

The Earned Income Tax Credit and Educational Attainment for its Recipients: Evidence from Personal Level Data of the Current Population Survey

Timothy Han

University of California, Berkeley

May 2016

Abstract

In this paper, I estimate the effects of the EITC on educational attainment for direct EITC recipients with a quasi-experiment approach, using the variations in generosity by the program's expansions in the 1990s. By EITC recipients, I refer only to the individuals who are working and receiving the tax refunds. This paper provides the first estimates of the EITC's effect on its recipients' educational attainment. I look at three thresholds of educational attainment: high school completion, some college, and college completion. Using a difference-in-difference approach with ordinary least squares estimators, I find mixed results across different education levels when comparing single women with and without children, and single women with one child versus single women with two or more children. When comparing single women with and without children, the EITC increases the share of individuals that have completed high school or above by 2.2 percentage points and some college or above by 2.7 percentage points, but decreases college completion or above by 1 percentage point. When comparing single women with one child and single women with two or more children, the EITC decreases the share of individuals that have completed some college or above by 2 percentage points while the effects on other levels of educational attainment are ambiguous. These results are robust to a variety of controls including race, age, time fixed effects, state fixed effects, and unemployment rates by state. Additionally, event study estimates are consistent with these results. The results indicate that the EITC's strong work incentives and credits may increase short-term education (high school completion and some college), but may decrease longer, more investing education levels (college completion). However, for families with multiple children, the EITC decreases or has an ambiguous affect on educational attainment because of the wage-earners higher responsibility to provide for their dependents.

Introduction

The Earned Income Tax Credit (EITC) is one of the largest and least controversial means-tested transfer program in the United States, with 26.7 million recipients sharing \$63 billion in total federal EITC expenditures in 2013 (Nichols and Rothstein 2015). It is an anti-poverty program that focuses on families whose incomes lie between 75% and 150% of the poverty line (Hoynes and Patel 2014). The EITC has proven to be an extremely effective anti-poverty program, as shown by the analysis of the new Census supplemental poverty measure (Short 2014). This analysis suggests that income from refundable tax credits, primarily from the EITC, reduces the number of people in poverty by 15% and reduces child poverty by over 25%. Because of its widespread success, the program has received bipartisan support, with expansions authorized by both Democratic and Republican congresses under the last 5 presidents (Nichols and Rothstein 2015). With these expansions, more and more families are becoming eligible for the program and receiving more income from their labor. Much of the research done about the EITC has looked at how it affects labor supply and how effective it is at reducing poverty; however, the effects of the EITC extend far beyond labor supply decisions. Recently, more research has attempted to understand the educational outcomes that result from the EITC. Because the family structure requirement of the EITC, almost all of this research has been about the children in the EITC eligible families.

My research attempts to find out how the EITC affects educational attainment for the direct recipients. These recipients may make a choice between pursuing education and working. The people who could potentially qualify for the EITC have low income and dependents to take care of. Although more education may result in more lucrative returns in the future, these individuals may have immediate responsibilities to take care of their families so they may choose

to work low-wage jobs instead of going to school. However, the EITC may have the opposite effect. Because the EITC only rewards people who work, individuals who are not employed may choose to get more education so that they can have better chances of employment. For the employed, the tax refunds from the EITC helps cover immediate responsibilities such as providing food and paying rent, which may free up time and lift the pressure to work long hours. On the other hand, the EITC's work incentives and their low-income situations may cause these individuals to work even more. My research looks at the EITC's effect on three levels of educational attainment: high school completion, some college, and college completion. By EITC recipient, I refer to the primary wage earner that receives the tax refunds. I use cross sectional, person level data from the Current Population Survey for the years 1990 to 1999. In 1993, the Clinton administration massively expanded the EITC through the Omnibus Budget Reconciliation Act (OBRA 1993). The 1993 legislation produced dramatic changes to the EITC, as families claiming two or more children received an increase in the maximum credit of \$4,236 (2013 dollars), from their maximum benefit in 1984 (Hoynes and Patel 2015). This expansion serves as the basis of my quasi-experiment approach because there were significantly different credits given to people with children versus people without, and people with two or more children versus people with one child. Intuitively, the effect on education does not seem to be clear. Extra income from the EITC could have an income effect and increase leisure time, which may be spent on part-time education. However, the EITC implements strong work incentives because the opportunity cost of not working increases. Additionally, the decision between work and education can be interrelated, as some individuals may pursue education to make themselves more attractive in the job market. After researching single women with children versus single women without children, I found that the EITC increases high school completion and some

college attainment, but decreases college completion. For single women with two or more children versus single women with one child, the EITC decreases some college attainment and has an ambiguous affect on the other levels of education.

EITC Eligibility and Schedule (Figure 1)

Eligibility for the EITC is based on family structure and family's earnings and income. The criterion for family structure is the presence of qualifying children in the household for at least half the tax year. "Qualifying children" consists of youth younger than nineteen, 24 if a full time student, or any age if totally disabled (Nichols and Rothstein 2015). The next requirement is earned income, which must be below a threshold that varies with family size and filing status. The EITC schedule has three segments: a "phase-in" range, where the credit increases in proportion to the amount earned; a "plateau" range, where the maximum credit is paid; and a "phase-out" range, where the credit is reduced in proportion to the difference between earnings and the end of the plateau range (Nichols and Rothstein 2015). Because the EITC requires earned income and has a phase-in region, there are strong incentives to work for individuals who are not working at all or not working much. Additionally, the extra after-tax income may have many affects on the EITC recipients or their dependents.

Proceedings of the Paper

Section 1 will explore the literature and research done on the EITC's impact on educational outcomes. Section 2 will describe the data sources I use and the methodology of my research. In Section 3 I will explain my results, with interpretations of coefficients and robustness checks. In Section 4, I will summarize my results and conclude the paper. After the 4 sections, I include my references and an appendix, which includes all of my tables and graphic figures.

I. Literature Review

EITC's affect on Educational Outcomes

Much of the previous research done on the EITC's affect on educational outcomes has centered on the children who are living under the recipients. The two areas of focus have been the EITC's affect on educational performance and educational enrollment. Manoli and Turner (2015) found that an additional \$1000 of after-tax income from tax refunds increases college enrollment by 2 to 3 percentage points. They used a regression kink design and analyzed students whose families received tax refunds in the spring of their high school senior year. Although this research shows a positive affect of EITC funding on educational enrollment for the dependents of the EITC recipients, it is unclear whether the effect would be the same for the EITC recipients. Because of the family structure and low-income level of EITC recipients, it may be difficult for the recipients to spend money on themselves. Because the recipients are already low-income, the decision to spend money on their own education may hinder the money available to provide for their dependents that live with them.

Furthermore, research on intergenerational impacts of the EITC on education outcomes by Bastian and Michelmore's (2015) suggests that an additional \$1,000 in EITC exposure when a child is 18 year old increases: the likelihood of completing high school (2.5 percent), attending college (3.7 percent), and completing college (3.7 percent). It seems that this extra income in tax refunds helps motivate and support children to achieve better educational outcomes. Dahl and Lochner (2008) find that a \$1,000 increase in income from the EITC raises combined math and reading test scores by 6% of a standard deviation in the short-run. Although the extra income has improved educational outcomes for children, the direct EITC recipients are the ones spending their time at work to earn this income.

EITC's Affect on Labor

In each phase of the EITC schedule, there are different labor effects. Between the choices of leisure and labor, each phase of the schedule has different incentives. The EITC has different affects on labor depending on where the recipient is on the EITC schedule. For individuals out of the labor force, the EITC raises the potential wage, which results in an increase of the substitution effect and no income effect, with respect to leisure and consumption (Hotz and Scholz 2003). These individuals are currently consuming all leisure and no labor. It may be that these individuals are spending their time in school, but the added work incentives of the EITC may take them into the work force. For individuals who are already in the labor force and in the plateau region, there is only an income effect, where they may reduce hours worked and move toward more leisure (Hots and Scholz 2003). These individuals may use their leisure time to enroll in school. For individuals in the phase out region, they may reduce hours worked because there is a negative substitution effect from the EITC imposing a lower effective wage rate (Hots and Scholz 2003). This is shown in Raj Chetty's study, where there is a sharp bunching around the max benefits of the EITC (Chetty, Friedman, and Saez 2013). The individuals in the phase-out region experience strong incentives to move toward leisure because substitution and income effects both push the individual to work less and consume more leisure. For these individuals, the EITC should have a positive effect on educational outcomes.

How the EITC is spent

Extensive research has been done on how EITC recipients spend their refunds. Barrow and McGranahan (2000) and Goodman-Bacon and McGranaham (2008) found that households spend more on durable goods, with the biggest expenditure on vehicles. Vehicles can be used for commuting to work, but it also opens up the opportunity of commuting to school, such as a local community college. Besides their expenditures on durable goods, the primary use of EITC

refunds is to pay or catch up on bills and debts (Goodman-Bacon and McGranaham 2008). This suggests that EITC recipients need all the credits they can receive to pay off necessary bills and buy essential items. For this reason, it may be unlikely that the recipients would sacrifice time and money to pursue education; however, if short-term education can lead to higher wages, it may be a viable option.

II. Data and Methodology

Methodology

Building off much of Hoynes and Patel's (2015) research design in their paper on the EITC and poverty, I use a Difference-in-Difference estimator that compares a treatment group to a control group, before and after the legislative change in the EITC. The control group is a comparable sample that captures common changes before and after the expansion. With person level data from 1990 to 1999, I used Ordinary Least Squares (OLS) estimators through a multi-variable regression model to find the effect of EITC exposure on education attainment.

Model to be estimated: $Y_i = \alpha + \beta_1(\text{post} * \text{treat})_i + \beta_2(\text{post})_i + \beta_3(\text{treat})_i + \beta_n x_{n,i} + u_i$

Y_i = Educational Attainment: high school completion and above, some college and above, college completion and above (3 different variables). It is equal to 1 if the individual has reached that level of educational attainment and 0 if the individual has not.

Post = A variable indicating if the individual is in a year after 1993, which is after the OBRA 93 EITC expansion.

Treat= A variable indicating if the individual is in the treatment group. The first treatment and control group are single women with children versus single women without children. The second is single women with two or more children versus single women with one child.

$x_{n,i}$ = Control Variables: Age, Race, Year Fixed Effects, State Fixed Effects

u_i = Error term; i = Individual

I use two sets of treatment and control groups that leverage differences in EITC credit due to the expansion. The first set compares single women with children (treatment) to single women without children (control). After OBRA 1993, women with children received a significant increase in credits while women without children received very small EITC credits. This captures the effect of the EITC; however, the two groups may not make educational decisions in the same way. Women without children may have more freedom in choosing to go to school, while women with children may have less time for school and must focus on providing for the family. On average, women without children have more education, are more likely to be white, less likely to be divorced, and more likely to be employed (Hoynes and Patel 2015). To control for these differences, I include demographic controls and sample limitations. The second set compares single women with one child (control) to single women with two or more children (treatment). The OBRA 93 expansion was much larger for those with two or more children (Figure 2). These groups should be very comparable and experience the same changes through time, with the only difference being the EITC expansion. By implementing state effects, year effects, and other control variables, I further attempt to avoid the omitted variable bias and isolate the effect of the EITC on educational attainment. The summary statistics of the variables that I included in my models can be found in tables 1 and 2, for each set of control and treatment groups. In addition, I also estimate the EITC's effects on employment to facilitate a link to prior literature and ensure that my methods are robust.

Data

I use data from the Current Population Survey (CPS), which is a monthly U.S. household survey conducted by the U.S. Census Bureau and the Bureau of Labor Statistics. The CPS

includes person level data of individuals' age, educational attainment, race, poverty status, income, and many other attributes. I control my sample size to the years 1990 to 1999, which are the years most relevant to the 1993 EITC expansion. The years prior to 1993 account for any trends that may affect educational decisions and the years after 1993 show the changes of educational attainment after the expansion. I limit the data to single women ages 20 to 45 who are not disabled and who have a total family income that is less than three times the official poverty rate cutoff. I focus on single women because they have the largest participation rates in the program and single filers with children account for almost 60 percent of EITC filers and about three-quarters of the cost of the credit (Hoynes and Patel 2015). By limiting the data, the control and treatment groups should be very similar and the difference-in-difference estimator should help isolate the effect of the EITC on education.

III. Description of Results

The two sets of control and treatment groups had very different results. For single women with children versus single women without children, the EITC increased the share of people who completed high school or above by 2.2 percentage points, increased some college or above by 2.7 percentage points, and decreased college completion or above by 1 percentage point (Tables 3,4,5). For single women with two or more children versus single women with one child, the EITC's effect was negative for some college and positive, but not statistically significant, for high school and college completion (Tables 6,7,8). The mixed results really demonstrate the complex ways that individuals with different family structures can respond to the EITC.

Single women with children versus single women without children

There may be two reasons for the positive coefficient on high school completion and some college. The first reason is that the credits of the EITC have an income effect that pushes

individuals to seek more leisure than labor. Without the EITC, individuals would have to work longer hours to earn certain levels of income, so the increase of EITC credits can enable the individuals to work less and earn the same income. With more leisure, these individuals may go back to school to get some college from their local community college or take classes to earn their high school diploma if they did not before. This effect applies to the individuals who were already working before the EITC expansion. The second reason for this occurrence applies to individuals who were not working before the expansion. The EITC only benefits those who work, so non-employed individuals were strongly incentivized to join the work force. Only 77 percent of single women with children had completed high school and only 33 percent had some college (Table 1). Because many jobs require a high school education and encourage higher levels of education, non-working individuals may go to school to increase their chances of employment. High school completion and some college are short term and low financial investments; however, completing college is longer and more expensive. For this reason, the EITC discourages college completion. The EITC's strong work incentives have a negative effect on college completion because low-income families may not have the resources to commit their time and money to completing college while missing out on wages and the EITC's credits.

Single women with two or more children versus single women with one child

The only statistically significant coefficient within this model is negative for some college education. Individuals with more than one child may have more demanding responsibilities to take care of their children that require significant investments of time and money. I hypothesize that this is the reason for the differences in effect for the two treatment groups. The income effect for this group may be significantly smaller than the previous treatment group. The responsibility of providing for multiple kids increases the EITC's incentives to work

and minimizes the income effect of consuming more leisure instead of labor. Single women with two or more children have even lower levels of education; however, the high demands to take care of their dependents and the EITC's credits may push them to search hard in the labor market and take whatever job they can get.

Interpretation of Coefficients

Because the outcome variable is an indicator of whether the individual has reached a level of educational attainment, the coefficients suggest a percentage change.

-Treat (1 + Children and 2 + Children): The coefficient on this variable is the difference of educational attainment between the treat group and the control group.

-Year > 1993: The coefficient on this variable is the difference of educational attainment between people in years after 1993 and people in years before 1993.

-(Treat x Year>1993): The coefficient on this variable is the Difference-in-Difference effect. It is the difference between the change of the outcome variable for the treatment group and the change of the outcome variable for the control group. This is the isolated effect of the EITC on educational attainment.

-Age: an increase of 1 in age changes the percentage of people receiving the level of educational attainment (for the 3 levels of educational attainment) by β_{Age} .

-Race Groups (Black, American Indian, etc.): The coefficient on this variable is the difference of educational attainment between the specified race group versus Whites.

-Unemployment Rate by State: The coefficient implies that a 1 percent increase of the unemployment rate in the individual's state changes the percent of people receiving the level of educational attainment (for the 3 levels of educational attainment) by $\beta_{\text{Unemployment Rate}}$ percent.

-(Unemployment Rate x Treat): This coefficient is the interaction term between the unemployment rate and the treatment. It measures how the treatment group reacts to the unemployment rate compared to the control group.

Robustness Checks

Estimating the EITCs effect on Employment

I used my data and difference-in-difference models to estimate the effect of the EITC on employment. As seen in past research, the EITC should increase employment. I replicated these findings in my results, as the EITC increased employment in both treatment groups (Tables 9,10). This replication helps demonstrate the validity of my data and my research design.

Event Study Time Models

With difference-in-difference estimators, it is very important to see what the trend was like before the treatment. The pre-event trends must be compared to the findings in the results to see if the difference-in-difference approach is valid. The pre-event trends can show if there was already an additional factor that was influencing the educational outcomes for the two groups. Comparing the post-event and pre-event trends, I can better gauge the true effect of the EITC. When comparing single women with children versus single women without children, the event studies show no pre-event trends for educational attainment (Figure 3,4,5). This validates my research design and the comparability of the control and treatment groups. When comparing single women with two or more children versus single women with one child, the event studies show some pre-event trends for educational attainment. For the outcome variable some college, there is a positive difference (compared to 1993) between the treatment and control groups, but this difference goes slightly negative after 1993, which is consistent with the negative effect (Figure 6,7). This event study is less convincing; however, it is still consistent with the results.

State Unemployment Rates and (Unemployment Rate * Treat) Controls

Throughout the EITC's expansion, the labor market got stronger because the EITC's work incentives. As the labor market strengthens, people's education levels can be affected. I included state-level unemployment rates and an additional control variable that interacted the unemployment rates with the treatment group. For the core results (statistically significant coefficients), the coefficients and significance were similar when I added the state-level unemployment rates only (Tables 3,4,5). When I included the interaction variable for the model comparing single women with and without children, there were many changes to the significance and value of the coefficients (Tables 3,4,5). The difference-in-difference coefficient for high school completion dropped significantly and lost statistical significance. The coefficient for some college remained significant, but decreased significantly. The coefficient for college complete remained similar. For the model comparing single women with two or more children and single women with one child, the coefficient for some college actually increased and became more statistically significant (Table 7). In addition, the event-study model was significantly more convincing, as the pre-trends were completely opposite to post-trends (Figure 7). The reason for this variable having such an impact is that it interacts with the treatment, which makes it very correlated to the treat variable. This multicollinearity may bring the coefficients to zero. For this reason, I decided to report the results that excluded the (UR*treat) variable. However, I included the results with and without this variable in my regression tables and included the event study models with and without this variable (Figures 6,7).

Limitations and Possible Extensions

One limitation is that the data is cross-sectional and does not track the same individuals over time. The CPS conducts a monthly survey that is administered to a random sample of the

population. Without the longitudinal aspect in my study, I was not able to use a panel dataset and control for time and entity fixed effects. With longitudinal data, I would also be able to observe the changes in educational outcomes for the people who benefited from the EITC expansion. Another limitation is that there were some mismatches within the CPS reporting. For example, years 1990 and 1991 reported 12th grade as “12th grade, no diploma” while years 1992-1999 reported 12th grade as “12th grade, diploma unclear”. Because of this mismatch of the data, my variable for high school completion may not be fully accurate. For this variable, I regarded 12th grade educational attainment as high school completion. This data mismatch also applied to the college completion variable. Years 1990 and 1991 did not report whether the individual had earned their Bachelor’s degree. For this variable, I regarded an educational attainment of four years in college as college completion.

Furthermore, the data did not capture all kinds of educational attainment such as vocational or work training programs. One of my theories for why the EITC increased education is that individuals sought after education to make them more attractive candidates in the job market. If the data included vocational and work training programs in educational attainment, the EITC may have had a stronger positive increase for educational attainment.

V. Conclusion

As the EITC continues to expand and offer tax refunds to more low-income families, it is important to understand its affects past influencing labor supply decisions and lifting families over the poverty threshold. Although much research has been done on income and children educational outcomes, the heads of households’ educational outcomes should be considered as well. From the results of my research, the EITC increases high school completion and some college, but decreases college completion. It seems that the EITC’s strong work incentives

indirectly increase the need for more education; however, it discourages high commitment, long-term educational outcomes like college completion. Additionally, the EITC's credits increase effective wages, and individuals consume more leisure instead of labor due to the income effect. However, for families with more than two children, the wage earners have less freedom to consume leisure, so the EITC's work incentives discourages this group from seeking higher education. For low-income families, the EITC has been very effective in encouraging work and offering financial assistance. However, if the EITC also encourages schooling, the recipients and their families may have even more profound effects because higher education leads to better paying jobs. So not only would the EITC alter labor decisions in terms of hours, it would also affect the type of jobs and wages that individuals may have in the future, with higher education. Further research should be conducted with panel data of individual EITC recipients and their educational decisions, including vocational and work training programs. With further research, the findings would be more robust and may offer even more reasons to support the EITC.

References

- Barrow, L., & Mcgranahan, L. (2000). The Effects of the Earned Income Credit on the Seasonality of Household Expenditures. *National Tax Journal NTJ*, 53(4), 1211-1244.
- Bastian, J., & Michelmore, K. (2015). The Intergenerational Impacts of the Earned Income Tax Credit on Education and Employment Outcomes. *SSRN Journal*.
- Chetty, R., Friedman, J. & Saez, E. 2013. Using Differences in Knowledge across Neighborhoods to Uncover the Impacts of the EITC on Earnings. *American Economic Review*, 103(7): 2683-2721.
- Dahl, G., & Lochner, L. (2008). The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit. *NBER*.
- Goodman, A. & McGranahan, L. (2008). How do EITC Recipients Spend Their Refunds? *SSRN Journal*. 32(2).
- Hotz, J. & Scholz, J. (2003). The Earned Income Tax Credit. *NBER*.
- Hoynes, H., & Patel, A. (2015). Effective Policy for Reducing Inequality? The Earned Income Tax Credit and the Distribution of Income. *NBER Working Paper Series*.
- Manoli, D., & Turner, N. (2015). Cash-on-Hand & College Enrollment: Evidence from Population Tax Data and Policy Nonlinearities. *NBER Working Paper Series*.
- Nichols, A., & Rothstein, J. (2015). The Earned Income Tax Credit (EITC). *NBER Working Paper Series*.
- Short, Kathleen (2015). The Supplemental Poverty Measure: 2014. United States Department of Commerce.

Appendix

Table 1-Summary Statistics for Single Women with and without children

Variable	No Children					1+ Children				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
highschool~e	34,818	0.870	0.337	0	1	35,286	0.766	0.423	0	1
somecollege	34,818	0.524	0.499	0	1	35,286	0.331	0.471	0	1
collegecom~e	34,818	0.172	0.378	0	1	35,286	0.059	0.235	0	1
age	34,818	27.917	7.150	20	45	35,286	32.562	6.839	20	45
black	34,818	0.146	0.353	0	1	35,286	0.290	0.454	0	1
americanin~n	34,818	0.015	0.121	0	1	35,286	0.022	0.147	0	1
asian	34,818	0.044	0.204	0	1	35,286	0.016	0.124	0	1
white	34,818	0.788	0.408	0	1	35,286	0.663	0.473	0	1
otherrace	34,818	0.007	0.085	0	1	35,286	0.009	0.094	0	1
UR	34,818	0.059	0.016	0.02	0.11	35,286	0.060	0.016	0.02	0.11
post	34,818	0.570	0.495	0	1	35,286	0.580	0.494	0	1

Table 2- Summary Statistics for Single Women with 1 child and Single women with 2+ children

Variable	1 child					2+ Children				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
highschool~e	14,331	0.831	0.375	0	1	20,955	0.723	0.448	0	1
somecollege	14,331	0.370	0.483	0	1	20,955	0.304	0.460	0	1
collegecom~e	14,331	0.068	0.252	0	1	20,955	0.052	0.222	0	1
age	14,331	31.727	7.447	20	45	20,955	33.133	6.328	20	45
black	14,331	0.260	0.439	0	1	20,955	0.311	0.463	0	1
americanin~n	14,331	0.022	0.148	0	1	20,955	0.022	0.146	0	1
asian	14,331	0.016	0.125	0	1	20,955	0.015	0.122	0	1
white	14,331	0.694	0.461	0	1	20,955	0.642	0.479	0	1
otherrace	14,331	0.007	0.086	0	1	20,955	0.010	0.099	0	1
UR	14,331	0.059	0.016	0.02	0.11	20,955	0.060	0.016	0.02	0.11
post	14,331	0.583	0.493	0	1	20,955	0.578	0.494	0	1

Note: For Tables 3-8, I reported the coefficients without the UR*Treat variable in the model

Table 3

Difference-in-Difference Estimates of OBRA 93 on Educational Attainment (Highschool Completion and Above)

Model: 0 vs. 1+ Children			
1+ Children	-0.118*** (0.00482)	-0.117*** (0.00482)	-0.0225 (0.0140)
Year > 1993	0.0358*** (0.00702)	0.0339*** (0.00737)	0.0429*** (0.00743)
(Year >1993) * (1+ Children)	0.0220*** (0.00583)	0.0219*** (0.00583)	0.00269 (0.00650)
<u>Controls</u>			
age	0.00256	0.00256	0.00244
agesquared	-3.56e-05	-3.56e-05	-3.38e-05
black	0.0136***	0.0136***	0.0137***
americanindian	-0.0688***	-0.0688***	-0.0708***
asian	0.0520***	0.0521***	0.0508***
otherrace	-0.182***	-0.182***	-0.182***
Year	X	X	X
State	X	X	X
Unemployment Rate		-0.205	0.492**
Unemployment Rate * 1+ Children			-1.413***
Observations	70,104	70,104	70,104
R-squared	0.046	0.046	0.047

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 4

Difference-in-Difference Estimates of OBRA 93 on Educational Attainment (Some College and Above)

Model: 0 vs. 1+ Children			
1+ Children	-0.191*** (0.00565)	-0.190*** (0.00565)	-0.140*** (0.0178)
Year > 1993	0.0932*** (0.00919)	0.0883*** (0.00952)	0.0931*** (0.00970)
(Year >1993) * (1+ Children)	0.0277*** (0.00731)	0.0273*** (0.00731)	0.0172** (0.00804)
<u>Controls</u>			
age	-0.00208	-0.00209	-0.00215
agesquared	1.26e-05	1.27e-05	1.37e-05
black	-0.0481***	-0.0481***	-0.0481***
americanindian	-0.0848***	-0.0848***	-0.0859***
asian	0.115***	0.116***	0.115***
otherrace	-0.0972***	-0.0969***	-0.0967***
Year	X	X	X
State	X	X	X
Unemployment Rate		-0.541*	-0.172
Unemployment Rate * 1+ Children			-0.747***
Observations	70,104	70,104	70,104
R-squared	0.060	0.060	0.060

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5

Difference-in-Difference Estimates of OBRA 93 on Educational Attainment (College Complete and Above)

Model: 0 vs. 1+ Children			
1+ Children	-0.124*** (0.00365)	-0.124*** (0.00365)	-0.123*** (0.0115)
Year > 1993	0.0179*** (0.00631)	0.0169*** (0.00651)	0.0170** (0.00666)
(Year >1993) * (1+ Children)	-0.0100** (0.00471)	-0.0101** (0.00472)	-0.0103** (0.00520)
<u>Controls</u>			
age	0.0403***	0.0403***	0.0403***
agesquared	-0.000579***	-0.000579***	-0.000579***
black	-0.0569***	-0.0569***	-0.0569***
americanindian	-0.0665***	-0.0665***	-0.0665***
asian	0.0894***	0.0894***	0.0894***
otherrace	-0.0439***	-0.0438***	-0.0438***
Year	X	X	X
State	X	X	X
Unemployment Rate			-0.103
Unemployment Rate * 1+ Children		-0.111	-0.0148
Observations	70,104	70,104	70,104
R-squared	0.062	0.062	0.062

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6

Difference-in-Difference Estimates of OBRA 93 on Educational Attainment (High School Completion and Above)

Model: 1 vs. 2+ Children			
2+ Children	-0.128*** (0.00696)	-0.128*** (0.00696)	-0.0196 (0.0214)
Year > 1993	0.0535*** (0.0112)	0.0505*** (0.0117)	0.0642*** (0.0119)
(Year >1993) * (2+ Children)	0.0110 (0.00885)	0.0110 (0.00885)	-0.0114 (0.00989)
<u>Controls</u>			
age	0.0420***	0.0420***	0.0419***
agesquared	-0.000557***	-0.000557***	-0.000556***
black	0.0443***	0.0442***	0.0438***
americanindian	-0.0724***	-0.0724***	-0.0734***
asian	-0.0219	-0.0220	-0.0238
otherrace	-0.181***	-0.180***	-0.180***
Year	X	X	X
State	X	X	X
Unemployment Rate		-0.312	0.697*
Unemployment Rate * 2+ Children			-1.610***
Observations	35,286	35,286	35,286
R-squared	0.064	0.064	0.064

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7

Difference-in-Difference Estimates of OBRA 93 on Educational Attainment (Some College and Above)

Model: 1 vs. 2+ Children			
2+ Children	-0.0248*** (0.00402)	-0.0247*** (0.00402)	0.00414 (0.0131)
Year > 1993	3.15e-06 (0.00672)	-0.00140 (0.00695)	0.00225 (0.00718)
(Year >1993) * (2+ Children)	0.00672 (0.00520)	0.00672 (0.00520)	0.000767 (0.00575)
<u>Controls</u>			
age	0.00478***	0.00477***	0.00475***
agesquared	3.06e-07	4.04e-07	7.50e-07
black	-0.0135***	-0.0136***	-0.0137***
americanindian	-0.0340***	-0.0340***	-0.0343***
asian	0.0833***	0.0832***	0.0827***
otherrace	-0.0328***	-0.0327***	-0.0325***
Year	X	X	X
State	X	X	X
Unemployment Rate		-0.146	0.122
Unemployment Rate * 2+ Children			-0.428**
Observations	35,286	35,286	35,286
R-squared	0.028	0.028	0.028

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 8

Difference-in-Difference Estimates of OBRA 93 on Educational Attainment (College Completion and Above)

Model: 1 vs. 2+ Children			
2+ Children	-0.0719*** (0.00755)	-0.0718*** (0.00755)	0.0298 (0.0252)
Year > 1993	0.128*** (0.0128)	0.120*** (0.0133)	0.133*** (0.0137)
(Year >1993) * (2+ Children)	-0.0198* (0.0101)	-0.0199** (0.0101)	-0.0408*** (0.0112)
<u>Controls</u>			
age	0.0413***	0.0412***	0.0412***
agesquared	-0.000511***	-0.000511***	-0.000510***
black	0.0126**	0.0125**	0.0121**
americanindian	-0.0422**	-0.0422**	-0.0432**
asian	0.0342	0.0340	0.0324
otherrace	-0.0842***	-0.0836***	-0.0827***
Year	X	X	X
State	X	X	X
Unemployment Rate		-0.824**	0.120
Unemployment Rate * 2+ Children			-1.505***
Observations	35,286	35,286	35,286
R-squared	0.044	0.044	0.045

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9
Difference-in-Difference Estimates of OBRA 93 on Employment

Model: 0 vs. 1+ Children			
1+ Children	-0.170*** (0.00550)	-0.169*** (0.00550)	-0.0388** (0.0165)
Year > 1993	0.0313*** (0.00840)	0.0211** (0.00876)	0.0334*** (0.00886)
(Year >1993) * (1+ Children)	0.0655*** (0.00691)	0.0648*** (0.00691)	0.0384*** (0.00766)
<u>Controls</u>			
age	0.0273***	0.0273***	0.0271***
agesquared	0.000282***	0.000282***	0.000279***
black	-0.104***	-0.104***	-0.104***
americanindian	-0.161***	-0.161***	-0.164***
asian	-0.0980***	-0.0977***	-0.0995***
otherrace	-0.100***	-0.0994***	-0.0989***
Year	X	X	X
State	X	X	X
Unemployment Rate		-1.140***	-0.180
Unemployment Rate * 1+ Children			-1.945***
Observations	70,104	70,104	70,104
R-squared	0.072	0.072	0.073

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 10
Difference-in-Difference Estimates of OBRA 93 on Employment

Model: 1 vs. 2+ Children			
2+ Children	-0.145*** (0.00774)	-0.145*** (0.00773)	-0.0773*** (0.0243)
Year > 1993	0.120*** (0.0122)	0.106*** (0.0128)	0.115*** (0.0131)
(Year >1993) * (2+ Children)	0.0186* (0.00998)	0.0186* (0.00998)	0.00462 (0.0112)
<u>Controls</u>			
age	0.0553***	0.0552***	0.0552***
agesquared	-0.000616***	-0.000615***	-0.000614***
black	-0.0658***	-0.0660***	-0.0662***
americanindian	-0.142***	-0.142***	-0.142***
asian	-0.0166	-0.0170	-0.0181
otherrace	-0.108***	-0.107***	-0.106***
Year	X	X	X
State	X	X	X
Unemployment Rate		-1.445***	-0.814*
Unemployment Rate * 2+ Children			-1.006***
Observations	35,286	35,286	35,286
R-squared	0.114	0.114	0.115

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Figure 1: Earned Income Tax Credit by Number of Children and Filing Status, 2014

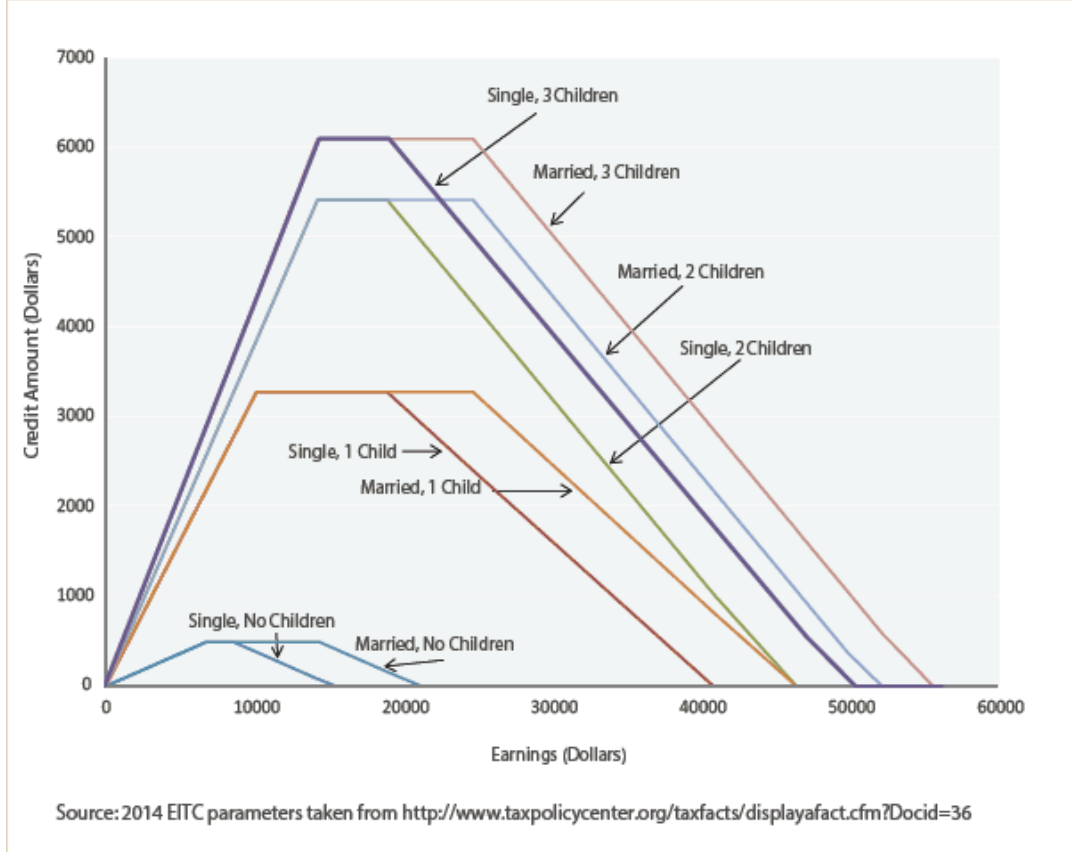
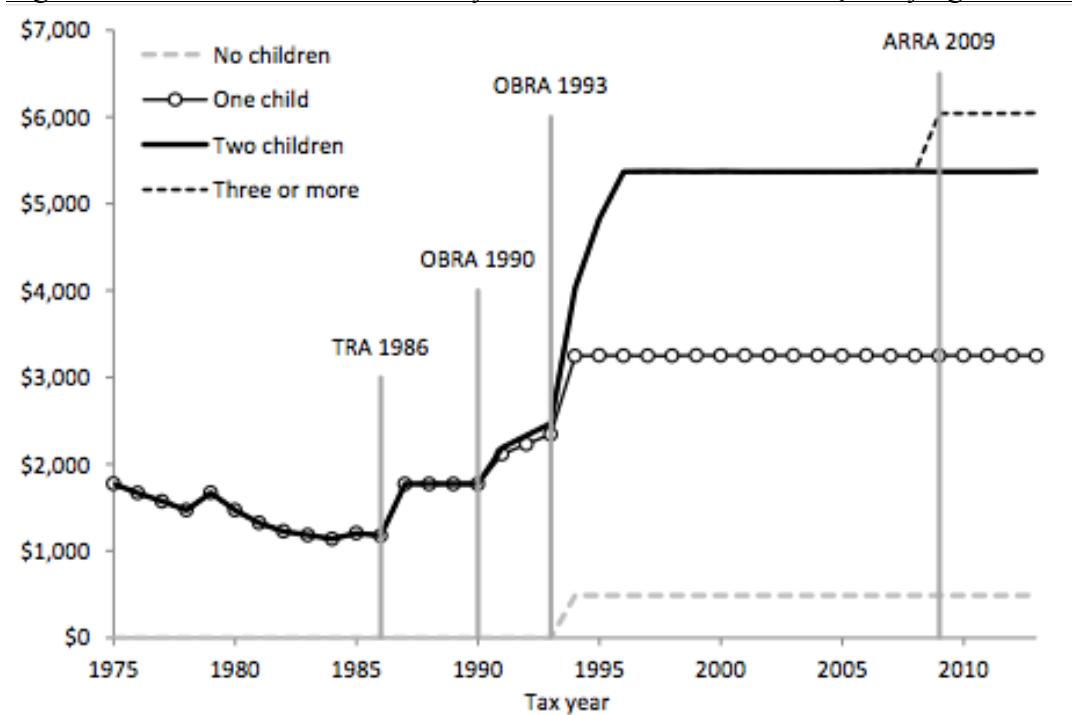


Figure 2: Federal Maximum EITC by Tax Year and Number of Qualifying Children



Note: Figures 3-6 Exclude the Unemployment Rates by State and the Unemployment Interaction variable

Figure 3

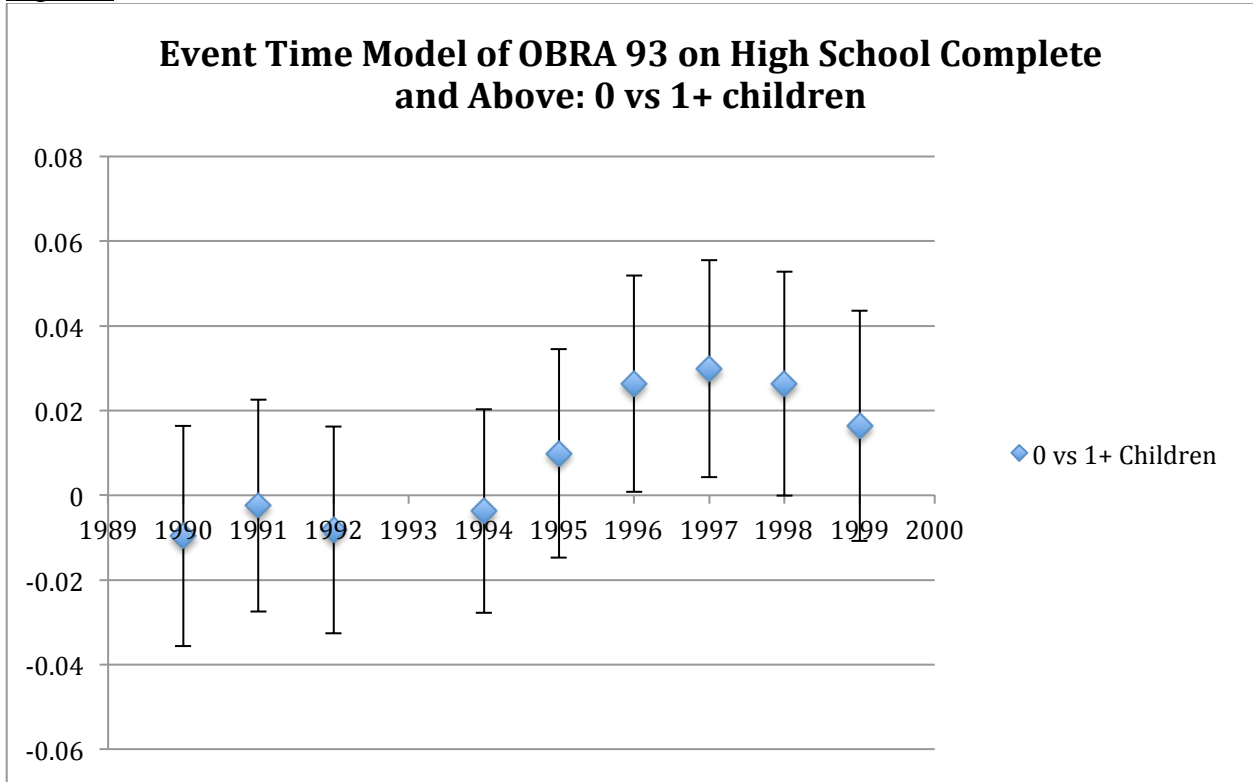


Figure 4

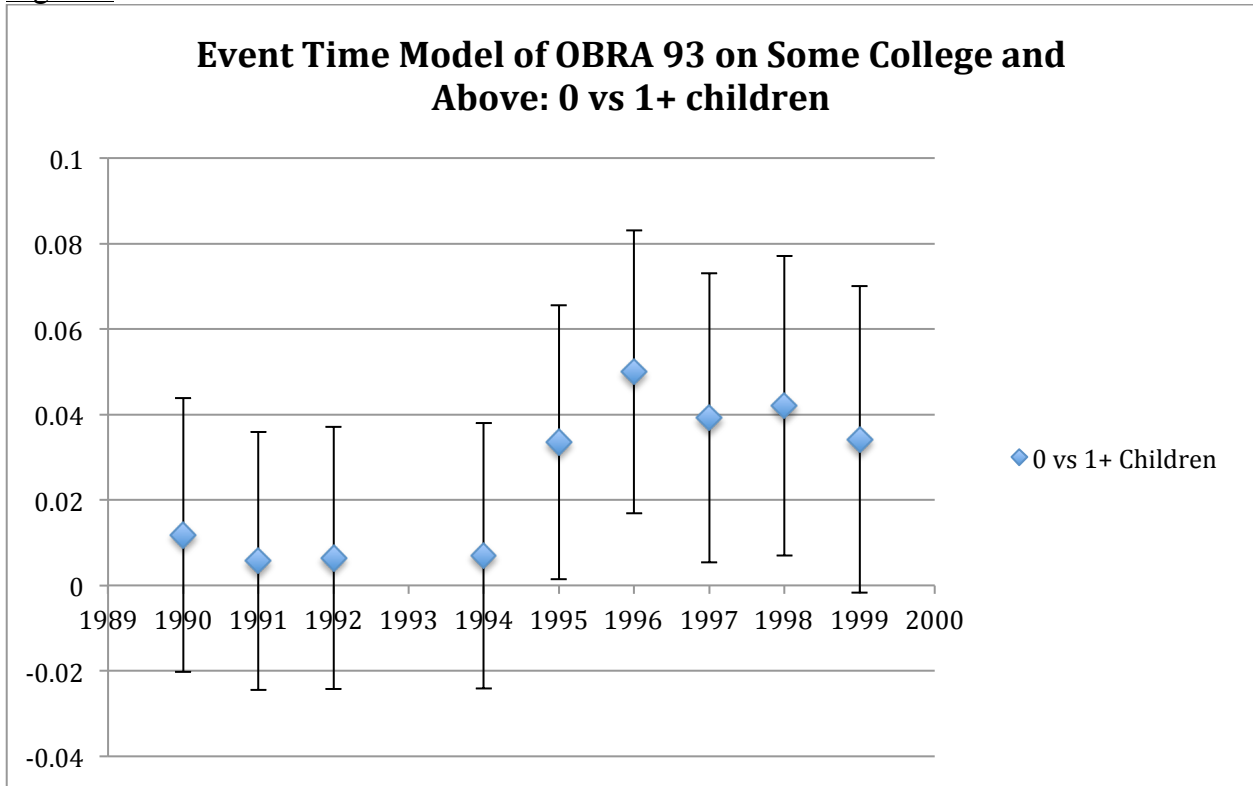


Figure 5

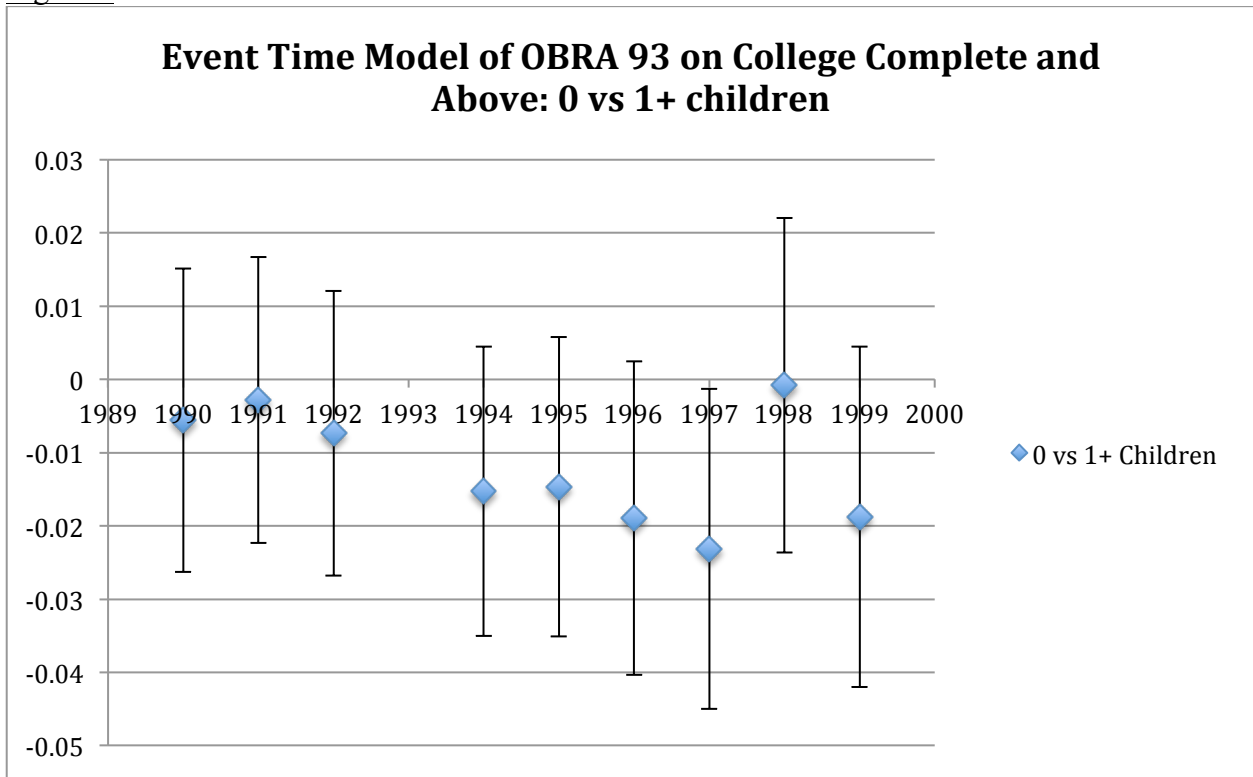


Figure 6

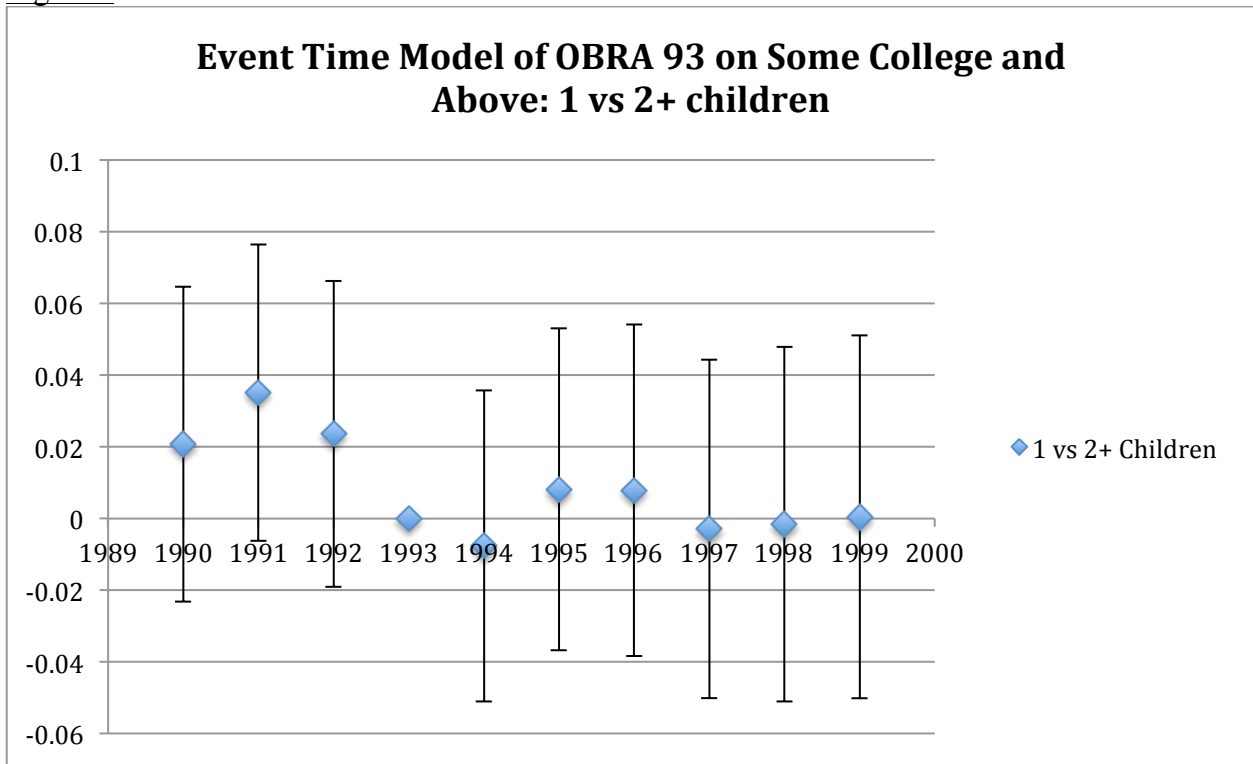


Figure 7:

