Does Diverse Tax Planning Reduce Tax Risk?

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Abstract: We investigate the relationship between diverse tax planning and a firm's level of tax risk. Prior studies have demonstrated that firms face a trade-off between engaging in tax avoidance and managing exposure to tax risk. We propose that firms may be able to achieve both objectives by diversifying their portfolios of tax avoidance strategies. We create two measures of diversification based on two different ways of measuring tax avoidance. Using these two measures, we find that tax strategy diversification benefits firms in two ways. First, when holding the level of tax avoidance constant, increasing diversification reduces the firm's exposure to tax risk. Second, when firms increase their level of tax avoidance, having higher diversification mitigates the impact of the increased tax avoidance on their tax risk exposure. Our study highlights the benefits of firms engaging in a diverse portfolio of tax strategies and shows that the relationship between tax avoidance and tax risk is contingent on the firm's diversification, which may provide an explanation for the mixed evidence found in prior literature.

Keywords: tax risk; tax avoidance; tax planning; effective tax rates; diversification; tax strategies

JEL Classifications: H25, H32, M41, M48.

Data Availability: Data are available from the public sources cited in the text.

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I. INTRODUCTION

Prior studies have generally found that managers prefer smooth, or less volatile, earnings and cash flows (e.g., Beidleman 1973; Ronen and Sadan 1981; Healy and Wahlen 2000; Graham, Harvey, and Rajgopal 2005). Given that income taxes are a significant expense and cash outflow for many firms, it follows that managers may prefer less volatile tax expenses and tax payments as well. However, prior literature suggests that minimizing tax volatility may be a separate and distinct objective from tax minimization (Neuman 2023). In short, firms likely trade off the ability to engage in increased tax avoidance (i.e., reduced tax payments/expenses) with the preference for maintaining low volatility of tax payments/expenses. We propose that through strategic tax planning, some firms may be able mitigate this trade-off and achieve both objectives. As firms engage in more tax avoidance, they may add additional tax strategies, which has the effect of diversifying their tax planning.[1] Drawing on portfolio theory, diversification reduces the overall risk, or variance, of the portfolio without reducing the expected return (Markowitz 1952, 1959). If one considers tax planning as an overall portfolio of tax strategies, adding additional tax strategies increases diversification and, depending on the covariance of the payoffs from the different strategies, may reduce overall variance, and therefore, risk. Thus, in this paper we investigate whether the diversification of a firm's tax strategies reduces tax risk.[2]

A significant focus of recent tax accounting research is to explain variations in corporate tax avoidance, and why some firms are able to exhibit lower effective tax rates (ETRs) than

[1] We define a "tax strategy" as a specific plan to reduce the amount of income tax otherwise owed. We define the broader term "tax planning" as the overall goal to reduce the amount of income tax owed, composed of one or more specific tax strategies.

[2] In finance, diversification is the process of allocating capital in one's portfolio to a mix of different investments in a way that reduces exposure to any one particular asset, thereby reducing overall variance, or risk. Thus, by this technical definition, diversification means a reduction in risk. However, in applying this concept to a tax avoidance setting, we use a more general definition of the term, an increase in the number of items or strategies. Thus, we consider the effect of the diversification of tax strategies on tax risk to be an empirical question.

others. A number of studies suggest that certain types of tax avoidance may be more aggressive or riskier, given an increased likelihood of being detected and overturned upon audit. For example, Lisowsky, Robinson, and Schmidt (2013) describe tax avoidance as a continuum ranging from perfectly legitimate positions, to more aggressive permanent book-tax differences, to the most aggressive tax positions, such as tax sheltering.[3] In short, engaging in greater amounts of tax avoidance could result in more uncertainty with respect to future tax payments/expenses, which not all firms are willing to accept.

Consistent with the idea that this uncertainty is viewed unfavorably as a tradeoff to tax avoidance, Drake, Lusch, and Stekelberg (2019) find that the perceived value of tax avoidance to shareholders is reduced when the firm is exposed to greater tax risk. This suggests that the value of the savings from tax avoidance may be negated by the perceived costs of increased uncertainty. Building on this, Neuman (2023) finds that not all firms approach tax planning in the same way and that while some firms do focus on tax minimization, others focus on the distinct, separate objective of maintaining low tax volatility. In addition, anecdotal evidence suggests that accounting firms, as well as their clients, place value on consistent, or sustainable, tax outcomes (Deloitte LLP 2013).

However, despite this presumption that tax minimization comes at the expense of tax consistency or stability, the literature finds that some firms are able to sustain tax avoidance in the long run (Dyreng, Hanlon, and Maydew 2008), higher levels of tax avoidance do not necessarily result in increased uncertainty regarding future tax payments (Guenther, Wilson, and Wu 2019), and, on average, tax avoidance is accomplished using persistent strategies (Guenther,

[3] As Lisowsky et al. (2013) describe, tax sheltering is composed of tax positions that have little or no business purpose but generate tax benefits that the tax authority will most likely disallow. Thus, these tax positions have the weakest facts and the highest amount of uncertainty.

Matsunaga, and Williams 2017). Thus, some firms are able to achieve the "best of both worlds," namely, to engage in tax avoidance without the corresponding tax volatility. Drawing on portfolio theory, we propose that one possible reason is that diverse tax planning, by use of a portfolio of different tax avoidance strategies, may reduce the variance of tax outcomes. In sum, we first hypothesize that, irrespective of the level of tax avoidance, diversifying that tax avoidance through multiple tax strategies can reduce tax risk (H1). Then, building on H1, we hypothesize that as tax avoidance increases, diversification can mitigate the effect of tax avoidance on tax risk (H2). In short, we investigate the effect that diversification has on tax risk, as well as the effect that diversification has on the relationship between corporate tax avoidance and tax risk.

While we are interested in diverse tax planning, empirically we cannot observe which specific tax strategies managers employ. Thus, we create two broad measures of diversification based on two different ways of measuring tax avoidance. Our first measure uses broad categories of book-tax differences (BTDs) as the sources of tax benefits from avoiding tax, measured using a Cash ETR. We estimate, using a U.S. sample, the amount of tax avoided as 35 percent of total BTDs plus the amount of state tax avoided.[4] We then separate this total amount into five categories, or sources, of tax avoidance: *Permanent Foreign BTD, Permanent U.S. BTD, Temporary Foreign BTD, Temporary U.S. BTD*, and *State BTD*. Our second measure focuses on tax avoidance via an adjusted GAAP ETR.[5] We utilize the income tax rate reconciliation data from Schwab, Stomberg, and Xia (2021) to identify the categories each firm uses to avoid tax. The sum of the tax avoided in these categories represents the total tax avoided.

[4] During the sample period, prior to the 2017 Tax Cuts and Jobs Act, the U.S. statutory corporate tax rate was thirty-five percent.

[5] We adjust the firm's GAAP ETR to reflect only the effects of tax avoidance strategies, defined using tax rate reconciliation categories as discussed in Section III.

Thus, for each of our two measures, we have specific categories of tax avoidance and can calculate the relative portion of total tax avoided that is attributed to each category. Using this information, we then compute the Herfindahl index, a common measure of portfolio diversification (Woerheide and Persson 1992). Finally, we multiply the Herfindahl index by -1, so that it is increasing in diversification, and then transform the result to a percentile measure ranging from 0 to 1. In sum, by incorporating different information from financial statements and income tax footnotes, these two measures reflect the diversification of tax avoidance, with one measure focusing on the income tax *payment* (Cash ETR) and the other focusing on the income tax *expense* (adjusted GAAP ETR).

Although a precise definition is not yet agreed upon in the tax literature (Dyreng, Hanlon, and Maydew 2019), a number of studies define tax risk as uncertainty regarding a firm's future tax payments or outcomes (e.g., Guenther et al. 2017; Dyreng et al. 2019; Hanlon, Maydew, and Saavedra 2017; Bauer and Klassen 2014; Neuman, Omer, and Schmidt 2020). Drawing on portfolio theory, this risk results from the dispersion, or variance, of potential tax outcomes from tax avoidance strategies due to, for example, uncertainty in the application of tax law, uncertainty over the facts of a situation, uncertainty over how well a firm's accounting system arrives at the tax result, and uncertainty over whether a tax action will subject the firm to adverse attention (Neuman et al. 2020). The higher the variance, the more likely, over time, that a firm's tax payments/expenses are volatile. Consistent with this view and prior literature, we measure tax risk as the volatility of future ETRs over the next five years, using a Cash ETR and an adjusted GAAP ETR to correspond with the two diversification measures.[6]

[6] In probability theory, variance is the expected value of the squared difference of a random variable (the actual outcome) from its mean (the expected outcome) and represents the dispersion or spread of the random variables about the mean. Thus, this mathematical definition of variance is what our definition of tax risk captures.

In our first main test (H1), we examine the relation between diversification and tax risk. Using our two measures of diversification, we find that when controlling for the level of tax avoidance, diversification reduces tax risk. Thus, holding the level of tax avoidance constant, spreading that tax avoidance out over multiple tax strategies effectively lowers tax risk compared to concentrating that tax avoidance in fewer strategies. In our second main test (H2), we add an interaction term to our model and examine the effect of diversification on the relationship between tax avoidance and tax risk. We find that the relationship between tax avoidance and tax risk is contingent on the diversification of the firm's tax strategies. While our results indicate that tax avoidance significantly increases tax risk, on average, diversification significantly weakens this relationship. For firms with high diversification, we do not find a positive relationship between tax avoidance and tax risk.

Overall, our study contributes to the literature in several ways. First, we add to the growing research on the relationship between tax avoidance and tax risk. As discussed by Wilde and Wilson (2018), there has been a limited understanding of how these two concepts are related. However, recent studies suggest that firms may trade off tax minimization (i.e., higher tax avoidance) with the ability to maintain low ETR volatility (i.e., lower tax risk) (Neuman 2023; Drake et al. 2019). We introduce a new dimension, the concept of tax diversification, to this discussion, and show how diverse tax planning may be a mitigating factor.

Second, we contribute a new way of thinking about tax avoidance by proposing that not all tax planning is equal. Prior literature has primarily focused on the level of tax avoidance and the risks associated with that level. Our study suggests that the way in which a particular level of tax avoidance is achieved may be equally important, as making strategic decisions with respect to diversifying tax planning may reduce tax risk exposure. In sum, we expand the theoretical

framework surrounding tax planning and offer a new dimension for future researchers to explore. In addition, the idea that incorporating a variety of tax strategies into an overall tax strategy portfolio can reduce risk is likely of interest to managers, investors, and tax practitioners, and may inform their decision making.

Finally, we provide additional insight into the extensive literature on the variation in tax avoidance observed amongst public corporations (Dyreng et al. 2008). One proposed explanation for the observed variation is the willingness of some firms to accept the additional risk or uncertainty that comes with engaging in additional tax avoidance. Our study suggests that this variation may also be attributed to the premise that some firms have found a way to better manage that risk through tax strategy diversification. In short, despite the common belief that there are risks associated with engaging in tax avoidance, firms may be able to better manage tax risk through a diverse portfolio of tax strategies.

II. HYPOTHESIS DEVELOPMENT

As described by Dyreng et al. (2019), a precise definition of tax risk is not yet agreed upon in the tax literature, but the concepts of risk, uncertainty, and aggressiveness, with respect to tax, are related. Prior researchers have focused on tax risk as the uncertainty of whether a firm will have to repay tax savings in the future (Dyreng et al. 2019; Hanlon et al. 2017; Bauer and Klassen 2014) and uncertainty regarding a firm's future tax payments (Guenther et al. 2017). Neuman et al. (2020, 1789) draw on established definitions of risk and state that "tax risk stems from economic risk, tax law uncertainty, and inaccurate information processing." Building on this, the authors define tax risk as "the uncertainty about future tax outcomes generated by current actions or activities, or the failure to take actions or pursue activities." Drake et al. (2019, 170) use a more classical finance definition and "focus on a notion of tax risk related to the

dispersion of potential outcomes from tax avoidance."

Because the idea of risk involves uncertainty about what may or may not occur in the future, it is difficult to measure ex ante. Guenther et al. (2017) find that the volatility of Cash ETRs is associated with future stock volatility, suggesting a relation to firm risk. Based on this, subsequent researchers have measured tax risk as the five-year standard deviation of annual Cash ETRs (e.g., Hutchens and Rego 2015; Drake et al. 2019; Abernathy, Finley, Rapley, and Stekelberg 2019; Campbell, Cecchini, Cianci, Ehinger, and Werner 2019). Since investors and firms value consistent and sustainable tax outcomes, having volatility in tax outcomes is generally viewed negatively and is something that firms seek to mitigate (Deloitte LLP 2013; Drake et al. 2019; Neuman 2023). In sum, while an exact definition of tax risk remains unsettled, prior research seems to suggest that potential volatility of tax outcomes is a consequence or result of this risk.

Thus, given that prior researchers have viewed and measured tax risk similarly to portfolio risk from a classical finance perspective (e.g., Drake et al. 2019), an intuitive extension is to incorporate the classical finance concept of diversification and investigate whether diversification can reduce tax risk. The idea of diversification can be summarized in the popular idiom "don't put all your eggs in one basket." Markowitz (1952, 1959) introduces diversification in portfolio theory, where an investor constructs their portfolio of investments to minimize their risk for a given level of expected return, thus creating an efficient portfolio. Risk depends not only on the variance of each individual asset in the portfolio, but also on the correlation, or covariance, between every two individual assets. Thus, diversifying a portfolio by including assets with unrelated risk will reduce the overall risk of the entire portfolio.

Applying this to a corporate tax avoidance setting, engaging in tax planning represents an

investment in tax avoidance. The overall goal of reducing the amount of income tax owed is carried out through specific tax strategies. While each strategy has an initial amount of planned tax savings, the final outcome may be different than planned. Based on the probability of each outcome, each tax strategy has an on-average expected amount of tax savings and a distribution of possible outcomes. The dispersion, or variance, of these outcomes represents tax risk. If a firm diversifies their tax planning portfolio with multiple tax strategies whose outcomes are not perfectly correlated, then the variance of their overall outcomes is reduced, leading to lower volatility over time. For example, if a firm avoids tax through just one method, such as research and development (R&D) credits, the failure of that strategy would result in a complete loss of all tax avoidance. However, if that same firm avoided the same level of tax through two methods, such as R&D credits and accelerated depreciation, then the failure of one strategy does not necessarily result in the failure of the other and a complete loss of all tax avoidance. In other words, the tax outcome is less volatile.[7]

Thus, regardless of the *level* of tax avoidance, the diversification of tax strategies can reduce risk through the reduced variance of outcomes and thus, lower volatility. Holding a firm's level of tax avoidance constant, if a firm can diversify and spread out that same level of tax avoidance over additional tax strategies, it will have lower tax risk. Therefore, we hypothesize that:

H1: Ceteris paribus, for a given level of tax avoidance, the diversification of tax strategies reduces tax risk.

A common assumption underlying prior research on corporate tax avoidance is that avoiding tax is risky. Lisowsky et al. (2013) describe tax avoidance as a continuum ranging from

[7] See Appendix A for further detail on applying the concept of portfolio diversification to the corporate tax avoidance setting.

the least aggressive tax positions, such as purchasing tax-exempt bonds, to the most aggressive tax positions, such as risky tax sheltering. Building on agency theory and the idea that managers are risk-averse, several studies suggest that this aversion to risky tax avoidance drives variations in the level of tax avoidance (e.g., Chen and Chu 2005; Rego and Wilson 2012; Bardertscher, Katz, and Rego 2013; Graham, Hanlon, Shevlin, and Shroff 2014). Consistent with this, Drake et al. (2019) investigate whether investors value tax avoidance and find that the value of the savings from tax avoidance may be negated by the perceived costs of increased uncertainty or risk.

However, another stream of literature finds that some firms are able to sustain tax avoidance in the long run (Dyreng et al. 2008) and that higher levels of tax avoidance do not necessarily result in higher risk (Guenther et al. 2017; Guenther et al. 2019). While tax avoidance and tax risk have been found to be distinct and separate constructs (Neuman 2023; Neuman et al. 2020; Drake et al. 2019), prior literature suggests that they still are intertwined, though the extent to which remains unclear (Dyreng et al. 2019; Wilde and Wilson 2018).

In sum, while one may expect, ex ante, that engaging in tax avoidance increases tax risk, prior literature has found mixed results. One aspect of this relationship that has not yet been explored is the role of diversification. Building on our previous arguments for H1, if firms add additional tax strategies as they engage in more tax avoidance, thereby diversifying their overall tax planning portfolio, the effect of tax avoidance on tax risk may be mitigated. Returning to the example of the firm that avoids tax using just one strategy, R&D credits, if this firm engages in additional tax avoidance by adding another strategy, accelerated depreciation, the benefits of diversification may outweigh any potential costs of the increased level of tax avoidance. As long as these additional strategies have outcomes that are not perfectly correlated with existing strategies in the portfolio, the effect of this incremental tax avoidance on the firm's overall tax

risk will be partially offset by the increased diversification. Therefore, the prior mixed evidence in the literature on the effect of tax avoidance on tax risk could be partially driven by the role that diversification plays on this relationship. Following these arguments, our second hypothesis is:

H2: As a firm's level of tax avoidance increases, the diversification of tax strategies mitigates the effect of tax avoidance on tax risk.

However, there are explanations for why diverse tax planning might fail to reduce the variance of possible outcomes, and thus, fail to reduce tax risk. First, adding certain tax strategies could affect the likelihood of these tax strategies failing if they are highly correlated with existing strategies. For example, if a firm has subsidiaries in multiple countries including one tax haven, and then diversifies by adding subsidiaries in two additional tax havens, this may fail to reduce tax risk as tax authorities may detect operations in these tax havens simultaneously and deny the associated tax benefits, thereby increasing the correlation of outcomes from these strategies. High correlation makes it likely that the strategies succeed or fail in conjunction with one another. In this case, the firm would be adding additional strategies to their tax planning portfolio without any benefits of diversification.

Second, having diverse tax strategies may require adding tax planning elements to different business units of the firm, which could increase the overall complexity of the firm's operations. Using our previous example, engaging in both R&D and accelerated depreciation strategies adds potential complexity to both the firm's R&D division and the manufacturing division (when purchasing equipment), relative to only focusing on one of the two strategies. This could lead to a greater risk of accounting errors, affecting the probability of the tax savings failing to materialize as expected. This, in turn, would affect tax risk due to the increased

variance of tax outcomes. In addition, increased complexity could also result in a lower-quality information environment, particularly in firms with a lack of cooperation between business units, which leads to higher tax risk (Gallemore and Labro 2015). Thus, diversification could add potential negative outcomes to the firm's internal operations, which affects the dispersion of tax outcomes, thereby offsetting the benefits of diversification. In sum, whether engaging in diverse tax planning successfully results in reduced tax risk is unclear. Thus, in testing the two hypotheses, we view the effect of the diversification of tax strategies on tax risk as an empirical question.

III. RESEARCH DESIGN AND DESCRIPTIVE STATISTICS

Diversification Measures

While the focus of this paper is on the diversification of tax strategies, empirically we cannot observe which specific tax strategies managers employ in their tax planning. What we can observe, however, is the outcome of these tax strategies in the form of how much tax a firm has avoided, compared to the U.S. statutory rate of thirty-five percent during our sample period. In addition, we can observe that these benefits of tax avoidance seem to come from different sources, or categories. As an example, these sources could include permanently avoided tax from municipal bond interest or temporarily deferred tax from accelerated depreciation. Although there can be any number of tax strategies aggregated into one category of tax avoidance, to the extent that a firm utilizes more categories, it follows that the firm has more diverse underlying tax strategies. Tax strategies in the same category likely have higher covariance with one another than do strategies from different categories. For example, strategies in the same category might be reviewed or audited by the same authority and/or would be discovered simultaneously, such as the firm that avoids U.S. tax permanently through a number of tax haven subsidiaries. While

each separate subsidiary may represent a separate tax avoidance strategy, it is plausible that the overall use of tax havens would be reviewed collectively. Thus, the gains from diversification from employing tax strategies in the same category (which we cannot observe) may not affect diversification as much as tax strategies in different categories (which we can observe). To test our hypotheses, we create two measures of diversification that reflect the diversification of the categories of tax avoidance, which in turn reflect the diversification of the underlying tax strategies.

Our first measure of diversification uses broad categories of BTDs as the categories of tax avoidance. By comparing the expected current year federal tax, measured as pretax income multiplied by thirty-five percent, to the firm's actual current year federal tax, we estimate the amount of federal tax avoided. This avoided federal tax can then be separated into tax that is permanently avoided or tax that is temporarily avoided by deferring it to a future year. Each group can further be separated into tax avoided on domestic or foreign source income. In addition, managers may also engage in state tax planning to source U.S. income to states with little or no corporate income tax. To estimate the state tax avoided, we compare the expected state tax, measured as pretax domestic income multiplied by the tax rate of the firm's headquarters state, to the firm's actual current year state tax.[8]

The total tax avoided in a year is equal to the avoided federal tax plus the avoided state tax. Thus, for our first measure of diversification, firms can avoid tax using five broad categories of tax avoidance: *Permanent Foreign BTD*, *Permanent U.S. BTD*, *Temporary Foreign BTD*,

[8] Although total state income taxes can also be separated into current and deferred taxes, most taxable income for state purposes conforms very closely to federal taxable income. Thus, a temporary BTD due to a timing difference would be reflected in both federal and state deferred taxes. In other words, the same temporary tax strategies used for federal tax avoidance will often manifest in state tax avoidance. Therefore, to avoid double counting tax strategies we focus on location as the predominant state tax strategy.

Temporary U.S. BTD, and *State BTD*. Using the proportion of total tax avoided in each of the five categories, we calculate the Herfindahl index, a widely used measure of portfolio concentration (Woerheide and Persson 1992), as the sum of squares of the proportion in each category. A low Herfindahl index indicates a diversified portfolio, while a high Herfindahl index indicates a concentrated (or less diversified) portfolio.[9] We then multiply the index by negative one so that the score is increasing in diversification and finally, convert the score into a percentile measure to range between zero and one. Further details on calculating this diversification measure can be found in Appendix B.

Our second measure of diversification uses a dataset from Schwab et al. (2021) that allocates every item in a firm's income tax rate reconciliation into twenty-two categories. We then select six of these categories that are directly related to a firm's tax avoidance activities to proxy for broad sources of tax avoidance – tax credits, the Domestic Production Activities Deduction (DPAD), foreign tax rate differences, state taxes, tax-exempt income, and uncertain tax benefits (UTBs).[10] To create our second diversification measure, we take each of these six tax avoidance categories and, if the category is negative (i.e., reduces the firm's ETR on the income tax rate reconciliation), we say that the firm is avoiding taxes using that category. We compute the sum of all negative categories, which represents the total tax the firm avoided, as reflected on the income tax rate reconciliation. Then, similar to our first diversification measure, we calculate the Herfindahl index based on the relative portion of the total tax avoided that is

[9] For example, if tax avoidance is evenly spread out over the five categories, the Herfindahl index would be $(0.2)^2 + (0.2)^2 + (0.2)^2 + (0.2)^2 + (0.2)^2 = 0.2$ (the minimum value that can be achieved). If tax avoidance is concentrated in one category, the Herfindahl index would be $(1.0)^2 = 1.0$ (the maximum possible value).

[10] Schwab et al. (2021) identify four categories that relate to tax avoidance activities – DPAD, credits, foreign tax, and state tax. We also include tax-exempt income because we believe this category incorporates many permanent tax avoidance strategies (e.g., municipal bond interest). We also include UTBs because this item incorporates firms settling risky tax positions favorably or unfavorably, which directly corresponds to the realization of tax risk (our main variable of interest).

attributed to each category, multiply by negative one so that the measure is increasing in diversification, and finally, convert it to a percentile ranging from zero to one. Appendix B presents further details. We find that the correlation between our two diversification measures is 0.2225. While the two measures covary as they both capture tax planning diversification, the relatively modest correlation indicates that the measures also capture unique aspects of diversification driven by different types of tax strategies.

Research Design

Our first test examines whether, when holding the level of tax avoidance constant, diversification reduces tax risk (H1). To test H1, we regress tax risk on diversification, tax avoidance, and a set of control variables, as shown below in Equation (1).

$$\begin{aligned} TaxRisk_{i,t} = {} & \beta_0 + \beta_1 Diversification_{i,t} + \beta_2 TaxAvoid_{i,t} + \beta_3 PTBI_{i,t} + \beta_4 Vol\_PTBI_{i,t} \\ & + \beta_5 BTM_{i,t} + \beta_6 Leverage_{i,t} + \beta_7 Size_{i,t} + \beta_8 Vol\_CashFlow_{i,t} + \beta_9 Vol\_ETBSO_{i,t} \\ & + \beta_{10} ETBSO_{i,t} + \beta_{11} Vol\_SpecialItems_{i,t} + \beta_{12} SpecialItems_{i,t} + \beta_{13} NOLCF_{i,t} \\ & + \beta_{14} CHG\_NOLCF_{i,t} + \beta_{15} Foreign_{i,t} + \beta_{16} ForeignIncome_{i,t} + \beta_{17} PPE_{i,t} \\ & + \beta_{18} Inventory_{i,t} + \beta_{19} Intangible_{i,t} + \beta_{20} Equity_{i,t} + \beta_{21} RD_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Diversification is one of the two diversification measures we discussed above. When we use our first *Diversification* measure, based on broad categories of BTDs, *TaxAvoid* is calculated based on the current year Cash ETR, defined as cash taxes paid divided by the pretax income. We winsorize the Cash ETR between zero and one to aid in interpretation. Finally, we multiply the measure by negative one to arrive at *TaxAvoid* so that the measure is increasing in tax avoidance. We use the Cash ETR here since this measure incorporates permanent and temporary differences, which are both reflected in the BTD diversification measure. We also use a peer-adjusted measure (*AdjTaxAvoid*) as a second measure of tax avoidance, equal to the current year Cash ETR subtracted from the median current year Cash ETR for the firm's size/industry

portfolio.[11] This variable is also increasing in tax avoidance and ranges from negative one to one. *TaxRisk* is defined as the future five-year standard deviation of annual Cash ETRs.

When we use our second *Diversification* measure, based on the income tax rate reconciliation categories, *TaxAvoid* is equal to the current year GAAP ETR, adjusted to only reflect the tax avoidance categories we discussed previously. We compute this measure as 35 percent of pretax income plus the sum of each of the six tax avoidance items, which creates a GAAP ETR measure that only reflects the firm's tax avoidance activities, as opposed to non-tax avoidance items such as the valuation allowance. Since items in the tax rate reconciliation only reflect permanent differences, the GAAP ETR is more appropriate than the Cash ETR here. We also compute a second peer-adjusted measure, subtracting the firm's adjusted GAAP ETR from the median current year adjusted GAAP ETR for the firm's size/industry portfolio. When using this second diversification measure, *TaxRisk* is calculated as the volatility of this adjusted GAAP ETR over the next five years.

Thus, with each of our two diversification measures, our measures of tax avoidance and tax risk correspond to how diversification is measured, either based on the cash tax payment (Cash ETR) or the income tax expense (adjusted GAAP ETR). All other variables are defined in Appendix C. Our control variables represent common controls in the tax avoidance literature. Continuous variables are winsorized at the 1st and 99th percentiles. Standard errors are robust and clustered by firm. We also incorporate firm and year fixed effects into the model. With firm fixed effects, we implicitly control for any time-invariant firm characteristics and restrict our analyses to only within-firm variation (i.e., examining how firms' tax risk responds to changes in diversification over time).

[11] Industry is defined using the Fama French 12 classification system, and size is defined using quintiles of total assets.

For our second set of tests, we hypothesized that as tax avoidance increases, diversification mitigates the effect of tax avoidance on tax risk (H2). To test H2, we begin with Equation (1), but also include an interaction term between tax avoidance and diversification, as shown below in Equation (2).

$$\begin{aligned} TaxRisk_{i,t} = {} & \beta_0 + \beta_1 Diversification_{i,t} + \beta_2 TaxAvoid_{i,t} + \beta_3 Diversification_{i,t} \\ & \times TaxAvoid_{i,t} + \beta_4 PTBI_{i,t} + \beta_5 Vol\_PTBI_{i,t} + \beta_6 BTM_{i,t} + \beta_7 Leverage_{i,t} \\ & + \beta_8 Size_{i,t} + \beta_9 Vol\_CashFlow_{i,t} + \beta_{10} Vol\_ETBSO_{i,t} + \beta_{11} ETBSO_{i,t} \\ & + \beta_{12} Vol\_SpecialItems_{i,t} + \beta_{13} SpecialItems_{i,t} + \beta_{14} NOLCF_{i,t} \\ & + \beta_{15} CHG\_NOLCF_{i,t} + \beta_{16} Foreign_{i,t} + \beta_{17} ForeignIncome_{i,t} + \beta_{18} PPE_{i,t} \\ & + \beta_{19} Inventory_{i,t} + \beta_{20} Intangible_{i,t} + \beta_{21} Equity_{i,t} + \beta_{22} RD_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

We continue to use our two measures of *Diversification*, with the corresponding measures of *TaxAvoid* and *TaxRisk*. All variables and specifications remain the same as in Equation (1). Here, our coefficient of interest is β_3, the coefficient on the interaction term. This coefficient represents how the relationship between tax avoidance (*TaxAvoid*) and tax risk (*TaxRisk*) changes as the firm's diversification increases over time. Since *Diversification* is a percentile measure ranging from zero to one, the coefficient β_2 represents how tax avoidance affects tax risk for undiversified firms (i.e., those with diversification of zero). On the other hand, the sum of the coefficients β_2 plus β_3 represents how tax avoidance affects tax risk for firms with the maximum diversification in our sample. Therefore, this model allows us to examine the sign of the interaction effect to test our hypothesis, as well as examine the economic magnitudes of how diversification can influence the relationship between tax avoidance and tax risk.

Sample Selection

Table 1 summarizes the sample selection procedure used in our study. We begin with all U.S. incorporated observations in Compustat from 1993 to 2016 with available data. Selecting this time frame ensures a relatively consistent tax regime between the two most recent U.S.

income tax reforms, beginning after the Tax Reform Act of 1986 and ending before the Tax Cuts and Jobs Act of 2017 (TCJA). In addition, beginning in 1993 ensures consistent accounting for income taxes post FAS-109, which is important for our measure of diversification.[12] We remove loss firms (i.e., firms with negative pre-tax income) from the sample since ETRs cannot be interpreted for these firms. We further eliminate all observations with insufficient data to calculate our two tax avoidance measures (Cash ETR and adjusted GAAP ETR) or measures of diversification. For our first diversification measure (based on BTDs), we exclude observations with missing data to compute current and deferred taxes and pretax domestic and foreign income. In addition, we require the sum of the firm's BTD categories to be positive to ensure that the firm is avoiding taxes overall during the year, as it is difficult to conceptualize diversification when the firm is paying more taxes than the statutory tax rate. For our second diversification measure (based on income tax rate reconciliation categories), we require the firm to be present in the Schwab et al. (2021) dataset so that its tax reconciliation data can be extracted. To compute the diversification measure, we require the firm to be avoiding taxes using at least one of the aforementioned categories in the income tax rate reconciliation.

For the tax risk measure, we also require five future years of data to calculate future Cash ETR and adjusted GAAP ETR volatility (*TaxRisk*), with the last possible year of the five-year measure being in 2016 before any anticipation of the reduction of the corporate statutory tax rate under the TCJA.[13] In addition, we require sufficient data to calculate all control variables.

[12] Statement of Financial Accounting Standards No. 109 (FAS 109), codified as ASC 740, is effective for fiscal years beginning after December 15, 1992. FAS 109 established basic principles of accounting for income taxes, including deferred tax liabilities and assets. Because our measure of diversification is calculated using categories of current and deferred income taxes, we require *t* to be no earlier than 1993.

[13] The Tax Cuts and Jobs Act of 2017 reduced the corporate statutory tax rate from 35 percent to 21 percent, which necessarily affects a firm's volatility of Cash ETRs, even if it consistently never avoids any tax. Thus, it is important that the sample end in 2016, before any anticipatory effects of the TCJA, such as the revaluation of deferred tax assets and liabilities. Among other changes, the TCJA moved the U.S. from a worldwide tax system towards a territorial tax system, further limiting the comparability of corporate tax strategies before and after the TCJA.

Together this limits the sample to 8,917 observations for our tests using the first measure of diversification, broad categories of book-tax differences, and 3,911 for tests using the second measure of diversification, the income tax rate reconciliation items.

Descriptive Statistics

Table 2 presents descriptive statistics for all regression variables. For the tax risk measures, we note that the volatility of Cash ETR is larger than the volatility of adjusted GAAP ETR, consistent with Cash ETR being influenced by more factors that can increase volatility, such as temporary tax avoidance and the timing of cash tax payments. We also present the summary statistics for the Herfindahl indices used in our diversification measures (multiplied by negative one so that they are increasing in diversification) before being transformed into the percentile *Diversification* measures for our regression analysis. We note that the tax reconciliation measure (*HERFINDAHL_TAXREC*) is much more concentrated on average (i.e., higher magnitude of the Herfindahl index), suggesting that many firms in our sample only employ a few types of permanent tax strategies. Indeed, more than 50 percent of observations in the sample have a score of negative one, indicating that only one type of permanent tax strategy is employed. Using the BTD measure (*HERFINDAHL_BTD*), on the other hand, creates a more diverse measure for the average firm. This is consistent with the fact that the BTD measure captures a broader range of tax avoidance strategies, incorporating both permanent and temporary deferral strategies.

In Table 3, we present the mean of these two measures by Fama French 12 industry. Across both the BTD measure and the tax reconciliation measure, the four industries with the most tax diversification are Chemicals, Manufacturing, Consumer Durables, and Business Equipment. More regulated industries, such as Finance, Telephone & TV, and Oil, Gas, & Coal

are among the least diversified, consistent with the premise that these firms have different tax planning incentives and capabilities than non-regulated firms. Overall, the industry averages between the two measures have a correlation of 0.6789, providing further support for the use of these two proxies for tax diversification.

IV. RESULTS

Table 4 reports the results of estimating Equation (1) using our first diversification measure based on broad BTD categories. In these models, we control for the level of tax avoidance using the Cash ETR (column 1) and peer-adjusted Cash ETR (column 2). Across both sets of results, we find that when holding the level of tax avoidance constant, there is a negative relationship between diversification and future tax risk. This is consistent with the prediction in H1 that firms that increase tax strategy diversification can reduce their exposure to tax risk. Though not the focus of H1, we note that there is a positive coefficient on *TAXAVOID_CASH* and *PEERADJ_TAXAVOID_CASH*, suggesting that tax avoidance increases tax risk when controlling for the level of diversification. In Table 5, we present the results of testing H1 using our second diversification measure based on the income tax rate reconciliation categories. Again, we find results consistent with our prediction in H1 that diversification reduces tax risk when controlling for tax avoidance. We also continue to find that tax avoidance is positively related to tax risk, when controlling for diversification.

Table 6 presents the results of estimating Equation (2) using our first measure of diversification based on broad BTDs and the corresponding measures of tax avoidance and tax risk. We examine how firms' future tax risk is associated with the firm's current levels of tax avoidance, tax strategy diversification, and the interaction between the two measures. First, we find in column (1) that the coefficient on *TAXAVOID_CASH* is significantly positive, indicating

that, when the firm has a very low level of diversification (*DIVERSIFICATION_BTD* = 0), tax avoidance significantly increases the firm's future tax risk exposure. However, we find that the interaction term of *DIVERSIFICATION_BTD* and *TAXAVOID_CASH* is significantly negative, suggesting that, as the firm increases its tax strategy diversification, this positive relationship between tax avoidance and tax risk exposure is mitigated. This provides support for our prediction in H2 that firms that increase their level of tax avoidance can mitigate the associated increase in tax risk exposure by increasing the diversification of their tax strategies. In column (2), we repeat this analysis using the peer-adjusted measure of tax avoidance and find similar, statistically significant results, further providing support for H2. To visually depict this relationship, Figure 1 highlights how the relationship between tax avoidance and tax risk changes across different levels of diversification. At low levels of diversification, tax avoidance has a clear positive relationship with tax risk as the line is upwards sloping. However, at higher levels of diversification, the strength of this relationship is mitigated. Visually, one can observe that at the highest levels of diversification, tax avoidance and tax risk no longer exhibit a positive relationship.

In Table 7, we repeat our estimation of Equation (2) using the second measure of diversification based on the income tax rate reconciliation categories and the corresponding measures of tax avoidance and tax risk. We continue to find results consistent with our predictions. At low diversification levels (*DIVERSIFICATION_TAXREC* = 0), tax avoidance is positively and significantly related to tax risk. However, the significantly negative coefficient on the interaction between *DIVERSIFICATION_TAXREC* and *TAXAVOID_GAAP* indicates that diversification can mitigate this relationship, consistent with our predictions in H2. Column (2) presents similar results using the peer-adjusted tax avoidance measure. Figure 2 visually depicts

how the relationship between tax avoidance and tax risk changes across different levels of diversification using the income tax rate reconciliation measure. Similar to Figure 1, we highlight that, while the relationship between tax avoidance and tax risk is upwards sloping at low levels of diversification, the strength of this relationship is mitigated at higher diversification levels.

In summary, across our two measures of diversification, our results highlight the benefits of engaging in diverse tax planning. Specifically, when holding the level of tax avoidance constant, diversification reduces tax risk, and, when allowing tax avoidance to vary, diversification mitigates a positive relationship between tax avoidance and tax risk. Prior mixed evidence on the relationship between tax avoidance and tax risk may be partially explained by the failure to consider the varying diversity of firms' tax planning strategies.

V. CONCLUSION

Despite the presumption that managers prefer to reduce cash tax payments or tax expenses, prior literature suggests that tax avoidance may come at the cost of increased volatility of future tax payments/expenses. In short, firms likely trade off the ability to maintain consistent tax payments with the ability to engage in increased tax avoidance (Neuman 2023). We propose that, through strategic tax planning, firms may be able to mitigate their tax risk exposure by taking advantage of the role that diversification plays in reducing the variance within a portfolio of tax strategies, thereby reducing volatility over time. Therefore, we investigate the effect that the diversification of tax strategies has on a firm's tax risk exposure, as well as the effect that diversification has on the relationship between tax avoidance and tax risk.

We develop two measures representing diverse categories of tax avoidance, as a proxy for the underlying tax strategies, based on (1) broad categories of book-tax differences and (2)

broad categories from the income tax rate reconciliation schedule. We test our hypotheses by regressing tax risk on tax avoidance and diversification, and then adding an interaction term between the two. Using both measures of diversification, we find evidence consistent with our expectations. First, we find that firms that increase diversification reduce their exposure to tax risk. Second, we find that, as firms increase their level of tax avoidance, those that have higher diversification are able to mitigate the effect of the increased tax avoidance on their future tax risk exposure.

In sum, we contribute to the growing literature on the relationship between tax avoidance and tax risk, and add a new dimension, diversification, to our way of thinking about how these two concepts affect one another. Our results suggest that, despite the common belief that there are risks to engaging in tax avoidance, firms may be able to mitigate tax risk through diverse tax planning. Rather than simply trading off tax minimization with lower tax risk, firms may be able to make strategic decisions to mitigate their tax risk exposure. This, in turn, may inform the literature on the puzzling variance in tax avoidance observed amongst public corporations, as some firms may be able to manage any accompanying tax risk better than their less-diversified peers. Overall, despite the common belief that there are unavoidable risks associated with engaging in tax avoidance, our paper suggests that firms may be able to better manage tax risk through a diverse portfolio of tax strategies.

APPENDIX A
Diversification in a Tax Avoidance Setting

This appendix provides a detailed explanation of how we apply the concept of portfolio diversification to the corporate tax avoidance setting. Tax avoidance can broadly be defined as the reduction of a firm's explicit tax liability (Hanlon and Heitzman 2010). Firms may be able to achieve a certain level of tax avoidance with no additional cost or risk in their normal course of business by taking advantage of tax incentives embedded within the tax law. This level of tax avoidance depends on available opportunities, and varies by firm, depending on circumstances and industry. For example, firms engaged in R&D as part of their business strategy will benefit from R&D tax credits, while other firms will not. However, if a manager wants to increase the amount of their firm's tax avoidance beyond this basic level, they must engage in tax planning. There are non-trivial costs involved in tax planning, such as creating an internal tax department, paying for outside tax services, or incurring legal and accounting costs to carry out a specific tax strategy. Thus, when a manager engages in tax planning, they are making an investment in tax avoidance.

The return on the investment is the expected or planned tax savings. However, there is some probability that the initial amount of the planned tax savings will not be achieved. Planned tax savings can be reduced in several ways. First, if audited, the firm may have to repay a portion of the savings, plus penalties and interest, if the tax authority successfully challenges the position during the audit. Second, before a tax strategy is completed, the tax law could change such that savings in future years are reduced or eliminated. Tax savings may never be realized due to failures within the tax strategy, such as a miscommunication between key business units. Finally, tax savings could be offset by additional unforeseen costs such as reputational or political costs.

The likelihood of any of these happening depends on the particular tax strategy.[14]

FIN 48 (now codified within ASC 740-10) establishes a "more-likely-than-not" threshold for reporting uncertain tax positions in the financial statements, suggesting that firms engage in tax strategies knowing that the final amount of tax savings may not be the same as the initial amount of planned tax savings. While firms may engage in a tax strategy with an initial amount of planned tax savings in mind, after factoring in the probabilities of reduction, there is an on-average amount of expected tax savings. The dispersion, or variance, of the possible amounts of final tax savings, compared to this on-average expected amount of tax savings, gives rise to volatility over time, representing tax risk for the purpose of our study.

Each tax strategy has its own distribution of possible tax outcomes, with each outcome having a probability of occurring. If this distribution has a high variance, then the amount by which the firm could miss its expected return (the on-average expected tax savings) is large. This would represent higher tax risk because the firm could end up with tax savings much lower than expected. As an example, consider Firm A, which has one tax strategy with two possible outcomes: failure or success. There is an eighty percent chance Firm A will end up with one hundred dollars of planned tax savings, and a twenty percent chance Firm A will end up with nothing. Thus, the on-average expected savings is eighty dollars. However, although on average Firm A expects eighty dollars of tax savings, if the tax strategy fails, Firm A will actually end up with zero tax savings. The variance of the possible two tax outcomes represents higher volatility.

Drawing again on portfolio theory, diversifying a portfolio will reduce the overall variance of a portfolio's payoffs, provided that the payoffs of each individual asset are not

[14] To the extent the tax avoidance strategy results in a financial reporting problem (such as a restatement) or fails to provide a financial reporting benefit in the form of a lower tax expense, this could also reduce the expected benefit from the tax strategy.

perfectly correlated. To continue the example, consider a second firm, Firm B, which plans to avoid the same one hundred dollars of tax as Firm A. However, Firm B has two tax strategies that are perfectly correlated, planning to save fifty dollars each. These two strategies have the same possible outcomes as Firm A's strategy: either both strategies succeed, or both strategies fail. For each strategy, there is an eighty percent chance Firm B will end up with fifty dollars, and a twenty percent chance Firm B will end up with nothing. Thus, adding the two together, the on-average expected tax savings of the two strategies is eighty dollars, the same as Firm A. If these two strategies are perfectly correlated, the variance of the possible outcomes for Firm B is the same as Firm A. If both strategies fail, Firm B gets nothing. If both strategies succeed, Firm B gets one hundred dollars of savings. Thus, Firm A and Firm B have the same tax risk.

However, if the outcomes of the two strategies are not perfectly correlated, then there is a *third* possible outcome. Both strategies succeed, both strategies fail, or one strategy succeeds and one strategy fails. The possible outcomes are now one hundred, fifty, or zero dollars.[15] Thus, even though for both firms the on-average expected savings is eighty dollars, if Firm B misses that amount, they could still end up with fifty dollars of tax savings. The less correlated the two strategies are, the more likely the fifty-dollar outcome and the less likely the zero-dollar outcome. Thus, having two strategies that are not perfectly correlated reduces the variance of the overall tax planning of Firm B and reduces the amount by which Firm B could miss its expected tax savings. Firm B has lower tax risk as the lower payoff variance will mathematically lead to lower volatility of future tax outcomes.[16] In sum, holding the on-average expected tax savings

[15] The probability of both strategies having a zero payoff is 0.2 x 0.2 = 0.04. The probability of both strategies having a $50 payoff is 0.8 x 0.8 = 0.64. The probability of one strategy having a zero payoff and the other having a $50 payoff is 2 x 0.8 x 0.2 = 0.32. ($0 x 0.04) + ($100 x 0.64) + ($50 x 0.32) = $80, the expected payoff.
[16] The variance of the single strategy for Firm A is 1,600, while the variance of the two strategies for Firm B (assuming the outcomes are uncorrelated) is 800.

constant, increasing the number of strategies shrinks the variance of the tax planning portfolio, making the distribution of outcomes closer to the expected tax savings amount. Therefore, tax risk is reduced as the distribution of possible outcomes gets closer to the expected tax savings, reducing volatility over time.

As a more general accounting analogy, tax avoidance can be thought of as creating a contingent liability, where a potential tax expense (the tax liability) may occur depending on the outcome of uncertain future events (e.g., the firm's success in carrying out tax avoidance, the potential for IRS audits, or the potential for negative public attention, to name a few). While the potential tax expense can be reasonably estimated, the final amount and, thus, the final amount of tax avoidance depend on these uncertain, future events. One common type of contingent liability is a lawsuit. For example, assume a firm is sued for damages of $100, and the manager believes there is a 25 percent chance the firm will lose the lawsuit. The expected future cash outflow is $25, but the only two possible outcomes are $100 (a 25 percent chance of losing the lawsuit) or $0 (a 75 percent chance of winning the lawsuit). A second type of contingent liability is warranty expense. Assume a firm sells ten units. There is a 25 percent chance that each unit will need to be repaired under warranty, costing the firm $10 per unit repaired. Thus, with this type of contingent liability, the expected future cash outflow is still $25, but now there are eleven possible outcomes, ranging from a cash outflow of $100 (all ten units are repaired), to $90 (nine units are repaired), and so on to $0 (none of the units are repaired). Despite the same $25 expected future cash outflow from both contingent liabilities, the larger number of possible outcomes leads to a smaller variance for the warranty, as compared to the lawsuit.

In sum, relating back to tax avoidance, with just a single tax avoidance strategy that either succeeds or fails, the variance of the future cash outflows (tax payments) behaves like that

of the lawsuit. However, the more tax avoidance strategies the firm employs, or the more the firm diversifies its tax planning, the more the variance of the future cash outflows behaves like that of the warranty. Increasing the number of potential outcomes can reduce the variance, which reduces volatility over time, thereby reducing tax risk.

APPENDIX B
Measures of Diversification

This appendix provides additional details on the calculation of our two measures of diversification. The first is based on broad categories of book-tax differences, while the second measure is based on broad categories from the income tax rate reconciliation schedule.

Measure One – Broad Categories of BTDs

For this measure, we estimate the amount of tax avoided and separate this amount into five categories of tax avoidance. We begin by comparing the expected federal tax to the actual federal tax. During the sample period, prior to the TCJA, the U.S statutory corporate tax rate is thirty-five percent, imposed on worldwide income. Thus, if firms do not avoid any tax, their expected current year U.S. tax on worldwide income should be:

$$Expected\ Federal\ Tax\ = PI\ \times 35\%$$

where:

PI = pretax income, and observations with negative pretax income are excluded.

However, the firm's actual current year tax is:

$$Actual\ Federal\ Tax\ = TXFED\ + TXFO$$

where:

TXFED = current U.S. tax expense

TXFO = current foreign tax expense

Comparing the two results in the amount of tax avoided:

$$Federal\ Tax\ Avoided\ = Expected\ Federal\ Tax\ - Actual\ Federal\ Tax$$

Part of the tax avoided is deferred, or temporarily avoided. It is avoided in the current year but is expected to be incurred in future years.

$$Temporarily\ Avoided\ Federal\ Tax\ = TXDFED\ + TXDFO$$

where:

TXDFED = deferred U.S. tax expense

TXDFO = deferred foreign tax expense

If the tax is not temporarily avoided, it is permanently avoided.

$$Permanently\ Avoided\ Federal\ Tax\ = Federal\ Tax\ Avoided - Temporarily\ Avoided\ Federal\ Tax$$

Although, during the sample period, the income from foreign subsidiaries of U.S. multinational corporations (MNCs) is subject to U.S. corporate income tax, active source income is not taxed until the income is repatriated, or paid as a dividend, back to the parent entity. Upon repatriation, the firm generally pays the difference between the U.S. and foreign tax rate.[17] For financial reporting purposes, if the operating earnings reinvested abroad in the foreign subsidiaries are designated as "indefinitely reinvested," the firm does not record a tax expense or deferred tax liability for the U.S. tax owed upon repatriation. Thus, the tax on indefinitely reinvested foreign earnings (IRFE) is generally considered to be permanently avoided.[18] Firms disclose the cumulative amount of IRFE in their annual filings. Comparing the prior year cumulative total to the current year cumulative total provides an estimation of the current year foreign earnings designated as indefinitely reinvested, *Estimated IRFE*.[19] We estimate the permanent foreign BTD as*:*

[17] The amount of the dividend is grossed up by the foreign tax rate and that total amount is taxed at the U.S. statutory rate of thirty-five percent. The firm then receives a foreign tax credit for foreign taxes paid, which helps mitigate any impact from double taxation. Thus, the incremental tax owed upon repatriation can generally be thought of as the difference between thirty-five percent and the foreign tax rate.

[18] Firms report "indefinitely reinvested foreign earnings" (IRFE) as a permanent difference in the tax rate reconciliation in the income tax footnote. Because of this, IRFE are often referred to in the literature as "permanently reinvested earnings" (PRE).

[19] This information is available in the database Audit Analytics beginning in 2008. To estimate IRFE for firm-years missing this data, we multiply pretax foreign income by an average percent. The average percent is calculated as the median percent of pretax foreign earnings designated as IRFE each year pretax foreign income is greater than zero. IRFE is winsorized to range from zero to that year's total pretax foreign income.

$$Permanent\ Foreign\ BTD\ = \left(35\%\ - \left(\frac{TXFO\ + TXDFO}{PIFO}\right)\right) \times Estimated\ IRFE$$

where:

PIFO = pretax foreign income

We assume *Permanent Foreign BTD* is zero for observations with zero or negative pretax foreign income.

The permanently avoided tax is composed of foreign and U.S. BTDs. Thus:

$$Permanent\ U.S.\ BTD\ = Permanently\ Avoided\ Tax\ - Permanent\ Foreign\ BTD$$

We assume that the incremental tax on current year foreign earnings not designated as indefinitely reinvested are deferred, as the tax is not current until the year in which the repatriation occurs. Thus, we estimate the temporary foreign BTD as:

$$Temporary\ Foreign\ BTD = \left(35\%\ - \left(\frac{TXFO\ + TXDFO}{PIFO}\right)\right) \times (\ PIFO\ - Estimated\ IRFE\ )$$

We assume *Temporary Foreign BTD* is zero for observations with zero or negative pretax foreign income.

The temporarily avoided tax is composed of foreign and U.S. BTDs. Thus:

$$Temporary\ U.S.\ BTD\ = Temporarily\ Avoided\ Tax\ - Temporary\ Foreign\ BTD$$

Therefore, each year the total federal tax avoided arises from four sources of tax benefits.

In addition, managers may also engage in state tax planning to source U.S. income to states with little or no corporate income tax. Although total state income taxes can also be separated into current and deferred taxes, most taxable income for state purposes conforms very closely to federal taxable income. Thus, a temporary BTD due to a timing difference would be reflected in both federal and state deferred taxes. In other words, the same temporary tax strategies used for federal tax avoidance will often manifest in state tax avoidance. Therefore, to avoid double counting tax strategies we focus on location as the predominant state tax strategy.

To estimate the State BTD, we compare each firm's total state tax expense (current and deferred) to the maximum corporate state tax rate of the state in which the firm is headquartered:

$$State\ BTD\ = (Headquarters\ State\ Tax\ Rate\ \times PIDOM) - TXS - TXDS$$

where:

PIDOM = pretax domestic income

TXS = current state tax expense

TXDS = deferred state tax expense

The total tax avoided in a year is equal to the avoided federal tax plus the avoided state tax. Thus, for our first measure of diversification, firms can avoid tax using five broad categories of tax avoidance: *Permanent Foreign BTD*, *Permanent U.S. BTD*, *Temporary Foreign BTD*, *Temporary U.S. BTD*, and *State BTD*.

To calculate our measure of diversification, we adopt a widely used measure of portfolio concentration, the Herfindahl index (Woerheide and Persson 1992). The Herfindahl index is calculated as the sum of squares of the proportion of market value invested in each security within a portfolio. A low Herfindahl index indicates a diversified portfolio, while a high Herfindahl index indicates a concentrated (or less diversified) portfolio. We extend this measure to a tax avoidance setting where firms can avoid tax each year using up to five categories. If tax avoidance is evenly spread out over the five categories, the Herfindahl index would be $(0.2)^2 + (0.2)^2 + (0.2)^2 + (0.2)^2 + (0.2)^2 = 0.2$. This would be the minimum score a firm could receive and would represent perfect diversification. On the other end, if a firm avoids tax using only one category, the Herfindahl index would be $(1.0)^2 = 1.0$. This would be the highest score a firm could receive and would represent perfect concentration (or being completely undiversified). Thus, for firms that avoid tax, we calculate the percentage of tax avoided in each of the five

categories and calculate the Herfindahl index, ranging from 0.2 to 1.0. We next multiply the Herfindahl index by negative one, so that it is increasing in diversification, and finally, convert the score to a percentile measure ranging from zero to one.

Measure Two – Broad Categories from the Income Tax Rate Reconciliation

Our second measure of diversification uses a dataset from Schwab et al. (2021), which allocates every item in a firm's income tax rate reconciliation into the following twenty-two categories:

- Alternative Minimum Tax (AMT)
- Compensation
- **Credits**
- Deferred Taxes
- **Domestic Production Activities Deduction (DPAD)**
- Entities
- Expirations
- Financing
- **Foreign**
- Goodwill Impairment
- Insurance
- Intercompany Transactions
- Tax law changes
- Losses
- Mergers
- Nondeductible Expenses
- Unclassified
- Permanent Differences
- **State Taxes**
- **Tax-Exempt Income**
- **Unrecognized Tax Benefits (UTBs)**
- Valuation Allowances

We then select six of these categories, as bolded above, that are directly related to the firm's tax avoidance activities and use these as the broad sources of tax avoidance. While Schwab et al. (2021) mainly consider Credits, DPAD, Foreign, and State Taxes as tax avoidance categories, we also include Tax-Exempt Income since items such as municipal bond interest income clearly

represent tax avoidance (defined as paying a rate, zero, less than the statutory rate). We also include a sixth category, UTBs, since these items represent tax avoidance that has occurred, yet is not reflected in the tax expense of the financial statements as its ultimate realization is uncertain in nature. Settling these tax positions favorably or unfavorably will contribute to the firm's tax risk, which is our main variable of interest.

We then compute an adjusted GAAP ETR as 35 percent of pretax income plus the sum of these six items, creating an ETR measure that only reflects the firm's tax avoidance activities (and UTBs, which reflect tax risk). When computing tax risk, we also calculate ETR volatility as the volatility of this newly created adjusted GAAP ETR over the next five years. Because unfavorable settlements of tax positions (which increase the firm's realized risk exposure) are embedded into the UTB component, it is important to have UTBs as a separate category in the construction of both our tax avoidance and diversification measures.

To create our diversification measure, we take each of the bolded categories and, if the category is negative (i.e., reduces the firm's ETR on the tax rate reconciliation), we say that the firm is avoiding taxes using that category. We compute the sum of all negative categories, which represents the total tax the firm avoided as reflected on the tax rate reconciliation. Then, similar to our first diversification measure, we calculate the Herfindahl index based on the relative portion of the total tax avoided that is attributed to each category – computed by taking the ratio of each category (if negative) relative to the total tax avoided, squaring it, and then computing the sum of squares across all categories in which the firm is avoiding tax. Finally, we multiply the index by negative one so that it is increasing in diversification (i.e., a higher score represents higher diversification), and lastly, convert the result to a percentile measure ranging from zero to one. As an example, if a firm's tax credits reduced the adjusted GAAP ETR by 2 percent, the

firm's DPAD reduced the adjusted GAAP ETR by 3 percent, and the firm's foreign activities *increased* the adjusted GAAP ETR by 1 percent, we would compute the diversification measure as follows:

> Total tax avoided = 2% + 3% = 5% (excluding the *Foreign* category because in this year it is not a tax avoidance strategy since it *increases* the tax burden)
>
> Relative tax avoided: Credits = 0.4 (2% / 5%) and DPAD = 0.6 (3% / 5%)
>
> Sum of squares = (0.4^2) + (0.6^2) = 0.52. Thus, the measure is -0.52.

Finally, we convert this to a percentile measure so it ranges between 0 and 1. We note that there are many firms with a Herfindahl index of -1 since they only have one category that is negative (i.e., they only employ permanent tax strategies in one category listed in the tax rate reconciliation). Thus, their corresponding percentile measure would be zero.

APPENDIX C
Variable Definitions

Diversification Variables

HERFINDAHL_BTD	The Herfindahl index of the firm's tax strategy portfolio, multiplied by negative one, based on the categories of book-tax differences the firm uses to avoid tax. Further details are provided in Appendix B.
HERFINDAHL_TAXREC	The Herfindahl index of the firm's tax strategy portfolio, multiplied by negative one, based on the categories of tax strategies listed in the firm's tax reconciliation as categorized by Schwab et al. (2021). Further details are provided in Appendix B.
DIVERSIFICATION_BTD	The percentile transformation of HERFINDAHL_BTD ranging between 0 and 1.
DIVERSIFICATION_TAXREC	The percentile transformation of HERFINDAHL_TAXREC ranging between 0 and 1

Tax Avoidance Variables

TAXAVOID_CASH	The firm's cash effective tax rate (Cash ETR), computed as cash taxes paid (TXPD) divided by pre-tax income (PI), multiplied by negative one. Firms are required to have positive PI and a non-negative Cash ETR. Cash ETR is replaced with 1 if it is higher than 1.
PEERADJ_TAXAVOID_CASH	The firm's cash effective tax rate, subtracted from the median cash effective tax rate of the firm's industry peers. Industry peers are defined as firms in the same Fama French 12 industry and in the same quintile of total assets.
TAXAVOID_GAAP	The firm's adjusted GAAP effective tax rate (GAAP ETR), computed as 35% plus the sum of the following tax rate adjustment items extracted from Schwab et al. (2021): Tax credits, domestic production activities deduction (DPAD), foreign tax adjustments, state taxes, tax-exempt income, and uncertain tax benefits (UTBs), multiplied by negative one. Firms are required to have positive PI and a non-negative adjusted GAAP ETR. Adjusted GAAP ETR is replaced with 1 if it is higher than 1.

PEERADJ_TAXAVOID_GAAP	The firm's adjusted GAAP effective tax rate, subtracted from the median adjusted GAAP effective tax rate of the firm's industry peers. Industry peers are defined as firms in the same Fama French 12 industry and in the same quintile of total assets.
Risk Variables	
SD_CETR	The standard deviation of the firm's Cash ETR, as defined above, from t+1 to t+5.
SD_ETR	The standard deviation of the firm's adjusted GAAP ETR, as defined above, from t+1 to t+5.
Control Variables	
PTBI	Pretax Income (PI) scaled by prior-period Total Assets (AT).
VOL_PTBI	The standard deviation of PTBI from t+1 to t+5.
BTM	Book value of equity (CEQ) over price per share (PRCC_F) times total common shares outstanding (CSHO).
LEVERAGE	Long-Term Debt (DLTT) scaled by prior-period total Assets (AT).
SIZE	The natural log of total assets (AT).
SPECIAL	Special items (SPI) scaled by prior-period total assets (AT)
VOL_SPECIAL	The standard deviation of SPECIAL from t+1 to t+5.
VOL_CASHFLOW	The standard deviation of cash flow (OANCF) scaled by prior-period total Assets (AT) from t+1 to t+5.
ETBSO	The excess tax benefit of stock options (TXBCOF + TXBCO) scaled by prior-period total assets (AT). Set to 0 if missing.
VOL_ETBSO	The standard deviation of ETBSO from t+1 to t+5.

NOLCF	Net operating loss carryforward (TLCF) scaled by prior-period total assets (AT). Set equal to 0 if missing.
CHG_NOLCF	Current year net operating loss carryforward (TLCF) less prior year TLCF scaled by prior-period total assets (AT). Set to 0 if missing.
FOREIGN	Indicator variable equal to 1 if foreign pre-tax income, tax expense or deferred tax expense (PIFO, TXFO, TXDFO) is greater than 0.
FOREIGN_INCOME	Foreign pretax income (PIFO) divided by lagged assets (AT)
PPE	Net property, plant and equipment (PPENT) divided by assets (AT)
INVENTORY	Inventory (INVT) divided by assets (AT)
INTANGIBLE	Intangible assets (INTAN) divided by assets (AT)
EQUITY	Equity in earnings (ESUB) divided by lagged assets (AT)
RD	R&D expenditures (XRD) divided by lagged assets (AT).

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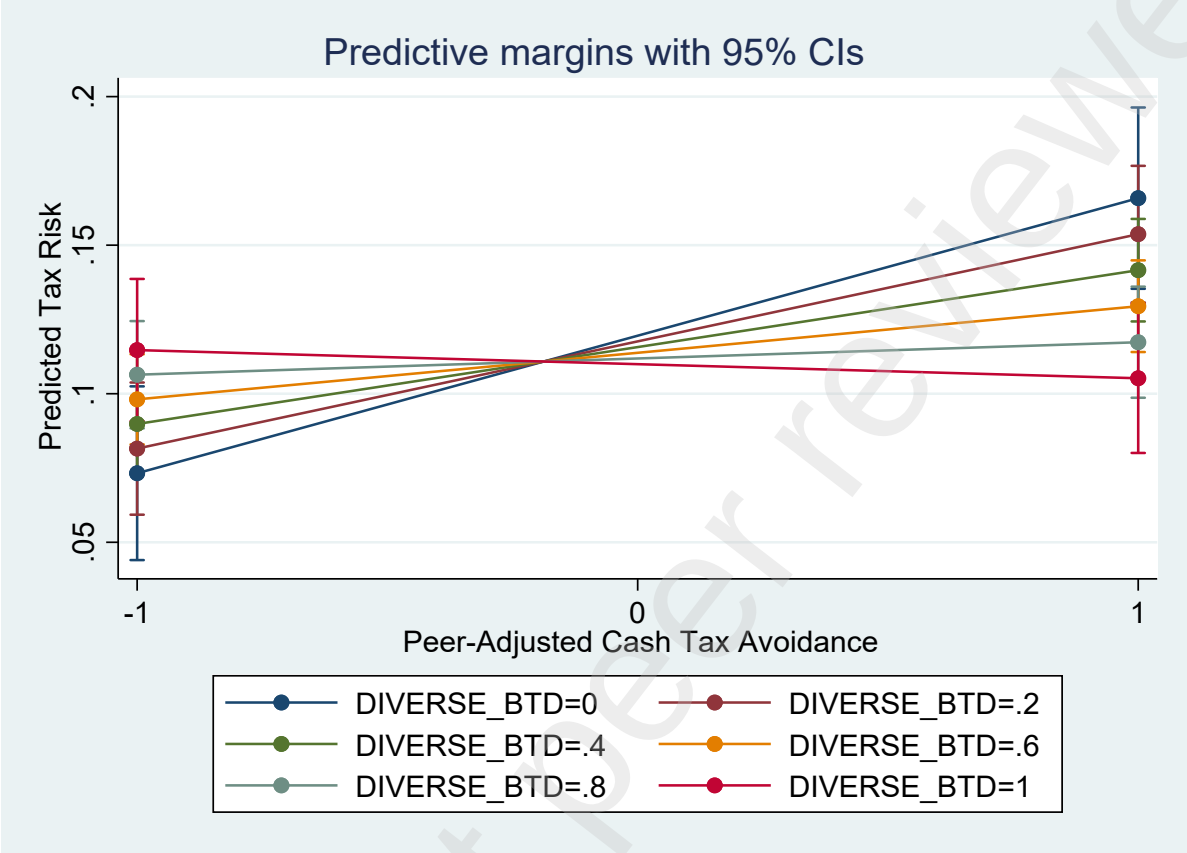
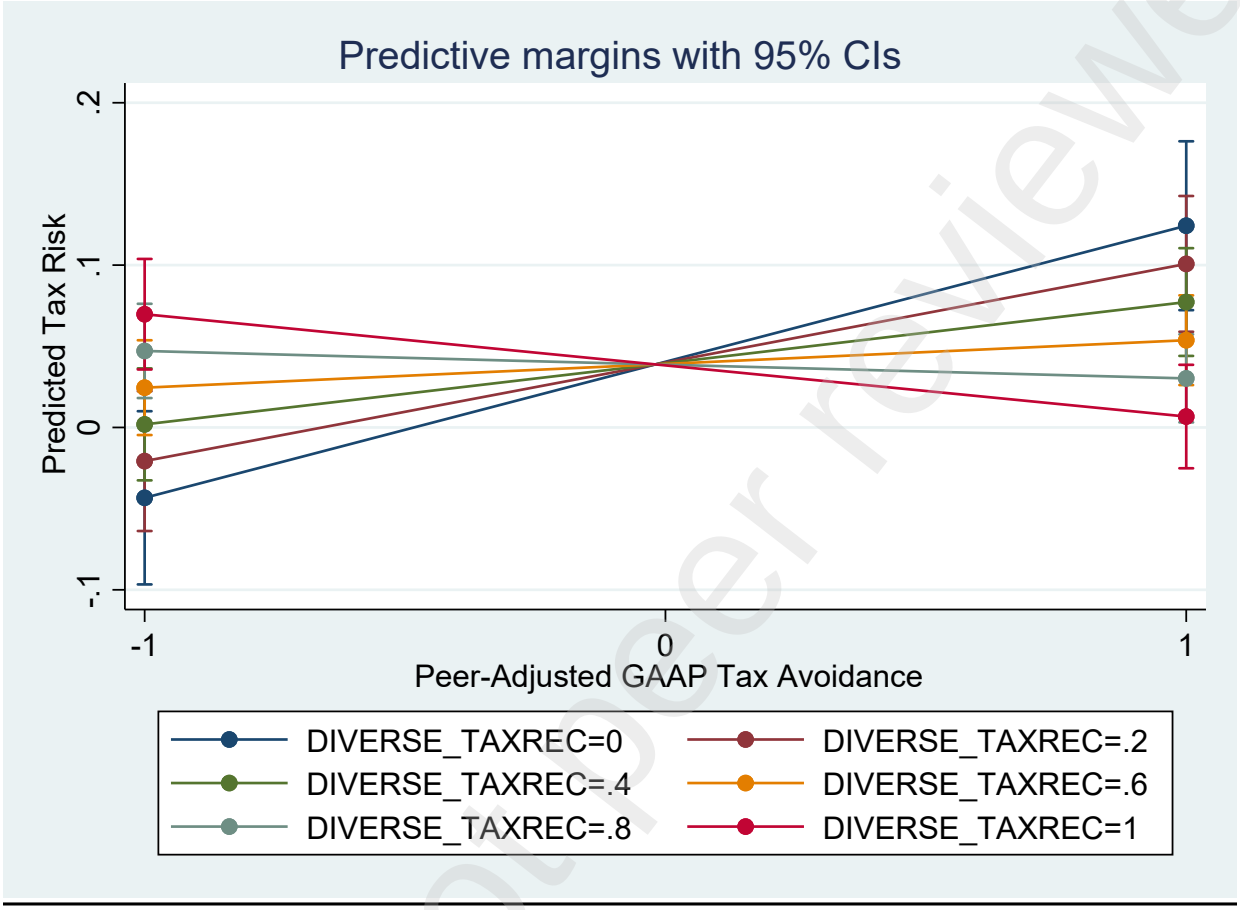
Figure 1: Relationship Between Tax Avoidance and Tax Risk at Different Diversification Levels – Book-Tax Difference Measure of Diversification



Note: This figure presents how the linear relationship between tax avoidance, computed using the Cash ETR, and tax risk, computed using Cash ETR volatility, changes as the firm's tax strategy diversification increases.

Figure 2: Relationship Between Tax Avoidance and Tax Risk at Different Diversification Levels – Tax Reconciliation Measure of Diversification



Note: This figure presents how the linear relationship between tax avoidance, computed using the adjusted GAAP ETR, and tax risk, computed using adjusted GAAP ETR volatility, changes as the firm's tax strategy diversification increases.

Table 1: Sample Selection

Diversification Measure	BTD	Tax Rec
All Compustat firms (1993–2016) incorporated in the U.S.	277,496	277,496
Less: Loss firms	(95,136)	(95,136)
Insufficient Data to Calculate:		
Tax Avoidance Measure (Cash ETR or GAAP ETR)	(74,907)	(51,373)
Diversification Measure	(67,284)	(113,605)
Tax Risk Measure	(28,057)	(12,995)
Control Variables	(3,195)	(476)
Sample	**8,917**	**3,911**

Note: This table describes how the sample selection procedures are conducted, and the corresponding sample size reductions, for our final sample, with respect to the two diversification measures.

Table 2: Descriptive Statistics

	N	*Mean*	*SD*	*Q25*	*Q50*	*Q75*
Dependent Variables						
SD_CETR	8,917	0.11	0.10	0.05	0.08	0.15
SD_GETR	3,911	0.04	0.04	0.01	0.03	0.05
Tax Variables						
HERFINDAHL_BTD	8,917	-0.59	0.20	-0.72	-0.54	-0.43
HERFINDAHL_TAXREC	3,911	-0.81	0.23	-1.00	-1.00	-0.58
TAXAVOID_CASH	8,917	-0.24	0.15	-0.34	-0.25	-0.13
PEERADJ_TAXAVOID_CASH	8,917	-0.01	0.15	-0.09	0.00	0.09
TAXAVOID_GAAP	3,911	-0.32	0.08	-0.36	-0.33	-0.28
PEERADJ_TAXAVOID_GAAP	3,911	0.02	0.08	-0.01	0.01	0.05
Control Variables						
PTBI	8,917	0.16	0.15	0.08	0.13	0.20
VOL_PTBI	8,917	0.05	0.07	0.02	0.03	0.06
BTM	8,917	0.48	0.40	0.24	0.39	0.62
LEVERAGE	8,917	0.19	0.22	0.00	0.13	0.29
SIZE	8,917	6.33	2.12	4.89	6.32	7.74
VOL_CASHFLOW	8,917	0.05	0.05	0.02	0.04	0.06
VOL_ETBSO	8,917	0.00	0.00	0.00	0.00	0.00
ETBSO	8,917	0.00	0.00	0.00	0.00	0.00
VOL_SPECIAL	8,917	0.01	0.02	0.00	0.01	0.01
SPECIAL	8,917	0.00	0.02	0.00	0.00	0.00
NOLCF	8,917	0.05	0.31	0.00	0.00	0.00
CHG_NOLCF	8,917	0.00	0.04	0.00	0.00	0.00
FOREIGN	8,917	0.46	0.50	0.00	0.00	1.00
FOREIGN_INCOME	8,917	0.02	0.04	0.00	0.00	0.03
PPE	8,917	0.31	0.27	0.09	0.23	0.44
INVENTORY	8,917	0.15	0.18	0.01	0.10	0.23
INTANGIBLE	8,917	0.15	0.21	0.00	0.05	0.23
EQUITY	8,917	0.00	0.01	0.00	0.00	0.00
RD	8,917	0.02	0.05	0.00	0.00	0.02

Note: This table presents the descriptive statistics for each of our regression variables, including the sample size, means, standard deviation, and quartiles.

Table 3: Industry Descriptives

Industry	HERFINDAHL_BTD Mean	HERFINDAHL_TAXREC Mean
Consumer Non-Durables	-0.552	-0.839
Consumer Durables	-0.545	-0.719
Manufacturing	-0.542	-0.781
Oil, Gas, Coal	-0.708	-0.839
Chemicals & Allied Products	-0.506	-0.731
Business Equipment	-0.552	-0.738
Telephone & TV	-0.631	-0.91
Utilities	-0.62	N/A (no sample)
Wholesale & Retail	-0.586	-0.919
Healthcare, Medical Equipment	-0.572	-0.784
Finance	-0.651	-0.967

Note: This table presents the mean level of diversification by Fama French 12 industry.

Table 4: The Relationship Between Tax Strategy Diversification and Future Tax Risk - Book-Tax Difference Measure of Diversification

Dependent Variable = SD_CETR		
	(1)	(2)
DIVERSIFICATION_BTD	**-0.008***	**-0.008****
	(-1.958)	**(-1.969)**
TAXAVOID_CASH	0.019**	
	(2.222)	
PEERADJ_TAXAVOID_CASH		0.019**
		(2.344)
PTBI	-0.030**	-0.030**
	(-2.272)	(-2.272)
VOL_PTBI	0.014	0.014
	(0.275)	(0.271)
BTM	-0.002	-0.002
	(-0.336)	(-0.363)
LEVERAGE	0.001	0.001
	(0.174)	(0.170)
SIZE	0.025***	0.025***
	(6.289)	(6.204)
VOL_CASHFLOW	0.229***	0.229***
	(3.398)	(3.394)
VOL_ETBSO	-1.584***	-1.590***
	(-2.660)	(-2.669)
ETBSO	-0.749**	-0.748**
	(-1.976)	(-1.969)
VOL_SPECIAL	1.172***	1.171***
	(6.463)	(6.454)
SPECIAL	0.155***	0.155***
	(2.807)	(2.827)
NOLCF	-0.002	-0.002
	(-0.273)	(-0.232)
CHG_NOLCF	0.020	0.020
	(1.067)	(1.045)
FOREIGN	0.006	0.006
	(0.641)	(0.625)
FOREIGN_INCOME	-0.074	-0.072
	(-1.085)	(-1.056)
PPE	-0.012	-0.013
	(-0.870)	(-0.912)
INVENTORY	0.071***	0.071***
	(2.977)	(2.959)
INTANGIBLE	-0.005	-0.004
	(-0.367)	(-0.343)
EQUITY	0.357	0.360

	(1.150)	(1.162)
RD	-0.058	-0.057
	(-0.736)	(-0.725)
Observations	8,917	8,917
R-squared	0.115	0.115
Firm Fixed Effects	YES	YES
Year Fixed Effects	YES	YES

Note: This table presents the results of estimating OLS Regressions of the standard deviation of the firm's Cash ETR over the next five years on the firm's tax strategy diversification, measured using the book-tax difference categories. All variables are calculated as described in Appendix C. Variables are winsorized at the 1st and 99th percentiles. Standard errors are robust and clustered by firm. T-statistics are presented in parentheses. *, **, and *** denote two-tailed statistical significance at 10%, 5%, and 1%, respectively.

Table 5: The Relationship Between Tax Strategy Diversification and Future Tax Risk - Tax Reconciliation Measure of Diversification

Dependent Variable = SD_GETR		
	(1)	(2)
DIVERSIFICATION_TAXREC	**-0.005****	**-0.005****
	(-2.419)	**(-2.419)**
TAXAVOID_GAAP	0.042**	
	(2.007)	
PEERADJ_TAXAVOID_GAAP		0.040**
		(1.990)
PTBI	0.006	0.006
	(0.540)	(0.537)
VOL_PTBI	0.089**	0.089**
	(2.202)	(2.201)
BTM	0.011**	0.011**
	(2.416)	(2.449)
LEVERAGE	-0.001	-0.000
	(-0.067)	(-0.054)
SIZE	0.008*	0.008*
	(1.810)	(1.891)
VOL_CASHFLOW	0.015	0.016
	(0.304)	(0.330)
VOL_ETBSO	-0.054	-0.066
	(-0.130)	(-0.159)
ETBSO	0.107	0.111
	(0.451)	(0.467)
VOL_SPECIAL	0.170	0.168
	(1.500)	(1.475)
SPECIAL	0.031	0.032
	(0.775)	(0.787)
NOLCF	0.002	0.002
	(0.553)	(0.552)
CHG_NOLCF	0.037***	0.037***
	(2.667)	(2.676)
FOREIGN	0.000	0.000
	(0.088)	(0.031)
FOREIGN_INCOME	-0.042	-0.041
	(-1.171)	(-1.153)
PPE	-0.001	-0.002
	(-0.121)	(-0.160)
INVENTORY	0.007	0.007
	(0.423)	(0.431)
INTANGIBLE	0.006	0.006
	(0.873)	(0.885)
EQUITY	-0.682**	-0.683**

	(-2.536)	(-2.531)
RD	-0.035	-0.036
	(-0.792)	(-0.809)
Observations	3,911	3,911
R-squared	0.049	0.049
Firm Fixed Effects	YES	YES
Year Fixed Effects	YES	YES

Note: This table presents the results of estimating OLS Regressions of the standard deviation of the firm's GAAP ETR, adjusted to reflect tax avoidance activities, over the next five years on the firm's tax strategy diversification, measured using the categories of tax avoidance activities reflected in the firm's tax reconciliation. All variables are calculated as described in Appendix C. Variables are winsorized at the 1st and 99th percentiles. Standard errors are robust and clustered by firm. T-statistics are presented in parentheses. *, **, and *** denote two-tailed statistical significance at 10%, 5%, and 1%, respectively.

Table 6: The Moderating Effect of Diversification on the Relationship Between Tax Avoidance and Future Tax Risk - Book-Tax Difference Measure of Diversification

Dependent Variable = SD_CETR		
	(1)	(2)
DIVERSIFICATION_BTD	-0.026***	-0.010**
	(-3.411)	(-2.382)
TAXAVOID_CASH	0.055***	
	(3.455)	
DIVERSIFICATION_BTD x TAXAVOID_CASH	**-0.067*** **	
	(-2.788)	
PEERADJ_TAXAVOID_CASH		0.046***
		(3.076)
DIVERSIFICATION_BTD x PEERADJ_TAXAVOID_CASH		**-0.051** **
		(-2.261)
PTBI	-0.030**	-0.030**
	(-2.254)	(-2.221)
VOL_PTBI	0.012	0.013
	(0.229)	(0.246)
BTM	-0.002	-0.002
	(-0.354)	(-0.382)
LEVERAGE	0.002	0.001
	(0.187)	(0.146)
SIZE	0.025***	0.024***
	(6.240)	(6.153)
VOL_CASHFLOW	0.232***	0.231***
	(3.448)	(3.425)
VOL_ETBSO	-1.562***	-1.568***
	(-2.621)	(-2.623)
ETBSO	-0.734*	-0.736*
	(-1.934)	(-1.938)
VOL_SPECIAL	1.179***	1.178***
	(6.494)	(6.495)
SPECIAL	0.157***	0.157***
	(2.843)	(2.851)
NOLCF	-0.002	-0.002
	(-0.325)	(-0.245)
CHG_NOLCF	0.022	0.020
	(1.151)	(1.073)
FOREIGN	0.006	0.006
	(0.667)	(0.650)
FOREIGN_INCOME	-0.067	-0.067
	(-0.984)	(-0.989)
PPE	-0.012	-0.013
	(-0.866)	(-0.906)
INVENTORY	0.071***	0.070***

	(2.957)	(2.936)
INTANGIBLE	-0.004	-0.004
	(-0.318)	(-0.313)
EQUITY	0.361	0.362
	(1.166)	(1.168)
RD	-0.064	-0.061
	(-0.798)	(-0.770)
Observations	8,917	8,917
R-squared	0.116	0.116
Firm Fixed Effects	YES	YES
Year Fixed Effects	YES	YES

Note: This table presents the results of estimating OLS Regressions of the standard deviation of the firm's Cash ETR over the next five years on interaction between the firm's tax strategy diversification, measured using the book-tax difference categories, and the firm's level of tax avoidance. All variables are calculated as described in Appendix C. Variables are winsorized at the 1st and 99th percentiles. Standard errors are robust and clustered by firm. T-statistics are presented in parentheses. *, **, and *** denote two-tailed statistical significance at 10%, 5%, and 1%, respectively.

Table 7: The Moderating Effect of Diversification on the Relationship Between Tax Avoidance and Future Tax Risk - Tax Reconciliation Measure of Diversification

Dependent Variable = SD_GETR		
	(1)	(2)
DIVERSIFICATION_TAXREC	-0.040***	-0.002
	(-3.707)	(-1.107)
TAXAVOID_GAAP	0.082***	
	(2.990)	
DIVERSIFICATION_TAXREC x TAXAVOID_GAAP	**-0.108*** **	
	(-3.398)	
PEERADJ_TAXAVOID_GAAP		0.084***
		(3.120)
DIVERSIFICATION_TAXREC x PEERADJ_TAXAVOID_GAAP		**-0.115*** **
		(-3.591)
PTBI	0.004	0.004
	(0.336)	(0.324)
VOL_PTBI	0.090**	0.090**
	(2.220)	(2.201)
BTM	0.011**	0.011**
	(2.390)	(2.424)
LEVERAGE	-0.001	-0.002
	(-0.166)	(-0.185)
SIZE	0.008*	0.008*
	(1.762)	(1.845)
VOL_CASHFLOW	0.012	0.013
	(0.236)	(0.261)
VOL_ETBSO	-0.019	-0.012
	(-0.045)	(-0.027)
ETBSO	0.092	0.102
	(0.379)	(0.423)
VOL_SPECIAL	0.167	0.165
	(1.463)	(1.445)
SPECIAL	0.025	0.027
	(0.604)	(0.657)
NOLCF	0.002	0.002
	(0.671)	(0.668)
CHG_NOLCF	0.035**	0.036**
	(2.484)	(2.537)
FOREIGN	0.000	-0.000
	(0.005)	(-0.024)
FOREIGN_INCOME	-0.045	-0.043
	(-1.232)	(-1.194)
PPE	-0.000	-0.001
	(-0.023)	(-0.061)

INVENTORY	0.010	0.009
	(0.559)	(0.549)
INTANGIBLE	0.008	0.007
	(1.044)	(0.990)
EQUITY	-0.669**	-0.672**
	(-2.475)	(-2.472)
RD	-0.035	-0.033
	(-0.800)	(-0.757)
Observations	3,911	3,911
R-squared	0.059	0.060
Firm Fixed Effects	YES	YES
Year Fixed Effects	YES	YES

Note: This table presents the results of estimating OLS Regressions of the standard deviation of the firm's GAAP ETR over the next five years, adjusted to reflect tax avoidance activities, on interaction between the firm's tax strategy diversification, measured using the book-tax difference categories, and the firm's level of tax avoidance. All variables are calculated as described in Appendix C. Variables are winsorized at the 1st and 99th percentiles. Standard errors are robust and clustered by firm. T-statistics are presented in parentheses. *, **, and *** denote two-tailed statistical significance at 10%, 5%, and 1%, respectively.