**The Inevitable Disclosure Doctrine and Corporate Tax Avoidance**

**ABSTRACT:** In this study, we investigate the effect of the protection of trade secrets through the adoption of the inevitable disclosure doctrine (IDD) by US state courts on corporate tax avoidance. We suggest a positive impact of IDD adoption on tax avoidance, because IDD adoption reduces information transparency by increasing the benefit of nondisclosure and, hence, creates greater opportunities for firms to engage in more aggressive tax avoidance activities. Based on a large sample of US firms between 1977 and 2011, we find a significant increase in tax avoidance for firms in states that have adopted the IDD, compared with firms in states that have not adopted it. We further show that the impact of the IDD on corporate tax avoidance is more salient in firms with lower internal information quality. Our findings have important implications for both investors and regulators.

*JEL Codes*: H26; K2; M4

*Keywords*: Trade secrets; Inevitable Disclosure Doctrine; IDD; Tax avoidance; Tax planning

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* **Introduction**

Prior research has provided inconclusive evidence concerning the relationship between corporate transparency and tax avoidance. Some researchers argue that a firm’s information environment has a direct impact on its tax avoidance, as an opaque information environment can help the firm better obfuscate its tax liabilities to government agencies (e.g., Neuman et al. 2013; Chen and Lin 2017; Kerr 2018). On the basis that tax planning obscures the firm’s actual performance to reduce tax, other researchers contend that tax avoidance negatively affects the firm’s information environment (e.g., Ayers et al. 2009; Comprix et al. 2011; Balakrishnan et al. 2019).[[1]](#footnote-1) In this paper, we aim to provide new evidence on the casual association between corporate information environment and tax avoidance using the staggered adoption of the inevitable disclosure doctrine (IDD) by US state courts that generates heterogeneity in the firm’s disclosure practices.

According to the Uniform Trade Secrets Act (UTSA) of 1979 (amended in 1985), a trade secret is a piece of information that 1) derives economic value, actual or potential, from not being generally known to people outside the organization; and 2) is the subject of efforts that are reasonable, under the circumstances, to maintain its secrecy. Employers are often concerned about the leakage of their trade secrets when key employees depart, especially when these employees fail to sign a non-compete agreement. If the hiring of a departing employee by a competitor inevitably leads to the divulgence of the firm’s trade secrets and causes the firm irreparable harm, state courts in the US can allow the employer to use trade secret law to prevent a former employee from working for, or limiting their responsibility with, the competitor. Courts and scholars refer to this type of trade secret claims as the inevitable disclosure doctrine (hereafter, the IDD).[[2]](#footnote-2) The IDD removes one of the most important channels through which a firm’s competitors can obtain its confidential information: the recruitment of the key employees.

Identifying the causal effect of the corporate information environment on tax avoidance is challenging due to the potential reverse causality. To address this challenge, we take the advantage of the staggered adoption of the IDD by US state courts. Once the IDD is adopted in a legal ruling by a state court, firms located in that state can stop their employees from working for their rivals as it will inevitably lead to disclosure of former employers’ confidential information and pose a threat to their trade secrets. The IDD, which covers all trade secrets and employees, does not require proof of the actual divulgence of secrets or damage. Since former employees are the primary channel through which firms lose their trade secrets ([Klasa et al.](#page19) [2018](#page19); Ali et al. 2019), the IDD provides enhanced protection of trade secrets and exploiting the setting of IDD adoption does not rely on the measurement of trade secrets protection at an individual firm. As the occurrence of IDD adoption by a state court is not systematically associated with economic situations of the state ([Klasa et al.](#page19) [2018](#page19)), IDD adoption creates exogenous variations in corporate disclosure practices when holding other determinants of tax avoidance constant.

Prior research suggests that IDD adoption increases the proprietary cost of disclosure for a firm because competitors rely more on public disclosure to access proprietary information in the presence of the IDD that precludes the divulgence of trade secrets through the unrestricted movement of employees. Furthermore, if a firm discloses valuable information (e.g., production method or customer lists) in its financial statements, the information loses trade secret status. In order to be protected by the IDD, rational managers would decrease the disclosure of proprietary information, resulting in lower corporate transparency (e.g., Li et al. 2018a; Kim et al. 2000).[[3]](#footnote-3) Reduced transparency has been shown to affect tax avoidance. One strand of research on tax avoidance suggests that the complexity and obfuscatory nature of tax avoidance require opacity (Kim et al. 2011). Because adoption of the IDD reduces a firm's transparency, it enables firms to become more aggressive in tax avoidance.

Empirically, we employ a difference-in-differences approach by creating an indicator variable (IDD) that equals 1 for state-years when the IDD is adopted by the state court, and 0 in all other state-years. Thus, we are able to compare changes in the tax avoidance of firms in states that experience a change in IDD adoption (treatment group) with changes in the tax avoidance of firms in states that do not adopt the IDD (control group).[[4]](#footnote-4) Following prior research (e.g., Chen et al. 2010), we use multiple measures of tax avoidance. As Graham et al. (2013) emphasize that effective tax rates are the most important measure to capture corporate tax avoidance, our first measure is the firm's effective tax rates (ETR), calculated as total tax expense divided by pre-tax income. Our second measure of tax avoidance is book-tax differences (BTD), calculated as the difference between pre-tax book income and estimated taxable income.[[5]](#footnote-5) Our sample consists of 70,739 firm-year observations from the US for the period of 1997 to 2011.[[6]](#footnote-6)

We further investigate whether the effect of the IDD on tax avoidance differs between firms with different levels of internal information quality (IIQ). Consistent with prior studies (Chen and Lin, 2017; Kerr, 2018), we use analyst coverage and absolute value of discretionary accruals as the proxies of IIQ. We expect that the effect of the IDD on tax avoidance is more pronounced in firms with lower IIQ, as IDD adoption could play a more significant role in obfuscating the information environment of these firms and provide opportunities for them to become more aggressive in tax avoidance.

Our study reports several important findings. Our main analysis demonstrates a significantly positive impact of IDD adoption on corporate tax avoidance, indicating that firms headquartered in IDD-adopting states are more likely to engage in greater tax avoidance activities than those in states that have not adopted the IDD. The results continue to hold after we control for firm, state and industry fixed effects, which alleviate the potential concerns that our results are driven by unobserved time-invariant heterogeneity. Furthermore, we show that the impact of the IDD on corporate tax avoidance is more salient in firms with lower internal information quality *ex ante* (firms with lower analyst coverage and larger absolute discretionary accruals). This result indicates that IDD adoption helps firms with poor internal information quality to further obfuscate their information environment, thus enabling them to engage in greater tax avoidance.

One common concern with the causal interpretation of our findings is that the difference-in-differences approach hinges on the “parallel trend assumption”, which requires that the trends in corporate tax avoidance practices between the firms in states that adopt the IDD (treatment group) and those in states that do not (control group) are similar before IDD adoption. Consistent with the assumption, our results show that firms started engaging in greater tax avoidance strategies only after the adoption of the IDD in their headquartered states, but not before. Our results are robust to alternative measures of tax avoidance, dropping observations from states that never adopt the IDD, propensity-score matching (PSM) and instrumental variable estimation to address selection bias concerns.

We are aware of one concurrent study that resembles similarity to ours. Li et al. (2018b) investigate the effect of IDD adoption on tax avoidance through the lens of managers’ career concerns, as the IDD increases (limits) the cost of job loss (outside career opportunities) for under-performing (out-performing) managers. Consequently, the former (latter) would engage more (less) in tax avoidance. They find evidence consistent with their conjecture. A key difference between these two studies is that we scrutinize the effect of change in corporate transparency (through IDD adoption) on tax avoidance. The enhanced benefit of non-disclosure of proprietary information induces firms to reach a new equilibrium of disclosure, which gives firms more opportunities to engage in tax avoidance. This conjecture is corroborated by our results. Collectively, these two studies present distinctive interpretations of the tax-related consequences of IDD adoption in US states.

We contribute to the literature in two dimensions. First, few studies have examined the causal effect of information asymmetry on tax avoidance. This gap is surprising, as managers clearly face conflicts between financial reporting quality and tax planning (e.g., Scholes and Wolfson 1992). The paucity of research might be partially driven by potential endogeneity concerns. The primary source of endogeneity is reverse causality, as seen in the inconsistent conclusions of previous studies. For example, Kerr (2018) finds that information asymmetry leads to tax avoidance. In contrast, several other studies find that aggressive tax planning affects earnings quality and information asymmetry (e.g., Ayers et al. 2009; Comprix, et al. 2011; Balakrishnan et al. 2019). Therefore, the question of whether the information environment affects or is affected by tax avoidance is under debate. Furthermore, unobservable factors could be simultaneously correlated with information asymmetry and tax avoidance. Our study takes advantage of the adoption of the IDD as an exogenous shock to information transparency to address the endogeneity issue that plagues prior research and provides fresh insights into the casual association between the corporate information environment and tax avoidance. Second, we add to the nascent research on the economic consequences of strengthened trade secret protection ([Klasa et al.](#page19) [2018](#page19); [Li](#page19) [et al.](#page19) [2018](#page19)a). [Klasa et al.](#page19) ([2018](#page19)) show that enhanced trade secret protection through IDD adoption encourages firms to take more risks, as measured by higher firm leverage. [Li et al.](#page19) ([2018](#page19)a) find that IDD adoption increases the proprietary cost of disclosure and firms affected by IDD adoption have lower levels of disclosure. We extend this line of enquiry by showing that IDD adoption also affects corporate tax avoidance activities.

The rest of the paper is structured as follows. Section 2 explains the institutional background of the IDD. Section 3 develops our hypotheses. Section 4 discusses the sample and research design while section 5 presents our main results. Section 6 provides robustness tests and section 7 concludes.

* **Background Information of the IDD**

Trade secrets are regarded as the most important intellectual property that adds value to a business and allows firms to maintain their competitive advantage. In the US, protection of trade secrets mainly relies on common law at the state level. One of the key laws protecting trade secrets is recognized as the Inevitable Disclosure Doctrine (IDD). Under IDD, employees can be stopped from working for rivals such work will inevitably lead to the disclosure of their former employers' trade secrets. Therefore, firms in the state where the state court has adopted the IDD can rely on it to prevent employees from being employed by rival firms.[[7]](#footnote-7)

The core principle of the IDD lies in the concept of “threatened misappropriation" of trade secrets ([Klasa et al.](#page19) [2018](#page19)). In other words, employers do not need to provide evidence of the actual divulgence of trade secrets by their former employees. Mere threats to the firm's trade secrets are considered enough to trigger protection under the IDD and prevention of former employees from joining rivals. The PepsiCo Inc *v*. Redmond, 54 F.3d 1262 (the Seventh Circuit, 1995) is a prominent case to illustrate the IDD's “threatened misappropriation" concept. William Redmond, Jr, worked for PepsiCo in its North America division between 1984 and 1994, and had access to inside information and the trade secrets of the firm. In November 1994, Redmond accepted an offer from Quaker to be the vice president of field operations for the sports drink “Gatorade”. PepsiCo and Quaker were competing head-to-head in the “sports drink” and “new age drink” markets. Based on the accusation that Redmond would inevitably disclose trade secrets or confidential information to his new employer, PepsiCo filed a suit to seek a temporary restraining order to enjoin Redmond from taking up his new job at Quaker. The district court recognized the IDD in this case and ruled against Redmond joining Quaker Oats because Redmond would inevitably disclose PepsiCo's trade secrets (such as pricing, costs, marketing information) to adequately fulfil his responsibilities at Quaker, which would give Quaker undue competitive advantage. The Seventh Circuit affirmed the district court order to enjoin Redmond from assuming his position at Quaker. The PepsiCo case has been followed by other state courts since 1995.

Although protection of trade secrets has been, to some extent, codified into the statutory US Uniform Trade Secrets Act (UTSA), the principle of IDD is not explicitly included in the UTSA, and the common law application of IDD is independent of the UTSA ([Li et al.](#page19) [2018](#page19)a; [Klasa et al.](#page19) [2018](#page19)). While the UTSA requires evidence of actual misappropriation of trade secrets, the IDD provides protection (such as an injunction against former employees working for competitors) based on “mere threats” to trade secrets. As evidence of actual divulgence can be hard to provide due to the confidential nature of trade secrets, the IDD will provide more protection of trade secrets than the UTSA by reducing mobility-induced leakage of trade secrets to rivals.

The IDD also provides stronger protection of trade secrets than the contractual protection mechanisms of trade secrets (e.g., non-disclosure agreements and non-compete covenants that are often contained in labour contracts). The violation of contractual agreements is often difficult to prove in court because this requires proof of the actual divulgence of trade secrets. This requirement can deter firms from pursuing protection of their secrets due to the confidential nature of the information. Even if a firm ultimately won the case, the revelation of the secrets to competitors during the legal process would cause unavoidable damage to the business. Moreover, contractual agreements are often enforceable only within the state ([Garmaise](#page18) [2011](#page18)). If the competitor resides in another state, contractual agreements on confidentiality will be of limited assistance. In comparison, application of IDD neither suffers from these evidential and geographic limitations nor requires employers to reveal the content of their trade secrets. To summarize, IDD adoption provides more protection of trade secrets than other protection mechanisms.

* **Related Literature and Hypothesis Development**

Prior research has provided several studies empirically investigating the relationship between corporate transparency and tax avoidance. Some prior studies examine the negative effect of tax avoidance on corporate transparency. For example, Ayers et al. (2009) find that the information content of high tax-planning firms’ taxable income is much lower than that of low tax-planning firms. Comprix et al. (2011) examine the effect of tax avoidance (measured by book-tax differences) on the divergence of investor opinions. Book-tax differences reflect subjective judgement of management concerning future tax consequences and increase the opportunities of aggressive reporting. They find positive associations between book-tax differences and the measures of investor uncertainty regarding the information conveyed in financial reports. Balakrishnan et al. (2019) investigate whether firms with aggressive tax avoidance have a less transparent information environment. They postulate that tax planning can increase the financial complexity of the firm, which cannot be adequately clarified through communications with outside parties. Consistent with their argument, they find evidence showing a significant association between aggressive tax planning and lower corporate transparency.

Another stream of literature analyses the impact of transparency on tax avoidance. As transparency is associated with better governance and better governed firms are more likely to engage in more sustainable tax strategies, Neuman et al. (2013) show that firms with sustainable tax strategies are associated with more transparent information environments. Hanlon et al. (2015) examine the relationship between tax evasion through offshore tax havens and foreign portfolio investment. They find that improvement of information-sharing with tax havens decreases inbound investment from such tax havens, suggesting that transparency discourages tax evasion. Gallemore and Labro (2015) argue for the importance of a firm’s internal information environment in supporting tax avoidance outcomes. They show that effective tax rates are lower for firms that have high internal information quality. Chen and Lin (2017) investigate the effect of information asymmetry, as reflected in analyst coverage, on corporate tax avoidance. They hypothesize that analysts care about corporate tax policies and scrutiny by analysts discourages firms from engaging in risky tax aggressiveness. They find that firms avoid tax more aggressively after a reduction in analyst coverage. Kerr (2018) investigates the association between financial reporting transparency and tax avoidance. As an opaque information environment can help the firm better obfuscate its tax liabilities to government agencies, he finds that firms with less reporting transparency exhibit higher levels of tax avoidance.

These prior studies, which document evidence on the various aspects of the relationship between corporate transparency and tax avoidance, are related to our study. However, the evidence is inclusive on whether changes in a firm’s information environment can cause changes in its tax avoidance behaviour or vice versa. We aim to fill the research gap by identifying an exogenous shock to the information environment and providing new evidence on the causality of the relationship between corporate transparency and tax avoidance.

Protection of trade secrets has received growing attention in the finance and accounting literature (Ali, et al. 2018; [Li et al.](#page19) [2018](#page19)a; [Klasa et al.](#page19) [2018](#page19)). Using data on CEO non-compete agreements (NCAs), Kini et al. (2020) explore the determinants and economic consequences of NCAs. They find that enforceable NCAs are positively associated with CEO compensation and more likely when departing CEOs are likely to work for competitors. The growing research on trade secret protection also consistently documents that IDD adoption reduces the revelation of confidential information to competitors through employee mobility, which decreases the competitive threats confronting firms in the product market ([Png et al.](#page19) [2013](#page19); [Klasa et al.](#page19) [2018](#page19)). In what follows we discuss the mechanisms through which the protection of trade secrets, as reflected by the adoption of the IDD, can influence a firm's tax avoidance activities.

Our argument focuses on the link between information transparency associated with IDD adoption and the firm’s tax avoidance incentives. We argue that the adoption of the IDD generates exogenous variations in a firm's proprietary costs of disclosure and, as a result, changes the firm's overall information environment. First, the IDD increases a firm's proprietary costs of disclosure by increasing the marginal value of disclosure to its rivals through a substitution channel. That is, with less access to trade secrets via employees' job switching, rival firms would rely more heavily on a firm's public disclosures in discovering its proprietary information. This reliance makes the firm’s disclosure more valuable to its rivals and also means the sacrifice of higher economic value for the disclosing firm and its management (Li et al. 2018a; Ali et al. 2019; Kim et al. 2020).

Second, for information to be protectable under trade secret laws (including the IDD), it must not be readily ascertainable by persons who could obtain economic value from its use. For example, once a firm discloses a piece of information, such as customer lists or production method in its financial reports, the information loses its trade secret status. Thus, to take advantage of the protection offered by the IDD, firms must avoid disclosing their proprietary information to the capital markets because such disclosure essentially makes the information less protectable by the IDD. Put in a different way, the adoption of the IDD increases the marginal benefits of nondisclosure. As a result, firms disclose less in response to IDD adoption, resulting in decreasing corporate transparency and an information environment which has deteriorated. The evidence documented in prior research is consistent with this argument. For instance, Li et al. (2018a) show that firms respond to IDD adoption by reducing the level of disclosure regarding their customer identities, which are key in understanding how firms generate their taxable revenues. Ali et al. (2019) find that managers are more likely to withhold bad news after IDD adoption as restrictions on external employment opportunities under the IDD increase the costs of a job loss. Kim et al. (2020) document a significant decrease in disclosures of R&D activities and other confidential information after IDD adoption. They further document a significant decrease in overall firm-specific information production, taking into consideration both proprietary and non-proprietary information.

Further, reduced transparency has been shown to be related to tax avoidance. One strand of research on tax avoidance suggests that the complexity and obfuscatory nature of tax avoidance require opacity (e.g., Desai and Dharmapala 2006; Kim et al. 2011). For example, Kim et al. (2011) argue that managers engage in tax avoidance to facilitate rent extraction through bad news hoarding activities which mask and obscure managers’ opportunistic behaviour for extended periods. Managers prefer to increase the opacity of tax-related transactions as complexity and obfuscation are necessary to minimise the risk of tax avoidance arrangements being detected by government agencies. Therefore, as IDD adoption leads to less transparency in a firm’s information environment, it gives the firm more opportunities to engage in aggressive tax avoidance. Based on the discussion, we expect a positive impact of IDD adoption on tax avoidance. Consequently, H1 is formulated as follows:

***H1:*** *Protection of trade secrets through IDD adoption has a positive effect on a firm’s involvement in tax avoidance.*

There could be arguments against H1. For example, Dyreng et al. (2019) have developed a theoretical model to explicate how labour market power can influence a firm’s incentive to engage in tax avoidance. In particular, if the firm has high market power, it can partially pass the tax burden to other stakeholders such as employees and consumers, which suggests that such firms are less incentivized to avoid tax. The adoption of IDD unambiguously reduces employee mobility and enhances the labour market power of employers, which could potentially lead to less tax avoidance. A recent study by Gao et al. (2018) finds a significant decrease in firms’ upward earnings management after IDD adoption, consistent with employers having a reduced incentive to manage earnings upward when the labour market position becomes strengthened following employees’ outside opportunities being restricted by the IDD. If the same logic holds in the setting of tax avoidance, IDD adoption could result in less avoidance, which contradicts H1. Therefore, we consider the association between IDD adoption and tax avoidance as an empirical question that deserves further investigation.

1. **Data and Research Design**

*4.1 Data*

Table 1, Panel A reports the sample selection process. We start with all firms in the Compustat database for the period 1977 to 2011. We exclude firms in the financial and utility industries (SIC code 6000-6999; 4900-4999 respectively), foreign firms, and firms with missing values for the variables used in the analyses. Our final sample consists of 70,739 frim-year observations from 1977 to 2011.

Table 1, Panel B presents the frequency of firm-year observations in each state during our sample period. California is the state that contributes the largest number of observations (10,386), while Arkansas is the state that contributes the least number of observations (7).

Table 1, Panel C provides the summary statistics. The mean value of the IDD suggests that 40.9 percent of our sample observations are in the states that adopt IDD. The mean of ETR is 0.278 and varies from 0.047 in the 25th percentile to 0.408 in the 75th percentile, implying that there is substantial variation in firms’ engagement in tax avoidance. On average, the sample’s long-term debt equals 18 percent of total assets and its foreign income constitutes 0.5 percent of total assets. The mean ROA of the sample is 1.9 percent and 43.1 percent of sample firms have net operating loss carry-forward. Finally, the mean PPE equals 32.7 percent of total assets and 9.8 percent of sample firms’ assets are intangibles.

[Insert Table 1 about here]

*4.2 Research Design*

We use a difference-in-differences approach to exploit the exogenous variations in trade secret protection arising from the staggered adoption of the IDD in US states. As the protection of trade secrets is strengthened for firms in the states where the IDD has been adopted, this method effectively compares the difference in tax avoidance between the firms in the treatment group (state-years when the IDD is adopted) and those in the control group (state-years when the IDD is not adopted). In this way, we can provide evidence on the causal effects of IDD adoption on corporate tax avoidance. Our empirical model is specified as follows.

 

where, *Tax* represents our measures of corporate tax avoidance. *Tax* is either the firm's effective tax rates (ETR) or book-tax differences (BTD). As tax avoidance is defined as the reduction of the firm's tax liability ([Hanlon and Heitzman](#page18) [2010](#page18)), lower effective tax rates (ETR) and higher book-tax differences (BTD) capture the effects of the whole spectrum of tax planning strategies and activities engaged by the firm to avoid tax ([Kubick et al.](#page19) [2015](#page19)). ETR is calculated as total tax expense (TXT) divided by pre-tax income (PI). ETR is based on the expense accruals and reflects the tax avoidance strategies which result in permanent book-tax differences (such as investments in tax-exempt assets or tax shelters). BTD measures the difference between a firm’s reported financial income and its taxable income. BTD is calculated as pre-tax book income (PI) less estimated taxable income ((TXFED + TXFO) / statutory marginal tax rate) divided by lagged total assets (AT).

Our main variable of interest in Equation (1) is the IDD. We utilize the list of IDD adoption and rejection in US states compiled by [Klasa et al.](#page19) ([2018](#page19)) to code the indicator variable IDD in Equation (1).[[8]](#footnote-8) These precedent-setting cases and court rulings are considered to be well known by firms and, hence, firms are expected to adjust their policies in response to these trade secret laws ([Li et al.](#page19) [2018](#page19)a). Following [Klasa et al.](#page19) ([2018](#page19)), the IDD indicator is equal to 1 for state-years when the IDD is adopted by the state court, and 0 in all other state-years. All other state-years include both the state-years when the prior adoption was reversed and the state-years when the IDD was never adopted by the state court. Specifically, we set the IDD indicator to zero in all years preceding the date of the precedent-setting case in a given state, and one in the year of the case and afterwards. We allow the value of the IDD indicator to revert to zero when a subsequent state court decision reverses its previous position of IDD adoption and rejects the IDD. For the other states whose case laws did not explicitly consider, or never accepted, the IDD, we set the IDD indicator equal to zero in every year. To test H1, we expect the coefficient on the IDD indicator to be significantly negative (positive) when the effective tax rates (book-tax differences) are used to capture the firm’s tax avoidance activities.

We control for the determinants of tax avoidance activities that are documented by prior research (e.g., [Chen et al.](#page18) [2010](#page18); [Kubick et al.](#page19) [2015](#page19)). In particular, we include firm size (SIZE), market-to-book ratio (MTB), leverage (LEV), return on assets (ROA), indicator for loss carry-forward (NOL), change in loss carry-forward (DNOL), foreign income (FI), property, plant and equipment (PPE), equity income in earnings (EQINC), and intangible assets (INTAN). We also include state and year fixed effects to control for any state and time-varying characteristics. The standard errors are clustered at the firm level.

1. **Empirical Results**

*5.1 Results of Testing H1*

Table 2 presents the results of estimating Equation (1). The dependent variable is ETR (BTD) in Model 1 (Model 2). The variable of interest is the IDD indicator. Across the models we introduce the firm level controls suggested by prior research, and we also include the industry (three-digit SIC), year and state fixed effects to account for factors that do not vary across firms within a given industry, year and state. The results in Table 2 lend support to H1, showing that firms in states where the IDD has been adopted are more aggressive in tax avoidance (reflected in lower effective tax rates and larger book-tax differences), *ceteris paribus*. The economic magnitudes of the findings are significant. For example, based on the results in Model 1, IDD adoption by a state is associated with a 2.51 percent reduction in the effective tax rates relative to the sample mean effective tax rates. The results in Table 2 are consistent with H1 and confirm the positive effects of IDD adoption on corporate tax avoidance. It is plausible that IDD adoption significantly increases the benefit of non-disclosure and reduces corporate transparency, which creates more flexibility for firms to engage in aggressive tax avoidance activities.

In respect of the control variables, our results are broadly consistent with those documented in previous studies (e.g., [Chen et al. 2010](#page18); [Kubick et al. 2015](#page19)). We find that the coefficients on firm size, leverage, return-on-assets, change in loss carry-forward and intangible assets are significantly positive, which indicate that large, highly leveraged, more profitable firms and firms with higher intangible assets are less likely to engage in tax avoidance. In contrast, the coefficients on MTB, NOL, PPE and EQINC are significantly negative, which suggest that firms with better investment opportunities, loss carry-forward, higher tangible assets and more equity income are more likely to avoid tax.

[Insert Table 2 about here]

*5.2 Further Analyses*

In this section we test whether the impact of IDD adoption on tax avoidance differs in firms with different levels of internal information quality (IIQ) *ex ante*. Following the literature (e.g., Chen and Lin 2017; Kerr 2018), we use analyst coverage and absolute value of discretionary accruals as the proxies of IIQ, with the assumption that firms followed by more analysts and reporting smaller absolute discretionary accruals have better internal information quality (IIQ). Empirically, we partition the sample based on the sample median analyst coverage (absolute discretionary accruals). Then we run Equation (1) in these sub-samples and compare the coefficients on the IDD indicator between high and low IIQ firms. We expect the effect of IDD adoption on tax avoidance to be more pronounced in the sub-sample characterised with low IIQ, since IDD adoption would play a more important role in obfuscating the information environment for these firms and enable them to be more aggressive in tax avoidance.

The results, presented in Table 3 are consistent with our prediction. In Panel A, the tax avoidance measure is effective tax rates. We observe the positive impact of IDD adoption on tax avoidance is significant only in the sub-sample with less-than-median analyst coverage. The positive impact of IDD adoption on tax avoidance is significant in both sub-samples when IIQ is measured with absolute discretionary accruals, but the magnitude of IDD coefficient is lager in the sub-sample with higher-than-median absolute discretionary accruals (low IIQ). We report similar findings when tax avoidance is measured with book-tax differences in Panel B. The coefficient on the IDD is significant only in the sub-sample with less-than-median analyst coverage, and the magnitude of the coefficient on the IDD is larger in the sub-sample with higher-than-median absolute discretionary accruals. The results are consistent with the argument that IDD adoption increases the benefit of non-disclosure of proprietary information and provides more opportunity for firms to more aggressively avoid tax. Such a positive impact of IDD adoption on tax avoidance is found to be more salient among firms with lower internal information quality.

[Insert Table 3 here]

1. **Robustness Tests**

*6.1 Timing of IDD Adoption*

Our interpretation of a causal effect of IDD adoption on corporate tax avoidance relies on a critical assumption, commonly known as the “parallel trends assumption". This assumption requires that the trends in outcomes between the treated and control groups are similar before the exogeneous shock. In our context, this translates into the similar levels of tax avoidance activities between firms in states that have adopted the IDD and those in states that have not. In this section, we explore whether the parallel-trend assumption is satisfied before IDD adoption. Specifically, we re-estimate our baseline specifications (Models 1 and 2 in Table 2) by replacing the IDD indicator with four lead-lag terms. They are: IDD Adoption -2, IDD Adoption -1, IDD Adoption0, IDD Adoption+1 and IDD Adoption2+, which are equal to one if the firm is headquartered in a state that will adopt the IDD in two years, will adopt the IDD in one year, adopted the IDD in the current year, adopted the IDD one year ago, or adopted the IDD two or more years ago, respectively, and zero otherwise. In addition, we also include a dummy variable of IDD Rejection, which equals one if the state where the firm is headquartered has rejected the previously adopted IDD in year t, and zero otherwise. Year, industry and state fixed effects are included in the analyses.

In Models 1 and 2 of Table 4, we find that the coefficients on IDD Adoption -2, IDD Adoption-1, IDD Adoption0 and IDD Adoption+1 are all insignificant. In contrast, we report that the coefficient on IDD Adoption2+ is negative (positive) and significant in Model 1 where effective tax rates are the dependent variable (Model 2 where book-tax differences are the dependent variable). These results suggest that firms started engaging in more aggressive tax avoidance strategies after the adoption of the IDD, but not before. It is plausible that the ETR (BTD) becomes lower (larger) two years after adoption of the IDD, since it takes time for the benefit of tax avoidance strategies to materialize. Importantly, the coefficient on IDD Rejection is positive and significant in Model 1 (the coefficient is insignificant in Model 2), which suggests a decrease in tax avoidance after the IDD has been rejected in a state in which IDD was previously adopted. After the rejection of the IDD, trade secrets can be more easily divulged to competitors with the mobility of key employees. Such competitive threats reduce the certainty of future earnings and the benefit of tax avoidance and the return from investment on tax avoidance becomes lower. Hence, firms would engage in tax avoidance to a lesser extent after IDD rejection. Collectively, our results provide evidence supporting a positive impact of IDD adoption on tax avoidance.

[Insert Table 4 here]

*6.2 Dealing with Local Economic Conditions*

One alternative explanation for our main results is that changes in unobservable local economic conditions (e.g., poor investment opportunities) are associated with both state courts' decisions on the IDD and firms' corporate tax avoidance strategies.[[9]](#footnote-9)If this is the case, then the observed relationship between the IDD and corporate tax avoidance could be spurious. In this section, we address such concerns by matching each IDD-adoption state (treatment group) with its neighbouring non-IDD-adoption states (control group).

[Li et al.](#page19) ([2018](#page19)a) argue that unobserved changes in economic conditions are likely to spread across neighbouring states, thus making them exposed to the same local economic conditions. Therefore, the neighbouring-state matching allows us to compare the corporate tax avoidance activities of firms in the state that experience similar economic conditions.[[10]](#footnote-10) If the observed impact for the full sample is exclusively driven by any omitted variables related to local economic conditions, then one should expect the relationship between IDD adoption and tax avoidance to be insignificant. In Models 1 and 2 of Table 5, we re-estimate Equation (1) using the neighbouring-state matched sample. Our results show that the coefficient on the IDD continues to be negative and statistically significant at the one percent level, which suggests a decrease in effective tax rates and an increase in book-tax differences following IDD adoption. Collectively, these results suggest that the likelihood of unobservable changes in the local economic conditions are unlikely to drive the significant impact of the IDD on tax avoidance behaviour.

[Insert Table 5 here]

*6.3 Alternative Measures of Tax Avoidance*

In the main analysis we use book effective tax rates (ETR) and book-tax differences (BTD) as the primary proxies of tax avoidance. In this section, we employ alternative measures of tax avoidance to rule out that our results are driven by the choice of specific tax avoidance measures. Table 6 presents the results of estimating Equation (1) using alternative measures of tax avoidance. In Model 1 of Table 6, the dependent variable is the long-run effective tax rates (LRETR), which are calculated as the sum of total tax expense from year t-4 to year t, divided by the sum of pre-tax book income, accumulated over the same period ([Dyreng et al. 2008](#page18); [Kubick et al. 2015](#page19)). We find the coefficient on the IDD to be negative and significant at the one percent level. In Models 2 and 3, we use ETR2, which is calculated as current tax expense divided by net income before extraordinary items plus current tax expense plus minority interest less extraordinary items less equity in earnings and ETR3, which is calculated as total tax expense less change in deferred tax divided by operating cash flow, respectively ([Lennox et al.](#page19) [2013](#page19)). Our results show that, in both models, the impact of the IDD on tax avoidance continues to remain statistically significant.

Next, in Model 4 of Table 6, we consider whether our inference holds if we replace ETR measure with Cash ETR, which is defined as cash taxes paid divided by pre-tax income ([Kubick et al. 2015](#page19)). The rationale behind using Cash ETR is that it reflects deferral strategies that produce temporary cash savings by decreasing (increasing) cash taxes in the current (future) period ([Edwards et al.](#page18) [2016](#page18)). We continue to find a significantly negative effect of the IDD on cash ETR. Finally, in Model 5, we use the probability of engaging in tax shelter (SHELTER), which is defined as a dummy variable that equals one if a firm's estimated probabilityof using tax shelter is above the yearly sample median, and zero otherwise.[[11]](#footnote-11) We show that the coefficient on the IDD to be positive and significant. The results imply that firms in states that have adopted IDD have a higher likelihood of using tax shelters to engage in tax avoidance. These results show that our main findings of estimating Equation (1) are robust to the use of alternative measures of tax avoidance.

[Insert Table 6 here]

*6.4 Removing Non-Precedent Setting States*

In this section, we assess the robustness of our results by dropping observations in states that never adopted the IDD. We do so because [Li et al.](#page19) ([2018](#page19)a) suggest a court will study previous decisions on the IDD before ruling a new IDD case. In contrast, if a state court has never considered the IDD, then it remains unclear whether the IDD would be viable in that state. Compared with non-precedent setting states, precedent setting states should have clearer and stronger position on trade secret protection. Therefore, the effect of IDD adoption on tax avoidance is expected to hold after observations from non-precedent setting states are removed. The results, as presented in Panel A of Table 7, lend credence to our prediction.

*6.5 Placebo Test*

To further demonstrate the credibility of our results, we conduct the Placebo test in this section. Specifically, we randomly assign a pseudo-IDD adoption (rejection) year, which is different from the actual IDD adoption (rejection) year, for each state that adopted (rejected) the IDD. Then we use this pseudo-IDD year to create an indicator variable, *Placebo IDD*, following the same procedures used in our main tests. We re-estimate Equation (1) by replacing the IDD in Equation (1) with *Placebo IDD*. The results of the placebo test are reported in Panel B of Table 7. As shown in Panel B, the coefficients on *Placebo IDD* are insignificant, suggesting that these randomly selected pseudo-IDD adoption (rejection) years are not significantly associated with corporate tax avoidance. The placebo analyses enhance the credibility of our main results by showing that our main results are not observable for randomly selected years that are different from the actual IDD adoption (rejection) years.

 [Insert Table 7 here]

*6.6 Propensity-Score Matching*

We also use propensity-score matching (PSM) to ensure that the treatment group has similar observable characteristics to the control group before IDD adoption. We focus on the following firm-level variables in the matching process: firm size, market-to-book, leverage and ROA. We use a nearest neighbour-matching approach without replacement subject to a calliper constraint of 0.01. That is, without replacement, we match each “treatment firm” (a firm headquartered in states that have adopted the IDD) with one matching firm (a firm headquartered in a state that has not adopted the IDD) with the closet propensity scores within a maximum distance of one percent. We have 24,387 (22,412) observations for this analysis when the dependent variable is ETR (BTD). The matching is successful as the normalized difference of firm-specific variables between the treatment and control groups is insignificant. We repeat the regression analysis using the PSM sample, and the untabulated results remain qualitatively unchanged and continue to show a significantly positive effect of IDD adoption on tax avoidance.

*6.7 Instrumental Variable Estimation*

To address the self-selection bias that firms who adopt aggressive tax avoidance strategies may intentionally locate their headquarters in states that have adopted the IDD, we employ an instrumental variable (IV) approach. This requires us to find a suitable instrument that satisfies both the relevance (i.e., associated with the IDD) and exclusion (i.e., no direct effect on the firm’s tax rates except through the IDD). To do so, we focus our attention on state-level factors that could influence the likelihood that a state court would adopt the IDD. Specifically, we use *State Rivals*, as our main instrument, which is a dummy variable that equals one if the number of firms headquartered in the same state that operate in the same three-digit SIC code during the year is larger than the sample median, and zero otherwise (Gao et al. 2018). Gao et al. (2018) show that employees have better employment mobility when there are large numbers of industry peer firms available in the local labour market. Therefore, the risk of rival firms poaching employees with the knowledge of trade secrets is relatively higher in these states, making it more likely for state courts to adopt the IDD. We thus hypothesize that the higher number of industry rivals within the same state, the higher the likelihood the states recognizes the IDD. In the first stage, we use the instrumental variable to predict the likelihood that IDD would be adopted by a state, and in the second stage analysis, the predicted likelihood of IDD adoption is used to replace the IDD in Equation (1). The untabulated results show that the predicted IDD continues to have a positive effect on tax avoidance (measured with effective tax rates and book-tax differences).

1. **Conclusions and Discussions**

In this paper we examine the impact of the protection of trade secrets through IDD adoption on corporate tax avoidance. The IDD is a legal doctrine that protects a firm’s trade secrets through reducing labour mobility induced information leakage to its competitors. We hypothesize that IDD adoption significantly increases the benefit of non-disclosure of proprietary information, which decreases information transparency and helps firms mask their tax avoidance activities. Using a difference-in-differences analysis, we find that firms located in states that have adopted the IDD engage in more aggressive tax avoidance than those in non-adopting states. Using analyst coverage and discretionary accruals as the *ex-ante* measures of internal information quality, we further find that the impact of IDD adoption on corporate tax avoidance is more salient for firms with low internal information quality. The results are consistent with our hypothesis that IDD adoption reduces corporate transparency and provides more opportunities for firms to avoid tax. We also conduct a battery of robustness tests, which include addressing the timing of IDD adoption and local economic conditions, adopting alternative measures of tax avoidance, neighbouring-state and propensity-score matchings, instrumental variable approach, and Placebo test. Our results persist through these sensitivity checks.

Our findings indicate that IDD adoption imposes a direct impact on corporate tax avoidance. Since the main consideration of IDD adoption is to maintain a balance between employers’ interests in trade secret protection and employees’ interests in labour mobility (Harris 2000), corporate tax avoidance is an unintended consequence of IDD adoption. Given that firms in states where the IDD has been adopted are more likely to engage in tax avoidance, these firms are subject to higher tax risk and such risk needs to be factored into the decision-making process of investors and policy makers. Our findings also suggest the importance of maintaining corporate transparency in deterring tax avoidance activities. IDD adoption creates an endogenous shock to corporate information environment, thereby providing a natural experiment on the causal relationship between corporate information environment and tax avoidance. By showing that reduced transparency after IDD adoption leads to more aggressive tax avoidance behaviour, our study sheds more light on the debate and mixed evidence in prior literature on the relationship between information asymmetry and tax avoidance.

Our study is subject to several limitations. First, as information environment is not directly observable, we rely on the adoption of the IDD to infer the changes in the firm’s information environment. We also rely on the measures of analyst coverage and discretionary accruals to infer the quality of the firm’s internal information environment. Moreover, our tax avoidance measures are limited to the direct tax avoidance measures of effective tax rates and book-tax differences. These measures could capture the firm’s overall tax avoidance strategy with errors as they do not consider potential tax planning activities that only indirectly affect tax avoidance. Finally, it is possible that IDD adoption is confounded with the changes in unobservable economic and governance environments. Although our difference-in-differences analysis and matching process can significantly reduce these endogeneity concerns, we can not completely rule out alternative explanations.

Our study has managerial implications. Corporate tax planning forms an important part of managers’ responsibilities. Understanding the effect of IDD adoption on corporate tax might affect how managers choose their tax strategies based on the location of the business. Since regulators and investors are concerned with corporate transparency and tax avoidance, managers of the firms located in states that have adopted the IDD might also want to better utilise voluntary disclosures to mitigate any concerns of greater information asymmetry and tax risk from relevant stakeholders. Our study opens revenues for future research on identifying specific characteristics of corporate information environment associated with tax avoidance and other channels that might interact with corporate information environment to influence managers’ decisions to engage in tax planning and avoidance. Providing more insight on the relationship between the characteristics of corporate environment and tax avoidance behaviour would be an important contribution to the literature.

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**Appendix A**

Variable Definitions

|  |  |
| --- | --- |
| Variable Name | Definition |
| ***Tax Measures*** |  |
| ETR (Effective Tax Rates) | Ratio of total tax expense (Compustat TXT) to pre-tax book income (Compustat PI). We constrain the values of ETR to lie on the [0, 1] interval. |
| BTD (Book-tax Differences) | Ratio of pre-tax book income (Compustat PI) less estimated taxable income ((Compustat TXFED + Compustat TXFO) / statutory marginal tax rate) to lagged total assets (Compustat AT). |
| LRETR (long-run ETR) | Ratio of sum of total tax expense from year t-4 to year t to the sum of pre-tax book income, accumulated over the same period, as in [Dyreng et al.](#page18) ([2008](#page18)) and [Kubick et al.](#page19) ([2014](#page19)). |
| ETR2 | Ratio of current federal tax expense (Compustat TXFED) to net income before extraordinary items (Compustat IB) plus current tax expense (Compustat TXFED) plus minority interest (Compustat MII) less extraordinary items (Com pustat XIDO) less equity in earnings (Compustat ESUB). See [Lennox et al.](#page19) ([2013](#page19)). |
| ETR3  | Ratio of total tax expense (Compustat TXT) less change in deferred tax (Compustat TXDITC - LTX) to operating cash flow (Compustat OANCF). See [Lennox](#page19) [et al.](#page19) ([2013](#page19)). |
| Cash ETR | Ratio of cash taxes paid (Compustat TXPD) to pre-tax income (Compustat PI). See [Kubick et al.](#page19) ([2014](#page19)) |
| SHELTER | Dummy variable coded 1 if a firm's estimated shelter probability is above yearly median shelter probability and 0 otherwise. Following [Wilson](#page19) ([2009](#page19)), we compute shelter probability as, P(Shelter) = -4.30 + (6.63 \* book-tax difference) - (1.72 \* Leverage) + (0.66 \* Firm Size) + (2.26 \* Return on Assets) + (1.62 \* Foreign Income) + (1.56 \* Research and Development Expense). |
|  |  |
| ***IDD Measures***  |  |
| IDD | Dummy variable coded 1 for state-years when the IDD is adopted, and 0 otherwise.  |
| IDD Adoption2 | Dummy variable coded 1 if the firm is headquartered in a state that will adopt the IDD in two years and 0 otherwise. |
| IDD Adoption1 | Dummy variable coded 1 if the firm is headquartered in a state that will adopt the IDD in one year and 0 otherwise. |
| IDD Adoption0 | Dummy variable coded 1 if the firm is headquartered in a state that adopted the IDD in the current year and 0 otherwise. |
| IDD Adoption+1 | Dummy variable coded 1 if the firm is headquartered in a state that adopted the IDD one year ago and 0 otherwise. |
| IDD Adoption+2 | Dummy variable coded 1 if the firm is headquartered in a state that adopted the IDD two or more years ago and 0 otherwise. |
| IDD Rejection | Dummy variable coded 1 if the state where the firm is headquartered has rejected the previously adopted IDD by year *t* and 0 otherwise. |

|  |  |
| --- | --- |
| Variable Name | Definition |
| ***Control Variables*** |  |
| SIZE (Firm Size) | Natural log of lagged total assets (Compustat AT). |
| MTB (Market-to-Book Ratio) | Ratio of the lagged market value of equity (Compustat PRCC\_F \* CSHO) to lagged book value of equity (Compustat CEQ). |
| LEV (Leverage) | Ratio of long-term debt (Compustat DLTT) to lagged total assets (Compustat AT). |
| ROA (Return on Assets) | Pretax book income (Compustat PI) to lagged total assets (Compustat AT). |
| NOL (NOL Dummy) | Dummy variable coded 1 if the firm reports a positive tax loss carry forward during the year (Compustat TLCF). |
| DNOL  | Change in firm i's NOL from year t-1 to t (Compustat TLCF) divided by lagged total assets (Compustat AT). |
| FI (Foreign Income) | Ratio of pre-tax income from foreign operations (Compustat PIFO) to lagged total assets (Compustat AT). |
| PPE (Property, Plant and Equipment) | Ratio of net property, plant and equipment (Compustat PPENT) to lagged total assets (Compustat AT). |
| EQINC (Equity Income) | Ratio of equity in earnings (Compustat ESUB) to lagged total assets (Compustat AT). |
| INTAN (Intangible Assets) | Ratio of intangible assets (Compustat INTAN) to lagged total assets (Compustat AT). |
| State Rivals | Dummy variable that equals one if the number of firms headquartered in the same state that operate in the same 3-digit Standard Industrial Classification (SIC) code during the year is larger than the sample median and zero (Gao et al. 2015; Chen et al. 2020; Dey and White 2020). |
| ***Proxies for Internal Information Quality (IIQ)*** |  |
| Analysts Coverage | Total number of analysts following the firm during the year (as in Chen and Lin 2017).  |
| Absolute Discretionary Accruals | The absolute values of discretionary accruals are difference between actual accruals and non-discretionary accruals, calculated using an augmented version of the modified Jones model (Dechow et al. 1995) proposed by Kothari et al. (2005) which controls for company performance by including return on assets in the computation model.  |

**Appendix B**

**Precedent-Setting Legal Cases Adopting or Rejecting the Inevitable Disclosure Doctrine**

|  |  |  |  |
| --- | --- | --- | --- |
| **State** |  **Precedent-Setting Cases** | **Date** | **Decision** |
| AR | Southwestern Energy Co. *v.* Eickenhorst, 955 F. Supp. 1078 (W.D. Ark. 1997) | 3/18/1997 | Adopt |
| CT | Branson Ultrasonics Corp. *v.* Stratman, 921 F. Supp. 909 (D. Conn. 1996) | 2/28/1996 | Adopt |
| DE | E.I. duPont de Nemours & Co. *v.* American Potash & Chem. Corp., 200 A.2d 428 (Del. Ch. 1964) | 5/5/1964 | Adopt |
| FL | Fountain v. Hudson Cush-N-Foam Corp., 122 So. 2d 232 (Fla. Dist. Ct. App. 1960) | 7/11/1960 | Adopt |
| FL | Del Monte Fresh Produce Co. *v.* Dole Food Co. Inc., 148 F. Supp. 2d 1326 (S.D. Fla. 2001) | 5/21/2001 | Reject |
| GA | Essex Group Inc. *v.* Southwire Co., 501 S.E.2d 501 (Ga. 1998) | 6/29/1998 | Adopt |
| IL | Teradyne Inc. *v.* Clear Communications Corp., 707 F. Supp. 353 (N.D. 111. 1989) | 2/9/1989 | Adopt |
| IN | Ackerman *v.* Kimball Int'l Inc., 652 N.E.2d 507 (Ind. 1995) | 7/12/1995 | Adopt |
| IA | Uncle B's Bakery *v.* O'Rourke, 920 F. Supp. 1405 (N.D. Iowa 1996) | 4/1/1996 | Adopt |
| KS | Bradbury Co. *v.* Teissier-duCros, 413 F. Supp. 2d 1203 (D. Kans. 2006) | 2/2/2006 | Adopt |
| MA | Bard v. Intoccia, 1994 U.S. Dist. LEXIS 15, 368 (D. Mass. 1994) | 10/13/1994 | Adopt |
| MI | Allis-Chalmers Manuf. Co. v. Continental Aviation & Eng. Corp., 255 F. Supp. 645 (E.D. Mich. 1966) | 2/17/1966 | Adopt |
| MI | CMI Int'l, Inc. v. Intermet Int'l Corp., 649 N.W.2d 808 (Mich. Ct. App. 2002) | 4/30/2002 | Reject |
| MN | Surgidev Corp. v. Eye Technology Inc., 648 F. Supp. 661 (D. Minn. 1986) | 10/10/1986 | Adopt |
| MO | H&R Block Eastern Tax Servs. Inc. v. Enchura, 122 F. Supp. 2d 1067 (W.D. Mo. 2000) | 11/2/2000 | Adopt |
| NJ | Nat'l Starch & Chem. Corp. v. Parker Chem. Corp., 530 A.2d 31 (N.J. Super. Ct. 1987) | 4/27/1987 | Adopt |
| NY | Eastman Kodak Co. v. Powers Film Prod., 189 A.D. 556  | 12/5/1919 | Adopt |
| NC | Travenol Laboratories Inc. v. Turner, 228 S.E.2d 478 (N.C. Ct. App. 1976) | 6/17/1976 | Adopt |
| OH | Procter & Gamble Co. v. Stoneham, 747 N.E.2d 268 (Ohio Ct. App. 2000) | 9/29/2000 | Adopt |
| PA | Air Products & Chemical Inc. v. Johnson, 442 A.2d 1114 (Pa. Super. Ct. 1982) | 2/19/1982 | Adopt |
| TX | Rugen v. Interactive Business Systems Inc., 864 S.W.2d 548 (Tex. App. 1993) | 5/28/1993 | Adopt |
| TX | Cardinal Health Staffng Network Inc. v. Bowen, 106 S.W.3d 230 (Tex. App. 2003) | 4/3/2003 | Reject |
| UT | Novell Inc. v. Timpanogos Research Group Inc., 46 U.S.P.Q.2d 1197 (Utah D.C. 1998) | 1/30/1998 | Adopt |
| WA | Solutec Corp. Inc. v. Agnew, 88 Wash. App. 1067 (Wash. Ct. App. 1997) | 12/30/1997 | Adopt |

**Table 1. Sample Selection and Summary Statistics**

Panel A reports the sample selection process. Panel B presents the frequency of firm-year observations in each state during our sample period and the mean value of the IDD indicator. Panel C presents the descriptive statistics for the key variables used in our analysis. Analytical definitions for all variables are provided in the Appendix A.

|  |  |
| --- | --- |
| **Panel A: Sample Selection** | Obs. |
| Total number of firm-year observations from 1977-2011 | 307,786 |
| Less: Financial and utilities firm-years | (90,977) |
| Less: Firms located in foreign countries | (30,896) |
| Less: Missing values for the variables used in main regressions | (80,874) |
| Full Sample |  70,739 |
| **Panel B: Sample Distribution** |  |
| **State** | **Obs.** | **IDD=1** | **State** | **Obs.** | **IDD=1** | **State** | **Obs.** | **IDD=1** |
| AK | 7 | 0.000 | AL | 385 | 0.000 | AR | 221 | 0.239 |
| AZ | 1,019 | 0.000 | CA | 10,386 | 0.000 | CO | 1,887 | 0.000 |
| CT | 1,608 | 0.371 | DC | 95 | 0.000 | DE | 209 | 1.000 |
| FL | 3,772 | 0.750 | GA | 1,783 | 0.418 | HI | 70 | 0.000 |
| IA | 338 | 0.000 | ID | 178 | 0.000 | IL | 3,037 | 0.589 |
| IN | 774 | 0.445 | KS | 505 | 0.118 | KY | 424 | 0.000 |
| LA | 327 | 0.000 | MA | 3,384 | 0.497 | MD | 1,092 | 0.000 |
| ME | 72 | 0.000 | MI | 1,696 | 0.870 | MN | 2,409 | 0.779 |
| MO | 1,061 | 0.285 | MS | 108 | 0.000 | MT | 42 | 0.000 |
| NC | 1,479 | 1.000 | ND | 36 | 0.000 | NE | 220 | 0.000 |
| NH | 396 | 0.000 | NJ | 3,843 | 0.661 | NM | 129 | 0.000 |
| NV | 832 | 0.000 | NY | 6,642 | 1.000 | OH | 2,648 | 0.204 |
| OK | 755 | 0.000 | OR | 711 | 0.000 | PA | 2,938 | 0.851 |
| RI | 258 | 0.000 | SC | 317 | 0.000 | SD | 80 | 0.000 |
| TN | 973 | 0.000 | TX | 6,838 | 0.329 | UT | 736 | 0.436 |
| VA | 1,782 | 0.000 | VT | 70 | 0.000 | WA | 1005 | 0.520 |
| WI | 1078 | 0.000 | WV | 58 | 0.000 | WY | 26 | 0.000 |
| **Panel C: Descriptive Statistics** |
|  |  |  | **Obs.** | **Mean** | **Median** | **S.D.** | **25%** | **75%** |
| IDD |  |  | 70,739 | 0.409 | 0.000 | 0.492 | 0.000 | 1.000 |
| ETR |  |  | 70,739 | 0.278 | 0.348 | 0.190 | 0.047 | 0.408 |
| BTD |  |  | 66,243 | 0.211 | 0.004 | 0.936 | 0.088 | 0.037 |
| SIZE |  |  | 70,739 | 4.142 | 4.099 | 2.241 | 2.640 | 5.637 |
| MTB |  |  | 70,739 | 2.457 | 1.659 | 2.677 | 0.897 | 3.071 |
| LEV |  |  | 70,739 | 0.180 | 0.113 | 0.206 | 0.004 | 0.281 |
| ROA |  |  | 70,739 | 0.019 | 0.069 | 0.318 | 0.057 | 0.156 |
| NOL |  |  | 70,739 | 0.431 | 0.000 | 0.495 | 0.000 | 1.000 |
| DNOL |  |  | 70,739 | 0.133 | 0.000 | 0.579 | 0.000 | 0.016 |
| FI |  |  | 70,739 | 0.005 | 0.000 | 0.020 | 0.000 | 0.000 |
| PPE |  |  | 70,739 | 0.327 | 0.251 | 0.294 | 0.117 | 0.444 |
| EQINC |  |  | 70,739 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 |
| INTAN |  |  | 70,739 | 0.098 | 0.008 | 0.199 | 0.000 | 0.101 |

**Table 2. IDD and Corporate Tax Avoidance**

This table presents the regression results on the effect of IDD on a firm’s ability to engage in tax avoidance. The dependent variable in Model 1 is book effective tax rates (ETR), defined as the ratio of total tax expense (Compustat TXT) to pre-tax book income (Compustat PI). The dependent variable in Model 2 is book-tax differences (BTD), defined as the ratio of pre-tax book income (Compustat PI) less estimated taxable income ((Compustat TXFED + Compustat TXFO) / statutory marginal tax rate) to lagged total assets (Compustat AT). IDD is an indicator variable equal to one if the firm is headquartered in a state whose courts recognize the IDD, and zero otherwise. Analytical definitions for all variables are provided in Appendix A. Standard errors are robust to heteroscedasticity (reported in parentheses). \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

|  |  |  |
| --- | --- | --- |
|  | **Effective Tax Rates** | **Book-Tax Differences** |
|  |  Model 1 |  Model 2 |
| IDD | -0.007\*\*\* | 0.041\*\*\* |
|  | (0.002) | (0.008) |
| SIZE | 0.015\*\*\* | 0.048\*\*\* |
|  | (0.000) | (0.001) |
| MTB | -0.004\*\*\* | 0.011\*\*\* |
|  | (0.000) | (0.001) |
| LEV | 0.007\*\* | 0.059\*\*\* |
|  | (0.003) | (0.013) |
| ROA | 0.236\*\*\* | 1.304\*\*\* |
|  | (0.002) | (0.011) |
| NOL | -0.088\*\*\* | 0.199\*\*\* |
|  | (0.001) | (0.006) |
| DNOL | 0.015\*\*\* | -0.592\*\*\* |
|  | (0.001) | (0.005) |
| FI | 0.007 | -2.210\*\*\* |
|  | (0.028) | (0.124) |
| PPE | -0.009\*\*\* | -0.346\*\*\* |
|  | (0.002) | (0.011) |
| EQINC | -0.755\*\*\* | -2.864\*\*\* |
|  | (0.101) | (0.471) |
| INTAN | 0.028\*\*\* | -0.228\*\*\* |
|  | (0.003) | (0.013) |
| Intercept | 0.349\*\*\* | 0.038 |
|  | (0.052) | (0.247) |
| Observations |  70,739 |  66,243 |
| *R2* | 0.507 | 0.601 |
| Year Fixed Effects |  Yes |  Yes |
| 3-digit Industry Effects |  Yes |  Yes |
| State Fixed Effects |  Yes |  Yes |

**Table 3. IDD, Internal Information Quality and Corporate Tax Avoidance**

This table presents the regression results on the effect of IDD on a firm’s ability to engage in tax avoidance across firms with high and low internal information quality. We split firms into high and low high internal informational quality groups based on two proxies: analyst coverage, defined as the total number of analysts following the firm during the year (as in Chen and Lin, 2017); and absolute values of discretionary accruals, computed as using an augmented version of the modified Jones model (Dechow et al. 1995) proposed by Kothari et al., 2005 which controls for company performance by including return on assets in the computation model. High (low) and low (high) IIQ firms are those that are above and below median values of analyst coverage (absolute values of discretionary accruals) respectively. The dependent variable in Panel A is book effective tax rate (ETR), defined as the ratio of total tax expense (Compustat TXT) to pre-tax book income (Compustat PI). The dependent variable in Panel B is book-tax difference, defined as the ratio of pre-tax book income (Compustat PI) less estimated taxable income ((Compustat TXFED + Compustat TXFO) / statutory marginal tax rate) to lagged total assets (Compustat AT). IDD is an indicator variable equal to one if the firm is headquartered in a state whose courts recognize the IDD, and zero otherwise. Analytical definitions for all variables are provided in Appendix A. Standard errors are robust to heteroscedasticity (reported in parentheses). \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

|  |
| --- |
| **Panel A: Effective Tax Rates (ETR)** |
|  | **Analyst Coverage** | **Absolute Discretionary Accruals** |
|  |  High IIQ |  Low IIQ |  High IIQ | Low IIQ |
| IDD | -0.003 | -0.011\*\*\* | -0.005\* | -0.008\*\*\* |
|  | (0.002) | (0.003) | (0.003) | (0.003) |
| Observations |  38,414 |  32,325 |  35,369 |  35,370 |
| *R2* | 0.454 | 0.538 | 0.475 | 0.549 |
| *Subsample comparison of coefficients on the IDD* |
| *z*-statistics | 2.242\*\* | 0.818 |
| *p*-values |  0.024 | 0.413 |
| **Panel B: Book-Tax Differences (BTD)** |
|  | **Analyst Coverage** | **Absolute Discretionary Accruals** |
|  |  High IIQ |  Low IIQ |  High IIQ | Low IIQ |
| IDD | -0.001 | 0.074\*\*\* | 0.010\* | 0.072\*\*\* |
|  | (0.005) | (0.018) | (0.006) | (0.017) |
| Observations |  36,248 |  29,995 |  33,122 |  33,121 |
| *R2* | 0.557 | 0.596 | 0.588 | 0.596 |
| *Subsample comparison of coefficients on the IDD* |
| *z*-statistics | -3.356\*\*\* |  -2.736\*\*\* |
| *p*-values |  0.000 |  0.006 |
| Firm Controls |  Yes |  Yes |  Yes |  Yes |
| Year FE |  Yes |  Yes |  Yes |  Yes |
| 3-digit Industry FE |  Yes |  Yes |  Yes |  Yes |
| State FE |  Yes |  Yes |  Yes |  Yes |

**Table 4. Timing of IDD Adoption and Corporate Tax Avoidance**

This table presents the results from the dynamic effect of IDD adoption on corporate tax avoidance. The dependent variable in Model 1 is book effective tax rate (ETR), defined as the ratio of total tax expense (Compustat TXT) to pre-tax book income (Compustat PI). The dependent variable in Model 2 is book-tax difference, defined as the ratio of pre-tax book income (Compustat PI) less estimated taxable income ((Compustat TXFED + Compustat TXFO) / statutory marginal tax rate) to lagged total assets (Compustat AT). IDD Adoption -2, IDD Adoption -1, IDD Adoption0, IDD Adoption+1 and IDD Adoption2+ are indicator variables equal to one if the firm is headquartered in a state that will adopt the IDD in two years, will adopt the IDD in one year, adopted the IDD in the current year, adopted the IDD one year ago, and adopted with IDD two or more years ago, respectively, and zero otherwise. IDD Rejection is an indicator variable equals one if the state where firm is headquartered has rejected the previously adopted IDD by year t. Analytical definitions for all variables are provided in the Appendix A. Standard errors are robust to heteroscedasticity (reported in parentheses). \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

|  |  |  |
| --- | --- | --- |
|  | **Effective Tax Rates** | **Book-Tax Differences** |
|  |  Model 1 |  Model 2 |
| IDD Adoption-2 | 0.001 | -0.015 |
|  | (0.004) | (0.021) |
| IDD Adoption-1 | 0.004 | -0.003 |
|  | (0.004) | (0.020) |
| IDD Adoption0 | 0.003 | -0.001 |
|  | (0.004) | (0.022) |
| IDD Adoption+1 | 0.001 | 0.014 |
|  | (0.005) | (0.022) |
| IDD Adoption2+ | -0.004\*\* | 0.042\*\*\* |
|  | (0.002) | (0.010) |
| IDD Rejection | 0.012\*\*\* | -0.019 |
|  | (0.004) | (0.017) |
| Observations |  70,739 |  66,243 |
| *R2* | 0.508 | 0.601 |
| Firm Controls |  Yes |  Yes |
| Year Fixed Effects |  Yes |  Yes |
| 3-digit Industry Effects |  Yes |  Yes |
| State Fixed Effects |  Yes |  Yes |

**Table 5. Neighbouring-State Matching Analysis**

This table presents the results of the effect of adoption of the IDD on corporate tax avoidance using a matched sample of neighbouring-states rms. The treatment group include those firms headquartered in states that adopt the IDD. The control group include only those firms head-quartered in neighbouring states that did not adopt the IDD. The following matched groups are included in the sample (adopted states. non-adopted neighbouring states). (NY:VT); (FL:AL); (DE: DC, MD); (NC: VA, SC, TN); (MN: ND, SD, WI); (IL:KY); (TX: NM, OK, LA); (MA: RI, NH); (IA: NE); (AR: MS); (WA: OR, ID); (UT: NV, CO, WY, AZ); (OH: WV). The dependent variable in Models 1 and 2 is book effective tax rates (ETR), defined as the ratio of total tax expense (Compustat TXT) to pre-tax book income (Compustat PI). The dependent variable in Models 3 and 4 is book-tax differences (BTD), defined as the ratio of pre-tax book income (Compustat PI) less estimated taxable income ((Compustat TXFED + Compustat TXFO) / statutory marginal tax rate) to lagged total assets (Compustat AT). IDD is an indicator variable equal to one if the firm is headquartered in a state whose courts recognize the IDD, and zero otherwise. For ease of exposition, we do not report the results on control variables. Analytical definitions for all variables are provided in the Appendix A. Standard errors are robust to heteroscedasticity (reported in parentheses). \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

|  |  |  |
| --- | --- | --- |
|  | **Effective Tax Rates** | **Book-Tax Differences**  |
|  |  Model 1 |  Model 2 |  Model 3 |  Model 4 |
| IDD | -0.009\*\*\* | -0.009\*\*\* | 0.047\*\*\* | 0.038\*\*\* |
|  | (0.002) | (0.002) | (0.010) | (0.008) |
| Intercept | 0.328\*\*\* | 0.351\*\*\* | -0.219\*\*\* | -0.269\*\*\* |
|  | (0.015) | (0.004) | (0.070) | (0.018) |
| Observations | 45,954 | 45,954 | 42,142 | 42,142 |
| *R2* | 0.507 | 0.483 | 0.611 | 0.602 |
| Firm Controls |  Yes | Yes | Yes | Yes |
| Matched-group FE |  No | Yes | No | Yes |
| Year Fixed Effects |  Yes | Yes | Yes | Yes |
| 3-digit Industry Effects |  Yes | No | Yes | No |
| State Fixed Effects |  Yes | No | Yes | No |

**Table 6. Alternative Measures of Corporate Tax Avoidance**

This table presents results on the effect of IDD on firms’ ability to engage in tax avoidance using five alternative measures of tax avoidance. The dependent variable in Model 1 is long-run effective tax rate (LRETR), calculated as the sum of total tax expense (Compustat TXT) from year *t*-4 to year *t*, divided by the sum of pre-tax book income (Compustat PI), and accumulated over the same period, as in Dyreng et al. (2008) and Kubick et al. (2014). In Model 2, we use ETR2, which is defined as the ratio of current federal tax expense (Compustat TXFED) to net income before extraordinary items (Compustat IB) *plus* current tax expense (Compustat TXFED) *plus* minority interest (Compustat MII) less extraordinary items (Compustat XIDO) less equity in earnings (Compustat ESUB), see Lennox et al (2013). In Model 3, we use ETR3, which is defined as the ratio of total tax expense (Compustat TXT) less change in deferred tax (Compustat TXDITC - LTX) to operating cash flow (Compustat OANCF), as in Lennox et al (2013). In Model 4, we use Cash ETR, defined as the ratio of cash taxes paid (Compustat TXPD) to pre-tax income (Compustat PI). In Model 5, we use SHELTER, which is a dummy variable that equals one if a firm’s estimated shelter probability is above yearly median shelter probability. IDD is an indicator variable equal to one if the firm is headquartered in a state whose courts recognize the IDD, and zero otherwise. For ease of exposition, we do not report the results on control variables. Analytical definitions for all variables are provided in the Appendix A. Standard errors are robust to heteroscedasticity (reported in parentheses). \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **LETR** | **ETR2** | **ETR3** | **Cash ETR** |  **SHELTER** |
|  | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| IDD | -0.005\*\* | -0.005\*\*\* | -0.006\*\* | -0.006\*\* | 0.059\* |
|  | (0.002) | (0.001) | (0.003) | (0.003) | (0.034) |
| Intercept | 0.486\*\*\* | 0.253\*\*\* | 0.122 | 0.176\*\*\* | -8.603\*\*\* |
|  | (0.078) | (0.011) | (0.110) | (0.041) | (0.138) |
| Observations |  53,784 |  62,439 |  49,648 |  44,634 |  58,890 |
| *R2* (Pseudo *R2*) | 0.477 | 0.435 | 0.296 | 0.319 | (0.690) |
| Firm Controls |  Yes |  Yes |  Yes |  Yes |  Yes |
| Year FE |  Yes |  Yes |  Yes |  Yes |  Yes |
| 3-digit Industry FE  |  Yes |  Yes |  Yes |  Yes |  Yes |
| State FE |  Yes |  Yes |  Yes |  Yes |  No |

**Table 7. Removing Non-Precedent Setting States and Placebo Test**

Panel A presents results on the effect of IDD on firms’ ability to engage in tax avoidance based on sub-sample of firms that are headquartered in 21 states whose IDD status can be clearly identified (or rejected). IDD is an indicator variable equal to one if the firm is headquartered in a state whose courts recognize the IDD, and zero otherwise. Panel B presents the results from a Placebo test on the effect of IDD on a firm’s ability to engage in tax avoidance. Placebo IDD is an indicator variable equal to one if the firm is headquartered in a state-year which is within the IDD adoption period, and zero otherwise. The dependent variable in Model 1 is book effective tax rates (ETR), defined as the ratio of total tax expense (Compustat TXT) to pre-tax book income (Compustat PI). The dependent variable in Model 2 is book-tax differences (BTD), defined as the ratio of pre-tax book income (Compustat PI) less estimated taxable income ((Compustat TXFED + Compustat TXFO) / statutory marginal tax rate) to lagged total assets (Compustat AT). For ease of exposition, we do not report the results on control variables. Analytical definitions for all variables are provided in the Appendix A. Standard errors are robust to heteroscedasticity (reported in parentheses). \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

|  |
| --- |
| **Panel A: Removing Non-Precedent Setting States** |
|  | **Effective Tax Rates** | **Book-Tax Differences** |
|  |  Model 1 |  Model 2 |
| IDD | -0.007\*\*\* | 0.050\*\*\* |
|  | (0.002) | (0.009) |
| Intercept | 0.357\*\*\* | -0.138\*\* |
|  | (0.016) | (0.061) |
| Observations |  46,926 |  37,710 |
| *R2* | 0.500 | 0.615 |
| Firm Controls |  Yes |  Yes |
| Year Fixed Effects |  Yes |  Yes |
| 3-digit Industry Effects |  Yes |  Yes |
| State Fixed Effects |  Yes |  Yes |
| **Panel B: Placebo Test** |  |  |
|   | **Effective Tax Rates** | **Book-Tax Differences** |
|  |  Model 1 |  Model 2 |
| Placebo IDD | -0.002 | 0.007 |
|  | (0.002) | (0.008) |
| Intercept | 0.349\*\*\* | 0.037 |
|  | (0.052) | (0.247) |
| Observations |  70,739 |  66,243 |
| R2 | 0.507 | 0.601 |
| Firm Controls |  Yes |  Yes |
| Year FE |  Yes |  Yes |
| 3-digit Industry FE |  Yes |  Yes |
| State FE |  Yes |  Yes |

1. There are also studies reporting insignificant association between information environment and tax avoidance. For instance, Joshi et al. (2019) examine the effect of increased transparency on the tax planning of European banks. Relying on the introduction of country-by-country reporting requirements to the banking industry across Europe, they find only limited evidence supporting a decline of income-shifting by banks’ affiliates and no significant change in the effective tax rates among the banks affected by the regulatory change. They conclude that increased transparency in reporting does not materially influence a bank’s tax avoidance activities. [↑](#footnote-ref-1)
2. Even if a US state has not ratified the UTSA, the state court can still adopt the IDD (Klasa et al. 2018). See section 2 for details about the IDD. [↑](#footnote-ref-2)
3. Based on a sample of 28, 547 firms in US between 1994 and 2010, Li et al. (2018a) report that firms respond to IDD recognition by decreasing the level of disclosure of their customers’ identities, and such effect is stronger for firms in more volatile industries and firms with lower reliance on external financing. These findings are consistent with the conjecture that IDD is associated with reduced disclosure and higher corporate opacity. [↑](#footnote-ref-3)
4. The location of the firm is based on the location of its headquarters (Klasa et al. 2018). [↑](#footnote-ref-4)
5. Robustness tests confirm that our results are insensitive to alternative measures of tax avoidance including cash effective tax rates. [↑](#footnote-ref-5)
6. The sample contains 70,739 (66,243) observations when we use effective tax rate (ETR) (book-tax difference) as the measure of tax avoidance. [↑](#footnote-ref-6)
7. In Appendix B, we provide a summary of the states that have adopted IDD. [↑](#footnote-ref-7)
8. [Klasa et al.](#page19) ([2018](#page19)) create the list of IDD adoption by collecting the court rulings of recognizing or rejecting the IDD from prior legal studies to identify the states where the IDD is adopted or rejected. This list is reproduced in Appendix B. [↑](#footnote-ref-8)
9. The fixed effects approach used in our primary analysis addresses this concern to the extent that it controls for unobserved time-invariant local factors that might affect firms’ corporate avoidance strategies. However, if some observable time-variant factors drive the effect, then fixed effects cannot adequately address this problem. [↑](#footnote-ref-9)
10. If we are unable to identify a close-by matched control firm to a treated firm, we drop this treated firm from the sample. [↑](#footnote-ref-10)
11. Following [Wilson](#page19) ([2009](#page19)), we compute shelter probability as follows. P (Shelter) = –4.30 + (6.63 × book-tax difference) – (1.72 × Leverage) + (0.66 × Firm Size) + (2.26 × Return on Assets) + (1.62 × Foreign Income) + (1.56 × Research and Development Expense). Because [Wilson](#page19) ([2009](#page19)) computes the predicted value of the probability of a tax shelter (P(Shelter)) with a model that includes the variables that we use as control variables (i.e., ROA, Leverage, Foreign Income and Firm Size), we estimate our regression both with and without these control variables and obtain similar results. [↑](#footnote-ref-11)