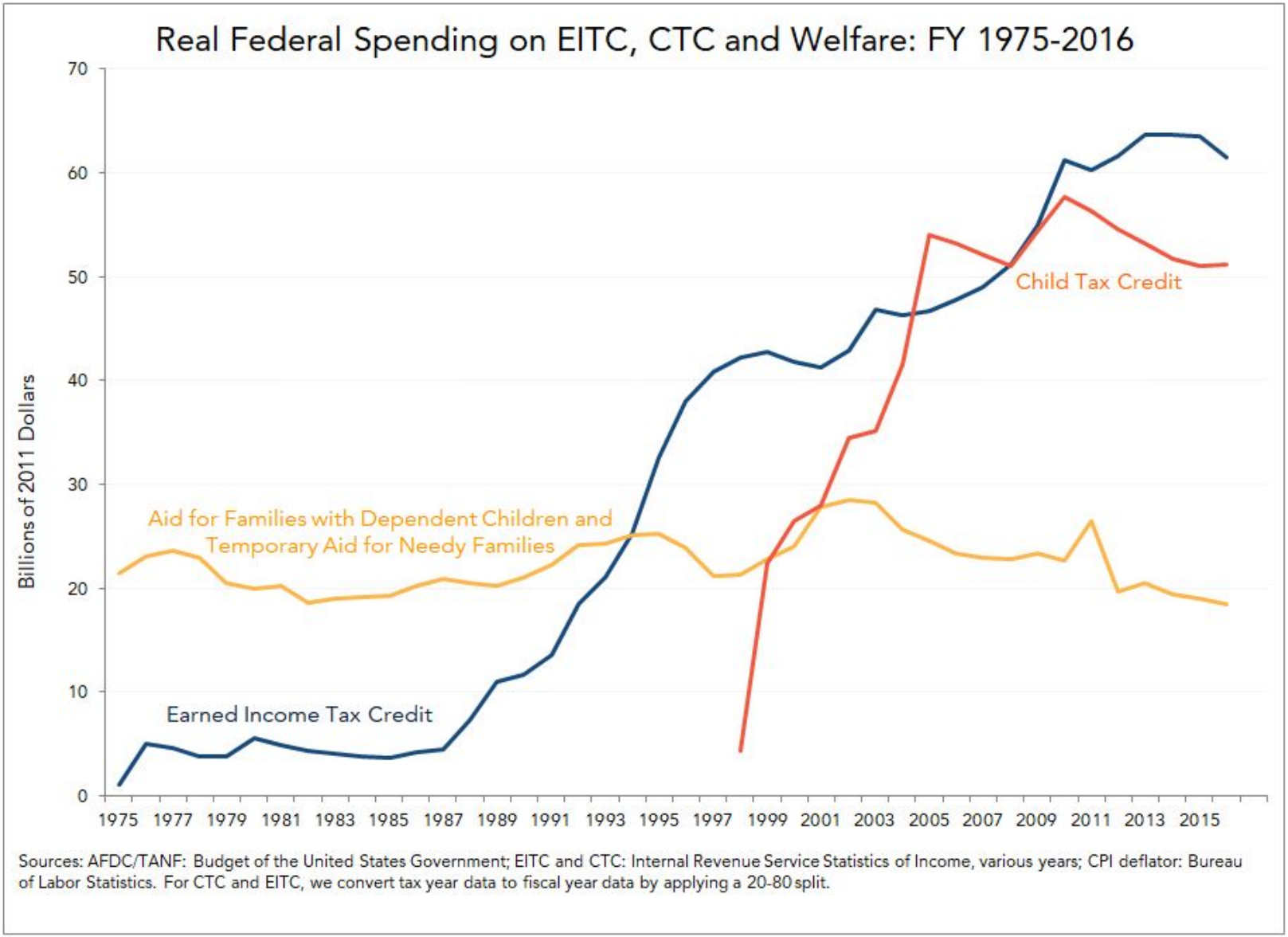
Spending on U.S.Safety Net



Motivation

Motivation:

- The Earned Income Tax Credit (EITC) is a tax credit that targets low-income working families in the United States
- The Child Tax Credit (CTC) targets a larger range of households: 40 percent goes to households with income > $100K
- EITC: $60B to 25 million households in 2020
- CTC: $118B to 48 million households in 2020 (more than doubled since 2016)
- Eligible only if have 'earned' income
- Credits increase with number of children
- Distributed through income tax process

Motivation

Background of the EITC:

- Began in 1975
- Welfare-to-work: major expansion in 1990, 2001 and 2009

Background of the CTC:

- Began in 1998, major expansion in early 2000s (max credit of $500 per child)
- Then again in 2012 ($1,000), in 2018 ($2,000), and 2021 ($3,000 - $3,600 for one year)

Both receive bi-partisan support

De-facto wage insurance schemes

Our focus: low-income/low-skilled single mothers

Research Question:

- What is the role of the EITC and CTC as *insurance* programs?

Innovation

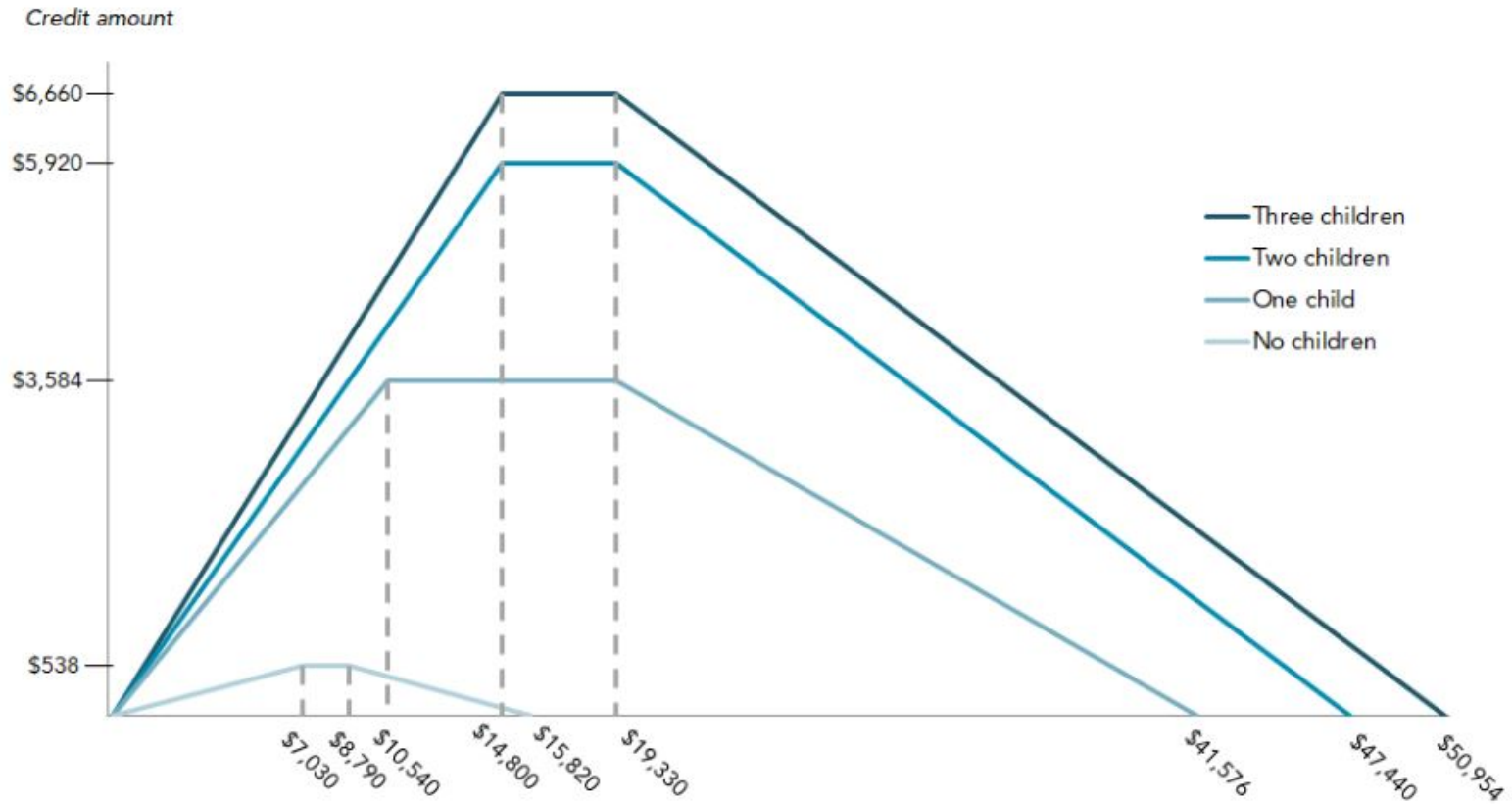
Why study the insurance dimension of EITC and CTC?

- Because their structures provide wage insurance; protects against idiosyncratic risk for a broad set of households
- Because dependents are costly, and ex-ante, not known with certainty (custody, divorce, unplanned)
- Because recipients have poor self-insurance capacity; start with low wealth, don't have time to accumulate buffer stocks of assets

Innovation:

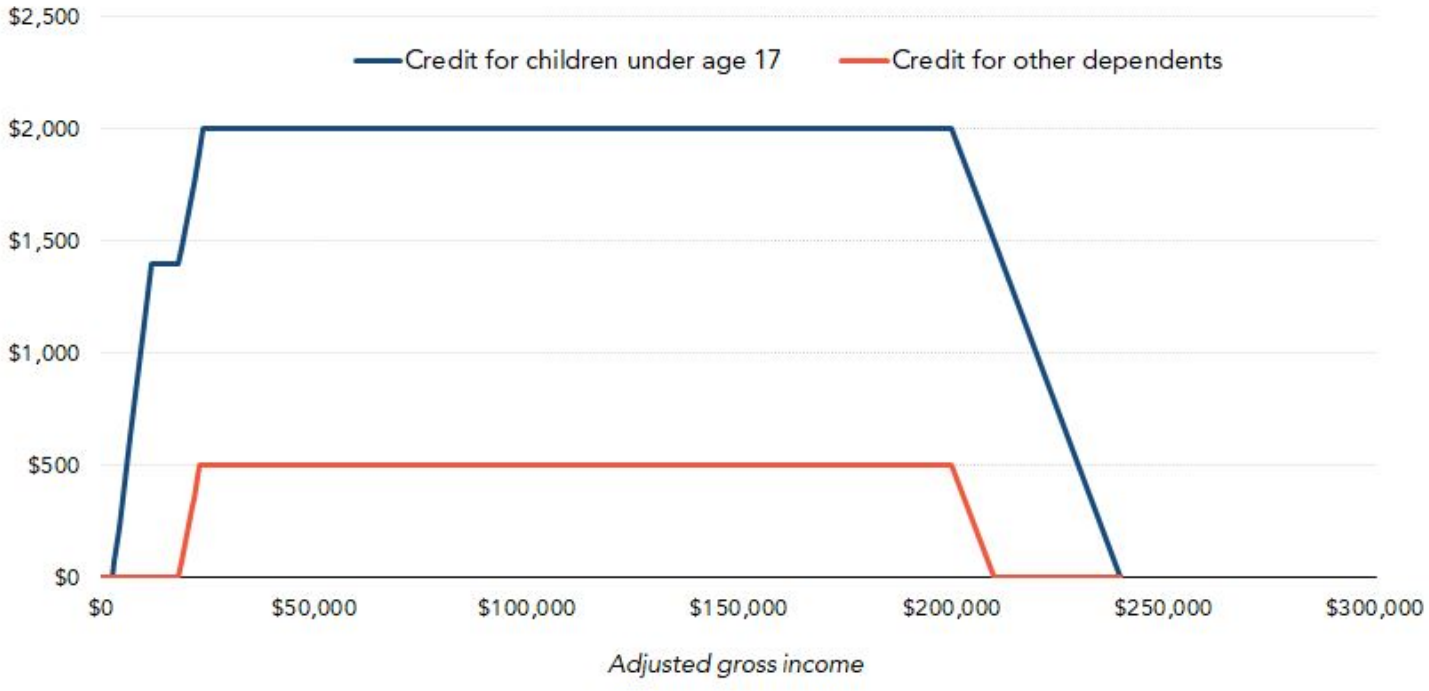
- Substantive: First paper to study the insurance role of the EITC and CTC
- Technical: First dynamic model of EITC and CTC with risk and (limited) self-insurance

EITC Structure 2020, Single parent



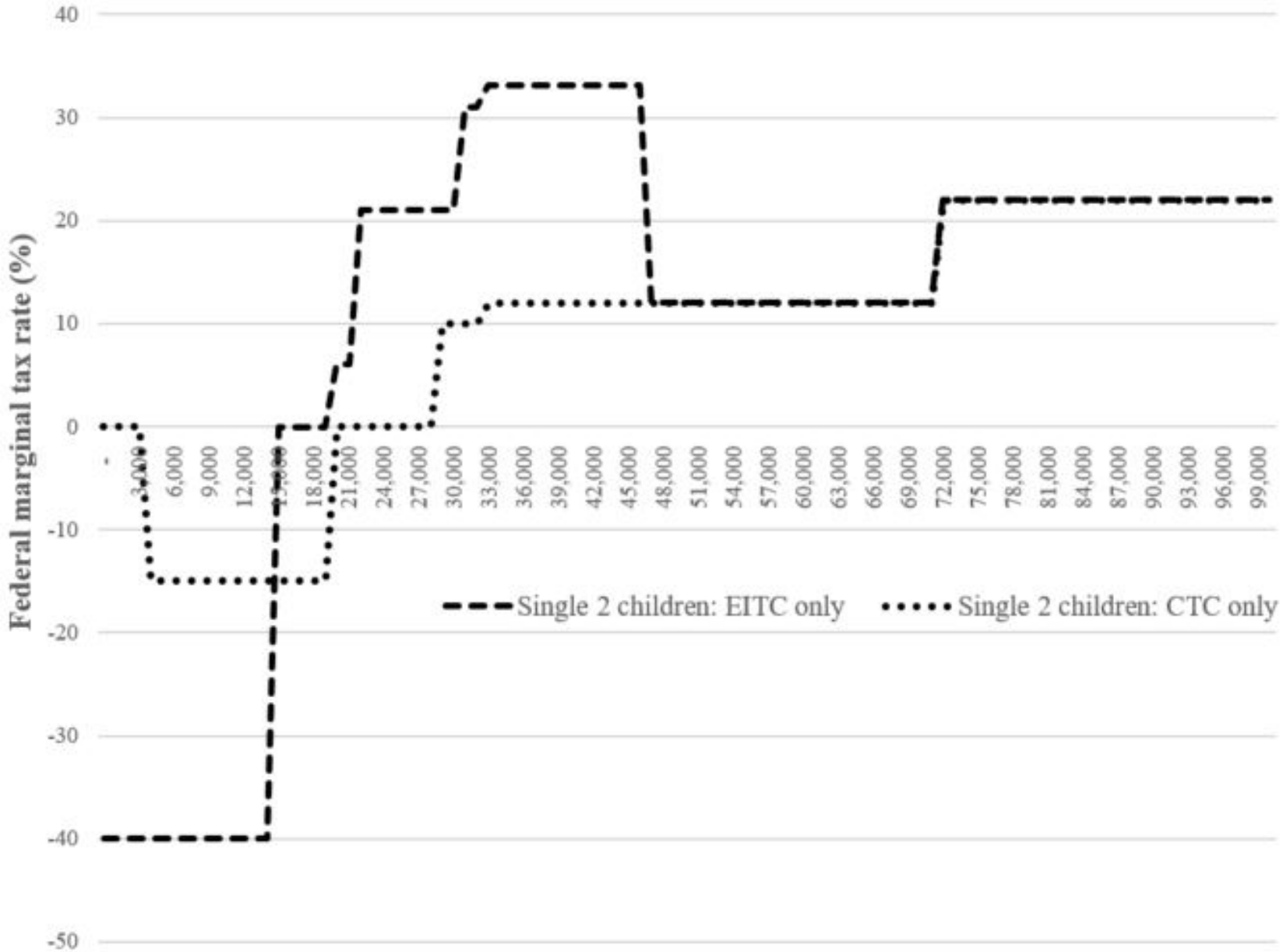
Source: Urban-Brookings Tax Policy Center (2020). Internal Revenue Procedure 2019-44, Internal Revenue Service.
Notes: Assumes all income comes from earnings. Amounts are for taxpayers filing a single or head-of-household tax return. For married couples filing a joint tax return, the credit begins to phase out at income $5,890 higher than shown.

CTC Structure 2020, Single parent with one child

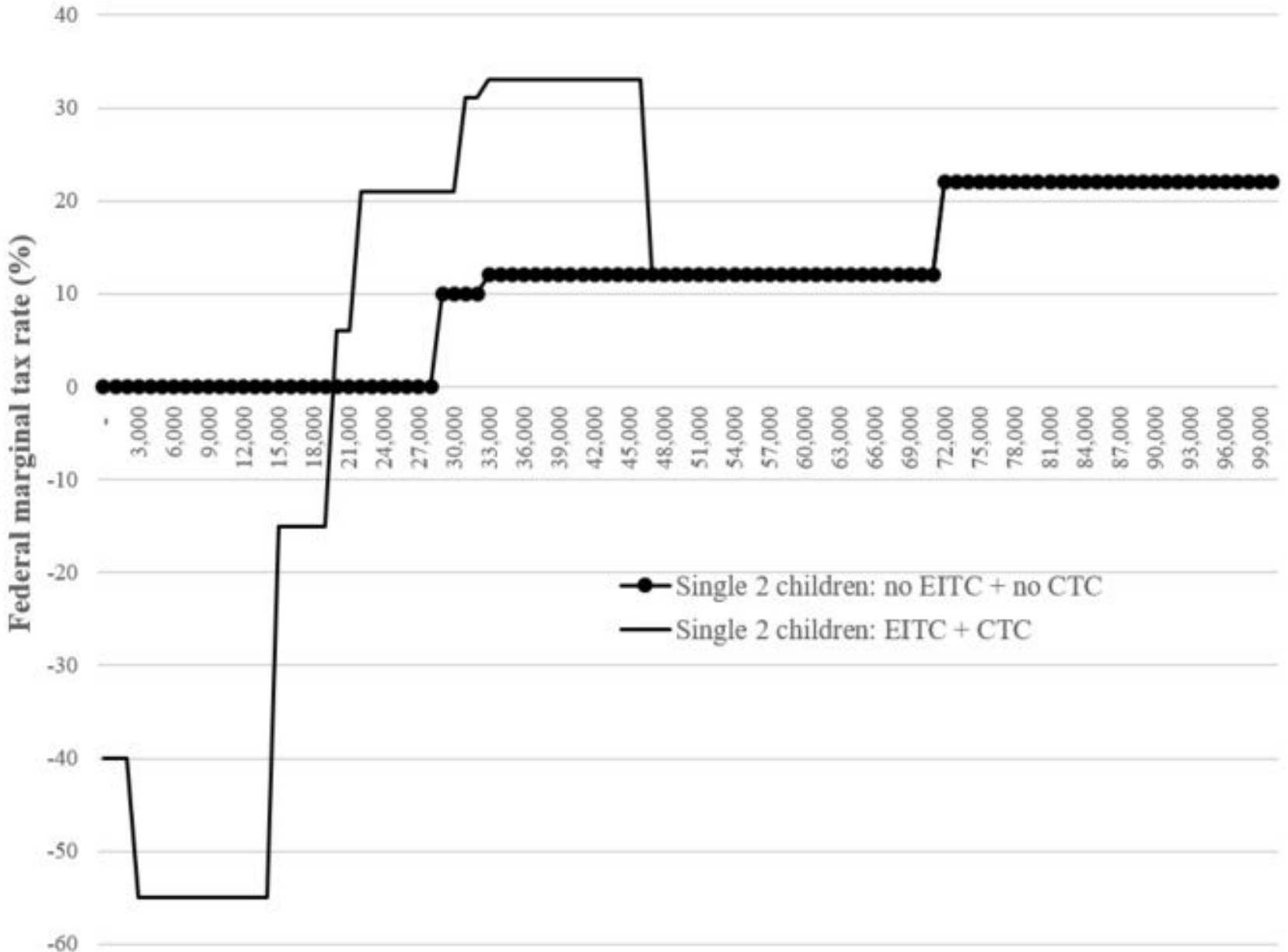


Source: Urban-Brookings Tax Policy Center calculations.
Notes: Assumes all income comes from earnings, and child meets all tests to be a CTC-qualifying dependent. Credit for married parents begins to phase out at $400,000 of income. Only citizen children qualify for the $2,000 CTC for children under 17. Noncitizens under age 17 who meet the dependency tests of eligibility can qualify for the credit for dependents over age 17.

Marginal Tax Rates with EITC and CTC, 2019



Marginal Tax Rates, 2019



Profile of EITC Recipients

- Average income of EITC recipients in 2019: $37,490
- For households with two children, the EITC and CTC can represent more than 35% of income or more
- Characteristics of EITC recipients (from 2019 CPS):

	EITC Recipients	non-EITC Recipients
% Single	56.6%	41.3%
% Women	62.7%	50.4%
% HS Degree or Less	54.9%	36.6%
% Have Children	74.5%	45.6%
Average Wage/Salary	$37,490	$96,737

- We focus on young unskilled single mothers (those without a college education, age 25-44)

Intuition

- Extensive margin of labor supply:
  - The EITC and CTC should both increase labor market participation
- Intensive margin:
  - Ambiguous for EITC. Hours should increase for very low income households (when credit is big), fall as income rises (when credit is being phased-out)
  - Mostly income effect for CTC
- Empirical evidence: EITC increased labor force participation for single mothers; very little work on CTC
- Labor supply near borrowing constraints:
  - Risk + borrowing constraints mean wealth-poor single mothers "have to work"

Overview of Findings

In a dynamic, life-cycle model with wage-risk, 'dependent'-risk and borrowing constraints, we find that ....

- The EITC and CTC are important insurance mechanisms for low-income single mothers:
  - Increase consumption and savings
  - Insure against productivity (or wage) risk: reduces consumption volatility by 6 percentage points
  - Insure against demographic risk (ie, number of children)
- The EITC and CTC have important effects on labor supply:
  - Labor force participation significantly decreases without either tax credit (extensive margin)
  - Hours worked increases without either tax credit (intensive margin)

Related Literature

- Low-income households face significant wage risk:
  Huggett, Ventura & Yaron (2011); Ozkan, Guvenen & Song (2012)
- Low-income households do not borrow much, and many are credit-constrained:
  Jappelli (1990); Hubbard, Skinner & Zeldes (1995)
- Low-income households close to their credit constraint work a lot to smooth consumption:
  Pijoan-Mas (2006); Athreya (2008)
- The empirical labor supply response of the EITC is mixed:
  Hotz & Scholz (2003); Eissa and Hoynes (2006); Dickert, Houser & Scholz (1995); Eissa and Leibman (1996)
- Family size is a shock to individuals:
  Cubeddu and Rios-Rull (2002)

Recent Literature

- Studies that consider dynamic effects of EITC
  - Chan (2013)
    - Explains the rise in female labor market participation during the 1990's due to macroeconomy, welfare reform and EITC
  - Blank (2012):
    - Stresses the effects of EITC on the transitions to part-time and full-time work
  - Bitler, Hoynes & Kuka (2014):
    - EITC as an effective safety net during recessions (insurance against aggregate risk)
  - Huff Stevens, East and Schaller (2020):
    - Single-female headed households have extremely persistent ETIC eligibility
- Very little work on CTC
  - Recent exception: Goldin and Michelmore (2020); the poorest households are not eligible for CTC

Environment

- All agents are unskilled (with no college education)
- Finitely-lived agents value consumption (c) and leisure (l) with CRRA preferences
  - Agents work for 47 years, then retire (model period is one year)
- Borrowing constraint in each period j:

$$x_{j+1} \geq \underline{x}. \tag{1}$$

- Demographic shocks:
  - All households are childless for first 6 years
  - In year 7, households receive demographic shock (# of dependents): $i \in \{1, 2, 3\}$
  - Children live with the parent until they become independent adults (for 18 years)

Wages, Taxes and Transfers

- Wage shocks at age j:

$$\ln w_j = \mu_j + z_j + u_j$$

  - μ_j: age-specific mean of log female unskilled wages
  - z_j: persistent shocks
  - u_j: transitory shocks

Optimization

- Agent's problem at age j:

$$\max_{(\{c_j,l_j\},x_R)\in\Pi(\Psi_0)} E_0 \sum_{j=1}^{47} \beta^j \left(\frac{\left(\frac{c_j}{ES_j}\right)^{1-\sigma}-1}{1-\sigma} + \lambda\frac{l_j^{1-\eta}-1}{1-\eta}\right) + \phi(x_R) \quad (2)$$

where ES_j is the age-specific equivalence scale, $\lambda > 0$ is the weight of leisure, and x_R is wealth at retirement.

- Budget constraint:

$$c_j + \frac{x_{j+1}}{R} \leq w_j(1-l_j)(1-\tau(y_j)) + x_j + \tau_{welf}$$

$$x_{j+1} \geq \underline{x}$$

where $\tau(y_j)$ is the tax rate.

Optimization continued

- Agents have access to a safety net that guarantees a minimum level of consumption $\overline{c}$.
- Hence, agents receive "welfare":

$$\tau_{welf} = \max[\overline{c}ES_j - x_j - w_j(1 - l_j)(1 - \tau(y_j)), 0]$$

  and $\overline{c}$ is a consumption floor per adult-equivalent.
- Households realize the number of children $N_{c,j} \in \{0, 1, 2, 3\}$ at age j.
- Problem is solved recursively: discretized, Monte Carlo simulations, compute moments of distributions for decision rules

Key Model Parameters

- Marginal tax rates with EITC and CTC as of 2019 with tight borrowing constraint ($\underline{x} = 0$)
- Coeff of relative risk aversion $\alpha = 2$
- Coeff of relative aversion with respect to leisure $\eta = 2.65$
- Coeff of relative aversion with respect to consumption $\sigma = 1.64$
- Risk free rate of 2 percent
- Minimum consumption floor varies by children ($6,700 - $20,000)
- Mean of log earnings by age (using CPS data)
  - Calibrated to match labor force participation rates for each household type

Model vs Data

		1 kid	2 kids	3 kids
Labor force participation rate	Model	0.732	0.696	0.667
	Data	0.749	0.727	0.670
EITC Participation Rate	Model	0.636	0.604	0.628
	Data	0.574	0.612	0.622
Hours worked, if hours>0	Model	1,446	1,479	1,387
	Data	1,340	1,265	1,143
Median Wage, EITC Recipients	Model	$13.28	$12.08	$11.39
	Data	$12.50	$12.00	$10.72

- Parameterization does quite well but LFP a little low, hours a little high

Experiment 1: All Credits vs No Credits

- Counterfactual experiment: EITC and CTC are completely eliminated
- Same environment but the income tax schedule (in 2019) will not include the EITC or CTC
- Long-run steady state analysis
  - Outcomes reflect the decisions of a cohort whose members have used decision rules that reflect the absence of EITC and CTC for their entire lives
- Inherently different analysis than empirical strategies (which exploit cross-state or time-series variation)

Experiment 1: All Credits vs No Credits

		1 kid	2 kids	3 kids
Labor force participation	All credits	0.732	0.696	0.667
	No credits	0.629	0.432	0.307
Hours worked	All credits	1,446	1,479	1,387
	No credits	1,523	1,555	1,470
Assets	All credits	$2,635	$2,198	$2,692
	No credits	$1,995	$1,664	$2,039
Consumption	All credits	$24,912	$25,208	$24,779
	No credits	$23,372	$21,879	$22,328

- Credits increase LFP, decrease hours, and increase savings and consumption for all household types

Experiment 1: All Credits vs No Credits

- Punchline so far:
  - EITC and CTC increase labor force participation rates of unskilled single mothers (by 10 - 36 percentage points)
  - Mean hours worked fall (by 5-6 percent)
  - Households save more with the EITC/CTC and consume more
  - Nothing too surprising here

Insurance Role of Tax Credits

- The EITC and CTC insure against productivity risk:
  - Mean consumption and standard deviation (SD) increase, but mean increases more
  - Coefficient of variation (CV) decreases

Single mothers with 2 children		**Mean**	**SD**	**CV**
Consumption	All credits	25,208	10,320	**0.410**
	No credits	21,879	9,732	**0.470**

- With the EITC and CTC, consumption volatility decreases by 6 percentage points
- EITC alone reduces standard deviation in consumption

Experiment 2: Cut welfare

Reduce minimum consumption floor by one-half (from $16,000 to $8,000 for mother with two children)

Single mothers 2 kids		**Full welfare**	**Half welfare**
Labor force part	All credits	0.696	0.968
	No credits	0.432	0.906
Hours worked	All credits	1,479	1,519
	No credits	1,555	1,625
Assets	All credits	$2,198	$4,979
	No credits	$1,664	$4,876
Consumption	All credits	$25,208	$25,279
	No credits	$21,879	$21,096

Experiment 2: Cut welfare

- Cutting welfare makes single mothers work a lot: LFP at 97% with credits!
- Eliminating credits does the same but quantitatively not as large of effects of cutting welfare.
- Cutting welfare motivates mores savings.
- Credits are more important for consumption.

Experiment 3: All Credits vs 1 Credit vs No Credits

Isolate role of tax credits: consider EITC only vs CTC only

Single mothers 2 kids	**All credits**	**EITC**	**CTC**	**No credit**
Labor force participation	0.696	0.679	0.570	0.432
Hours worked	1,479	1,473	1,547	1,555
Assets	$2,198	$2,111	$1,664	$1,664
Consumption	$25,208	$23,690	$23,167	$21,879

- EITC is important for labor market effects (both extensive and intensive margins)
- CTC also has some important labor market effects on the extensive margin only
- EITC encourages savings, CTC does not
- Getting both credits is super important for consumption; one credit helps but both credits are highly valuable

Conclusion

- The EITC and CTC provide insurance against wage (or productivity) risk for single mothers by increasing mean consumption and lowering consumption volatility.
- The EITC and CTC insure households against demographic risk (ie, having children).
- More single mothers enter the labor market due to EITC mostly and CTC (to some extent).
- Both the EITC and CTC are important for this group, but for different reasons!
    - Labor market vs consumption/savings

Extensions

- Consider recent changes to CTC and EITC as a result of stimulus packages
- Consider a more expansive EITC for childless earners

Thank you!

Questions/Comments?

Value Function

The following problem is solved recursively:

$$V(N_{c,j}, j, x_j, z_j, u_j) = \max_{x_{j+1}, l_j, c_j} \left(\frac{\left(\frac{c_j}{ES_j}\right)^{1-\sigma} - 1}{1-\sigma} + \lambda \frac{l_j^{1-\eta} - 1}{1-\eta} \right)$$
$$+ \beta E_{z_{j+1}|z_j} V(N_{c,j+1}, j+1, x_{j+1}, z_{j+1}, u_{j+1})$$

subject to

$$c_j + \frac{x_{j+1}}{R} \leq w_j(\bar{l} - l_j)(1 - \tau(y_j)) + x_j + \tau_{welf} \tag{3}$$

$$x_{j+1} \geq \underline{x}$$

and

$$\bar{l} - l_j \leq \overline{h}_j$$

Parameterization/Model Solution

- Demographic shocks:
  - 26.6% of unskilled single women have no children, 24.4% have one child, 25.8% have two children and 23.1% have three or more children
  - Average age at first child is 25
- Grid:
  - Wages: 15 values of persistent shock and 7 values for transitory shock
  - Labor supply: discretized so that individuals may choose labor supply within 10 hours per year (120 grid points)
  - Assets: 400 grid points (0,$1M)
- Monte Carlo simulation
  - 100,000 agents
  - Compute moments of distributions for decision rules