The Relation between Payroll and Income Tax Avoidance

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Payroll taxes, such as FICA, represent a considerable expense for businesses and are a large source of government revenue. Considering that employers pay approximately 50% of FICA, payroll taxes have a material impact on firm profitability. Despite the large cost, little is known about the determinants of payroll tax avoidance. By misclassifying employees as independent contractors, a firm can avoid their portion of FICA contributions and a variety of other employee related costs. This paper utilizes publicly available Wage and Hour Compliance Action (i.e., WHD) Data from the Department of Labor to identify employee misclassification and to empirically identify whether firms that avoid income taxes also avoid payroll taxes. This paper has two main results. First, CashETR is negatively related to the likelihood of successfully discovering Fair Labor Standard Act (FLSA) violations during a Wage and Hour Division audit. Second, firms reduce their income tax avoidance following the discovery of FLSA violations. Taken together, these results suggest that firms that avoid income taxes also avoid payroll taxes.

"Workers classified as employees cost 30-40% more than contractors because companies must pay federal income, Social Security, and Medicare taxes for each employee, as well as unemployment insurance, and the cost of benefits, such as health insurance" (Mulcahy 2019).

1. Introduction

Employee misclassification is the incorrect identification of workers as independent contractors instead of as employees. Workers designated as independent contractors receive a Form 1099 (i.e., income from self-employment) and the employer avoids withholding payroll taxes, remitting their share of Social Security and Medicare tax, and any contributions related to unemployment insurance/workers' compensation.[1] While the issue of employee misclassification is not new, the recent rise of the gig economy has brought increased attention to this issue from policymakers, activists, and the media.[2] Additionally, several high-profile class action lawsuits involving Uber, Microsoft, FedEx, Lyft, and Citigroup, among others, have increased the salience of the issue to the general public. Prior academic literature devotes considerable attention, time, and resources to the notion of unfair and aggressive income tax avoidance, but less is known about payroll tax avoidance and how these types of behavior relate. The purpose of this paper is to establish whether a relation exists between income and payroll tax avoidance.

An issue with the study of payroll taxes is that these taxes cannot be identified from publicly available financial accounting data. Payroll taxes are allocated with wages/salaries into different income statement accounts. For this reason, this paper empirically tests whether firms that avoid income taxes also avoid payroll taxes through employee misclassification. The underlying logic is

[1] In contrast, properly classified employees receive a Form W-2 for which the employer withholds payroll taxes.
[2] The Gig economy is based on flexible, temporary, or freelance jobs, often involving connecting with clients or customers through an online platform.

that a company which avoids certain types of taxes may be more inclined to avoid other types of taxes as well.

Payroll taxes include those taxes deducted from an employee's wages, or those taxes paid by the employer based on the employee's wages.[3] Payroll taxes account for a significant portion of IRS revenue. In 2019, individual income taxes withheld (37.9%), and Federal Insurance Contributions Act (FICA) taxes (31.7%) account for 69.6% of the total IRS collections. After accounting for refunds, FICA taxes represent 36.3% of the net IRS collections compared to just 7.3% for business income taxes. For simplicity, if one assumes that employers pay 50% of all FICA contributions[4], payroll taxes paid by employers represent 18.15% of net IRS collections. Considering the difference in IRS percentages and the large literature addressing business income taxes, the relative sparsity of literature addressing payroll taxes is surprising. Even further, although not remitted to the IRS, unemployment taxes paid to the state on employee wages would add additional payroll tax costs to employers.[5]

The Scholes-Wolfson framework for effective tax planning suggests that all parties, all taxes, and all costs must be considered in evaluating tax management decisions (Scholes et al. 2020). Given that payroll taxes are costly, profit insensitive, and administratively burdensome (Cruz 2019), the employer's share of payroll taxes is likely an important managerial consideration. Although independent contracting can benefit workers and businesses, some employers intentionally misclassify employees. While it is not clear ex-ante that the use of independent

[3] For the purposes of my research question, I am interested in the payroll taxes that are the responsibility of the employer (i.e., the employer share of FICA). In other words, I am interested in the taxes that a firm can avoid through misclassification.

[4] It is slightly less than 50% because wages paid in excess of $200,000 are subject to an extra 0.9% Medicare tax that is the sole responsibility of employees.

[5] State unemployment tax is a percentage of an employee's wages. Each state sets a different range of tax rates that is determined based on industry, how many former employees received unemployment benefits, and experience.

contractors reduces the total labor cost, employee misclassification could represent a managerial decision to avoid payroll taxes. It is possible that some employers mistakenly misclassify employees due to ambiguous, and sometimes differing, criteria in determining employee status between the Department of Labor, IRS, and states (Donahue, Lamare, and Kotler 2007). However, it is also likely that some misclassification is an intentional strategy. If caught, firms that misclassified employees can be held responsible for paying back-taxes and interest on employees' wages, and for their portion of FICA taxes. Even further, if the misclassification is determined to be intentional, there can be criminal and civil penalties.

While misclassification clearly impacts the "employee", through underpayment of wages, absence of benefits, and increased employee risk exposure (Weil 2017), there are other negative consequences for the economy. Governments receive less tax revenue and legitimate businesses struggle to compete against companies that intentionally misclassify employees as a source of competitive advantage (Chau and Artecona 2017). The U.S. Treasury estimates that forcing employers to properly classify their workers and tightening other (i.e., safe harbour) restrictions on classification, would yield $8.71 billion in added tax revenue over the next decade (Loten and Maltby 2013). Given this estimate was made prior to the rise of the gig economy, it is likely that this amount is now much higher.

This study focuses on whether firms that avoid income taxes also avoid payroll taxes through employee misclassification. While not the focus of this study, another relevant issue is whether misclassified employees themselves reduce their overall tax burden. This could be an avenue for future research given the high noncompliance rate associated with self-employed income (Slemrod 2007). This could also explain why some misclassified workers do not report the misclassification to authorities. While misclassified workers may be able to increase their after-tax earnings if

considered independent, as highlighted from the recent Covid-19 Pandemic, misclassified workers cannot access federal and state benefits when they need them.

My research question is centered on the notion that tax avoidance should relate to all taxes. While the literature has primarily focused on income tax avoidance, all taxes that have a material impact on profitability should be effectively managed by firms. The National Conference of State Legislatures estimates that a business can save 30 percent of their labor costs by using independent contractors rather than employees (National Conference of State Legislatures 2014).[6] Employee misclassification represents a simple (yet effective) mechanism for payroll tax avoidance. However, it should be noted that while misclassification may be easy to implement, it is both an illegal strategy and costly if the classification is proven to be incorrect.[7] Misclassification may lead to monetary fines such as back taxes for misclassified workers, and may also result in reputation damage, criminal/civil penalties or sanctions (Zaino 2017).

This paper makes several contributions to the literature. First, very little is known about payroll tax avoidance because, even with proprietary data, payroll tax avoidance is difficult to explicitly identify. At least anecdotally, firms misclassify employees to avoid their share of payroll taxes (Mulcahy 2019). Publicly available Department of Labor Wage and Hour Division audits uncover labor violations and require no subjectivity from the researcher. Thus, the use of these audits as a proxy for payroll tax avoidance can circumvent the issue of identification and aid in the discovery of the determinants and consequences of payroll tax avoidance. Second, albeit related

[6] Many firms will legitimately hire independent contractors for its increased flexibility, for specific skill sets, and to reduce overhead.

[7] While the DOL and IRS consider written agreements as a factor for proper employee classification, they also consider the reality of the situation. While legitimate independent contracting exists, I am interested in the Department of Labor: Wage and Hour Division Audits that uncover Fair Labor Standard Act Violations and are thus not indicative of real independent contracting relationships.

to above, is that although non-income taxes are economically significant, the avoidance of these taxes is a relatively unexplored research area (Wang et al. 2019). By establishing a relationship between payroll and income tax avoidance, I provide evidence consistent with the Scholes-Wolfson framework whereby firms consider multiple types of taxes in their decision making. The fact that a relationship exists between different types of taxes further exacerbates the lost government revenue problem. Third, this paper answers the call for studies that identify specific transactions and techniques that firms employ to generate tax savings (Wilde and Wilson 2018). Employee misclassification is an approach to avoid payroll taxes. Given the difficulty in explicitly identifying any type of avoidance activity, if the avoidance of payroll taxes may be related to other questionable tax behavior, authorities may want to devote increased scrutiny to the misclassifying firms to discover other types of avoidance strategies.

The remainder of this paper is structured as follows: Section 2 provides background information, Section 3 develops the hypotheses, Section 4 describes the data and outlines the empirical design, Section 5 presents the empirical results and a discussion of the findings, and Section 6 concludes.

2. Institutional Background and Prior Literature

2.1. Institutional Background

2.1.1. "Independent" Work

The IRS, Department of Labor, and each state have their own specific tests to determine whether an individual should be classified as an independent contractor or as an employee. While many of the tests are similar in nature, for simplicity, I focus on the IRS because it effects all employers in the United States. The IRS uses a right-to-control test to determine employee status. For the IRS, the general rule is that an individual is an independent contractor if the payer has the

right to control or direct only the result of the work, not what will be done or how it will be done (IRS 2020). Specifically, the IRS considers behavioral control, financial control, and the type of relationship between the parties. Behavioral control includes facts that show whether the business has a right to direct and control how a worker performs a task, financial control includes facts that show whether the business has a right to control the business aspects of the worker's job, and the type of relationship includes the permanency of the relationship and the extent to which services performed are a key aspect of the regular business of the company (IRS 2020). Using Uber as an example, in a 2019 memo the National Labor Relations Board argued that Uber drivers are independent because they have "significant entrepreneurial opportunity by virtue of their near complete control of their cars and work schedules, together with freedom to choose log-in locations and to work for competitors of Uber." (Scheiber 2019).[8]

The U.S. Bureau of Labor Statistics defines contingent workers as "those who do not have an implicit or explicit contract for continuing employment." Such cases include independent contractors, on-call workers, temporary help agency workers, and workers provided by contract firms. According to the US Bureau of Labor, in May 2017, there were 10.6 million independent contractors, 2.6 million on-call workers, 1.4 million temporary help agency workers, and 933,000 workers provided by contract firms (U.S. Bureau of Labor Statistics 2018). Unlike the other contingent categories, independent contractors are legally self-employed and are thus subject to different tax and labor laws relative to traditional, or other contingent, employment (Collins et al. 2019)[9]. As a caveat, the estimates provided by the Bureau do not include workers who have a traditional main job but engage in alternative work to supplement their income. It is well

[8] On November 3, 2020, California voters approved Proposition 22, a ballot measure that allows gig economy companies to continue treating drivers as independent contractors.
[9] While contingent employment is not "traditional", contingent employees receive a W-2 tax form rather than a 1099-MISC.

established that the gig economy serves as a source of secondary income for many households (Koustas 2019). In a recent study by the McKinsey Global Institute, 8,000 respondents across Europe and the United States were surveyed about their income in the past 12 months. The results suggest that 20 to 30 percent of the working-age population engage in some form of independent work (Bughin et al. 2016).

It is important to note that being considered an independent contractor does not necessarily represent employee misclassification. Many workers self-select into independent work for its increased flexibility, control, and independence relative to traditional employment. Additionally, many workers use independent work to supplement their income.

2.1.2. Payroll Taxes

Companies are legally responsible for paying a portion of employee payroll taxes. As stipulated by FICA, an employer must pay Social Security (6.2% on wages up to $137,700), and the Medicare Tax (1.45% on wages up to $200,000). These rates can be found in IRS Publication 15: (Circular E), Employer's Tax Guide (Internal Revenue Service 2020). Independent contractors pay both the employer and employee portions of the FICA tax (i.e., 15.3%) as outlined by the Self-Employed Contributions Act (SECA) but can deduct 50% on their personal tax return. Additionally, employers are responsible for federal and state unemployment taxes (FUTA, SUTA), workers compensation insurance, and for withholding and remitting employee income taxes to the appropriate authority[10]. While there are other benefit costs paid to employees that can be mandated by union agreements or as incentives to attract/retain employees, for the purposes of this paper, I focus on the legal requirements imposed by statute on all firms and not on the additional benefits

[10] 2020 FUTA tax rate is 6%, applied to the first $7,000 earned by each employee. ($7,000 * 6% = $420)

that affect a smaller subset of businesses.[11] I argue that this is appropriate because additional deductions/benefits would increase the cost for each employee and thus further incentivize misclassification.

According to IRS administrative data, in 2019, FICA contributions amounted to 31.7% of all IRS collections.[12] For illustrative purposes, corporate income taxes represent 7.7% (IRS 2020). As an example of payroll taxes that firms pay, consider an employee earning $100,000. As an independent contractor, the cost to an employer is simply the $100,000 wage. However, if classified as an employee, the cost is an additional $7,650 (6.2% + 1.45%) in Social Security and Medicare taxes. There are also administrative costs associated with other income tax withholding, other voluntary benefits, inflexibility costs, and unemployment insurance premiums.[13] While the $7,650 may not seem high, the cost can become material and is for each employee (at $100,000). While legitimate independent contractors may charge higher fees to compensate for lost benefits, for the purposes of this study, I am interested in employee misclassification. Therefore, the above example holds for intentional misclassifications. An intentional misclassification, provided it is not detected, will yield significant cost savings to an employer ($7,650 per misclassified employee in my example).

[11] The most popularly offered employee benefits include: Health Insurance, Life Insurance, Dental Insurance, Pension Plans, Flexible Spending Accounts (FSAs) or Health Savings Accounts (HSAs), Paid Vacation and Sick Time, Paid Holidays, Paid Medical Leave, Flexible Schedules, and Education Assistance.

[12] Self-Employment Insurance Contributions Act (SECA) are separate from the 31.74%. Self-Employed FICA account for 1.8% of IRS collections.

[13]There are many benefits and allowances that can be provided to an employee on a non-taxable basis. The most common voluntary benefits include: Cell Phone and Internet Services, Education and Professional Development Costs, Professional Dues, Recreational Facilities and Club Dues, Gifts and Awards, Automobile Allowances, Counselling Services, Loyalty Points, Private Health Services Plan, and Short-Term/Long-Term Disability Insurance. These benefits are not awarded to independent contractors.

2.1.3. Misclassification & Detection

Employee misclassifications are associated with labor and tax law violations (TIJTA 2018). While many assume that the Internal Revenue Service (IRS) or Department of Labor (DOL) is primarily responsible for the detection and punishment of misclassification, neither is particularly effective. IRS tax enforcement, including audits, recovers only 2 percent of the total US tax liability (Debacker et al. 2018).[14] As for the DOL, it normally only handles cases where there is the possibility that many workers have been misclassified and there has been a substantial loss to the federal and/or state government (Messina et al. 2019).

While it is likely that the DOL or IRS can identify employee misclassification through specific or targeted audits, proper classification is largely determined from other non-random mechanisms. If an employee believes that they are misclassified, there are several legal recourse options available. First, an employee may report to the state labor office for violations regarding unemployment insurance, worker's compensation, and tax fraud. Second, an employee may report the misclassification to the DOL Wage and Hour Division (WHD) to report a FLSA violation. Third, an employee may report suspected tax fraud to the IRS by using Form 3949-A. Fourth, an employee/employer may file an IRS Form SS-8 for a determination of worker status. Any of these approaches will work and it is unclear which specific approach a misclassified employee would take. For the purposes of this study, I rely on the U.S. Department of Labor Wage and Hour

[14] Taxpayers voluntarily pay about 81.7 percent of their tax liability. Tax enforcement, mostly via audits, helps to recover an additional 2% of the total tax liability. The remaining 16.3 percent is lost (Debacker et al. 2018).

Division complaints. In many cases, an employee would contact a lawyer who in turn would suggest the most appropriate form of action.

The Wage and Hour Division of the Department of Labor enforces the Fair Labor Standards Act (FLSA) which provides employees with minimum wage, overtime pay, and child labor standards/protections[15]. WHD FLSA investigations detect and address misclassification primarily when responding to complaints from workers (United States Government Accountability Office 2006)[16]. Applying the FLSA's definition, workers who are economically dependent on the business of the employer, regardless of skill level, are employees. Conversely, independent contractors are workers with economic independence who are in business for themselves (WHD 2014). Fair Labor Standards Act Enforcement Statistics indicate that from FY 2009-2019 there were 239,437 WHD investigations that resulted in FLSA violations. In total, these violations impacted 3,027,957 employees who were awarded nearly $2 billion dollars in back wages. The FLSA gives the Department of Labor the authority to recover back wages and liquidated damages (to be paid to employees), and to assess civil money penalties (to be paid to the government), in instances of violations (United States Department of Labor 2015).

There are reasons why a misclassified employee would not complain to the IRS or Department of Labor. For one, employees may be uneducated/unaware of the misclassification or fear potential job loss. It is also reasonable that an employee may prefer to be misclassified since employees do not have the same tax advantages. While unreimbursed employee business expenses are limited in deductibility, an independent contractor can write off all reasonable and necessary

[15] WHD also enforces a variety of other Acts including: Family and Medical Leave Act, Service Contract Act, Migrant and Seasonal Agricultural Worker Protection Act, Davis-Bacon and Related Act, etc.
[16] 75 percent of all WHD investigations are initiated by worker complaints (Weil 2010)

business expenses that would reduce their tax payments to receive higher after-tax remuneration (Parrish 2013). Independent contractors may also choose to incorporate to be taxed at a lower rate.

2.2. Prior Literature

2.2.1. Tax Avoidance

Given that the Scholes-Wolfson framework for effective tax planning suggests that all parties, all taxes, and all costs must be considered in evaluating tax management decisions, it is likely that payroll taxes are an important consideration to firms. However, despite the large cost associated with payroll taxes, payroll tax avoidance has not been well documented in the literature. Following Hanlon and Heitzman (2010), tax avoidance can be defined as the reduction of explicit taxes. Explicit taxes are any tax levied and collected by the government. These taxes include income tax, payroll tax, property tax, sales tax, capital gains tax, etc.

While significant research exists regarding the mechanisms and determinants of corporate income tax avoidance (see Wilde and Wilson (2018) for a comprehensive review), there has been little research regarding non-income-based taxes (Dyreng and Maydew 2018). This is because while income taxes are reported in financial statements, other corporate tax payments, such as payroll taxes, are often hidden and difficult to explicitly identify (Christensen, Cline, and Neubig 2001). Determinants of corporate tax avoidance include: Firm size (Rego 2003), political sensitivity (Mills, Nutter, and Schwab 2013), unionization (Chyz et al. 2013), ownership structure, (Badertscher, Katz, and Rego 2013), executive characteristics (Dyreng, Hanlon, and Maydew 2010), and institutional holdings (Khan, Srinivasan, and Tan 2017).

Using Bureau of Economic Analysis data, Robinson (2012) finds that firms that avoid income taxes also appear to avoid non-income (i.e., employer contributions and taxes other than

income/payroll) taxes. However, the specific mechanisms of the non-income tax avoidance are not clear. Further, the measure of non-income tax avoidance (i.e., the sum of other taxes and employer contributions scaled by assets) may not be indicative of actual non-income tax avoidance. Firms operate across jurisdictions that each have different types of non-income taxes assessed at different rates. This implies that there is no benchmark to assess the amount of non-income taxes firms are avoiding (Drake et al. 2018). Regarding payroll taxes, it is difficult to explicitly identify the number of employees[17], the number of independent contractors, or the total compensation expense. In that sense, estimating the total amount of payroll taxes paid, or an appropriate benchmark, is extremely difficult without confidential or proprietary data.

In their comprehensive review of the tax avoidance literature, Wilde and Wilson (2018) call for studies that identify specific transactions and techniques that firms employ to generate tax savings. The authors argue that it is difficult to identify specific types of activities or tax planning mechanisms because tax planning activities are not publicly observable. Misclassification is one potential, and simple, way to reduce payroll taxes and could explain why 10% to 20% of employers misclassify at least one employee (Carré 2015). One can argue that misclassification is an easier strategy (albeit illegal) to implement and employ relative to other documented avoidance mechanisms including: shifting income across countries and states (Gupta and Mills 2002; Dyreng and Lindsey 2009), engaging in tax shelters (Wilson 2009), or engaging in complex financial arrangements (Engel et al. 1999).

[17] The number of employees is available on Compustat (emp) and represents the number of company workers as reported to shareholders. Using the Compustat universe, from 2000-2019, this figure is reported for 68.77% of firm-year observations.

2.2.2. Tax Audits/Enforcement

While corporations deal with a variety of different laws and regulations, it is up to the government to enforce them. Since enforcing laws is expensive, governmental agencies will inspect for compliance through periodic or targeted audits. Theoretically, the threat of enforcement should deter tax avoidance (Allingham and Sandmo 1972).

While Hoopes, Mescall, and Pittman (2012) document that U.S. public firms undertake less aggressive tax positions when tax enforcement is stricter, it is not explicitly clear how tax authorities select which firms to audit and what the impact, if any, is of such audits. Naturally, while prior research can infer or predict enforcement, the government will not identify its own criteria because doing so would cause firms to systematically alter their behaviors to avoid enforcement. Given the information sensitivity, tax authorities also rarely reveal which firms have been subject to a tax audit (Li, Pittman, and Wang 2019). While it may not be clear which or why firms are audited, it is understood that tax audits are not random. There are likely some specific characteristics that causes the firm to be selected for a tax audit.

Nessa et al. (2020) examine the impact of IRS resources on the tax enforcement process to document that the IRS reduces its rate of audit and the incidence/magnitude of proposed deficiencies when faced with fewer resources. The findings of this paper are especially relevant given the recent resource reductions experienced by the IRS. From 2009-2018, the IRS Budget & Workforce has been reduced by 14.4% and 20.6% respectfully (Internal Revenue Service 2019).

3. Hypothesis Development

Tax compliance is largely determined by the trade-off between the relevant costs and the relevant benefits granted by taking a specific tax position. Each firm considers the direct benefits

of tax avoidance against the associated nontax costs to derive its own unique level of optimal tax avoidance (Kim et al. 2019). The economics literature suggests that individual tax compliance is determined by the probability of detection, the cost of the punishment, and the risk aversion of the individual (Allingham and Sandmo 1972). Unlike individual tax compliance, corporate tax compliance decisions are made by the agent (Slemrod 2007). As such, for management to avoid taxes it must be that total compensation expense is measured on an after-tax basis and expected firm profits are substantially greater compared to reporting honestly (Chen and Chu 2005). While these theoretical models specifically target tax evasion (or illegal) strategies, they can easily be applied to firms that engage in aggressive tax strategies that may or may not be legal.

Given the Scholes-Wolfson framework for effective tax planning considers all taxes, it is likely that firms that engage in corporate income tax avoidance, will also partake in non-income tax avoidance. Theoretically, the risk aversion of the firm and compensation incentive contracts offered to management will also lend themselves to non-income tax planning. If an agent is remunerated based on after-tax cash flow, like corporate income taxes, payroll tax reduction would be incentivized. Additionally, the threat of detection and punishment related to payroll tax avoidance is likely lower than for income taxes because there is no appropriate benchmark to compare against (Drake et al. 2018).

While the argument above has merit, it is not without tension. Tax avoidance can be characterized as the attempt to minimize a tax liability within the provisions of the law. Following Hanlon and Heitzman (2010), tax avoidance can be considered as a continuum with legal and acceptable strategies on one end and illegal activities on the other. For illustrative purposes West (2018) differentiates between tax avoidance/tax minimization as being legal, tax fraud as being illegal, and tax evasion being those activities in a grey area. Employee classification is likely best

considered as a grey area. While employee misclassification can be intentional, it can also be an unintentional error. As the economy evolves, the typical employee versus independent contractor test is becoming convoluted and confusing. Firms should reduce payroll taxes if the nontax costs associated with the reduced payroll taxes do not exceed the benefit. However, given that employee classification is likely best considered as a grey area, its nontax associated costs are not trivial. Alternatively, if firms misclassify employees as contractors to save on payroll taxes, profits will increase, which may lead to higher income taxes. Therefore, firms may substitute different types of tax payments that ultimately result in the highest after-tax income.

Taken together, this leads to the first hypothesis, stated in the null form.

Hypothesis 1: *There is no association between a firm's income tax avoidance behavior and its payroll tax avoidance*

Irrespective of whether income tax avoidance is associated with the likelihood of payroll tax avoidance, it is possible that successful labor violation audits would still be of interest to the IRS. The IRS has a strong administrative preference for workers to be classified as employees (Steingold 2017). As employees, the IRS collects all withheld income taxes from the employer. As independent contractors, the IRS must collect and analyze the income taxes for each misclassified employee. Additionally, the IRS may consider that firms that avoid payroll taxes have a risk tolerance that would translate to other questionable tax behavior, including income taxes. Given the statue of limitations, if misclassification is deemed to be intentional, the IRS can reassess the misclassifying firm for unpaid payroll/other taxes plus interest and penalties for the previous 3 years.

While prior research focuses on the effects of tax audits on future tax compliance, the data is often proprietary. DeBacker et al. (2015) use confidential IRS audit data to show that corporations gradually increase their tax aggressiveness following an audit and then reduce it when the perceived audit probability increases again. The authors assert that the findings reflect that the perceived audit risk decreases post audit. Conversely, Li, Pittman, and Wang (2019) use confidential Chinese tax audit data and find that after firms have been audited, they significantly increase their effective tax rates, reduce their book-tax differences, and reduce their income-decreasing discretionary accruals. Some prior studies have circumvented the proprietary data issue by relying on Transactional Records Access Clearinghouse (TRAC) data to calculate the probability of an IRS audit based on asset size (Hoopes, Mescall, and Pittman 2012; Hanlon, Hoopes, and Shroff 2014; Guedhami and Pittman 2008). Using this data, the audit probability is calculated as the number of corporate tax return audits completed divided by the number of corporate tax returns received by the IRS each year across eight nominal asset levels. This measure represents the ex-ante risk of an IRS audit rather then an actual audit.

While WHD audits do not represent tax audits, in September 2011, the IRS signed a Memorandum of Understanding (MOU) with the Department of Labor. As part of the agreement, the Department of Labor will provide Wage and Hour investigation data to the IRS if the Department of Labor believes it raises employment tax compliance related to misclassification.[18] Under the agreement, the agencies will work together and share information to reduce the misclassification of employees, to reduce the tax gap, and to improve compliance with federal labor laws. In that sense, while DOL investigations may not be indicative of a future IRS audit,

[18] In the 5 years since the signing of the MOU, the IRS evaluated and classified more than 1,300 DOL referrals, with 39% selected for further examinations.

firms may perceive increased potential scrutiny from tax/employment authorities and may adjust their behavior accordingly.

On the contrary, A DOL audit merely increases the perceived ex-ante threat of an IRS audit because the US government has committed to cooperative enforcement efforts between the DOL, IRS, and individual state unemployment agencies. Conceptually, it is hard to justify why the income tax behavior of a given firm would change after a DOL audit because payroll and income taxes are inherently different. Therefore, income tax avoidance is likely to change for one of two reasons. It either increases because firms need to adjust their income tax planning to compensate for the lost payroll tax savings, or it decreases because firms are worried about the increased potential IRS scrutiny on other tax positions.

Taken together, this leads to the second hypothesis, stated in the null form.

Hypothesis 2: *There is no change in firm income tax avoidance behavior following payroll tax avoidance*

4. Methodology

4.1. Measure of Payroll Tax Avoidance

As discussed in earlier sections, payroll taxes are not directly observable/reported in publicly available financial statements. To further complicate the issue, firms may legitimately hire independent contractors. While a researcher could compare the number of FTEs relative to their competitors, the payroll tax on their income tax returns, or the number of 1099-Misc forms (i.e., the tax form provided to each independent contractor), it is unclear how any of these would best approximate payroll tax avoidance. It is important to note that in and of itself, the decision on hiring an employee versus an independent contractor is not illegal. Firms can, and should, do

whatever is best for their business, reputation, and shareholders. On the contrary, it is the misclassification of employees that is against the law because of employer responsibilities mandated through tax and labor legislation.

To circumvent this issue, and to proxy for payroll tax avoidance through employee misclassification, I rely on the Department of Labor Wage and Hour Compliance Action Enforcement dataset. This dataset contains all concluded Wage and Hour Compliance audits that relate to US labor laws. The Wage and Hour Division (WHD) enforces federal minimum wage, overtime pay, recordkeeping, and child labor requirements of the Fair Labor Standards Act and a number of other labor acts including the Migrant and Seasonal Agricultural Worker Protection Act, the Employee Polygraph Protection Act, the Family and Medical Leave Act, Davis-Bacon and Related Acts, the Service Contract Act etc. WHD audits mainly relate to the Fair Labor Standards Act which only provides protection to employees.

A WHD investigation can include all employees and independent contractors for a three-year period. This corresponds to the three-year statute of limitations for willful violations. As a caveat, the findings start/end date provided in the WHD data do not necessarily equal the case open/close date. However, given that many audits are initiated by an employee complaint, it is likely that the case end date is a good approximation of the investigation close date. Workers usually file a complaint when filing for unemployment and realizing they are not entitled, or when they are injured and not entitled to disability. As such, the complaints are likely to be timely in nature.

The dataset contains the number of labor violations found, back wage amount, number of employees' due back wages, and civil money penalties assessed for each concluded audit. The use of this dataset removes the ambiguity of arbitrarily assuming employee misclassification through

abnormally low payroll taxes. Instead, the data accurately identifies instances of labor wage violations for a given firm. One issue with the data is that it only represents investigations. Consistent with other types of enforcement, not every company is investigated every year, or ever at all and there are likely non-random reasons a firm is selected for an Audit.[19] However, most relevant to this paper, is the fact that investigations can lead to either detected violations or no violations. Therefore, the data provides a clean test as to whether labor law violations were identified for a given investigation.

Another limitation of the data is that most investigations are related to small private companies.[20] Given the research question, I require public financial accounting data to determine if there is a relationship between income tax and payroll tax avoidance. While this significantly reduces the sample, it should not bias the results. I argued above that, on occasion, employee misclassification occurs because of ambiguous criteria in determining employee status at the Department of Labor, IRS, and State Levels (Donahue, Lamare, and Kotler 2007). This ambiguity (and potential confusion) should be of greatest importance to companies that lack sophisticated tax/human resource departments. Therefore, it is likely that large public companies are intentionally, and not mistakenly, misclassifying employees. Additionally, given the trade-off literature, the associated nontax costs from intentionally misclassifying employees are likely higher for public firms relative to small private firms.

[19] To control for this sample selection issue, I employ a Heckman Selection Model (Heckman 1979). See Research Design.

[20] Paying employees in cash is a common method of evading income and employment taxes used in small businesses. Therefore, the large incidence of private firms is not surprising.

4.2 Measure of Income Tax Avoidance

While many proxies exist for income tax avoidance, I employ Cash ETR defined as the ratio of cash taxes paid divided by pre-tax income. I choose this proxy because it represents the effects of both permanent and temporary tax avoidance strategies, is inclusive of both conservative and aggressive tax avoidance activities, and is not biased by changes in accounting accruals (Dyreng, Hanlon, and Maydew 2008). To employ this proxy, I require that firms must have non-missing, and positive pre-tax income, and I remove observations where CashETR is above 100% or below 0% of pre-tax income.

4.3 Empirical Model

4.3.1 Likelihood of a Successful Employee Misclassification Audit

Hypothesis one tests the association between a firm's income tax avoidance behavior and its payroll tax avoidance through employee misclassification. As discussed in the literature review, very little is known about the determinants of payroll tax avoidance. Anecdotally, "misclassified workers can be found in almost every sector of the economy, working for small companies to publicly traded multinational corporations" (Carré 2015). Given that misclassification of employees denies employees their benefits and protections afforded under the Fair Labor Standards Act (FLSA), I define a successful employee misclassification audit if the number of total FLSA case violations is greater than zero.[21]

Ex-ante, it is unclear whether income tax avoidance should predict payroll tax avoidance, or whether payroll tax avoidance should predict income tax avoidance. While I motivate the test through companies avoiding certain types of taxes being more inclined to avoid other types of

[21] For robustness and falsification tests, I also consider all WHD case violations.

taxes, I justify income tax avoidance as the dependent variable because, at least in certain instances, income tax avoidance is less risky. Conversely, especially for the large publicly traded firms included in my sample, employee misclassification is illegal (or at least very aggressive). Gallemore, Maydew, and Thornock (2014) argue that "when the managers decide to engage in tax avoidance, they weigh the expected benefits of tax avoidance against the expected costs and will not engage in tax avoidance unless the net benefits are positive in an expected value sense." This implies that firms should take relatively low-risk (i.e., legal) tax avoidance strategies and then as these opportunities are utilized, take progressively more aggressive positions until the expected value is zero. For this reason, legal income tax avoidance, at least conceptually, should precede illegal (or questionable) payroll tax avoidance through employee misclassification.

Given that I am interested in examining the determinants of payroll tax avoidance through employee misclassification, I estimate the determinants on the subsample of firms that have had WHD audits. However, given that audit itself is likely not random, without controlling for the sample selection issue, the results may be biased and unrepresentative of the population (Maddala 1991). To control for the potential sample selection bias, I employ a Heckman two-step correction procedure (Heckman 1979). In the first stage, I estimate a probit model for having a WHD audit. In the second stage, I correct for the selection bias by including the fitted values from the first stage selection equation (i.e., Inverse Mills ratio). This research design allows me to model the chance of a successful misclassification audit based on individual firm characteristics, and importantly, the measure of income tax avoidance while also addressing the endogeneity concern related to the selection bias.

Since the determinants of payroll tax avoidance are not well established, I control for the traditional firm-level variables that impact income tax avoidance.[22] I justify this decision because firm characteristics that predict corporate income tax avoidance may also predict other types of tax avoidance. I control for firm size (size), income from foreign operations (ForeignIncome), leverage (leverage), capital intensity (CapIntensity), research and development activities (RD), advertising expenditures (ADV), firm profitability (ROA), the number of pre-tax losses that a firm experienced over the previous four years (LossIntensity), income related to the equity method of accounting (EquityIncome), and the industry-median cash effective tax rate (IndustryETR).

Additionally, if each firm considers the direct benefits of payroll tax avoidance against its associated nontax costs, I need to control for the benefits and costs related to misclassification. Therefore, I include variables that would either increase the benefit of misclassification or increase the non-tax costs related to misclassification. Additional control variables include employee intensity (Employees), Big4 auditor (Big4), unionization (Union), whether the firm offers a pension (Pension), and being headquartered in a state with a higher minimum wage then the federal level (MinWageGreaterthenFederal). For proper identification, the Heckman model requires a valid exclusion restriction in the selection model that affects selection but not the outcome (Wolfolds and Siegel 2019). In his report to the Wage and Hour Division, Weil (2010), identifies a subset of industries that should be the focus of WHD attention because such industries have a large concentration of vulnerable workers, workers are unlikely to step forward, and the WHD is likely able to change employer behavior. Given that the WHD requested this report, and David Weil became the administrator of the WHD under President Obama in 2014, these identified

[22] Detailed variable definitions are included in Appendix 1.

targeted industries are more likely to be audited regardless of firm characteristics. For this reason, my exclusion variable is whether the firm operates in a Priority Industry (PriorityIndustry).

The model is specified as:

Stage 1:

$$(1) \qquad \Pr(WHD\ Audit) = \beta_0 + \sum \beta_k FirmTaxAvoidance\ Controls_{i,t} + \sum \beta_k Firm\ EmployeeControls_{i,t} + Priority\ Industry + \epsilon_t$$

Stage 2:

$$(2) \qquad \Pr(FLSA\ Violations) = \beta_0 + \boldsymbol{\beta_1 CashETR} + \sum \beta_k FirmTaxAvoidance\ Controls_{i,t} + \sum \beta_k Firm\ EmployeeControls_{i,t} + \lambda + \epsilon_t]$$

The coefficient of interest for Hypothesis one is β1 in the second stage of the Heckman two-step model. A negative coefficient would be consistent with WHD audits being more likely to discover FLSA violations (i.e., employee misclassification) for firms with lower cash taxes paid after controlling for the potential selection bias of being audited by the WHD. Detailed variable definitions are included in Appendix 1.

4.3.2 Change in Firm Behavior Post DOL investigation

Hypothesis two tests whether the income tax avoidance behavior of a firm changes following the detection of employee misclassification. To test hypothesis two, I employ a staggered DiD research design whereby I compare the change in behavior for firms that had FLSA violations versus firms that did not have FLSA violations detected in the WHD audits. Treat equals 1 for

public firms that have been subjected to a successful WHD audit (i.e., an audit that discovers violations) in either the year or two years pre/post a given WHD audit, and 0 otherwise. I choose this treatment effect because some firms are subjected to multiple WHD audits. Therefore, the treatment effect of one audit would overlap the treatment effect of another audit. Post equals 1 in the two subsequent years of a WHD audit, regardless of whether the audit was successful. The logic for two years is consistent with the fact that the FLSA contains a two-year statute of limitations (three-years for willful violations). I also include industry and year fixed effects to control for industry-level differences in tax planning.

For this test, I rely exclusively on the successful versus unsuccessful WHD audits because it is unclear if firms not subjected to an audit are misclassifying employees but have yet to be caught.

The model is specified as:

$$(3)\ Tax\ Avoidance\ = \beta_0 + \beta_1\, Treat * Post + \beta_2\, Treat + \beta_3\, Post + \sum \beta_k\, Firm\ Controls_{i,t} + Year\ FE + Industy/Firm\ FE + \epsilon_t$$

The purpose of this test is to affirm the underlying research question of whether firms that avoid income taxes also avoid payroll taxes. If the interaction coefficient is negative, the results would suggest that firms increase their income tax planning to compensate for the lost payroll tax savings. Conversely, if the interaction coefficient is positive, the results would suggest that firms reduce their income tax avoidance following the detection of payroll tax avoidance. One explanation for this result is that firms may fear increased IRS scrutiny and the expected benefit associated with a particular tax position no longer outweigh the associated nontax costs. Detailed variable definitions are presented in Appendix 1.

5. Empirical Findings

5.1. Summary Statistics

Table 1 Panel A presents the sample-selection process. I begin with all publicly available WHD audits.[23] In total, there are 302,402 audits. Next, I restrict the sample to publicly traded (i.e., Compustat) firms. Most of the sample attrition results from WHD audits primarily being conducted on private firms. This is consistent with the notion that either private firms lack the appropriate accounting or HR department to aid in compliance, and/or that these firms have a different benefit and risk trade-off given the lower ex-ante threat of detection/enforcement or other non-tax costs. To match the firms in the WHD Sample to Compustat, I conduct a Fuzzy Matching procedure that matches on the Company Legal Name.[24] [25] After this procedure, I am left with 5,763 unique investigations. While the dataset contains all investigations from FY 2005, it includes findings from as early as 1984. I constrain the investigation findings data to begin in 2000 and to end in 2018. Some firms are audited more then once in a calendar year. Since my tests are conducted at the firm-year level, I sum the total FLSA violations for a given firm each year to get the net result of all the WHD Audits. The purpose of the WHD Audit is to detect FLSA violations. Therefore, regardless of which specific audit discovers FLSA violations, FLSA violations would exist. Finally, consistent with prior tax avoidance studies, I eliminate firm-year observations with missing or negative pre-tax income, and firm-year observations missing the data required to compute CashETR and control variables.

[23] Wage and Hour Compliance Action Data can be found at: https://enforcedata.dol.gov/views/data_catalogs.php. My final WHD data was downloaded in August 2020.
[24] I use 96.5% as my fuzzy matching calibration based on a manual check of the matched data
[25] A Freedom of Information Act (FOIA) request was made in April 2020 to provide the employee identification number to match with higher precision. See https://www.dol.gov/foia/: Tracking Number - 891322

In total, there are 2,190 firm-year audit observations. 808 firm-year audits have zero labor violations (36.89%), and 1,382 firm-year audits have non-zero labor law violations (63.11%). While not perfectly balanced, it is encouraging that the number of successful audits is not substantially different from the number of unsuccessful audits.

Table 2 Panel A and B provide the observations over the sample period and further separates the WHD Audits into audits with FLSA violations. Of the 1,382 firm-year audits with non-zero labor law violations, 906 (65.56%) have FLSA labor violations. Given that FLSA violations are my proxy for misclassification, 906 of the 2,190 (41.37%) audits detect misclassification. Overall, the number of observations is well distributed by year. The number of observations per year significantly increases after 2005 which coincides with when all WHD investigation data becomes publicly available.

Table 2 Panel C and D provide the observations across industries. Consistent with above, the number of observations is well distributed across industries when considering all WHD violations or when only considering FLSA violations.[26]

5.2. Descriptive Statistics

Table 3 provides descriptive statistics for the income tax avoidance proxy and the control variables used in this study. Panel A provides the descriptive statistics for all WHD audits, Panel B provides the descriptive statistics for WHD audits with FLSA Violations, Panel C provides the descriptive statistics for WHD audits with positive violations but without FLSA violations, and Panel D provides the descriptive statistics for all WHD audits without any violations.

[26] My results are robust to the exclusion of firms in the financial services industry.

Panel E compares the differences in means between the WHD audits with FLSA violations and the WHD audits without any violations. Importantly, for most of the variables the two groups are not significantly different. This indicates that audits that discover FLSA violations are not concentrated on fundamentally different firms. The income tax avoidance proxy, Cash ETR, is slightly higher (26.9% versus 26.3%) for the WHD audits without any violations but the mean difference is not statistically significant.

5.3. Multivariate Tests

5.3.1. Likelihood of a Successful Employee Misclassification Audit

Table 4 presents the first stage result for modeling the likelihood of being audited by the WHD. The first column considers all observations while the second column removes observations that are either missing data needed to calculate CashETR, have negative pre-tax income, or have a CashETR calculated below 0 or above 1. Importantly, many of the coefficients are in the predicted direction, although not all are significant at traditional levels. The controls for employee bargaining power are almost all highly significant. Furthermore, the exclusion restriction (i.e., PriorityIndustry) is highly significant. Consistent with expectations, the likelihood of being audited is strongly positively related to being in a priority industry as identified by Weil (2010).

Table 5 presents the second stage results for modeling the likelihood of being a labor violator conditional on controlling for the determinants of being selected for a WHD audit. While columns 1 and 2 consider all WHD violations, columns 3 and 4 only consider FLSA violations. Furthermore, Column 1 and 3 do not include CashETR. While I am most interested in studying whether income tax avoidance is related to payroll tax avoidance, given the scarcity related to payroll tax avoidance, it is also relevant to document whether other firm attributes are positive predictors of misclassification. Specifically, by imposing a restriction on positive Cash ETR, I am

inherently removing loss firms from the analysis which, although insignificant, could be of interest in future research given the strong univariate results of Table 3, Panel E.

The variable of interest is CashETR. A negative coefficient on CashETR would be consistent with labor violations being more likely in firms that also engage in income tax avoidance. I observe a significantly negative coefficient on Cash ETR only for FLSA violations. As can be seen in Column 2, while negative, CashETR is not statistically significant when considering all labor violations. This is of note for two reasons. First, this test offers validation to my measure of payroll tax avoidance given that misclassification is a violation of FLSA laws and not of other WHD violations. Secondly, the negative coefficient on CashETR in Column 4 suggest that WHD audits are more likely to discover FLSA violations for firms with lower cash taxes paid. Put simply, firms with lower CashETR are more likely to avoid payroll taxes through employee misclassification.

Regarding economic significance, Cash ETR has a negative coefficient of -0.171 (p-value, 0.059). This implies that if Cash ETR decreases by 1 percentage point, holding everything else constant, the firm is 0.157% more likely to have FLSA labor violations (i.e., employee misclassification) detected by a WHD audit.[27]

5.3.2. Change in Firm Tax Avoidance Behavior Post DOL investigation

Table 6 presents the results for Hypothesis 2 and is related to the change in CashETR following the discovery of labor violations during a WHD audit. Treated firms represent those firms that have had labor violations detected in either the year, or two years before or after the WHD audit. Control Firms represent those firms that have been subjected to unsuccessful WHD audits in either the year, or two years before or after a WHD audit. This specification was

[27] $e^{-0.171} - 1$ = -0.157%

implemented because it is difficult to decipher which specific audit-year is driving the result if a firm is subject to multiple WHD Audits year after year. Additionally, given that I am unaware of the exact timing of the WHD Audit, the CashETR reaction may not be immediate.

The DiD coefficient is positive and significant across all specifications when considering all WHD violations and when only considering FLSA violations.[28] This suggests that following a successful WHD audit, firms increase their CashETR irrespective of whether the violation is related to the Fair Labor Standards Act or another relevant labor statute. This result signals that firms, regardless of the labor violation, adjust their income tax planning down. When considering the results for Columns 3 and 4 (i.e., the columns that use FLSA violations to proxy for employee misclassification, or payroll tax avoidance), the fact that firms adjust their income tax planning down following the detection of labor violations provides evidence that firms that engage in payroll tax avoidance also engage in income tax avoidance. I conjecture that firms decrease their income tax avoidance to reflect the threat of increased IRS scrutiny and that firms update the cost-benefit trade-off of other aggressive tax positions. In untabulated tests, the results remain consistent when I add the ex-ante threat of Audit enforcement. Consistent with prior literature (ex., Hoopes, Mescall, and Pittman 2012) the audit probability for a firm-year is calculated as the number of corporate audits completed in the same asset class as the firm divided by the total number of corporate tax returns filed in that asset class in the prior year.

[28] In untabulated analyses, Cash ETR when considering WHD violations other then FLSA violations also loads significantly positively.

5.4. Robustness Tests

5.4.1. Validation of Misclassification Proxy

Table 7 and 8 provide additional support that FLSA violations are detecting employee misclassification. Following a similar difference-in-difference research design to Equation (3), in Table 7, I examine whether FLSA violations result in changes to the employee intensity of a firm (# of employees/sales). Employee misclassification implies that true employees are being mislabelled as independent contractors. For that reason, employee intensity will be artificially lower than for firms properly recording employees. When considering FLSA violations, the DiD coefficient is positive and statistically significant with and without industry fixed effects. When considering all WHD violations, the DiD coefficient is only significant without industry fixed effects. The positive and significant coefficient provides assurance that the proxy for payroll tax avoidance is indeed related to misclassification.

In Table 8, again with a similar difference-in-difference research design, I test whether FLSA violations result in cost classification differences on the Income Statement. It is likely harder to justify independent contractor status if the work being performed is directly related to sales. I support this conjecture because when the IRS assesses employee classification, they consider the extent to which the services performed are a key aspect of the regular business of the company. Therefore, given that Cost of Goods Sold (COGS) represent the direct costs incurred in the production of goods or services, firms may want to avoid classifying the labor costs of misclassified employees as COGS and instead classify the costs as Selling, General, and Admin (SG&A) expenses.

In Table 8, Panel A, I test for the impact of WHD audits on the COGS percentage of sales. Following the discovery of FLSA violations, relative to the control group, the DiD coefficient is

positive and statistically significant with and without industry fixed effects. This implies that Cost of Goods Sold increase following the detection of FLSA violations. While the result is also positive when considering all labor violations, the coefficient is larger and more statistically significant for FLSA violations. Conversely, in Table 8, Panel B, I follow a similar approach to test for changes in Selling, General and Administrative Expenses. The DiD coefficient is negative and statistically significant only for FLSA violations with industry fixed effects. Taken together, the results in Table 8 suggest that firms increase COGS and decrease SGA following the detection of FLSA violations. These results are difficult to reconcile without FLSA violations being indicative of employee misclassification.

5.4.2. Sample Partitions

Each firm has a unique optimal level of tax avoidance that balances the costs of different tax planning techniques with the benefits (Kim et al. 2019). In that sense, each firm has a unique portfolio of tax planning tools available to employ. In Table 9, I partition sample firms into groups that are more likely to engage in higher rates of tax avoidance to see if the effect in Table 6 differs across groups. Following Guenther, Wilson, and Wu (2019), I partition my sample into firms that are considered to be multinational and domestic. I also partition my sample into firms that are above and below the industry median ETR. For the foreign income partition, the DiD coefficient is only significant for domestic firms. For the above Industry median Cash ETR, while the DiD coefficient is positive and significant for both groups, the coefficient is higher for the firms with above median Cash ETR. Taken together, these two partitions suggest that firms with more tax planning opportunities do not exhibit the same increase in their taxes paid following the detection of employee misclassification.

6. Conclusion

This paper empirically identifies whether firms that avoid income taxes also avoid payroll taxes. Given the recent rise of the Gig Economy, there has been an increasing trend for employers to classify their employees as independent contractors. While this classification may be legitimate, some firms intentionally misclassify their employees to reduce labor costs. By misclassifying an employee as an independent contractor, a firm can avoid their share of the FICA contribution which, for the typical firm, represents a large cost.

In order to answer the research question, I first establish that income tax avoidance is positively related to the likelihood of successfully discovering FLSA violations during a WHD audit. I then establish that firms increase their income taxes paid following the detection of FLSA violations during a WHD Audit. Taken together, these results suggest that firms that avoid income taxes also avoid payroll taxes.

The results are important for a variety of reasons. First, little is known about the determinants of payroll tax avoidance or the determinants of being audited by the DOL for labour violations. Second, by showing that firms that avoid income taxes also avoid payroll taxes, I provide evidence consistent with the complementarity of avoiding different types of taxes. Taken together, the government may want to target firms with specific characteristics or with low income taxes to search for payroll tax transgressions. Third, given a reduction in income tax avoidance following the discovery of labor violations, governments may be able to reduce the tax gap in ways other then through traditional IRS tax enforcement activities. Different types of enforcement, including WHD audits, may cause firms to adjust their tax avoidance trade-off and increase taxes paid.

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Appendix 1 – Variable Definitions

Variable	Definition
CashETR	Cash taxes paid (txpd) divided by the sum of pre-tax income (pi)
COGS/Sales	Cost of Goods Sold (cogs) divided by Net Sales (sale)
Employees/Sales	Number of Employees (emp) divided by Net Sales (sale)
SGA/Sales	Selling, General and Administrative Expense (xsga) divided by Net Sales (sale)
Adv	Advertising expense (xad) divided by total assets (at); missing values set equal to zero
Big4	Indicator Variable if the firm is audited by a Big4 Auditor
CapInt	Net PPE (ppent) scaled by total assets (at)
Equity Income	Equity income (esub) scaled by total assets (at)
Foreign Income	Indicator Variable if the firm had non-zero foreign income (pifo)
IndustryMedianETR	The median CASHETR for the firm's two-digit Standard Industrial Classification Code (sictwo)
Intangibles	Intangibles (intan) scaled by total assets (at); missing values set equal to zero
Leverage	Long-term debt (dltt)) scaled by total assets (at)
Loss Firm	Indicator Variable if the firm had missing pre-tax income (pi)
LossIntensity	Loss intensity over the previous four-year period defined as the number of years a firm has negative pre-tax book income (pi) from year t−4 to year t−1 scaled to range from [0,1]
MedianIncomeGreaterthenFederal	Indicator Variable if the corporate headquarter state median income is greater then US federal level for a given year
MinWageGreaterthenFederal	Indicator Variable if the corporate headquarter state minimum wage is greater then US federal level for a given year
MTB	Market value of equity (Cprcc_f*csho) divided by book value of equity (ceq)
Pension	Indicator Variable if the firm had non-zero Pension and Retirement Expense (xpr)
PriorityIndustry	Indicator Variable if the firm Industry Sector is identified by Weil (2010)
RD	R&D expense (xrd) scaled by total assets (at); missing values are set equal to zero.
ROA	Pre-tax book income (pi) divided by total assets (at)
sictwo	Two-digit Standard Industrial Classification Code

Size	Natural log of total assets (at)
stateIncomeTax	Indicator Variable if the corporate headquarter state has state income taxes
Union	Indicator Variable if the firm had a Collective Bargaining Agreements File (https://www.dol.gov/agencies/olms/regs/compliance/cba)

Table 1: Sample Selection

Detailed variable definitions are presented in Appendix 1

		# Obs.
Number of Publicly Matched WHD Audits		5,763
Less: Audits before 2000	(4)	
Less: Audits after 2018	(284)	
Less: *"Duplicate" Audits**	(2,181)	
Less: Observations missing from Compustat	(1,104)	
Sample of WHD Audits for Non-Cash ETR Tests		2,190
Less: Observations with Negative Pre-Tax Income	(438)	
Less: Observations missing Pre-Tax Income	(19)	
Less: Observations missing Cash Taxes Paid	(36)	
Less: Observations with Cash Taxes Paid < 0%	(80)	
Less: Observations with Cash Taxes Paid> 100%	(46)	
Sample of WHD Audits for Cash ETR Tests		1,571

*** The duplicate audits represent observations for firms that have had multiple audits over the given year. Given that tests are conducted at the firm-year level, I only require the cumulative audit result for a given year. As such, I aggregate the number of WHD violations for each firm in a given year irrespective of how many WHD Audits they endure.

Table 2: Sample Distribution

Detailed variable definitions are presented in Appendix 1.

Panel A: Annual Distribution of WHD Audits

Year	*Unsuccessful Audit* (i.e., WHD Violations < 0)		*Successful Audit* (i.e., WHD Violations > 0)		Total	
	Count	%	Count	%	Count	%
2000	0	0.00%	6	0.27%	6	0.27%
2001	2	0.09%	4	0.18%	6	0.27%
2002	1	0.05%	7	0.32%	8	0.37%
2003	1	0.05%	24	1.10%	25	1.14%
2004	43	1.96%	109	4.98%	152	6.94%
2005	87	3.97%	122	5.57%	209	9.54%
2006	55	2.51%	111	5.07%	166	7.58%
2007	57	2.60%	89	4.06%	146	6.67%
2008	73	3.33%	107	4.89%	180	8.22%
2009	65	2.97%	96	4.38%	161	7.35%
2010	66	3.01%	93	4.25%	159	7.26%
2011	67	3.06%	91	4.16%	158	7.21%
2012	57	2.60%	98	4.47%	155	7.08%
2013	39	1.78%	79	3.61%	118	5.39%
2014	51	2.33%	82	3.74%	133	6.07%
2015	49	2.24%	70	3.20%	119	5.43%
2016	28	1.28%	58	2.65%	86	3.93%
2017	32	1.46%	76	3.47%	108	4.93%
2018	35	1.60%	60	2.74%	95	4.34%
	808	36.89%	1,382	63.11%	2,190	100.00%

Panel B: Year Distribution of WHD Violations

Year	*WHD Violations with Zero FLSA Violations* (i.e., WHD Violations > 0, FLSA Violations = 0)		*FLSA Violations* (i.e., FLSA Violations > 0)		Total WHD Violations	
	Count	%	Count	%	Count	%
2000	1	0.07%	5	0.36%	6	0.43%
2001	1	0.07%	3	0.22%	4	0.29%
2002	1	0.07%	6	0.43%	7	0.51%
2003	6	0.43%	18	1.30%	24	1.74%
2004	31	2.24%	78	5.64%	109	7.89%
2005	35	2.53%	87	6.30%	122	8.83%
2006	32	2.32%	79	5.72%	111	8.03%
2007	35	2.53%	54	3.91%	89	6.44%
2008	36	2.60%	71	5.14%	107	7.74%
2009	28	2.03%	68	4.92%	96	6.95%
2010	29	2.10%	64	4.63%	93	6.73%
2011	36	2.60%	55	3.98%	91	6.58%
2012	34	2.46%	64	4.63%	98	7.09%
2013	35	2.53%	44	3.18%	79	5.72%
2014	33	2.39%	49	3.55%	82	5.93%
2015	31	2.24%	39	2.82%	70	5.07%
2016	22	1.59%	36	2.60%	58	4.20%
2017	30	2.17%	46	3.33%	76	5.50%
2018	20	1.45%	40	2.89%	60	4.34%
	476	34.44%	906	65.56%	1,382	100.00%

Panel C: Industry Distribution of WHD Audits

Industry Sector***	WHD Violations = 0		WHD Violations > 0		Total	
	Count	%	Count	%	Count	%
Agriculture, Forestry, & Fishing	3	0.14%	8	0.37%	11	0.50%
Construction	28	1.28%	33	1.51%	61	2.79%
Finance, Insurance, & Real Estate	70	3.20%	121	5.53%	191	8.72%
Manufacturing	151	6.89%	258	11.78%	409	18.68%
Mining	17	0.78%	24	1.10%	41	1.87%
Nonclassifiable Establishments	4	0.18%	8	0.37%	12	0.55%
Retail Trade	263	12.01%	337	15.39%	600	27.40%
Services	147	6.71%	350	15.98%	497	22.69%
Transportation & Public Utilities	105	4.79%	199	9.09%	304	13.88%
Wholesale Trade	20	0.91%	44	2.01%	64	2.92%
	808	36.89%	1,382	63.11%	2,190	100.00%

Panel D: Industry Distribution of WHD Audits with Violations

Industry Sector***	*WHD Violations with Zero FLSA Violations*		*FLSA Violations*		Total WHD Violations	
	Count	%	Count	%	Count	%
Agriculture, Forestry, & Fishing	6	0.43%	2	0.14%	8	0.58%
Construction	9	0.65%	24	1.74%	33	2.39%
Finance, Insurance, & Real Estate	33	2.39%	88	6.37%	121	8.76%
Manufacturing	118	8.54%	140	10.13%	258	18.67%
Mining	4	0.29%	20	1.45%	24	1.74%
Nonclassifiable Establishments	2	0.14%	6	0.43%	8	0.58%
Retail Trade	94	6.80%	243	17.58%	337	24.38%
Services	93	6.73%	257	18.60%	350	25.33%
Transportation & Public Utilities	98	7.09%	101	7.31%	199	14.40%
Wholesale Trade	19	1.37%	25	1.81%	44	3.18%
	476	34.44%	906	65.56%	1,382	100.00%

***For the multivariate tests, I classify firms into their 2-Digit SIC classification code. However, for brevity, this table reports the industry sector. The Gig Economy is often associated with technology firms and the potential for employee misclassification. These types of firms would be represented by a variety of industry sectors. For example: Alphabet (Services), Amazon (Retail Trade), Apple (Manufacturing), Facebook (Services), Microsoft (Services), and Uber (Transportation & Public Utilities).

Table 3: Descriptive Statistics

Detailed variable definitions are presented in Appendix 1.

Panel A: All WHD Audits

Variables	N	Mean	SD	Min	p25	Median	p75	Max
CashETR	1571	0.265	0.157	0.000	0.160	0.267	0.354	0.968
Employees/Sales	2103	0.009	0.012	0.000	0.003	0.005	0.010	0.164
COGS/Sales	2170	0.694	0.373	0.001	0.587	0.716	0.823	15.499
SGA/Sales	1923	0.219	0.525	0.003	0.093	0.169	0.269	15.387
Size	2171	7.966	2.141	-1.228	6.545	7.826	9.294	14.780
Leverage	2158	0.253	0.247	0.000	0.071	0.214	0.365	3.645
Foreign Income	2190	0.391	0.488	0.000	0.000	0.000	1.000	1.000
CapInt	2143	0.340	0.251	0.000	0.118	0.310	0.526	0.954
Intangibles	2171	0.189	0.205	0.000	0.019	0.108	0.311	0.871
ROA	2171	0.042	0.243	-5.721	0.011	0.061	0.115	0.910
MTB	1978	3.081	14.163	-290.544	1.289	2.079	3.603	245.698
RD	2171	0.007	0.037	0.000	0.000	0.000	0.000	1.135
Pension	2190	0.897	0.304	0.000	1.000	1.000	1.000	1.000
Loss Firm	2171	0.202	0.401	0.000	0.000	0.000	0.000	1.000
Union	2190	0.070	0.256	0.000	0.000	0.000	0.000	1.000
MedianIncomeGreaterthenFederal	2110	0.473	0.499	0.000	0.000	0.000	1.000	1.000
MinWageGreaterthenFederal	2110	0.444	0.497	0.000	0.000	0.000	1.000	1.000
stateIncomeTax	2110	0.741	0.438	0.000	0.000	1.000	1.000	1.000
Big4	2161	0.879	0.326	0.000	1.000	1.000	1.000	1.000

Panel B: FLSA Violations (i.e., Audits with FLSA Violations > 0)

Detailed variable definitions are presented in Appendix 1.

Variables	N	Mean	SD	Min	p25	Median	p75	Max
CashETR	622	0.263	0.156	0.000	0.157	0.270	0.354	0.938
Employees/Sales	865	0.010	0.013	0.000	0.003	0.007	0.012	0.135
COGS/Sales	896	0.692	0.191	0.001	0.581	0.719	0.832	1.857
SGA/Sales	785	0.253	0.776	0.003	0.087	0.182	0.280	15.387
Size	897	7.428	2.123	-1.228	6.201	7.370	8.647	14.525
Leverage	887	0.243	0.241	0.000	0.039	0.193	0.369	2.497
Foreign Income	906	0.341	0.474	0.000	0.000	0.000	1.000	1.000
CapInt	882	0.319	0.260	0.000	0.080	0.264	0.496	0.951
Intangibles	897	0.191	0.209	0.000	0.011	0.117	0.310	0.871
ROA	897	0.022	0.336	-5.721	0.004	0.056	0.117	0.692
MTB	821	3.439	14.223	-133.875	1.283	2.061	3.584	245.698
RD	897	0.008	0.049	0.000	0.000	0.000	0.000	1.135
Pension	906	0.879	0.327	0.000	1.000	1.000	1.000	1.000
Loss Firm	897	0.233	0.423	0.000	0.000	0.000	0.000	1.000
Union	906	0.051	0.220	0.000	0.000	0.000	0.000	1.000
MedianIncomeGreaterthenFederal	865	0.447	0.498	0.000	0.000	0.000	1.000	1.000
MinWageGreaterthenFederal	865	0.398	0.490	0.000	0.000	0.000	1.000	1.000
stateIncomeTax	865	0.727	0.446	0.000	0.000	1.000	1.000	1.000
Big4	893	0.828	0.378	0.000	1.000	1.000	1.000	1.000

Panel C: WHD Violations but Zero FLSA Violations (i.e., Audits with WHD > 0 & FLSA Violations = 0)

Detailed variable definitions are presented in Appendix 1.

Variables	N	Mean	SD	Min	p25	Median	p75	Max
CashETR	351	0.261	0.157	0.000	0.166	0.259	0.346	0.871
Employees/Sales	459	0.008	0.013	0.000	0.003	0.004	0.007	0.164
COGS/Sales	474	0.689	0.185	0.075	0.605	0.715	0.809	1.750
SGA/Sales	417	0.203	0.315	0.007	0.107	0.167	0.246	6.127
Size	474	8.597	2.189	1.904	6.895	8.642	10.092	14.674
Leverage	472	0.263	0.212	0.000	0.115	0.236	0.363	1.775
Foreign Income	476	0.475	0.500	0.000	0.000	0.000	1.000	1.000
CapInt	469	0.351	0.237	0.001	0.146	0.342	0.528	0.954
Intangibles	474	0.203	0.203	0.000	0.037	0.119	0.341	0.798
ROA	474	0.054	0.180	-2.868	0.015	0.063	0.106	0.910
MTB	420	3.002	20.978	-290.544	1.290	2.066	3.432	193.191
RD	474	0.007	0.034	0.000	0.000	0.000	0.000	0.609
Pension	476	0.931	0.254	0.000	1.000	1.000	1.000	1.000
Loss Firm	474	0.186	0.389	0.000	0.000	0.000	0.000	1.000
Union	476	0.122	0.327	0.000	0.000	0.000	0.000	1.000
MedianIncomeGreaterthenFederal	459	0.475	0.500	0.000	0.000	0.000	1.000	1.000
MinWageGreaterthenFederal	459	0.497	0.501	0.000	0.000	0.000	1.000	1.000
stateIncomeTax	459	0.765	0.425	0.000	1.000	1.000	1.000	1.000
Big4	472	0.913	0.282	0.000	1.000	1.000	1.000	1.000

Panel D: WHD Audits with Zero Violations (i.e., Audits with Violations = 0)

Detailed variable definitions are presented in Appendix 1.

Variables	N	Mean	SD	Min	p25	Median	p75	Max
CashETR	598	0.269	0.158	0.000	0.162	0.271	0.363	0.968
Employees/Sales	779	0.009	0.011	0.000	0.003	0.005	0.010	0.147
COGS/Sales	800	0.699	0.563	0.009	0.577	0.714	0.817	15.499
SGA/Sales	721	0.191	0.144	0.007	0.090	0.154	0.265	1.883
Size	800	8.195	1.987	2.735	6.862	8.021	9.309	14.780
Leverage	799	0.258	0.272	0.000	0.074	0.213	0.361	3.645
Foreign Income	808	0.399	0.490	0.000	0.000	0.000	1.000	1.000
CapInt	792	0.358	0.247	0.000	0.139	0.330	0.549	0.912
Intangibles	800	0.179	0.201	0.000	0.018	0.095	0.290	0.806
ROA	800	0.059	0.121	-1.152	0.016	0.067	0.117	0.473
MTB	737	2.726	7.916	-94.371	1.292	2.120	3.621	93.741
RD	800	0.005	0.020	0.000	0.000	0.000	0.000	0.205
Pension	808	0.899	0.302	0.000	1.000	1.000	1.000	1.000
Loss Firm	800	0.176	0.381	0.000	0.000	0.000	0.000	1.000
Union	808	0.062	0.241	0.000	0.000	0.000	0.000	1.000
MedianIncomeGreaterthenFederal	786	0.499	0.500	0.000	0.000	0.000	1.000	1.000
MinWageGreaterthenFederal	786	0.463	0.499	0.000	0.000	0.000	1.000	1.000
stateIncomeTax	786	0.742	0.438	0.000	0.000	1.000	1.000	1.000
Big4	796	0.916	0.278	0.000	1.000	1.000	1.000	1.000

Panel E: Mean Comparison Between Successful and Unsuccessful WHD Audits

This table presents the means for the sample of WHD Audits with Zero Violations and WHD Audits with FLSA Violations, and the difference for all variables between the two groups. Detailed variable definitions are presented in Appendix 1.

Variables	WHD Audits with Zero Violations Mean	WHD Audits with FLSA Violations Mean	MeanDiff
CashETR	0.269	0.263	0.006
Employees/Sales	0.009	0.01	-0.002***
COGS/Sales	0.699	0.692	0.006
SGA/Sales	0.191	0.253	-0.063**
Size	8.195	7.428	0.768***
Leverage	0.258	0.243	0.015
Foreign Income	0.399	0.341	0.057**
CapInt	0.358	0.319	0.039***
Intangibles	0.179	0.191	-0.011
ROA	0.059	0.022	0.037***
MTB	2.726	3.439	-0.713
RD	0.005	0.008	-0.003
Pension	0.899	0.879	0.02
Loss Firm	0.176	0.233	-0.057***
Union	0.062	0.051	0.011
MedianIncomeGreaterthenFederal	0.499	0.447	0.051**
MinWageGreaterthenFederal	0.463	0.398	0.065***
stateIncomeTax	0.742	0.727	0.015

Table 4: First Stage Model of the Determinants of a WHD Audit

This table presents the Probit regression results for modelling the likelihood of being audited by the Department of Labor. P-values are presented in parentheses. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively. Detailed variable definitions are presented in Appendix 1.

VARIABLES	All Observations	Observations with CashETR
CashETR		0.422***
		(0.00)
size	0.145***	0.152***
	(0.00)	(0.00)
ROA	0.001	0.002
	(0.89)	(0.77)
MTB	-0.000	-0.000
	(0.86)	(0.88)
Leverage	-0.233***	-0.360***
	(0.00)	(0.00)
ForeignIncome	0.005	0.008
	(0.82)	(0.78)
CapIntensity	0.620***	0.731***
	(0.00)	(0.00)
Employees	0.018	4.748***
	(0.56)	(0.00)
Intangibles	0.277***	0.385***
	(0.00)	(0.00)
RD	-3.727***	-5.897***
	(0.00)	(0.00)
Big4	0.167***	0.186***
	(0.00)	(0.00)
Union	0.393***	0.381***
	(0.00)	(0.00)
Pension	0.187***	0.162***
	(0.00)	(0.00)
MinWageGreaterthenFederal	0.031	0.056**
	(0.16)	(0.03)
PriorityIndustry	0.585***	0.571***
	(0.00)	(0.00)
LossFirm	-0.048*	
	(0.08)	
Constant	-3.589***	-3.778***
	(0.00)	(0.00)
Observations	92,157	48,348
Pseudo R-squared	0.163	0.145

Table 5: Second Stage Model of the Determinants of a Violation being Detected
This table presents the Probit regression results for modelling the likelihood of being detecting for labor law violations while correcting for the potential selection bias of being Audited. P-values are presented in parentheses. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively. Detailed variable definitions are presented in Appendix 1.

VARIABLES	WHDViolator		FLSAViolator	
CashETR		**-0.017**		**-0.171***
		(0.853)		**(0.059)**
size	-0.009	-0.006	-0.038***	-0.046***
	(0.265)	(0.54)	(0.000)	(0.000)
ROA	-0.032	-0.106	-0.050	-0.237
	(0.629)	(0.552)	(0.453)	(0.179)
MTB	0.001	0.000	0.001	0.001
	(0.389)	(0.645)	(0.149)	(0.127)
Leverage	-0.019	0.030	-0.032	-0.015
	(0.745)	(0.676)	(0.57)	(0.835)
ForeignIncome	0.004	0.019	-0.045*	-0.022
	(0.856)	(0.501)	(0.066)	(0.435)
CapIntensity	-0.089	-0.134*	-0.193***	-0.329***
	(0.161)	(0.089)	(0.002)	(0.000)
Employees	1.372	2.608**	1.710*	2.818**
	(0.149)	(0.05)	(0.071)	(0.032)
Intangibles	0.171**	0.122	0.034	-0.100
	(0.013)	(0.135)	(0.616)	(0.214)
RD	-0.314	-0.294	-0.229	0.596
	(0.463)	(0.707)	(0.59)	(0.441)
LossFirm	-0.002		-0.017	
	(0.949)		(0.606)	
Big4	-0.076*	-0.074	-0.068*	-0.073
	(0.056)	(0.124)	(0.083)	(0.126)
Union	0.104**	0.090	-0.097*	-0.113**
	(0.042)	(0.114)	(0.055)	(0.045)
Pension	0.070*	0.086*	0.015	-0.016
	(0.098)	(0.088)	(0.722)	(0.743)
MinWageGreaterthenFederal	-0.035	-0.043	-0.083***	-0.078***
	(0.126)	(0.102)	(0.000)	(0.002)
Constant	0.572***	0.513**	0.913	1.204
	(0.003)	(0.039)	(0.000)***	(0.000)***
Number of Observations	1,852	1,390	1,852	1,390
Prob > chi2	0.0014	0.0055	0.0000	0.0000

Table 6: Change in CashETR

This table presents results for Equation (3) which tests the impact of discovering labor violations on firms' Cash ETR. The control group includes firms that were subjected to a WHD audit but for which no labor violations were found. P-values are presented in parentheses. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively. Detailed variable definitions are presented in Appendix 1.

VARIABLES	WHD Violations		FLSA Violations	
DiD	**0.035*** **	**0.034*** **	**0.029** **	**0.030*** **
	(0.00)	**(0.00)**	**(0.01)**	**(0.01)**
Treat	-0.009	-0.010	-0.007	-0.011
	(0.21)	(0.18)	(0.41)	(0.20)
Post	-0.013	-0.010	-0.014	-0.012
	(0.17)	(0.30)	(0.13)	(0.20)
size	0.000	0.001	-0.002	-0.001
	(0.96)	(0.59)	(0.40)	(0.75)
ForeignIncome	0.022***	0.026***	0.024***	0.029***
	(0.00)	(0.00)	(0.00)	(0.00)
Leverage	-0.058***	-0.052***	-0.063***	-0.058***
	(0.00)	(0.00)	(0.00)	(0.00)
CapIntensity	-0.026**	0.009	-0.025**	0.010
	(0.02)	(0.63)	(0.04)	(0.63)
RD	-0.596***	-0.714***	-0.622***	-0.857***
	(0.00)	(0.00)	(0.00)	(0.00)
Adv	-0.089	0.026	-0.067	0.084
	(0.21)	(0.80)	(0.39)	(0.46)
Intangibles	-0.000***	-0.000	-0.000	0.000
	(0.00)	(0.51)	(0.36)	(0.72)
ROA	0.115***	0.104***	0.120***	0.121***
	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.000	-0.000	0.000	-0.000
	(0.59)	(0.52)	(0.95)	(0.79)
EquityIncome	-1.167**	-1.319**	-1.233*	-1.331*
	(0.03)	(0.02)	(0.08)	(0.09)
LossIntensity	-0.021*	-0.031	-0.032**	-0.052**
	(0.06)	(0.18)	(0.01)	(0.03)
IndustryMedianETR	0.582***	0.550***	0.589***	0.646***
	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.139***	0.149***	0.152***	0.122**
	(0.00)	(0.00)	(0.00)	(0.02)
Observations	3,490	3,490	2,737	2,737
Fixed Effects	NO	Industry & Year	NO	Industry & Year
Adj. R-squared	0.113	0.134	0.114	0.131

Table 7: Change in Employees/Sales following Violations

This table presents results for testing the impact of discovering labor violations on firms' Employee Intensity. The control group includes firms that were subjected to a WHD audit but for which no labor violations were found. P-values are presented in parentheses. ***, **, * denote significance at 1%, 5%, and 10%. Detailed variable definitions are presented in Appendix 1.

VARIABLES	WHD Violations		FLSA Violations	
DiD	**0.001***	**0.001**	**0.002*****	**0.001***
	(0.06)	**(0.18)**	**(0.01)**	**(0.08)**
Treat	0.000	0.000	0.000	0.000
	(0.39)	(0.54)	(0.57)	(0.71)
Post	0.000	0.001	0.000	0.001
	(0.74)	(0.29)	(0.82)	(0.21)
size	-0.001***	-0.000***	-0.001***	-0.000***
	(0.00)	(0.00)	(0.00)	(0.01)
ForeignIncome	0.001	0.001*	0.000	0.001
	(0.12)	(0.07)	(0.53)	(0.39)
Leverage	-0.004***	-0.005***	-0.004***	-0.005***
	(0.00)	(0.00)	(0.00)	(0.00)
CapIntensity	0.008***	0.000	0.009***	0.000
	(0.00)	(0.79)	(0.00)	(0.80)
Intangibles	0.001	-0.005***	0.002**	-0.005***
	(0.16)	(0.00)	(0.04)	(0.00)
ROA	-0.003***	-0.006	-0.003***	-0.005
	(0.00)	(0.10)	(0.00)	(0.16)
MTB	0.000	0.000	0.000	0.000
	(0.55)	(0.38)	(0.55)	(0.35)
RD	0.047***	0.043	0.056***	0.056
	(0.00)	(0.15)	(0.00)	(0.11)
Pension	-0.003***	-0.001	-0.003***	-0.000
	(0.00)	(0.39)	(0.00)	(0.59)
Union	-0.002***	-0.001***	-0.001	-0.001
	(0.00)	(0.01)	(0.23)	(0.30)
LossFirm	-0.001**	-0.000	-0.001**	-0.000
	(0.01)	(0.67)	(0.01)	(0.84)
MedianInc > Federal	-0.001**	-0.002***	-0.001**	-0.002***
	(0.04)	(0.00)	(0.02)	(0.00)
MinWage > Federal	0.001	0.001**	0.001**	0.001**
	(0.10)	(0.04)	(0.03)	(0.04)
stateIncomeTax	0.000	0.001*	0.001	0.001
	(0.28)	(0.08)	(0.23)	(0.27)
Constant	0.018***	0.014***	0.017***	0.015***
	(0.00)	(0.00)	(0.00)	(0.00)
Observations	5,386	5,386	4,278	4,278
Fixed Effects	NO	Industry & Year	NO	Industry & Year
Adj. R-squared	0.112	0.286	0.118	0.276

Table 8: Change in Cost Classification

These tables present results for testing the impact of discovering labor violations on firms' cost classification. The control group includes firms that were subjected to a WHD audit but for which no labor violations were found. P-values are presented in parentheses. ***, **, * denote significance at 1%, 5%, and 10%. Detailed variable definitions are presented in Appendix 1.

Panel A: Product Costs (COGS/Sales)

VARIABLES	WHD Violations		FLSA Violations	
DiD	**0.017***	**0.015****	**0.025****	**0.022*****
	(0.10)	**(0.05)**	**(0.03)**	**(0.01)**
Treat	-0.019***	-0.001	-0.028***	-0.000
	(0.01)	(0.86)	(0.00)	(0.94)
Post	-0.005	-0.009	-0.005	-0.009
	(0.56)	(0.19)	(0.53)	(0.17)
SalesGrowth	-0.031***	-0.017	-0.039***	-0.028*
	(0.00)	(0.17)	(0.01)	(0.07)
size	-0.021***	-0.002	-0.020***	-0.003*
	(0.00)	(0.12)	(0.00)	(0.09)
ForeignIncome	0.036***	-0.012**	0.029***	-0.009
	(0.00)	(0.02)	(0.00)	(0.13)
Leverage	-0.035***	-0.036***	-0.037***	-0.029**
	(0.00)	(0.00)	(0.00)	(0.01)
CapIntensity	0.104***	-0.133***	0.099***	-0.158***
	(0.00)	(0.00)	(0.00)	(0.00)
Intangibles	-0.054***	-0.175***	-0.062***	-0.187***
	(0.00)	(0.00)	(0.00)	(0.00)
ROA	-0.109***	-0.172***	-0.094***	-0.148***
	(0.00)	(0.00)	(0.00)	(0.00)
MTB	-0.000	-0.000	-0.000	-0.000
	(0.92)	(0.13)	(0.52)	(0.16)
RD	-1.875***	-1.929***	-1.740***	-1.779***
	(0.00)	(0.00)	(0.00)	(0.00)
Adv	-0.570***	-0.496***	-0.503***	-0.426***
	(0.00)	(0.00)	(0.00)	(0.00)
Pension	0.013	0.023***	0.013	0.028***
	(0.13)	(0.00)	(0.15)	(0.00)
LossFirm	0.010	0.021***	0.010	0.020**
	(0.22)	(0.01)	(0.27)	(0.03)
Constant	0.819***	0.848***	0.811***	0.856***
	(0.00)	(0.00)	(0.00)	(0.00)
Observations	4,925	4,925	3,873	3,873
Fixed Effects	NO	Industry & Year	NO	Industry & Year
Adj. R-squared	0.157	0.509	0.142	0.496

Panel B: Period Costs (SG&A/Sales)

VARIABLES	WHD Violations		FLSA Violations	
DiD	**-0.003**	**-0.007**	**-0.008**	**-0.011***
	(0.65)	**(0.25)**	**(0.31)**	**(0.09)**
Treat	0.012**	0.006	0.017***	0.006
	(0.02)	(0.19)	(0.00)	(0.24)
Post	0.003	0.005	0.003	0.004
	(0.62)	(0.40)	(0.61)	(0.43)
SalesGrowth	-0.008	-0.016	-0.020**	-0.024
	(0.29)	(0.17)	(0.04)	(0.16)
size	0.000	-0.008***	-0.002*	-0.009***
	(0.72)	(0.00)	(0.08)	(0.00)
ForeignIncome	-0.016***	0.008**	-0.007*	0.011**
	(0.00)	(0.03)	(0.10)	(0.01)
Leverage	-0.039***	-0.021**	-0.041***	-0.024**
	(0.00)	(0.03)	(0.00)	(0.03)
CapIntensity	-0.140***	-0.031**	-0.139***	-0.015
	(0.00)	(0.01)	(0.00)	(0.30)
Intangibles	-0.003	0.068***	0.007	0.085***
	(0.78)	(0.00)	(0.53)	(0.00)
ROA	-0.053***	-0.054**	-0.049***	-0.050**
	(0.00)	(0.01)	(0.00)	(0.04)
MTB	0.000	0.000*	0.000	0.000
	(0.35)	(0.06)	(0.47)	(0.11)
RD	1.566***	1.612***	1.456***	1.488***
	(0.00)	(0.00)	(0.00)	(0.00)
Adv	0.826***	0.507***	0.738***	0.433***
	(0.00)	(0.00)	(0.00)	(0.00)
Pension	-0.018***	-0.029***	-0.018***	-0.032***
	(0.00)	(0.00)	(0.01)	(0.00)
LossFirm	0.034***	0.026***	0.036***	0.030***
	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.238***	0.219***	0.251***	0.229***
	(0.00)	(0.00)	(0.00)	(0.00)
Observations	4,925	4,925	3,873	3,873
Fixed Effects	NO	Industry & Year	NO	Industry & Year
Adj. R-squared	0.247	0.460	0.243	0.457

Table 9: Likelihood of Tax Avoidance Sample Partition

This table present results for testing whether the impact of discovering labor violations on firms' CashETR differs for firms who are more likely to engage in higher rates of tax avoidance. The control group includes firms that were subjected to a WHD audit but for which no labor violations were found. P-values are presented in parentheses. ***, **, * denote significance at 1%, 5%, and 10%. Detailed variable definitions are presented in Appendix 1.

VARIABLES	Foreign Income		Above Industry Median Cash ETR	
	No	**Yes**	**No**	**Yes**
DiD	**0.058*** **	**0.005**	**0.016***	**0.023***
	(0.00)	**(0.76)**	**(0.07)**	**(0.05)**
Treat	-0.014	-0.008	-0.002	-0.009
	(0.22)	(0.54)	(0.81)	(0.32)
Post	-0.023*	-0.006	-0.010	-0.011
	(0.10)	(0.6)	(0.18)	(0.27)
size	0.005	-0.004	0.010***	-0.012
	(0.20)	(0.27)	(0.00)	(0.00)***
Leverage	-0.096***	-0.014	-0.031**	0.008
	(0.01)	(0.39)	(0.02)	(0.38)
CapIntensity	0.035	-0.046	0.002	0.024
	(0.21)	(0.18)	(0.87)	(0.26)
RD	-0.821***	-0.814***	-0.100	-0.473
	(0.00)	(0.00)	(0.43)	(0.01)***
Adv	0.115	-0.181	-0.120*	0.289
	(0.44)	(0.31)	(0.07)	(0.01)**
Intangibles	0.000	0.000	0.000	0.000
	(0.78)	(0.28)	(0.39)	(0.09)*
ROA	0.102*	0.004	0.244***	-0.392
	(0.10)	(0.95)	(0.00)	(0.00)***
MTB	-0.001*	0.000	0.000	0.000
	(0.06)	(0.31)	(0.94)	(0.17)
EquityIncome	-3.310**	-1.782*	-1.405**	1.988
	(0.05)	(0.07)	(0.02)	(0.01)**
LossIntensity	-0.011	-0.099***	-0.028	-0.049
	(0.75)	(0.01)	(0.11)	(0.05)**
IndustryMedianETR	0.704***	0.526***	0.617	0.774
	(0.00)	(0.00)	(0.00)***	(0.00)***
Constant	0.109	0.162**	-0.096	0.302
	(0.11)	(0.02)	(0.11)	(0.00)***
Observations	1,623	1,114	1,215	1,552
Fixed Effects	Industry & Year		Industry & Year	
Adj. R-squared	0.172	0.124	0.4436	0.2268