The Effects of Earned Income Tax Credit Payment Expansion on Maternal Smoking

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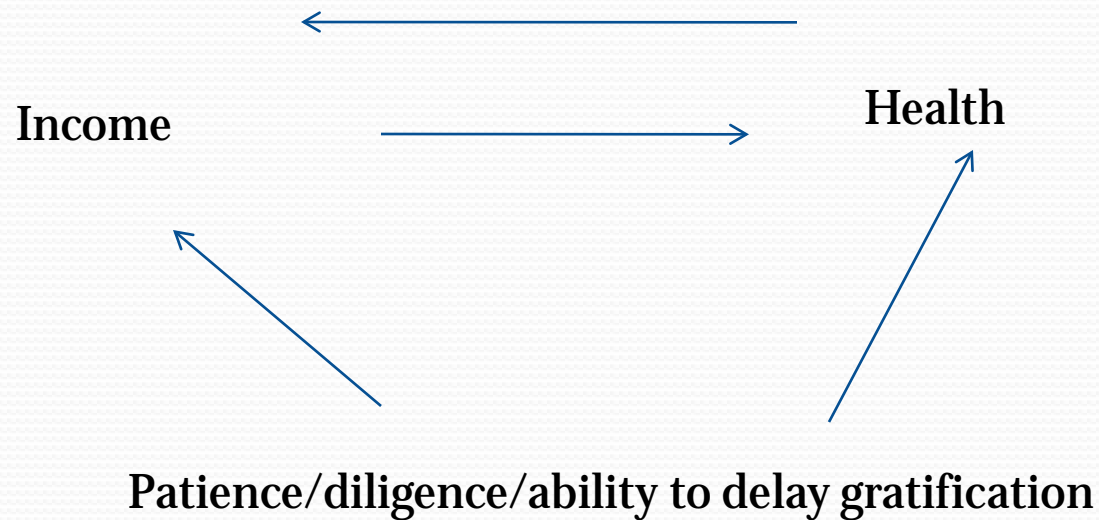Easton, Pennsylvania USA

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Overview

- Motivation
- Background and Literature Review
- Data
- Identification and Estimation
- Results

Motivation

– Public health insurance **à** better health (Currie and Gruber, 1996a, b)

– Welfare reform **à** health and health behavior (Bitler et al., 2005, Corman et al., 2010)

– Earned Income Tax Credit (EITC) **à** better health and health behavior?

  – Does income cause better health?

Empirical Challenge: how to determine if an increase in income *causes* better health outcomes...

Income → Health

Health → Income

Patience/diligence/ability to delay gratification → Income

Patience/diligence/ability to delay gratification → Health

Patience/diligence/ability to delay gratification

EITC

- Overview
  - § 1975
  - § Cash payments to individuals with positive earnings
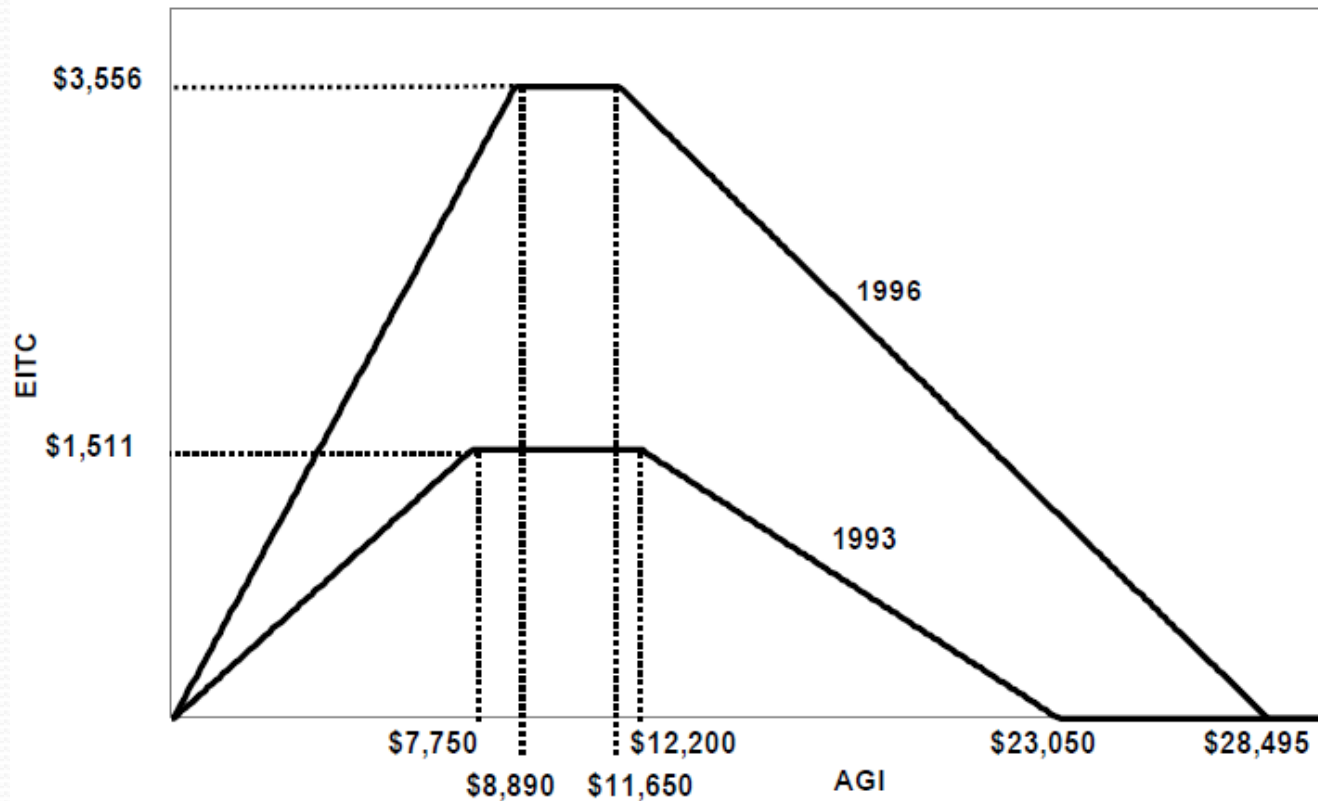 - § Largest anti-poverty program: > 25 million, $58 billion in 2009
  - § 3-phase structure
- EITC Expansion: 1993 – 1996
  - § First sizable difference in benefits between families with 1 vs 2+ children (<=19)

EITC Expansion

Figure 1: EITC Payments for Families with 2 or more Children
1993 and 1996

EITC Expansion

Calendar year	Credit rate (percent)	Minimum income for maximum credit	Maximum credit	Phaseout Rate (percent)	Phaseout range [1]	
					Beginning income	Ending income
1992						
One child	17.6	7,520	1,324	12.57	11,840	22,370
Two children	18.4	7,520	1,384	13.14	11,840	22,370
1993						
One child	18.5	7,750	1,434	13.21	12,200	23,050
Two children	19.5	7,750	1,511	13.93	12,200	23,050
1994						
No children	7.65	4,000	306	7.65	5,000	9,000
One child	26.3	7,750	2,038	15.98	11,000	23,755
Two children	30	8,425	2,528	17.68	11,000	25,296
1995						
No children	7.65	4,100	314	7.65	5,130	9,230
One child	34	6,160	2,094	15.98	11,290	24,396
Two children	36	8,640	3,110	20.22	11,290	26,673
1996						
No children	7.65	4,220	323	7.65	5,280	9,500
One child	34	6,330	2,152	15.98	11,610	25,078
Two children	40	8,890	3,556	21.06	11,610	28,495

Others on EITC

– EITC and labor force participation (Hotz and Scholz, 2003)

– EITC and marriage (Ellwood, 2000)

– EITC and health

1) Schmeiser (2009) -BMI

2) Evans and Garthwaite (2010)

3) Baughman (2005) –EITC and health insurance

4) Baughman and Dickert-Conlin (2009) EITC and fertility

Contribution of this research

- Use longitudinal data which allows us to control for unobserved time-invariant heterogeneity
- We can identify with confidence if the family has an EITC eligible child something that is not possible in the BRFSS b/c they do not have information on the ages of children in household
- We focus on a health behavior, smoking, which provides a mechanism for explaining why health benefits from increased income may occur-namely women may stop smoking

We focus on smoking

– A leading preventable cause of mortality and morbidity in the U.S.

– Women, African Americans and individuals with low SES are more likely to smoke, more vulnerable to the health risks and less likely to quit

Health Risks of Maternal Smoking

- Smoking linked to low birth weight
- Smoking during pregnancy has been linked to behavioral problems in toddlers
- Smoking by mothers is implicated as a risk factor for early initiation of smoking by their children
- Second hand smoke has negative health consequences for anyone exposed (Surgeon General, 2006)

WHO, 2010 report on secondhand smoke

- 40% of children world wide exposed to secondhand smoke in 2004

- 28% of deaths from second hand smoke in 2004 were children

- Largest disease burden from secondhand smoke in 2004 was lower respiratory infections in children under the age of five

Identification and Estimation: DD with longitudinal data

- Control group: Mothers with only 1 EITC eligible child in household
- Treatment group: Mothers with 2 or more EITC eligible children in household
- Before: 1992, After: 1998

Identification and Estimation: DD with longitudinal data

- State level fixed effects control for differences in smoking patterns by state (possible due to state differences in cigarette prices and/or sentiment toward maternal smoking). They also control for changes in the U.S. welfare system .

- We include additional covariates to control for compositional changes to improve the precision o f our estimates.

- Covariates in X include marital status, urban, Hispanic, age

DD Model with Individual and State FEs

$$S_{it} = b_0 + \text{AFTER}_{it} b_1 + 2\text{kids}_{it} b_2$$

$$+ (\text{AFTER}_{it} \times 2\text{kids}_{it}) d_{dd}$$

$$+ X_{it} b_x + \sum_{m=1}^{50} State_m l_m + a_i + e_{it}$$

Data

- NLSY 79: 12,686, 14-21, in 1979, reinterviewed annually until 1994 and biennially after that
- EITC eligibility: need to restrict our sample to those l*ikely* to be EITC eligible
  - Important labor supply consequences of EITC so an income-based criterion is inappropriate
  - We follow Evans and Garthwaite (2010) and use years of education (less than 13) to denote those who are EITC eligible
  - Prior research shows no evidence that there are positive fertility effects of the EITC expansion we study
- Mother's smoking status: 1992 vs. 1998
- By race: White vs. Non-White

Summary Statistics

	Years of Education <=12		P-value	Years of Education >=13		P-value
	One EITC eligible child	Two or more EITC eligible Children		One EITC eligible child	Two or more EITC eligible Children	
Smoker	0.4334	0.3374	0.0000	0.2097	0.1754	0.3107
	(0.4958)	(0.4729)		(0.4074)	(0.3805)	
Married	0.5082	0.6057	0.0000	0.6250	0.7659	0.0000
	(0.5002)	(0.4888)		(0.4844)	(0.4236)	
Urban	0.7009	0.7241	0.9126	0.8024	0.7281	0.0002
	(0.4581)	(0.4471)		(0.3984)	(0.4451)	
Age	33.8353	33.6075	0.0018	33.9032	34.7362	0.0000
	(3.8643)	(3.4962)		(3.7364)	(3.3780)	
Black	0.4404	0.5482	0.0000	0.4785	0.4582	0.7283
	(0.4967)	(0.4978)		(0.4999)	(0.4984)	
White	0.7477	0.6886	0.0002	0.6720	0.7233	0.0897
	(0.4346)	(0.4631)		(0.4698)	(0.4475)	
Hispanic	0.1881	0.2369	0.0019	0.1505	0.1815	0.1113
	(0.3910)	(0.4253)		(0.3578)	(0.3856)	
Number of children in household	1.1005	2.6972	0.0000	1.0565	2.4885	0.0000
	(0.3196)	(0.9728)		(0.2687)	(0.7442)	
Total net family income (1000s of 1992 $)	30.9652	34.6947	0.1149	63.8824	65.7104	0.8051
	(46.1201)	(64.6682)		(120.3108)	(111.9203)	
N	856	2229		744	1482	

Table 3. Sample Means (Standard Deviations) by Race

	White	Black
Smoker	0.2826	0.2547
Married	0.7481	0.4791
Urban	0.7056	0.8249
Age	34.0814	33.8098
	(3.6030)	(3.5983)
Total Net Family Income (1000s 1992 $)	53.8031	35.0559
	(95.8434)	(71.6537)
Hispanic	0.2856	0.4062
Yrs of Education <13	0.5804	0.6070
Number of children in household	2.0939	2.2938
	(.9856)	(1.1341)
N	3747	2634

Average EITC benefits, NLSY mothers
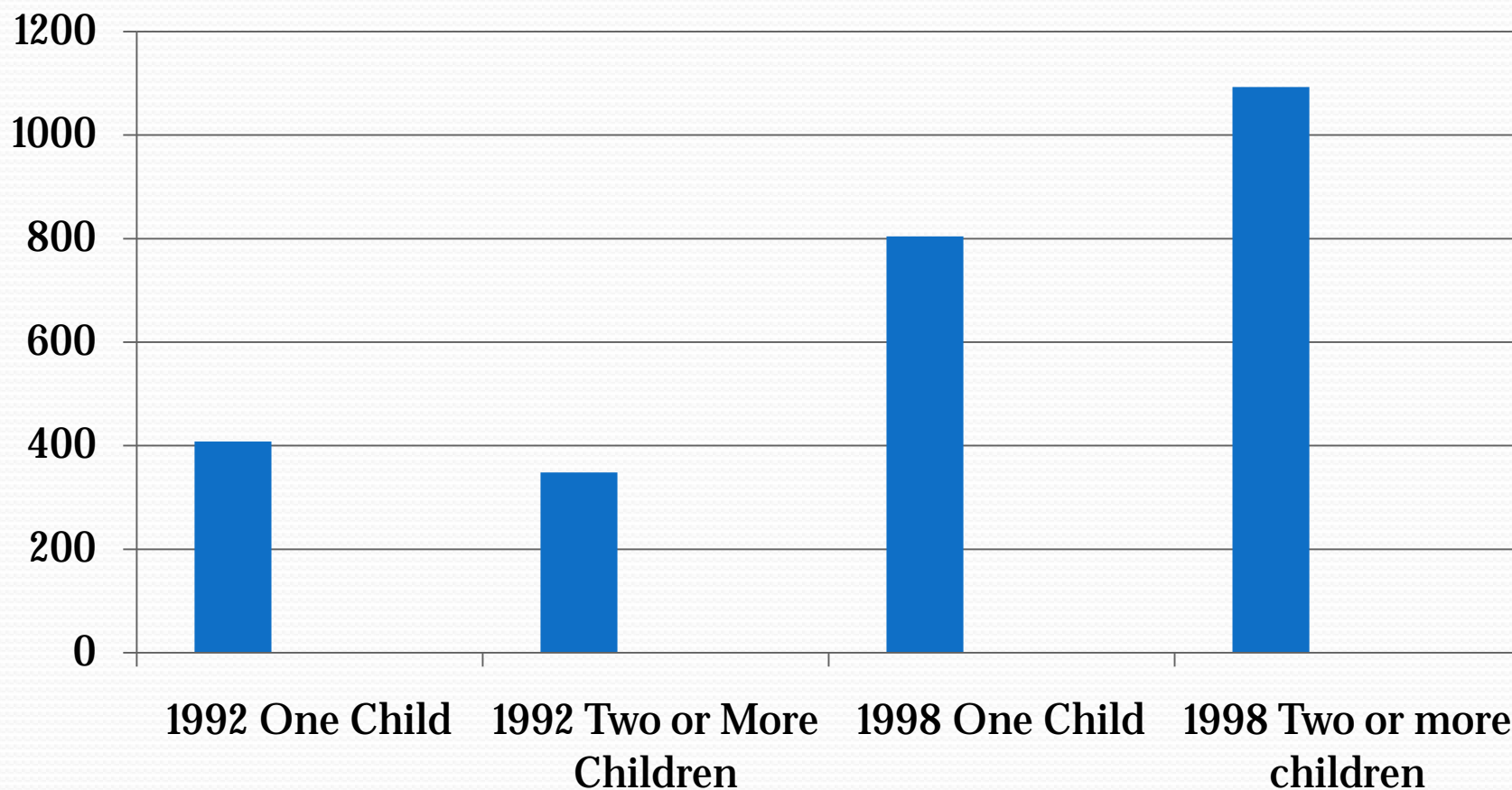
DD estimates

	OLS	Probit	OLS with FE
White Women	-0.0932**	-0.0913**	-0.0645*
	(0.0460)	(0.0455)	(0.0386)
Black Women	-0.0363	-0.0336	0.00211
	(0.0554)	(0.0541)	(0.0388)

Critical Assumption of the DD model

- Low educated mothers with two or more children (treatment group) would have experienced the same smoking behavior over time as low educated mothers with only one child (control group)
  - If this does not hold, our DD estimate is biased
- Can't directly test this but we use a DDD where high educated mothers, who were unlikely to be eligible for the EITC form the comparison group
  - We use the differential trends in smoking for high educated mothers with two or more versus only one child to deal with the potential bias provided that those trends for high educated mothers are similar to those for low educated mothers before and after the policy change.

Identification: DDD

$$S_{it} = b_0 + \text{AFTER}_{it}\,b_1 + 2\text{kids}_{it}\,b_2$$

$$+\text{Elig}_{it}\,b_3 + (\text{AFTER}_{it} \times 2\text{kids}_{it})\,b_4$$

$$+(\text{AFTER}_{it} \times \text{Elig}_{it})\,b_5 + (\text{Elig}_{it} \times 2\text{kids}_{it})\,b_6$$

$$+(\text{AFTER}_{it} \times \text{Elig}_{it} \times 2\text{kids}_{it})\,d_{ddd}$$

$$+X_{it}\,b_x + \sum_{m=1}^{50} State_m\,l_m + a_i + e_{it}$$

DDD Estimates

	Probability of Smoking	
	Black Women	White Women
δ_{ddd}	-0.0309	-0.101*
	(0.0614)	(0.0544)

Falsification Test

- Re-estimate our DDD model with three or more children as treatment group and eliminate mothers with only one child from the sample

- According to the way the EITC expansion is constructed we should only observe differential trends in health behaviors when we compare mothers with one child to mothers with two or more. We should not see any significant differential trends when we compare mothers with two children to mothers with three or more. If this is the case, then we can have more confidence that the changes in smoking we observe are due to the EITC expansion

Falsification Test

	White Women	Black Women
δ_{ddd}	0.0900	0.0273
	(0.0677)	(0.0549)

Conclusion and Future Research

– **Exogenous increase in income reduced smoking by low income, less educated white mothers**

– **Why white and not African American women?**

– **Other health indicators (BMI etc).**