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Authors: Neil Silveus and Christiana Stoddard

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Identifying the causal effect of income on religiosity using the Earned Income Tax Credit

Neil Silveus[1], Christiana Stoddard[2]

[1]University of Pittsburgh

[2]Montana State University

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Abstract

How do economic conditions – income and the generosity of social insurance– affect religious behavior? This paper provides novel evidence for the United States using variation in Earned Income Tax Credit benefits across states, over time, and by number of children. In the raw data, income and religiosity have a trivial relationship. In contrast, the instrumental variables strategy shows that increases in income from the EITC are found to sizably reduce religious attendance among low-income individuals. Among individuals who attend, the results indicate that an additional $1000 in annual income is associated with a decrease of roughly 1 service per year (as compared to an average of 16 services per year). The effect arises mainly along the intensive margin, decreasing devout behavior and increasing more marginal attendance, but having little impact on whether an individual participates at all or on beliefs. There are also minimal effects on the occurrence and amount of contributions to religious organizations. The results extend our understanding of the determinants of religiosity, the relationship between governmental income support and religious behavior, and the social effects of the Earned Income Tax Credit.

Keywords— Religion; Earned Income Tax Credit; EITC; crowd-out; Safety Net

JEL Classification— H310; I380; Z12

1 Introduction

Religion is a part of life for most people in the United States. According to Pew Research Center, in 2014, 36% of Americans attended religious services weekly, while another 33% attended "once or twice a month" or "a few times a year." (Pew Research Center, 2014*b*). However, religiosity in the United States is declining. According to the General Social Survey (GSS) and the Public Religion Research Institute, 25% of Americans report being "atheist," "agnostic," "secular," or describe their religious affiliation as "nothing in particular." This combined group of "nones" has roughly tripled since 1990.

Concerns about the interaction between religion and economic conditions has been highlighted in discussions of recent demographic trends. For example, in describing the increase in mortality rates among less educated non-Hispanic whites, Case and Deaton (2017) note that the "deaths of despair" are not primarily caused by unemployment or low wages unless "they work through their effects of family, or spiritual fulfillment, and on how people perceive meaning and satisfaction in their lives in a way that goes beyond material success."[1]

How *do* economic conditions affect religious behavior, "spiritual fulfillment" or "meaning and satisfaction?" Answering this question is difficult because income and religious behavior have a complex, multi-directional relationship. As we describe in the next section, depending on the context, observational evidence can suggest either a positive or a negative association between income and religiosity. Further adding to the complexity, competing economic theories posit a direction of causation that runs both from income to religion and from religion to income.

Consequently, several recent papers use different natural experiments from income shocks to identify the effect of income on religion. However, the results have been contradictory. Chen (2010) finds that negative income shocks in Indonesia increased religiosity, while Buser (2015) finds the opposite relationship – cash transfer payments in Ecuador increased religious behavior. Costa, Junior and Rocha (2019) finds that a negative economic shock in Brazil had divergent effects on religious activity that depended on the type of

[1] See Chen et al. (2020) for the link between "deaths of despair" and religious service attendance in the Nurses Health Study and Health Professionals Follow up Study.

Protestant group.

Collectively, this suggests that the specific institutions and the religious context of a population are relevant for the effect of income on religiosity. Why might the effects of income shocks vary across countries and populations? One possibility is the extent of public social safety nets. A number of researchers have noted the role of religious organizations in providing informal insurance against adverse events in the form of goods and services provided by congregations and other members. The availability of alternative public services that are substitute for the services provided by religious groups may be relevant for understanding the effect of income changes on religious behavior.

To the best of our knowledge, this paper is the first to causally identify the effect of income on religious behavior (attendance and contributions) in a developed country, although the focus is also on a low-income population. To do this, we focus on income changes stemming from variation in the Earned Income Tax Credit, now the largest anti-poverty program in the United States. The EITC is a refundable tax credit for low income households with positive wage income. EITC payments have varied significantly over time and by the number of eligible children used in the schedules. Some states also provide supplemental tax credits that generate additional variation in payments across states and time. We use variation in this program to both identify the effect of income on religiosity as well as to directly test the effect of public generosity itself.

We examine the effect of income on religious attendance using data from the National Longitudinal 1979 Children and Young Adult Surveys (NLSYCYA) and the effect of income on religious giving using data from the Panel Study of Income Dynamics (PSID). Income and religiosity are only marginally correlated based on OLS results. However, the instrumental variables strategy reveals a strong negative effect–increases in income from the EITC are found to sizably reduce religious attendance among low-income individuals. Among individuals who attend, the results indicate that an additional $1000 in annual income is associated with a decrease of roughly 1 service per year (as compared to an average of 16 services per year). The effect arises mainly along the intensive margin, decreasing devout behavior and increasing more marginal attendance, rather than shifting the overall religious participation decision. Conversely, our evidence suggests that increases in income generates only small

positive change in the occurrence and amount of contributions to religious organizations.

2 Previous Literature

Income and religious behavior have a complex, multi-directional relationship. Depending on the context, observational evidence can suggest either a positive or a negative association and a causal effect that runs in both directions. Below we briefly outline the relevant evidence and theories for each of these varied associations. We then turn to the specific relationship we want to identify – whether there is credible causal evidence of a negative effect of income on religious behavior and why that might be.

2.1 Theory and evidence for a positive association between income and religion

In many contexts, religious and income exhibit a positive correlation. Figure 1 documents this in the US using data from the General Social Survey (GSS). In these data, higher income individuals currently attend more frequently than low income individuals. As incomes of the lowest tercile of individuals in the US declined over time relative to other groups, so too did attendance rates of this group relative to higher income groups. Additionally, Chetty et al. (2014) provide evidence that the share of religious adherents in a population is strongly correlated with positive intergenerational mobility. This contemporary evidence reinforces the statement by Iannaccone (1998) that "religion is not the province of the poor and uniformed." More direct causal evidence of the positive effect of income on religiosity comes from Buser (2015), who examines religious behaviors of poor families in Ecuador after a 2010 change in the eligibility criteria and finds higher payments associated with more religious attendance.

What economic theories might explain a positive association between religion and income? One explanation is that religiosity has a positive effect on income through its positive effects on job networks (Montgomery, 1991), academic achiegvement (Putnam, 2016), mental and physical health (Hummer et al., 1999; Fruehwirth, Iyer and Zhang, 2019), lower substance abuse (Califano Jr et al., 2001; Gruber and Hungerman, 2008), and higher mari-

tal stability (Gruber, 2005). However, the positive association between income and religion could also be generated through the opposite causal direction. Azzi and Ehrenberg (1975) posit that if "afterlife consumption" is a normal good, church attendance and financial contributions should increase in non-wage income.

2.2 Theory and evidence for a negative association between income and religion

Teasing out the relationship between income and religion is further complicated by the fact that in other contexts, religion and income exhibit a negative association instead of the positive one described above. This negative association is frequently observed in cross country contexts where religious activity and per capita gross domestic product share a well-documented inverse relationship (Barro and McCleary, 2003; McCleary and Barro, 2006*b*,*a*). A negative relationship between income and religiosity is also found in Brazil by Costa, Junior and Rocha (2019), who find worsening economic conditions due to changes in tariffs led to increased Pentacostal activity, although more traditional Protestants did not experience this same increase in activity.

What economic theories might explain a negative association? Once again, the direction of causality could run in either direction. The negative effect of religion on income is described in Iannaccone (1992) and Hungerman (2014*a*), who model religious involvement as a club good and suggest that religious proscriptions to limit free riding may reduce income. Further evidence of this comes from Squicciarini (2020), who shows that local religious intensity led to resistance to technological education and slowed economic development in France during the Second Industrial Revolution.

But as with the positive association, there is also a second causal pathway, this time running from higher income to lower religiosity. Here the negative association is driven by the (negative) substitution effect of higher wages rather than the (positive) income effect in Azzi and Ehrenberg (1975) described above. In Lipford and Tollison (2003), higher wage income increases the opportunity cost of church attendance, leading to lower religious activity. This theory is further developed and supported in Gruber and Hungerman (2008)

and Hungerman (2014*a*), who find evidence that activities such as shopping or gambling are economic substitutes for religious service attendance and that service attendance decreases when the opportunity cost of time rises.

Of particular interest to us, other literature theorizes that formal religious affiliations may provide a social safety net – a type of informal insurance – against adverse economic situations. Empirical support for this comes from Dehejia, DeLeire and Luttmer (2007) who document that after experiencing negative income shocks, individuals in the US who make donations to religious organizations report lower consumption decreases than those who make no donations. Similarly, Chen (2010), examines the effect of the 1997 Indonesian financial crisis and finds that consumption shocks increase the likelihood of participation in group Koran study and sending children to Islamic schools. Ager, Hansen and Lønstrup (2016) show increased church membership in counties that experienced damage during the Great Mississippi flood of 1927 and find evidence that the increase is due to demand for social insurance. Finally, Hungerman (2005) and Gruber and Hungerman (2007) document increases (decreases) in charitable expenditures in response to decreases (increases) in government spending on anti-poverty programs.

As is clear from this review, the multiplicity of relationships requires careful causal identification to establish evidence for any one of these theories. This paper builds on the previous literature to fill an existing gap. First, we provide direct evidence on the causal effect of income on religiosity for a developed country. In our view, the most convincing causal evidence on the effect of income on religion comes from Buser (2015) in Ecuador, Chen (2010) in Indonesia, and Costa, Junior and Rocha (2019) in Brazil. The first finds a positive effect of income on religiosity in Ecuador, while the second paper finds a negative effect of income in Indonesia. Costa, Junior and Rocha (2019) finds effects that vary depending on the Protestant group—a positive effect for traditional Protestants and a negative effect for Pentacostals. Collectively, this suggests that country specific institutions and the specific context of religion may be important – not surprising when there is both an income and substitution effect at play. While there are many papers examining religious behavior in the United States, there are few featuring empirical strategies that directly illuminate the causal effect of income on religion.

Our second contribution is to provide evidence from a developed country that shows how public safety nets affect the private religious behavior of those most likely to benefit from the public funds. Both Hungerman (2005) and Gruber and Hungerman (2007) show that charitable contributions to religious organizations fall when government aid to low income individuals rises, as in the New Deal, and that contributions rise when government aid falls, as in the 1996 Welfare Reform. However, these changes in giving likely reflect behavioral responses of better-off donors who were not necessarily the recipients of public aid. Our work complements these previous papers by examining the effects of a major social program on the low income families who are the intended recipients of government funds.

3 EITC

The federal Earned Income Tax Credit began as a part of the Tax Reduction Act of 1975. Through expansions in 1986, 1990, 1993, 2002, and 2009, it has grown to be the largest means-tested transfer program in the United States. As of 2017, there were 27 million recipients of the federal EITC, with total tax credits amounting to $66.4 billion.

The EITC functions as a wage subsidy for low income workers, with benefits initially increasing with income, plateauing, and then tapering off. The basic EITC benefit schedule has three distinct ranges: the phase-in range, the maximum-credit range, and the phase-out range. The benefit schedule is defined separately for married and unmarried households,[2] households with no children, households with two children, and (beginning in 2009) households with three children.[3]

The most important expansions of the federal income tax credit occurred in 1994 and 2009. Because the data used in this paper do not cover years before 1994, the 2009 expansion is especially important. Figure 2a displays the schedules for households with no children,

[2]Beginning in 2002, the EITC phase-out range for married households filing jointly began at higher income levels. In all years, the phase-in range, maximum EITC, and phase-out rate is identical for married and unmarried households.

[3]Eligible children are under 19 (or disabled) and include biological children, adopted children, foster children, siblings, and descendants of any of these. To be eligible, these children must also live in the household for more than half the year. Unless otherwise noted, this paper uses "children," "eligible children," and "dependents" interchangeably to refer to children eligible for EITC calculation.

with one child, and with two children in 2008. For a family with two children in 2008, credit was given at a rate of 40% of family earnings to a maximum of $4,824. Households received this amount until family income reaches $15,740, at which point the credit was reduced at a rate of 21.06% for every dollar earned until family earnings or AGI reached $38,646, when the credit was completely phased out. Figure 2b shows the following expansion, which included a new schedule for families with three or more children. Figure 3 shows the expansion of the federal EITC over time.

Along with variation in EITC generosity across years and across numbers of children, a third source of variation comes from differences in state matching rates for the federal EITC. From 1984 to 2015, 24 states and the District of Columbia offered state credits to residents as a percentage of EITC benefits given. These policies were instituted at varying times and with varying generosity. In 2015, these percentages range from 3.5% in Louisiana to 40% in the District of Columbia. In other words, a two child tax unit in the District of Columbia eligible for the maximum federal EITC of $5,572 would receive an additional $2,219 in matching state credits. In contrast, the equivalent tax unit in Louisiana would receive $194 from the state.

Empirical evidence suggests that the EITC increases income through two channels. Obviously, one channel is the direct monetary benefit of the tax credit. Second, the EITC may increase the labor force participation for many individuals (Hotz and Scholz, 2006), although recent literature challenges this finding particularly for the period we cover (Kleven, 2019). Further, married women may face a negative incentive to join the labor force (Eissa and Hoynes, 2004). In extensions to our baseline results, we consider whether labor force participation decisions induced by the EITC explain our results and we find no evidence for this channel.

4 Data

4.1 NLSYCYA Data

Relatively few datasets contain both income and religious information. This paper is the first to measure the relationship between income and religiosity by merging the waves of the NLSY79 Children and Young Adults (NLSYCYA) from years 1994 to 2012. The NLSYCYA is a longitudinal survey of young adults of age 15 and older beginning in 1994 and designed to track labor market activity and family dynamics. The NLSYCYA follows the biological children of women in the original National Longitudinal Survey of Youth 1979 (NLSY79) cohort. Waves of the NLSYCYA were conducted biennially through 2012. The NLSYCYA survey was modeled after the NLSY79 questionnaires, and contains both income and demographic variables. However, the NLSYCYA is distinct from the NLSY79 in that survey respondents are also asked questions about religious service attendance.

To measure levels of religious participation in the NLSYCYA, respondents were asked in each year: "In the past year, about how often have you attended religious services?" Respondents chose from six responses: "More than once a week," "About once a week," "Two or three times a month," "About once a month," "Several times a year or less," and "Not at all." Figure 4 shows the sample distribution of this discrete measure of religious attendance for two years in our sample–just before the large federal EITC expansion in 2009 and just after that expansion.

In additional to estimating coefficients on binary indicators for falling into one of these groups, we also summarize the responses using an imputed number of religious services attended per year. Responses indicating "More than once a week" or "About once a week" are interpreted as 52 religious services attended, "About once a month" as 12 religious services, "Several times a year or less" as 6, and "Not at all" as 0.

Information on state and federal EITC policy comes from University of Kentucky Center for Poverty Research National Welfare Data. Our analysis uses this information in two ways. First, the NLSYCYA does not report individual EITC benefits. We impute the individual EITC benefit component of income based on federal and state rules following Bastian and

Michelmore (2018) and Dahl and Lochner (2012) using NBER's TAXSIM.[4] Second, we use the federal and state eligibility rules to calculate the maximum *potential* EITC benefit for a family with the specific number of children. This measure of EITC generosity is our instrumental variable.

The population most likely to be affected by the EITC are those earning less than $45,000 in 2013 dollars and those who are of working age. Therefore, the sample is trimmed to include only those with reported income less than $45,000 (in 2013 dollars) and who are 18 years of age or older, as is also done in Kenkel, Schmeiser and Urban (2014). This trimmed sample has a total of 24,009 observations with 7,039 unique individuals.

Table 1 provides summary statistics for the full sample, independents (as defined by the tax code),[5] and for the subset of the sample who attend religious services. Pew Research estimates that 69% of Americans attend services at least once a year, while only 33% attend once a week (Pew Research Center, 2014*b*). Even though the NLSYCYA is relatively young (mean age of 23.4), the sample is similar to national estimates in terms of religiosity. For the full sample and among independents, about 70% attend at least one service a year and 22% attend once a week or more. Among attenders, 40% attend religious services infrequently–"several times a year or less." Mean levels of religious service attendance is about 18 services per year; among attenders the mean is 24.7 services a year. In general, other summary statistics look similar across groups, although independents are less likely to be enrolled in school. Attenders and the full sample earn a little over $12,700 annually, while independents earn closer to $15,800.

4.2 PSID Data

For information on religious contributions, we use the Panel Study of Income Dynamics (PSID) which is a longitudinal survey of heads of households originating in 1968 designed to track income, health, and demographic information. Waves of the PSID were conducted annually from 1968 to 1998 and biennially since 1999. Few panel datasets are available with

[4]Note that this imputation assumes full takeup of benefits. Actual EITC takeup rates are particularly high, at around 80% Currie (2004).

[5]A child is considered independent if they are 19 or older and not enrolled in school full time or 24 and older and enrolled in school full time. Married students are also independent.

information on financial contributions that are specifically religious in nature. Beginning in 2001, however, the PSID began to include information on participant household level religious contributions as a part of the Philanthropy Panel Study module. In addition to dollar amounts for religious giving, the PSID contains demographic and income information for the estimation of the empirical model. Although the PSID is a useful dataset for the study of the interaction between income and religious giving, it has been given little attention by economists studying religious behaviors.[6] The dataset used for this analysis is comprised of the 2001 through 2015 survey waves, and follows individuals who were a head of household in 2001. The sample is trimmed to include only those with reported family income less than $45,000 (in 2013 dollars) and whose head of household is between 18 and 65 years of age (inclusive). Lastly, we drop individuals whose religious contributions are greater than their income and whose information about contributions to religious organizations is missing. This trimmed sample has a total of 43,093 observations with 12,227 individuals.

Table 2 contains summary statistics for the main groups used in the PSID analysis. These groups are the full trimmed sample, households headed by someone with no bachelor's degree, households whose head or spouse of the head attends any religious services, and households with no religious attendance. Households with less than a bachelor's are chosen because they are most likely to be affected by EITC. Households with members that attend religious services are chosen in order to isolate the behavioral response of income on religious giving for religious people. Lastly, household with no religious attendance are included to observe whether any effect of income on religious giving occurs even in the absence of attendance. Summary statistics look remarkably similar across groups. Notably, those who attend religious services donate more on average than the full sample and the no bachelor's degree sample.

[6] Yoruk (2013) is a notable exception, which uses PSID to estimate the cross-price elasticity of religious attendance with respect to the tax-price of charitable contributions.

5 Methodology

The analysis estimates both (1) the reduced form effect of EITC generosity on religiosity and (2) the effect of income on religious behavior. Both are of interest. The first is a more direct test of "crowding out," indicating whether available potential government income support, whether received or not, affects religious participation. The second uses EITC generosity as an instrument for income, allowing us to uncover the elasticity of the response of religious behavior to income.

Estimates of the reduced form effect of EITC generosity on religious behavior use several alternative measures of religiosity as dependent variables (R_{it}) in the following equation:

$$R_{ist} = \gamma_0 + \gamma_1 Max\_EITC_{ist} + \gamma_2 X_{ist} + \gamma_3 W_{st} + \delta_t + \sigma_s + w_{ist} \quad (1)$$

We first estimate this equation using only control variables associated with the EITC schedule (the vector of year fixed effects δ_t, the vector of state fixed effect σ_s, and the number of EITC children). This specification is the closest to the quasi-experimental design, relying only on differences in the EITC schedule across states, years, and household size.

We then include an expanded set of individual controls, X_{it}, with dummies for race, sex, marital status, urban or rural residence, current school enrollment, whether the individual lives with parents, and for associate degree attainment or higher. Number of children (biological, adopted, or foster) and years of education are also included in X_{ist}. We also include the unemployment rate for state s in year t, W_{st}. If the quasi-experimental design holds, inclusion of these additional controls should not substantially change the estimates.

These results directly examine the effect of the available government income support on individuals, whether or not they are currently taking advantage of that program. Behavior might change if individuals adjust their participation for the fact that they (or others in their community) may be less reliant on support from a religious group to mitigate potential future income shocks. We maintain the same sample restrictions for both the reduced form and the following IV estimates so that the results are estimates for lower-income families.

Second, to investigate the effect of income on religious intensity, we estimate (R_{it}) in the following equation:

$$R_{ist} = \alpha_0 + \alpha_1 Income_{ist} + \alpha_2 X_{ist} + \alpha_3 W_{st} + \delta_t + \sigma_s + u_{ist} \quad (2)$$

Here $Income_{ist}$ is defined as wage and tip income, including the imputed EITC payment, in thousands of dollars for individual i in state s in year t. Again individual controls, X_{it}, include dummies for race, sex, marital status, urban or rural residence, current school enrollment, whether the individual lives with parents, and for associate degree attainment or higher.[7] Number of children (biological, adopted, or foster) and years of education are also included in X_{ist}. The unemployment rate for state s in year t is W_{st}.[8] Again, δ_t is a vector of year fixed effects and σ_s is a vector of state fixed effects.

The specification of this equation ignores the possibility of permanent individual level characteristics that are associated with both income and religious participation. For example, an individual's innate discipline and social aptitude may be both fixed over time and correlated with church attendance and income. A second set of result adds individual fixed effects to the regressions to control for potential bias from these unobserved variables.

However, even with the inclusion of state, year, and individual fixed effects, the results are potentially biased in the presence of reverse causality. For example, if religion has a positive influence on earnings through network connections, the results from the fixed effect regressions will still be upwardly biased: Individuals who change their religious behaviors may experience increases in income, but this association would not reflect the causal effect of income on religious behavior. Therefore, the preferred specification is the two-stage least squares model, where EITC generosity is used as an instrument. First stage estimates for β_1 in the first stage equation 3 are available in Appendix Tables A.1 and A.3.

$$Income_{ist} = \beta_0 + \beta_1 Max\_EITC_{ist} + \beta_2 X_{ist} + \beta_3 W_{st} + \delta_t + \sigma_s + v_{ist} \quad (3)$$

[7] Using a more restricted set of covariates increases the estimates of the effect of income on religiosity. We include this larger set to provide the most conservative estimates.

[8] Much of our sample comes from years during and after the Great Recession. It may be that the Great Recession changed churches' support to low income attenders or altered the demand for religious services. Much of these effects are controlled for by including state unemployment rate in the regression. However, the main specifications are also estimated for years before the Great Recession and results are reported in A.4. This sample restriction does not change estimates of the effects of income nor EITC generosity.

The instrumental variable Max_EITC_{ist} measures EITC generosity based on the maximum benefit possible for a family of given size in a specific state and year. Changes in the maximum EITC across states, time, and number of eligible children in the household provide a plausibly exogenous source of variation that is independent of work behavior.[9]

The NLSYCYA sample is young, with a mean age of 23, and this group is transitioning to legal independence. For the tax code, individuals are considered independent if they are 19 or older and not a full time student, or if they are married, or if they are over 24. We first estimate the regressions based on the full sample, where dependents are assigned Max_EITC of zero, essentially treating them as part of the control group. However, dependents may not have full control over their religious participation, and so we also additionally present estimates for independents only.

The variation in income used in the IV identification strategy comes from differences in year, numbers of children, and state residence. The first stage regression does not sufficiently predict income when individual fixed effects are included because individuals in the sample change states or number of children relatively infrequently.[10] Consequently, we do not include individual fixed effects in the 2SLS estimates. Instead, standard errors for the 2SLS regressions are calculated with a two-way cluster at the individual and state level. Adjusting standard errors in this way is a particularly conservative correction for correlation within individuals and within states over time.[11]

In order for the maximum EITC to be a valid instrument, it must be highly correlated with income and it must be exogenous to the religiosity of a given household. We discuss the exclusion restriction in more detail below. The relevance condition is easily satisfied. EITC generosity is highly correlated with income for this group, not surprising given the young age (and low incomes) of the households. First stage results are presented in Appendix

[9] Children are counted as eligible if they are living in $i's$ household and are a biological, adopted, or foster child of i or of $i's$ partner.

[10] Less than 15% have lived in more than one state, and less than 2% have lived in more than two states.

[11] Using NLSY79 data, Acemoglu and Pischke (2003) similarly cluster at the individual level and state by year level in place of individual fixed effects. Petersen (2009) clusters standard errors at the firm and year level to address error correlation both across firms and within firms over time. For an overview of the use of two-way clusters in empirical economics, see Colin Cameron and Miller (2015).

Table A.1. According to these results, an additional $1000 in maximum potential EITC income translates directly into approximately the same amount in additional income. Not surprisingly given this pass-through, the F statistics indicate that EITC income is highly relevant in this first stage. First stage F-statistics are provided in each table and exceed significance thresholds by wide margins (with a few exceptions which we will note).

6 Attendance Results from the NLSYCYA

The first set of results examine the direct effect of the EITC schedule on religious participation. Table 3 reports the reduced form estimates that indicate the net effect of the maximum potential EITC benefit on religiosity. The first columns reports the results with using only the EITC parameters as controls. The second column shows results with the full set of individuals controls along with the state unemployment rate.

Table 3 shows that a $1000 increase in potential EITC generosity reduces attendance. Each row reports the coefficient estimate for the effect of income on some measure of attendance, meaning that each cell comes from a separate regression. The top row reports effects on imputed attendance. The second row shows that there is no effect on the extensive margin–individuals are no more or less likely to attend at some point during the year than not at all. Instead, the direct effect of the EITC comes from a shift from more devout attendance, which declines by about two percentage points, towards more marginal attendance–the probability of attending a few times a year increases by about 1.5 percentage points.

The results are largely similar across the two columns. In other words, the estimated effect are similar whether we include individual controls or not. This provides evidence that the schedule changes are driving the effects, reassuring evidence that the quasi-experimental design approach is valid.

We next turn to estimates of the effect of income on religiosity, using the maximum EITC benefits as an instrument. Baseline results for the NLSYCYA are presented in Table 4. The first three columns report estimates using the full sample, while the second three columns estimates use the sample of independents as defined by the tax code. Each set first

reports the OLS regressions that include state and year fixed effects, a subsequent column for regressions that additionally include individual fixed effects, and a final column with the two-stage least squares estimates using EITC generosity.

The OLS and individual fixed effect regressions for both samples show a modest negative relationship between income and religiosity, with $1000 in income associated with a small decrease of .03-.07 fewer services per year. The following rows report the effects across the distribution, with trivial changes in probability of a given category of less than one percent in all cases.[12]

However, the IV results in the final column of each panel indicate that these coefficients are positively biased due to simultaneity. Once we account for this reverse causality, income has a sizable negative effect on attendance. In the first row, the IV results shown in columns 3 and 6 indicate that $1000 more in income is associated with .6 to .9 fewer services per year. The effects are largely driven by changes on the intensive margin of participation. The second row of Table 4 shows that the causal effect of $1000 in income has essentially no effect on whether or not an individual attends. However, higher income does significantly decrease the intensity of participation. An additional $1000 in income is associated with a drop of about 1.5 percentage points in the probability of attending once a week or more, while in contrast the probability of attending a few time a year increases by 1.4 percentage points. The F-statistics for the IV regressions show the strength of the first stage relationship. Note that even though there are 4 separate IV regressions reported in Columns (3) and (6), each cell in the column has the same first stage for the regressions.

The shift in intensity is further fleshed out in Table 5, which restricts the analysis to those that attend services at some point during the year. Here an additional $1000 in income is associated with a decline of almost 1 service per year, a 1.8 percentage point probability increase in the probability of attending a few times a year but a 2 percentage point decrease in the probability of attending once a week or more. In both tables, the results for independents and for the entire sample are nearly identical.

The fact that the extensive margin is largely independent of income suggests that beliefs

[12]Ordered probit models yield predicted probabilities that are quantitatively and qualitatively similar. These results are included in Table A.2

and affiliation are perhaps less susceptible to income or the insurance benefits of religion. To investigate this, we look to an alternative measure of religiosity. In all survey waves, respondents are asked "How important would you say religion is to you?" and may respond with "Very important," "Fairly important," "Fairly unimportant," or "Not important at all." Using this measure, Table 6 reveals that although the OLS result indicates a positive correlation between income and the importance of religion and income, IV and reduced form estimates suggest that neither income nor the direct effect of EITC has an impact on the stated importance of religion.

While we view the evidence as consistent with the theory that the EITC is a public alternative to the insurance benefits of religion, the association also could be consistent with other theories. For example, could these results be driven by time costs associated with higher labor force participation induced by the EITC? Table 7 reports several specifications that provide evidence regarding this possibility. The first two columns include total hours worked or a labor force participation dummy as controls. For brevity, the results are presented only for independents, as the results for the full sample are substantially similar. The results show that including the labor force participation variables does not substantially change the results. This makes it less likely that time costs associated with LFP are driving the change in attendance. As an alternative way to see if LFP changes are related to our results, the third and fourth columns presents results for men with children in the household. Previous research indicates that men are the least likely to change their labor force decisions in response to the EITC. If increased LFP is the explanation for reduced religious participation, we would expect the effects for men to be minimal or at least more muted. Instead, the results in Column 3 indicate that men's religious behavior is similar to that of the overall sample.

6.1 Heterogeneity

Although 95% of Americans identify as either unaffiliated or Christian (Pew Research Center, 2014*a*), remarkable diversity exists within American Christianity. Further, Christian denominations vary greatly in demographics, theological teaching, and financial support to struggling adherents. Columns 1 through 4 of Table 8 shows results by the most common

affiliations in our sample: Catholics, Baptists, Non-denominational Christians, and Non-Catholic Christians.[13] The effects of income changes are largest for non-denominational Christians as well as non-Catholic Christians as a whole, although results are significant only for the latter group. This result resembles that in Hungerman (2014*b*), who finds that education tends to decrease affiliation for non-Catholics, but not for Catholics. However, these results should be taken with some caveats as the first stage results (effect of EITC on income) are very weak for both Catholic and non-denominational Christians (perhaps due in part to the smaller sample sizes).

Denominational categories represent a broad way to think about religion in the United States, but there is considerable variation within these categories. For example, the category "Baptist" contains both evangelical and mainline denominations, limiting the usefulness of this distinction. Therefore, we also examine differences in responses to income by a second indicator of religious experience: race. In a 1960's interview with *Meet the Press*, Martin Luther King, Jr. famously remarked that that "eleven o'clock on Sunday morning is one of the most segregated hours, if not the most segregated hour, in Christian America." Much remained the same in 2012, when 80% of churchgoers attended services where a single ethnic or racial group comprised at least 80% of congregants (Chaves and Anderson, 2014). Further, sociological research indicates that predominately black and predominately white congregations differ in methods of support for members in need. This literature finds that black congregations more often provide in-kind transfers (Chaves and Higgins, 1992), whereas the share of white members of a congregation is a strong predictor of commitment to giving (Cnaan and Boddie, 2002). Additionally, Dehejia, DeLeire and Luttmer (2007) suggests that for members of predominantly black congregations, church life is often the center of community life in a way that is not so for members of predominantly white congregations. If true, these phenomena would suggest lower income elasticities of church attendance for blacks relative to whites. Indeed, columns 5 through 7 show that blacks

[13]The NLSYCYA identifies respondents as Roman Catholic, Jewish, Baptist, Lutheran, Methodists, Presbyterians, Episcopalian, Mormon, Unitarian, Quaker, Non-denominational, Other Protestant, Muslim, Buddhist, Other, or None. Non-Catholic Christians include Baptists, Lutherans, Methodists, Presbyterians, Episcopalian, Mormon, Unitarian, Quaker, Non-Denominational, and Other Protestant. Sample size prevents us from analyzing each group individually.

have a much lower (and insignificant) attendance response to income, unlike that for whites and Hispanics. These results are also consistent with Dehejia, DeLeire and Luttmer (2007), who find evidence that religion provides whites with consumption insurance against income shocks, but fail to find a similar effect for blacks.

6.2 Validating the Exclusion Restriction

The key identifying assumption in the IV results is validity of the exclusion restriction, that is, that the EITC instrument is exogenous to religious behavior. One potential threat to the exogeneity of the instrument would be if states that enact more generous policies also vary in religious behaviors or if they have unobserved time varying characteristics that drive changes in both religiosity and EITC generosity. Bentzen and Sperling (2020), for example, show that adoption of state level faith-based initiatives in the United States has led to increased religious participation, religious organizations, and religiously affiliated politicians. It is plausible that similar policies are also related to the generosity of state level safety nets. We take several different approaches to mitigate these concerns and to examine the validity of the our identifying assumptions.

First, Table 9 reports the reduced form and IV results result for 4 sub-samples for whom the EITC should be less relevant. This spirit of this is to essentially conduct "placebo" tests. If we were to find similar results for these groups as in the regular sample, it would suggest that the EITC policy variable was picking up state level factors that affect the religiosity of all individuals in the state, rather than changing only the behaviors of the eligible groups. The top panel reports the reduced form estimates of the impact of the state maximum EITC benefit on religiosity; the bottom panel reports the IV results of the effect of income on religiosity. Column 1 includes dependent-only individuals (based on age, marital status, college enrollment, and EITC eligible own children), Column 2 includes individuals who have an bachelor's degree or higher, Column 3 reports results for individuals who make \$25K or more annually, and Column 4 includes men who do not have children (married or unmarried). In all cases, none of the results are statistically significant. Furthermore, the coefficient estimates vary in both sign and magnitude, showing no pattern of results that appears to be correlated with religiosity. This is reassuring, given that the EITC should be

largely inapplicable for these groups. In fact, this appears to be the case, given that the F-statistics for the first stage results for these groups indicate that the EITC is much less relevant (which explains why the standard errors displayed in Table 9 are so much larger than those in Table 4).

As a second check that other state level policies or characteristics are not driving the results, we exclude the state EITC supplements in calculating the potential maximum EITC benefits. These results are reported in Columns 1 and 2 of Table 10. The variation in EITC benefits that identifies these estimates comes from changes in the federal EITC benefit schedules for families of different sizes over time. Columns 1 presents these results for the full sample, while columns 2 presents results for attenders. In both cases, the results are quantitatively and qualitatively similar to those in Table 4. This again makes it highly implausible that the effects in Table 4 are driven by state level unobserved characteristics.

Differences in state EITC supplements are one source of variation in our instrument, and based on Table 10, this source of variation does not appear to be endogenous. The second source of variation is that due to number of children. As a third check on the validity of our results, we address the possibility that families who have more children (and therefore are eligible for higher potential EITC benefits) may have different religious responses to changes in income, confounding the results. Note that the reported regressions up this point already include the number of EITC eligible children in the household as a control variable, so if more religious families choose to have more children and have higher income as a result of EITC benefits, this effect would already be accounted for in the estimates. Further, much of the variation in our baseline results comes from different in the way that schedules have treated number of children over time. For example, the relative generosity of the one- and two-child schedules has changed over time, and in 2009, a three-child schedule was introduced. Wisconsin also has a different state matching rate based on the number of children. Finally, previous literature has found the EITC does not appear to be associated with changes in fertility, again reducing the probability that endogenous changes in family size may be driving the results (Crump, Shah Goda and Mumford, 2011; Baughman and Dickert-Conlin, 2009).

However, as additional confirmation the final two columns of Table 10 reduce the

amount of variation in EITC benefits that come from increases in the number of children within families. Specifically, these estimates use the predicted maximum EITC benefits using the current-year state and federal EITC schedules but calculate the benefits based on the number of EITC eligible children in the household from the *previous* survey wave (2 years prior). Consequently, these regressions largely rely on variation in income coming from changes in the state or federal benefit schedule that adds categories for additional numbers of children and not changes in a family's size itself. Obviously using this approach reduces the overall amount of variation, particularly as the sample is young and in the process of family formation. The resulting coefficients in columns 3 and 4 of Table 10 continue to indicate a negative effect of income on religious participation, again shifting individuals from higher to lower intensity. Although these coefficients are still much more negative than the OLS and FE estimates, they are about half the size of the other IV results.

Finally, our survey period overlaps with the Great Recession, a period that potentially had significant impacts on actual and perceived future income volatility and which had substantial regional variation in its impacts. To ensure that our results are not driven by any exception patterns during this period, we report estimates in Table A.4. The results here are largely similar to those including the full set of years.

7 Religious Contributions Results from the PSID

To this point, we have focused on religious attendance. Another important measure of religious participation is religious giving. Several papers have estimated a positive relationship between religious giving and attendance.[14] Less is known about the causal effect of income on religious giving. In contrast to religious attendance, giving to religious organizations is typically anonymous. Therefore, it is unlikely that individuals use contributions to gain access to informal insurance provided by religious groups. If access to such informal insurance motivates religious involvement, increases in income are more likely to affect attendance

[14] A number of economists have documented a positive relationship between religious giving and religious attendance (Olson and Caddell, 1994; Iannaccone, 1997; Dahl and Ransom, 1999; Lunn, Klay and Douglass, 2001; Kim, 2013; Yoruk, 2013; Forbes and Zampelli, 1997). In contrast, Gruber (2004) finds evidence for a negative relationship, suggesting religious monetary contributions and attendance are substitutes.

than contributions.

As noted in the discussion of the literature, a number of papers do find that expansion of the social safety net may lead to lower religious contributions in general: for example, the New Deal appears to have been accompanied by such a drop in church based charity (Gruber and Hungerman, 2007) and Hungerman (2005) finds increased giving in response to the 1996 welfare reform in the US. However, this substitution between public and private safety nets does not distinguish between the response of the *recipients* of government programs and the other (likely more affluent) potential *donors* who may have decreased the altruistic donations to religious organizations when the government safety net increases. Here we use the 2001 through 2015 waves of the Panel Study of Income Dynamics to provide evidence that changes in income due to the EITC have a small but positive effect on religious giving among low-income Americans.

To investigate the response of income on religious giving, equations 2, 3, and the IV specification are estimated using contribution data from the PSID. We use four measures for religious giving, R_{it}. First is a binary variable for whether any donations were made from person i's household in the previous year. The coefficient on income in this specification measures the effect of a \$1000 change in income on the likelihood of giving any amount to a religious organization. Next is the dollar amount reported to be donated from members of person i's household during the previous year. This regression is run first for every individual and then for those individuals for whom a household member donated a nonzero dollar amount to a religious organization. In order to determine whether share of income spend on religious contributions changes with income shocks, we also include percent of total household income donated to religious organization. Lastly, we include logged donations where the transformed variable is set to zero if the household has no religious donations. The coefficient on income in this specification allows us to estimate the percentage change in religious donations in response to a \$1000 increase in income. Total household wage income, $Income_{it}$, is again wage and tip income plus TAXSIM inputed EITC benefits in thousands of dollars. X_{it} is a vector of controls for the head of household that includes Beale code (a measure of a location along the urban-rural continuum), age, race, sex, number of children, previous year employment status, marriage dummy, and educational attainment dummies.

Year and state fixed effects are again included in all specifications.

Table 11 reports the direct effect of the maximum EITC credit on donations to religious organizations. Each cell represents a separate coefficient on income from reduced form regressions with state and year fixed effects. Column 1 additionally includes only EITC parameters, while Column 2 includes the full set of controls and individual fixed effects. The similarity of magnitudes between the two columns suggests that the schedule changes rather than individual characteristics are driving the effects.

The reduced form estimates in Table 11 suggest that a $1000 increase in maximum EITC generosity increases the probability of making a religious contribution slightly, by less than one percentage point. The amount donated increases by $9 to $13, which does not appear to be large enough to alter religious giving as a percentage of income (as indicated in the third row). The results for logged donation amounts indicate that a $1000 increase in EITC generates a 4% to 6% increase in giving.

Table 12 shows fixed effects and IV results for the effect of income on giving to religious organizations. Columns 1 and 2 report the coefficients on income from Equation 2 without and with individual fixed effects respectively. The results indicate that a $1000 increase in EITC income has virtually no effect on the probability of making a religious donation. EITC benefits also appear to have little effect on the amount donated, with a $1000 increase in income corresponding to just a $4 increase in giving in the model with individual fixed effects. Estimates in the third row show that donations as a percentage of income do not change despite this small increase. Logged donations likewise suggest a small response in religious giving, with a $1000 increase in income corresponding to roughly a 1% to 2% increase in religious giving. The giving response seems to be slightly larger among those who donated any amount to religious organizations. The within-individual comparison in column 2 indicates that a $1000 increase results generates an increase in giving of $16.

However, if time-varying omitted variables impact both income and religious giving, then these estimates are biased. Because of this concern, the preferred specification again uses EITC generosity to instrument for income. First-stage results reported in Table A.3 indicate that maximum EITC benefit amount is strongly correlated with income, with F statistics ranging from 18 to 126. Columns 3 and 4 report the IV results. In general,

the coefficients in the IV regressions are slightly increased in magnitude compared to the fixed effects estimates indicating that the fixed effects regressions are biased toward zero. The IV estimates indicate that a $1000 increase in income leads to a $7 to $9.4 increase in religious donations. Results for those who donate any amount are less precise, with estimates suggesting a small negative change in donations in the model without individual fixed effects and a much larger positive change in the within-individual estimates. Unlike our estimated impacts on religious service attendance, analysis of religious giving indicates income has a small but positive effect on religious giving in our sample.

We next investigate whether effects may be observed in groups more likely to use religious affiliation as means of social insurance. Table 13 shows the results of the reduced form and two-stage least squares regressions on subsamples of interest. The first column examines responses of those without a bachelors degree, as this group may be more likely to use informal insurance. Those who exhibit other religious behaviors may also be more likely to change contribution decisions in response to income changes. To examine this possibility, we use information from the 2003 and 2005 PSID survey waves, which asks respondents about their religious attendance. Column 2 reports results for households with members that attend religious services in order to isolate the behavioral response of income on religious giving for religious people. Using these same survey waves, Column 3 reports results from household with no religious attendance to observe whether any effect of income on religious giving occurs even in the absence of attendance.

Column 1 mirrors the results in Tables 11 and 12, perhaps unsurprising given the majority of our sample do not possess a bachelor's degree. Column 2 suggests that while an increase in income slightly reduces the occurrence of a donation among attenders, there is little evidence that it leads to a change the total amount of annual giving. Column 3 shows a lack of response among those who do not attend religious services, as one might expect. However, the sample used in the regressions reported in Columns 2 and 3 comes only from the 2003 and 2005 survey waves which heavily reduces the number of observations. Results in these columns should therefore be viewed with caution.

8 Conclusion

Identifying the relationship between income and religiosity is complicated due to bi-directional effects and both positive and negative influences, which has led to few credibly causal estimates of the effect of income on religious behavior. To date, we are not aware of any paper that investigates this causal effect in a developed economy. Further, many of the papers on this topic examine negative income shocks. This paper examines a positive income shock by investigating how low income residents of the United States make changes to religious participation behaviors in response to income changes induced by the Earned Income Tax Credit. Further, we directly estimate the effect of the availability of government provided assistance through the EITC on the religious behavior of potential recipients.

Using EITC generosity to instrument for income, we find that increases in income generate a significant decline in religious attendance (in contrast to the trivially small relationship in the OLS estimates). For the average attender, the IV results imply that a $1000 change in income causes a decrease in attendance of about 4%. This negative income elasticity is concentrated along the intensive rather than the extensive margin of religious attendance. Rather forgoing religious services altogether, an additional $1000 in income reduces the number of services attended by about one a year, largely from decreases in the percentage of individuals who attend weekly and increases in the percentage who attend a few times a year. Our evidence suggests that there is almost no effect of income changes on the occurrence of contributions to religious organizations, and we find only small positive changes in the amount donated on the order of $10 in contribution per $1000 change in income. We do not find evidence that changes in labor force participation are the channel through which the effects emerge or that the results are driven by potential policy endogeneity.

The effects of income on religious behaviors is best understood as an average treatment effect for low income individuals with children. In fact, we find no evidence that EITC generosity affects the religious behavior of individuals who are unlikely recipients (dependents, more educated or higher income individuals, or men without children). However, this paper does not speak to the effect of income on religious participation for those higher in the income distribution, representing an interesting area for future work.

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9 Tables and Figures

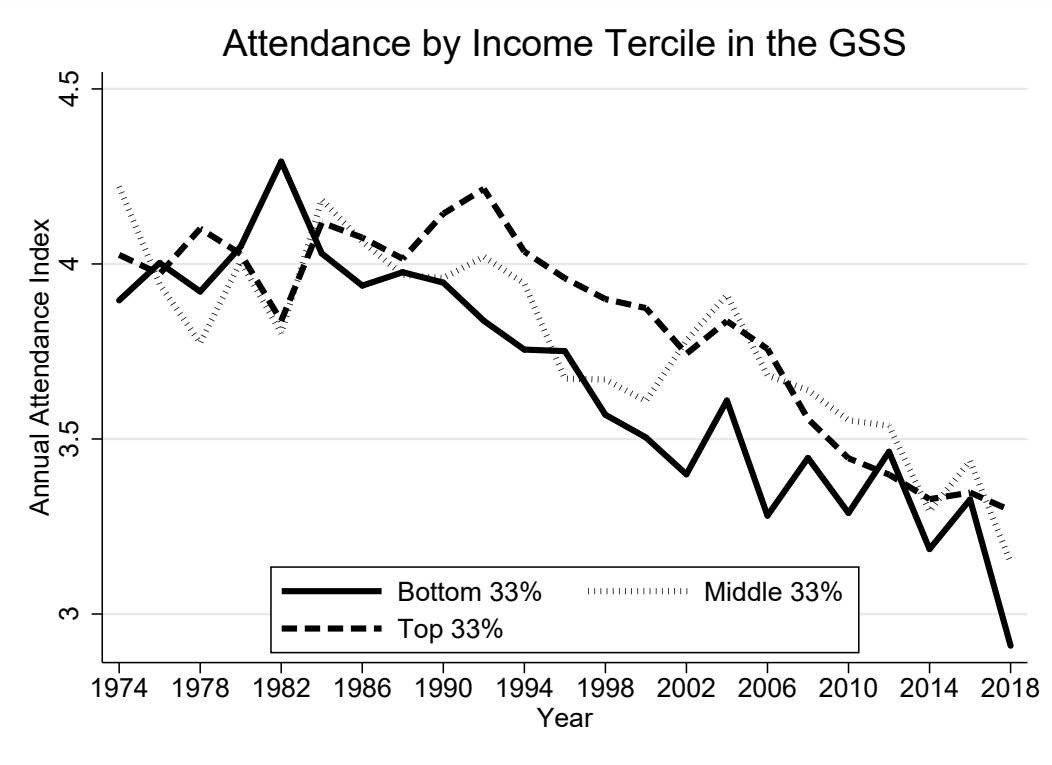
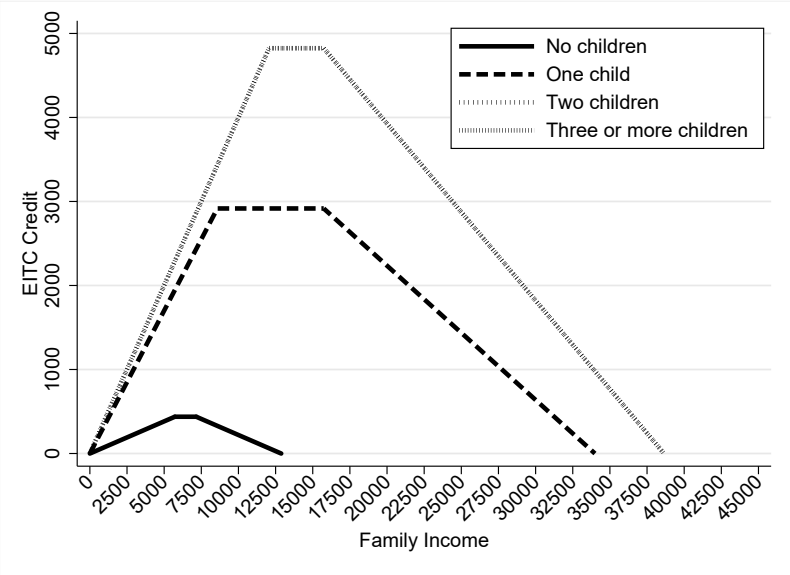


Figure 1: Vertical axis measures average religious service attendance of GSS respondents by income tercile. Attendance index is as follows: 0 for never attends, 1 for once a year, 3 for several times a year, 4 for once a month, 5 for two or three times per month, 6 for nearly every week, 7 for every week, 8 for more than once a week. Across all years and incomes, this fraction is 3.81% . Income terciles created separately for each year.

(a) 2008 Federal EITC schedule



(b) 2009 Federal EITC schedule

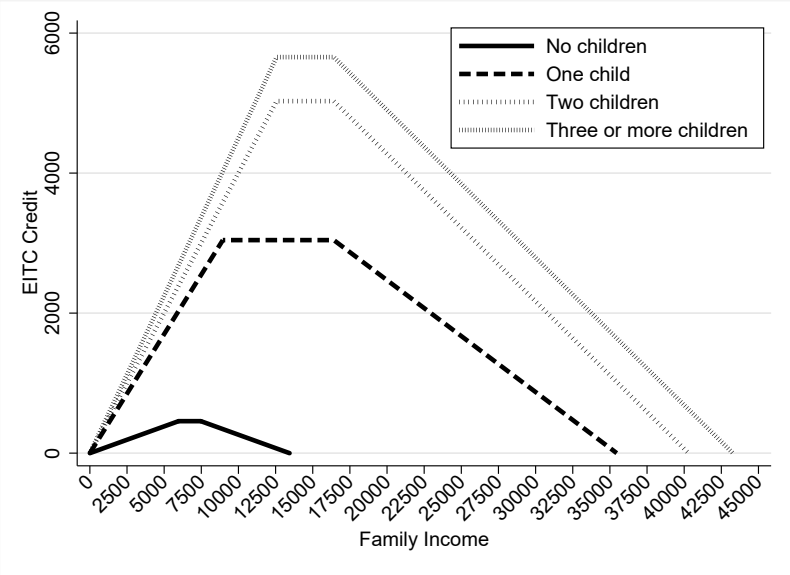


Figure 2: Source: Tax Policy Center, A Joint Project of the Urban Institute & Brookings Institution. 2017 "Historic EITC Parameters"

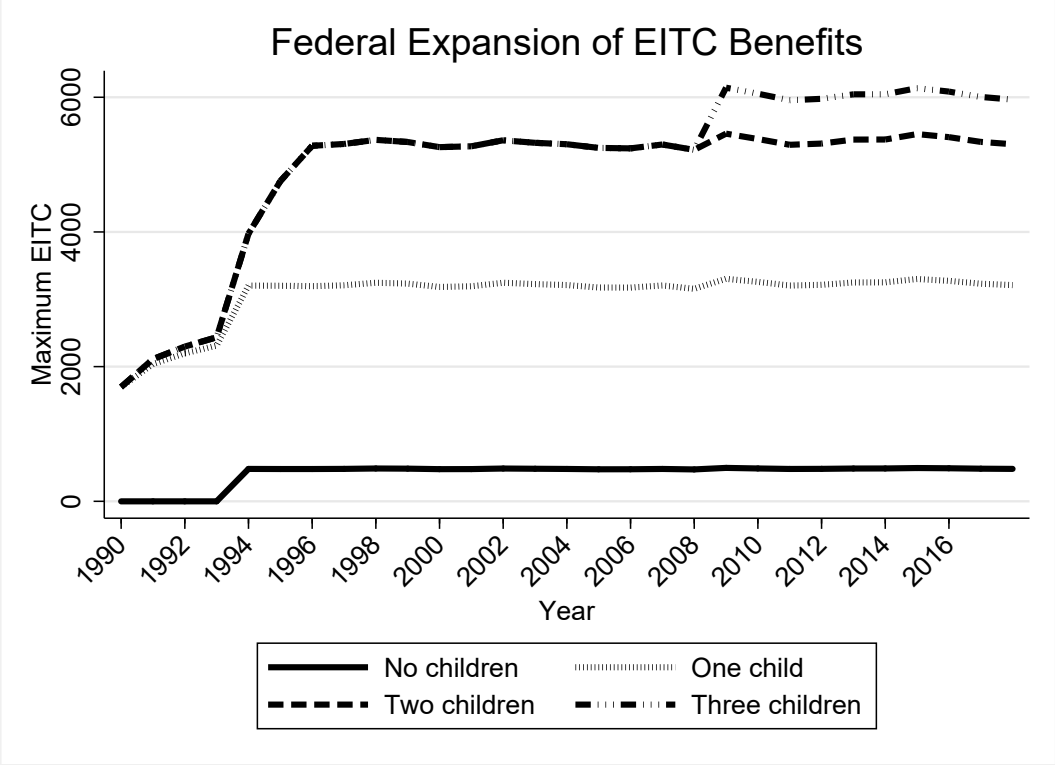


Figure 3: Source: Tax Policy Center, A Joint Project of the Urban Institute & Brookings Institution. 2017 "Historic EITC Parameters"

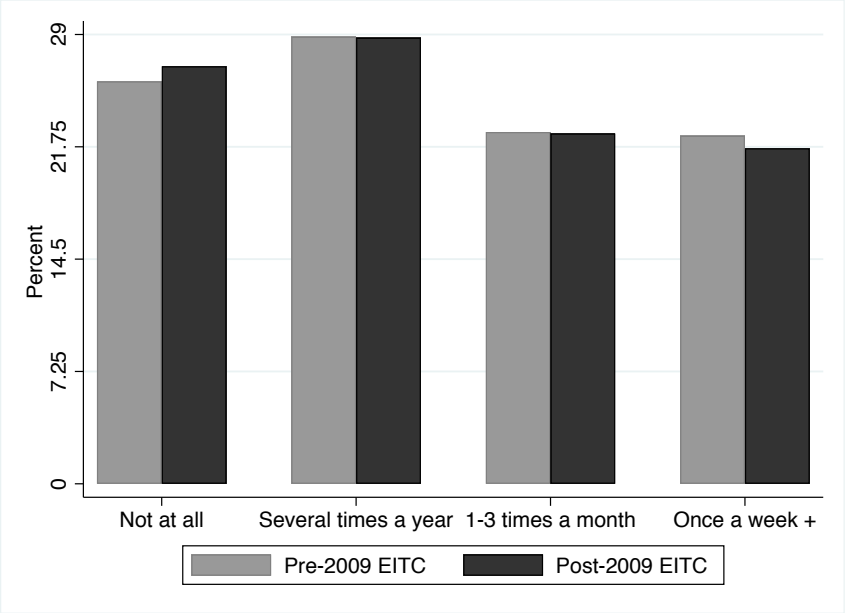


Figure 4: Religious Attendance in the NLSYCYA in 2008 and 2010 waves

Table 1: Descriptive Statistics for NLSYCYA. 1994-2012

	Full Sample	Independents	Attenders
Attends religious services	0.733	0.705	1.000
	(0.442)	(0.456)	(0.000)
Number religious services per year	18.095	16.392	24.682
	(20.059)	(19.313)	(19.654)
Attends once a week or more	0.218	0.186	0.298
	(0.413)	(0.389)	(0.457)
Attends several times a year or less	0.556	0.593	0.395
	(0.497)	(0.491)	(0.489)
Income with EITC (thousands of dollars)	12.877	15.807	12.783
	(12.886)	(13.451)	(12.797)
Maximum EITC (thousands of dollars)	1671.947	2126.835	1647.245
	(1944.658)	(2122.694)	(1921.821)
TAXSIM predicted EITC	571.379	792.961	569.675
	(1347.670)	(1531.297)	(1336.935)
Urban	0.768	0.775	0.764
	(0.422)	(0.417)	(0.425)
Age	23.392	24.842	23.286
	(4.060)	(3.788)	(4.065)
Black	0.486	0.467	0.495
	(0.500)	(0.499)	(0.500)
White	0.370	0.384	0.367
	(0.483)	(0.486)	(0.482)
Hispanic	0.222	0.232	0.217
	(0.416)	(0.422)	(0.412)
Other Race	0.114	0.114	0.110
	(0.317)	(0.318)	(0.313)
Enrolled in school	0.353	0.127	0.391
	(0.478)	(0.333)	(0.488)
Lives with parents	0.480	0.353	0.498
	(0.500)	(0.478)	(0.500)
Female	0.515	0.523	0.536
	(0.500)	(0.500)	(0.499)
Number of EITC kids	0.530	0.736	0.521
	(0.988)	(1.097)	(0.978)
Married	0.138	0.192	0.142
	(0.345)	(0.394)	(0.349)
Years of education	12.424	12.450	12.559
	(4.289)	(4.663)	(4.171)
Associate degree or higher	0.113	0.141	0.122
	(0.316)	(0.348)	(0.328)
Unemployment rate	6.578	6.686	6.567
	(2.379)	(2.411)	(2.371)
Observations	24009	17300	17601

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample restricted to those above 18 making less than $45,000 dollars a year (in 2013 dollars).

Table 2: Descriptive Statistics for Panel Study of Income Dynamics. 2001-2015

	Full Sample	No Bachelors Degree	Head or wife attends	Neither head nor wife attends
Whether donate	0.198	0.184	0.310	0.025
	(0.399)	(0.388)	(0.463)	(0.156)
Donation amount	190.802	168.043	278.466	5.884
	(823.456)	(786.846)	(899.489)	(57.866)
Donation amount (if any)	972.355	922.703	897.957	236.680
	(1641.915)	(1644.233)	(1432.910)	(284.638)
Number of religious services	24.729	23.969	34.860	0.000
	(45.427)	(43.059)	(50.557)	(0.000)
Income in 1000s (including predicted EITC)	25.923	25.656	26.985	25.318
	(11.909)	(11.893)	(11.413)	(11.603)
Maximum EITC	2.801	2.906	3.043	2.765
	(2.296)	(2.298)	(2.223)	(2.288)
Predicted EITC	1187.668	1250.050	1051.599	1130.574
	(1785.732)	(1813.565)	(1617.953)	(1847.535)
Beale code	3.168	3.210	3.595	3.652
	(2.789)	(2.825)	(2.546)	(2.577)
Age	38.001	38.150	38.162	36.259
	(12.328)	(12.274)	(11.714)	(11.692)
Black	0.512	0.532	0.556	0.359
	(0.500)	(0.499)	(0.497)	(0.480)
White	0.403	0.381	0.346	0.551
	(0.491)	(0.486)	(0.476)	(0.497)
Hispanic	0.100	0.105	0.107	0.059
	(0.300)	(0.307)	(0.309)	(0.236)
Other Race	0.036	0.036	0.036	0.050
	(0.187)	(0.186)	(0.186)	(0.218)
Sex	1.456	1.454	1.502	1.426
	(0.498)	(0.498)	(0.500)	(0.495)
Employed	0.822	0.819	0.822	0.824
	(0.383)	(0.385)	(0.382)	(0.381)
Children under 18 in family unit	1.162	1.222	1.340	1.170
	(1.412)	(1.432)	(1.467)	(1.444)
Married	0.266	0.268	0.286	0.227
	(0.442)	(0.443)	(0.452)	(0.419)
No HS Degree	0.257	0.279	0.292	0.329
	(0.437)	(0.449)	(0.455)	(0.470)
High School degree, no college	0.353	0.384	0.337	0.394
	(0.478)	(0.486)	(0.473)	(0.489)
Some college, but less than BA	0.311	0.337	0.302	0.231
	(0.463)	(0.473)	(0.459)	(0.421)
BA+	0.079	0.000	0.069	0.046
	(0.270)	(0.000)	(0.254)	(0.210)
Unemployment rate	6.378	6.372	5.812	5.711
	(2.077)	(2.073)	(0.796)	(0.827)
Observations	43,093	39,677	7,952	3,258

Source: Panel Study of Income Dynamics. 2001-2015. Sample restricted to those between 18 and 65 years of age (inclusive) and making less than $45,000 dollars a year (in 2013 dollars).

Table 3: Reduced Form effects of EITC on Attendance in the NLSYCYA

	Full Sample		Independents	
	EITC Schedule Controls only	Full Set of Controls	EITC Schedule Controls only	Full Set of Controls
	(1)	(2)	(3)	(4)
Number Services (imputed)	-0.8923***	-1.2099***	-0.0927	-0.6954***
	(0.2341)	(0.2379)	(0.2407)	(0.2370)
Never attend	0.0047	0.0076	-0.0094*	-0.0015
	(0.0048)	(0.0046)	(0.0049)	(0.0047)
Several times a year	0.0154***	0.0166***	0.0110**	0.0154***
	(0.0044)	(0.0046)	(0.0045)	(0.0048)
1 to 3 times per month	-0.0016	0.0010	0.0031	0.0020
	(0.0038)	(0.0039)	(0.0038)	(0.0037)
Once a week or more	-0.0187***	-0.0255***	-0.0049	-0.0160***
	(0.0048)	(0.0047)	(0.0049)	(0.0047)
N	24,009		17,300	

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Column 1 regressions contain state fixed effects, year fixed effects, and number of children. Columns 2 regressions additionally contain all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4: Effects of Income on Attendance in the NLSYCYA

	Full Sample			Independents		
Dependent Variable	OLS	Individual Fixed Effects	IV	OLS	Individual Fixed Effects	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Number services (imputed)	-0.0987***	-0.0697***	-0.8912***	-0.0517***	-0.0281*	-0.6477***
	(0.0135)	(0.0144)	(0.1986)	(0.0128)	(0.0149)	(0.2265)
Never attend	-0.0001	0.0005	0.0056*	-0.0009***	-0.0001	-0.0014
	(0.0003)	(0.0004)	(0.0033)	(0.0003)	(0.0004)	(0.0045)
Several times a year	0.0019***	0.0010***	0.0122***	0.0017***	0.0007	0.0144***
	(0.0003)	(0.0004)	(0.0038)	(0.0003)	(0.0004)	(0.0051)
1 to 3 times per month	0.0006*	-0.0001	0.0008	0.0008**	0.0000	0.0019
	(0.0003)	(0.0005)	(0.0029)	(0.0003)	(0.0005)	(0.0035)
Once a week or more	-0.0023***	-0.0014***	-0.0188***	-0.0015***	-0.0006*	-0.0149***
	(0.0003)	(0.0003)	(0.0040)	(0.0002)	(0.0003)	(0.0046)
State Fixed Effects	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y
Individual Fixed Effect	N	Y	N	N	Y	N
F-stat for first stage	-	-	68.78	-	-	43.11
N	24,009			17,300		

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5: Effects Among Attenders

	Full Sample	Independents
Panel A: Reduced Form Results		
Number services (imputed)	-1.4175***	-0.9956**
	(0.2843)	(0.2872)
Several times a year	0.0272***	0.0201***
	(0.0058)	(0.0060)
1 to 3 times per month	0.0053	0.0025
	(0.0052)	(0.0054)
Once a week or more	-0.0325***	-0.0226***
	(0.0059)	(0.0060)
Panel B: IV Results		
Number services (imputed)	-0.9670***	-0.8871***
	(0.2546)	(0.3146)
Several times a year	0.0186***	0.0179***
	(0.0051)	(0.0067)
1 to 3 times per month	0.0036	0.0022
	(0.0035)	(0.0047)
Once a week or more	-0.0222***	-0.0202***
	(0.0053)	(0.0065)
F-stat for first stage	54.70	31.78
N	17,601	12,197

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 6: Reported importance of Religion

	OLS	IV	Reduced Form
	(1)	(2)	(3)
Importance index	0.0026***	-0.0053	-0.0056
	(0.0008)	(0.0079)	(0.0085)
N		17,601	

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain state fixed effects, year fixed effects, and all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 7: Results with Labor Force Participation Controls

	Independents		Men with Children	
	Hours Control (1)	LFP Control (2)	Hours Control (3)	LFP Control (4)
Panel A: Reduced Form Results				
Number services (imputed)	-1.1828***	-1.2036***	-0.6947***	-0.6988***
	(0.2367)	(0.2386)	(0.2361)	(0.2385)
Never attend	0.0076	0.0085*	-0.0015	-0.0005
	(0.0045)	(0.0047)	(0.0048)	(0.0049)
Several times a year	0.0160***	0.0159***	0.0154***	0.0147***
	(0.0046)	(0.0047)	(0.0048)	(0.0048)
1 to 3 times a month	0.0010	0.0003	0.0020	0.0014
	(0.0039)	(0.0038)	(0.0037)	(0.0037)
Once a week or more	-0.0249***	-0.0250***	-0.0160***	-0.0157***
	(0.0047)	(0.0047)	(0.0047)	(0.0046)
Panel B: IV Results				
Number services (imputed)	-0.6523***	-0.8486***	-0.4980***	-0.5315***
	(0.2321)	(0.3290)	(0.1730)	(0.1812)
Never Attend	-0.0014	-0.0006	-0.0010	-0.0007
	(0.0045)	(0.0059)	(0.0050)	(0.0053)
Several times a year	0.0144***	0.0179***	0.0138***	0.0145***
	(0.0051)	(0.0067)	(0.0047)	(0.0050)
1 to 3 times a month	0.0019	0.0017	-0.0029	-0.0033
	(0.0035)	(0.0045)	(0.0055)	(0.0058)
Once a week or more	-0.0150***	-0.0191***	-0.0099***	-0.0104***
	(0.0047)	(0.0066)	(0.0033)	(0.0036)
F-stat for first stage	74.47	69.21	53.20	36.27
N	17,300		8,258	

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 8: Results by Race and Religion

	Religion				Race		
	Catholic (1)	Baptist (2)	Non-Denominational (3)	Non-Catholic Christian (4)	White (5)	Black (6)	Hispanic (7)
Panel A: Reduced Form Results							
Number services (imputed)	-0.2053	-0.5173	-1.1370**	-0.9632***	-1.1241***	-0.2943	-1.0352***
	(0.6812)	(0.5197)	(0.4843)	(0.3297)	(0.3977)	(0.4248)	(0.2914)
Never attend	-0.0000	0.0076	0.0027	0.0031	0.0127	-0.0070	-0.0161
	(0.0154)	(0.0072)	(0.0091)	(0.0051)	(0.0091)	(0.0088)	(0.0103)
Several times a year	0.0010	0.0112	0.0275**	0.0200**	0.0070	0.0159**	0.0288***
	(0.0145)	(0.0141)	(0.0111)	(0.0086)	(0.0093)	(0.0074)	(0.0065)
1 to 3 times a month	0.0001	-0.0062	-0.0094	-0.0014	0.0057	-0.0007	0.0138
	(0.0191)	(0.0083)	(0.0137)	(0.0059)	(0.0070)	(0.0050)	(0.0100)
Once a week or more	-0.0011	-0.0130	-0.0208*	-0.0218***	-0.0254***	-0.0083	-0.0266***
	(0.0073)	(0.0103)	(0.0105)	(0.0062)	(0.0076)	(0.0084)	(0.0048)
Panel B: IV Results							
Number services (imputed)	-0.4590	-0.3249	-1.3235	-0.7420**	-1.4547**	-0.2359	-1.0260**
	(1.5123)	(0.3285)	(0.8097)	(0.2961)	(0.6492)	(0.3415)	(0.4064)
Never Attend	-0.0000	0.0048	0.0031	0.0024	0.0165	-0.0056	-0.0160
	(0.0338)	(0.0047)	(0.0104)	(0.0039)	(0.0120)	(0.0070)	(0.0110)
Several times a year	0.0023	0.0070	0.0320	0.0154**	0.0090	0.0128**	0.0286***
	(0.0319)	(0.0087)	(0.0203)	(0.0075)	(0.0125)	(0.0063)	(0.0102)
1 to 3 times a month	0.0002	-0.0039	-0.0109	-0.0010	0.0074	-0.0005	0.0137
	(0.0418)	(0.0051)	(0.0171)	(0.0046)	(0.0096)	(0.0041)	(0.0100)
Once a week or more	-0.0025	-0.0082	-0.0243	-0.0168***	-0.0329**	-0.0066	-0.0264***
	(0.0153)	(0.0067)	(0.0149)	(0.0059)	(0.0143)	(0.0068)	(0.0078)
F-stat for first stage	.91	24.55	5.44	34.92	7.77	28.91	8.41
N	3,074	4,169	2,316	8,539	6,639	8,078	4,011

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old not living with parents and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 9: Results for Groups Less Effected by EITC

	Dependents (1)	BA+ (2)	Income> $25K (3)	Male no kids (4)
Panel A: Reduced Form Results				
Number services (imputed)	17.7121**	0.5206	-0.1580	-2.7272
	(8.0329)	(0.9165)	(0.4938)	(13.5486)
Never attend	-0.0662	-0.0031	-0.0004	0.0019
	(0.2328)	(0.0158)	(0.0093)	(0.2488)
Several times a year	-0.4986**	-0.0060	0.0052	-0.0373
	(0.2178)	(0.0186)	(0.0130)	(0.1715)
1 to 3 times a month	0.3620	-0.0091	-0.0017	0.1338
	(0.2319)	(0.0139)	(0.0091)	(0.1404)
Once a week or more	0.2068	0.0182	-0.0029	-0.1067
	(0.2268)	(0.0185)	(0.0071)	(0.2525)
Panel B: IV Results				
Number services (imputed)	-6.8446	-0.7925	1.7129	-0.2396
	(13.2141)	(1.8309)	(5.6670)	(1.1664)
Never Attend	0.0256	0.0047	0.0043	0.0002
	(0.1278)	(0.0295)	(0.1012)	(0.0219)
Several times a year	0.1927	0.0091	-0.0563	-0.0033
	(0.3300)	(0.0288)	(0.1536)	(0.0155)
1 to 3 times a month	-0.1399	0.0139	0.0188	0.0118
	(0.3408)	(0.0260)	(0.1000)	(0.0140)
Once a week or more	-0.0799	-0.0277	0.0318	-0.0094
	(0.1193)	(0.0445)	(0.0844)	(0.0214)
F-stat for first stage	0.35	1.01	0.68	2.59
N	6,709	1,889	5,095	9,877

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain state fixed effects, year fixed effects, and all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 10: Testing for Endogeneity of EITC Benefits

	IV based on Federal Benefits		IV Based on Benefits for Lagged Family	
Dependent Variable	Full Sample	Attenders	Full Sample	Attenders
Number services (imputed)	-0.8238***	-1.0399***	-0.5264***	-0.6500***
	(0.2088)	(0.2708)	(0.1051)	(0.1169)
Never attend	0.0011	-	0.0016	-
	(0.0040)	-	(0.0025)	-
Once a week or more	-0.0186***	-0.0241***	-0.0116***	-0.0149***
	(0.0042)	(0.0057)	(0.0024)	(0.0029)
Several times a year	0.0143***	0.0193***	0.0082***	0.0119***
	(0.0043)	(0.0056)	(0.0022)	(0.0026)
1 to 3 times a month	0.0029	0.0048	0.0018	0.0030
	(0.0031)	(0.0040)	(0.0027)	(0.0031)
F-stat for first stage	253.7	52.8	205.0	39.3
N	24,009	17,601	24,009	17,601

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain state fixed effects, year fixed effects, and all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 11: Reduced Form effects of EITC on Donations to religious organizations in PSID

	EITC Schedule Controls only	Full Set of Controls
	(1)	(2)
Whether donated	0.006	0.008**
	(0.004)	(0.004)
Amount donated	9.099	12.945*
	(8.483)	(7.568)
Amount donated (percent of income)	0.000	0.000
	(0.000)	(0.000)
Logged donation amount (zeros coded as one)	0.043	0.061***
	(0.028)	(0.022)
N	43,093	43,093
Amount donated (if any)	30.762	15.471
	(118.296)	(126.195)
N	8,456	8,456
State Fixed Effects	Y	Y
Year Fixed Effects	Y	Y
Individual Fixed Effects	N	Y

Source: Panel Study of Income Dynamics. 2001-2015. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Column 1 regressions contain state fixed effects, year fixed effects, individual fixed effects, and number of children. Columns 2 regressions additionally contain all control variables listed in Table 2. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 12: Effect of Income on Donations to religious organizations

	Fixed Effects		IV	
	(1)	(2)	(3)	(4)
Whether donated	0.003***	0.002***	0.006***	0.005***
	(0.000)	(0.000)	(0.002)	(0.002)
Amount donated	6.243***	4.171***	7.217***	9.430***
	(0.560)	(0.646)	(2.746)	(3.125)
Amount donated (percent of income)	-0.000**	-0.000***	0.000	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Logged donation amount (zeros coded as one)	0.024***	0.012***	0.040***	0.045***
	(0.002)	(0.002)	(0.009)	(0.011)
N	43,093	43,093	43,093	43,093
Amount donated (if any)	19.176***	16.043***	-6.173	36.459
	(1.994)	(5.766)	(24.945)	(41.819)
N	8,456	8,456	8,456	8,456
State Fixed Effects	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Individual Fixed Effects	N	Y	N	Y

Source: Panel Study of Income Dynamics. 2001-2015. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain all control variables listed in Table 2. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 13: Effect of Income on Donations to Religious Organizations

	No Bachelor's Degree	Either head or wife Attends	Neither head nor wife Attends
	(1)	(2)	(3)
Panel A: Reduced Form Results			
Whether donate	0.007*	-0.022	-0.008
	(0.004)	(0.037)	(0.035)
Donation amount	11.332*	7.838	1.377
	(6.629)	(41.390)	(6.528)
Donation amount (percent of income)	0.000	0.000	0.000
	(0.000)	(0.001)	(0.000)
Logged donation amount (zeros coded as one)	0.059***	-0.088	-0.023
	(0.022)	(0.228)	(0.163)
Donation amount (if any)	-3.139	-55.347	
	(134.442)	(230.719)	
Panel B: IV Results			
Whether donate	0.005***	-0.032*	-0.004
	(0.002)	(0.019)	(0.005)
Donation amount	8.323***	7.075	0.636
	(3.061)	(20.260)	(0.768)
Donation amount (percent of income)	0.000***	0.000	0.000
	(0.000)	(0.001)	(0.000)
Logged donation amount (zeros coded as one)	0.044***	-0.133	-0.013
	(0.011)	(0.106)	(0.023)
Donation amount (if any)	12.727	-83.105	
	(45.071)	(128.918)	
N	39,677	7,952	3,258
N (Any donation)	7,226	2,466	81

Source: Panel Study of Income Dynamics. 2001-2015. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain all control variables listed in Table 2. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

10 Appendix

Table A.1: First Stage Effect of Max Potential EITC Benefits on Income: NLSYCYA Sample

	Full Sample	Indep	Attend	Full Sample	Indep	Attend
Max EITC	1.0236***	0.9157***	1.1168***			
	(0.1445)	(0.1461)	(0.1998)			
EITC lagged				-0.5277***	-0.4713***	-0.5531***
				(0.0482)	(0.0633)	(0.0550)
F	50.1645	39.2850	31.2315	119.7117	55.4645	101.3017
N	24,009	17,300	17,601	24,009	17,300	17,601

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Regressions contain all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A.2: Ordered Probit Results for Effect of Max EITC on Religious Attendance

	Full Sample		Independents	
	Marginal Effects at $1000 EITC (1)	Marginal Effects at Mean EITC (2)	Marginal Effects at $1000 EITC (3)	Marginal Effects at Mean EITC (4)
Never attend	0.0253	0.0261	0.0177	0.0183
	(0.0030)	(0.0030)	(0.032)	(0.0034)
Several times a year	0.0063	0.0052	0.0031	0.0022
	(0.0009)	(0.0006)	(0.0007)	(0.0004)
Monthly	-0.0017	-0.0020	-0.0015	-0.0018
	(0.0002)	(0.0002)	(0.0002)	(0.0003)
2 to 3 times per month	-0.0055	-0.0058	-0.0043	-0.0045
	(0.0006)	(0.0007)	(0.0007)	(0.0008)
Weekly	-0.0135	-0.0134	-0.0084	-0.0082
	(0.0016)	(0.0016)	(0.0016)	(0.0015)
More than once a week	-0.0109	-0.0100	-0.0066	-0.006
	(0.0015)	(0.0012)	(0.0014)	(0.0012)
N	24,009		17,300	

Source: NLSY79 Children and Young Adult Surveys. 1994-2012. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Regressions contain all control variables listed in Table 1. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A.3: First Stage Effect of Max Potential EITC Benefits on Income: PSID Sample

	Full Sample	No college	Either head or wife attends	Neither head nor wife attends
Maximum EITC	1.272***	1.306***	0.891***	1.623***
	(0.054)	(0.055)	(0.110)	(0.160)
F	553.404	559.038	65.617	103.485
N	43,093	39,677	7,952	3,258

Source: Panel Study of Income Dynamics. 2001-2015. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain all control variables listed in Table 2. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A.4: Results excluding Great Recession years

	Reduced Form		2SLS	
	Full Sample	Independents	Full Sample	Independents
Attendance (imputed)	-1.6100***	-0.8509**	-1.0492***	-0.7253**
	(0.3442)	(0.3601)	(0.2310)	(0.2939)
Never attend	0.0135**	0.0015	0.0088**	0.0013
	(0.0066)	(0.0069)	(0.0041)	(0.0058)
Several times a year	0.0116***	0.0178***	0.0139**	0.0118*
	(0.0062)	(0.0067)	(0.0044)	(0.0061)
1 to 3 times a month	0.0006	0.0026	0.0004	0.0022
	(0.0052)	(0.0050)	(0.0034)	(0.0042)
Once a week or more	-0.0320***	-0.0180**	-0.0209***	-0.0153***
	(0.0069)	(0.0072)	(0.0044)	(0.0057)
N	15,605	10,811	15,605	10,811

Source: NLSY79 Children and Young Adult Surveys. 1994-2008. Sample restricted to survey waves before the Great Recession. Sample includes those over 18 years old and with income (in 2013 dollars) less than $45,000. Each cell represents the coefficient on income from a separate regression. Regressions contain state fixed effects, year fixed effects, and all control variables listed in Table 1. Standard errors clustered at the individual and state level in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.