14.03/003 Micro Theory & Public Policy, Fall 2025

Lectures 7 & 8. Individual Demand: Income Effects, Substitution Effects, and Labor Supply

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Revised September 29, 2025

Today

1. Why so many in-kind transfers?
2. Review: Income and substitution effects
3. Income effects, substitution effects, and labor supply

Why Is So Much Redistribution In-Kind and Not in Cash? Evidence from a Survey Experiment

Zachary Liscow and Abigail Pershing

PDF | PDF PLUS | Abstract | Full Text | Supplemental Material

Abstract

Economists often point to the superiority of cash over in-kind transfers as a means of redistribution because recipients can choose how to use these resources. However, among the trillions of dollars of annual US transfers, redistribution is mostly in-kind. We conducted a survey experiment to help explain why.

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Liscow and Pershing survey sample

Table A1. Survey Demographics: Survey Percentages and Test of Difference with US Population

	US Population	Treatment				Yale Sample
		Control	Economics	Rights	Poor Spending	
Age						
18-34	30	30 (0.98)	30 (0.81)	30 (0.95)	29 (0.63)	98 (0.00)
35-44	16	17 (0.55)	17 (0.84)	16 (0.85)	16 (0.82)	2 (0.00)
45-54	16	17 (0.92)	16 (0.98)	16 (0.80)	17 (0.95)	0 (0.00)
55-64	17	17 (0.88)	17 (0.97)	16 (0.84)	18 (0.43)	0 (0.00)
65+	21	20 (0.59)	21 (0.92)	22 (0.52)	20 (0.95)	0 (0.00)
Race						
White	60	58 (0.31)	61 (0.65)	61 (0.64)	62 (0.45)	63 (0.48)
Hispanic/Latino	18	20 (0.05)	18 (0.92)	18 (0.80)	17 (0.76)	16 (0.19)
Black	12	12 (0.98)	12 (0.85)	12 (0.88)	11 (0.99)	5 (0.01)
Asian/Pacific Islander	6	6 (0.42)	6 (0.90)	6 (0.61)	6 (0.94)	11 (0.00)
Other	4	3 (0.00)	3 (0.09)	4 (0.23)	4 (0.12)	5 (0.11)
Gender						
Female	51	50 (0.72)	51 (0.83)	51 (0.84)	49 (0.31)	57 (0.00)
Income						
Under $25,000	19	19 (0.72)	19 (0.95)	19 (0.84)	19 (0.77)	6 (0.00)
$25,000-$50,000	21	21 (0.94)	21 (0.91)	21 (1.00)	21 (0.72)	4 (0.00)
$50,000-$75,000	17	17 (0.93)	17 (0.92)	17 (0.88)	17 (0.85)	8 (0.00)
$75,000-$100,000	13	13 (0.68)	13 (0.80)	13 (0.88)	12 (0.91)	9 (0.07)
$100,000+	30	30 (0.90)	30 (0.96)	30 (0.87)	31 (0.87)	72 (0.00)
Political affiliation						
Republican	28	28 (0.99)	28 (0.99)	27 (0.74)	29 (0.70)	5 (0.00)
Democrat	29	30 (0.70)	29 (0.91)	30 (0.48)	28 (0.61)	80 (0.00)
Independent	41	40 (0.49)	41 (0.97)	40 (0.67)	40 (0.58)	9 (0.00)
Education						
HS graduate or less	40	36 (0.00)	37 (0.10)	36 (0.07)	40 (0.87)	1 (0.00)
Some college+	60	64 (0.00)	63 (0.10)	63 (0.07)	60 (0.87)	99 (0.00)
Sample Size		1029	505	519	527	184

Preference question: Cash versus in-kind transfers?

Please consider the following program that the federal government is considering permanently adopting to help low-income Americans. The program would be funded by an across-the-board income-tax rate increase.

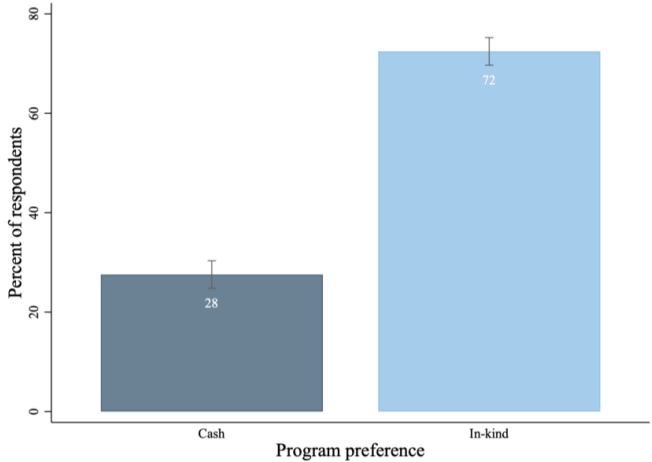
Figure A-1

Benefit Offered	Every year, each American below the poverty line receives $2,000, in a separate account, that can be used to pay for healthcare, housing, and food costs only.
Total Cost	$2,000 per year per American below the poverty line.

Figure A-2

Benefit Offered	Every year, each American below the poverty line receives $2,000 in cash to spend on whatever they choose.
Total Cost	$2,000 per year per American below the poverty line.

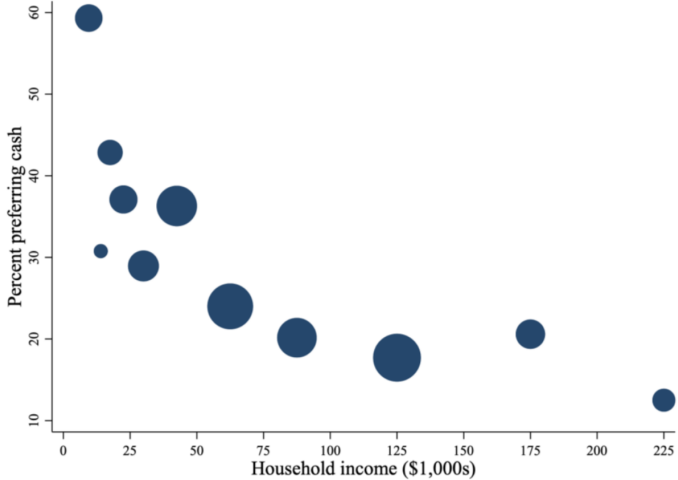
Figure 1. Preference Between Cash and In-Kind Programs – General Population



Notes: The figure shows the percent of respondents preferring each of the cash and in-kind programs, when respondents are asked to choose between them. The thin bars mark 95 percent confidence intervals. Data are from control survey.

Liscow & Pershing,2022

Figure A3. Preference for Cash by Income – General Population



Notes: This figure illustrates the percent preferring cash in each income bracket. Marker size is proportional to the number of observations in the income bracket, and markers are located at the midpoint of each income bracket. The coefficient of this regression is -0.16 with standard error = 0.02 (-12.53 and 1.71 respectively when using log(income)). Data are from the control survey.

Subjective beliefs question: How do the poor spend their money?

How Respondents Think the Poor Spend Money [asked in all but the below-poverty survey]

41. What percent of a cash benefit from the government do you think Americans below the poverty line would spend on necessities? Please assume that "necessities" means housing, transportation, food at home, clothing, utilities, healthcare, and education.

    Slider from 0 to 100

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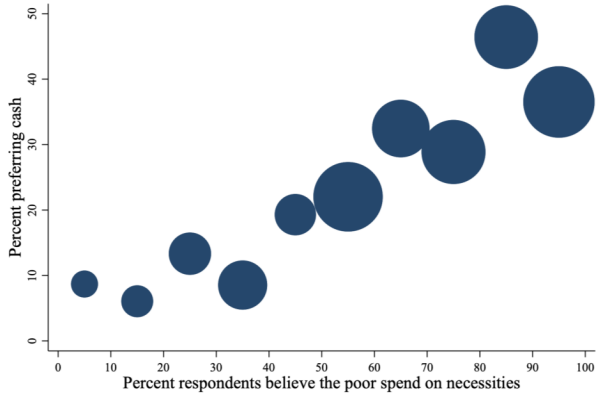
Those who believe the poor spend money on necessities favor cash

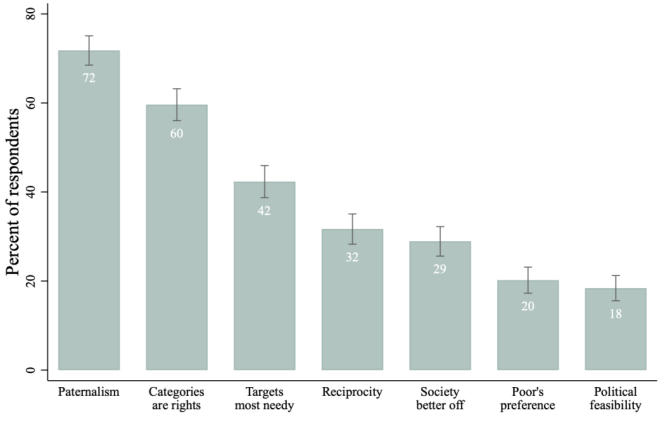
Figure 2. Relationship Between Program Preference and Perception of the Poor's Spending Habits – General Population



Notes: This graph shows the preference for the cash program, by respondents' perception of how much out of a cash transfer the poor would spend on necessities. Marker size is proportional to the number of observations in each decile of perceived spending on necessities. The coefficient from the regression of preferring cash on perceived spending is 0.42 (SE = 0.05). Data are from control survey.

Modal reason for opposing cash: Paternalism

Figure 3.a. Reasons Given for Preferring In-Kind – General Population



Notes: This figure shows the percentage of respondents who selected each reason for preferring in-kind, by order of popularity. "Other (please specify)" was also displayed as an option; it was chosen by 3 percent of respondents. The thin bars mark 95 percent confidence intervals. Observations are respondents preferring in-kind in the control survey.

pa·ter·nal·ism | pəˈtərn(ə)lˌizəm |

noun

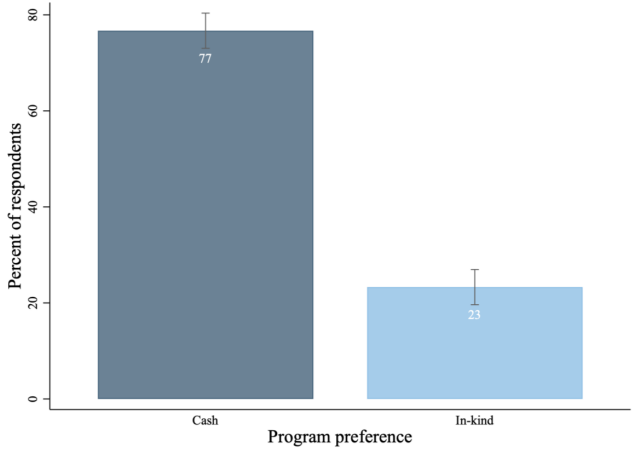
the policy or practice on the part of people in positions of authority of restricting the freedom and responsibilities of those subordinate to them in the subordinates' supposed best interest: *the arrogance and paternalism that underlies cradle-to-grave employment contracts*.

DERIVATIVES

paternalist | pəˈtərn(ə)ləst | noun, adjective

Respondents who are below poverty line overwhelmingly favor cash

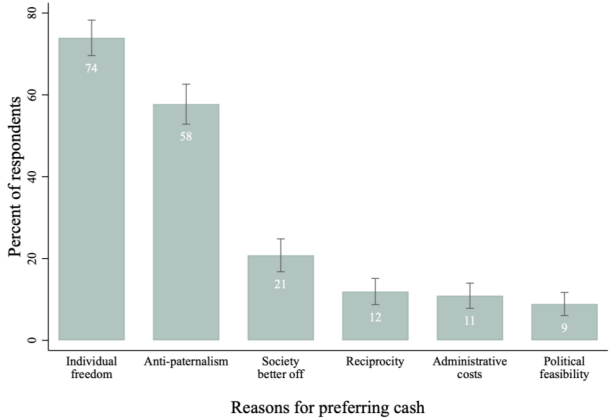
Figure 5. Preference Between Cash and In-Kind Programs – Below-Poverty Survey



Notes: The figure shows the percent preferring each of the cash program and the in-kind program, when respondents in the below-poverty survey are asked to choose between them. The thin bars mark 95 percent confidence intervals.

Modal reason poor favor cash: Individual freedom

Figure 6.b. Reasons Given for Preferring Cash as Recipient – Below-Poverty Survey

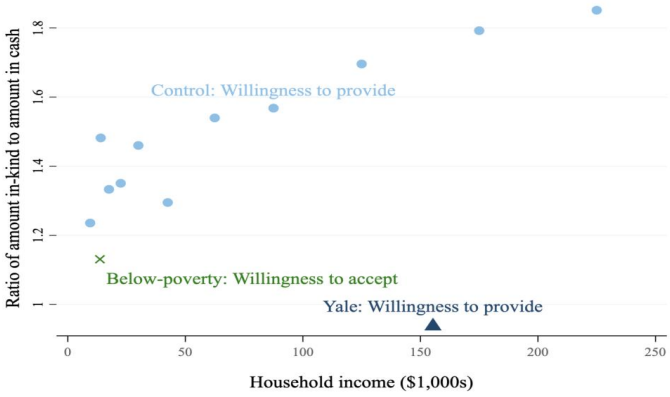


Notes: The figure shows the support for each of the reasonings offered in the below-poverty survey for preferring cash, in order of popularity. “Other (please specify)” was also displayed as an option; it was selected by 4 percent of respondents. The thin bars mark 95 percent confidence intervals.

Why do we give so little cash relative to in-kind? The answer may be here

1. Poor value in-kind transfers at approx \$0.80 per dollar
2. It takes about $\$1.25$ ($\$1.25 = 1/\$0.80$) of in-kind transfer to *psychically* equal $\$1.00$ in cash
3. Affluent households are willing to give \$1.20 – \$1.80 in in-kind transfers per dollar of cash

Figure 7. Willingness to Provide or Accept In-Kind vs. Cash Transfers



Income and substitution effects

(Normal and Inferior goods)

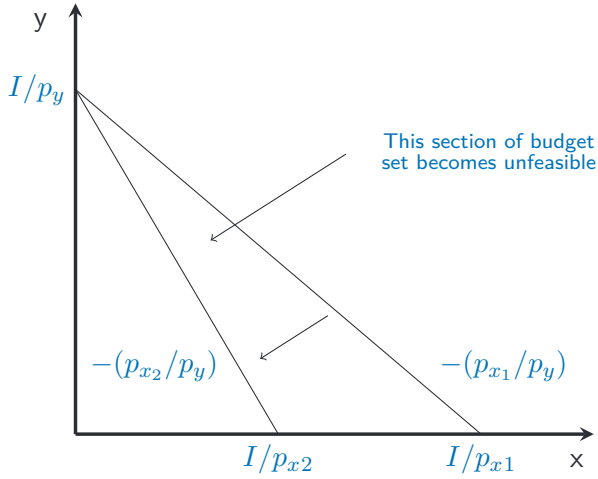
What happens to demand for a good when its price increases but income is held constant?

- Formally, what is $\partial d_x(p_x, p_y, I)/\partial p_x$.

- Two effects:

  1. It shifts the budget set inward toward the origin for the good whose price has risen. This component is the 'income effect.'
  2. It changes the slope of the budget set so that the consumer faces a different set of market trade-offs. This component is the 'substitution effect.'

Effect of a price increase on the budget set



Two effects of price rise: (1) Substitution effect; (2) Income effect

- What happens to consumption of X if

$$\frac{p_x}{p_y} \uparrow$$

while utility is held constant?

- Provided that the axiom of diminishing MRS applies, we'll have

$$\frac{\partial h_x(p_x, p_y, U)}{\partial p_x} < 0$$

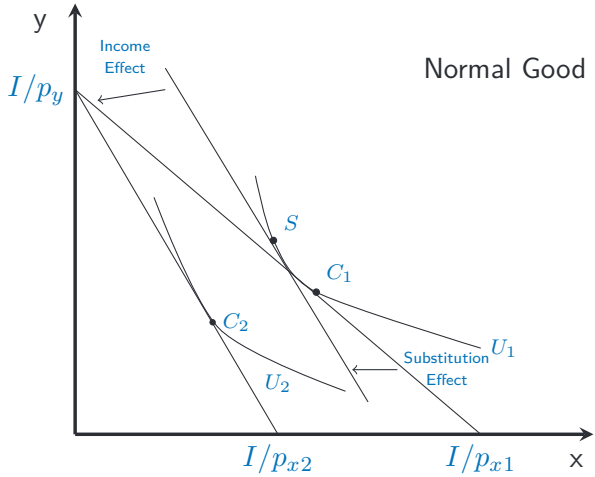
- Holding utility constant, the substitution effect is *always* negative.

Two effects of price rise: (1) Substitution effect; (2) Income effect

- Income effect defined as

$$\partial d_x(p_x, p_y, I)/\partial I$$

- Can be either negative or positive.
  - **If $\partial d_x(p_x, p_y, I)/\partial I > 0$, good X is said to be a normal good.**
  - If $\partial d_x(p_x, p_y, I)/\partial I < 0$, good X is said to be an inferior good.
  - Inferior goods can be further subdivided in "weakly" and "strongly" inferior goods. We'll come back to this point Wednesday

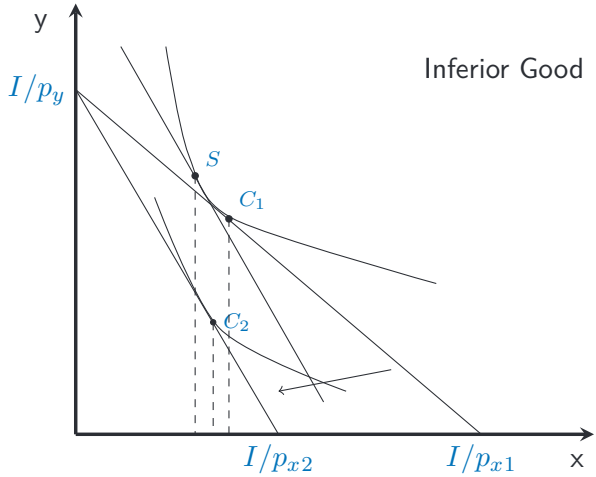

y
Income
Effect
I/p_y
Normal Good
S
C_1
C_2
U_1
Substitution
Effect
U_2
I/p_{x2}
I/p_{x1}
x

Income effects: Normal vs. inferior goods

- Defined as

$$\partial d_x(p_x, p_y, I)/\partial I$$

- Can be either negative or positive.
  - If $\partial d_x(p_x, p_y, I)/\partial I > 0$, good X is said to be a normal good.
  - **If $\partial d_x(p_x, p_y, I)/\partial I < 0$, good X is said to be an inferior good.**
  - Inferior goods can be further subdivided in "weakly" and "strongly" inferior goods. We'll come back to this point Wednesday


y
I/p_y
Inferior Good
S
C_1
C_2
I/p_{x2}
I/p_{x1}
x

Normal and Inferior goods

Summary

- For a normal good ($\frac{\partial d_x}{\partial I} > 0$), the income and substitution effects are complementary.
- For an inferior good ($\frac{\partial d_x}{\partial I} < 0$), the income and substitution effects are countervailing.
- For a Giffen good (AKA, *strongly inferior, abnormal*), the income effect dominates: $\left|\frac{\partial d_x}{\partial I} \cdot X\right| > \left|\frac{\partial h_x}{\partial p_x}\right|$. Note **both** are negative. (*We'll cover this Wednesday—not today*)

Income effects, substitution effects, and labor supply

Income and substitution effects in labor supply

- We typically think of demand functions as describing **goods** demand
- The same reasoning applies to labor **supply**
- And it's pretty cool how it works
- (We'll return to demand for goods in the next lecture—specifically, Giffen goods)

First principles: Labor vs. leisure

A consumer has to decide whether to work and how much to work

- She has only 24 hours a day
- She can divide these hours among work and leisure
- Consider the role of income and substitution effects
  1. Holding constant income, how does an increase in the hourly wage affect labor supply?
  2. Holding constant the hourly wage, how does an increase in income affect labor supply?
  3. What is the effect of an increase in hourly earnings on labor supply?

Context: The Earned Income Tax Credit (EITC)

- The EITC is a federal income subsidy for low wage workers—specifically, a refundable tax credit
- As of December, 2023
  - About 23 million eligible workers and families received the federal EITC
  - Federal expenditures were $57 billion
  - Average benefit per household was $2,541

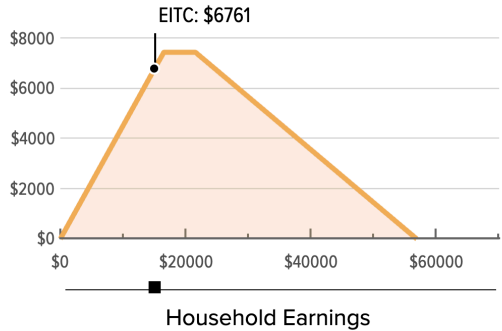
Federal EITC benefits schedule in 2023: Single parent, three children

Value of Federal Earned Income Tax Credit, 2023

Filing Status: Single/Head of Household

Number of Children: Three or More

Household Earnings: $ 15000



Note: Assumes all income is from earnings (as opposed to investments, for example).

Source: Internal Revenue Service

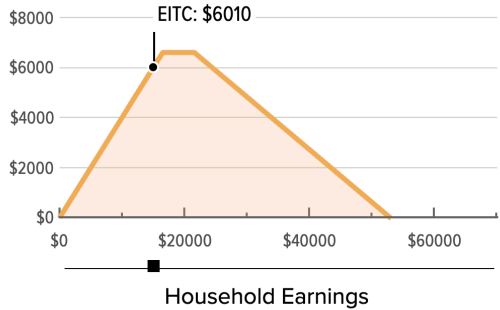
Federal EITC benefits schedule in 2023: Single parent, two children

Value of Federal Earned Income Tax Credit, 2023

Filing Status: Single/Head of Household

Number of Children: Two

Household Earnings: $ 15000



Note: Assumes all income is from earnings (as opposed to investments, for example).

Source: Internal Revenue Service

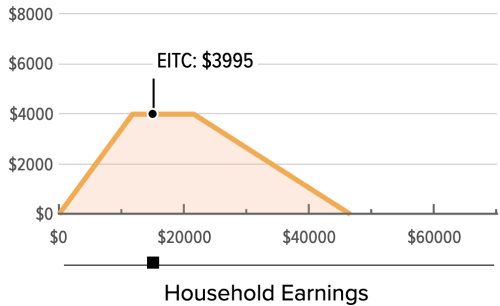
Federal EITC benefits schedule in 2023: Single parent, one child

Value of Federal Earned Income Tax Credit, 2023

Filing Status:
Single/Head of Household

Number of Children:
One

Household Earnings:
$ 15000



Note: Assumes all income is from earnings (as opposed to investments, for example).

Source: Internal Revenue Service

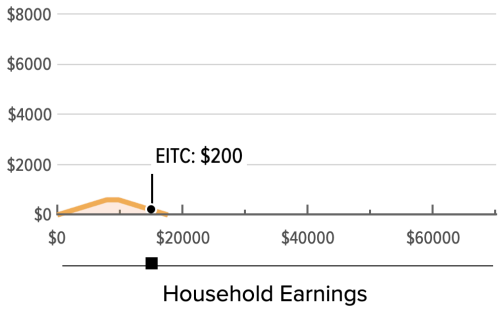
Federal EITC benefits schedule in 2023: Single parent, no children

Value of Federal Earned Income Tax Credit, 2023

Filing Status: Single/Head of Household

Number of Children: None

Household Earnings: $ 15000



Note: Assumes all income is from earnings (as opposed to investments, for example).

Source: Internal Revenue Service

Federal EITC benefits schedule in 2023: Table

TABLE 1

2023 Earned Income Tax Credit Parameters

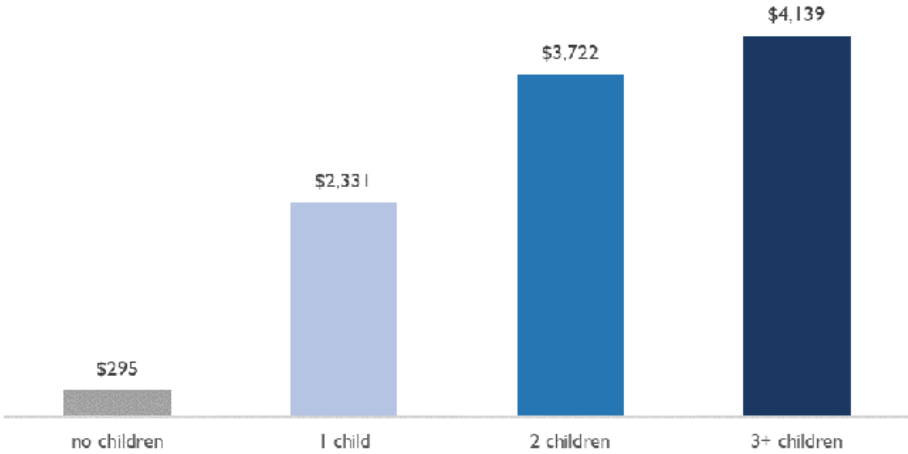
(Filing status single[a])

	Phase-in rate	Phase-in ends	Maximum credit amount	Phase-out begins	Phase-out rate	Phase-out ends
No children[b]	7.65%	$7,840	$600	$9,800	7.65%	$17,640
1 child	34%	$11,750	$3,995	$21,560	15.98%	$46,560
2 children	40%	$16,510	$6,604	$21,560	21.06%	$52,918
>2 children	45%	$16,510	$7,430	$21,560	21.06%	$56,838

[a] Note: Unmarried filers who claim children for the purposes of the EITC usually file as heads of household; the parameters for each family size are the same as

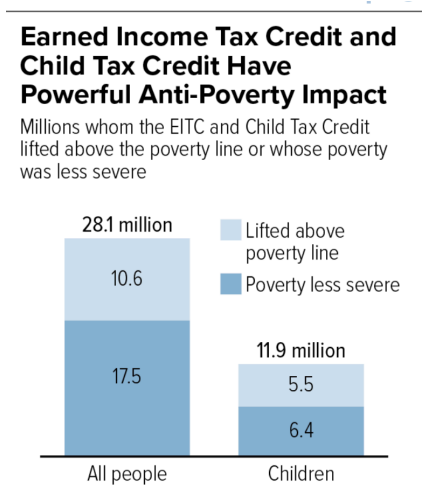
Average EITC benefit paid in 2020 by number of children

Figure 10. Average EITC by Number of Qualifying Children, 2020



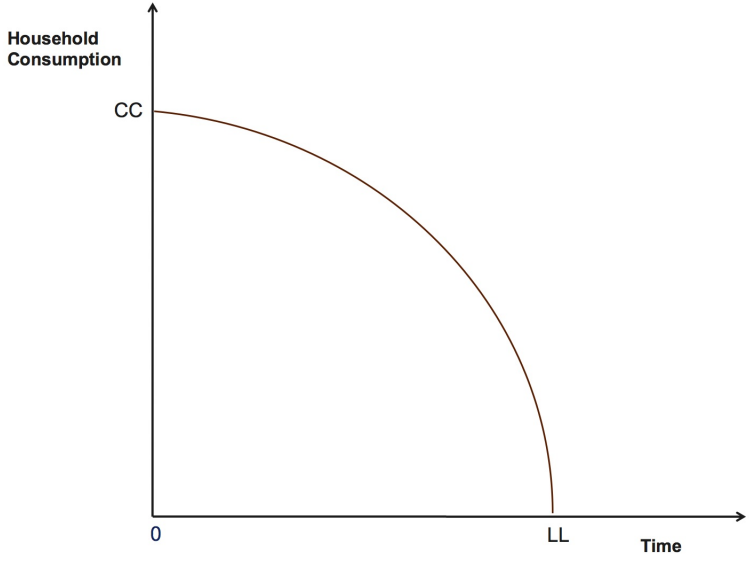
Source: Congressional Research Service, based on data from the Internal Revenue Service, *Statistics of Income, SOI Tax Stats-Individual Statistical Tables by Size of Adjusted Gross Income,* Table 2.5.

Anti-poverty effects of EITC in 2019

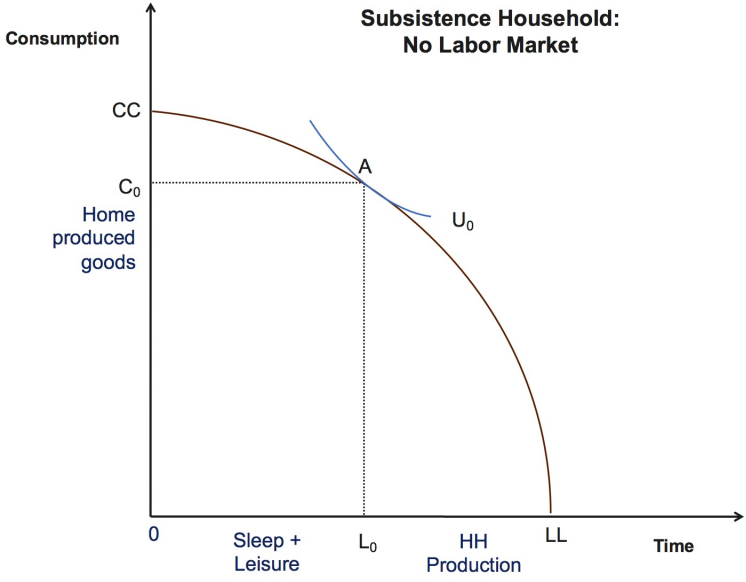


Modeling the effects of the EITC on labor supply and leisure?

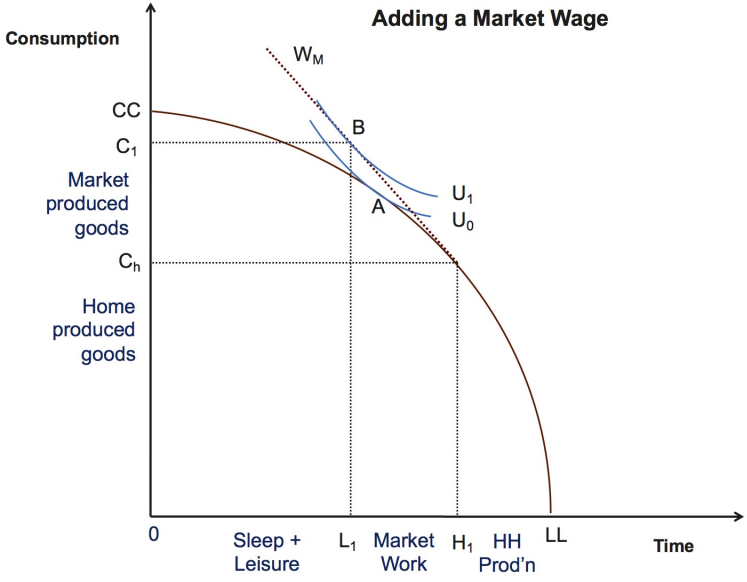
Household PPF in consumption vs. leisure space



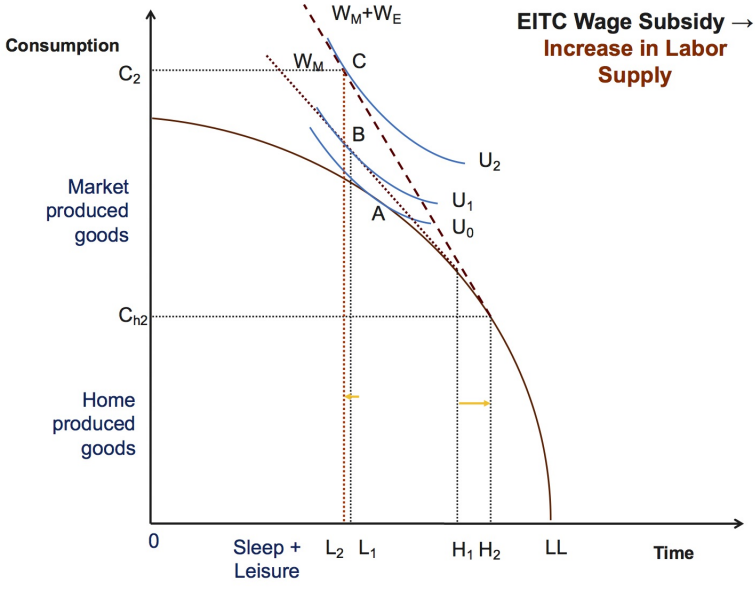
Household PPF in consumption vs. leisure space



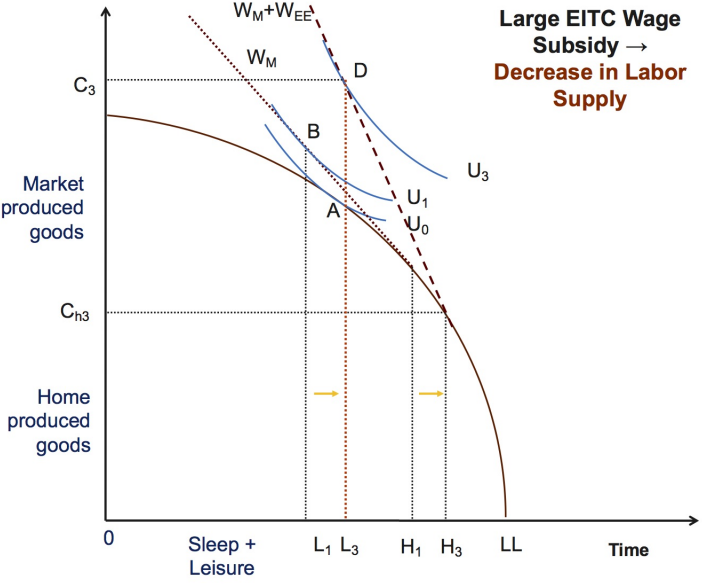
Household PPF in consumption vs. leisure space



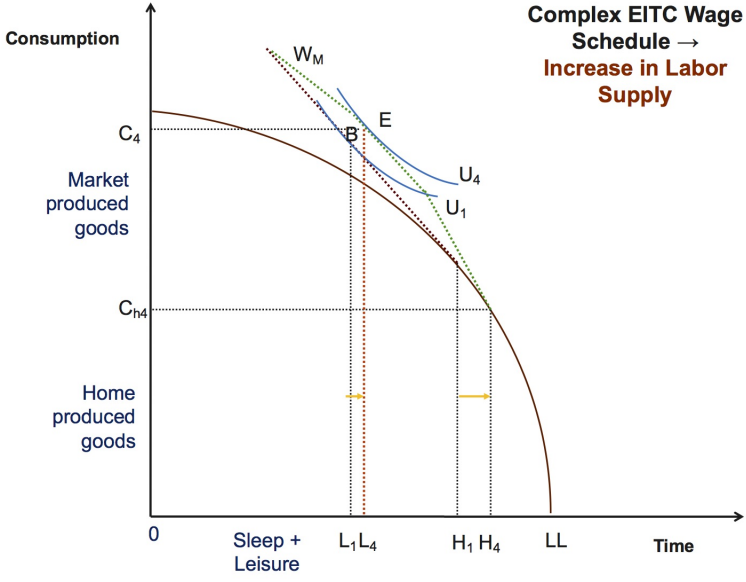
Household PPF in consumption vs. leisure space



Household PPF in consumption vs. leisure space



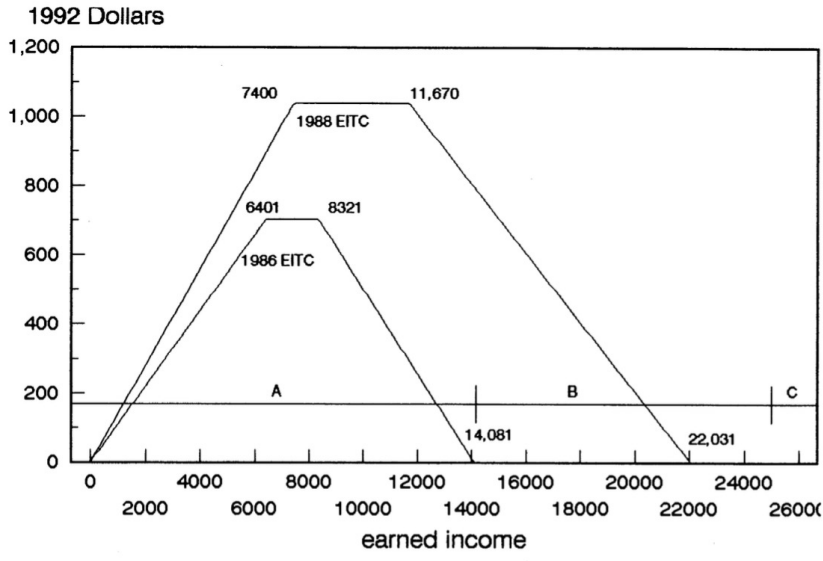
Household PPF in consumption vs. leisure space



Labor supply responses to the Earned Income Tax Credit: Evidence from the Tax Reform Act of 1986

Eissa and Leibman, 1996

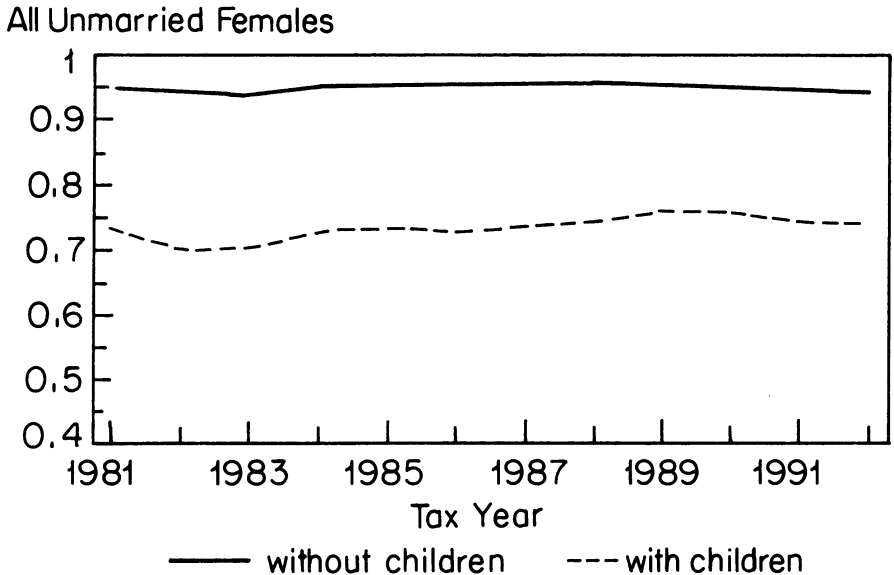
Comparison of EITC schedule in 1986 and 1988



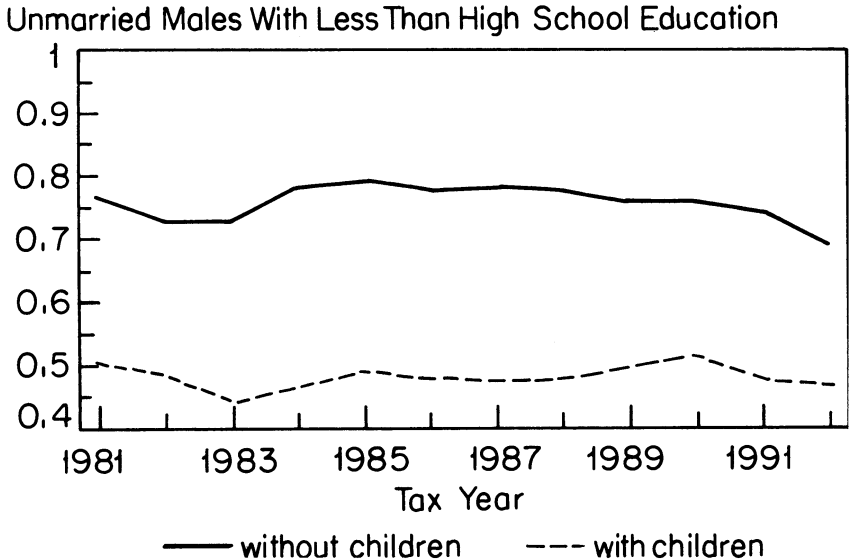
Summary statistics: Unmarried women, Ages 16 – 44

Variable	Without children	With children			
			Education		
		All	Less than high school	High school	Beyond high school
Age	26.78 (7.02)	31.17 (7.07)	28.67 (7.39)	30.88 (6.79)	33.97 (6.21)
Education	13.44 (2.33)	12.05 (2.28)	9.33 (1.81)	12.00 (0.00)	14.63 (1.54)
Nonwhite	0.15 (0.36)	0.37 (0.48)	0.43 (0.49)	0.37 (0.48)	0.33 (0.47)
Preschool children	0.00 (0.00)	0.48 (0.50)	0.61 (0.49)	0.48 (0.50)	0.36 (0.48)
Filing unit size	1.00 (0.00)	2.74 (0.96)	3.03 (1.17)	2.66 (0.88)	2.60 (0.81)
Earned income	15,119 (13,799)	11,262 (12,498)	4109 (7844)	10,678 (10,679)	18,856 (14,497)
Earnings conditional on working	15,880 (13,708)	15,188 (12,289)	8414 (9475)	13,758 (10,225)	20,589 (13,920)
Labor force participation	0.952 (0.214)	0.742 (0.438)	0.488 (0.500)	0.776 (0.417)	0.916 (0.278)

Labor force participation of unmarried women, 1981–1992



Labor force participation of unmarried men, 1981–1992



Diff-in-diff estimates: Labor force participation

TABLE II

LABOR FORCE PARTICIPATION RATES OF UNMARRIED WOMEN

	Pre-TRA86 (1)	Post-TRA86 (2)	Difference (3)	Difference-in-differences (4)
A. *Treatment group:* With children [20,810]	0.729 (0.004)	0.753 (0.004)	0.024 (0.006)	
Control group: Without children [46,287]	0.952 (0.001)	0.952 (0.001)	0.000 (0.002)	*0.024 (0.006)*

Diff-in-diff estimates: Labor force participation

TABLE II

LABOR FORCE PARTICIPATION RATES OF UNMARRIED WOMEN

	Pre-TRA86 (1)	Post-TRA86 (2)	Difference (3)	Difference-in-differences (4)
A. *Treatment group:* With children [20,810]	0.729 (0.004)	0.753 (0.004)	0.024 (0.006)	
Control group: Without children [46,287]	0.952 (0.001)	0.952 (0.001)	0.000 (0.002)	*0.024 (0.006)*
B. *Treatment group:* Less than high school, with children [5396]	0.479 (0.010)	0.497 (0.010)	0.018 (0.014)	
Control group 1: Less than high school, without children [3958]	0.784 (0.010)	0.761 (0.009)	−0.023 (0.013)	*0.041 (0.019)*
Control group 2: Beyond high school, with children [5712]	0.911 (0.005)	0.920 (0.005)	0.009 (0.007)	*0.009 (0.015)*

Diff-in-diff estimates: Labor force participation

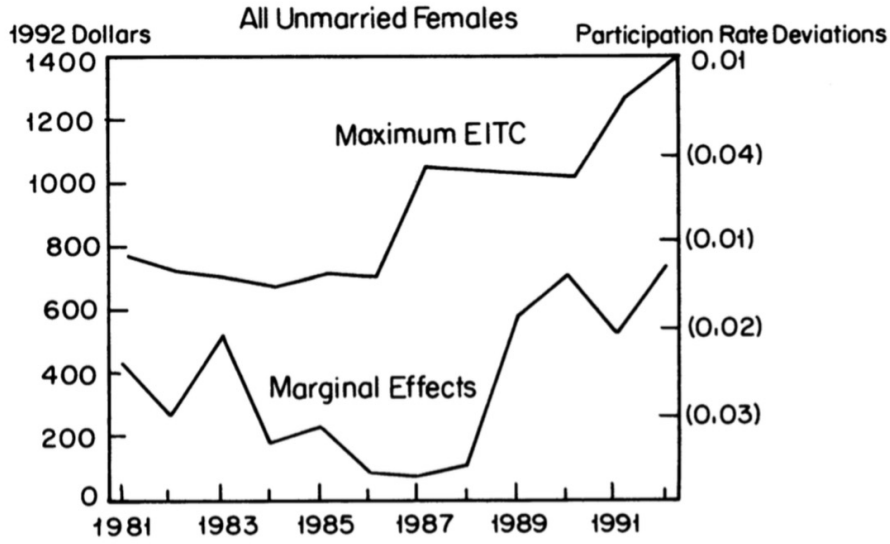
TABLE II

LABOR FORCE PARTICIPATION RATES OF UNMARRIED WOMEN

	Pre-TRA86 (1)	Post-TRA86 (2)	Difference (3)	Difference-in-differences (4)
A. *Treatment group:*				
With children [20,810]	0.729 (0.004)	0.753 (0.004)	0.024 (0.006)	
Control group:				
Without children [46,287]	0.952 (0.001)	0.952 (0.001)	0.000 (0.002)	*0.024 (0.006)*
B. *Treatment group:*				
Less than high school, with children [5396]	0.479 (0.010)	0.497 (0.010)	0.018 (0.014)	
Control group 1:				
Less than high school, without children [3958]	0.784 (0.010)	0.761 (0.009)	−0.023 (0.013)	*0.041 (0.019)*
Control group 2:				
Beyond high school, with children [5712]	0.911 (0.005)	0.920 (0.005)	0.009 (0.007)	*0.009 (0.015)*
C. *Treatment group:*				
High school, with children [9702]	0.764 (0.006)	0.787 (0.006)	0.023 (0.008)	
Control group 1:				
High school, without children [16,527]	0.945 (0.002)	0.943 (0.003)	−0.002 (0.004)	*0.025 (0.009)*
Control group 2:				
Beyond high school, with children [5712]	0.911 (0.005)	0.920 (0.005)	0.009 (0.007)	*0.014 (0.011)*

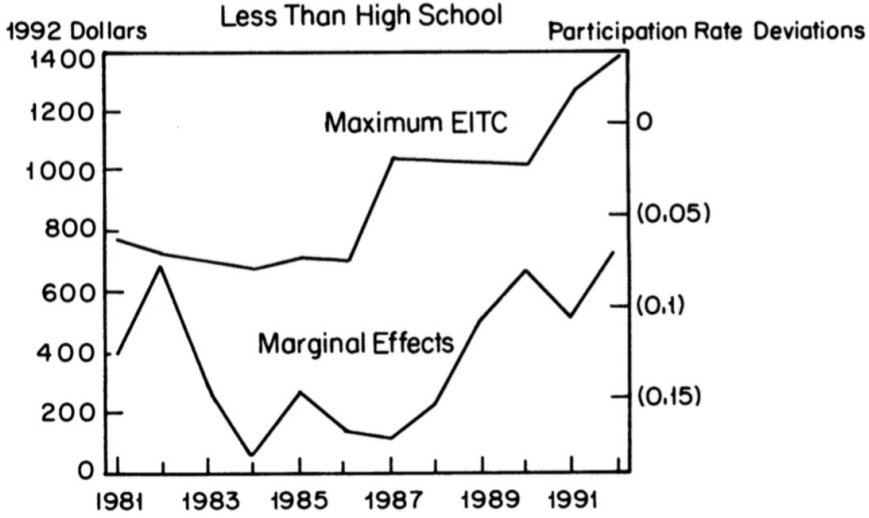
Max EITC and LFP of unmarried women

Contrasting women with vs. without children



Max EITC and LFP of unmarried women without a high school diploma

Contrasting women with vs. without children



Did EITC reduce hours worked? Unmarried women with and without kids

Dependent variable:	Annual hours	Annual hours	Annual hours	Annual hours
Variables	All single women with hours > 0 (1)	Less than high school with hours > 0 (2)	All single women (3)	Less than high school (4)
Kids (γ_0)	-83.03 (47.82)	-249.44 (132.61)	-186.48 (46.65)	-327.07 (110.24)
Post86 (γ_1)	-29.95 (23.61)	63.27 (78.03)	-45.33 (25.20)	-56.27 (69.26)
Kids × Post86 (γ_2)	*25.22 (15.18)*	*2.98 (46.04)*	*37.37 (15.31)*	*83.83 (39.42)*
Observations	59,474	5700	67,097	9354

EITC was designed by economists, taking account of income and substitution effects

- The EITC was developed and enacted by conservative social policymakers in 1975, during the Nixon Administration
- The EITC was initially quite popular with conservatives
- The EITC reform we analyzed in class today was enacted under the Reagan Administration in 1988
- The EITC was substantially expanded by the George H.W. Administration in 1990 and the Clinton Administration in 1993
- At present, there is considerably more skepticism towards the EITC among conservative than liberal social policymakers