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IMPACT OF TAX STRATEGIES ON TAX RISK & AVOIDANCEA STUDY OF NIGERIA PUBLIC FIRMS

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Abstract: The paper investigates the effect of different tax strategies employed by a public company on the relation between measures of corporate tax avoidance and risk. Prior studies have generally failed to find a relation between measures of overall firm risk (such as stock return volatility) and measures of corporate tax avoidance (such as low effective tax rates). One possible reason for this empirical result is the failure to consider the role that the diversification of tax risk, through utilization of a portfolio of different tax avoidance strategies, might have on reducing tax risk and, as a result, on reducing overall firm risk. A broad measure of diversification based on five sources of tax benefits. Controlling for the level of tax avoidance, regress measures of risk on diversification and an interaction term and find weak support that diversification reduces tax risk, as measured by the volatility of future cash ETRs, and mixed evidence on the effect of diversification on overall firm risk, as measured by the volatility of future monthly stock returns.
Keywords: *Tax Strategies, Tax Risk, Tax Avoidance, Cooperate Tax Avoidance*

Introduction

"Tax strategy" is a specific plan to reduce the amount of income tax otherwise owed while "tax planning" is the overall goal to reduce the amount of income tax owed, it is composed of one or more specific tax strategies. 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 risk. Thus, by this technical definition, diversification means a reduction in risk.

However, in applying this concept to a tax avoidance setting, the researcher used a more general definition of the term, an increase in the number of items or strategies. Thus, the effect of the diversification of tax strategies on tax risk is considered to be an empirical statement

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 others. A number of studies show that this variation can be partially explained by firm characteristics such as size (Zimmerman (1983)), ownership structure (Chen, Chen, Cheng, and Shevlin (2010)), corporate governance (Desai, Dyck, and Zingales (2007)), and subsidiary locations (Dyreng and Lindsey (2009)). Others have reasoned that certain types of tax avoidance are more aggressive and riskier. Lisowsky, Robinson, and Schmidt (2013) describe tax avoidance as a continuum ranging from perfectly legitimate, to more aggressive permanent book tax differences, to the most aggressive tax positions, such as tax sheltering. Thus, more tax avoidance could suggest a firm's willingness to accept more risk. Building on agency theory and the assumption that managers are risk-averse, several studies suggest that this managerial aversion to risk drives variations in the level of tax avoidance (Chen and Chu (2005); Rego and Wilson

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(2012); Bardertscher, Katz, and Rego (2013); Graham, Hanlon, Shevlin, and Shroff (2014)).

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. Consistent with this idea that there are risks associated with tax avoidance, the practitioner literature has focused on the importance of tax risk management (Arlinghaus (1998); Goodman (2004)).

Along with other firm-specific risks, managers regularly discuss tax-related risks and plans to address these risks as part of their annual SEC filings. Tax risk is also increasingly discussed with revenue authorities worldwide, leading Big 4 accounting firms to publish surveys and guides for their clients on the importance of managing tax risk (PricewaterhouseCoopers (2004); Ernst & Young (2014)). Despite the practitioner focus on reducing tax risk, it has been difficult for researchers to identify a relation between tax avoidance and risk. The literature finds that some firms are able to sustain tax avoidance in the long run (Dyreng, Hanlon, and Maydew (2008)) and that higher levels of tax avoidance do not necessarily result in higher risk (Guenther, Matsunaga, and Williams (2017) and Guenther, Wilson, and Wu (2018). Wilde and Wilson (2018) summarize academic research on corporate tax planning and our limited understanding of how these two concepts of tax avoidance and tax risk are associated. One possible reason for this empirical result is the failure to consider the role that the diversification of tax risk, through utilization of a portfolio of different tax avoidance strategies, might have on reducing tax risk and, as a result, on reducing overall firm risk. Thus, I investigate the effect that the number of different tax strategies employed by a public company has on the relation between measures of corporate tax avoidance and measures of risk.

As described by Dyreng, Hanlon, and Maydew (2018), a precise definition of tax risk is not yet agreed upon in the tax literature, but the concepts of risk, uncertainty, and aggressiveness, with regard to tax, are related. Prior researchers have focused on the uncertainty of whether a firm will have to repay tax savings in the future (Dyreng, Hanlon, and Maydew (2018), Hanlon, Maydew, and Saavedra (2018), and Bauer and Klassen (2014)) and uncertainty regarding a firm's future tax payments (Guenther, Matsunaga, and Williams (2016)). Neuman, Omer, and Schmidt (2018) draw on broad definitions of risk and 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, Lusch, and Stekelberg (2017) focus on a more classical finance definition and define tax risk as "the dispersion of potential outcomes from tax avoidance."

DIVERSIFICATION

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 in 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 research and development 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 the firm's tax avoidance beyond this basic level, she must engage in some sort of tax planning. There are non-trivial costs involved in tax planning, such as creating an internal tax department, paying for outside tax services, or legal and accounting costs to carry out a specific tax strategy. Thus, when a firm engages in tax planning, managers 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,

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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.

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 their 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. This strategy has two possible outcomes: the tax strategy is either successful or it fails. There is an eighty percent chance Firm A will end up with one hundred naira of planned tax savings, and a twenty percent chance Firm A will end up with nothing. Thus, the on-average expected savings is eighty naira. However, although on average Firm A expects to end up with eighty dollars of tax savings, if the tax strategy 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.

Firm A ends up with the much lower amount of zero tax savings. The variance of the possible two tax outcomes represents my measure of tax risk. 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 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 fifty naira, 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 naira, 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 naira 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 fails. The possible outcomes are now one hundred, fifty, or zero naira. Thus, even though both Firm A and Firm B expect eighty naira of tax savings on average, if Firm B misses that amount, they could still end up with fifty naira of tax savings. The less correlated the two strategies are, the more likely the fifty, the probability of both strategies having a zero payoff is 0.2 x 0.2 = 0.04. The probability of both strategies having a N50 payoff is 0.8 x 0.8 = 0.64. The probability of one strategy having a zero payoff and the other having a N50 payoff is 2 x 0.8 x 0.2 = 0.32. (N0 x 0.04) + (N100 x 0.64) + (N50 x 0.32) = N80, the expected payoff.

In sum, holding the on-average expected tax savings 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 to the extent the distribution of possible outcomes gets closer to the expected tax savings. As a more general 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.

HYPOTHESES OF THE STUDY

The concept 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 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.

Thus, regardless of the riskiness of the level of tax avoidance, the diversification of tax strategies can reduce risk through the reduced variance of outcomes. Whether a diversified firm has a Cash ETR of 20 percent or 30 percent, the tax outcome is less volatile, as compared to a non-diversified firm. In addition, for a given level of tax avoidance, the diversification of tax strategies can reduce the effect of tax avoidance on tax risk.Comparing two firms that avoid more tax with a Cash ETR of 20 percent, the more diverse firm is less risky. Therefore, the researcher hypothesize that:

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

H1(b): Ceteris paribus, for a given level of tax avoidance, the diversification of tax strategies mitigates the effect of tax avoidance on tax risk.

However, there are several potential reasons why diversification could increase the variance of possible outcomes, and thus increase tax risk. First, adding certain tax strategies could affect the likelihood of a tax strategy failing. For example, if a firm has subsidiaries in multiple countries including one tax haven, audit risk and reputational risk might increase if the firm diversified by adding subsidiaries in two additional tax havens. In such a case, the more diversified a firm's tax strategies are, the more exposure there is for a regulatory authority or the public to take notice. This could increase the likelihood that both strategies fail, increasing the variance of the possible outcomes, and increasing tax risk.

Second, more strategies could increase the complexity of the firm's operations, which 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 the outcomes. Thus, diversification could add new potential outcomes that would not be present without increased diversification. Third, increasing the number of tax strategies and the complexity of the tax function could provide managers with more opportunities to divert earnings, increasing the risk of managerial theft (Desai and Dharmapala (2006)). This could cause the firm to miss the on-average expected tax savings, increasing tax risk. Finally, diversification of tax strategies may fail to reduce tax risk if the potential outcomes of the tax strategies are highly correlated. In this case, the firm would be adding

additional strategies to their tax planning portfolio without any benefits of diversification. In sum, the predicted effect of diversification is unclear. Thus, in testing my two hypotheses, I view the effect of the diversification of tax strategies on tax risk as an empirical question.

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RESULTS

Descriptive Statistics

TABLE 2
Descriptive Statistics

Panel A: GMW Replication Sample

Variable	n	Mean	Std. Dev.	25th Percentile	50th Percentile	75th Percentile
5-Year TaxAvoid	42,523	-0.2703	0.1976	-0.3490	-0.2609	-0.1449
3-Year TaxAvoid	47,095	-0.2603	0.2022	-0.3480	-0.2507	-0.1181
5-Year Adjusted TaxAvoid	42,523	-0.0205	0.1750	-0.0699	0.0000	0.0668
3-Year Adjusted TaxAvoid	47,095	-0.0217	0.1811	-0.0772	0.0000	0.0725
FirmRisk (SD_Ret)	49,121	0.1139	0.0677	0.0666	0.0968	0.1417
TaxRisk (SD_CETR)	29,469	0.1358	0.1187	0.0500	0.0973	0.1836
TaxRisk (SD_GAAPETR)	30,490	0.1183	0.1188	0.0266	0.0773	0.1674
TaxRisk (Tax-Spike 5-Year)	49,121	0.1620	0.3685	0.0000	0.0000	0.0000
TaxRisk (Tax-Spike 3-Year)	49,121	0.1175	0.3220	0.0000	0.0000	0.0000
PTBI	49,121	0.0813	0.1106	0.0169	0.0647	0.1308
Vol_PTBI	49,121	0.0699	0.0811	0.0201	0.0438	0.0869
BTM	49,121	0.6605	0.5215	0.3222	0.5378	0.8408
Leverage	49,121	0.2093	0.2235	0.0150	0.1497	0.3248
Size	49,121	6.5993	1.9790	5.2223	6.5936	7.9066
Shares_Out	49,121	3.4434	1.4309	2.4371	3.3798	4.3249
Vol_SpecialItems	49,121	0.0240	0.0398	0.0018	0.0088	0.0271
Vol_CashFlow	49,121	0.0609	0.0632	0.0217	0.0424	0.0766
Vol_ETBSO	49,121	0.0006	0.0021	0.0000	0.0000	0.0000
ETBSO	49,121	0.0004	0.0018	0.0000	0.0000	0.0000
CHG_NOLCF	49,121	0.0017	0.0391	0.0000	0.0000	0.0000
LOSS	49,121	0.1409	0.3480	0.0000	0.0000	0.0000

Note: This table presents the descriptive statistics for the full GMW diversification sample, including observations only present in either the 5-year or 3-year sample. All variables are defined in Appendix A. All continuous variables are winsorized at the 1% and 99% levels.

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TABLE 2
Descriptive Statistics

Panel B: Diversification Sample

Variable	n	Mean	Std. Dev.	25th Percentile	50th Percentile	75th Percentile
5-Year TaxAvoid	11,859	-0.2216	0.1270	-0.3157	-0.2429	-0.1369
3-Year TaxAvoid	16,587	-0.2120	0.1371	-0.3111	-0.2280	-0.1020
5-Year Adjusted TaxAvoid	11,859	0.0074	0.1013	-0.0396	0.0000	0.0515
3-Year Adjusted TaxAvoid	16,587	0.0097	0.1164	-0.0427	0.0000	0.0648
FirmRisk (SD_Ret)	17,072	0.0992	0.0546	0.0612	0.0859	0.1219
TaxRisk (SD_CETR)	10,242	0.1207	0.1123	0.0433	0.0842	0.1597
TaxRisk (SD_GAAPETR)	10,626	0.0969	0.1094	0.0177	0.0537	0.1415
TaxRisk (Tax-Spike 5-Year)	17,072	0.1394	0.3463	0.0000	0.0000	0.0000
TaxRisk (Tax-Spike 3-Year)	17,072	0.0976	0.2968	0.0000	0.0000	0.0000
PTBI	17,072	0.1204	0.0969	0.0520	0.0958	0.1605
Vol_PTBI	17,072	0.0564	0.0682	0.0188	0.0358	0.0663
BTM	17,072	0.5385	0.4058	0.2742	0.4482	0.6944
Leverage	17,072	0.2212	0.2276	0.0120	0.1703	0.3417
Size	17,072	6.8229	1.9539	5.5312	6.8470	8.1264
Shares_Out	17,072	3.6522	1.4470	2.6610	3.5937	4.5348
Vol_SpecialItems	17,072	0.0159	0.0297	0.0015	0.0065	0.0170
Vol_CashFlow	17,072	0.0552	0.0570	0.0212	0.0386	0.0680
Vol_ETBSO	17,072	0.0009	0.0025	0.0000	0.0000	0.0000
ETBSO	17,072	0.0007	0.0023	0.0000	0.0000	0.0000
CHG_NOLCF	17,072	-0.0004	0.0313	0.0000	0.0000	0.0000

Note: This table presents the descriptive statistics for the full diversification sample, including observations only present in either the 5-year or 3-year sample. All variables are defined in Appendix A. All continuous variables are winsorized at the 1% and 99% levels.

Panels A and B of Table 2 presents descriptive statistics for the larger GMW Replication sample and my smaller Diversification sample, respectively. The mean (median) *5-Year TaxAvoid* of -22.16 percent (-24.29 percent) in the Diversification sample is less negative than the mean (median) of -27.03 percent (-26.09 percent) in the GMW replication sample.

Thus, firms in the Diversification sample avoid more tax, consistent with sample selection requirement that firms in this sample are overall tax avoiders. Firms in the Diversification sample also avoid more tax compared to peers in their industry/size portfolio, with the mean of *5-Year Adjusted TaxAvoid* at 0.74 percent compared to -2.05 percent in the GMW Replication sample. In addition, firms in the Diversification sample are larger and less volatile in terms of *TaxRisk* and *FirmRisk*. Finally, 14.09 percent of firms in the GMW Replication sample have losses in the current year, while the Diversification sample excludes all firms with losses. Panel C of Table 2 presents the industry composition of both samples using the Fama-French 49 industry codes. The largest industries in both samples include Retail, Business Services, Electronic Services, and Computer Software. In general, the industry composite on of the two samples is similar, with a few exceptions. The GMW Replication sample has a larger percentage of firms in Utilities (4.27%) and Banking (7.31%), as compared to the Diversification sample (1.27% and 1.52%, respectively). Lastly, the Trading industry comprises 11.40% of the Diversification sample, compared to 7.12% of the GMW Replication sample.

Diversification Measurement and Descriptive Statistics

While the focus of this paper is on the diversification of tax strategies, empirically I cannot observe which tax strategies managers employ in their tax planning. What I

can observe, however, is the outcome of these tax strategies in the form of how much tax a firm has avoided. Additionally, the researcher observed that these benefits of tax avoidance seem to come from different sources. 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 aggregating into one source of a tax benefit, to the extent that a firm has more diverse sources of tax benefits, it follows that the firm has more diverse underlying tax strategies. Thus, my measure of diversification reflects the diversification of the sources of benefits of tax avoidance, which in turn reflect the diversification of the underlying tax strategies.

Finally, managers may also engage in state tax planning to source Nigeria 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.

CONCLUSION

Consistent with the idea that tax avoidance is risky, the practitioner literature has focused on the importance of tax risk management. However, empirically, prior studies have generally failed to find a relation between measures of overall firm risk and measures of corporate tax avoidance. Hence the researcher propose that one possible reason is that prior researchers have failed to consider the role that diversification plays in reducing the risk of a portfolio of tax strategies, and thereby reducing overall firm risk.

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APPENDIX A

VARIABLE DEFINITIO

Diversification Variables

Diverse_Dummy	An indicator variable equ level of diversification o *Diverse_Count25* (*Diver* otherwise.
Diverse_Count25	A variable ranging from buckets the firm avoided
Diverse_Count15	A variable ranging from buckets the firm avoided
Negative_Count5	A variable counting the r reducing) line items pres each year, over 5 years (*t*
Negative_Count3	A variable counting the r reducing) line items pres each year, over 3 years (*t*

Tax Avoidance Variables

5-Year TaxAvoid	The five-year sum (from paid (TXPD) divided by income (PI) less special i 1. Firms are required to h Multiplied by negative o avoidance.

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Control Variables

PTBI	Pretax Income (PI) sc (AT).
Vol_PTBI	The standard deviatic prior-period Total As
BTM	Book value of equity (PRCC_F) times tota (CSHO).
Leverage	Long-Term Debt (DI Assets (AT).
Size	The natural log of tot
Shares_Out	The log of the firm's (CSHO).
Vol_SpecialItems	The standard deviatic prior-period total ass

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PTBI	Pretax Income (PI) (AT).
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BTM	Book value of equit (PRCC_F) times to (CSHO).
Leverage	Long-Term Debt (I Assets (AT).
Size	The natural log of t