The Effects of IRS Audits on EITC Claimants[*]

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Abstract

The Internal Revenue Service (IRS) devotes substantial resources to audit tax returns of Earned Income Tax Credits (EITC) claimants, but little is known about the deterrence effect of these audits. Our paper examines the impact of this tax enforcement on subsequent individual taxpaying among those who claimed an EITC. Studying randomized IRS audits during the 2006-2009 period, we find that EITC participants who are audited show much larger increases in reported income in subsequent years, both compared to a control group of EITC filers, and compared to audited filers who were not EITC claimants. We find behavioral impacts on the extensive margin as well, with the probability of a filer claiming an EITC dropping by over 6 percentage points within 4 years following the audit, as well as changes in filing status and the number of dependents.

Keywords: individual income tax, tax audit, tax evasion, tax avoidance

JEL Classifications: H24, H26

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1. Introduction

The Earned Income Tax Credit (EITC) is a major component of the antipoverty efforts in the United States, distributing an estimated $66.7 billion to 27.5 million families in 2014.[1] However, EITC claims suffer from a substantial amount of noncompliance, with the Treasury Inspector General for Tax Administration estimating that between $13.3 billion and $15.6 billion in claims were issued improperly, representing 21 to 25 percent of total payments.[2] IRS's main countermeasure is to expend a substantial amount of enforcement resources auditing returns that claim the EITC. More than a third of the returns that were audited in 2014 were returns where the filer claimed the EITC. In contrast, the fraction of all filers (not just those who were audited) claiming the EITC is about twenty percent.[3]

Though these audits may recapture credits that were erroneously claimed in the tax year that was audited, we do not know whether such audits are effective in deterring subsequent non-compliance. To address this important policy question, our study investigates the impact of audits on EITC claimants' longer-term taxpaying behavior, on both intensive and extensive margins.

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[1] See https://www.eitc.irs.gov/EITC-Central/abouteitc. The EITC functions as a wage supplement for low income workers. The credit initially increases at the phase-in rate with a taxpayer's earned income, up to a maximum amount. The credit stays flat over an additional range of earnings, and beyond a certain amount of earnings (or adjusted gross income, whichever is higher) the credit declines at the phase-out rate with additional earnings until it is completely taxed away.

In addition, between 1990 and 2006, fourteen states adopted state-level EITCs, bringing the total number of state EITCs to nineteen. State level EITCs generally are figured as a fraction of the federal EITC, with the fraction in 2006 ranging across states from 5% to 35%.

[2] See https://www.treasury.gov/tigta/auditreports/2013reports/201340084fr.pdf In contrast, the rate of non-compliance from the income tax system as a whole is about 15%.

[3] Though the rate of audits among EITC claimants is higher than for the full population, both rates are still quite low. For example, in 2015, about 1.7% of EITC claimants were audited, compared to 0.6% of non-EITC filers. See https://www.irs.gov/pub/irs-soi/15databk.pdf.

Compliance problems with the EITC have been well documented. Among studies highlighting these compliance issues is Blumenthal, Erard, and Ho (2005), which finds not only substantial noncompliance, but also that professional tax preparers do not reduce rates of improper claims, and may even increase such rates, as these preparers are more likely to claim the EITC for a filer who meets some, but not all of the requirements. McCubbin (2000) delves into EITC noncompliance in detail and finds that noncompliance often arises through the misreporting of the number of dependents, likely because the EITC is more generous when there are more dependents in the filing unit. McCubbin (2000) also finds that the probability of misreporting the number of dependents is increasing in the EITC benefit, with about 28 percent of the qualifying-child errors being driven by systematic misreporting.[4]

Saez (2010) and Mortenson and Whitten (2015) both document evidence of "bunching" around the first kink the EITC schedule. The first kink in the EITC schedule is where the schedule transitions from the ETIC phase in rate, where the amount of the credit increases with income, to the maximum credit amount, where the amount of the credit is constant over a range of additional income. This suggests that individuals are manipulating income to locate near the maximum EITC benefit. While such manipulation may come from changes in real economic activity, the fact that this bunching exists only for filers with self-reported income suggests that the manipulation of income is through reporting changes. Mortenson and Whitten (2015) find that the degree of bunching at the first kink on the EITC schedule has been increasing over time.

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[4] Holtzblatt (1994), using data from the Tax Compliance Measurement Program (TCMP), also finds the majority of returns whose EITC amount of was disallowed uncovered misreporting in the number of qualifying children or marital status, but that misreporting of income was the source of the EITC disallowance in about 30% of the cases. However, one should note that the TCMP data that Holtzblatt (1994) uses come from the mid-1980's, before the IRS required filers to report the Social Security Numbers of dependents.

Joulfaian and Rider (1996) study the role of marginal tax rates on tax compliance. Like our study, they use the structure of the EITC program and consider the incentives the program creates for filers. They focus on the presences of large changes in marginal tax rates at different points on the EITC schedule and find that despite significant negative marginal rates in the phase-in region and large marginal tax rates in the phase-out region of the schedule, there is little effect on reported income. They exception they find, which is consistent with the bunching evidence presented, is amongst those filers with proprietorship income. These filers tend to underreport income to a greater extent as they face higher marginal tax rates.

The availability of administrative data on audits and tax returns have led to a handful of recent studies that have examined the impact of audits on subsequent taxpaying in the field. Though DeBacker et al. (2015) find that corporations in the U.S. tend to pay less tax following an audit, other studies that focus on individual taxpayers tend to find that taxpayers report more income and pay more tax following an audit. Kleven et al (2011) find that audits and the threat of audits led to an increase in reported income in Denmark, and that the effect of audit on incomes subject to third-party information reporting is much smaller than on incomes that are not subject to third-party reporting. DeBacker et al. (2016) use U.S. tax data and randomized IRS audits, finding similar results. Advani et al. (2015) study self-employed individuals in the U.K., and also find that these individuals tend to pay more tax after an audit.

In light of these studies, we note that EITC recipients are a rather different group of taxpayers, some of whom tend to have lower income and a stronger incentive to misreport in order to stay eligible for the credit. As documented from previous work, the structure of the EITC program provides many avenues for a taxpayer to manipulate benefits such as through reported income or dependents. An open question is whether this misreporting incentive undermines or weakens the effectiveness of audits. On the one hand, the incentive may induce

EITC claimants to keep misreporting to maximize EITC benefits, reducing the effect of audits. On the other hand, the incentive may imply high ex-ante rates of noncompliance, allowing audits to have a stronger effect.

To test for the long-term effects of audits on tax reporting, we use data from the Internal Revenue Service's (IRS) National Research Program (NRP). The NRP began conducting random audits of individual tax filers starting in tax year 2001, and began conducting annual random audits starting in 2006. To these data, we merge returns from the universe of filers from 2000 to 2012, allowing us to examine the impact of audits on individual taxpaying behavior for a period of up to six years after an audit.[5] Importantly, we are able observe the reported incomes, tax payments, and credits claimed both of those who were, and those who were not, subject to audit, enabling us to compare the behavior of the audited treatment group to a suitably chosen control group.

Since the treatment, an IRS audit, is randomized through the NRP, our empirical strategy is straightforward. Using the sampling weights that the IRS uses to select individuals for an NRP audit, we construct a nationally representative sample of audited individuals who were EITC claimants in the year of audit. We pair this with a random sample of individuals drawn from the same population of tax filers, those who filed a return in that year and claimed an EITC. Then, we compare the tax filings of these two groups before and after the audit year.

Our results show that the adjusted gross income of EITC recipients increase by over 6% following audit, with this increase persisting for at least 6 years. To put this in perspective, and to demonstrate that this finding doesn't simply capture the impact of audits among low income filers, the change in adjusted gross income of all filers reporting less than $40,000 in

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[5] The IRS defines an audit as "a review/examination of an organization's or individual's accounts and financial information to ensure information is being reported correctly, according to the tax laws, to verify the amount of tax reported is correct." (Internal Revenue Service (2014)).

adjusted gross income is about 3.5% and does not display such a persistent increase. We also find changes along other margins, with the rate at which filers claim the EITC falling by 6% as a result of audit and the likelihood of reporting head of household status or multiple dependents dropping at similar rates.

The paper proceeds as follows. Section 2 describes the data. Section 3 outlines our empirical strategy and Section 4 gives some more detail on tax compliance rates amongst all filers and those claiming the EITC. Our results that consider the impact of audit on filing behavior begin in Section 5, where we discuss changes in reported income following audit. Section 6 provides a framework to explain the relatively large changes we see from EITC participants and gives some evidence to support this theory. Section 7 explores changes along the margins of dependents and filing status. Section 8 explores the differences in responses across various sources of income. We conclude our study in Section 9.

2. Data

Our estimation sample is constructed with data from three sources. First, we use data from the 2006-2009 waves of the IRS's National Research Program (NRP).[6] The NRP conducts audits on a stratified, random sample of the filing population and includes in their data weights to allow researchers to create population-representative statistics. Included in these data are taxpayer identifiers (the social security number (SSN) of the primary filer), the year of the audited return, and the resulting adjustment to the tax return by line on the Form 1040. Each of the NRP waves have approximately 15,000 observations.

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[6] Note that we exclude the NRP wave from 2001. Documentation suggests that the sampling frame and intent of the 2001 wave sufficiently different from later waves to treat them as comparable.

Next, we turn to the IRS's Audit Information Management System (AIMS) to acquire additional information about the NRP audits. The AIMS data contain detailed information on all IRS audits (including NRP and non-NRP audits) from 1996 to present, and allows us to observe the date the audit began and ended.

We then create a control group for each of the NRP waves by randomly selecting a 0.1% sample of filers from the IRS's population of individual income tax returns. To do so, we choose a set of 10 four-digit SSN endings. Then, for each year from 2006- 2009,[7] we select all primary filers who had one of these 10 four-digit endings from the universe of returns filed that year.

Using the SSN of the primary filer, for each taxpayer in our treatment and control groups for the three years 2006-2009, we draw all returns they filed from 2000 through 2012 from the population of individual income tax returns. These data include many items from the filer's Form 1040 and the associated forms and schedules, including all items on the front page of Form 1040 and the main line items from most associated schedules.

Since the focus in the study is on the behavior of EITC claimants after audits, in most specifications that follow we cut the sample to only include taxpayers who claimed an EITC in the tax year for which they were drawn.[8] For comparison, however, we also present estimates from two alternative samples. In the first, we include all audited taxpayers, regardless of whether they claimed an EITC, so that we can compare EITC claimants to the wider population. However, if lower income taxpayers respond differently to audits than higher income taxpayers, any differences between EITC claimants and the full population may simply

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[7] The sample size is dictated by computational constraints.
[8] In other words, to be in the 2006 EITC recipient sample, the taxpayer had to either be included in the 2006 wave of the NRP and claim an EITC in 2006, or had to be drawn into the 2006 control group and claimed an EITC in 2006.

be driven by income differences the two groups. Thus, for a second alternative sample, we include only include audited taxpayers, regardless of whether they claimed an EITC, whose adjusted gross income was below $40,000 in the year of audit.[9] For this sample, we draw a 0.2% random sample from the universe of tax returns and then select those with incomes of $40,000 in the year of the audit (thus creating a sample of low-income filers that is similar in size to that of all tax filers noted earlier).

Our final panel is thus comprised of a control group of randomly selected filers from the years of the NRP waves (followed over time) and a treatment group of randomly audited filers from the NRP waves (who are also followed over time). Creating our control group in this way (by ensuring that that those in the control group filed a return in the year the treatment group was audited) allows us to match the attrition rates across treatment and control groups, both among EITC claimants, and among the tax-filing population as a whole.

Although we have detailed information on the characteristics of the audit and the adjustments to tax returns following audit for audits that were closed by the time we pull data from the AIMS database, we lack information on audits that were not closed by October 2015. However, given that our last NRP wave is from 2009 and that well over 95% of audits are closed within two years, almost all audits have been closed.

Table 1 summarizes our sample, noting weighted and unweighted observations in the base year (i.e., NRP wave year) and across all years 2000-2012.[10]

[Table 1 about here]

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[9] A limit of $40,000 was used because it roughly the maximum amount of income a taxpayer could have earned while remaining eligible for the EITC in the NRP years – the end of the phase-out range for a taxpayer with two children was 36,348 in 2006, 38,646 in 2008, and 40,363 in 2009 (for three children in 2009 it was 43,279).
[10] We use weights for both our randomly sampled control group and the treatment group. We weight the control group by giving each filer equal weight to sum to the total population of filers in the base year. We weight the treatment groups using the NRP sampling weights. This gives us a number of weighted observations approximately equal to the population of filer in the base year for the NRP sample. We then apply these weights to the filing units for each year they are in the panel.

While we do observe the date an audit was opened and closed, we do not know when the filer was notified of the audit or the results of the audit. Thus, we use as our timing convention the number of years since the audited return was filed. For example, filers selected in the 2006 NRP wave had their tax year 2006 return audited. Thus, we consider their tax year 2007 return as being one year since the audited return was filed. We use this convention throughout the paper. As a result, one would not expect a sharp increase in reported income for all filers in a given NRP wave in the first year since audit, since the duration of audits and the time when filers were notified varies. However, since the vast majority of audits are closed within two years, we do expect the effects of audits to fully materialize two to three years after the audited tax year.

Those selected for an NRP audit have three potential audit experiences. Their return can be accepted as filed, or they may receive a correspondence audit, communicating with the IRS via telephone or post, or they might have an in-person audit, meeting with the IRS examiner. These last two experiences, the correspondence audit and in-person audit, are both intensive, where the examiner will thoroughly consider all items on the filers return, checking for accuracy and documentation on the income and expenses listed. While selection into the NRP is random, selection into the type of audit experienced is not. We thus do not distinguish between these types of audit in our results. Rather, the treatment effect we estimate the impact of is an intent to audit effect, since selection into accepted as filed is a possible outcome of the random audit selection.

3. Characteristics of EITC Filers

Before delving into our empirical strategy and results, it's useful to describe the population or filers that we are focusing on. Table 2 presents summary statistics, comparing characteristics of those in our sample who were EITC claimants in the base year (i.e., the year of the NRP audit or the year from which the control group was determined) to all filers with adjusted gross incomes (AGI) less than $40,000.

[Table 2 about here]

Mean AGI is lower for the EITC sample, but rates of reporting wage income and self-employment income (on Schedule C) are higher for the EITC group. Looking down the table, we see that EITC filers are younger on average, which taken together with the income differences noted above, suggests that the group of lower income filers as a whole is disproportionately older filers with more retirement or capital income. EITC filers are also more likely to file as married or head of household and report more than twice as many dependents as the low-income group as a whole.

As noted, the IRS has had a particular interest in the compliance of filers with the EITC program. Table 3 highlights compliance rates for three groups of filers: all filers, filers with AGI less than $40,000, and filers with who claimed the EITC. The compliance rates summarized here are based on the NRP audits. What we find are that compliance rates of the EITC filers are lower than for the full population of filers, though the size of adjustments is also smaller. However, comparing EITC filers to other low income filers, we find that the EITC claimants rates of adjustment and underreported income are higher, and average audit adjustments are about 30% higher as well. On average, about 47% of EITC claimants who are audited have some adjustment to their credit amount, with an audit overturning about $1000 in EITC on average.

[Table 3 about here]

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4. Empirical strategy

The objective of the paper is to understand the impact of audit on filers who have claimed the EITC. We answer this question in two ways. We first use simple, non-parametric, difference-in-difference tabulations. We then examine the persistent of the audit effects using fixed effects regression models.

4.1 Difference-in-differences tabulations

The randomized controlled trial nature of the NRP allows us to consider the effects of audit on tax paying behavior using simple, non-parametric estimators. Here we employ a difference-in-differences estimator to understand how audits affect taxpaying behavior. In particular, we look at the changes in AGI and rates claiming and EITC as a result of audit. Our difference-in-differences estimator of the effect of audit is:

$$Effect\ of\ audit = \left(\bar{Y}_{B,2} - \bar{Y}_{B,1}\right) - \left(\bar{Y}_{A,2} - \bar{Y}_{a,1}\right) \qquad (1)$$

where B denotes the treatment group (i.e., the NRP sample) and A denotes the control group. The subscripts 1 and 2 denote the pre-audit and post-audit periods respectively. For each, we consider the mean over a span of 3 years. Thus the $\bar{Y}_{B,2}$ is calculated as the mean of the variable of interest (AGI or an indicator for claiming the EITC) for the NRP sample over the three years after audit and $\bar{Y}_{B,1}$ is calculated as the mean of the income source of interest for the NRP sample over the three years prior to audit. The variables for the control group follow an analogous method.

4.2 Within-filer estimates of the effects

Because we have a panel of tax returns, we can examine changes in individuals' behavior after an audit while controlling for time-invariant unobserved individual characteristics. We first estimate an equation of the form

$$Income_{it} = \beta PostAudit_{it} + \gamma_i + \eta_{t,w} + \varepsilon_{it}, \quad (2)$$

where $Income_{it}$ denotes a measure of income for individual (taxpayer) *i* in year *t*; and *PostAudit_{it}* denotes that the individual was audited during our sample period prior to year *t*, γ_i denotes an individual (taxpayer) fixed effect. The parameter $\eta_{t,w}$ denotes a year-wave fixed effect. That is, rather than a series of year dummy variables, our specification includes a set of dummy variables that interact the year with the wave of the filer (i.e. the wave of the NRP they were selected in or are a control group for). In this way, we can have a great deal of flexibility in terms of how economic conditions differentially affect filers from different waves. This important when we condition our sample on income or EITC status in a given year. In this specification, identification of the effects of audit come from within filer changes in reported income between the pre- and post- audit periods, net of trends in income common across the treatment and control groups (with are picked up by the year-wave fixed effects).

We then examine whether the effects of audit differ with the number of years since the audited tax year. To do so, we estimate equations of the form:

$$Income_{it} = \sum_{k=1}^{K} \beta_k \left(PostAudit_{it}\right) * \left(k \, Years \, Since \, Audit\right) + \gamma_i + \eta_{t,w} + \varepsilon_{it} \quad (3)$$

In this specification, the key explanatory variables are a series of dummies that show the difference between the audited and control group from Year 1 through (at most) Year 6 after the audited tax year. We also include coefficients on each of the two years prior to audit to test for any pre-trend differences.

5. Effects of audit on reported income

With an understanding of the differences in compliance rates across the different groups of filers, we now turn to an analysis of the effects of audit on filer behavior. In particular, we consider intensive margin changes in AGI following an audit. Table 4 gives a sense of these responses through some simple differences-in-differences results. The table shows the percentage changes in AGI between the three years prior to audit and the three years after. These percentage changes largest for the EITC filers with a change of about 3.3% of AGI, and smallest for the all filers group with a change in AGI of about 1.6%.

[Table 4 about here]

In Table 5, we extend the simple differences-in-differences results. Here we present the results of regression models that identify the effects of audit off of within-filer variation, after netting out trends common to the treatment and control groups. Again, we present results for the three groups of filers: all filers, filers with AGI<$40,000 in the year of audit, and filers claiming the EITC in the year of audit. We see that the common trends assumption holds, the coefficients on the dummy variables for years prior to audit and statistically insignificant, albeit noisy in the smaller samples. The coefficient on the post audit period is positive and strongly significant for all groups. Comparing the magnitude of the effect of audit on AGI across these groups, we find a stronger effect amongst EITC filers than other low income filers, with change in AGI of over $700.

[Table 5 about here]

Given our panel data, we can also observe how these audits affect reported income over time. Figure 1 shows the changes in AGI in each year after audit for the three groups of filers we consider. This dynamic analysis suggests that EITC filers may have larger responses and more persistent responses to audit than other low income filers. Reponses of filers as a whole are of about the same order of magnitude as EITC filers, but are much larger in percentage terms for the lower income EITC filers. Table 6 presents a similar pattern, using fixed effects regression models.[11]

[Figure 1 about here]

[Table 6 about here]

The fact that EITC filers display such large changes in income following audit is interesting. This group is not that much different in terms of age or income from the group of filers with AGI < $40,000 (see Table 2), but their changes in reported AGI following audit are almost twice as large. We propose that these large responses are related to the distinct incentives of the EITC program and the large impact that audits can have under such conditions. We develop this further in the next section.

After having seen the relatively large responses to AGI, and along several other margins, we now consider how different income sources change after audit. DeBacker et. al (2016) have documented substantial differences in the magnitude and trends of the changes across different income sources post audit. They find large, but more transitory effects, on income less subject to third party reporting, such as self-employment income and more muted, but more persistent effects, on other income sources such as wages and salaries. Further, we saw some evidence of changes in bunching behavior by EITC filers, but this was driven by

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[11] Note that in Table 6, we winsorize income variables at the 99% level for the "all filers" sample. The IRS data we use are unedited and several large outliers (which could be data entry errors on the part of the tax filer) introduced noise into this sample that is apparent in the results in Tables 4, 5 and Figure 1.

those with self-employment income. Thus, we now ask, among EITC filers, how does reported income from different income sources respond to audit?

[Table 7 about here]

Table 7 presents the results of estimating our fixed effects model separately for different wages and salaries, and self-employment income as reported on Schedule C of Form 1040, and compare these effects to the overall effect on AGI. Figure 2 summarizes these results, with Panel A showing the level changes that Table 7 related, and Panel B showing the changes in percentage terms the mean amounts of income for these sources vary. Changes in self-employment income do show the transitory impact of audit that DeBacker et. al (2016) document, and wages show large changes as well (albeit smaller in percentage terms), with the changes in wage income showing a persistent impact of audit. Because AGI includes both of these income components (among others), AGI exhibits a positive increase that persists over time.

[Figure 2 about here]

6. The effect of audits in the presences of anchor points

The EITC is a credit that supports the income of filers while maintaining incentives to work. The credit does this increasing the size of the refundable credit as a filer's qualified earnings increase, up to a point. The amount of the credit is limited at a maximum that varies depending

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on the number of dependents. Once the maximum credit is reached, the credit amount stays constant as income increases until the second threshold is reached. Past that point, the amount of the credit declines as income increases. Figure 3 shows the EITC schedules for filers who file as single or head of household (solid line) and those who file are married (dashed line) and with various numbers of dependents.

[Figure 3 about here]

This design of the EITC program has been shown to encourage labor force participation (see Holtzblatt et al. (1994) and Meyer (2002)). However, the sharp change in the marginal tax rate on earned income at the first kink in the EITC schedule provides an incentive for filers to report just enough income to obtain the maximum credit and not more (see Saez (2010) for a detailed discussion of the effect of the incentives at these kink points). The change in the filer's marginal tax rate at this first kink can be as high as 45 percentage points (for filers with three or more dependents), which may represent a substantial incentive to manipulate reported income in order to be just at that kink point. There are similar, albeit smaller, incentives to locate just to the left of the second kink point as well. Here, the phase-out of the EITC means that the increase in marginal tax rates at that point may be as high as 21.6 percent (for filers with two or more dependents).

Thus, one possible cause of that large intensive margin changes in the reported income of EITC participants who have been audited may be that before the audit, filers are manipulating income in order to locate near the first or second kink point, but after the audit, the increase in compliance results in filers becoming unanchored from these kink points. Thus, one would see a change in reported income that is large and persistent as it now increases with the filers income growth over time rather than being tied to these threshold levels created by the incentives of tax policy.

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The most direct test of this hypothesis is to look at whether tax payers do in fact bunch at these kink points before audit – and whether that behavior is changed as a result of the audit. Saez (2010) and Mortenson and Whitten (2015) both find evidence of bunching around the first kink point, mostly driven by filers with income that is less verifiable by the IRS such as self-employment income. Using our sample, we test for this bunching pattern. Panel A of Figure 3 shows kernel density estimators for filers with two or more dependents from the NRP who had only wage income. The solid line shows the distribution of filers in the year of the audit while the dashed line shows the audited filers three years after the audit. Here, while noisy, the data show no evidence of bunching at the first kink point for wage earners, in line with Saez (2010). Panel B show the same kernel density estimators for filers with two or more dependents who reported self-employment income. In this case, there is an obvious mass of filers at the first kink in the audit year and three years later. This result corroborates the earlier evidence of Saez (2010), that filers with income that is not subject to third party reporting tend to manipulate their income reporting to a greater extent. However, what hasn't been documented before are the effects of audit on the tendency of filers to bunch around the first kink point. The dashed line shows that the extent of this bunching is reduced three years after audit. The elasticity of earned income implied by the bunching is 0.39 in the year of the audit and 0.28 three years later. Due to the small sample size of filers in this region from the NRP audits, the estimated reduction in the elasticity is not statistically significant, but it is at least suggestive that filers are responding to audit by displaying less of this bunching behavior.

[Figure 4 about here]

Figure 5 provides further evidence of this change in filer behavior. In Panel A, the histogram on the left shows the density of filers with self-employment income in all years before the audit year for the control group. The histogram on the right shows this density

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for all years these filers were observed after the audit year. For the control group, bunching at the first kink point in the EITC schedule is evident both before and after the audit. Panel B show the corresponding histograms for the treatment group, those selected for an NRP audit. For this group, the pre-audit period shows bunching similar to that of the control group around the first kink point. However, following the audit, the distribution shows less of a mass at the first kink point and a more uniform density to the right of the first kink point on the EITC schedule. The elasticity of earned income implied from this bunching is 0.48 in the years before the audit and 0.23 in the years following audit. This decline in the elasticity of earned income, visible by the decline in the fraction of filers bunched near the first kink point on the EITC schedule in the treatment group, is statistically significant at the five percent level.

[Figure 5 about here]

7. Other margins of response to audit

The EITC also provides incentives for reporting behavior to change along other dimensions. In particular, the amount of the filer's credit is an increasing function of the number of dependents (up to three) and the credit phase out is shifted to the right for married filers relative to single filers (see Figure 3). Thus, one might consider how audits affect reporting behavior along these dimensions, which represent notches in the EITC schedule.

7.1 Dependents

McCubbin (2000) provides evidence of compliance issues from EITC filers stemming from the misreporting of dependents in order to increase credit amounts. In 1987, a change in tax administration required filers to report the social security numbers of dependents over age 5 on tax returns. Nonetheless, this reporting margin is still relevant as McCubbin (2000) shows with post-1987 data, and may be affected by audit.

Figure 6 shows how the number of children are affected by audits for our EITC sample. Audit filers report about 0.1 less dependents two years after audit as compared to those not being audited.

[Figure 6 about here]

The jump in EITC benefits is largest between one and two dependents. Thus, we also estimate a linear probability model with filer fixed effects where the dependent variable is an indicator variable for different numbers of dependents. The results from estimating these models are presented in Table 8. What these results show is that the change in the number of children post audit from EITC filers is almost entirely due to a lower likelihood of reporting two dependents and a higher likelihood of reporting zero dependents. Two years after audit, the likelihood of an audited filer reporting two dependents drops by 3.4%, while the likelihood of reporting zero dependents rises by 5%.

[Table 8 about here]

7.2 Filing status

The amount of EITC for which a taxpayer is eligible can depend on filing status, for two reasons. First, starting in 2002, the beginning and ending points of the phase-out range are higher for married taxpayers filing jointly than they are for heads of household. As a result, a

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married taxpayer with income in the phase-out range is eligible for a larger EITC than a head of household with the same amount of income. Second, a couple in which both partners earn income may be eligible for different EITC amounts depending on whether they were married and filed jointly, or unmarried and filed separately.[12] These two factors suggest that filing status among EITC recipients may be affected by an audit. Although the filing unit's individual circumstances dictate the most tax advantaged filing status, Scholz (1994) reports evidence that most changes to filing status amongst EITC claimants following audit were changes from married filing jointly to married filing separately or from head of household to single status.

Table 9 shows the changes in the fraction of filers filing as married or head of household following audit. Results for the sample of filers with AGI under $40,000 are presented together with the EITC sample to allow for comparison across these groups. These results show that the rate at which filers switch their status to married increases after audit for both groups. However, the increase for the EITC sample is about two to three times as large for the group of low income filers, peaking at a 3% increase in the likelihood of filing married six years after audit.

[Table 9 about here]

Columns 3 and 4 of Table 8 show the decline in head of household status post audit. Again, changes for the EITC sample are two to three times are large as for the low-income sample. Two years after audit, the likelihood of the audited filer who claimed the EITC in the audit year filing as head of household declines by 7.2%.

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[12] Consider a man and a woman with two children in 2006, both of whom earned $20,000. If they were married filing jointly, they would be ineligible for an EITC, since their joint earned income exceeded the end of the phase-out range for married couples, which was $38,348. If they were not married, and filed separately with one of the individuals claiming both children and filing head of household, the head of household would be eligible for an EITC of $3446. On the other hand, if they both earned $8,000, they would be eligible for an EITC of $4536 if married filing jointly, but only $3200 if one filed as head of household and the other as single.

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7.3 Extensive margin results

We now turn to other evidence highlight how audits may induce filers to become unanchored from the EITC policy thresholds. In particular, filers who become unanchored are likely to be ones who no longer claim the EITC after audit. Thus, we can look to extensive margin changes in filing behavior. To do this, we use a linear probability model with filer fixed effects. This model is analogous to that presented in Section 4, but with the dependent variable being an indicator variable for whether the filer claimed the EITC. Figure 7 summarizes the results from this model as estimated on the sample of EITC filers. Filers who were audited have a 5% lower likelihood of claiming the EITC two years after audit and a 2% lower likelihood six years after audit. As filers become less likely to claim the credit, they are less anchored to the income thresholds relevant to the EITC.

[Figure 7 about here]

8. Conclusion

In administering social benefit programs, the government typically uses a number of criteria to determine eligibility. These criteria inevitably provide margins for non-compliance. The EITC is no exception. The primary countermeasures against misreporting are audits. Thus, it is important to know whether these audits are effective in reducing future misreporting, and if so, by how much and for how long.

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The empirical exercise in this paper offers clear evidence for the auditing effectiveness, among EITC recipients. We find that audits of EITC participants result in changes along several margins; income, EITC claim rates, filing status, and number of dependents. These results highlight how audits can counteract incentives to misreport – either intentionally or not – along many dimensions.

[Figure 8 about here]

To put this in perspective, consider the changes in the amount of EITC claimed following an audit shown in Figure 8. EITC claims drop by as much as $200 and are about $100 dollars lower even 6 years after audit. Thus, over the first 6 years after audit, the fall in EITC claims is about $800, more than even the average amount of EITC overturned upon audit, $501. In other words, each audit reduces the EITC misreporting by at least $1,300, effectively enhancing the targeting of this program toward the families in need.

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Table 1. Number of observations

	Weighted Observations		Unweighted Observations	
	Total observations	Filers Claiming EITC	Total observations	Filers Claiming EITC
NRP Sample				
All Years	5,835,714,922	991,631,910	588,489	90,858
Base Year	541,046,981	97,207,496	51,712	8,831
Positive Adjustment to Tax Liability	220,742,538	31,175,194	28,016	2,735
Zero Adjustment to Tax Liability	279,993,810	63,541,737	18,689	5,858
Negative Adjustment to Tax Liability	40,310,633	2,490,565	5,007	238
Random Sample				
All Years	5,832,234,000	979,991,000	5,832,234	979,991
Base Year	552,924,000	97,713,000	552,924	97,713

Note: The National Research Program (NRP)'s sample is the treatment group, which has been audited. The random sample is randomly selected from the universe of tax files. Our data include the 2006-2009 NRP waves. The number of observations of the NRP sample is weighted according to the weights that were used by NRP.

Table 2. Descriptive statistics

	All Filers	Filers with AGI < $40,000	EITC Claimants
Fraction claiming EITC	16.5%	28.6%	69.9%
AGI			
Mean	$52,334	$21,230	$18,986
Fraction with Wage and Salary Income	85.1%	81.8%	89.5%
Mean	$45,707	$19,782	$18,246
Fraction with Sch C Income	15.5%	13.6%	19.3%
Mean	$9,215	$6,800	$7,705
Age	43.39	42.08	37.47
Fraction Married	43.4%	23.6%	24.9%
Fraction Head of Household	14.1%	19.9%	44.6%
Number of Dependents (mean)	0.66	0.54	1.21
Observations	6,420,723	6,388,596	2,058,997

Note: The National Research Program (NRP)'s sample is the treatment group, which has been audited. The random sample is randomly selected from the universe of tax files. Our data include the 2006-2009 NRP waves. The number of observations of the NRP sample is weighted according to the weights that were used by NRP.

Table 3. Tax compliance rates

	All Filers	Filers with AGI < $40,000	EITC Claima
Pre-audit Gross Income	$48,443	$16,748	$15,253
Fraction non-zero	99.7%	99.2%	99.8%
Audit Adjustment	$5,097	$3,666	$4,453
Fraction non-zero	43.6%	40.0%	46.2%
Underreported Income	$6,777	$4,702	$5,384
Fraction non-zero	35.6%	33.4%	40.4%
Overreported Income	-$2,282	-$1,585	-$2,062
Fraction non-zero	8.0%	6.6%	5.8%
EITC Adjustment	-$1,033	-$1,046	-$1,066
Fraction non-zero	8.7%	14.9%	47.1%

Note: This table reports the measures of compliance found in our
NRP data. The first column reports means and fractions for all
filers, the second column for filers with adjusted gross income
below $40,000, and the third column reports these statistics for
EITC claimants. Data from from NRP audit data and relfect the
adjustments determined from NRP audits.

Table 4. Difference-in-Differences

	NRP Sample	Non-NRP, Random Sample	% Difference
All Filers			
Pre-audit Adjusted Gross Income	$51,905	$51,865	-0.08%
Post-audit Adjusted Gross Income	$52,280	$51,413	-1.66%
% Diff	0.72%	-0.87%	1.58%
Filers with AGI < $40,000			
Pre-audit Adjusted Gross Income	$19,778	$19,757	-0.11%
Post-audit Adjusted Gross Income	$20,786	$20,406	-1.83%
% Diff	5.10%	3.28%	1.72%
EITC Claimants			
Pre-audit Adjusted Gross Income	$18,148	$18,170	0.12%
Post-audit Adjusted Gross Income	$19,531	$18,905	-3.21%
% Diff	7.62%	4.04%	3.33%

Note: This table reports reports the post-treatment and difference-in-differences in taxable income between the audited and non-audited groups, for all filers, filers with AGI<$40,000, and separately for EITC claimants. The means are calculated over three years before and three years after audit (to define pre and post-audit period).

Table 5: Effect of audit on reported gross income

	All Filers	Filers with AGI<$40,000	EITC Filers
2 Years Pre Audit	-184.739	-48.748	62.468
	(170.676)	(115.518)	(121.268)
1 Year Pre Audit	1.023	12.863	24.690
	(178.590)	(118.563)	(125.078)
Post-Audit	690.602***	405.505***	733.010***
	(215.881)	(154.220)	(148.832)
Individual FE	Yes	Yes	Yes
Year of Tax Return FE	No	No	No
Year Relative to Audit FE	Yes	Yes	Yes
Constant	49006.683***	25622.003***	22034.977***
	(289.419)	(160.808)	(175.157)
R-squared	0.006	0.022	0.020
N	6,420,723	6,388,596	2,058,997

Notes: This table reports the results of a regression of the duration since the last audit on adjusted gross income. Standard errors clusted at the individual filer level are reported in parentheses below the point estimates. The asterisks denote the level of statistical significance: * p<0.10, ** p<0.05, *** p<0.01.

Table 6: The lasting effect of audit on reported gross income

	All Filers	Filers with AGI<$40,000	EITC Filers
2 Years Pre Audit	-183.955	-48.684	63.166
	(170.623)	(115.453)	(121.221)
1 Year Pre Audit	1.653	12.950	25.253
	(178.467)	(118.498)	(125.015)
1 Year Post Audit	423.871**	276.934**	563.864***
	(207.152)	(139.476)	(144.232)
2 Year Post Audit	713.792***	385.082**	742.815***
	(226.842)	(161.938)	(160.496)
3 Year Post Audit	888.922***	494.635***	873.686***
	(260.258)	(182.166)	(176.481)
4 Year Post Audit	806.598***	580.405***	706.800***
	(301.725)	(211.134)	(210.020)
5 Year Post Audit	441.925	336.708	767.490***
	(364.305)	(275.498)	(278.373)
6 Year Post Audit	1211.468**	355.373	1013.386**
	(528.106)	(383.770)	(410.253)
Individual FE	Yes	Yes	Yes
Year of Tax Return FE	Yes	No	No
Year Relative to Audit FE	No	Yes	Yes
Constant	49006.659***	25647.419***	21895.750***
	(289.415)	(59.271)	(76.637)
R-squared	0.006	0.022	0.020
N	6,420,723	6,388,596	2,058,997

Notes: This table reports the results of a regression of the duration since the last audit on adjusted gross income. Standard errors clusted at the individual filer level are reported in parentheses below the point estimates. The asterisks denote the level of statistical significance: * p<0.10, ** p<0.05, *** p<0.01.

Table 7: Effect of audit on reported income, by income source

| | Income Source | | |
	AGI	Wages	Sch C
2 Years Pre Audit	63.166	69.637	-26.477
	(121.221)	(117.200)	(38.529)
1 Year Pre Audit	25.253	-56.789	56.196
	(125.015)	(125.183)	(40.950)
1 Year Post Audit	563.864***	101.180	262.127***
	(144.232)	(144.446)	(49.883)
2 Year Post Audit	742.815***	261.712	249.021***
	(160.496)	(162.082)	(54.817)
3 Year Post Audit	873.686***	399.072**	154.105***
	(176.481)	(178.291)	(56.532)
4 Year Post Audit	706.800***	516.247**	41.140
	(210.020)	(212.115)	(63.647)
5 Year Post Audit	767.490***	621.286**	59.968
	(278.373)	(270.291)	(80.722)
6 Year Post Audit	1013.386**	592.490	38.743
	(410.253)	(387.469)	(110.702)
Individual FE	Yes	yes	yes
Year of Tax Return FE	No	no	no
Year Relative to Audit FE	Yes	yes	yes
Constant	21895.750***	18578.010***	1665.404***
	(76.637)	(75.667)	(23.204)
R-squared	0.020	0.011	0.006
N	2,058,997	2,058,997	2,058,997

Notes: This table reports the results of a regression of the duration since the last audit on reported income, separately for adjusted gross income, wages and salaries, and self-employment income reported on Schedule C of Form 1040. Standard errors clustered at the individual filer level are reported in parentheses below the point estimates. The asterisks denote the level of statistical significance: * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 8: The effect of audit on numbers of dependents

| | Number of Dependents | | | | |
	Zero	One	Two	Three	Four+
2 Years Pre Audit	-0.001	0.004	-0.004	-0.000	0.002
	(0.004)	(0.005)	(0.005)	(0.003)	(0.001)
1 Year Pre Audit	-0.007*	0.014***	-0.005	-0.002	0.000
	(0.004)	(0.005)	(0.005)	(0.003)	(0.002)
1 Year Post Audit	0.022***	-0.001	-0.014**	-0.006*	-0.001
	(0.005)	(0.006)	(0.005)	(0.003)	(0.002)
2 Year Post Audit	0.050***	-0.010	-0.034***	-0.006	-0.000
	(0.006)	(0.006)	(0.006)	(0.004)	(0.002)
3 Year Post Audit	0.039***	-0.008	-0.026***	-0.005	0.000
	(0.006)	(0.006)	(0.006)	(0.004)	(0.002)
4 Year Post Audit	0.033***	-0.012	-0.017**	-0.006	0.001
	(0.007)	(0.007)	(0.007)	(0.005)	(0.003)
5 Year Post Audit	0.022***	-0.016*	0.002	-0.008	0.001
	(0.009)	(0.009)	(0.009)	(0.006)	(0.003)
6 Year Post Audit	0.017	-0.013	0.004	-0.007	-0.001
	(0.012)	(0.014)	(0.013)	(0.009)	(0.005)
Individual FE	Yes	Yes	Yes	Yes	Yes
Year of Tax Return I	No	No	No	No	No
Year Relative to Aud	Yes	Yes	Yes	Yes	Yes
Constant	0.342***	0.272***	0.240***	0.111***	0.035***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.001)
R-squared	0.034	0.008	0.005	0.004	0.001
N	2,058,999	2,058,999	2,058,999	2,058,999	2,058,999

Notes: This table reports the results of a regression of the duration since the last audit on indicators for various numbers of dependents claimed by the filer. Standard errors clusted at the individual filer level are reported in parentheses below the point estimates. The asterisks denote the level of statistical significance: * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 9: Effect of audit on filing status

	Filing as Married		Filing as Head of Household	
	Filers with AGI<$40,000	EITC Filers	Filers with AGI<$40,000	EITC Filers
2 Years Pre Audit	-0.001	-0.005*	0.000	0.004
	(0.002)	(0.003)	(0.002)	(0.004)
1 Year Pre Audit	-0.002	-0.005*	0.002	0.008*
	(0.002)	(0.003)	(0.002)	(0.004)
1 Year Post Audit	0.006**	0.015***	-0.015***	-0.040***
	(0.002)	(0.004)	(0.003)	(0.005)
2 Year Post Audit	0.013***	0.025***	-0.026***	-0.072***
	(0.003)	(0.004)	(0.003)	(0.006)
3 Year Post Audit	0.013***	0.028***	-0.022***	-0.064***
	(0.003)	(0.004)	(0.003)	(0.006)
4 Year Post Audit	0.013***	0.027***	-0.026***	-0.057***
	(0.004)	(0.005)	(0.004)	(0.007)
5 Year Post Audit	0.007	0.025***	-0.022***	-0.039***
	(0.005)	(0.006)	(0.004)	(0.009)
6 Year Post Audit	0.008	0.030***	-0.028***	-0.050***
	(0.006)	(0.009)	(0.006)	(0.012)
Individual FE	Yes	Yes	Yes	Yes
Year of Tax Return FE	No	No	No	No
Year Relative to Audit FE	Yes	Yes	Yes	Yes
Constant	0.294***	0.282***	0.202***	0.424***
	(0.001)	(0.002)	(0.001)	(0.002)
R-squared	0.010	0.012	0.001	0.017
N	6,388,609	2,058,999	6,388,609	2,058,999

Notes: This table reports the results of a regression of the duration since the last audit on filing status. Standard errors clusted at the individual filer level are reported in parentheses below the point estimates. The asterisks denote the level of statistical significance: * p<0.10, ** p<0.05, *** p<0.01.

1 Figures

Figure 1: Effects of Audit on Adjusted Gross Income
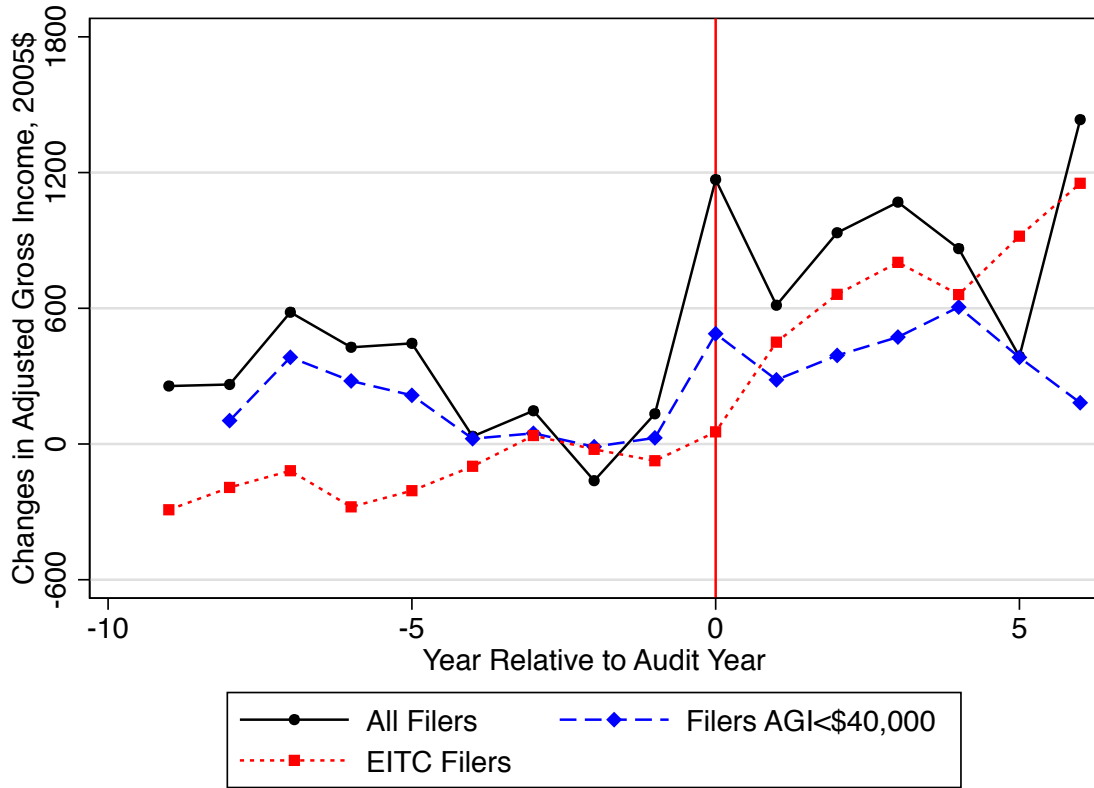
Figure 2: Effects of Audit on EITC Amounts
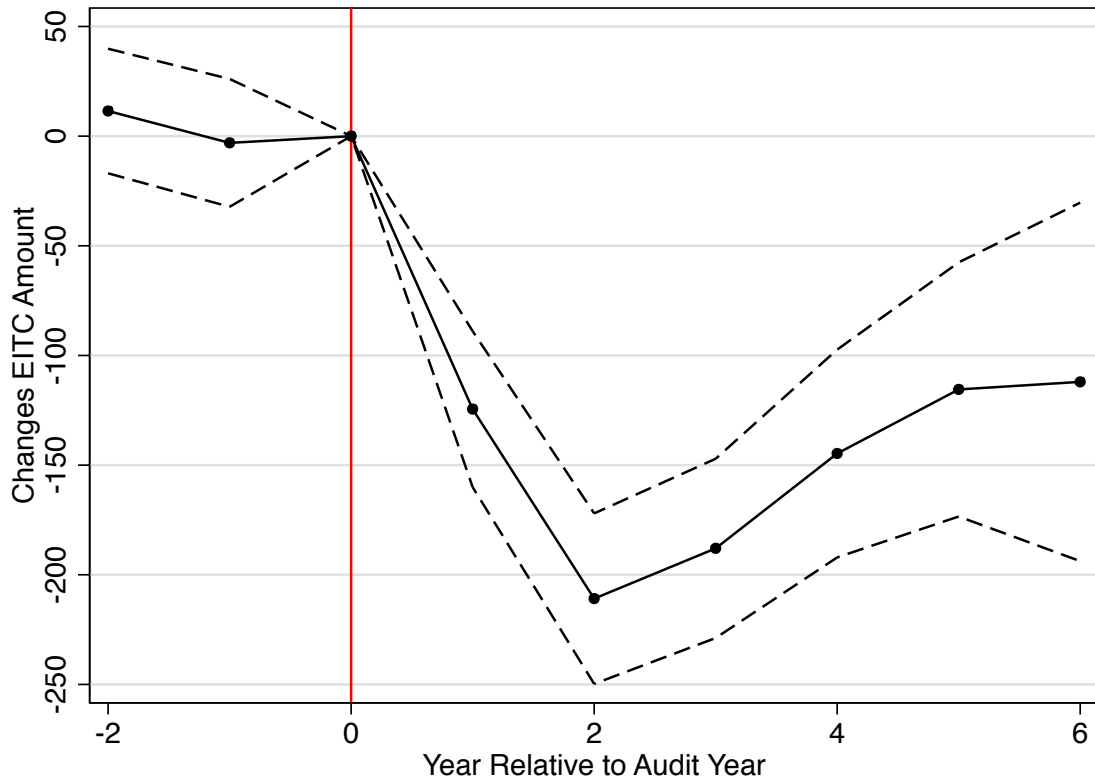
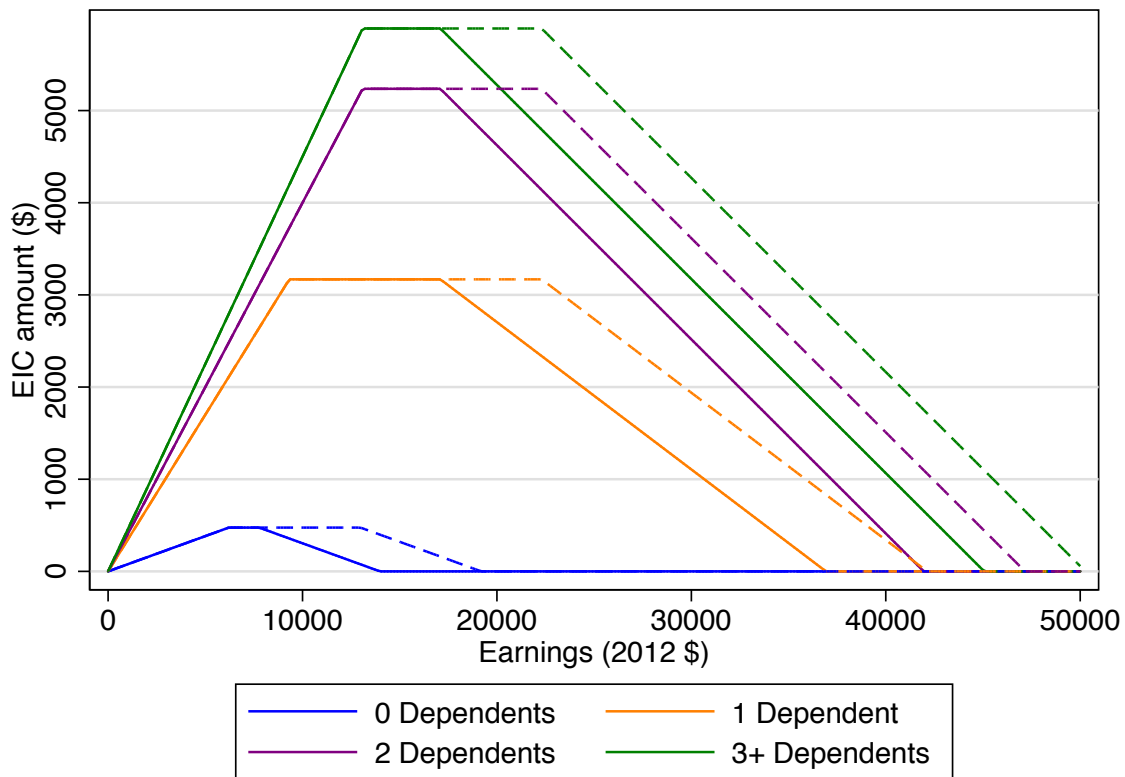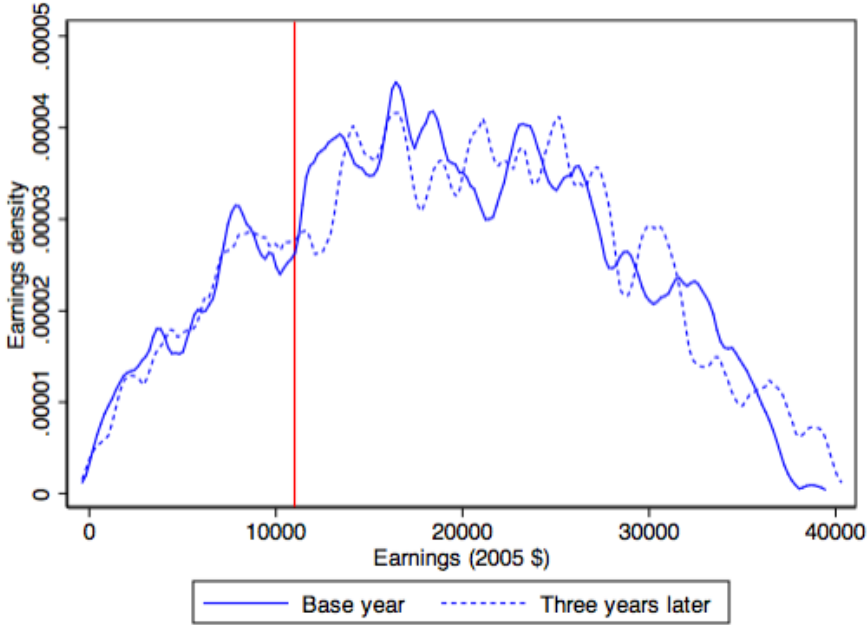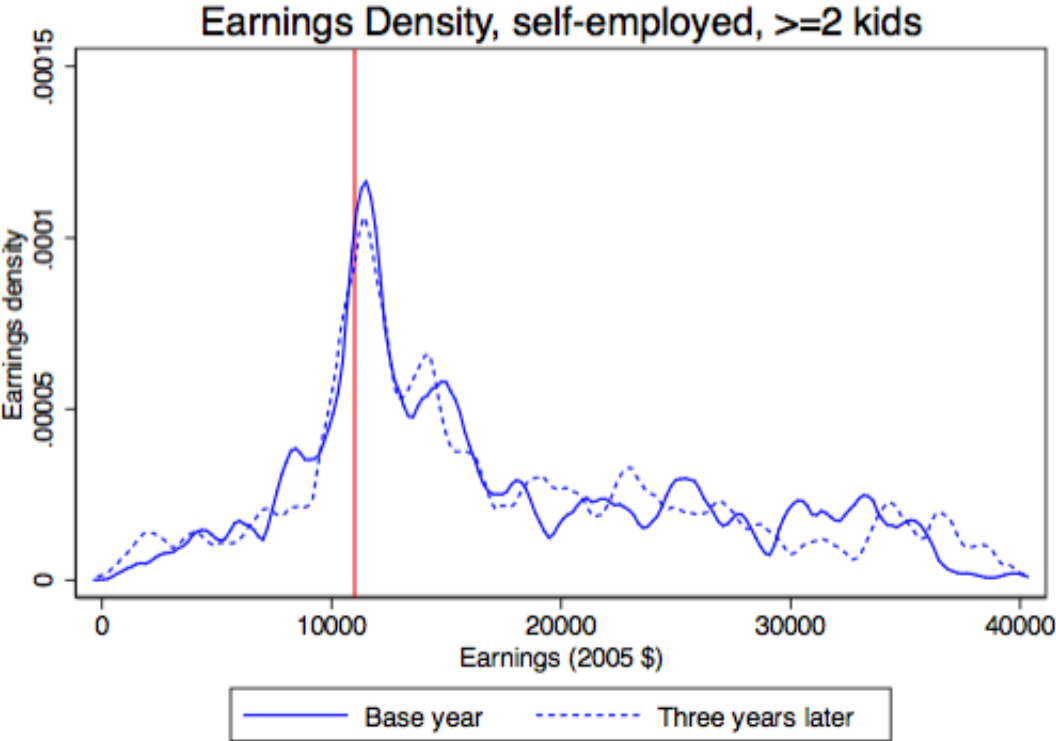**Figure 3:** Earned Income Tax Credit Schedules

Figure 4: Bunching by Taxpayers Around First Kink in EITC Schedule
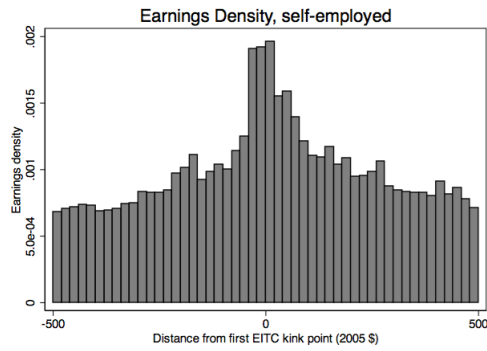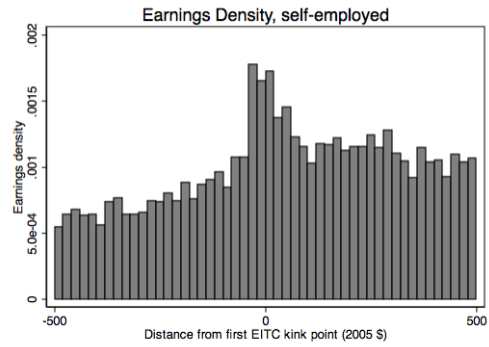

(a) Filers with Only Wage Income
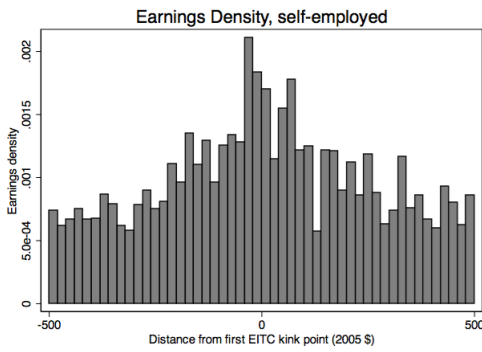

(b) Filers with Self-employment Income

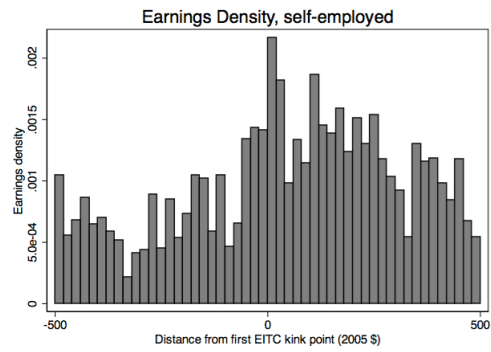**Figure 5:** Distribution of Taxpayers with Self-Employment Income

(a) Control group, before audit

(b) Control group, after audit

(c) Treatment group, before audit

(d) Treatment group, after audit

Figure 6: Effects of Audit on EITC Claim Rates
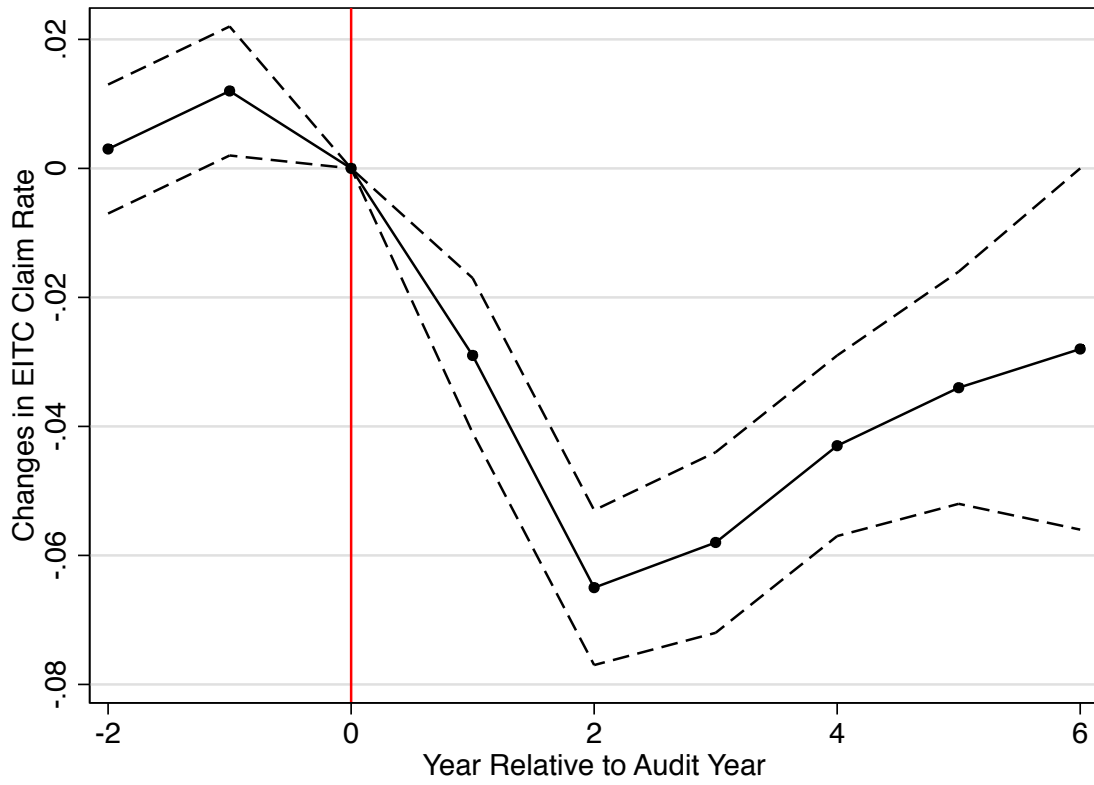
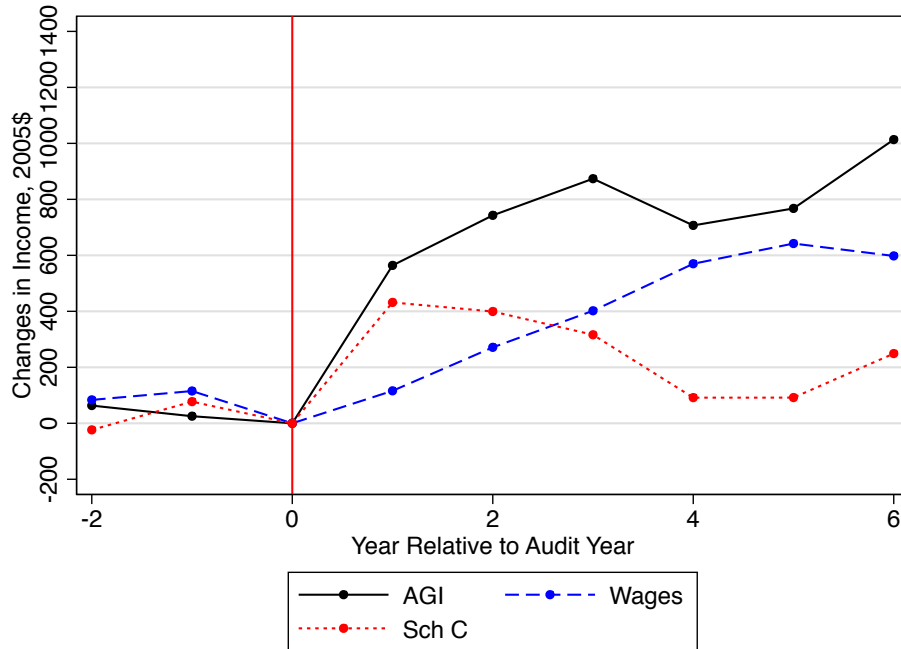**Figure 7:** Effects of Audit on Number of Dependents
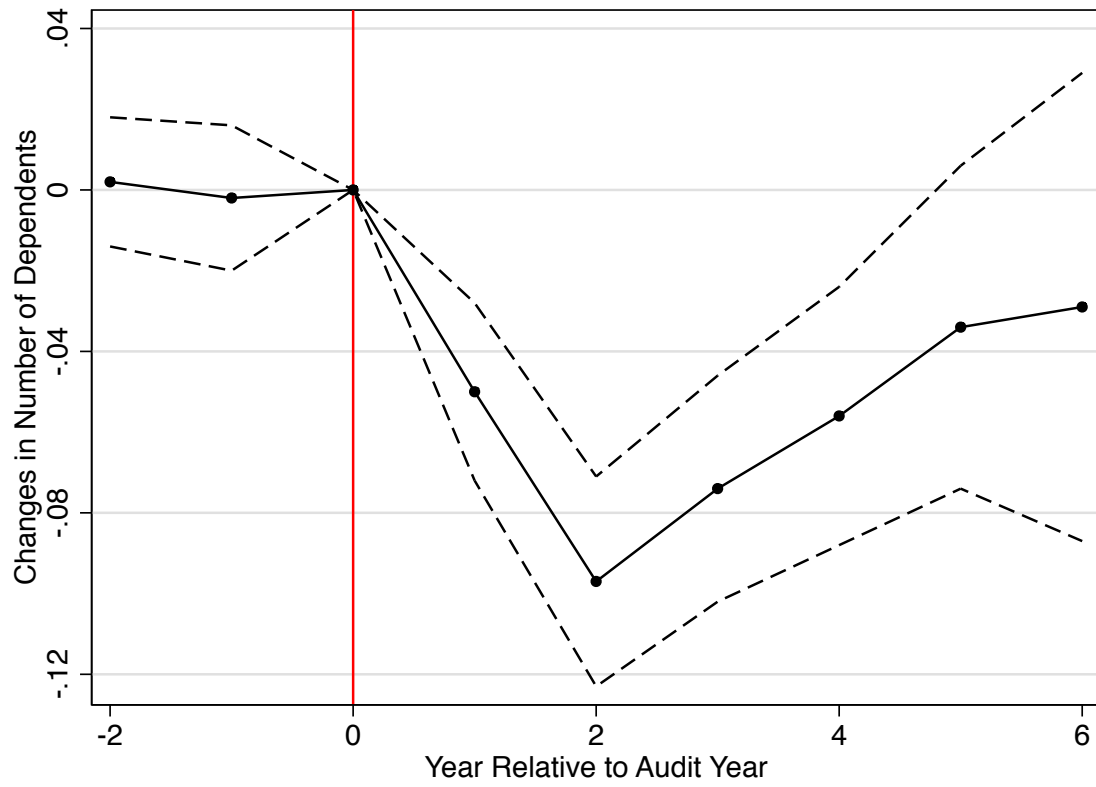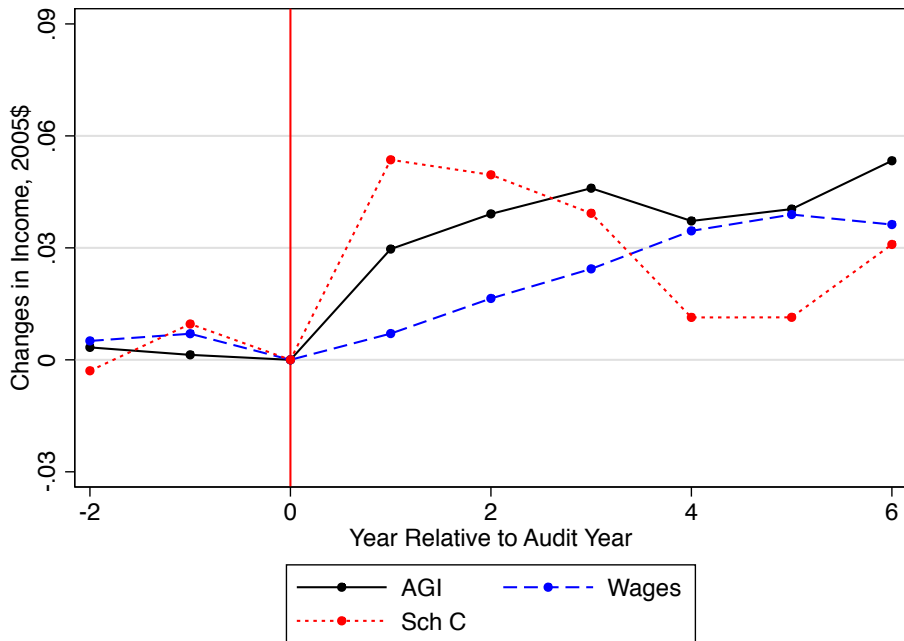
Figure 8: Effects of Audit on Income by Source

(a) Changes by Source, Levels

(b) Changes by Source, Percentages