The Impact of Profitability Pressure and Capital Market Valuation on Tax Haven Engagement

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This draft: January 2024

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Abstract:

We investigate three key research questions related to firms' engagement in tax haven activities: (1) the relationship between firm profitability pressures and tax haven involvement, (2) how the capital market prices tax haven activities as potential risks, and (3) whether firm profitability pressures moderate the relationship between tax haven activities and capital market perceptions of risk. Using data from 1995 to 2020, we find that firms use tax havens as a last resort to maintain profitability despite the associated risks. We further find that tax haven activities are generally negatively valued by capital markets, reflecting increased information risk and agency costs. However, firms facing profitability challenges are viewed more favorably by capital markets when they engage in tax haven activities, suggesting that tax heavens may serve as a last resort for firms to maintain financial viability. These findings emphasize the non-linear relationship between market perceptions and tax haven engagement and contribute to our understanding of factors influencing aggressive tax avoidance practices.

Keywords: Tax haven activity; tax avoidance; firm performance; information risk; stock return

JEL Classification: G10; G30; H26; L21; M41

I. Introduction

Tax havens are countries or territories with low-income tax rates combined with tax loopholes and financial reporting opacity due to lax legal, administrative, and regulatory oversights. Therefore, tax haven activities can help multinational corporations substantially reduce their current tax liability, and it can be perceived to be beneficial to shareholders because "every dollar of taxes paid is a dollar that cannot be reinvested within the firm" (Koester, Shevlin, and Wangerin, 2017, p. 3285). In this paper, we address three research questions: first, is there an association between firms' profitability pressure and tax haven activities? Second, whether tax haven activities are priced by the capital market as a potential risk? Third, whether firms' profitability pressure moderates the association between tax haven activities and the pricing of risk associated with a tax haven? These questions can help us better understand why income shifting by multinational corporations to tax haven jurisdictions is pervasive (Dharmapala and Riedel, 2013; Dharmapala, 2016; Dyreng and Markle, 2016).

Engaging in tax avoidance through activities in tax havens carries certain costs. First, the tax avoidance strategy can amplify uncertainty regarding tax liabilities, thereby elevating the risk associated with financial information (Balakrishnan, Blouin, and Guay, 2019; Dyreng, Hanlon, and Maydew, 2019). Intricate tax sheltering arrangements often obscure the true economic substance of transactions (Coppola, Maggiori, Neiman, and Schreger, 2021). Moreover, engaging in questionable tax avoidance practices heightens the likelihood of coming under regulatory scrutiny (Dyreng, Hoopes, and Wilde, 2016).

Tax avoidance tends to go hand in hand with managerial rent extraction since it reduces corporate transparency. This, in turn, creates more opportunities for managers to divert a firm's resources for personal gain (Desai and Dharmapala, 2006; Desai, Dyck, and Zingales, 2007;

Kim, Li, and Zhang, 2011). Prior research has shown that firms with managers incentivized to take on higher levels of risk through equity incentives are more inclined to engage in tax avoidance (Rego and Wilson, 2012; Armstrong, Larcker, Ormazabal, and Taylor, 2013; Armstrong, Blouin, Jagolinzer, and Larker, 2015). Moreover, the agency costs associated with tax avoidance can escalate if companies are led by narcissistic and overconfident CEOs who exhibit an inflated sense of superiority and entitlement, leading them to disregard caution and legal compliance (Olsen and Stekelberg, 2016; Chyz, Gaertner, Kausar, and Watson, 2019).

Hence, when viewed from the shareholders' perspective, a firm's involvement in tax haven activities entails a delicate balance between the advantages of tax benefits associated with tax havens and the downsides of reduced transparency, increased agency costs, and potential regulatory scrutiny linked to such activities (Scholes and Wolfson, 1992; Armstrong et al., 2015). Consequently, companies that can shield themselves from excessive risk exposure are better positioned to exploit opportunities in establishing subsidiaries in tax haven locations (Kubick, Lynch, Mayberry, and Omer, 2015; Higgins, Omer, and Philips, 2015). Conversely, U.S. firms facing financial constraints tend to shift less income from the United States to foreign jurisdictions than their financially more flexible counterparts (Dyreng and Markle, 2016).

Although evidence suggests that effective corporate governance can temper a firm's inclination toward aggressive tax avoidance practices (Chen, Chen, Cheng, and Shevlin, 2010), the findings are not definitive, particularly when considering the possibility of an optimal level of tax aggressiveness. For instance, Robinson, Xue, and Zhang (2012) contend that the financial expertise within the audit committee, which represents sound corporate governance, is positively correlated with tax planning. However, this correlation turns negative when tax planning is perceived as excessively risky and aggressive. When both the financial expertise and

independence of the board are taken into account simultaneously, Armstrong et al. (2015) have demonstrated that boards with greater financial expertise and independence can help mitigate exceedingly aggressive tax avoidance practices. In essence, robust corporate governance can curtail agency costs when firm managers deviate from the optimal level of tax avoidance strategies to maximize their personal gains.

To sum up, using tax havens can serve as an effective tax strategy, significantly reducing a firm's cash tax obligations. However, this approach comes with inherent risks, including information uncertainty, agency costs, potential damage to reputation, and costs associated with regulatory enforcement for engaging in tax haven activities. Within this context, industry leaders and companies with high profits are better positioned to leverage aggressive tax strategies by establishing subsidiaries in tax haven jurisdictions (Dharmapala and Riedel, 2013; Higgins et al., 2015; Kubick et al., 2015). Nonetheless, the relationship between tax haven activities and profitability may not always follow a strict linear pattern, particularly when risky tax strategies involve an optimization process (Scholes and Wolfson, 1992; Cloyd, Mills, and Weaver, 2003; Robinson et al., 2012; Armstrong et al., 2015). Furthermore, when firms face profitability challenges and have limited investment opportunities (McGuire, Omer, and Wilde, 2014), they may resort to tax haven activities as a last-ditch effort to maintain profitability, even if it means accepting increased risk associated with such activities (Robinson, Sikes, and Weaver, 2010; Armstrong, Blouin, and Larker, 2012). As a result, whether there is a linear association between a firm's profitability pressure and tax haven activities remains a matter of empirical investigation.

Using tax haven activity data of publicly traded firms based on 10-K Exhibit 21 from the period of 1995 to 2020, we document a positive association between firms' profitability pressure

and their propensity to engage in tax haven activities. Probably, firms faced with profitability pressure also have limited investment opportunity sets (McGuire et al., 2014). They may resort to tax haven activities as a last-ditch effort to maintain profitability, even if it means accepting increased risk associated with such activities (Robinson et al., 2010; Armstrong et al., 2012).

Additionally, our research reveals that, on average, tax haven activities receive a negative valuation from the capital market. This discovery aligns with the concept that tax haven engagements heighten information risk for firms and increase the associated agency costs related to potential managerial rent-seeking behavior. However, our study reveals that when firms encounter profitability challenges, the capital market views tax haven activities more favorably. Consequently, tax haven activities appear to be one of the last resort options for firms striving to maintain their financial viability. Moreover, it is worth noting that the impact of tax haven activities on the capital market response is not overshadowed by other tax-related considerations, underscoring the multifaceted nature of tax strategies and their potential for complementarity.

Although at first glance, our results seem to contradict those of Goh, Lee, Lim, and Shevlin (2016), who document a negative association between tax avoidance and the cost of equity, they acknowledge the negative effect of tax avoidance on the cost of equity is stronger for firms with better outside monitoring, firms with higher likelihood of realizing potential tax savings, and firms with higher information quality. In other words, to some extent, their study explores the benefits associated with tax avoidance, it also shows agency costs as a moderating factor.

Indeed, our findings reinforce the idea that there exists an interdependent relationship between how the capital market responds to a firm's engagement in tax haven activities. Tax haven activities are typically seen as risky and receive an unfavorable valuation from the capital

market. Nevertheless, for companies that have exhausted all the alternatives to sustain profitability, tax haven activities, as a last resort for firms to stay profitable, might actually be perceived positively by the capital market.

Our study contributes to and fills the gap in the literature on tax haven research by examining how the capital market reacts to tax haven activities. Our study is motivated by the conjecture that tax avoidance strategies are most likely intertwined with many considerations and factors (Hanlon and Heitzman, 2010). Our finding supports the notion that the capital market reacts to firms' tax haven activities in a non-linear fashion. Although on average, tax haven activities are considered risky and are priced unfavorably by the capital market, when firms have exhausted other means to maintain profitability, tax haven activities are viewed as a viable strategy by the capital market. As a result, our research helps to understand better the factors that affect a firm's propensity to engage in aggressive tax avoidance behavior (Hanlon and Heitzman, 2010).

The remainder of the paper is organized as follows. Section II discusses related literature and develops the hypotheses. Section III discusses the variables and models used in our empirical analyses. Section IV provides empirical results, and Section V presents additional sensitivity analyses for our main hypotheses. Section VI concludes.

II. Literation Review and Hypotheses Development

II.1. Tax Haven Activities and Firm Performance

According to the normative shareholder theory, i.e., the Friedman's doctrine (Friedman, 1970), a business entity's greatest responsibility "lies in the satisfaction of shareholders." Therefore, maximizing a firm's profit and returns for shareholders is the singular objective of the

firm. Accordingly, "every dollar of taxes paid is a dollar that cannot be reinvested within the firm" (Koester et al., 2017). Therefore, firms often engage in tax avoidance activities, which encompass a wide scope of tax management strategies, from the most benign ones, such as taking advantage of accelerated depreciation, to the most aggressive and even illegal strategies, such as tax shelters (Hanlon and Heitzman, 2010; Dyreng et al., 2019). If possible, firms will shift income from high-income tax jurisdictions to low-income tax jurisdictions, often to tax haven jurisdictions with low corporate tax rates combined with tax loopholes and reporting opacity. Based on the 2019 IMF report, over 40 percent of the world's foreign direct investment is considered "phantom" investments that pass through empty corporate shells without "real business activities."[1] The rising magnitude and pervasiveness of tax avoidance through tax havens has become a sensitive issue that captures news headlines. Despite the government scrutiny and public outcry, the appeal of using tax havens seems to be significantly increasing (Gravelle, 2015).

Prior research has documented that tax avoidance strategies in general, and tax haven activities in particular, are associated with many factors such as business strategies, firms' operating environment, executives' abilities and characteristics, and managerial incentives. Therefore, the degree of tax avoidance varies cross-sectionally, resulting in a wide range of income tax rates, from 20% to 40% of pre-tax income for U.S. publicly traded firms. Dyreng, Hanlon, and Maydew (2008) note that many firms implement aggressive tax avoidance strategies via domestic means.

Business Strategies and Firms' Operating Environment

[1] https://www.imf.org/en/Publications/WP/Issues/2019/12/11/what-is-real-and-what-is-not-in-the-global-fdi-network

Reducing income tax by engaging in income shifting via tax havens appears to be a widely used tax avoidance strategy in the U.S. Of the Fortune 500 companies, at least 362 have established subsidiaries in tax haven jurisdictions (Citizens for Tax Justice, 2014). The estimated loss in U.S. tax revenue from corporate profit shifting through tax haven activities varies from about $54 billion to $130 billion (Zucman, 2014). Firms' tax departments are usually considered profit centers (Robinson et al., 2010; Armstrong et al., 2012). However, as noted by Higgins et al. (2015), not all firms have equal means and appetites to engage in tax avoidance strategies. Firms' approaches to engaging in tax avoidance behavior vary according to firms' characteristics, such as income shifting costs (Grubert and Slemrod, 1998; De Simone, Klassen, and Seidman, 2017). For example, Dyreng and Markel (2016) document that financially constrained U.S. firms shift less income from the U.S. to foreign jurisdictions than their financially less constrained peers. The reason is that the tax benefits associated with income shifting from high to low tax jurisdiction are substantially reduced with an increased likelihood of income repatriation (Dharmapala and Riedel, 2013; Dharmapala, 2014). In other words, firms with financial constraints are less likely to be engaged in cross-jurisdiction income-shifting behavior. Specifically, Dyreng and Markel (2016) show that financially constrained firms shift 9-13% less of their domestic income out of the U.S. than their financially unconstrained peers.

A firm's business strategy can influence its tax-planning (Miles and Snow, 1978, 2003; Higgins et al., 2015). Based on management literature, Higgins et al. (2015) categorize firms into three different types, "Prospectors, Defenders, and Analyzers," using a combined score of profitability, R&D investments, efficiency of distribution channels, growth and stability, and capital flexibility. Higgins et al. (2015) document that "Prospectors," i.e., firms with high combined scores, are in the position to be constantly innovative while incorporating aggressive,

albeit gradual, tax-planning strategies along the way.[2] These firms care less about the potential reputation costs associated with aggressive tax strategies due to the lack of substitutable products available on the market.[3] Kubick et al. (2015) also find that a firm's competitive advantage measured by product market power often results in more aggressive tax strategies.

On the contrary, "Defenders" those with low combined scores, face very limited tax-planning opportunities because of their unfavorable market position and aversion to risk and uncertainty. Often, the product lines of "Defenders" have viable substitutes, which result in their aversion to reputation costs associated with bad publicity. Limited tax-planning opportunities compounded with innate risk aversion and concerns for reputation costs often result in "Defenders" diminishing their focus on tax avoidance strategies (Higgins et al., 2015).[4] On top of the firm-specific effect, the industry effect is also important in deciding the degree of tax avoidance (Davis, Guenther, Krull, and Williams, 2016).

In addition to cross-sectional variation in income shifting, there is time-series variation within a business enterprise. Using a panel of European multinational affiliates from 1995 to 2005, Dharmapala and Riedel (2013) document that parent companies' positive earnings shocks are associated with a significantly positive increase in their low-tax affiliates' pre-tax profits. Further, the intensity of regulatory scrutiny also affects the degree of tax avoidance (Dyreng, Hoopes, and Wilde, 2016). For example, Kubick, Lynch, Mayberry, and Omer (2016) find that when firms received tax-related SEC comment letters, they subsequently decreased their tax

[2] Sudden and significant changes in profits in different jurisdictions are likely to be a red flag for transfer pricing audits (Dyreng and Markel, 2016). Therefore, income shifting strategies need to be established over time by having a long-term approach.
[3] Although Gallemore, Maydew, and Thornock (2014) fail to find long-lasting reputational effects from tax shelter news events, based on a survey of tax executives of publicly traded firms conducted by Graham, Hanlon, Shevlin, and Shroff (2014), 72 percent of tax executives rate concerns for reputation as an important factor when evaluating tax planning strategies.
[4] In Higgins et al. (2015), "*Analyzers*" are between "*Prospectors*" and "*Defenders*" and are included only as an empirical benchmark.

avoidance behavior due to an increase in expected tax enforcement costs. Furthermore, Kubick et al. (2016) document a spill-over effect that within the same industry, firms without receiving SEC letters increase their reported GAAP effective tax rate after their peer firms' regulatory scrutiny. De Simone et al. (2017) provide evidence that active management of income shifting can result in higher returns on assets. Low operating uncertainty is necessary for long-term tax strategies to be effective (Francis and Reiter, 1987; Shevlin, 1990; Dhaliwal, Frankel, and Trezevant, 1994; Kubick et al., 2015), which, in turn, can affect future benefits derived from tax avoidance activities (McGuire et al., 2014).

Executives Ability and Characteristics

Dyreng, Hanlon, and Maydew (2010) document that tax avoidance exhibits a significant fixed managers' effect that appears idiosyncratic across firms. Koester et al. (2017) argue that executives (CEOs, CFOs, COOs, etc.) with superior ability are able to manage resources and engage in tax avoidance activities more efficiently by state tax planning, income shifting to tax havens, claiming research and development credits, and taking full advantage of accelerated depreciation deductions, etc. (Koester et al., 2017). Capable executives know how to operate successfully within their firm's operating environment (Demerjian, Lev, and McVay, 2012; Demerjian, Lev, Lewis, and McVay, 2013) and are in a better position to align tax strategies with business strategies (Koester et al., 2017).

In addition, the "tone at the top" matters, especially when top executives are fixated on profitability, size, power, and personal glories accompanying these yardsticks (Cohan, 2022). For example, executives' aggressive character traits can be spilled over to aggressive tax avoidance strategies at their firms (Chyz, 2013). Narcissistic and/or overconfident CEOs are associated with

firms' aggressive tax strategies (Olsen and Stekelberg, 2016; Chyz et al., 2019) because often, these CEOs who possess a heightened sense of superiority and entitlement are extremely motivated to pursue rewards and desirable outcomes while not concerned with negative outcomes. To a certain extent, propelled to serve shareholders' interests, CEOs can also be forced to engage in aggressive tax avoidance strategies (Chyz and Gaertner, 2018). Furthermore, these aggressive behaviors are also often identified at firms with strong political connections, as political connections can ensure low costs of tax enforcement (Kim and Zhang, 2016).

Corporate Governance and Managerial Incentives

In addition to executives' ability, their personal payoff function and the associated agency cost are other causes of cross-sectional variation of firms' tax aggressiveness (Armstrong et al., 2012; Rego and Wilson, 2012; Gaertner, 2014). Tax avoidance and managerial rent extraction are often complementary because tax avoidance reduces corporate transparency, which, in turn, provides more opportunities for managers to extract firms' resources for personal benefit (Desai and Dharmapala, 2006; Desai et al., 2007; Kim et al., 2011).[5] To a certain extent, this argument is substantiated by empirical evidence that firms whose managers have relatively large risk-taking equity incentives engage in more tax avoidance (Rego and Wilson, 2012; Armstrong et al., 2013; Armstrong et al., 2015). Also, it has been documented that sound corporate governance can mitigate firms' tendency to engage in aggressive tax avoidance (Chen et al., 2010).

However, like any risky business strategy, tax strategy is an optimization process where firms weigh the cost and benefit associated with such strategies by default (Scholes and Wolfson,

[5] Nevertheless, Blaylock (2015) argues there is no conclusive evidence of managerial rent extraction in U.S. setting.

1992; Armstrong et al., 2015). Therefore, good corporate governance matters, but the association between corporate governance and the level of tax avoidance is non-linear (Armstrong et al., 2015). For example, Robinson et al. (2012) document that audit committee financial expertise, i.e., sound corporate governance, is positively associated with tax planning, but that this association is negative when tax planning is thought to be risky and too aggressive. When board financial expertise and independence are considered together, Armstrong et al. (2015) show that financially sophisticated and independent boards can help mitigate extreme levels of tax avoidance. In other words, sound corporate governance can reduce agency costs if firm managers deviate from the optimal level of tax avoidance strategies to maximize their own payoffs.

A tax haven is an effective tax strategy because it can substantially reduce a firm's cash tax liability. However, there are potential reputation costs and regulatory enforcement costs associated with tax aggressiveness. Applying this line of argument, industry leaders and profitable winners are in a better position to take advantage of aggressive tax strategies by establishing tax haven affiliates (Dharmapala and Riedel, 2013; Higgins et al., 2015; Kubick et al., 2015). However, the association between tax haven activities and profitability does not need to be strictly linear if a risky tax strategy involves an optimization process (Scholes and Wolfson, 1992; Cloyd et al., 2003; Robinson et al., 2012; Armstrong et al., 2015). Further, when firms face profitability pressure and limited investment opportunities (McGuire et al., 2014), they are probably more likely to be involved in tax haven activities as a last resort to assure profitability (Robinson et al., 2010; Armstrong et al., 2012) irrespective of increased risk exposure due to tax haven activities. Thus, whether there is a linear association between a firm's profitability pressure and tax haven activities is purely an empirical question. As such, we state our hypothesis in null format as follows:

H1: There is no association between firms' profitability pressure and tax haven activities.

II.2. Risk Exposures of Tax Haven Activities and Market Reaction

Risk of Tax Haven Activities

In the tax haven arena, the opacity caused by opportunistic managers rent extracting behavior (Desai and Dharmapala, 2006; Desai et al., 2007; Kim et al., 2011) can be amplified by investment through foreign subsidiaries using shells in tax haven jurisdictions that often obscures economic reality, on the asset side and liability side (Coppola et al., 2021). Therefore, tax haven activities can increase financial opacity. At the firm level, Balakrishnan et al. (2019) conclude that although firms engaging in aggressive tax planning can achieve expected tax savings, aggressive tax strategy can also lead to a less transparent information environment. Furthermore, increased tax position disclosures cannot mitigate the financial opacity associated with aggressive tax strategy (Balakrishnan et al., 2019).

In addition, tax avoidance is a risky business strategy that can often result in a higher level of tax uncertainty (Dyreng et al., 2019). Therefore, firms face a tradeoff between tax benefits and information opacity. Consequently, firms that are better insulated from risk exposure are in a better position to take advantage of establishing affiliates in tax haven jurisdictions (Higgens et al., 2015; Kubick et al., 2015; Kim and Zhang, 2016). In addition, capable managers can also help mitigate their firms' risk exposure because of their superior skills and understanding of their business (Demerjian et al., 2012; Demerjian et al., 2013; Koester et al., 2017). Guenther, Matsunaga, and Williams (2017) argue that if tax avoidance strategies are

implemented consistently, they will not increase firm risk.[6] Therefore, more empirical research is called for to understand better the association between tax haven activities and financial market risk.

Tax Haven Activities and Cost of Financing

As for whether tax haven activities are considered risky in finance, it has been documented that there is an increase in cost of capital, e.g., debt financing, for firms with aggressive tax avoidance, where the debt cost can be reflected in higher spread in either bank loans or at-issue bond spread accompanied with more stringent borrowing terms (Hasan, Hoi, Wu, and Zhang, 2014). For the equity market, Kim et al. (2011) find evidence that corporate tax avoidance is positively associated with firm-specific stock price crash risk because tax avoidance exacerbates opportunistic managers' tendency in rent extracting accompanied by manager's hiding unfavorable economic reality (i.e., hoarding and accumulation of bad news).

In addition, using a quasi-natural experiment, Bilicka, Clancey-Shang, and Qi (2022) document that multinational corporations affected by the worldwide debt cap reform introduced in the U.K. in 2010, which also had significantly restricted firms tax avoidance opportunities, experienced higher stock market returns after the shock, and this effect is mainly driven by firms with relatively poor corporate governance. Bilicka et al. (2022) attribute the positive stock market reaction to improved information transparency due to the reduction of tax avoidance opportunities. As a result, they suggest that policies that can curb aggressive tax strategies will help to improve financial transparency.

[6] Guenther et al. (2017) document that while cash tax rate volatility is positively associated with firms' future stock return volatility, tax avoidance measures used in literature are not associated with either firms' future overall risk or tax rate volatility.

However, the findings on the association between tax avoidance and the cost of capital is far from conclusive. Using the cost of equity measure by Lambert, Leuz, and Verrecchia (2007), Goh et al. (2016) document a negative association between tax avoidance and the cost of equity. Robinson et al. (2012), Armstrong et al. (2015), and Goh et al. (2016) find evidence that the negative effect of tax avoidance on the cost of equity is stronger for firms with better outside monitoring, the higher likelihood of realizing potential tax savings, and firms with higher information quality. However, the qualifiers attached to the claim that equity investors generally require a lower expected rate of return due to tax savings clearly illustrated the tradeoff between risk and return. Indeed, firm reputation is associated with the cost of capital (Cao, Myers, Myers, and Omer, 2015). Tax haven activities, albeit legal sometimes, are often viewed as firms' shirking corporate responsibilities, which can be viewed negatively by public opinion.

Therefore, how risk is associated with tax haven activities and how market prices such risk remain empirical questions. Ultimately, a firm's business environment, both internal and external, can be proxied by a firm's profitability pressure. Hence, we state our second hypothesis in null format:

H2a: There is no association between firms' tax haven activities and market returns.

H2b: The profitability pressure does not affect the association between firms' tax haven activities and market returns.

III. Research Design

We obtained financial reporting data from Compustat, stock price data from CRSP, institutional holding data from the Thomson Reuters Institutional Holdings (13F) database, and tax haven data from firms' 10-K filings (Exhibit 21). We retrieve tax haven information from all

the 10-K (Exhibit 21) filings of firms publicly trading in the U.S. from 1995 to 2020 (inclusive),[7] that is exactly our sample period.

III.1. Measures of Tax Havens

We construct three tax haven measures, namely, $Haven_{Hines}$, $Haven_{STHA}$, and $Haven_{top8}$. $Haven_{Hines}$ includes all jurisdictions identified in Hines and Rice (1994) based on both low tax rates and factors such as bank or commercial secrecy and the absence of exchange controls. $Haven_{STHA}$ includes all jurisdictions identified in the failed Stop Tax Have Abuse Act of 2007, which includes secrecy jurisdictions that have been previously and publicly identified by the Internal Revenue Service in Federal court proceedings.[8] $Haven_{top8}$ includes the top 8 jurisdictions based on the 2021 ranking of the Corporate Tax Haven Index (CTHI) value based on 20 indicators to measure the scope for corporate tax abuse that the jurisdiction's financial and tax systems allow for. The ranking is published every year on the Tax Justice Network website.[9] The compositions of all jurisdictions for $Haven_{Hines}$, $Haven_{STHA}$, and $Haven_{top8}$ are listed in Appendix A.

$Haven_{Hines}$, $Haven_{STHA}$, and $Haven_{top8}$ include the distinctive count of the number of tax jurisdictions. For example, if the Cayman Islands had been mentioned more than once in a firm's Form 10-K Exhibit 21 in a given year, we treat it as a count of 1 jurisdiction. Therefore, $Haven_{Hines}$, $Haven_{STHA}$, and $Haven_{top8}$ are all integers, 0, 1, 2, 3, and so on. When no haven

[7] Instead of using the raw 10-K documents, we download all the 'cleaned' 10-K documents created by Loughran McDonald from University Notre Dame's Software Repository for Accounting and Finance. These cleaned files have the extraneous characters removed which provides for substantial compression. We then create a Python script to identify tax haven jurisdictions in these filings. For all three tax haven measures defined in Appendix A, a tax haven is only counted if it is in the haven list of the measure. A tax haven measure is incremented by one for each distinct haven name identified by the script.
[8] https://www.congress.gov/bill/110th-congress/house-bill/2136?s=1&r=81
[9] https://cthi.taxjustice.net/en/

jurisdiction is mentioned in a firm's Form 10-K Exhibit 21, we set the corresponding haven measure to 0. Tax haven counts, excluding zero counts, are reported in Table 1.

Table 1 Panel A summarizes each year between 1995 and 2020 the number of publicly traded firms reported business activities measured by $Haven_{Hines}$, $Haven_{STHA}$, and $Haven_{top8}$ where the integers are greater than 0. The number of firms engaging in tax haven activities peaked from 1997 to 2000; the numbers are relatively stable afterward.[10] Table 1 Panel B summarizes the number of firms within each industry engaged in tax haven activities in 2020. Within our sample, approximately 65% of the firms use tax havens, suggesting that tax haven activities are quite pervasive tax strategies adopted more often by firms than tax shelter strategies.[11] The statistic is consistent with the notion that tax haven activities are likely to be an acceptable type of risk exposure from shareholders' perspective, and firm managers are encouraged to carry out these tax avoidance strategies (Robinson et al., 2010; Armstrong et al., 2012).

[Insert Table 1 here]

III.2. The Effect of Profitability Pressure on Tax Haven Activities ($H1_0$)

Our H1 tests whether profitability pressure is associated with corporations' tax haven activities. We used the following regression model:

$$\begin{aligned} Haven_{i,t} = {} & \beta_0 + \beta_1 Profitability\ Pressure_{i,t} + \beta_2 Avoidance\ Propensity_{i,t} \\ & + \beta_3\, Adj.Volatility_{CFO\ i,t} + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 Leverage_{i,t} + \beta_7 NOL_{i,t} \\ & + \beta_8 \Delta NOL_{i,t} + \beta_9 FI_{i,t} + \beta_{10} PPE_{i,t} + \beta_{11} Intangibles_{i,t} + \beta_{12} EqInc_{i,t} \end{aligned}$$

[10] Notably, often effective tax haven arrangement does not necessarily call for establishing affiliates in excessively large number of haven jurisdictions. For example, Apple's "Irish-Dutch-Irish" sandwich arrangement only involves two tax jurisdictions and is extremely effective in reducing taxable income on royalty (Holtzblatt, Geekie, and Tschakert, 2016).

[11] Samples for tax sheltering activities tend to be small. For example, Graham and Tucker (2006) use a sample of 43 unique firms with 152 firm-year observations. Wilson (2009) identifies 59 unique firms with 215 firm-year observations. Lisowsky (2010) has 267 firm-year observations. McGuire et al. (2014) use a sample of 45 unique firms.

$$+ \beta_{13} R\&D_{i,t} + \beta_{14} BTM_{i,t} + \beta_{15} iOWN_{i,t} + \beta_{16} Abs(DA)_{i,t} + \beta_{17} Big_{4/5i,t} + Industry\ \&Year\ Fixed\ Effects + \varepsilon_{i,t}, \quad (1)$$

where the regression is estimated using the OLS method that includes fixed industry effect and fixed year effect. In addition, estimation errors are clustered by firm level to adjust for time series dependence (Petersen, 2009). According to $H1_0$, the coefficient of interest is β_1.

$Haven_{i,t}$ represents the three haven activities, i.e., $Haven_{Hines}$, $Haven_{Abuse}$, and $Haven_{top8}$. We construct two variables for *Profitability Pressure*, where *Profitability Pressure* is a dummy variable set to 1 if the current year's (year *t*) earnings per share is less than that of the previous year's (year *t-1*), and 0 otherwise. Earnings per share is calculated as income before extraordinary items divided by the number of common shares outstanding.

There are many ways to implement tax avoidance strategies. These strategies are not mutually exclusive (Dyreng et al., 2008; Hanlon and Heitzman, 2010; Higgins et al., 2015; Kubick et al., 2015; Koester et al., 2017). However, all specific measures of tax avoidance have their limitations (Frank, Lynch, and Rego, 2009; Wilson, 2009; Hanlon and Heitzman, 2010; Lisowsky, 2010; Lanis and Richardson, 2015). We use the score based on Lisowsky (2010) where he estimated the likelihood of firms' engaging in aggressive tax shelter activities (Graham and Tucker, 2006; Hanlon and Slemrod, 2009; Gallemore, Maydew, and Thornock, 2014; Lanis and Richardson, 2015), and we label the measure as A*voidance Propensity*.[12] We also include other control variables. Specifically, incorporating tax strategies can be a gradual process (Higgins et al., 2015), and firms with a stable operating environment are in a better position to take advantage of long-term tax avoidance strategies (McGuire et al., 2014; Mayberry, McGuire,

[12] Lisowsky (2010) estimates a logistic model to predict the probability of a firm's engaging in tax sheltering activities (See his Table 4). The explanatory variables of his model include book-tax-difference, foreign income, R&D expenditures, and effective tax rates, all of which have been used in prior literature as proxies for tax planning (e.g., Dyreng et al., 2008; Chen et al., 2010; Kim et al., 2011; Hoi, Wu, and Zhang, 2013; Hope, Ma, and Thomas, 2013).

and Omer, 2015). We use abnormal operating cash flow volatility, the industry median adjusted operating cash flow volatility ($Adj.Volatility_{CFO}$) as the measure of a firm's operating stability (McGuire et al., 2014). *CFO* is cash flow from operating activity (OANCF) scaled by total assets (AT). $Volatility_{CFO}$ is the standard deviation of *CFO* from year *t-4* to *t*. $Adj.Volatility_{CFO}$ is the yearly industry median adjusted (by two-digit SIC) standard deviation of *CFO*. The other control variables in our analysis are similar to those in Hoi et al. (2013) and Kubick et al. (2015).

We include measures of corporation performance characteristics and tax avoidance determinants. Specifically, *Size* is the natural log of equity market value determined by multiplying the fiscal year end price of common stock (PRCC_F) by the common shares outstanding (CSHO). *ROA* is income before extraordinary items (IB) scaled by beginning balance total assets (AT). *Leverage* is the total long-term debt (DLTT) scaled by the beginning balance of total assets (AT). *NOL* is net operating loss carryforward (TLCF) scaled by beginning balance total assets (AT). Change of net operating loss carryforward, ΔNOL, is the change of net operating loss carryforward (TLCF) scaled by beginning balance total assets (AT). *FI* is foreign income (PIFO) scaled by beginning-of-year total assets. We use *PPE, Intangibles*, *EqInc*, and *R&D* to capture total net property, plant and equipment (PPENT), intangible assets (INTAN), equity income (ESUB), and research and development expense (XRD), respectively, all of which are scaled by the beginning-of-year total assets (AT). *BTM* is the equity book value (CEQ) scaled by the equity market value defined above. We use institutional ownership, *iOWN,* as a raw corporate governance measure. *iOWN* is the percentage of institutional holding of common shares outstanding. Follwoing Hoi et al. (2013), we use the absolute value of discretionary accruals, *Abs*(*DA*), as the measure of earnings quality. Discretionary accruals are the error terms

of the performance-adjusted accrual model (Kothari, Leone, and Wasley, 2005). $Big_{4/5}$ is an indicator variable set to 1 if the audit corporation is one of the Big 4/Big 5 and 0 otherwise.

In addition to estimating equation (1) using OLS and including fixed industry effect and fixed year effect, we also estimate the following ordered-logit model where the total number of total haven jurisdictions that a firm is associated with in a given year is $Haven_{i,t} \in \{0, 1, 2, \ldots, J\}$ and

$$\Pr(Haven_{i,t} \leq j \mid X) = F(\kappa_j - \beta X), \qquad j = 0, 2, \ldots, J\text{-}1, \tag{2}$$

where

$$\begin{aligned}\beta X = {} & \beta_0 + \beta_1 Profitability\ Pressure_{i,t} + \beta_2 Avoidance\ Propensity_{i,t} + \beta_3\, Adj.Volatility_{CFO\ i,t} \\ & + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 Leverage_{i,t} + \beta_7 NOL_{i,t} + \beta_8 \Delta NOL_{i,t} + \beta_9 FI_{i,t} + \beta_{10} PPE_{i,t} \\ & + \beta_{11} Intangibles_{i,t} + \beta_{12} EqInc_{i,t} + \beta_{13} R\&D_{i,t} + \beta_{14} BTM_{i,t} + \beta_{15} iOWN_{i,t} \\ & + \beta_{16} Abs(DA)_{i,t} + \beta_{17} Big_{4/5i,t} + Industry\ \&Year\ Fixed\ Effects + \varepsilon_{i,t}\,.\end{aligned}$$

III.3. The Pricing of Tax Haven Risk (H2a and H2b)

Our second set of hypotheses examines 1) whether tax haven activities are priced by the market as a risk consideration, and 2) whether profitability pressure affects the association between tax haven activities and market returns. To operationalize our analysis, we use the following OLS regression model:

$$\begin{aligned}Adj.Ret_{i,t} = {} & \beta_0 + \beta_1 Haven_{i,t} + \beta_2 Profitability\ Pressure_{i,t} \\ & + \beta_3 Haven_{i,t} \cdot Profitability\ Pressure_{i,t} + \beta_4\, Avoidance\ Propensity_{i,t} \\ & + \beta_5 Adj.Volatility_{CFOi,t} + \beta_6 Size_{i,t} + \beta_7 ROA_{i,t} + \beta_8 Leverage_{i,t} + \beta_9 NOL_{i,t} \\ & + \beta_{10} \Delta NOL_{i,t} + \beta_{11} FI_{i,t} + \beta_{12} PPE_{i,t} + \beta_{13} Intangibles_{i,t} + \beta_{14} EqInc_{i,t} \\ & + \beta_{15} R\&D_{i,t} + \beta_{16} BTM_{i,t} + \beta_{17} iOWN_{i,t} + \beta_{18} abs(DA)_{i,t} + \beta_{19} Big4/5_{i,t} \\ & + Industry\ \&\ Year\ Fixed\ Effects + \varepsilon_{i,t}\,.\end{aligned} \tag{3}$$

We use two measures for *Adj.Ret*, namely $Adj.Ret_{12\ months}$ *and* $Adj.Ret_{24\ months}$. Since the dissemination of financial reports usually occurs three months after the fiscal year-end, following

Hanlon (2005), $Adj.Ret_{12\ months}$ is a firm's market-adjusted buy-and-hold return beginning in the fourth month after the fiscal year-end of t to the end of the third month of fiscal year *t+1*. Considering the long-term aspect of the tax haven strategy (Higgins et al., 2015; Kubick et al., 2015; Guenther et al., 2017; Koester et al., 2017), we are also interested in the long-term market effect of haven activities. Similar to the calculation of $Adj.Ret_{12\ months}$, $Adj.Ret_{24\ months}$ is a firm's market-adjusted buy-and-hold return from the fourth month after the fiscal year-end of *year t* to the end of the third month of fiscal year *t+2*. The coefficients of interest are β_1 (**H2a**) and β_3 (**H2b**), i.e., the main effect of tax haven and the interaction effect of tax haven and profitability pressure.

IV. Empirical Findings

Table 2 shows the summary statistics of variables used in the analyses. The means (medians) for $Haven_{Hines}$, $Haven_{STHA}$, and $Haven_{Top8}$ are 1.629 (1.000), 1.647 (1.000) and 1.360 (1.000), respectively, suggestive of skewed distributions for these haven measures. With approximately 65% of corporations in the sample engaging in haven activities, the top 25% percentile corporations for each of the three haven measures tend to have multiple havens in different jurisdictions. The mean (median) of $Returns_{12\ months}$ is 5.2% (-5.7%). The mean (median) of $Returns_{24\ months}$ is 8.4% (-10.5%). Both return measures are skewed to higher returns in the sample. The median of *Profitability Pressure* is 1, which means that over half of the observations have at least one EPS decrease from year *t-2* to *t*.

[Insert Table 2 here]

Table 3 reports Pearson and Spearman correlations of variables used in our analysis. The three haven measures are positively correlated, with the coefficients ranging from 0.84 to 0.95 (Pearson) and 0.78 to 0.89 (Spearman). Although the correlation between *Profitability Pressure*$_{1year}$ and tax haven measures are all negative and significant based on the Pearson correlation, they are not all significant based on the Spearman correlation. Simply put, the univariate analysis provides weak evidence of the negative association between firms' profitability pressure and tax haven activities. Therefore, it is important to carry out a multivariate analysis to see how the association is affected when other determinants of tax haven activities are taken into consideration. The correlations of *Adj.Ret*$_{12\ months}$ and the three haven activity measures are all negative and significant. The univariate result provides preliminary evidence that haven activities are a risky component likely to be priced by the capital market.

[Insert Table 3 here]

IV.1. Profitability Pressure and Tax Haven Activities (H1$_0$)

To investigate the association between firms' profitability pressure causing more tax haven activities, we conduct two sets of analyses. First, we estimate OLS regressions with equation (1). The results are reported in Table 4. The coefficients on *Profitability Pressure*$_{1\ year}$ are 0.087 (t-stat=5.93) for *Haven*$_{Hines}$, 0.073 (t-stat=5.51) for *Haven*$_{STHA}$, and 0.049 (t-stat=4.95) for *Haven*$_{Top8}$. The coefficients on *Profitability Pressure*$_{2\ years}$ are 0.098 (t-stat=6.97) for *Haven*$_{Hines}$, 0.081 (t-stat=6.37) for *Haven*$_{STHA}$, and 0.055 (t-stat=5.74) for *Haven*$_{Top8}$. This is evidence that, based on multivariate analysis, there is a positive association between profitability pressure and tax haven activities, which is consistent with the notion that tax haven strategies can be used as the last resort to assure firms' profitability (Robinson et al., 2010; Armstrong et al.,

2012) when these firms' other investment opportunities are limited due to poor performance (McGuire et al., 2014).

It is important to note that the coefficients on *Avoidance Propensity*, i.e., the inclusive tax avoidance measure, are positive and significant across all tax haven specifications. This is evidence that tax avoidance strategies are multifaceted, and that tax haven activities and other tax avoidance strategies are not necessarily mutually exclusive. Furthermore, the effect of one cannot be subsumed by the other.

For other control variables, the coefficients on *Size* are positive and significant across all three tax haven specifications, supporting the notion that large firms have more resources to engage in tax haven activities. The coefficients on *ROA* are negative and significant, showing that firms with lower current period profit are more likely to engage in tax haven activities. The coefficients on *Leverage* are positive and indicate that firms carrying larger amounts of debt tend to use more tax havens, possibly because they have a higher demand for tax savings. The coefficients on *iOWN* and $Big_{4/5}$ are negatively associated with tax haven activities. If institutional ownership and Big 4/5 affiliation can be considered as a certain degree of governance measures, then our results show that corporate governance is negatively associated with tax haven activities, likely due to the risk exposures.[13]

[Insert Table 4 here]

To check the robustness of the results reported in Table 4, we also use ordered logit models (equation 2) to test firms' propensity to engage in tax haven activities, and the results are

[13] Our results are somewhat different from those of Robinson et al. (2012) and Armstrong et al. (2015) where they document that corporate board expertise and independence can help firms achieve the right degree of tax avoidance while avoiding excessively risky strategies.

reported in Table 5. Consistent with results in Table 4, the coefficient on *Pressure*, β_1, is 0.086 (z-stat=5.44) for $Haven_{Hines}$, 0.076 (z-stat=5.03) for $Haven_{STHA}$, and 0.063 (z-stat=4.06) for $Haven_{Top8}$. We consider this as further evidence that when firms face profitability pressure, they are more likely to be engaged in tax haven activities. Based on the results in Table 5, the change in $Pressure_{1\ year}$ from 0 to 1, holding everything else equal, will increase the odds for firms to be engaged in one more tax haven by 8.98%,[14] 7.90%, and 6.50%, respectively, for the three different tax haven specifications. A one-unit increase in *Profitability* $Pressure_{2\ years}$ will increase the odds for firms to be engaged in one more tax haven by 8.98%, 7.57%, and 6.29% for the three different tax haven specifications, respectively. Firms in the top ten percentile of *Profitability* $Pressure_{2\ years}$ have EPS decreases twice from year *t-2* to *t*. The odds of these firms using one more tax haven versus not using one increase by 18.77%,[15] 16.42%, and 13.43% for the three different tax haven specifications.

Taken together, our results are consistent with the notion that the null hypothesis (**H1$_0$**) of no association between profitability pressure and tax haven activities is rejected. Based on multivariate analyses, there is a positive association between firms' profitability pressure and firms' propensity to engage in tax haven activities. Our results support the notion that tax haven strategies can be used as a last resort to assure firms' profitability (Robinson et al., 2010; Armstrong et al., 2012; McGuire et al., 2014).

[Insert Table 5 here]

IV.2. The Pricing of Tax Haven Risk (H2a and H2b)

[14] For example, the percentage of increase in odds ratio for the logit regression with $Haven_{Hines}$ is calculated as: $e^{0.086}$ minus 1 is 8.98%.
[15] For example, the percentage of increase in odds ratio for the logit regression with $Haven_{Hines}$ is calculated as: $e^{2\times0.086}$ minus 1 is 8.77%.

According to the null hypotheses, 1) there is no association between haven activities and stock returns (**H2a**), and 2) the level of profitability pressure does not affect the association between firms' tax haven activities and market returns (**H2b**). In other words, we are testing that the coefficients of the main effect of tax haven activities in equation (2), β_1 (**H2a**), and the interaction effect of tax haven activities and profitability pressure, β_3 (**H2b**), are both zeros. The results are reported in Table 6.

In Table 6, having $Adj.Ret_{12\ months}$, the coefficient on *Haven,* β_1 is -0.016 (t-stat=-10.77), -0.018 (t-stat=-10.90), and -0.025 (t-stat=-11.19) for $Haven_{Hines,}$ $Haven_{STHA,}$ and $Haven_{Top8}$ respectively. Having $Adj.Ret_{24\ months}$, the coefficient on *Haven,* β_1 is -0.011 (t-stat=-5.31), -0.011 (t-stat=-5.03), and -0.016 (t-stat=-4.85) for $Haven_{Hines,}$ $Haven_{STHA}$, and $Haven_{Top8}$, respectively. The result rejects the null hypothesis (**H2a**) and shows that the risk associated with tax haven activities is priced by the capital market. Nonetheless, having $Adj.Ret_{24\ months}$ as return measure, β_1 is smaller in magnitude, suggesting a decaying effect of haven activities on capital market reaction.

As for the coefficient on the interaction term, *Haven*Profitability Pressure*, having $Adj.Ret_{12\ months}$, β_3 is 0.010 (t-stat=8.07), 0.011 (t-stat=8.11), and 0.016 (t-stat=8.64) for $Haven_{Hines,}$ $Haven_{STHA,}$ and $Haven_{Top8}$, respectively. Having $Adj.Ret_{24\ months}$, the coefficient on *Haven*Profitability Pressure,* β_3 is 0.009 (t-stat=5.38), 0.010 (t-stat=5.29), and 0.015 (t-stat=5.69) for $Haven_{Hines,}$ $Haven_{STHA}$, and $Haven_{Top8}$ respectively. The result rejects the null hypothesis (**H2b**) and shows the level of profitability pressure affects the association between tax haven activities and stock returns.

Taken together, our results suggest that, on average, tax haven activities are negatively priced by the capital market (β_1). The finding is consistent with the notion that tax haven

activities increase firms' information risk. Tax haven activities increase firms' financial opacity, which obscures economic reality (Desai and Dharmapala, 2006; Desai et al., 2007; Balakrishnan et al., 2019; Coppola et al., 2021). Furthermore, opacity due to tax haven activities provides opportunities for opportunistic managers' rent-extracting behavior that hurt shareholders' interests (Desai and Dharmapala, 2006; Desai et al., 2007; Kim et al., 2011). Both the information risk and agency cost associated with tax haven activities are priced by the capital market.

However, our results also suggest that when facing profitability pressure, tax haven activities are viewed favorably by the capital market (β_3). In other words, when firms face profitability pressure, as a last resort, these firms have to rely on tax haven activities to reduce tax expenses because "every dollar of taxes paid is a dollar that cannot be reinvested within the firm" (Koester et al., 2017). Under such circumstances, firms' tax departments are profit centers (Robinson et al., 2010; Armstrong et al., 2012).

Although, at first glance, our results contradict that of Goh et al. (2016), where they document a negative association between tax avoidance and cost of equity, Goh et al. (2016) acknowledge that the negative effect of tax avoidance on the cost of equity is stronger for firms with better outside monitoring, the higher likelihood of realizing potential tax savings, and firms with higher information quality. In other words, the study by Goh et al. (2016) has control for information risk and agency costs.

Our finding supports the notion that capital market reaction to firms' tax haven activities seems to be an ordered preference. First, tax haven activities are considered risky and are priced unfavorably by the capital market. Second, for firms that have exhausted other means to stay viable, tax haven activities are viewed as efforts by the capital market.

[Insert Table 6 here]

For both $Adj.Ret_{12\ months}$ and $Adj.Ret_{12\ months}$, the coefficients on *Avoidance Propensity* are negative and significant, consistent with the notion that aggressive tax strategies increase financial opacity and provide opportunities for managers' rent-seeking behaviors. As expected, the coefficients on *Profitability Pressure* are also negative, which is the value relevance of accounting earnings.

V. Additional Tests

V.1. Causality Test

Our study operates on the premise that profitability pressure has an impact on tax haven activities, as opposed to the inverse relationship. Nevertheless, an argument can be made for causality running in the opposite direction. For instance, engaging in tax haven activities may result in substantial management or reputation costs, ultimately affecting a company's profitability negatively. However, tax haven measures tend to be "sticky" over time. To address this potential endogeneity issue, we conduct Granger causality tests that account for the lead-lag relationship between profitability pressure and tax haven activities (Granger, 1969). Following Cheng and Subramanyam (2008) and Chen, Lobo, and Zhang (2017), we estimate both one-period-lag and two-period-lag models:

$$Haven_{i,t} = \gamma_1 Haven_{i,t-1} + \delta_1 Profitability\ Pressure_{i,t-1} + Control\ Variables_{i,t} + \varepsilon_{i,t}, \quad (4a)$$

$$Haven_{i,t} = \gamma_1 Haven_{i,t-1} + \gamma_2 Haven_{i,t-2} + \delta_1 Profitability\ Pressure_{i,t-1} + \delta_2 Profitability\ Pressure_{i,t-2} + Control\ Variables_{i,t} + \eta_{i,t}. \quad (4b)$$

We employ F tests to assess whether lagged profitability pressure is significantly associated with tax haven activities, even when accounting for lagged tax haven activities. Our

findings are reported in Table 7. F-values of *Profitability Pressure* with one-year lag are 7.11 ($p<0.008$), 4.99 ($p<0.014$), and 3.10 ($p<0.026$) for determinant variables *HavenHines*, $Haven_{STHA}$, and $Haven_{Top8}$, respectively. The F-values of *Profitability Pressure* with two-year lag are 6.01 ($p<0.014$), 5.53 ($p<0.018$), and 13.50 ($p<0.000$) for determined variables *HavenHines*, $Haven_{STHA}$, and $Haven_{Top8}$, respectively. F-tests reveal that lagged information on profitability pressure provides statistically significant information about tax haven activities in the presence of lagged tax haven activities. The results of both the one-year lag and two-year lag specifications reject the null and confirm the Granger causality.

[Insert Table 7 here]

V.2. Sensitivity Test

According to Desai, Foley, and Hines (2006), there are two distinctive yet nonexclusive patterns in how U.S. firms can lower income tax expenses by engaging in tax haven activities, namely transfer-pricing and/or purely tax deferral or avoidance. Multinational U.S. firms that are technology-intensive can benefit from intrafirm trade by manipulating income generated by intangible assets, i.e., transfer-pricing, to lower the overall tax expense. Specifically, these firms can allocate much income to subsidiaries in lower-income tax countries or jurisdictions. For example, the so-called "Irish-Dutch-Irish" sandwich strategy that Apple Inc. employs can effectively lower Apple's royalty income (Holtzblatt et al., 2016). However, albeit with tax loopholes, Ireland and the Netherlands are both vibrant economies with a full scale of economic activities. Due to the economy of scale, these countries make it easier for U.S. multinational companies to establish subsidiaries. However, there are many other tax haven countries and jurisdictions where the sizes of local economies are negligible. Therefore, when firms establish

operations in these countries and jurisdictions, the purpose is only for tax avoidance by tax deferral without meaningful economic activities (Desai et al., 2006). This type of tax havens is labeled as "dot havens" by Hines and Rice (1994) and Desai et al. (2006).

In addition to tax haven measures that we have used including all havens, we check the "dot haven" specifications. According to Desai et al. (2006) and Jones and Temouri (2016), we construct *Dot Haven,* which is the sum of total jurisdictions included in "dot havens".[16]
We repeat our analysis from Table 3 to Table 5 with only 'dot tax havens'. Using this subset of tax havens, we exclude real economic motivations for having subsidiaries in tax haven countries. Our results are presented in Tables 8 and 9. Table 8 reports similar analyses (**H1**) tabulated in Tables 4 and 5 but uses *Dot Haven* as an alternative haven measure. The results are robust to alternative tax haven measures and demonstrate a positive association between profitability pressure and tax haven activities.

[Insert Table 8 here]

Table 9 reports similar analyses (**H2a** and **H2b**) as in Table 6, except we use *Dot Haven* measure. It shows that, on average, tax haven activities are negatively priced by the capital market ($\beta_1 < 0$), i.e., *Dot Haven* increases firms' information risk. Nonetheless, when considering firms experiencing profitability pressure, Dot Haven generates favorable stock returns. In other words, the results suggest that tax haven activities are perceived as the last resort for firms to stay profitable.

[Insert Table 9 here]

[16] "Dot Havens" include Andorra, Anguilla, Antigua, Barbados, Bahrain, Bermuda, Bahamas, Belize, British Virgin Islands, Cayman Islands, Cook Islands, Cyprus, Isle of Man, Jersey, Gibraltar, Grenada, Guernsey, Liechtenstein, Luxembourg, Macao, Malta, Monaco, Netherlands Antilles, Saint Kitts and Nevis, Saint Lucia, Saint Vincent, Seychelles, and the Turks and Caicos Islands.

VI. Conclusions

In this paper, using tax haven activity data of publicly traded firms based on 10-K Exhibit 21 from the period of 1995 to 2020, we document a positive association between firms' profitability pressure and their propensity to engage in tax haven activities. We also document that, on average, tax haven activities are negatively priced by the capital market. The finding is consistent with the notion that tax haven activities increase firms' information risk and agency cost associated with potential managers' rent-extracting behavior. Furthermore, we document that when firms face intense profitability pressure, tax haven activities are viewed favorably by the capital market. Therefore, tax haven activities are likely one of the last resorts for firms to maintain profitability. In addition, the effect of tax haven activities on capital market reaction is not subsumed by other tax considerations, suggesting that tax strategies are multifaceted and can be complementary to each other.

Our results contribute to the literature on tax haven research by examining how the capital market reacts to tax haven activities. In doing so, we provide empirical evidence consistent with the conjecture that tax avoidance strategies are most likely intertwined with many considerations and factors. Our finding supports the notion that there is a non-linear capital market reaction to firms' tax haven activities. Although tax haven activities are generally considered risky and are priced unfavorably by the capital market, when firms have exhausted other means to maintain profitability, tax haven activities could be viewed as a viable strategy by the capital market.

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Appendix A: Tax Haven Compositions

$Haven_{Hines}$	$Haven_{STHA}$	$Haven_{Top8}$
Andorra, Anguilla*, Antigua and Barbuda, Antilles†, Bahamas, Bahrain, Barbados, Belize, Bermuda, British Virgin Islands*, Cayman Islands*, Cook Islands, Cyprus, Dominica, Gibraltar, Grenada, Guernsey‡, Hong Kong, Ireland, Isle of Man, Jersey‡, Jordan, Lebanon, Liberia, Liechtenstein, Luxembourg, Macau or Macao, Maldives, Malta, Marshall Islands, Mauritius, Monaco, Montserrat*, Niue, Panama, Singapore, Saint Kitts and Nevis, St. Lucia, Saint Vincent and Grenadines, Switzerland, Turks and Caicos*, and Vanuatu	Andorra, Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Cook Islands, Cyprus, Dominica, Gibraltar, Grenada, Guernsey, Hong Kong, Isle of Man, Jersey, Latvia, Liechtenstein, Lucia, Luxembourg, Malta, Panama, Samoa, Singapore, Saint Kitts and Nevis, Saint Vincent and Grenadines, Switzerland, U.S. Virgin Islands, and Vanuatu	Bermuda, British Virgin Islands, Cayman Islands, Hong Kong, Jersey, Luxembourg, Netherlands, and Switzerland

Note: * U.K. Caribbean Islands include the Cayman Islands, British Virgin Islands, Anguilla, Montserrat, and Turks and Caicos Islands (Hines and Rice, 1994).
† Antilles is labeled as Netherlands Antilles (Hines and Rice, 1994).
‡ Jersey and Guernsey are included as the Channels Islands (Hines and Rice, 1994).

Appendix B: Variable Definitions

Variable	Description
$Haven_{Hines}$	Sum of total unique haven jurisdictions included in different haven categories identified in Hines and Rice (1994), which are based on low tax rates, bank or commercial secrecy, and absence of exchange controls.
$Haven_{STHA}$	Sum of total unique haven jurisdictions identified in the failed Stop Tax Have Abuse Act of 2007, which include secrecy jurisdictions that have been previously and publicly identified by the Internal Revenue Service in Federal court proceedings.
$Haven_{Top8}$	Sum of total unique haven jurisdictions based on the 2021 ranking of Corporate Tax Haven Index (CTHI) value based on 20 indicators.
Profitability Pressure	A dummy variable that is set to 1 if the current year's earnings per share is less than that of previous year's earnings per share, and 0 otherwise. Earnings per share is calculated as income before extraordinary items (IB) divided by number of common shares outstanding (CSHO × split adjustment factor).
AdjRet1Y	A size adjusted 12-month buy-and-hold return starting from the third month of a given fiscal year.
AdjRet2Y	A size adjusted 24-month buy-and-hold return starting from the third month of a given fiscal year.
Avoidance Propensity	The value based on the logistic model used by Lisowsky (2010) to estimate the likelihood of firms' engaging in aggressive tax shelter activities.
$Volatility_{AdjCFO}$	The yearly industry median adjusted (by 2-digit SIC) standard deviation of *CFO* measured period over the past four years. *CFO* is cash flow from operating activity (OANCF minus XIDOC) scaled by total assets (AT).
Size	The natural logarithm of equity market value (PRCC_F × SCHO).
ROA	Income before extraordinary items (IB) scaled by beginning balance total assets (AT).
Leverage	Total long-term debt (DLTT), scaled by beginning balance total assets (AT).
NOL	A dummy variable coded as 1 if a tax loss carryforward (TLCF) is positive at the beginning of the year, 0 otherwise, following Gao, Yang, and Zhang (2016).
ΔNOL	Change in tax-loss carryforward (TLCF), scaled by beginning balance total assets (AT).
FI	Foreign income (PIFO), scaled by beginning balance total assets (AT).
PPE	Total net property, plant and equipment (PPENT), scaled by beginning balance total assets (AT).
Intangibles	Intangible assets (INTAN), scaled by beginning balance total assets (AT).

EqInc	Equity income (ESUB), scaled by beginning balance total assets (AT).
R&D	Research and development expense (XRD), scaled by beginning balance total assets (AT).
BTM	The book-to-market ratio is derived by dividing a firm's current book equity value (CEQ) by its market value.
iOWN	The percentage of institutional holding of common shares outstanding.
Abs(DA)	The absolute value of the discretionary accruals (*DA*) estimated using the Kothari et al. (2005) performance-adjusted accruals model.
Big4/5	An indicator variable set to 1 if the audit firm is one of the Big 4/Big 5 and 0 otherwise.

Table 1: Tax Haven Counts
Panel A. Firms with Tax Haven Activities

Year	$Haven_{Hines}$	$Haven_{STHA}$	$Haven_{Top8}$
1995	987	1,240	1,175
1996	1,601	2,084	1,965
1997	1,849	2,331	2,183
1998	1,829	2,324	2,147
1999	1,797	2,268	2,107
2000	1,685	2,105	1,983
2001	1,615	1,969	1,870
2002	1,546	1,847	1,760
2003	1,550	1,838	1,793
2004	1,548	1,817	1,771
2005	1,552	1,778	1,742
2006	1,561	1,763	1,727
2007	1,519	1,718	1,674
2008	1,427	1,615	1,560
2009	1,450	1,626	1,577
2010	1,459	1,626	1,594
2011	1,437	1,583	1,554
2012	1,438	1,596	1,569
2013	1,433	1,598	1,568
2014	1,469	1,619	1,588
2015	1,468	1,588	1,554
2016	1,438	1,542	1,490
2017	1,463	1,551	1,515
2018	1,471	1,553	1,498
2019	1,471	1,552	1,503
2020	1,527	1,603	1,550
Total	39,590	45,734	44,017

Panel B. Corporations with Tax Havens by Industry (2020)

Industry	SIC codes	$Haven_{Hines}$	$Haven_{STHA}$	$Haven_{Top8}$
Agriculture, Forestry, and Fishing	0100-0999	3	2	2
Mining	1000-1499	39	40	40
Construction	1500-1799	19	23	22
Manufacturing				
	2000-2700	93	99	99
	2800-2899*	383	387	367
	2900-3499	75	78	74
	3500-3599**	93	92	90
	3600-3699***	136	137	138
	3700-3999	210	209	211
Wholesale Trade	5000-5199	53	62	55
Retail Trade	5200-5999	76	109	107
Services	7000-8999	342	360	340
Other	9900-9999	5	5	4
Total		1,527	1,603	1,550

Note: We use the latest industry classification codes as the ending sample year for 2020.
* 2800-2899: Chemicals and Allied Products
** 3500-3599: Industrial and Commercial Machinery and Computer Equipment
*** 3600-3699: Electronic and Other Electrical Equipment and Components, Except Computer Equipment

Table 2: Summary Statistics

	N	Mean	S.D.	10%	25%	50%	75%	90%
$Haven_{Hines}$	70,340	1.629	2.313	0.000	0.000	1.000	2.000	5.000
$Haven_{STHA}$	70,340	1.647	2.075	0.000	0.000	1.000	2.000	4.000
$Haven_{Top8}$	70,340	1.360	1.554	0.000	0.000	1.000	2.000	4.000
Profitability Pressure	70,340	0.423	0.494	0.000	0.000	0.000	1.000	1.000
$AdjRet_{12\ months}$	70,340	0.052	0.654	-0.536	-0.308	-0.057	0.227	0.671
$AdjRet_{24\ months}$	63,547	0.084	1.081	-0.706	-0.447	-0.105	0.295	0.903
Avoidance Propensity	70,340	5.025	4.167	-0.618	2.221	5.296	8.055	10.196
$Adj.Volatility_{CFO}$	70,340	0.016	0.123	-0.061	-0.034	-0.010	0.026	0.101
Size	70,340	5.852	2.076	3.180	4.312	5.785	7.260	8.614
ROA	70,340	-0.032	0.266	-0.292	-0.047	0.035	0.087	0.146
Leverage	70,340	0.185	0.226	0.000	0.001	0.114	0.292	0.475
NOL	70,340	0.710	0.454	0.000	0.000	1.000	1.000	1.000
ΔNOL	70,340	0.093	15.751	-0.021	0.000	0.000	0.009	0.186
FI	70,340	0.011	0.036	0.000	0.000	0.000	0.010	0.049
PPE	70,340	0.268	0.260	0.037	0.082	0.183	0.363	0.637
Intangibles	70,340	0.175	0.252	0.000	0.000	0.069	0.260	0.495
EqInc	70,340	0.000	0.004	0.000	0.000	0.000	0.000	0.000
R&D	70,340	0.074	0.140	0.000	0.000	0.010	0.090	0.217
BTM	70,340	0.589	0.525	0.132	0.251	0.448	0.754	1.185
iOWN	70,340	0.511	0.319	0.057	0.215	0.535	0.798	0.930
Abs(DA)	70,340	0.100	0.113	0.012	0.030	0.067	0.127	0.220
Big_5	70,340	0.801	0.400	0.000	1.000	1.000	1.000	1.000

Note: All continuous variables are winsorized at the top and bottom 1% of their cross-sectional distribution (two-tailed).

Table 3: Correlation Matrices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Haven$_{Hines}$ (1)		**.89**	**.78**	.00	**.04**	**.45**	**-.22**	**.46**	**.06**	**.09**	**.04**	**.01**	**.36**	**-.10**	**.23**	**.09**	**.18**	**-.14**	**.33**	**.02**	**.15**
Haven$_{STHA}$ (2)	**.95**		**.90**	**-.01**	**.04**	**.44**	**-.22**	**.45**	**.07**	**.10**	**.03**	.00	**.33**	**-.09**	**.23**	**.09**	**.12**	**-.13**	**.32**	.00	**.15**
Haven$_{Top8}$ (3)	**.84**	**.90**		-.01	**.05**	**.45**	**-.23**	**.46**	**.07**	**.11**	**.03**	.00	**.34**	**-.10**	**.26**	**.09**	**.12**	**-.14**	**.33**	.00	**.15**
Profitability Pressure (4)	**-.01**	**-.02**	**-.01**		**-.23**	**-.08**	**.03**	**-.10**	**-.37**	**.02**	**-.01**	**.11**	**-.11**	**-.02**	**-.03**	**-.04**	**.02**	**.16**	**-.05**	-.01	**-.02**
AdjRet$_{12\ months}$ (5)	-.01	**-.01**	**-.02**	**-.29**		**.13**	**-.09**	**.22**	**.28**	**.01**	**.02**	**-.10**	**.12**	**.04**	**.06**	**.05**	**-.02**	**-.25**	**.13**	**.02**	**.03**
Avoidance Propensity (6)	**.44**	**.44**	**.46**	**-.08**	.01		**-.40**	**.82**	**.37**	**.35**	**.06**	**-.12**	**.40**	**.20**	**.32**	**.19**	**-.25**	**-.05**	**.64**	**-.17**	**.56**
Adj.Volatility$_{CFO}$ (7)	**-.14**	**-.15**	**-.16**	**.02**	.00	**-.39**		**-.34**	**-.22**	**-.17**	**-.03**	**.09**	**-.25**	**-.07**	**-.25**	**-.09**	**.06**	**-.04**	**-.28**	**.14**	**-.15**
Size (8)	**.48**	**.48**	**.50**	**-.10**	**.09**	**.80**	**-.25**		**.34**	**.22**	**.08**	**-.06**	**.38**	**.09**	**.31**	**.15**	**.00**	**-.40**	**.72**	**-.03**	**.36**
ROA (9)	**.07**	**.07**	**.08**	**-.21**	**.09**	**.46**	**-.46**	**.25**		.01	**.06**	**-.32**	**.31**	**.18**	**.11**	**.11**	**-.23**	**-.15**	**.23**	**-.06**	**.09**
Leverage (10)	**.07**	**.08**	**.08**	**.03**	**-.01**	**.25**	**-.12**	**.16**	**.04**		**.01**	**-.02**	**.09**	**.37**	**.26**	**.10**	**-.31**	**.02**	**.18**	**-.13**	**.14**
NOL (11)	**.03**	**.02**	**.02**	**-.01**	-.01	**.05**	**-.04**	**.08**	**.03**	.01		**.18**	.00	**-.02**	**.05**	-.01	**-.02**	**-.02**	**.09**	**.02**	**-.04**
ΔNOL (12)	-.00	-.00	-.01	**.01**	-.01	**-.07**	**.09**	**-.02**	**-.18**	.00	**.05**		**-.11**	**-.06**	**-.05**	**-.05**	**.14**	**-.05**	**-.05**	**.06**	**-.02**
FI (13)	**.30**	**.29**	**.31**	**-.12**	**.05**	**.33**	**-.16**	**.33**	**.26**	.01	**-.02**	**-.03**		**.01**	**.20**	**.12**	**.03**	**-.10**	**.28**	**-.03**	**.12**
PPE (14)	**-.11**	**-.10**	**-.13**	-.01	**.01**	**.14**	**-.10**	**.06**	**.13**	**.39**	**-.02**	**-.02**	**-.01**		**-.17**	**.08**	**-.37**	**.09**	**.01**	**-.15**	**.07**
Intangibles (15)	**.17**	**.18**	**.20**	-.01	**-.01**	**.21**	**-.10**	**.24**	**.04**	**.32**	**.04**	**.03**	**.07**	**-.17**		**.06**	**-.06**	**-.04**	**.30**	**-.02**	**.05**
EqInc (16)	**.08**	**.08**	**.07**	**-.04**	.01	**.13**	**-.06**	**.11**	**.11**	**.04**	.00	**-.02**	**.08**	**.06**	.00		**-.10**	**.01**	**.10**	**-.07**	**.05**
R&D (17)	-.01	**-.03**	**-.02**	**.03**	**.05**	**-.37**	**.38**	**-.07**	**-.61**	**-.17**	.00	**.13**	**-.10**	**-.25**	**-.08**	**-.09**		**-.32**	**-.04**	**.24**	.02
BTM (18)	**-.13**	**-.12**	**-.14**	**.16**	**-.19**	**-.06**	**-.08**	**-.40**	**.04**	**-.02**	**-.03**	**-.02**	**-.12**	**.07**	**-.07**	.00	**-.24**		**-.15**	**-.22**	**-.08**
iOWN (19)	**.30**	**.30**	**.33**	**-.05**	**.02**	**.63**	**-.24**	**.69**	**.24**	**.14**	**.09**	**-.03**	**.20**	.00	**.21**	**.06**	**-.10**	**-.19**		**-.05**	**.30**
Abs(DA) (20)	**-.01**	**-.02**	**-.02**	**-.01**	**.05**	**-.22**	**.28**	**-.05**	**-.35**	**-.03**	**.02**	**.09**	**-.01**	**-.07**	**.02**	**-.05**	**.37**	**-.15**	**-.09**		-.07
Big$_{4/5}$ (21)	**.15**	**.15**	**.16**	**-.02**	.01	**.57**	**-.11**	**.35**	**.10**	**.11**	**-.04**	**-.01**	**.09**	**.03**	**.03**	**.02**	.01	**-.09**	**.30**	**-.09**	

Note: Pearson correlations appear below the diagonal, and Spearman correlations appear above. All variables are described in Appendix B. Correlations in bold are significant at 0.01 level (two-tailed). For brevity, *AdjRet*$_{24\ months}$ are omitted from the correlation table.

Table 4: The Effect of Profitability Pressure on Tax Haven Activities-**H1**

		Dependent Variables: Haven Measures		
		$Haven_{Hines}$	$Haven_{STHA}$	$Haven_{Top8}$
Profitability Pressure	**$H1_0$**	0.087***	0.073***	0.049***
		(5.93)	(5.51)	(4.95)
Avoidance Propensity		0.216***	0.200***	0.155***
		(22.62)	(23.14)	(24.00)
$Adj.Volatility_{CFO}$		-0.003	-0.063	-0.152**
		(-0.03)	(-0.71)	(-2.29)
Size		0.321***	0.279***	0.208***
		(12.43)	(11.77)	(13.21)
ROA		-1.205***	-1.117***	-0.886***
		(-16.90)	(-17.89)	(-19.96)
Leverage		0.423***	0.399***	0.344***
		(5.58)	(5.76)	(6.78)
NOL		-0.037	-0.046	-0.054**
		(-1.10)	(-1.52)	(-2.36)
ΔNOL		0.020***	0.016***	0.031***
		(3.49)	(3.37)	(4.32)
FI		8.365***	6.929***	5.344***
		(13.00)	(11.87)	(12.68)
PPE		-1.216***	-1.114***	-0.882***
		(-12.19)	(-12.71)	(-14.37)
Intangibles		-0.053	0.027	0.057
		(-0.69)	(0.38)	(1.11)
EqInc		14.859***	12.322***	4.669
		(3.42)	(3.04)	(1.64)
R&D		-0.026	-0.204	-0.206**
		(-0.17)	(-1.48)	(-2.07)
BTM		0.170***	0.125***	0.089***
		(4.73)	(3.91)	(3.88)
iOWN		-0.688***	-0.609***	-0.353***
		(-6.44)	(-6.31)	(-5.60)
Abs(DA)		-0.225**	-0.176**	-0.158**
		(-2.30)	(-1.96)	(-2.37)
$Big_{4/5}$		-0.722***	-0.708***	-0.545***
		(-13.42)	(-14.51)	(-15.19)
Fixed Industry Effect		Yes	Yes	Yes
Fixed Year Effect		Yes	Yes	Yes
Adjusted R^2		34.87%	33.21%	37.09%

Note: (OLS Regression, 1995-2020, N = 70,340) Variable descriptions are the same as outlined in Table 2. All continuous variables are winsorized at the top and bottom 1% of their cross-sectional distribution. *, **, *** denote statistical significance at 10%, 5%, and 1% levels, respectively (two-tailed). T-statistics presented in parentheses are estimated based on standard errors clustered by firm. Estimated intercepts are not reported.

Table 5 The Effect of Profitability Pressure on Tax Haven Activities-**H1**

		Dependent Variables: Haven Measures		
		$Haven_{Hines}$	$Haven_{STHA}$	$Haven_{Top8}$
Profitability Pressure$_{1\ year}$	**H1**	0.086***	0.076***	0.063***
		(5.44)	(5.03)	(4.06)
Avoidance Propensity		0.357***	0.319***	0.300***
		(26.74)	(26.19)	(25.11)
Adj.Volatility$_{CFO}$		0.129	0.005	-0.168
		(1.13)	(0.04)	(-1.50)
Size		0.131***	0.144***	0.186***
		(5.29)	(6.06)	(7.90)
ROA		-1.453***	-1.401***	-1.457***
		(-19.05)	(-19.38)	(-19.87)
Leverage		0.342***	0.347***	0.440***
		(4.14)	(4.48)	(5.69)
NOL		-0.036	-0.054	-0.079**
		(-1.02)	(-1.60)	(-2.32)
ΔNOL		0.042**	0.038**	0.067***
		(2.46)	(2.43)	(5.61)
FI		6.082***	6.044***	6.388***
		(11.36)	(11.45)	(11.89)
PPE		-1.437***	-1.377***	-1.437***
		(-12.46)	(-13.10)	(-13.75)
Intangibles		-0.263***	-0.116	-0.013
		(-3.54)	(-1.62)	(-0.18)
EqInc		10.282***	7.246*	2.695
		(2.58)	(1.90)	(0.69)
R&D		1.095***	0.543***	0.251
		(6.65)	(3.47)	(1.58)
BTM		-0.006	-0.003	0.030
		(-0.15)	(-0.08)	(0.78)
iOWN		-0.283***	-0.274***	-0.281***
		(-3.05)	(-3.13)	(-3.28)
Abs(DA)		-0.266**	-0.225**	-0.288***
		(-2.51)	(-2.22)	(-2.78)
Big$_{4/5}$		-1.144***	-1.109***	-1.056***
		(-16.64)	(-17.41)	(-16.57)
Fixed Industry Effect		Yes	Yes	Yes
Fixed Year Effect		Yes	Yes	Yes
Pseudo R^2		13.80%	12.00%	13.50%

Note: (Ordered Logit Regression, 1995-2020, N = 70,340) Variable descriptions are the same as outlined in Table 2. All continuous variables are winsorized at the top and bottom 1% of their cross-sectional distribution. *, **, *** denote statistical significance at 10%, 5%, and 1% levels, respectively (two-tailed). T-statistics presented in parentheses are estimated based on standard errors clustered by firm. Estimated intercepts are not reported.

Table 6 Market Valuation of Tax Haven Risk **(H2a** and **H2b)**

		$Adj.Ret_{12\ months}$			$Adj.Ret_{24\ months}$		
$Haven_{Hines}$	**H2a**	-0.016***			-0.011***		
		(-10.77)			(-5.31)		
$Haven_{STHA}$	**H2a**		-0.018***			-0.011***	
			(-10.90)			(-5.03)	
$Haven_{Top8}$	**H2a**			-0.025***			-0.016***
				(-11.19)			(-4.85)
Profitability Pressure		-0.095***	-0.097***	-0.099***	-0.086***	-0.088***	-0.092***
		(-21.29)	(-21.02)	(-20.97)	(-12.48)	(-12.47)	(-12.57)
$Haven_{Hines}$*Profitability Pressure	**H2b**	0.010***			0.009***		
		(8.07)			(5.38)		
$Haven_{STHA}$* Profitability Pressure	**H2b**		0.011***			0.010***	
			(8.11)			(5.29)	
$Haven_{Top8}$* Profitability Pressure	**H2b**			0.016***			0.015***
				(8.64)			(5.69)
Avoidance Propensity		-0.029***	-0.029***	-0.029***	-0.020***	-0.020***	-0.020***
		(-16.02)	(-16.04)	(-15.86)	(-7.78)	(-7.80)	(-7.82)
$Adj.Volatility_{CFO}$		-0.059**	-0.060**	-0.061**	-0.093**	-0.094**	-0.094**
		(-2.01)	(-2.04)	(-2.09)	(-2.05)	(-2.06)	(-2.08)
Size		0.055***	0.055***	0.055***	0.018***	0.018***	0.018***
		(16.63)	(16.61)	(16.75)	(4.00)	(3.96)	(3.95)
ROA		0.373***	0.373***	0.371***	0.532***	0.533***	0.532***
		(18.56)	(18.58)	(18.42)	(20.86)	(20.89)	(20.85)
Leverage		0.019	0.019	0.020	0.048**	0.047**	0.047**
		(1.32)	(1.30)	(1.35)	(2.12)	(2.10)	(2.10)
NOL		-0.003	-0.003	-0.004	-0.003	-0.003	-0.003
		(-0.70)	(-0.72)	(-0.77)	(-0.42)	(-0.42)	(-0.42)
ΔNOL		-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
		(-0.77)	(-0.79)	(-0.78)	(-0.97)	(-0.97)	(-0.98)
FI		-0.003	-0.013	0.002	0.069	0.061	0.069
		(-0.04)	(-0.19)	(0.02)	(0.68)	(0.60)	(0.68)
PPE		0.029*	0.030*	0.028*	-0.015	-0.014	-0.014
		(1.93)	(1.95)	(1.83)	(-0.68)	(-0.65)	(-0.66)
Intangibles		-0.036***	-0.035***	-0.035***	-0.096***	-0.095***	-0.095***
		(-2.99)	(-2.92)	(-2.89)	(-5.67)	(-5.64)	(-5.64)
EqInc		0.507	0.480	0.424	1.195	1.175	1.144
		(0.75)	(0.71)	(0.62)	(1.26)	(1.24)	(1.20)
R&D		0.221***	0.219***	0.218***	0.327***	0.326***	0.326***
		(6.00)	(5.95)	(5.93)	(6.27)	(6.27)	(6.26)
BTM		-0.176***	-0.176***	-0.176***	-0.127***	-0.127***	-0.127***
		(-26.43)	(-26.52)	(-26.49)	(-12.64)	(-12.68)	(-12.66)
iOWN		-0.116***	-0.115***	-0.114***	-0.074***	-0.074***	-0.073***
		(-10.97)	(-10.93)	(-10.89)	(-4.64)	(-4.61)	(-4.59)
Abs(DA)		0.188***	0.188***	0.187***	0.093**	0.093**	0.092**
		(5.33)	(5.33)	(5.31)	(2.29)	(2.29)	(2.26)

Big4/5	0.062***	0.062***	0.061***	0.103***	0.104***	0.104***
	(7.11)	(7.08)	(6.97)	(7.58)	(7.58)	(7.58)
N		70,340			63,547	
Fixed Industry Effect	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Year Effect	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	12.61%	12.61%	12.62%	8.77%	8.77%	8.78%

Note: (OLS Regression, 1995-2020, N=70,340) Variable descriptions are the same as outlined in Table 2. All continuous variables are winsorized at the top and bottom 1% of their cross-sectional distribution. *, **, *** denote statistical significance at 10%, 5%, and 1% levels, respectively (two-tailed). T-statistics presented in parentheses are estimated based on standard errors clustered by firm. Estimated intercepts are not reported.

Table 7 Granger Causality Test

Haven Measures	Models	δ_1	$\delta_1 + \delta_2$	F-value	p-value
$Haven_{Hines}$	4a (*F-test:* $\delta 1=0$)	0.026		7.11	0.008
	4b (*F-test:* $\delta 1+\delta 1=0$)		0.033	6.01	0.014
$Haven_{STHA}$	*4a* (*F-test:* $\delta 1=0$)	0.020		4.99	0.026
	4b (*F-test:* $\delta 1+\delta 1=0$)		0.030	5.53	0.018
$Haven_{Top8}$	*4a* (*F-test:* $\delta 1=0$)	0.010		3.10	0.026
	4b (*F-test:* $\delta 1+\delta 1=0$)		0.029	13.05	0.000

Note: Variable descriptions are the same as outlined in Table 2. All continuous variables are winsorized at the top and bottom 1% of their cross-sectional distribution. Coefficients of all control variables are omitted for brevity.

Table 8 Sensitivity Analyses - The Effect of Profitability Pressure on Dot Haven Activities-**H1**

		Dependent Variable: *Dot Haven*	
		OLS Regression	*Ordered Logit*
Profitability Pressure	**H1**	0.023***	0.037**
		(2.60)	(2.35)
Avoidance Propensity		0.108***	0.245***
		(19.61)	(21.51)
$Adj.Volatility_{CFO}$		0.069	0.142
		(1.21)	(1.22)
Size		0.162***	0.151***
		(10.49)	(6.47)
ROA		-0.694***	-1.311***
		(-15.92)	(-16.94)
Leverage		0.294***	0.492***
		(6.62)	(6.19)
NOL		-0.018	-0.048
		(-0.92)	(-1.33)
ΔNOL		0.007	0.016
		(0.98)	(0.58)
FI		2.432***	3.258***
		(6.28)	(5.55)
PPE		-0.577***	-1.035***
		(-9.69)	(-9.98)
Intangibles		0.100**	0.099
		(2.15)	(1.35)
EqInc		10.365***	9.662**
		(3.59)	(2.31)
R&D		-0.423***	-0.508***
		(-4.88)	(-3.02)
BTM		0.102***	0.078**
		(4.57)	(1.99)
iOWN		-0.457***	-0.380***
		(-7.45)	(-4.25)
Abs(DA)		-0.101*	-0.143
		(-1.68)	(-1.33)
$Big_{4/5}$		-0.406***	-0.900***
		(-12.53)	(-13.85)
Fixed Industry Effect		Yes	Yes
Fixed Year Effect		Yes	Yes
Adjusted R^2		22.19%	
Pseudo R^2			9.66%

Note: Period: 1995-2020, N = 70,340) Variable descriptions are the same as outlined in Table 2. All continuous variables are winsorized at the top and bottom 1% of their cross-sectional distribution. *, **, *** denote statistical significance at 10%, 5%, and 1% levels, respectively (two-tailed). T-statistics presented in parentheses are estimated based on standard errors clustered by firm. Estimated intercepts are not reported.

Table 9 Sensitivity Analyses: Market Valuation of Dot Tax Haven Risk **(H2a** and **H2b)**

		$Adj.Ret_{12\ months}$	$Adj.Ret_{24\ months}$
Dot Haven	**H2a**	-0.020***	-0.023***
		(-9.16)	(-6.47)
Profitability Pressure		-0.246***	-0.266***
		(-42.52)	(-26.23)
*Dot Haven*Profitability Pressure*	**H2b**	0.031***	0.038***
		(11.24)	(8.38)
Avoidance Propensity		-0.031***	-0.024***
		(-16.89)	(-7.14)
$Adj.Volatility_{CFO}$		-0.074**	-0.060
		(-2.52)	(-0.94)
Size		0.055***	0.029***
		(16.70)	(5.20)
ROA		0.328***	0.508***
		(16.75)	(12.45)
Leverage		0.024*	0.037
		(1.67)	(1.18)
NOL		-0.003	-0.003
		(-0.59)	(-0.26)
ΔNOL		-0.004	-0.025
		(-1.43)	(-1.05)
FI		-0.145**	-0.191*
		(-2.17)	(-1.67)
PPE		0.033**	0.030
		(2.16)	(0.88)
Intangibles		-0.032***	-0.122***
		(-2.66)	(-5.96)
EqInc		0.269	-0.312
		(0.40)	(-0.20)
R&D		0.178***	0.296***
		(4.83)	(3.90)
BTM		-0.166***	-0.118***
		(-25.56)	(-10.64)
iOWN		-0.107***	-0.085***
		(-10.28)	(-4.32)
Abs(DA)		0.161***	0.203***
		(4.61)	(3.39)
$Big_{4/5}$		0.066***	0.113***
		(7.61)	(6.23)
Fixed Industry Effect		Yes	Yes
Fixed Year Effect		Yes	Yes
Adjusted R^2		14.50%	6.64%

Note: (OLS Regression, 1995-2020, N=70,340) Variable descriptions are the same as outlined in Table 2. All continuous variables are winsorized at the top and bottom 1% of their cross-sectional distribution. *, **, *** denote statistical significance at 10%, 5%, and 1% levels, respectively (two-tailed). T-statistics presented in parentheses are estimated based on standard errors clustered by firm. Estimated intercepts are not reported.