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FIRM TAKE-UP OF A CORPORATE INCOME TAX CUT: EVIDENCE FROM VIETNAM

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This paper examines whether and why a sizable portion of eligible firms in Vietnam did not claim a 30-percent temporary corporate income tax reduction, part of a stimulus package to boost the economy during the Global Financial Crisis. Using census firm-level panel data supplemented with survey data collected for this study, I find that only 40–60 percent of eligible firms claimed the tax cut. This low take-up rate is surprising in the context of under-reporting behavior in which businesses try in many ways to reduce their tax liability. Using a difference-in-differences approach with firm-level fixed effects, I find that nonclaiming firms were either not aware of the policy or were afraid of a tax audit. The government's policy may have boosted the economy by more had more firms known they could qualify for a tax cut.

Keywords: corporate tax, firm, take-up behavior, tax avoidance, development

JEL Codes: D03, H25, M38, O12

I. INTRODUCTION

There is a large literature on tax planning that shows how many firms aggressively act to reduce their tax burdens.[1] In some cases, however, firms do not claim available tax benefits to decrease their taxes.[2] In Vietnam in 2009, 2011, and 2012, eligible firms were able to attach a simple form to their tax returns and lower their tax rate temporarily by 30 percent (from a tax rate of 25 percent to 17.5 percent). This policy was part of a stimulus package during the Global Financial Crisis. Firms were eligible if their number of employees or assets were below a minimum threshold. Despite a simple process, a surprisingly large number of seemingly eligible firms failed to take advantage of this tax cut, potentially reducing its effectiveness. This paper documents the take-up rate of eligible firms, that is, the fraction who claimed the tax cut, and examines various reasons why some eligible firms did not take up the tax cut.

[1] Some papers are Chen et al. (2010), Dyreng, Hanlon, and Maydew (2010), Desai and Dharmapala (2006), and Graham and Tucker (2006).

[2] This literature is much smaller. A few existing papers are Knittel (2007) and Kitchen and Knittel (2016).

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Estimating the take-up rate is complicated because applying for the tax cut is not directly observable. From annual enterprise survey data collected by the General Statistical Office (GSO), I calculate the observed effective tax rate (ETR), in which tax liability is divided by profits before taxes, to proxy for take-up. During the years of the tax cut, the distribution of the ETR for eligible firms has peaks at around 17.5 percent, the reduced rate, and at around 25 percent, the standard rate. The 25-percent peak indicates that 45–60 percent of eligible firms did not receive the tax cut. During the year without the tax cut, the ETR histogram of eligible firms does not peak at 17.5 percent, alleviating the concern that the 17.5-percent peak in the tax-cut years might be due to other factors. To alleviate concerns that the take-up of eligible firms might have been underestimated because ineligible firms were misclassified as eligible, I plot ETRs in the tax-cut year of firms much below the eligibility employment thresholds and show a peak at 25 percent. Since it is hard to misclassify firms over the thresholds to be much smaller, I conclude that the observed incomplete take-up was not because of misclassification.

After documenting that many firms failed to claim the tax cut, I empirically examine whether low awareness and fear of audits explain this phenomenon. Four pieces of evidence suggest that a portion of eligible firms were unaware of the policy. First, difference-in-differences regressions show that compared to the non-tax-cut year, ETRs of eligible firms with accounting software were more likely to be around 17.5 percent than 25 percent in 2009. Thus, firms with accounting software were more likely to claim the tax cut in 2009. Accounting software could be a proxy for awareness because firms with accounting software might have employed more informed accountants. Second, I surveyed a representative sample of foreign-owned firms and found that more than 30 percent of eligible firms did not know about the tax cut. Third, take-up of eligible firms in 2012 was higher than in 2011, implying that firms learned about the policy over time. Finally, eligible firms did not receive any notification about the tax cut.

I hypothesize that when firms are afraid of audits, they are less likely to claim the tax cut because it could trigger the tax authorities' attention. I assume that firms are more afraid of audits if they have a history of tax avoidance; the measures are discussed in Section IV. The difference-in-differences results reveal that compared to the non-tax-cut year, ETRs of firms with a history of tax avoidance were less likely to concentrate around 17.5 percent than 25 percent in the tax-cut years, which suggests that fear of audits affects take-up. In all regressions, I control for a rich set of time-variant and invariant firm characteristics to account for confounding factors. The results are robust in regressions with firm fixed effects.

This paper contributes to a small but important literature that studies incomplete take-up of corporate benefits in developed countries. In the United States, the take-up rate of the targeted job tax credit, new jobs tax credit, Welfare-to-Work Tax Credit, small-business tax credits to offer health insurance or retirement plans to employees, or Work Opportunity Tax Credit is at most 30 percent. The take-up rate of accelerated depreciation is about 54–70 percent.[3] Hamersma (2003) mentions some reasons for low take-up: lack of information, complex eligibility rules, fear of audits, or monetary costs

[3] As discussed in O'Neill (1982), http://www.gao.gov/assets/680/675969.pdf, Hamersma (2003), Knittel (2007), and Kitchen and Knittel (2016).

outweighing their benefits. Knittel (2007) and Kitchen and Knittel (2016) suggest that firms that do not claim accelerated depreciations are loss-making and have shorter-lived assets. In general, Hamersma (2003) and Knittel (2007) recognize that these specific reasons are not well studied. This paper documents that incomplete take-up of corporate benefits in Vietnam, a developing country, is broadly similar to that in developed countries and studies reasons for that incomplete take-up.

The rest of the paper is organized as follows. Section II describes the tax cut. Section III documents incomplete take-up using ETR histograms. Section III also introduces the data and how I determine whether a firm was eligible or claimed the tax cut. I examine reasons for low take-up in Section IV, where I also discuss the regression equations and measures for awareness and history of tax avoidance. Section V presents conclusions.

II. POLICY CONTEXT IN VIETNAM

The 30-percent corporate income tax cut in Vietnam was implemented in the last quarter of 2008 and the entire years of 2009, 2011, and 2012. The policy was part of a stimulus package during the Global Financial Crisis. When the Vietnamese government first introduced the policy at the end of 2008, they planned to discontinue it at the end of 2009, so the policy was not implemented in 2010. However, it was reimplemented in 2011 and 2012. During this period, most firms paid a 25-percent corporate income tax rate in the non-tax-cut years.[4] Eligible firms could pay a reduced rate of 17.5 percent in the tax-cut years.

Small and medium-sized firms were targeted for the 30-percent temporary corporate income tax cut because the Vietnamese government believed that these firms were crucial for job creation and did not have enough financial capability.[5] In fact, Vietnam has had many policies to support small and medium-sized firms throughout the years, for example, Law 4-2017 in June 2017, which provided access to loans or technical and technological support for these firms.[6] Thus, the Vietnamese government appeared to want to support small and medium-sized firms. Therefore, the incomplete take-up of the studied tax cut was more likely the result of imperfect implementation than intentional.

To target small and medium-sized businesses, the government set maximum employment or asset-size eligibility thresholds. In 2009 and the last quarter of 2008, a firm was eligible for the policy if its total assets were less than or equal to $500,000 at the time of registration, or if the average number of long-term employees with more than three months of employment as of the last quarter of 2008 was 300 or fewer.[7] This definition has been used for many years; for example, the government used the same definition

[4] A small number of firms had to pay different rates. For example, the tax rate of firms in the oil and gasoline industries was 32 percent.

[5] For example, the Deputy Under Secretary of Ministry of Planning and Investment emphasized the importance of small and medium-sized firms for job creation and economic growth in a conference on August 24, 2018 (https://baodautu.vn/doanh-nghiep-nho-va-vua-la-luc-luong-san-xuat-tru-cot-cua-nen-kinh-te-d86812.html).

[6] See https://thuvienphapluat.vn/van-ban/Doanh-nghiep/Luat-Ho-tro-doanh-nghiep-nho-va-vua-2017-320905.aspx.

[7] For a firm established after October 2008, the number of employees in the first month that the firm received revenue needed to be fewer than or equal to 300.

in Decree 90 in 2001 about policies to support small and medium-sized firms. In 2010, the government changed the criteria defining small and medium-sized firms. As a result, firms in the commerce and service sectors were eligible for the tax cut in 2011 and 2012 if they averaged 100 or fewer long-term employees or if their assets were less than or equal to an equivalent of $2,500,000 in 2011. In the nonservice sector, these figures were, respectively, 300 or fewer average long-term employees or assets that were less than or equal to an equivalent of $5,000,000 in 2011.

There were few exceptions to eligibility for the tax cut in 2011 and 2012. On the one hand, revenue under special excise taxes and revenues from firms in banking, real estate, lottery, finance, insurance, and subsidiaries whose parent companies were not small and medium-sized were not eligible. On the other hand, regardless of size, firms in agriculture, aquaculture, forestry, textiles, leather shoes, electronic compartments, and public construction were always eligible. These exceptions did not apply for the tax cut in 2009. Overall, about 95 percent of firms were eligible for the policy in 2009, 2011, and 2012. Table 1 summarizes the general eligibility thresholds throughout the years.

The average number of long-term employees to determine eligibility was calculated based on the monthly turnovers. For example, suppose that firm A had 302 long-term employees on October 1, 2008. It hired two long-term workers in November, resulting in 304 employees. It laid off 10 workers in December, resulting in 294 employees. The average number of long-term employees as of the last quarter of 2008, therefore, was (302 + 304 + 294)/3 = 300. Thus, firm A was eligible for the policy in the last quarter of 2008 and in 2009.

The central government released a decree announcing the 2008–2009 tax cut on December 3, 2008; the decree about the 2011 tax cut was on August 6, 2011, and the one for 2012 was on July 30, 2012. Around this time, the policy was publicized on TV and in major news outlets. The central government also issued instructions to local tax officials on how to determine eligibility. However, individual firms were not notified about the tax cut, nor was there any notification of the tax cut in the corporate tax forms.

Table 1

Eligibility Rules

Year	Average Long-Term Employees or Assets ($thousands)	
2008–2009 all sectors	≤300 in 2008	or initial assets: ≤500 in 2008
2011–2012 service sectors	≤100 in 2011	or total assets: ≤2,500 in 2011
2011–2012 nonservice sectors	≤300 in 2011	or total assets: ≤5,000 in 2011

Notes: Subsidiaries whose parent companies were not small and medium-sized businesses were not eligible for the tax cut in 2011 and 2012. Firms in agriculture, aqua-culture, forestry, textiles, leather shoes, electronic compartments, and public construction were always eligible in these two years, regardless of their employment sizes.

To apply for the tax cut, a firm had to fill out a separate one-page form, also used for various other tax policies, as shown in Figure 1. Even in this form, the 30-percent temporary tax cut was not listed as a type of reduction. The firm needed to circle "Other" and explain the type of reduction for which it would like to apply.

The extra step of filling out a form to claim the tax cut may seem strange at first, but the tax office considered the 30-percent tax cut just another policy among various others that firms could apply for. The majority of taxes in Vietnam are filed on paper. Since the tax cut was temporary, the tax office did not want to change and reprint all the corporate income tax return forms or other tax treatment forms.

An alternative to the 30-percent corporate income tax cut could be to give the tax cut to all firms. However, the government might not think that large firms needed help, and it might not want to lose the tax revenue from large firms, which could be especially

Figure 1

Form 3-3A for Differential Tax Treatments in 2009, 2011, and 2012

Firm name: .....

Tax id: | | | | | | | | | | | | | |

Branch's name (if any):.....

Branch id: | | | | | | | | | | | | | |

A. Types of Reduction:

1. Requirements:

- ❑ *New established firm.*
- ❑ *Firm relocated to low socio-economic regions.*
- ❑ *Newly established firms in prioritized industries.*
- ❑ *Newly established firms in top prioritized industries.*
- ❑ *Newly established firms in prioritized industries according to decree No 124/2008/NĐ-CP.*
- ❑ *Newly established firms in low socio-economic regions.*
- ❑ *Newly established firms in especially low socio-economic regions.*
- ❑ *Newly established firms in cultural programs.*
- ❑ *Cooperative firms in Agriculture or Social Fund.*
- ❑ *Reduction according to the investment licence.*
- ☑ Other

Note: The author translated the Vietnamese form for differential tax treatments into English. The author obtained the original form from tax personnel in the Vietnamese Tax Office, which is under the Vietnamese Ministry of Finance (https://www.mof.gov.vn).

important during an economic downturn. Another alternative policy would have been to offer a tax cut based on income rather than assets and employment. In fact, the definition of small and medium-sized firms was changed in 2013 and 2014 to base it on revenue. Perhaps the Vietnamese government was still figuring out an appropriate definition of small and medium-sized firms.

III. WHAT WAS THE TAKE-UP RATE OF ELIGIBLE FIRMS?

This section documents the take-up rate of eligible firms. In subsection A, I describe the data and how I proxy for take-up and determine firms' eligibility. Subsection B presents the take-up results using the ETR histograms of eligible firms in the tax-cut years and non-tax-cut year.

A. Data and Variables

The main data in this paper are from annual surveys of registered (formal) firms in Vietnam conducted by the GSO.[8] For the analysis in this section, I use data from 2009 to 2011. In 2011, all registered firms in Vietnam were surveyed. In 2009 and 2010, all firms in small provinces, all firms in large provinces with more than 30 employees, and 15 percent of firms in large provinces with fewer than 30 employees were randomly surveyed.

For 2012, I only have data of firms greater than 50 employees. Since showing incomplete take-up using 2009 and 2011 data is sufficient, I do not use the 2012 data. I do not use 2008 data since the policy was only in place during the last quarter, making it hard to identify tax-cut status.

In Vietnam, tax-paying firms cannot carry losses backward but may carry losses forward for a maximum of five years.[9] In the main analyses, I use profits of a current year to calculate ETR.[10] The results using loss-carrying forward profits in Figure A1 and Table A1 in the Appendix are similar.

Because the data are annual instead of monthly, I cannot calculate the average number of long-term employees to perfectly identify the employment eligibility thresholds in 2009 and 2011. Instead, I use the number of long-term employees on December 31 of each year to proxy for the average number of long-term employees of that year. In terms of assets, I use total assets on December 31, 2011, to proxy for the asset threshold of the

[8] The total number of employees of firms in the data was about 11,000,000 in 2011. Estimating the underground economy in Vietnam is challenging. The Fulbright University in Vietnam estimated the informal sector had about 57 percent of the total number of workers, which translated to 28,000,000 employees in 2011. The GSO claimed that the informal sector was not that big, but they have not released their estimates: https://english.vietnamnet.vn/fms/business/194787/how-big-is-vietnam-s-informal-economic-sector-.html.

[9] As discussed in the Vietnam PwC tax pocket book: https://www.pwc.com/vn/en/publications/2017/pwc-vietnam-ptb-2017-en.pdf).

[10] Because it is a survey, it is unclear whether cross-carrying forward figures would create more noise. Thus, I chose the simplest calculation for the main analysis.

2011 and 2012 policy. For the 2009 policy, I define the initial assets of a firm as those in the year that the firm first appears in the dataset. The dataset first started in 2000, so my measurement of initial assets might not equal actual initial assets of firms established before 2000. Because of measurement errors in identifying eligibility thresholds, I might have categorized ineligible firms as eligible and thus underestimated the take-up rate among eligible firms. I will address this issue in subsection B.

In addition, eligibility also depends on industry and whether the firm is a subsidiary. The data have information on firms' industries to determine eligibility in 2011 and 2012. Firms with revenue under special excise taxes are not common, so this should not affect determining eligibility. In the data, the Tax ID is a firm's unique identifier. Subsidiaries and their parent companies have different Tax IDs, which makes it impossible to distinguish between the two. Fortunately, the subsidiary restriction for 2011 and 2012 policies did not apply to the 2009 policy, and subsidiaries are rare in Vietnam.[11] Thus, I treat each Tax ID as an independent firm.

B. Incomplete Take-Up among Eligible Firms

To measure how many firms were eligible but did not claim the tax cut, I plot ETR histograms of eligible firms from 2009 to 2011 in Figure 2. The tax-rate histograms are restricted to firms whose ETRs are between 0 and 50 percent since there are few firms (2.5 percent of all firms in the data) whose calculated tax rates are negative or greater than 50 percent. The bin width is 2 percent.

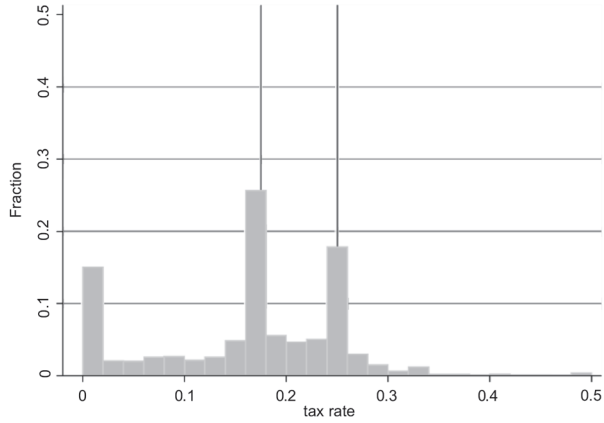
Figure 2 shows a mass of eligible firms concentrated around 0 percent (from 0 to 2 percent), the reduced rate of 17.5 percent (from 16.5 to 18.5 percent), and the standard rate of 25 percent (from 24 to 26 percent) in 2009 and 2011. The 0-percent peak represents firms that make losses or are exempted from paying taxes. The 17.5-percent peak illustrates the percentage of eligible firms receiving the 30-percent corporate income tax cut, while the 25-percent peak illustrates the percentage of eligible firms that did not claim the tax cut. The presence of the 25-percent peak indicates an incomplete take-up of the tax cut among eligible firms in 2009 and 2011.

To approximate the take-up rate, I only consider firms in the 17.5- or the 25-percent range because I cannot categorize whether the firm received the tax cut if its ETR is in a different range. As shown in Figure 2, about 60 percent of firms received the tax cut (in the 17.5- instead of the 25-percent range) in 2009 and 45 percent of firms received the tax cut in 2011.

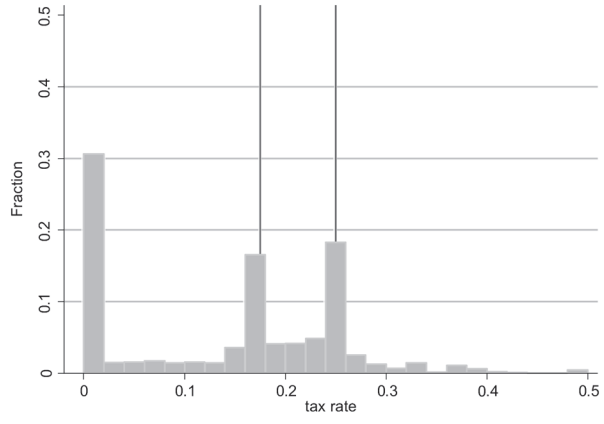
One concern about using the ETR to infer the tax-cut status is that the firm might fall into the 17.5-percent category because of factors other than the temporary tax cut. For example, firms might have claimed other tax deductions, and the survey data could be

[11] To my knowledge, there is not an official statistic on the number of subsidiaries in Vietnam. My hand-collected data show that there were about 400 subsidiaries in Vietnam in 2017. The total number of registered firms in 2017 was more than 400,000, so subsidiaries were about 0.1 percent of the total number of registered firms.

Figure 2
ETR Histograms of Eligible Firms in 2009 and 2011



2009



2011

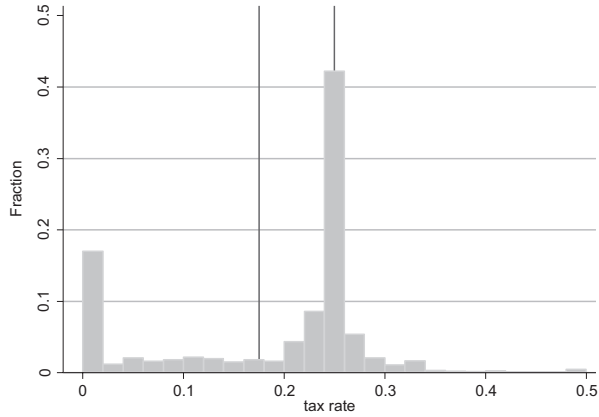
Note: The sample is restricted to firms whose tax rates are between 0 and 50 percent. The bin width is 2 percent.

noisy. Thus, looking at ETR histograms in 2010, the non-tax-cut year, helps alleviate this concern. The 2010 ETR in Figure 3 only has peaks at 0 and 25 percent. It does not exhibit a 17.5-percent peak, which indicates that not many firms have an ETR around 17.5 percent in the absence of the tax cut.[12]

[12] If the probability of paying zero taxes is endogenous, that is, it increases when tax rates are high, the take-up rate in the tax-cut year would be higher than in the exogenous scenario because firms aggressively reduce taxes.

Figure 3

ETR Histogram in 2010



Note: The sample is restricted to firms whose tax rates are between 0 and 50 percent. The bin width is 2 percent.

Another concern is that some ineligible firms could be misclassified as eligible because the average number of long-term employees and initial assets are mis-measured, as mentioned in subsection A above. This misclassification would underestimate the take-up of eligible firms. Figure 4 shows that ETR histograms of eligible firms between zero and 49 employees also exhibit the 25-percent peak in 2009 and 2011, which indicates incomplete take-up of the tax cut among these firms. It is less likely for ineligible firms with averages of more than 100 or 300 employees to be misclassified as firms with fewer than 50 employees. Therefore, misclassifications do not drive the entire incomplete take-up results among eligible firms.

IV. WHAT MIGHT EXPLAIN LOW TAKE-UP AMONG ELIGIBLE FIRMS?

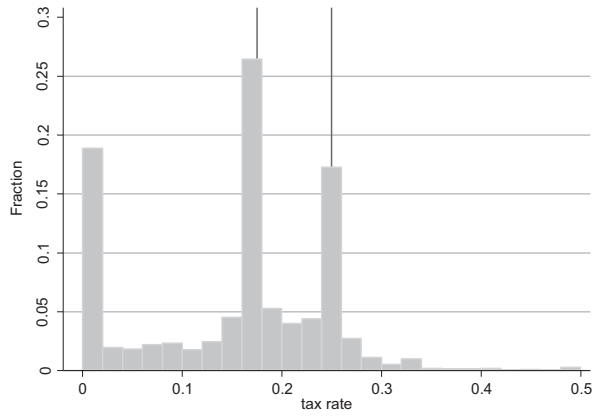
This section studies why take-up of the policy was incomplete among eligible firms. First, I examine two hypotheses: that low awareness and fear of audits might have contributed to the low take-up rate.[13] If eligible firms were not aware of the policy, they could not apply for it. In addition, when firms are afraid of audits, they are less likely to claim the tax cut because it could bring them to the tax authorities' attention and trigger an audit. Second, I discuss other possible explanations, such as complex eligibility rules, using institutional details.

Subsection A describes data and proxies for knowledge of the tax cut and fear of audits. Subsection B introduces the difference-in-differences regression. Subsections

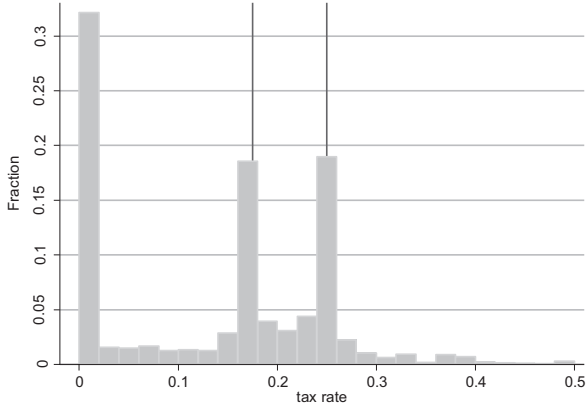
[13] On average, 3–5 percent of firms would be randomly audited each year. This probability increases if firms apply for any tax reductions. In fact, all firms that claimed the studied tax cut were audited in 2014.

Figure 4

ETR Histograms in 2009 and 2011 of Eligible Firms with Less than 50 Employees



2009



2011

Note: The sample is restricted to firms whose tax rates are between 0 and 50 percent. The bin width is 2 percent.

C and D provide evidence for unawareness and fear of audits, respectively. I discuss other possible explanations for the incomplete take-up in subsection E. Subsection F discusses sample selection.

A. Data and Variables

The data for the regression analysis in this section are the subsample of those in Section III. Specifically, these are firms with ETRs in the 17.5- or 25-percent range in 2009, 2011, or 2012. I also use data in 2012 to provide supplemental evidence for lack of awareness about the tax cut.

To proxy for firms' awareness, I examine whether firms had accounting software in 2008, the only year for which such information is available. Thus, firms had to be in the sample in 2008 to have information about the software. Accounting software might have directly informed firms about the temporary tax cut or might have been an indicator that firms hired highly skilled accountants who knew about the tax cut. In addition, subsection C provides other evidence to support the hypothesis that low awareness might have caused incomplete take-up.

Under the assumption that, for firms with a history of tax avoidance, tax audits are more costly, I measure fear of audits with three tax-avoidance measures: (1) the debt-to-revenue ratio, (2) the industry paper trail input, and (3) the industry paper trail output (Artavanis, Morse, and Tsoutsoura, 2016).[14] A high debt-to-revenue ratio could imply a large gap between reported and actual revenue and, hence, tax avoidance. To offer loans, banks in a cash economy, such as Vietnam, often use soft information to detect a firm's actual revenue. A high reported debt-to-revenue ratio indicates that a firm's reported revenue is unusually low compared to the size of the loans it receives, suggesting that the firm's reported revenue is lower than its actual revenue. Artavanis, Morse, and Tsoutsoura (2016) use monthly debt-to-income ratio to measure tax avoidance. To fit my data availability, I use the annual debt-to-revenue ratio to measure tax avoidance. In addition, I use the figures at the end of 2006 and 2007, well before the tax-cut policy, to avoid any complication that the tax cut might affect a firm's debt or revenue level.

The other two measures for tax avoidance are based on the idea that an industry whose income is difficult to track (a low-paper-trail industry) is more likely to evade or avoid taxes.[15] Artavanis, Morse, and Tsoutsoura (2016) survey executives in Greece to score each industry on the extent to which inputs and outputs are intermediate goods. If a firm is in an industry in which intermediate goods are less likely to be inputs or

[14] The accounting literature has other measures of tax avoidance. However, due to data availability and feasibility of the econometric specifications, I do not use those measures in this paper.

[15] Paper trails can be used to measure VAT avoidance. They can also be used to measure under-reporting of the corporate income tax, a tax on profits. When the tax authorities audit corporate taxes, taxpayers need to verify their revenue and costs. A firm that has a long paper trail (e.g., issues receipts to customers or uses online transactions) would have a harder time underestimating revenue and overestimating costs.

outputs, it is less likely to file value-added tax (VAT) returns or issue receipts. Thus, this firm is more likely to evade or avoid taxes. I create a variable *input_low*, which takes the value of 1 if the industry is ranked as low in its input intensity in Artavanis, Morse, and Tsoutsoura (2016), and 0 otherwise. Similarly, the *output_low* variable takes the value of 1 if the industry is ranked as low in its output intensity in Artavanis, Morse, and Tsoutsoura (2016), and 0 otherwise.

How similar are the economy and industry structure in Greece to those in Vietnam? Cash is very important in both economies. Even though evaluating the similarities between the industry structures of the two countries is difficult, many industries have similar degrees to which intermediate goods are inputs or outputs. For example, it is reasonable to think that, on average, most inputs in the manufacturing sector are intermediate goods or that most outputs of accounting and financial services are not intermediate goods. Though not perfect, the Greek paper trail measures could be a proxy for the paper trail measures of Vietnamese industries.

Table 2 shows some characteristics of firms in the sample in 2009 and 2011. The variable *ETRof* 17.5 equals 1 if a firm's ETR is around 17.5 percent (from 16.5 to 18.5 percent), and 0 if around 25 percent (from 24 to 26 percent). Table 2 shows that among firms with ETRs in the 17.5- or 25-percent range, about 58 percent of firms have ETRs in the 17.5-percent range; about 55 percent of firms have accounting software; and about 2 percent of firms are categorized as low-paper-trail input, while about 2 percent are categorized as low-paper-trail output. The mean debt-to-revenue ratio is 0.6, and the

Table 2

Summary Statistics in 2009 and 2011

Variables	Mean	Median	Standard Deviation
ETRof17.5 (=1 if ETR is around 17.5 percent)	0.58	1.00	0.49
Accounting software (=1 if accounting software in 2008)	0.55	1.00	0.50
Debt-to-revenue ratio	0.60	0.33	0.89
Output_low	0.02	0.00	0.13
Input_low	0.02	0.00	0.13
=1 if owner has college or above	0.59	1.00	0.49
Age	9.86	8.00	6.88
Total labor	85.59	35.00	212.56
Total asset	1311.34	381.86	6531.45
Total profit before tax	66.73	4.90	526.38
Observations	15,897		

Notes: In the regression analysis, a firm's ETR is either in the 17.5-percent range or the 25-percent range. Firms' profits and assets are in 2005 USD (in thousands).

median is 0.33. About 59 percent of firms have an owner with at least a college degree. The mean and median ages of firms are 9.86 and 8 years, respectively. The mean and median number of employees are 85.6 and 35, respectively. The mean and median asset levels are about $1.3 million and $381,000, respectively. The mean and median profits are $66,000 and $4,900, respectively.

B. Regression Equation

Below is the difference-in-differences regression equation to study how low awareness (subsection C) and fear of audits (subsection D) affect take-up.

$$ETRof\,17.5_{it} = \alpha_0 + year_t + \alpha_1\, accounting\ software_i + \alpha_2\, accounting\ software_i \times year_t + \alpha_3 fear\ of\ audits_i + \alpha_4 fear\ of\ audits_i \times year_t + \alpha_5 X_{it} + \varepsilon_{it}$$

Difference-in-differences regression equation with firm fixed effects:

$$ETRof\,17.5_{it} = \alpha_i + year_t + \alpha_2\, accounting\ software_i \times year_t + \alpha_3 fear\ of\ audits_i + \alpha_4 fear\ of\ audits_i \times year_t + \alpha_5 X_{it} + \varepsilon_{it}$$

As mentioned in subsection A above, $ETRof\,17.5_{it}$ equals 1 if the ETR of firm i is around 17.5 percent (from 16.5 to 18.5 percent) in year t, and 0 if around 25 percent (from 24 to 26 percent). $Year_t$ represents year indicators for 2009 and 2011. I use 2010 for the base year. Figure 3 shows that in 2010, in addition to the 25-percent range, there are firms with ETRs around 17.5 percent because of policies other than the studied tax cut. The variable $accounting\ software_i$ equals 1 if a firm had accounting software in 2008, and 0 otherwise. The variable $fear\ of\ audits_i$ is one of the three tax avoidance measures discussed in subsection A above, that is, *debt-to-revenue ratio*, *output_low*, or *input_low*.

The coefficient α_2 indicates whether accounting software helps explain incomplete take-up. If information available to a firm matters in its decision, I expect that firms with accounting software would be more likely to take up the tax cut than firms without it. Thus, I expect $\alpha_2 > 0$. The coefficient α_4 indicates whether fear of audits (tax avoidance) helps explain incomplete take-up. The hypothesis is that if a firm is afraid of audits because it avoids taxes, it would be less likely to claim the tax cut. Thus, I expect $\alpha_4 < 0$.

The X_{it} terms are control variables. The time-invariant variables are a firm's initial sizes (log assets in 2006 and 2007, log number of employees in 2006 and 2007, and age), type of ownership (private firm, government-owned firm, or foreign-owned firm), CEO characteristics (age, gender, and education), province fixed effects, and industry fixed effects. Time-variant variables are interactions between all time-invariant variables (except for province and industry fixed effects) and indicators of years 2009 and 2011 to control for any policies that may have affected different types of firms differently in those two years. In the fixed effects regression, I omit time-invariant controls and only keep the time-variant control variables.

Because I construct the dependent variable using the ETR, I exclude firms that make losses in each year from the regression analyses. Intuitively, the tax cut does not matter for these firms because they did not pay corporate income taxes. However, a firm's choice of paying zero taxes could be endogenous. I discuss how this decision affects estimation results in subsection F.

C. Low Policy Awareness

This subsection provides four pieces of evidence that show low awareness is one of the reasons explaining incomplete take-up. First, I examined the relationship between take-up and accounting software using the regression equations in subsection A. Table 3 shows that compared to 2010, firms with accounting software were about 3–4 percentage points more likely to claim the tax cut in 2009. I find no evidence that having accounting software in 2008 changed the probability of receiving a tax cut in 2011. That is probably due to the three-year gap: having accounting software in 2008 might not reflect the knowledge about the tax cut in 2011. The results are robust to controlling for firm-level fixed effects and different tax avoidance measures.

Table 3

Effects of Low Awareness and Fear of Audits on Take-Up among Eligible Firms

	(1)	(2)	(3)	(4)	(5)	(6)
Independent Variables	Debt/Rev	Debt/ Rev FE	Output	Output FE	Input	Input FE
Software × *year2009*	0.0376***	0.0481***	0.0405***	0.0520***	0.0399***	0.0515***
	(0.0108)	(0.0146)	(0.0106)	(0.0145)	(0.0107)	(0.0145)
Software × *year2011*	0.0105	0.00839	0.0167	0.0180	0.0161	0.0174
	(0.0122)	(0.0162)	(0.0125)	(0.0162)	(0.0162)	(0.0162)
Fear of audits × *year2009*	–0.0358***	–0.0209**	–0.145***	–0.102*	–0.123**	–0.0992*
	(0.00766)	(0.00931)	(0.0528)	(0.0566)	(0.0501)	(0.0546)
Fear of audits × *year2011*	–0.0311***	–0.0338***	–0.222***	–0.184**	–0.167***	–0.156**
	(0.00809)	(0.0109)	(0.0663)	(0.0765)	(0.0585)	(0.0766)
Constant	0.168	1.598	0.160	4.237	0.137	4.126
	(0.551)	(2.703)	(0.546)	(2.687)	(0.548)	(2.683)
N	24492	24492	25056	25056	25056	25056

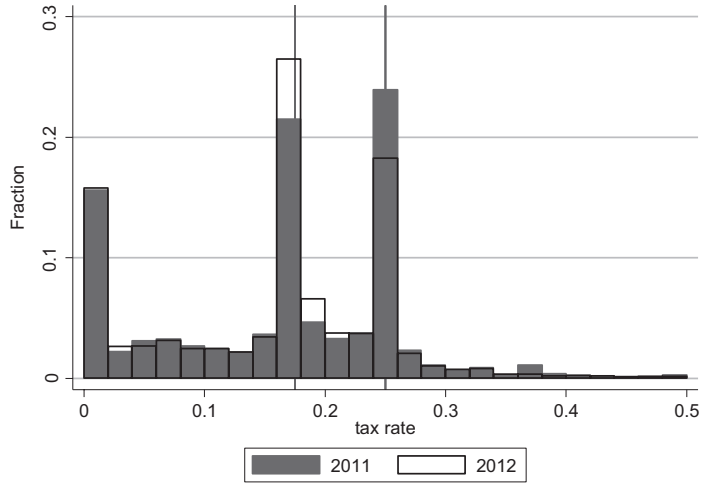
Notes: Regression equation and variables were explained in subsection B of Section IV. Standard errors are in parentheses. Fear of audits is measured in debt-to-revenue ratios in columns 1 and 2, low-paper-trail input in columns 3 and 4, and low-paper-trail output in columns 5 and 6. Columns 1, 3, and 5 do not include firm fixed effects. Columns 2, 4, and 6 include firm fixed effects. Asterisks denote significance at the 1% (***), 5% (**), and 10% (*) levels.

Second, I surveyed a nationally representative sample of foreign-owned firms and found that more than 30 percent of eligible surveyed firms were not aware of the tax cut in 2012.[16] This result cannot speak to what happened to domestic firms, however. On the one hand, foreign-owned firms could know more about the policy because they are more sophisticated and have more resources to hire tax experts. On the other hand, foreign-owned firms could be less informed about Vietnamese tax policy because they are outsiders.

Third, firms learned about the tax cut over time, indicating imperfect information, at least in the earlier years. Figure 5 overlays the ETR histograms of eligible firms with greater than 50 employees in 2012 with those in 2011 (because I only have data for firms with greater than 50 employees in 2012). Figure 5 shows that the 17.5-percent peak in 2012 is greater than that in 2011, while the 25-percent peak in 2012 is less than in 2011. This indicates that the take-up rate in 2012 was higher than that in 2011.[17] In

Figure 5

ETR Histogram in 2011 and 2012 of Eligible Firms with Greater than 50 Employees



Notes: The sample is restricted to firms whose tax rates are between 0 and 50 percent. The bin width is 2 percent.

[16] In early 2014, I collaborated with the Provincial Competitive Index (PCI) team to include in the PCI survey of foreign-owned firms a question about whether a firm was aware of the tax-cut program in 2012. The PCI is a survey that the Vietnam Chamber of Commerce and Industry has conducted annually since 2005. The survey asks for firms' perceptions about the business environment in Vietnam. Each year, the PCI consists of about 10,000 nationally representative firms in Vietnam, in which about 1,500 are foreign-owned firms. More information about the PCI can be found at http://eng.pcivietnam.org/.

[17] As explained in Section II, the eligibility requirements in 2009 were different from those in 2011 and 2012.

both years, the eligibility requirements were the same, the policies were announced midyear, and other economic conditions were also similar. Thus, the higher take-up rate in 2012 suggests that firms learned over time about the tax cut.

Finally, as mentioned in Section II, individual firms were not notified about the tax cut. To apply for the tax cut, a firm would have had to fill out a separate form from the corporate income tax return, as Figure 1 shows. This form did not list the 30-percent tax cut as an option. Thus, it is very plausible that some firms genuinely did not know about the tax cut.

In Vietnam, the tax authorities could not automatically issue refunds to eligible firms or follow up with taxpayers. They would have had to contact the social security department to obtain a firm's number of employees to determine a firm's eligibility because different government agencies do not have databases that link to each other.[18] In addition, Vietnam and developing countries may face capacity constraints in administering taxes. For example, they may not have enough dedicated employees to keep track of eligibilities or to follow up with potential beneficiaries of all government programs or benefits.

D. Fear of Audits

This subsection discusses how fear of audits, measured by tax avoidance variables, affects take-up. Table 3 shows that an increase in tax avoidance, and thus fear of audits, is associated with a decrease in the take-up rate of eligible firms. Specifically, compared to 2010, an increase in the debt-to-revenue ratio (columns 1 and 2) decreased the percentage of firms who had ETRs in the 17.5-percent rather than the 25-percent range in 2009 and 2011. In addition, compared to 2010, firms in a low-paper-trail industry, both in terms of input and output, were less likely to be in the 17.5-percent range (instead of the 25-percent range) in 2009 and 2011 (columns 3–6). In terms of magnitude, a 1-standard-deviation increase in tax avoidance measured by the debt-to-revenue ratio decreases the take-up by around 3 percentage points, which translates to about a 5-percent decrease in take-up because the average take-up rate in 2009 and 2011 is 58 percent (Table 1). In addition, a low-paper-trail industry was, on average, about 10–15 percentage points less likely to claim the tax cut, which was a 15- to 20-percent reduction.

It is important to keep in mind that the tax-avoidance measures only capture the relative degree of tax avoidance (e.g., a low-paper-trail industry has an easier time avoiding a tax than does a high-paper-trail industry), but they do not capture the absolute magnitude of tax avoidance (how much tax avoidance there is in the economy). In fact, without audit data, it is very hard to accurately measure the degree of tax avoidance. Thus, even though I interpret the magnitude of the coefficients to be specific, the signs of these coefficients are more meaningful: firms with a history of tax avoidance are associated with a lower take-up rate.

[18] The Central Tax Office did not have a database that linked to data of different local tax offices when I interned there in 2014.

E. Other Possible Explanations

This subsection discusses some other possible explanations in the literature for incomplete take-up. Hamersma (2003) mentioned that the eligibility rule might be too complex, that eligible firms are confused, or that the monetary costs outweigh their benefits. Knittel (2007) and Kitchen and Knittel (2016) suggest that firms that do not claim accelerated depreciation policies are loss-making and have shorter-lived assets.

In terms of complex eligibility rules, determining eligibility in 2009 was quite simple. The definition of small and medium-sized firms for the tax cut in 2009 had been around for quite some time. For example, Decree 90 in 2001 on government policies to support small and medium-sized firms used the same definition. In addition, as mentioned in Section II, the 2009 eligibility was based on initial assets or the average long-term employment level in the last quarter of 2008. Initial assets could be easily found on business registration cards.[19]As for the employment thresholds, firms could easily track the monthly number of long-term employees because they reported this number to the Department of Labor. It might have taken time to calculate the average number of long-term employees quarterly or annually based on their monthly figures. Unless a firm had gone through a major structural change, however, when the long-term employment figure at the end of the year was small enough — say, fewer than 200 employees — the firm did not have to go through a rigorous calculation to know that it was eligible.[20] Thus, it would not have been hard to determine the firm's eligibility in 2009.

The eligibility rule in 2011 and 2012 might be harder to figure out because the definition of small and medium-sized firms changed to more complex criteria, as discussed in Section II. Thus, at the beginning, firms might have been confused with the new thresholds and exceptions. Once firms understood the definition correctly, however, it was quite straightforward to determine their industries, average numbers of long-term employees, and assets at the end of 2011.

In terms of monetary cost, there was no fee to apply for the tax cut. In addition, as Figure 1 shows, it would not have taken much time to file the required one-page form, which asked only for the firm's name, address, and Tax ID. The firm did not have to prove its eligibility at the time of application. With respect to losses, I expect loss-making firms to be less likely to claim the tax cut because their taxable loss-carrying forward profits would be less in those years. Finally, it is hard to predict how short-lived assets would correlate with take-up because the corporate income tax cut may have affected assets differently than an accelerated depreciation.

F. Sample Selection

Some might worry that firms entering and exiting the sample could bias coefficients of accounting software or history of tax avoidance. I use the unbalanced panel data of firms that were in the 17.5- or 25-percent ETR range in at least one year from 2009

[19] As mentioned in subsection A of Section III, all firms in this dataset were registered.

[20] About 97 percent of firms in 2009 in Vietnam had less than 200 employees.

to 2011. Firms were in the sample one year but not in another because (1) they had fewer than 30 employees and were not randomly chosen; (2) they were no longer in the 17.5- or 25-percent range, including a possibility that they endogenously chose to pay zero taxes; (3) they were not surveyed due to errors; or (4) they permanently closed or they were open sometime from 2009 to 2011. To eliminate possible bias because of the first reason, I control for province fixed effects and number of employees, criteria used to select the sample (Solon, Haider, and Wooldridge, 2015). Biases because of the second, third, or fourth reason are harder to predict. Fortunately, Table A2 in the Appendix shows that the results of balanced panel data are largely similar to the results of unbalanced panel data in Table 3, even with a few insignificant coefficients due to a smaller sample size. Thus, in general, firms entering and exiting the sample do not affect the estimates by much.

Since my sample only includes firms in the 17.5- or 25-percent ETR range in at least one year, one could wonder what happens to firms never in these two ranges. Unfortunately, it is hard to predict because biases could go either way. However, as mentioned in Section III, the sample firms in this paper have about 40 percent of total employment of all firms and 50 percent of firms paying positive taxes, which are not trivial. Understanding the behavior of this subsample might shed light on the population.

V. CONCLUSIONS AND DISCUSSION

This paper examines whether and why a sizable portion of Vietnamese firms did not claim an optional 30-percent corporate income tax cut offered by the Vietnamese government in three separate years: 2009, 2011, and 2012. I document an intriguing fact: about 40 percent of businesses in Vietnam did not claim the tax cut that they were eligible for. This incomplete take-up is particularly puzzling in the context of transfer pricing among multinationals and under-reporting behavior in which businesses try in many ways to reduce their tax liability.

When examining some possible reasons for the incomplete take-up, I find that low awareness might have contributed to low take-up of the tax cut. A potentially beneficial policy can fail to deliver a result in practice if eligible firms are not informed. Thus, the government may want to spend resources ensuring that their targeted groups know about a policy when implementing it. Take-up may increase with targeted notifications and reminders.

A firm's fear of audits, measured by tax avoidance behavior, is also associated with take-up. A causal interpretation indicates that firms made trade-offs between different tax-planning options. To avoid audit, a firm might have forgone the benefit of a temporary policy because they chose another tax-planning method. The government, especially one in a cash economy, should take tax avoidance into account when using a tax policy to stimulate the economy.

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DISCLOSURE

The author has no financial arrangements that might give rise to conflicts of interest with respect to the research reported in this paper.

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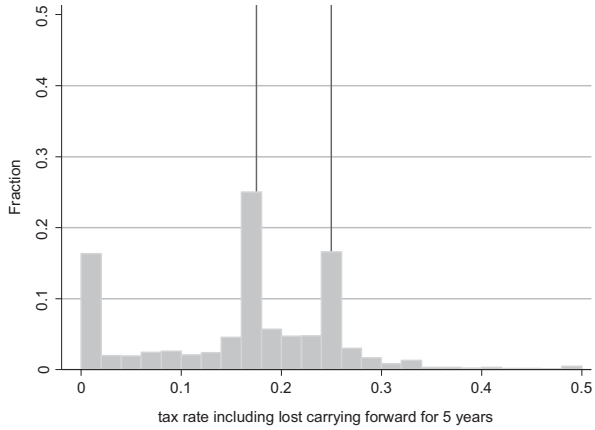
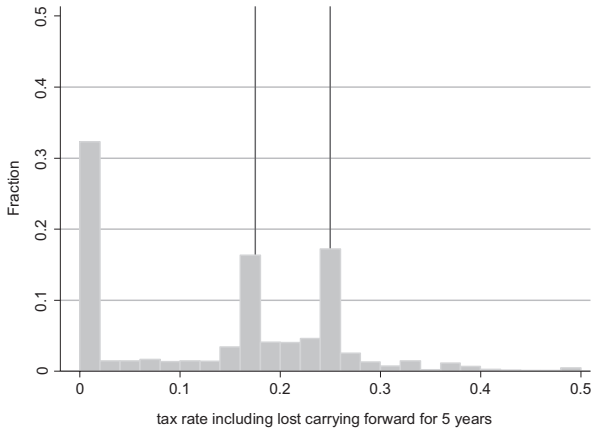
APPENDIX

Figure A1

Loss-Carrying Forward ETR of Eligible Firms in 2009 and 2011



2009



2011

Notes: I use loss-carrying forward profits to calculate ETR in these histograms. The samples are restricted to firms whose tax rates are between 0 and 50 percent. The bin width is 2 percent.

Table A1

Effects of Low Awareness and Fear of Audits on Take-Up Using Loss-Carrying Forward

Independent Variables	Debt/Rev	Debt/ Rev FE	Output	Output FE	Input	Input FE
Software × *year2009*	0.0443***	0.0535***	0.0475***	0.0576***	0.0470***	0.0570***
	(0.0119)	(0.0152)	(0.0115)	(0.0151)	(0.0115)	(0.0151)
Software × *year2011*	0.0134	0.00944	0.0184	0.0192	0.0178	0.0187
	(0.0123)	(0.0170)	(0.0127)	(0.0170)	(0.0127)	(0.0170)
Fear of audits × *year2009*	–0.0288***	–0.00969	–0.174***	–0.110*	–0.145***	–0.0952*
	(0.00785)	(0.00982)	(0.0542)	(0.0592)	(0.0521)	(0.0563)
Fear of audits × *year2011*	–0.0322***	–0.0308***	–0.221***	–0.191**	–0.156**	–0.152*
	(0.00927)	(0.0118)	(0.0743)	(0.0867)	(0.0634)	(0.0836)
Constant	–0.205	1.759	–0.101	4.415	–0.141	4.297
	(0.606)	(2.889)	(0.575)	(2.843)	(0.579)	(2.838)
N	21,527	21,527	22,015	22,015	22,015	22,015

Notes: Regression equation and variables were explained in subsection B of Section IV. I use loss-carrying forward profits to calculate the dependent variable. Standard errors are in parentheses. Fear of audits is measured in debt-to-revenue ratios in columns 1 and 2, low-paper-trail input in columns 3 and 4, and low-paper-trail output in columns 5 and 6. Columns 1, 3, and 5 do not include firm-level fixed effects. Columns 2, 4, and 6 include firm-level fixed effects. Asterisks denote significance at the 1% (***), 5% (**), and 10% (*) levels.

Table A2

Effects of Low Awareness and Fear of Audits on Take-Up Using Balanced Panel

Independent Variables	Debt/Rev	Debt/ Rev FE	Output	Output FE	Input	Input FE
Software × *year2009*	0.0563***	0.0579***	0.0571***	0.0590***	0.0571***	0.0589***
	(0.0183)	(0.0193)	(0.0191)	(0.0193)	(0.0190)	(0.0193)
Software × *year2011*	0.00442	0.00298	0.0122	0.0107	0.0120	0.00981
	(0.0186)	(0.0206)	(0.0196)	(0.0206)	(0.0196)	(0.0206)
Fear of audits × *year2009*	–0.0217	–0.0201	–0.00665	–0.0280	–0.0140	–0.0327
	(0.0145)	(0.0145)	(0.110)	(0.104)	(0.101)	(0.0965)
Fear of audits × *year2011*	–0.0275**	–0.0281*	–0.234**	–0.303***	–0.224**	–0.294***
	(0.0135)	(0.0152)	(0.0964)	(0.0940)	(0.0922)	(0.0890)
Constant	–0.0620	2.141	–0.192	5.630	–0.198	5.430
	(0.756)	(3.542)	(0.725)	(3.543)	(0.728)	(3.530)
N	8448	8448	8418	8418	8418	8418

Notes: Regression equation and variables were explained in subsection B of Section IV. I use balanced panel data from 2009 to 2011. Standard errors are in parentheses. Fear of audits is measured in debt-to-revenue ratios in columns 1 and 2, low-paper-trail input in columns 3 and 4, and low-paper-trail output in columns 5 and 6. Columns 1, 3, and 5 do not include firm-level fixed effects. Columns 2, 4, and 6 include firm-level fixed effects. Asterisks denote significance at the 1% (***), 5% (**), and 10% (*) levels.