

Illinois State University

ISU ReD: Research and eData

---

Capstone Projects-Economics

Economics

---

Summer 7-15-2019

## The Natality Effect of State Administered Earned Income Tax Credits

Jerome Sader  
jeromesader@gmail.com

Follow this and additional works at: <https://ir.library.illinoisstate.edu/cpe>



Part of the [Economics Commons](#)

---

### Recommended Citation

Sader, Jerome, "The Natality Effect of State Administered Earned Income Tax Credits" (2019). *Capstone Projects-Economics*. 3.

<https://ir.library.illinoisstate.edu/cpe/3>

This Capstone Project is brought to you for free and open access by the Economics at ISU ReD: Research and eData. It has been accepted for inclusion in Capstone Projects-Economics by an authorized administrator of ISU ReD: Research and eData. For more information, please contact [ISUReD@ilstu.edu](mailto:ISUReD@ilstu.edu).

# The Natality Effect of State Administered Earned Income Tax Credits

Sader, Jerome

Department of Economics

Illinois State University

## I. ABSTRACT

This paper utilizes a nine-period panel dataset and a first-difference equation to analyze to what extent state administered Earned Income Tax Credits to tax-filers impact the fertility rate among a state's population. Utilizing data from the American Community Survey, the IRS, and the Center for Disease Control, changes in fertility rates are regressed upon a first-difference model, which includes year fixed effects, that controls for changes in state-level variables such as household income, female education, female labor supply, changes in the amount of a state's population receiving the Earned Income Tax Credit, and the average amount that each household receives through the state administered Earned Income Tax Credit. The study finds that the marginal effect of the state administered contributions to tax-filers through a state's Earned Income Tax Credit program does not have a significant effect on the state's fertility rates. However, the model suggests that the number of households in a state's population who receive benefits from the Earned Income Tax Credit program has a negative effect on fertility rates.

## II. INTRODUCTION

The Earned Income Tax Credit (EITC) is a welfare program in the United States that has enjoyed the support of politicians of both major parties and academics alike. The program supplements income that workers earn by subsidizing their wages to incentivize workers to work more hours, even if their wages, salary, or commissions are otherwise relatively small. In the 1960s, the negative income tax was a popular proposed solution to poverty, and the EITC was born from these debates (Ventry & Dennis 2000). This direct transfer welfare program requires little bureaucratic or administrative overhead compared to other means-tested welfare services, simply creating a program by which the Internal Revenue Service can transfer expenditures to families and individuals as they complete their taxes (Ventry & Dennis 2000). Direct cash transfers, like the EITC, are also popular among some who believe that recipients of welfare have the best understanding of how to allocate resources they need to thrive, rather than welfare programs that provide direct and specific services at a free or reduced cost (Ventry & Dennis 2000).

The Ford Administration enacted the Tax Reduction Act in 1975 which established the EITC to create a labor incentive for low to moderate-income workers, applied to wages, salaries, tips, commissions, and net earnings from self-employment including various other earned income sources. The EITC applies on an upward sloping scale as a household earns income, plateaus toward the middle of the qualifying income amount, and then slopes downward until the household income approaches the maximum eligible income. EITC dollars are tax credits and not deductions, which means that each dollar expended through the EITC reduces tax liability by exactly one dollar, rather than reducing one's taxable income by one dollar.

In tax year 2018, the EITC for a four-person married household is available up until the household earns \$54,884 (IRS 2018). The maximum benefit for this family would be \$6,431 in refundable tax credits, meaning many families can expect to receive a lump sum of cash from their return if the credit is greater than the amount owed on their taxes. The program increases the labor supply of mothers and lifts millions of working families in the United States above the poverty line (Hoynes & Patel 2015). Since its inception, the federal government has expanded the Earned Income Tax Credit each decade, as recently as 2009. Governing bodies perceive the EITC as such a successful investment of public resources that twenty-nine states, plus Washington D.C. and Puerto Rico, have now created their own EITC which supplements the federal program. The state treasury runs the state administered programs by simply matching a portion of a tax-filer's federal EITC receipt. Therefore, if a tax-filer lives in a state that contributes a 10% EITC match, and the tax-filer receives a \$1,000 federal EITC, then the tax-filer would receive an additional \$100 through their state tax returns. In this paper, I examine the extent to which the additional amount provided by the state administered policy influences fertility rates.

Since the EITC is the third largest federal welfare program, deferring over \$66 billion in collected tax revenues, it is worth exploring whether it is a pro-natalist policy (IRS, Tax Policy Center 2018). A political narrative is present that families abuse welfare systems by having more children in order to receive larger benefits (Clawson et al 2000). Additionally, welfare programs that target low and moderate-income individuals and families that either encourage or discourage fertility decisions by women pose ethical questions regarding the proper role of welfare and anti-poverty reduction. The prospect that government policy can impact the birth rates of its constituents is an important question, not only to understand the macroeconomic consequences,

but to provide social context in the discussion of how public policy should address economic inequality and poverty. While previous research has scrutinized the EITC for its effects on the labor supply of women and fertility rates, this paper focuses exclusively on the impact of the marginal increases in EITC payments supplied by state administered policy.

This research investigates to what extent the marginal increase supplemented by state administered EITC policies have influenced the fertility rates of recipients. Utilizing a difference-in-difference model, the paper exploits variations in EITC match rates in various states, controlling for characteristics such as income, weekly hours worked, and education, across states from 2007-2016. The investigation reveals that the state administered EITCs do not appear to impact fertility rates, but that increases in a state's population that qualifies for the program decrease fertility rates.

### III. REVIEW OF LITERATURE

Most economic approaches toward studying fertility derive from two theoretical frameworks, the first presented in Becker (1960) and the second in Schultz (1973). Becker posits that children are normal goods. As incomes increase, so too does the demand for children. His model assumes that women and families decide to have children when they have access to the resources required to raise the child with a healthy upbringing in a safe home. The theory goes that people who have access to limited resources, considering the large expense that children incur, will decide to have fewer children. Those with access to many resources, or higher incomes, will prefer to raise more children for the fact that they can now afford them. As with all normal goods, increases in means cause increases in quantity demanded.

Schultz refutes this and argues that while rising incomes may encourage women to raise more children since they can afford all the expenses of raising a child, women with higher incomes tend to also have a higher opportunity cost of time. This is compelling because raising children is not only expensive, it is also time consuming. Schultz believes that as women enter the workforce, a phenomenon that revolutionized the labor market and was well underway by the early 1970s, their value of time increases due to the increases in market value for their time. Schultz argues that women relegated to housework and considered unemployable (by social norms, structural inequalities, and legal restrictions) did not have a large opportunity cost because the labor market did not value their time. So, with all this time available, women productively allocated their time by raising children. As women integrated themselves into the labor market, the increased market value of their time overrode the effect of increased income on raising children. So, as incomes increase for women, they start to value their time spent working more relative to staying home to raise children.

Schultz also suggests that a primary reason women have children is to raise them so that they one day will take care of them, meaning that women are concerned not with merely *having* children, but with having children that *survive*. Infant mortality has dropped considerably across the world, including the United States in the 20<sup>th</sup> century. Schultz argues that infant mortality decreases reduce fertility rates. Women need not have as many children since a larger proportion of born children will survive. These theoretical arguments can inform our understanding of some of the factors that may influence trends in fertility rates.

Literature on whether welfare policy can impact fertility has shown mixed results. Dyer & Fairlie (2004) find that family cap welfare reform, that stops benefits after a certain number of children live in the household, has no effect on the fertility rate of single, less-educated women. Similarly, Kearney (2004) studies whether family caps affect fertility, finding no significant effects. But Joyce et al (2004) find that women who are the most likely to use public assistance do give fewer births and have higher abortion rates after the implementation of family cap welfare reform.

Different types of welfare incentives may affect fertility to varying degrees. Milligan (2005) finds that a cash transfer program available to Quebec families with children, with total payments nearing \$8,000 CAD, led to a 25% increase in birthrates during the period of the program. Acs (1996) investigates whether a host of American welfare reforms instituted in the late 1980s and the early 1990s had impacts on fertility and finds that not one of the reforms had an impact on birth rates. However, Whittington, Alm, and Peters (1990) find that a \$1,000 increase in the personal exemption for federal tax deductions increases birthrates by 11 percent, impacting natality on middle income women more than low and high-income families. Similarly, Joyce, Kaestner, and Kwan (1998) conclude that Medicaid expansion in the early 1990s raised



the birthrate among White women by 5% but did not influence the fertility of Black women.

Grogger and Bronars (2001) examine twins to determine if welfare incentives cause women to marry and have children sooner. They find that single, White women were marrying at an older age with high welfare benefits and that single, Black women were more likely to have children with higher welfare benefits.

There is also robust literature on the EITC and its various effects on women, families, and children. For instance, Dahl and Lochner (2012) find that children of EITC recipients have greater educational achievement. They estimate that for each \$1,000 increase in income among eligible families, children increase their standardized test scores by 6% of a standard deviation. Additionally, EITC incentives impact the labor supply of single women. Eissa and Liebman (1996) find that the introduction of the EITC into the federal tax code in the late 1980s caused single women with children to increase their labor force participation by up to 2.8 percentage points, but that women already in the labor force did not increase their hours worked. Meyer and Rosenbaum (2001) find that the EITC expansion in the early 1990s increased the labor supply of single mothers the most of several welfare and tax reforms in the same period. Eissa and Hoynes (2004) estimate that early 1990s expansions of the EITC caused a reduction in the total labor supply of married couples. While the labor supply of married men slightly increased, the decrease in labor supply participation of married women offset any increase in total labor supply increase from EITC-receiving households.

There are a couple of studies related closely to the research question of this paper. Duchovny (2000) analyzes the EITC Expansion of 1990 to determine if it increased rates of fertility among groups of eligible women. Duchovny finds that married, White women and unmarried, non-White women increased their fertility, and that the expansion led to a five percent increase in the

probability of having a second child for married, White women and a twenty percent increase for unmarried, non-White women. Baughman and Dickert-Conlin (2009) test whether the EITC expansions between 1990 and 1999 effected fertility rates and found that the tax credit only produced small reductions in fertility rates among White women.

#### IV. MODEL

##### Equation 1:

$$\Delta BirthRate_{it} = \delta_1 \Delta 08_t \dots \delta_9 \Delta 16_t + B_1 \Delta x_{Iit-1} \dots + B_3 \Delta x_{Nit-1} + B_4 \Delta w_{it-2} + B_5 \Delta z_{it-2} + B_6 (\Delta w_{it-2} * \Delta z_{it-2}) + \epsilon_{it}$$

In this model, the subscript  $i$ 's refer to each individual state and the  $t$ 's refer to each individual year. The variable  $w$  refers to the average state EITC contribution per participating household,  $z$  refers to household participation rate (per 10,000 households), and  $x$ 's are controlled characteristics. The variable of interest is the interaction term  $\Delta w * \Delta z$ , which combines the state's EITC contribution with the number of households receiving the benefit. The model lags EITC amounts by two years because households make fertility decisions about one year before a birth and the IRS disburses EITCs following the tax year that households earn them. The model lags other control variables by one year. I employ year fixed effects to control for broad changes in economic and social characteristics that may have influenced fertility rates.

This paper uses a first differenced estimation equation using a nine-period panel of state-level data. The nine periods are the consecutive fiscal years between 2008 and 2016. This model will estimate the difference in fertility rates across states, exploiting the variations in the state's annual per household EITC contributions. The model includes both states that do and do not have their own state-level administered EITC, although it does omit a handful of states that have EITC programs. These omitted states have important and significant program policy variations that would make it impossible to estimate the amount of EITC paid out by each state's government using the data used in this paper, such as changing the match-rate based on how many children are in a household, or implementing complicated phase-in/phase-out slopes, similar to the federal program design.

Employing a panel approach estimates the impacts on fertility rates while controlling for various other social and economic characteristics of each individual state. In other words, the model compares changes in fertility rates within each state, so the model controls for observed changes in fertility rates due to differentiated structural characteristics of states. The first-difference model analyzes how changes in EITC are correlated with changes in fertility rates. In this way, the model accounts for structural differences in states whose fertility rates may be different due to unique economic and social characteristics. The change in fertility rate in each these states will be estimated as a function of the change in percentage of women that holds a high school degree or higher in each state, the change in median income of households in each state, the change in percentage of women working full-time in each state, the change in EITC participation rate in each state, and the change in the state-level EITC contribution in each state. States that employ a state-level EITC program will have positive or negative values, dependent on whether they increased or decreased the federal match rate each year and by how much the federal rate changes. In other words, if a state holds its match rate constant, but the federal government increases its EITC allocations, then the state will be expending an increase to the program recipient. The dataset reflects this increase. States that do not employ a state-level EITC program will have values of zero.

The coefficient of interest in this paper is  $B_6$ , which will estimate the impact of the implementation of the state level EITC on fertility rate, controlling for education, income, hours spent working, and for the saturation of EITC participants. The empirical approach of this paper is based upon the reviewed literature's conclusions that economic factors impact rates of fertility. The literature also demonstrates that the EITC can affect fertility rates. This model attempts to exploit variation in state-level EITC expenditures to determine the extent to which marginal

increases in tax returns impacts household income. I hypothesize that, based upon the reviewed literature, that increases in the EITC at the state-level would produce small reductions in fertility rates. The EITC is a strong and positive labor supply incentive, and this nudge of encouragement for working women to take on additional hours of work will likely result in reductions in the rates of childbirth. Therefore, I would expect the  $B_6$  variable to be negative.

However, it would not be surprising if the model produces statistically insignificant effects. The typical state-level contribution tends to range between \$100 and \$400 per year. This is certainly a sizeable receipt that could induce important changes in economic activity, but child-rearing is an expensive endeavor, in terms of physical and emotional labor, opportunity cost of time spent, as well as real dollar costs. The relatively small size of this tax expenditure compared to the total costs of raising a child could mean that state administered EITC programs do not meaningfully nudge fertility rates in any direction.

Another important consideration that might attenuate any impact of this tax incentive would be the diffusion of information. Many tax-filers may be unaware of these programs immediately upon creation. Furthermore, it is not clear how long it may take tax-filers to respond to changes in the tax code. My approach assumes that they respond within the tax year of which they receive their first lump-sum payment when they finalize their returns. Tax-filers may take longer to respond to changes in their effective tax rate, but my assumptions are consistent with the existing literature on the subject.

## V. DATA

This research uses annual Census data from the American Community Survey, fertility data from the Center for Disease Control and Earned Income Tax Data from both the IRS and the National Bureau for Economic Research. I estimate State level EITC contributions by multiplying annual matching rates set by state governments and the average amount of federal benefit received by each household each year. I use median household income to control for fertility rate changes that could be attributed to other changes in household income which influences a household's ability to access resources, healthcare, and childcare services and to control for broader macroeconomic trends in state's that may affect household decision-making. Likewise, research suggesting that increases in the educational attainment of women negatively impacts fertility rate informed the decision to include educational data on women in the study. This data, also coming from the American Community Survey, controls for trends in women's education that could be responsible for variations in fertility rates in each individual state during the period of study.

The Census Bureau conducts the American Community Survey annually and provides state level data collected under a consistent methodology for the years of interest in this study, from 2005-2016. Data for EITC participation comes from the IRS, presented by the Tax Policy Center, as well as the National Bureau for Economic Research. This data source is particularly valuable because it contains the entire population of program participants. In other words, the IRS data is not a sample of participants, thus, the data tells us about the program participation of the whole population. I collected data for tax years 2005-2016 in order to create a nine-period panel analysis during which I exploit variations between states' and their EITC programs. I adjusted all nominal dollars provided by the American Community Survey, the IRS, and the

National Tax Policy Center (which this dataset uses for household median income and EITC receipts) to constant 2016 dollars. Fertility data comes from the Center for Disease Control and spans the period of study from 2005-2016. Fertility rates describe how many livebirths occur in each year per 1,000 women between the ages of 16 and 44 in a given state.

The study uses the 2008-2016 period because of the lack of literature focused on recent data. The most updated EITC data from the Tax Policy Center is available only up to 2016. Most of the literature on EITC and fertility were published in the 1990s and early 2000s. Recently, the state administered EITC has grown in popularity among governing bodies. Since the year 2000, seventeen additional states have adopted their own EITC match to supplement the federal government program's rebate rate. This paper builds upon investigations of the EITC and its effects on labor supply and fertility decisions, with updated data sources, a nationwide difference-in-difference approach, and an emphasis on exploiting the variations in the marginal increase of the tax credit dollars provided by the states. The study sample includes 44 states, omitting 7 states with EITC programs that feature policy complexities that would make them difficult to study- including features like different match rates for households of different sizes, or vigorously changing matching rates for different incomes. This study includes 19 total states that administer their own EITC program, and includes 25 states that do not, serving as a control to the treatment group.

## VI. ANALYSIS

### Summary Statistics – Figure 1

#### States with EITC

Variable	Observations	Mean	Std.Dev.	Min	Max
Fertility Rate	188	63.3	6.9	50.2	77
Percentage of Households Receiving EITC	188	.17	.04	.10	.28

Average State Expenditure per Household for EITC	188	330.1	265.2	81.8	1169.9
Percentage of Women with High School Degrees	188	89.2	2.5	82.3	93.6
Percentage of Women Working Full-Time	188	51.9	3.8	43.3	59.6
Median Household Income	188	572734	9071.6	445623	78987.1

---

<b>States without EITC</b>					
Variable	Observations	Mean	Std.Dev.	Min	Max
Fertility Rate	340	67.7	7.5	50.3	95.7
Percentage of Households Receiving EITC	340	.19	.05	.10	.34
Percentage of Women with High School Degrees	340	87.7	3.7	78.8	94.3
Percentage of Women Working Full-Time	340	51.1	3.9	40.8	60.5
Median Household Income	340	54464	9186.4	38842.6	76705.5

Table 1 depicts the summary statistics of the sample I used to regress the model. In addition to the extra year of observations for the first-difference model, the model I employ uses a two-year lag on both the EITC participation and benefit amount variables. This means that the model requires an additional two years of observations. So, while the study collected data from 2005-2016, the specified model only scrutinizes years 2008-2016. These nine years across the forty-four states in the sample results in the smaller amount of observations in the regression results.



## Regression results – Figure 2

Change in	Coef.	St. Err.	t- value	p-value	[95% Conf.	Interval]	Sig
Fertility Rate							
Difference in Percent of returns with EITC 2 Year Lag	-22.393	7.73	-2.90	0.004	-37.550	-7.236	**
Difference in State EITC Contribution 2 Year Lag	0.000	0.001	-0.30	0.760	-0.001	0.011	
Difference in Female High School graduation percentage 1 Year Lag	0.042	0.122	0.35	0.728	-0.197	0.282	
Difference in Female Full-time work % 1 Year Lag	0.040	0.073	0.55	0.582	-0.103	0.184	
Difference in Household Median Income Real Dollars 1 Year Lag	0.000	0.000	-.19	0.847	-0.000	0.000	
<b>Difference in Percent of returns with EITC 2 Year Lag * Difference in State EITC Contribution 2 Year Lag</b>	0.066	0.117	0.56	0.573	-0.165	0.298	
Mean dependent var		-0.733	SD dependent var			1.218	
Overall r-squared		0.347	Number of obs			396.000	
F-test		17.464	Prob > F			0.000	
R-squared within		.417	Bayesian crit. (BIC)			1058.549	

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

The regression results displayed in Figure 2 show that the model explains 42% of the variations in birthrates among states during the sampled time. This is not too surprising, since

fertility decisions are quite complex and economic factors are only one element that rational actors consider. The change in the EITC participation rates is the only variable that is statistically significant. This suggests that as a state experiences an increase in the number of households filing for the EITC, the live birth rate of women aged 16-44 drop. This measure is both statistically significant at the 95% level when using clustered standard errors. There are likely omitted variables that are heavily conflated with participation in the EITC program that could more accurately specify the effect of the program. However, the negative sign of the result is consistent with cited literature above that the EITC can elicit increases in labor supply and fertility rates among women and families.

However, the most important variable that this paper focuses on is the interaction variable between the number of households receiving the EITC and the size of the state administered deduction. This continuous-continuous interaction variable, while positive in sign, is not statistically significant. This suggests that the marginal impact of state administered EITC programs did not affect fertility rates among states between 2008-2016. However, due to the findings that increased EITC participation does effect fertility rates, I believe that this issue deserves further study. The regression demonstrates that the EITC does influence fertility rates which the previously existing literature supports. I believe a model that specifies changes in the demographics across states accounting for ages, ethnic identities, and religious practice may produce more significant results and I suggest further study. I also believe that states that choose to administer EITC programs do not do so randomly, that is that there are unobservable characteristics of these states that may be influencing fertility rates in one direction or another. To an extent, the first-difference model addresses this by controlling for individual state characteristics by analyzing only the changes in fertility rates in each state, but the decisions that

lawmakers make to become a treatment group could be correlated with other factors that my model misses.

## VII. CONCLUSION

The regression results suggest that the state administered EITC programs employed between 2008 and 2016 did not have a statistically significant effect on fertility. In fact, all variations in state-level median income, female high school graduation rates and number of weekly hours worked by women were all statistically insignificant in estimating impact on fertility rates. The only variable with a statistically significant coefficient is the participation rate of the EITC program. I believe that this result is enough to suggest that there is more to learn from this research question. Previous literature suggests that the federal level EITC program effects both labor supply and fertility decisions among women in the United States, and with the introduction and expansion of state-level programs becoming more popular, this issue deserves further attention.

To carry this research forward, I recommend studying individual level data rather than attempting to discern trends across fertility rates of entire state populations. Rather than assessing changes in fertility rates of all people, homing in on the fertility rates specifically of people that the EITC program are likely to impact could yield more accurate results. For instance, it is possible that a state experiences greater uptake in their EITC program while a significant share of their population sees large increases in their income. Perhaps the fertility rates of the high-income families are dropping quickly, more quickly than any observable increase that could be happening among the low-income families of whom the child incentive of the EITC may impact. Likewise, the effect could be opposite, where a state sees more people receiving the tax credit while there is also an increase in households whose income is so low, they fail to qualify for the credit. Changes in the fertility rates of these extremely low-income households could be increasing more than an observable decrease among households that are receiving the tax credit.

Further study should address these issues by studying households as units of analyses rather than states, since the program of interest impacts roughly 10-15% of a state's population at most.

## VIII. BIBLIOGRAPHY

- Acs, Gregory. "The impact of welfare on young mothers' subsequent childbearing decisions." *Journal of Human Resources* (1996): 898-915.
- Baughman, Reagan, and Stacy Dickert-Conlin. "The EITC and fertility." *Journal of Population Economics* 22, no. 3 (2009): 537-563.
- Becker, Gary S. "An economic analysis of fertility." *Demographic and economic change in developed countries*, Columbia University Press (1960): 209-240.
- Bloom, David E., David Canning, Günther Fink, and Jocelyn E. Finlay. "Fertility, female labor force participation, and the demographic dividend." *Journal of Economic growth* 14, no. 2 (2009): 79-101.
- Bronars, Stephen G., and Jeff Grogger. "The economic consequences of unwed motherhood: Using twin births as a natural experiment." *The American Economic Review* (1994): 1141-1156.
- Clawson, Rosalee A., and Rakuya Trice. "Poverty as we know it: Media portrayals of the poor." *The Public Opinion Quarterly* 64.1 (2000): 53-64.
- Dahl, Gordon B., and Lance Lochner. "The impact of family income on child achievement: Evidence from the EITC." *American Economic Review* 102, no. 5 (2012): 1927-56.
- Duchovny, Noelia Judith. "The EITC and fertility." *PhD diss.*, University of Maryland, College Park (2001).

Dyer, Wendy Tanisha, and Robert W. Fairlie. "Do family caps reduce out-of-wedlock births? Evidence from Arkansas, Georgia, Indiana, New Jersey and Virginia." *Population Research and Policy Review* 23, no. 5-6 (2004): 441-473.

Eissa, Nada, and Hilary Williamson Hoynes. "Taxes and the labor market participation of married couples: the EITC." *Journal of public Economics* 88, no. 9-10 (2004): 1931-1958.

Eissa, Nada, and Jeffrey B. Liebman. "Labor supply response to the EITC." *The quarterly journal of economics* 111, no. 2 (1996): 605-637.

Feenberg, Daniel. State EITC provisions 1977-2016. National Bureau of Economic Research, 2017. <https://users.nber.org/~taxsim/state-eitc.html>. Retrieved February 23, 2019.

Hoynes, Hilary W., and Ankur J. Patel. "Effective policy for reducing inequality? The EITC and the distribution of income". *National Bureau of Economic Research*, No. w21340 (2015).

Joyce, Ted, Robert Kaestner, Sanders Korenman, and Stanley Henshaw. "Family cap provisions and changes in births and abortions." *Population Research and Policy Review* 23, no. 5-6 (2004): 475-511.

Joyce, Theodore, Robert Kaestner, and Florence Kwan. "Is Medicaid pronatalist? The effect of eligibility expansions on abortions and births." *Family Planning Perspectives* (1998): 108-127.

Kearney, Melissa Schettini. "Is there an effect of incremental welfare benefits on fertility behavior? A look at the family cap." *Journal of Human Resources* 39, no. 2 (2004): 295-325.

Meyer, Bruce D., and Dan T. Rosenbaum. "Welfare, the EITC, and the labor supply of single mothers." *The quarterly journal of economics* 116, no. 3 (2001): 1063-1114.

Milligan, Kevin. "Subsidizing the stork: New evidence on tax incentives and fertility." *Review of Economics and Statistics* 87, no. 3 (2005): 539-555.

Schultz, T. Paul. "A preliminary survey of economic analyses of fertility." *The American Economic Review* 63, no. 2 (1973): 71-78.

Whittington, Leslie A., James Alm, and H. Elizabeth Peters. "Fertility and the personal exemption: implicit pronatalist policy in the United States." *The American Economic Review* 80, no. 3 (1990): 545-556.

United States Census Bureau / American FactFinder. "S15051". 2005-2016 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2016. <http://factfinder2.census.gov>. Retrieved February 23, 2019.

United States Census Bureau / American FactFinder. "S1901". 2005-2016 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2016. <http://factfinder2.census.gov>. Retrieved February 23, 2019.

United States Census Bureau / American FactFinder. "S2303". 2005-2016 American Community Survey. U.S. Census Bureau's American Community Survey Office, 2016. <http://factfinder2.census.gov>. Retrieved February 23, 2019.

United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2003-2006, on CDC WONDER Online Database, March 2009. <http://wonder.cdc.gov/natality-v2006.html>. Retrieved February 16, 2019.



United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2007-2017, on CDCWONDER Online Database, October 2018. <http://wonder.cdc.gov/natality-current.html>. Retrieved February 16, 2019.

United States Internal Revenue Service (IRS), Tax Policy Center. EITC by State, 1997-2016, May 2018 <https://www.taxpolicycenter.org/statistics/eitc-claims-state>. Retrieved November 16, 2018.

United States Internal Revenue Service, Department of the Treasury. "Earned Income Credit (EIC)." *Publication 596 Cat. No. 15173A* (2018).

Ventry Jr, Dennis J. "The collision of tax and welfare politics: The political history of the Earned Income Tax Credit, 1969–99." *National Tax Journal* (2000): 983-1026.

## IX. APPENDIX

**Earned Income Tax Credit State Level Summaries, for States with EITC – Figure 3**

<b>State and Year</b>	<b>Percent of Households receiving EITC</b>	<b>State EITC Match Rate</b>	<b>Average State EITC Payment to Household</b>
<b>Colorado</b>			
2005	12.7%		
2006	12.5%		
2007	12.3%		
2008	13.2%		
2009	15.2%		
2010	15.3%		
2011	15.4%		
2012	15.2%		
2013	15.3%		
2014	14.8%		
2015	14.4%	10.0%	\$219.09
2016	13.9%	10.0%	\$215.20
<b>Connecticut</b>			
2005	10.3%		
2006	10.3%		
2007	10.2%		
2008	10.9%		
2009	12.2%		
2010	12.1%		
2011	12.5%	30.0%	\$635.80
2012	12.7%	30.0%	\$641.77
2013	13.3%	25.0%	\$543.51
2014	13.2%	27.5%	\$599.07
2015	13.1%	27.5%	\$604.45
2016	13.0%	27.5%	\$597.58
<b>Delaware</b>			
2005	14.8%	20.0%	\$445.17
2006	14.7%	20.0%	\$448.22
2007	14.2%	20.0%	\$436.94
2008	15.5%	20.0%	\$433.06
2009	16.9%	20.0%	\$466.42
2010	17.0%	20.0%	\$459.95
2011	17.0%	20.0%	\$461.51
2012	17.2%	20.0%	\$465.13
2013	17.4%	20.0%	\$469.07
2014	17.4%	20.0%	\$468.16
2015	17.0%	20.0%	\$476.06
2016	16.6%	20.0%	\$469.40

**Illinois**

2005	15.1%	5.0%	\$116.28
2006	15.0%	5.0%	\$118.16
2007	14.4%	5.0%	\$116.08
2008	15.6%	5.0%	\$115.86
2009	17.2%	5.0%	\$123.78
2010	17.3%	5.0%	\$122.43
2011	17.4%	5.0%	\$121.63
2012	17.3%	7.5%	\$183.61
2013	17.4%	10.0%	\$247.33
2014	17.2%	10.0%	\$248.18
2015	16.9%	10.0%	\$250.89
2016	16.5%	10.0%	\$246.60

**Iowa**

2005	13.2%	6.5%	\$133.15
2006	13.2%	6.5%	\$135.29
2007	12.6%	7.0%	\$142.69
2008	13.7%	7.0%	\$144.38
2009	15.6%	7.0%	\$155.48
2010	15.3%	7.0%	\$152.88
2011	15.2%	7.0%	\$151.57
2012	15.2%	7.0%	\$152.97
2013	15.3%	14.0%	\$311.16
2014	15.0%	15.0%	\$334.98
2015	14.8%	15.0%	\$341.55
2016	14.4%	15.0%	\$337.65

**Kansas**

2005	14.6%	15.0%	\$325.01
2006	14.2%	15.0%	\$326.73
2007	14.0%	17.0%	\$361.14
2008	14.7%	17.0%	\$362.03
2009	16.8%	17.0%	\$396.45
2010	16.9%	18.0%	\$413.76
2011	16.9%	18.0%	\$411.70
2012	16.7%	18.0%	\$415.22
2013	16.9%	17.0%	\$398.53
2014	16.6%	17.0%	\$398.80
2015	16.2%	17.0%	\$405.86
2016	16.0%	17.0%	\$398.82

**Louisiana**

2005	27.9%		
2006	26.9%		
2007	24.5%		
2008	26.1%	3.5%	\$92.56
2009	28.1%	3.5%	\$98.61

2010	27.6%	3.5%	\$96.71
2011	27.3%	3.5%	\$95.81
2012	26.9%	3.5%	\$96.20
2013	27.0%	3.5%	\$97.07
2014	26.6%	3.5%	\$97.34
2015	26.6%	3.5%	\$99.19
2016	26.4%	3.5%	\$97.83
<b>Maine</b>			
2005	14.3%	4.9%	\$98.85
2006	14.2%	5.0%	\$101.29
2007	13.2%	5.0%	\$98.56
2008	15.0%	5.0%	\$98.04
2009	16.9%	4.0%	\$83.28
2010	16.8%	4.0%	\$81.84
2011	16.7%	5.0%	\$100.89
2012	16.7%	5.0%	\$101.94
2013	16.8%	5.0%	\$103.29
2014	16.7%	5.0%	\$103.14
2015	16.3%	5.0%	\$104.43
2016	15.8%	5.0%	\$102.80
<b>Maryland</b>			
2005	13.2%	50.0%	\$1,085.21
2006	13.0%	50.0%	\$1,099.39
2007	12.7%	50.0%	\$1,079.00
2008	13.5%	50.0%	\$1,074.84
2009	14.8%	50.0%	\$1,163.24
2010	14.8%	50.0%	\$1,149.87
2011	14.9%	50.0%	\$1,143.60
2012	14.9%	50.0%	\$1,146.06
2013	15.0%	50.0%	\$1,159.77
2014	15.2%	50.0%	\$1,158.21
2015	14.8%	50.0%	\$1,169.90
2016	14.3%	50.0%	\$1,144.00
<b>Massachusetts</b>			
2005	10.4%	15.0%	\$299.14
2006	10.4%	15.0%	\$301.70
2007	10.1%	15.0%	\$296.03
2008	11.0%	15.0%	\$295.47
2009	12.3%	15.0%	\$315.00
2010	12.3%	15.0%	\$309.89
2011	12.5%	15.0%	\$306.99
2012	12.7%	15.0%	\$307.54
2013	12.9%	15.0%	\$312.02
2014	12.8%	15.0%	\$311.24
2015	12.4%	15.0%	\$313.90

2016	12.0%	15.0%	\$310.20
<b>Michigan</b>			
2005	14.9%		
2006	15.1%		
2007	14.9%		
2008	16.4%	10.0%	\$224.91
2009	18.4%	20.0%	\$483.46
2010	18.4%	20.0%	\$474.73
2011	18.4%	20.0%	\$474.76
2012	18.3%	6.0%	\$144.25
2013	18.4%	6.0%	\$145.36
2014	18.0%	6.0%	\$146.35
2015	17.5%	6.0%	\$148.41
2016	17.0%	6.0%	\$146.76
<b>Nebraska</b>			
2005	14.0%		
2006	13.9%	8.0%	\$173.68
2007	13.4%	10.0%	\$211.62
2008	14.3%	10.0%	\$212.17
2009	16.2%	10.0%	\$229.40
2010	16.1%	10.0%	\$226.78
2011	16.1%	10.0%	\$225.41
2012	16.0%	10.0%	\$227.96
2013	16.1%	10.0%	\$231.13
2014	15.7%	10.0%	\$231.95
2015	15.4%	10.0%	\$235.70
2016	15.0%	10.0%	\$232.60
<b>New Mexico</b>			
2005	23.7%		
2006	22.6%		
2007	21.5%	8.0%	\$182.48
2008	22.8%	10.0%	\$226.59
2009	24.8%	10.0%	\$245.65
2010	24.5%	10.0%	\$242.11
2011	24.4%	10.0%	\$241.12
2012	24.6%	10.0%	\$240.94
2013	24.7%	10.0%	\$243.82
2014	24.2%	10.0%	\$243.62
2015	24.0%	10.0%	\$247.25
2016	23.8%	10.0%	\$244.50
<b>North Carolina</b>			
2005	20.3%		
2006	20.0%		
2007	18.7%		
2008	20.7%	3.5%	\$82.28

2009	22.5%	5.0%	\$125.85
2010	22.2%	5.0%	\$124.25
2011	22.2%	5.0%	\$123.34
2012	22.2%	5.0%	\$123.93
2013	22.4%	4.5%	\$112.13
2014	22.2%		
2015	21.8%		
2016	21.0%		
<b>Ohio</b>			
2005	14.9%		
2006	15.1%		
2007	14.5%		
2008	16.1%		
2009	18.1%		
2010	18.0%		
2011	18.0%		
2012	17.8%		
2013	18.0%	5.0%	\$120.26
2014	17.7%	10.0%	\$240.67
2015	17.4%	10.0%	\$244.51
2016	17.1%	10.0%	\$240.70
<b>Oklahoma</b>			
2005	21.3%	5.0%	\$117.27
2006	20.6%	5.0%	\$118.22
2007	18.8%	5.0%	\$114.86
2008	20.5%	5.0%	\$114.19
2009	22.9%	5.0%	\$124.68
2010	22.6%	5.0%	\$123.43
2011	22.2%	5.0%	\$122.49
2012	21.6%	5.0%	\$122.83
2013	21.8%	5.0%	\$124.08
2014	21.2%	5.0%	\$124.45
2015	21.4%	5.0%	\$126.66
2016	21.4%	5.0%	\$125.85
<b>Oregon</b>			
2005	14.1%	5.0%	\$103.78
2006	13.9%	5.0%	\$103.77
2007	13.3%	5.0%	\$100.82
2008	14.7%	6.0%	\$120.20
2009	16.6%	6.0%	\$129.36
2010	16.5%	6.0%	\$126.73
2011	16.6%	6.0%	\$125.68
2012	16.5%	6.0%	\$125.90
2013	16.6%	6.0%	\$127.41
2014	16.3%	8.0%	\$168.19

2015	15.7%	8.0%	\$169.52	X.
2016	15.0%	8.0%	\$167.12	
<b>Vermont</b>				
2005	12.5%	32.0%	\$604.27	
2006	12.3%	32.0%	\$604.14	
2007	12.0%	32.0%	\$588.83	
2008	13.2%	32.0%	\$582.42	
2009	14.7%	32.0%	\$629.30	
2010	14.7%	32.0%	\$614.15	
2011	14.7%	32.0%	\$603.59	
2012	14.7%	32.0%	\$607.49	
2013	14.7%	32.0%	\$616.45	
2014	14.4%	32.0%	\$614.63	
2015	14.1%	32.0%	\$623.94	
2016	13.7%	32.0%	\$616.32	
<b>Virginia</b>				
2005	14.2%			
2006	14.1%	20.0%	\$447.74	
2007	13.6%	20.0%	\$437.40	
2008	14.8%	20.0%	\$435.30	
2009	16.4%	20.0%	\$467.99	
2010	16.5%	20.0%	\$462.38	
2011	16.4%	20.0%	\$457.87	
2012	16.4%	20.0%	\$461.15	
2013	16.7%	20.0%	\$464.32	
2014	16.6%	20.0%	\$461.26	
2015	16.3%	20.0%	\$467.55	
2016	15.9%	20.0%	\$460.60	