

TAX AVOIDANCE, FINANCIAL EXPERTS ON THE BOARD, AND BUSINESS STRATEGY

I. INTRODUCTION

Although there is considerable research attempting to explain cross-sectional variation in firms' tax planning, we still have an incomplete understanding of why some firms are more tax aggressive than others (Frank et al., 2009; Graham and Tucker, 2006; Rego, 2003; Rego and Wilson, 2012; Wilson, 2009; Chen et al., 2010; Lanis and Richardson, 2011). Specifically, evidence regarding firms' tax avoidance in the context of agency theory is still rare. It is not clear to what extent tax avoidance increase will increase shareholders' value. It is also not clear whether board of director play any role on firms' tax avoidance. In order to provide evidence on these issues, in this paper, we examine whether board of directors with sufficient financial expertise is able to identify firm's optimal level of tax avoidance and discourage managers from deviating from value-maximized tax policy. More specifically, we examine whether financial expert directors on the audit committee reduce the level of tax avoidance when managers are too aggressive on tax planning and encourage tax avoidance when managers are too conservative on tax planning.

We first assume that there is a firm-specific optimal level of tax avoidance which can maximize the value of firms (Armstrong et al., 2012; Chen, et al., 2010). Prior studies have shown that firm-level characteristics, such as size, leverage, research and development expenses (R&D) and the level of foreign operation, are associated with tax avoidance (Dyreng et al., 2010; Rego, 2003). This evidence suggests that these firm-specific characteristics might affect the costs and benefits of tax planning and cause cross-sectional variation in firms' tax planning.

Because both costs and benefits associated with different levels of tax avoidance might be firm-specific, the net benefits of tax avoidance should be also firm-specific.¹

Recently, Higgins et al. (2012) suggest that firms' business strategic type significantly influence firms' level of tax avoidance. They find that firms engaging in a strategy that focuses on minimizing and reducing the uncertainty of costs (defenders) avoid fewer taxes than firms following a strategy focusing on product differentiation and the aggressive pursuit of opportunities (prospectors). They also find that prospectors not only take advantage of tax planning opportunities due to their innovation strategy, but also due to their willingness to undertake risk and adapt to uncertainty.

In this study, we argue that different characteristics of each strategic type, such as strategy focus, risk tolerance and organizational structure influence firms' tax planning by influencing the manner which managers *weight* the costs and benefits of tax planning. Because defenders stress cost efficiency and certainty, tend to have a narrow product domain and a stable organizational structure, and do not adapt well to risk and uncertainty, they will put more weight on the cost of engaging in tax planning and will be more inclined to avoid engaging in costly tax avoidance strategies that involve significant uncertainty, even tax avoidance is expected to generate net benefits for its shareholders.² Thus, we argue that, in the absence of any corporate governance, defenders might avoid less taxes than they should (in order to maximize firm value). On the other hand, prospectors have a very broad product domain, a focus on innovation and change, and a more flexible organization structure. Because prospectors are much better at adapting to

¹ The most obvious benefit of tax aggressiveness is greater tax savings and one important cost of tax aggressiveness is the potential penalty imposed by the IRS, which is the product of the probability of being audited and being found out by the IRS and the expected penalties once found out.

² These costs include the upfront costs to developing and executing a tax plan (Mills et al. 1998), potential penalties for taking overly aggressive tax positions that are not sustained upon audit and the potential damage to its reputation if its participation in a particularly egregious tax strategy is disclosed to the public (Hanlon and Slemrod 2009).

risk and uncertainty, they are more likely to engage in risky tax planning behavior at an excessive level. We argue that, in the absence of any corporate governance, prospectors might be more aggressive than the optimal-level of tax planning.

Prior research suggests that board members protect shareholders by maximizing firm value (Byrd and Hickman, 1992; Coles et al., 2008; Cotter et al., 1997; Weisbach, 1988). This implies that the board should encourage or discourage firms' tax avoidance practice depending on business strategy. Boards should encourage defenders to avoid more taxes and discourage prospectors to be too aggressive on tax position. However, this assumes that board members have sufficient knowledge and expertise to evaluate firms' business strategy and able to monitor managers' tax planning. There is evidence that the extent of financial expertise is not consistent across boards (Krishnan and Visvanathan, 2008). Regulators have expressed concerns regarding whether directors have sufficient knowledge to effectively monitor the financial reporting process (Blue Ribbon Committee on Improving the Effectiveness of Corporate Audit Committees, 1999; Public Oversight Board, 1993; Sarbanes-Oxley Act of 2002 (SOX), 2002). Academic research also supports this view by showing a positive relation between appropriate expertise on the audit committee and the financial reporting quality (Dhaliwal et al., 2010; Krishnan and Visvanathan, 2008; Zhang et al., 2007).

As a result, in this paper we focus on financial expertise on the audit committee. We argue that directors with sufficient business and financial expertise are able to assess firms' business strategy and effectively intervene in corporate tax avoidance strategy. We expect that financial expert directors on the audit committee will encourage defenders (cost leadership and risk aversion) to be more aggressive in their tax planning. We predict that defenders will have lower cash and GAAP effective tax rate (ETR) and larger book tax difference when there is a presence

of financial expert on the audit committee.³ Conversely, we expect that financial expert directors will discourage prospectors (innovation and risk seeking) to be less aggressive on their tax planning. We predict that prospectors will have higher cash and GAAP ETR and smaller book tax difference when there is a presence of financial expertise.

Our sample is based on firms with financial data available from COMPUSTAT for the years 2004 to 2012. We rely on Bentley et al. (2011) for our measurement of business strategy. Their measure (STRATEGY) is based on the following characteristics identified in prior literature: research and development expense, number and volatility of employees, the market-to book ratio, selling and general and administrative expense, and assets in place. The higher the STRATEGY score, the more closely a firm's business strategy resembles a prospector-type approach. For financial experts' measurement, following Section 407 of SOX we create an indicator variable which equals 1 if there is at least one independent audit committee financial expert (FEDIR1), and zero otherwise.

Using 11,263 firm-year observations, we first regress the book and cash effective tax rate and book-tax difference, our three tax avoidance measures, on the financial expertise measure and control for other factors, including tax planning opportunities, that prior literature suggests are associated with tax avoidance. We do not find any evidence suggesting that financial expert directors *unconditionally* affect corporate tax avoidance. However, when interacting financial experts' measure (FEDIR1) to our continuous business strategy measure (STRATEGY), we find that financial expert directors play a statistically significant role in determining the level of tax avoidance that firms undertake conditionally upon business strategy. Firms with a higher

³ Following SEC, a financial expert director has an understanding of generally accepted accounting principles (GAAP), has the experience in preparing, auditing, analyzing or evaluating financial statements, and who has the ability to access the accounting principle or has an understanding of internal controls and procedures for financial reporting (SEC, 2003).

STRATEGY score (more closely resembling prospectors) avoid less taxes when there is at least one independent financial expert on the audit committee.

Based on Miles et al. (1978), and consistent with Bentley, et al. (2011) and Higgins, et al. (2012), we partition our sample based on STRATEGY score. We define firms with STRATEGY scores ranging from 6 (the minimum) to 12 as Defenders and firms with STRATEGY scores ranging from 24 to 30 (the maximum) as Prospectors.⁴ We find that financial expert directors significantly affect prospectors' tax avoidance policy. When there is at least one independent financial expert on the audit committee, prospectors avoid less tax, i.e. having higher cash and GAAP effective tax rate and lower book-tax differences. On the other hand, financial expert directors only intervene in defenders' cash effective rate. Our evidence suggests that defenders have lower cash effective tax rate when there is at least one financial expert director on the audit committee.

While the prior results apply to financial experts, we also investigate whether the results are driven by accounting expertise on the audit committee. One of the most controversial SOX provisions regarding financial experts is whether financial experts should include both accounting and non-accounting experts. The SEC's original proposal adopts a narrow definition of financial expertise that focuses on whether the director has prior accounting-related experience with financial reporting, such as experience as a public accountant, auditor, principal financial or accounting officer, or controller. However, due to widespread criticism of the narrow definition, the SEC broadened the definition in its final version to extend the field of qualified experts to include company presidents and CEOs. Because of the controversy surrounding the SEC's definition of financial expertise, we want to examine how accounting

⁴ All other firms are classified as Analyzers.

expertise on the audit committee affect corporate tax avoidance.⁵ We find that the presence of both independent accounting experts and independent non-accounting financial experts influence firms' tax avoidance policy. This evidence implies that the broad definition of financial expertise might reflect the needs of both accounting (CPA or accountant) and non-accounting expertise (CEO or president), which is consistent with the findings from prior studies (Dhaliwal, et al., 2010; Zhang, et al., 2007).

Our study contributes to literature in several ways. First, our study is of interest to academic researchers who study cross-sectional variation in firms' tax planning. We posit and find effects of financial expert directors on firms' tax planning. We view our consideration of the role of financial expert directors to be a step toward a better understanding of the substantial variation in tax avoidance. We also provide evidence regarding firms' tax avoidance in the context of agency theory. Prominent researchers (e.g., Desai and Dharmapala, 2006) call for more research to examine tax aggressiveness within an agency context. We show that financial experts on the audit committee are able to identify firms' business strategy and monitor managers' tax avoidance policy in the context of that strategy.

Furthermore, we contribute to the stream of literature that examines how the organizational design and structure of a firm influences its tax planning choices (Higgins, et al., 2012).

Specifically, we provide evidence that a firm's business strategy not only leads some firms (i.e.,

⁵ Prior studies examine the effects of accounting and non-accounting financial expertise on financial reporting quality. However, the results are mixed. For example, although Krishnan and Visvanathan (2008) find that accounting conservatism is not correlated with non-accounting financial expertise or nonfinancial expertise, Zhang, et al. (2007) find that both accounting and non-accounting experts negatively affect the possibility of internal control weakness. Dhaliwal, et al. (2010) also find that the mix of accounting and non-accounting financial expertise has the most positive impact on accruals quality.

Prospectors) to choose more aggressive tax planning opportunities than other firms (i.e., Defenders), but also influence financial expert directors' monitoring toward corporate tax policy.

This study also has implications for standard setters. We find that financial experts are better able to monitor corporate tax avoidance, supporting the SEC's intention to push for additional financial experts on the audit committee. We also contribute to the controversy about the definition of financial expertise. The operationalization of the concept of a financial expert remains a controversial issue. Some have argued that effective audit committee members are those who have general management experience (Olson, 1999), while others believe that accounting-specific expertise may be more important for audit committee members because audit committees are responsible for numerous duties that require a relatively high degree of accounting sophistication (Krishnan and Visvanathan, 2008). We find that the presence of both accounting and non-accounting experts, who gain their expertise from supervising employees and overseeing the performance of companies, are able to contribute to the effectiveness of the board. This suggests that the SEC's wide-ranging definition of financial expertise may not be a compromise to allay public criticism but rather reflects the need for broader expertise on the board.⁶

Section II provides a review of the prior literature and the development of our hypotheses. Section III discusses our research method and data used to test the interaction of financial expert presence on the audit committee and firm strategy as determinants of tax avoidance. Section IV presents the results of our analyses, and Section V presents our concluding remarks.

⁶ This broad definition of financial expertise was subsequently adopted by the NASDAQ (NASD Rule 4350(d)(2)(A)), while the NYSE implicitly adopted a broad definition by delegating the task of interpreting financial expertise to the board of their registrants (NYSE Section 303A(7)(a)).

II. PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

Tax Avoidance

The benefits of tax planning can be quite large, in terms of both increased cash flows and increased financial statement income, providing managers and shareholders with incentive to engage in tax avoidance activities. However, tax avoidance activities do not always lead to firm value maximization because aggressive tax planning may introduce observable (e.g., fines, professional fees) and unobservable (e.g. excess risk) costs to the firm. Evidence from prior studies suggests that corporate tax avoidance is systematically associated with certain firm attributes, including profitability, extent of foreign operations, intangible assets, research and development expenditures (R&D), leverage, and financial reporting aggressiveness (Frank, et al., 2009; Graham and Tucker, 2006; Wilson, 2009), suggesting that the costs and benefits of tax planning are affected by specific firm characteristics. Since both costs and benefits associated with different levels of tax avoidance might be firm-specific, it is reasonable to assume that there is a firm-specific optimal level of tax avoidance at which a firm can derive maximal positive net benefits from engaging in tax avoidance activities.

However, managers may not always achieve optimal tax planning level for their firm. For example, Rego and Wilson (2012) argue that, on average, risk-averse managers likely prefer to undertake tax avoidance that involves significant uncertainty but is expected to generate net benefits for its shareholders. On the other hand, Desai and Dharmapala (2006) point out that managers might be able to extract private benefits by engaging in complex tax avoidance activities. They argue that a company's tax avoidance activities, such as seeking offshore tax havens or creating complex structures involving tax-indifferent related parties, often comprise very complex transactions that are designed to obscure the underlying intent and to avoid

detection by the IRS. The obscure nature of such tax aggressiveness makes it easier for managers to hide rent extraction activities.

Prior studies examining how corporate governance mechanism affects managers' tax avoidance activities focus on managerial incentive compensation. Phillips (2003) looks at the relationship between tax planning and the compensation of managers and CEOs. He finds that compensation tied to after-tax performance measures is related to ETR decreases for managers but not CEOs. Rego and Wilson (2012) focus on CEO and CFO compensation and tax reporting aggressiveness and find a positive relationship between compensation and aggressive tax reporting. Desai and Dharmapala (2006) find that increased incentive alignment leads to less tax avoidance, and the authors propose that the quality of governance may play a role in this relationship. However, Minnick and Noga (2010) find that incentive compensation drives managers to make investments in longer-horizon payouts such as tax management.

Although incentive compensation is viewed as one of several effective corporate governance mechanisms, prior studies generally suggest that boards of directors also monitor managers' behavior and protect shareholders by mitigating agency problems between them and managers. For example, monitoring by the board of directors is shown to be associated with better firm performance around specific corporate events in which agency conflicts are most likely to occur, such as mergers and acquisitions (Byrd and Hickman, 1992), CEO replacement (Weisbach, 1988), and takeover bids (Cotter, et al., 1997).

However, the extant evidence regarding how the board affects firms' tax avoidance is limited and mixed. Lanis and Richardson (2011) show that the inclusion of a higher proportion of outside members on the board of directors reduces the likelihood of tax aggressiveness. Armstrong, et al., (2012) find that more sophisticated boards encourage more aggressive tax

positions when positive net benefits are likely and discourage more aggressive tax positions where the costs may exceed the benefits. On the other hand, Minnick and Noga (2010) find boards' measurement to be not as influential in tax management as incentive compensation.

Firm Business Strategy

In this paper, we argue that firm business strategy affects the manner in which the board of directors influences corporate tax avoidance. The term “business strategy” describes different competitive strategies that arise from the way companies decide to address fundamental problems.⁷ Prior studies have examined the association between business strategies and certain firm characteristics. Ittner et al. (1997) find that CEOs of prospector firms are compensated more on the basis of non-financial measures than defender firm CEOs. Dunbar and Phillips (2001) classify firms as either defenders (non-growth firms) or prospectors (growth firms), and argue that prospectors focus less on minimizing income tax expense and thus outsource more of their tax-planning and -compliance activities. Higgins et al. (2012) also examine the relation between business strategy and tax avoidance. They find that defender (cost leadership and risk aversion) and prospector (innovation and risk seeking) strategies avoid more taxes than firms following a more general (analyzer) strategy. They also find that prospectors appear to undertake more aggressive and less sustainable tax positions than defenders.

Because business strategy describes how a firm competes in its respective line of business, we argue that firms that undertake different business strategies **weight** the costs and benefits of tax planning differently. For example, because defenders are interested in minimizing costs, and the cost of devising and implementing tax planning strategies can be expensive, they might put

⁷ Miles and Snow (1978) argue that there are three fundamental problems: entrepreneurial, engineering, and administrative. The entrepreneurial problem relates to how a firm should manage its market share. The engineering problem involves how a company should implement its solution to the entrepreneurial problem. The administrative problem considers how a company should structure itself to manage the implementation of the solutions to the first two problems.

more weight on the cost of tax planning than they should. In addition, defenders' emphasis on stability and their need to reduce uncertainty suggests that defenders could be over-concerned with the uncertainty associated with tax avoidance, the potential penalties imposed by tax authorities, and the potential reputation damage associated with public disclosure of involvement with particularly egregious avoidance activities. As a result, without any intervention, defenders are more likely to forgo tax avoidance strategy with net positive value.

Relative to defenders, prospectors are less concerned with minimizing costs and are more focused on growth and innovation, possibly making tax minimization less of a concern for these types of firms. Nevertheless, prospectors are known for aggressively pursuing new opportunities, and it is possible that this aggressive culture influences their level of tax avoidance. In addition, prospectors tend to have a greater propensity for risk and thus might put less weight on the cost of tax planning and take greater risk than they should. Therefore, without any intervention, prospectors are more likely to be too aggressive with their tax planning.

Financial Expertise on the Audit Committee

Recently, much of the corporate governance literature focuses on financial expertise on the board and/or audit committee because prior research suggests that lack of appropriate expertise may reduce directors' ability to oversee firms' accounting practices. For example, Krishnan et al. (2008) find that the proportion of non-accounting financial experts on the audit committee (i.e., directors with experience as CEO or president) is unrelated with accounting conservatism, while the proportion of accounting financial experts on the audit committee is significantly positively correlated with conservatism. Regulators also emphasize the importance of financial expertise on the audit committee (Blue Ribbon Committee on Improving the Effectiveness of Corporate Audit Committees, 1999; Public Oversight Board, 1993; Sarbanes-Oxley Act of 2002

(SOX), 2002). This implies that regulators are concerned that boards with insufficient financial expertise might deter their audit committees' monitoring ability with respect to financial reporting. Section 407 of SOX requires firms to disclose whether at least one of the audit committee members is a financial expert. The NYSE requires that at least one member of the audit committee have accounting or related financial management expertise and that all members of the audit committee be financially literate.⁸

We focus on audit committee financial experts as defined by Section 407 of the SOX Act. Specifically, an audit committee financial expert is a person who has an understanding of generally accepted accounting principles (GAAP); experience in preparing, auditing, analyzing or evaluating financial statements; and the ability to understand accounting principles or to understand internal controls and procedures for financial reporting (SEC, 2003). Under the final rules adopted by the SEC, an audit committee member can be deemed a financial expert if the member has: (a) accounting expertise from work experience as a certified public accountant, auditor, chief financial officer, financial comptroller, financial controller, or accounting officer; (b) finance expertise from work experience as an investment banker, financial analyst, or any other financial management role; or (c) supervisory expertise from supervising the preparation of financial statements (e.g., CEO or company president).

Empirical academic research supports the regulatory view that audit committee financial expertise is related to more effective audit committee monitoring. Farber (2005) finds that firms subject to an SEC enforcement action have fewer financial experts on their audit committees

⁸ The NASDAQ rules require companies to certify whether at least one member of the audit committee has past employment experience in finance or accounting, requisite professional certification in accounting, or any other comparable experience or background that results in the individual's financial sophistication, including being or having been a CEO, CFO, or other senior officer with financial oversight responsibilities.

than a control group of similar firms. Dhaliwal, et al. (2010) document that financial expertise is positively associated with accruals quality. Zhang, et al. (2007) also provide evidence that firms are more likely to be identified with an internal control weakness under SOX if their audit committees have less financial expertise.

As a result, in this paper, we argue that directors with sufficient financial expertise and business knowledge are able to understand the relation between business strategy and corporate tax avoidance and will be able to monitor firms' tax planning activities specifically in the context of the firm's business strategy. We present the following hypothesis in null form:

H1: The presence of independent financial expert directors on the audit committee is not associated with firms' levels of tax avoidance, regardless of which organizational business strategies that firms take.

At a more specific level, because defenders have the strongest focus on cost minimization and will avoid less tax than they should, we predict that financial expert on the audit committee encourage defenders to engage in more tax avoidance strategies. Conversely, because prospectors have greater tax planning opportunities and will avoid more tax than they should, we predict that the presence of financial expertise on the audit committee will discourage prospectors' risky tax avoidance strategies. We present the following hypotheses in null form:

H2a: The presence of independent financial expert directors on the audit committee is not associated with defenders' levels of tax avoidance, and

H2b: The presence of independent financial expert directors on the audit committee is not associated with prospectors' levels of tax avoidance.

III. RESEARCH METHODS

Measuring Tax Avoidance

The tax avoidance literature has developed a several proxies for tax avoidance (Hanlon & Heitzman, 2010). To proxy for firms' tax avoidance activities, we estimate firms' book effective tax rates (*GAAP ETR*), cash effective tax rates (*CASH ETR*) and book-tax differences (*BTD*). We estimate three proxies of a firms' tax avoidance activities because the proxies, although correlated, capture different types of tax avoidance activities.

Our first measure of tax avoidance is cash effective tax rate (*CASH ETR*). We define *CASH ETR* as cash taxes paid divided (TXPD) by pre-tax book income adjusted for special items (PI-SPI) (Dyreng, Hanlon, & Maydew, 2010). *CASH ETR* reflects the assumption that managers view effective tax planning as the ability to minimize cash taxes paid. *CASH ETR* also reflects tax avoidance strategies that defer cash taxes paid to later periods as well as those that avoid tax entirely. Lower values of *CASH ETR* represent higher levels of tax avoidance.

The book effective tax rate, *GAAP ETR*, is our second measure of tax avoidance. *GAAP ETR* is defined as total tax expense (TXT) divided by pre-tax book income adjusted for special items (PI-SPI) (Dyreng et al., 2010). *GAAP ETR* is a commonly used measure of a firm's tax burden (Dyreng et al., 2010; Rego, 2003; Robinson, Sikes, & Weaver, 2010) and reflects tax avoidance activities that directly affect net income, but not those activities that defer cash taxes paid to a later period (Hanlon and Heitzman, 2010). A lower value of *GAAP ETR* reflects an increased level of tax avoidance.

Our third measure of tax avoidance, total book-tax differences (*BTD*), reflects tax avoidance activities that generate both permanent and temporary differences between financial statement income and taxable income. Following Wilson (2009), we define *BTD* as book income less

estimated taxable income, scaled by lagged total assets. Book income is pre-tax income (PI). Estimated taxable income is calculated by grossing up the sum of the current federal tax expense (TXFED) and the current foreign tax expense (TXT) and subtracting the change in NOL Carryforward (TLCF). Prior research suggests that larger *BTDs* are associated with higher proposed IRS audit adjustments as well as the probability of tax sheltering (Wilson, 2009). Accordingly, larger values of *BTD* represent higher levels of tax avoidance. Also see Appendix A for variable definitions.

Measuring Firm Strategy

To assign firms to different strategic types, we rely on Bentley et al.'s (2012) and Higgins et al.'s (2012) discrete STRATEGY composite measure, which proxies for a firm's business strategy. Strictly following prior studies (Bentley, Thomas, & Sharp, 2011; Higgins, Omer, & Phillips, 2012), we use the following six variables to construct our STRATEGY score: (1) the ratio of research and development to sales (RD5), (2) the ratio of employees to sales (EMP5), (3) the one-year percentage change in total sales (REV5), (4) the ratio of SG&A expenditures to sales (SGA5), (5) the standard deviation of total employees (σ EMP5), and (6) the ratio of net PPE scaled by total assets (CAP5). See Appendix B for detailed descriptions of each of the six variables.

Consistent with Ittner, Larcker, & Rajan (1997), Bentley et al. (2011), and Higgins et al. (2012), all variables are computed using a rolling average of the respective yearly ratios over the prior five years. We then rank each of the six variables by forming quintiles within each 2-digit SIC industry-year. Within each industry-year, observations in the top quintile receive a score of 5, those in the next quintile receive a score of 4, etc., and those in the lowest quintile are given a

score of 1.⁹ For each firm-year, we sum the scores across the six variables such that the maximum score a firm could receive is 30, and the minimum score a firm could receive is 6. We then subtract 6 from the score. Thus, our STRATEGY score variable has a minimal value of 0 and a maximal value of 24.¹⁰ Higher scores represent firms that follow a more prospector-type strategy, while lower scores represent firms that follow a more defender-type strategy.

Measuring Financial Expertise on Audit Committee

Section 407 of the SOX Act mandates firms to disclose whether there is at least one financial expert on the audit committee. Following Section 407, we create a dummy variable (FEDIR1), which equals one when there is at least one independent financial expert on the audit committee, to capture the monitoring imposed by financial experts on the audit committee.

We focus on the independence of financial experts for several reasons.¹¹ First, prior studies generally suggest that the interests of independent directors are more likely to be aligned with shareholders due to concerns about their reputation (Byrd & Hickman, 1992). In addition, Section 301 of the SOX Act mandates the SEC to direct the national securities exchange and national securities associations to prohibit the listing of any company that does not require all of its audit committee members to be independent. Following the requirement, publicly traded firms should have only audit committee members who are independent from management. Even though not all reporting companies are listed on a national securities exchange or association, Section 407 of the SOX Act explicitly requires a company to disclose whether the financial expert is independent of management. The SEC believes that “investors in these companies

⁹ The scoring for CAP5 is inverted because Defenders are expected to have the highest capital intensity

¹⁰ In our empirical model, we interact the STRATEGY score measure with the other dummy variable. In order to interpret our results, we subtract 6 from our STRATEGY score.

¹¹ The definition of “independent” in Section 407 follows the listing standards of the NYSE, the AMEX, and Nasdaq. Different securities laws include different definitions of “grey” (affiliated) directors. In this paper we use a strict definition which excludes the grey directors as independent directors.

would be interested in knowing whether the audit committee financial expert is independent of management.” This suggests that the SEC is concerned about the independence of audit committee financial experts.

Empirical Models

To investigate whether financial expertise on the audit committee and firm business strategy interact to influence firms' tax avoidance policy, we first specify the following model (subscripts suppressed):

$$\begin{aligned} TaxAvoidance = & \alpha + \beta_1 \times FEDIR + \beta_2 \times FEDIR \times STRATEGY + \gamma \times Control + \\ & YearEffects + IndustryEffects + \varepsilon \end{aligned} \quad (1)$$

TaxAvoidance is the dependent variable and proxy by three measures (*Cash ETR*, *GAAP ETR*, and *BTD*) that we examine (separately). Firms that engage in more tax avoidance behavior will have lower *Cash ETR* and/or *GAAP ETR* and higher book-tax differences (*BTD*). *FEDIR* represents the financial expertise on the audit committee, which are the main independent variables of interest. *STRATEGY* is the continuous strategy score, ranging from 0 (extreme defender-type firms) to 24 (extreme prospector-type firms). β_1 captures the effect of independent financial expert on tax avoidance when *STRATEGY* score is zero (extreme defender-type firms). We predict that firms following defenders-type strategy will avoid more tax when there is at least one independent financial expert on the audit committee, thus a negative (positive) coefficient on *FEDIR* is expected when *ETR* (*BTD*) proxies for tax avoidance.

β_2 captures the incremental effect of independent financial expert on tax avoidance when *STRATEGY* score is non-zero. The higher the *STRATEGY* score is, the more the firms follow prospector-type strategy. Because we argue that financial expert will discourage prospector-type firms to be too aggressive, as firms move from defender-type strategy (lower *STRATEGY* score)

toward prospector-type strategy (higher *STRATEGY* score), the presence of financial expert directors should be related to lower level of tax avoidance. As a result, β_2 is predicted to be significantly positive when using ETR (*Cash ETR* and *GAAP ETR*) to proxy for tax avoidance and negative when using *BTD* to proxy for tax avoidance.

Equation (1) emphasizes on *STRATEGY* measure, which is a discrete measure that captures cross-sectional variation in business strategy among the entire continuum of strategy types. In order to provide more powerful test, we attempt to capture the effect of financial expert on tax avoidance for those firms at the extreme ends of the strategy continuum. Following Bentley et al. (2012) and Higgins et al. (2012), we classify firms with *STRATEGY* scores ranging from 0 (the minimum) to 5 as Defenders, and firms with *STRATEGY* scores ranging from 19 to 24 (the maximum) as Prospectors.¹²

We then partition our sample and estimate equation (2) to capture the effect of financial expert directors on tax avoidance policy among each strategy group of firms.

$$TaxAvoidance = \alpha + \beta \times FEDIR + \gamma \times Control + YearEffects + IndustryEffects + \varepsilon \quad (2)$$

We estimate Equation (2) by using Defender-sample and Prospector-sample, respectively. Hypothesis 2A suggests that financial expert directors will encourage defenders to avoid more tax. Thus, in defender-sample, we predict β to be significantly negative (positive) when using *Cash ETR* and *GAAP ETR* (*BTD*) to proxy for tax avoidance. On the other hand, in prospector-sample, β is predicted to be significantly positive (negative) when using *Cash ETR* and *GAAP ETR* (*BTD*) to proxy for tax avoidance because financial expert directors will prevent prospectors from avoiding too

¹² Firms with *STRATEGY* scores ranging from 6 to 18 are classified as Analyzers. Under this classification scheme, 1,331 firm-years are classified as “Defenders”; 458 firm-years are classified as “Prospector”, and 9,317 firm-years are classified as “Analyzers”.

much tax (Hypothesis 2B).

To control for firm characteristics that could plausibly be related to tax avoidance, we include a set of control variables (*CONTROL*). We draw these variables from prior effective tax rate literature. We include size (*SIZE*), research and development expenditure (*R&D*), capital expenditures (*CAPITAL*), ratio of debt to assets (*LEVERAGE*), the ratio of intangible to total assets (*INTANGIBLE*), and gross property plant and equipment (*PPNE*) (Dyreng et al., 2010). Moreover, we control for firm profitability (*ROA*) and net operating loss carryforwards (*NOL* and ΔNOL) to proxy for firms' need to avoid income taxes (Chen, Chen, Cheng, & Shevlin, 2010; Rego, 2003). We also include an indicator for whether the firm has foreign operations (*FOREIGN_OPERATION*).

In addition, we include the size of board to capture the number of directors on the board (*BOARD_SIZE*). We also include number of independent directors (*BOARD_IND*) to control for the effect of board independence. Prior studies generally suggest that board independence is related to the board's monitoring ability (Dechow, M., Sloan, & Sweeney, 1996). We also control for the size of the audit committee (*AUD_SIZE*) and audit committee independence (*AUD_IND*) because the Blue Ribbon Committee suggests that audit committees should have at least three members, implying that larger audit committees are more likely to have a wider knowledge base on which to draw and are better able to perform their oversight duty. All variables are defined in Appendix A.

Data and Descriptive Statistics

The sample starts with all firms possessing available data from COMPUSTAT, covering the years from 2004 to 2012. We restrict the sample to post-2004 data because the SOX provision regarding financial experts is effective in 2003. COMPUSTAT provides firm-specific financial

information. Board data are obtained from the Corporate Library database for 2004-2008, and from RiskMetrics for 2009-2012 because the financial expert data is missing in Corporate Library after 2008. The Corporate Library is an independent investment research firm specializing in corporate governance and board effectiveness, and its database includes coverage of more than 3,700 U.S. corporations and more than 38,000 individual directorships for the 2000-2008 proxy reporting year. The database contains data collected from proxy statement filings, including information on each director's work experience, director independence, and committee assignments. The director data in RiskMetrics includes a range of variables related to individual board directors (name, age, tenure, gender, committee memberships, independence classification, primary employer and title, shares owned, etc).

We require all observations to have sufficient data to calculate *Cash ETR* and *GAAP ETR*. We require five years of data (1999 through 2003) to compute *STRATEGY* for the first year (2004) of our sample period. We also require an additional year (1998) to create lagged variables. In addition, we drop observations without board and audit committee data from Corporate Library or RiskMetrics. Last, we exclude firm-year observations with negative pre-tax income (adjusted for special items) to focus on firm-years during which tax avoidance is likely to be a priority. To reduce the effects of extreme observations, we winsorize observations in the top and bottom one percent of distributions of all continuous variables. As a result of these requirements, the sample used in our analyses consists of 11,269 firm-year observations.

-- INSERT TABLE 1 ABOUT HERE --

Table 1 reports the descriptive statistics of all variables used in Equation (1). The means and medians of our tax avoidance measures, *GAAP ETR*, *Cash ETR*, and *BTD*, are comparable with prior studies (Dyreng et al., 2010; McGuire et al., 2012). More specifically, the mean (median)

of *GAAP ETR* is 0.248 (0.233). The mean value of *BTD* is 0.020, which is consistent with prior studies (Wilson 2009). The descriptive statistics of control variables are similar to prior studies as well.

For the board measures, on average, 86% of our sampled firms have at least one independent financial expert on the audit committee while only 10% of our sampled firms have independent accounting expertise on the audit committee. The median firm has 10 directors on the board, with about 7 independent directors and 3 inside directors. These percentages are similar to those reported in the prior studies. Faleye, Hoitash, & Hoitash (2011) report that the median board has 9 members, 6 of whom are independent directors, using data for the period 1998 to 2006.

-- INSERT TABLE 2 ABOUT HERE --

Table 2 presents univariate Spearman correlations for some selected variables. Our measure of *STRATEGY* is not uniformly correlated with our tax avoidance proxies. Specifically, *STRATEGY* is negatively and significantly correlated with *BTD*, but is not significantly correlated with *GAAP ETR* and *Cash ETR*. In addition, our measure of financial experts' monitoring (*FEDIRI*) is not related to our tax avoidance proxies and *STRATEGY* measures. Board size (*BOARD_SIZE*) and board independence (*BOARD_IND*) are significantly correlated with *GAAP ETR*, *Cash ETR*, *BTD* and *STRATEGY*. In addition, we note that *GAAP ETR* and *Cash ETR* are significantly correlated to each other, but *BTD* is not correlated to *GAAP ETR*.

IV. EMPIRICAL RESULTS

Main Regression Results

Tables 3 through 5 present the results of our multivariate analyses. In all tables, p-values are based on standard errors that are clustered by firm and year (Gow, Ormazabal, & Taylor, 2010;

Petersen, 2009). All p-values in the tables are two-tailed. The coefficients on the year and industry fixed effects are not reported for the sake of brevity.

-- INSERT TABLE 3 ABOUT HERE --

Table 3 presents our tests of the association between financial expertise on the audit committee and tax avoidance among the continuum of strategy types. Lower (higher) values of *Cash ETR* and *GAAP ETR (BTD)* represent higher levels of tax avoidance. The coefficient on *FEDIR1* captures the effect of financial expert directors on the level of tax avoidance when *STRATEGY* score is zero (extreme defender-type strategy). We predict that financial expert directors will encourage firms that follow defender-type strategy to avoid more tax. Consistent with our prediction, column (1) and column (2) of Table 3 both show significant negative coefficients on *FEDIR1*, suggesting that firms with zero *STRATEGY* score (**extreme** defender-type firms) will have lower *Cash ETR* and *GAAP ETR* when there is at least one independent financial expert director on the audit committee. When using *BTD* to proxy for firms' tax avoidance, column (3) shows a significantly positive coefficient on *FEDIR1*. These findings are consistent with our prediction that firms following defender-type strategy tend to be less aggressive on their tax planning due to their business strategy and financial expert directors will encourage managers to avoid more tax in order to maximize firm value.

By interacting *FEDIR1* with *STRATEGY* measure, we capture the incremental effect of financial experts on the level of tax avoidance when *STRATEGY* score is non-zero. We predict that financial expert will discourage firms from aggressive tax planning policy when the firms rely on more prospector-type strategy. Since our *STRATEGY* score measure ranges from 0 to 24, a positive coefficient on *FEDIR1*STRATEGY* suggest that when there is an independent financial expert on the audit committee, the higher the *STRATEGY* score is, the larger the firm's *Cash ETR*

and *GAAP ETR* are. Consistent with our prediction, the coefficients on *FEDIRI *STRATEGY* are significant positive across column (1) and column (2). The results remain consistent with our prediction when using *BTD* to proxy for tax avoidance. We find a significantly negative coefficient on *FEDIRI *STRATEGY*, suggesting that when there is an independent financial expert on the audit committee, the larger the *STRATEGY* score is, the lower the *BTD* is.

The control variables are generally associated with tax avoidance in a manner consistent with prior research. In column (1), when *Cash ETR* is the dependent variable, the coefficients on *ROA*, *R&D*, *LEVERAGE* and *NOL* are significantly negative whereas the coefficients on *FOREIGN OPERATION* and Δ *NOL* are positive and significant. In column (2), when the *CAAP ETR* is the dependent variable, the coefficients on *R&D*, *LEERAGE*, and *NOL* are negative and significant whereas the coefficients on *INTANGIBLE* and *PPNE* are positively significant. In column (3), when *BTD* is the dependent variable, the coefficient on *CAPITAL* is negative and significant and the coefficients on *SIZE*, *ROA*, *PPNE*, *NOL*, and Δ *NOL* and are positive and significant. For board measures, the size and independence of audit committee are positively related to our *ETR* measures.

-- INSERT TABLE 4 ABOUT HERE --

In Table 4, we partition our sample based on Bentley et al.'s (2012) and Higgins et al.'s (2012) classification scheme, i.e., classifying firms with *STRATEGY* scores ranging from 0 (the minimum) to 6 as Defenders and firms with *STRATEGY* scores ranging from 18 to 24 (the maximum) as Prospectors. Under this classification scheme, 1,333 firm-years are classified as Defender, and 474 firm-years are classified as Prospectors. We attempt to capture the effect of financial expert on tax avoidance for those firms at the extreme ends of the strategy continuum by narrowing our analyses to the Defender and Prospector samples.

Table 4, Panel A presents the results when using Defender sample. Consistent with our prediction, when firms follow defender-type strategy, the presence of a financial expert director is associated with lower *Cash ETR*, suggesting that defenders become more aggressive on their cash position of tax planning when there is at least one independent financial expert. However, when using *GAAP ETR* and *BTD* as measures of tax avoidance, we do not find any significant relation between the presence of financial expert and the level of tax avoidance. These results imply that financial experts on the audit committee might be more concerned about defenders' cash flow implications of their tax planning.

Table 4, Panel B presents the results when using Prospector sample. We find that *FEDIRI* is uniformly correlated with our three tax avoidance proxies for firms following prospector-type strategy. The coefficients on *FEDIRI* are significantly positive when using *Cash ETR* and *GAAP ETR* to proxy for tax avoidance and significantly negative when using *BTD* to proxy for tax avoidance. This evidence suggests that for firms following a more prospector-type strategy, financial expert directors not only discourage firms from excessive cash tax planning, but also intervene in their *GAAP ETR* and *BTD*.¹³ The control variables are generally associated with tax avoidance in a manner consistent with Table 3 and prior research.

Accounting Expertise on the Audit Committee

In this section, we focus on accounting expertise on the audit committee. One of the most controversial SOX provisions is the definition of financial expertise on the audit committee. The SEC's original proposal adopts a definition of financial expertise that focuses on whether the director has prior accounting experience with financial reporting and suggests that such directors will have work experience as a public accountant, auditor, principal financial or accounting

¹³ We also examine the relation between financial expertise and the level of tax avoidance by using analyzer-sample. We do not find any significant association between the presence of at least one financial expert director on the audit committee and the level of tax avoidance when the firms' strategy score is between 7 and 17.

officer, or controller. Accounting-specific expertise is viewed as important for audit committee members because audit committees are responsible for numerous duties that require a relatively high degree of accounting sophistication. For example, audit committees are expected to assess the extent to which the firm's accounting policies are aggressive or conservative, and understand how these policies affect the firm's financial posture. Further, they evaluate judgmental accounting areas such as the company's reserves, review management's handling of proposed audit adjustments by the external auditors, and appraise the quality, and not just the acceptability, of the firm's financial reports (Blue Ribbon Committee on Improving the Effectiveness of Corporate Audit Committees, 1999; PriceWaterhouseCoopers, 1999).

However, narrowly defining financial expertise as accounting-related expertise has been widely criticized. Critics of the definition argue that its narrow focus on accounting-related expertise is unnecessarily restrictive and limits the pool of qualified directors. For example, the American Association of Bank Directors claims that the definition even disqualifies Alan Greenspan as a financial expert, and a Wall Street Journal article questions whether Warren Buffet would meet the requirements demanded by the rule (American Association of Bank Directors, 2002). Due to the widespread criticism of the narrow definition, the SEC "compromised" by broadening the definition of financial expertise in its final version of the SOX provision (Defond, Hann, & Hu, 2005). The final rule gives board members wide latitude to qualify a director as a financial expert by suggesting that directors may gain such expertise through experience supervising employees with financial reporting responsibilities, overseeing the performance of companies, and other relevant experience. Although the SEC does not explicitly state the job title "qualified financial expert" under this broader definition, the final rule logically extends the field of qualified experts to encompass company presidents and CEOs.

Because of the controversy surrounding the SEC's definition of financial expertise, the definition of what constitutes a financial expert has given rise to academic research on the effects of accounting and non-accounting financial expertise on financial reporting quality. The result of whether non-accounting expertise is beneficial to the effectiveness of audit committees is mixed. Krishnan & Visvanathan (2008) find that in general, accounting conservatism is not correlated with non-accounting financial expertise or nonfinancial expertise. Zhang, Zhou, & Zhou (2007) find that both accounting and non-accounting financial experts affect the possibility of internal control weakness. They find that firms are more likely to be identified with an internal control weakness if their audit committees have less accounting financial expertise and non-accounting financial expertise. Similarly, Dhaliwal, Naiker, & Navissi (2010) find that the mix of accounting and non-accounting expertise provides the most positive impact on accruals quality.

Thus, we examine whether the presence of an accounting expert affects firms' tax avoidance policy when considering firms' business strategy. Following Defond et al. (2005), we classify a financial expert as an accounting expert if the director has experience as a public accountant, auditor, principal or chief financial officer, controller, or principal or chief accounting officer. Other non-accounting financial experts, such as company presidents, investment bankers, or CEOs, are excluded from accounting expertise. Because RiskMetrics does not provide information regarding financial experts' profile, the sample period for this test is restricted from 2004 to 2008, the period covered by Corporate Library. This subsample consists of 7,963 observations.

To examine whether the presence of both independent accounting and non-accounting financial experts is related to tax avoidance, we estimate Equation (2) by substituting *FEDIR1* to

ACCDIR1 and *NONACC_FEDIR1*. *ACCDIR1* is a dummy variable that equals one if there is at least one independent accounting expert on the audit committee, and zero otherwise.

NonACC_FEDIR1 is a dummy variable equal to one if there is at least one independent non-accounting financial expert on the audit committee (i.e., CEO, president, investment banker, etc.), and zero otherwise.

Table 5, Panel A shows the results for the Defender sample. We find that for firms following a defender-type business strategy, the presence of at least one independent accounting expert is associated with lower *Cash ETR*. The coefficient on *ACCDIR1* is significantly negative (-0.050; $p < 0.05$). In addition, the presence of non-accounting financial expert also affects the firms' *Cash ETR* when the firms' closely follow defender-type strategy. The coefficient on *NonACC_FEDIR1* is -0.046 ($p < 0.05$). In addition, we find that the presence of independent accounting financial expert is associated with lower *GAAP ETR* when firms rely on more defender-type strategy while non-accounting financial expert do not affects defenders' *GAAP ETR*. This evidence might imply that an accounting expert, who has detailed knowledge of accounting and financial reporting process, is better able to monitor firms' effective book tax rate. However, the presence of independent accounting expert and non-accounting financial expert is not associated with *BTD*.

Table 5, Panel B shows the effect of accounting expertise on firms' tax avoidance policy for the Prospector sample. We find that both accounting and non-accounting financial experts affect firms' tax avoidance policy when the firms following a prospector-type strategy. The coefficients on both *ACCDIR1* and *NonACC_FEDIR1* are significantly positive when using *ETR* (*Cash ETR* and *GAAP ETR*) to proxy for tax avoidance. When using *BTD* as measure of tax avoidance, the coefficients on both *ACCDIR1* and *NonACC_FEDIR1* are significantly negative,

suggesting that both accounting expert and non-accounting expert prevent managers from aggressive tax planning when the firms follow prospector-type strategy.

These findings are consistent with prior studies which document that both accounting and non-accounting expertise benefit the financial reporting process (Zhang et al., 2007; Dhaliwal et al., 2005). Non-accounting experts typically consist of CEOs, presidents, investment bankers, or financial analysts. They have considerable experience in carrying out due diligence with regard to forecasting future performance, developing business strategy, and coping with major corporate events. Our findings suggest that while non-accounting experts do not possess the domain specific skills of accounting knowledge, the business and industry knowledge of these experts, when coupled with accounting expertise, provides incremental benefits to the firms.

V. CONCLUDING REMARKS

In this paper, we examine how firm business strategy interacts with the presence of financial expert directors on the audit committee to influence corporate tax avoidance. By assuming each firm has a firm-specific optimal level of tax avoidance, we first argue that firms' business strategy affects firms' tax planning by influencing the manner which managers weight the costs and benefits of tax planning. We argue that defenders will put more weight on the cost of engaging in tax planning and are more inclined to avoid engaging in costly tax avoidance strategy that involves significant uncertainty. On the other hand, prospectors are more likely to engage in risky tax planning because they are much better at adapting to risk and uncertainty. As a result, in the absence of any corporate governance, defenders will avoid less tax than they should, and prospectors will be too aggressive on their tax planning.

Since board members protect shareholders by maximizing firm value, the board should encourage defenders to avoid more taxes and discourage prospectors to be too aggressive on tax position. Consistent with our prediction, we find that firms following a more defender-type strategy have lower cash effective rates (*Cash ETR*) when there is at least one independent financial expert on the audit committee. We also find that firms focusing on a prospector-type strategy have higher cash effective tax rates (*Cash ETR*) and higher GAAP effective tax rates (*GAAP ETR*) and lower book tax differences (*BTD*) when there is at least one financial expert director on the audit committee. Our findings suggest that corporate governance plays a significant role on the determinant of corporate tax avoidance.

We also examine the impact of accounting experts on the level of tax avoidance. One of the most controversial issues of Section 407 of SOX is the operationalization of who is a financial expert. We find that the presence of both accounting and non-accounting expertise on the audit committee is associated with lower *Cash ETR* when the firms follow a defender-type strategy. We also find that both accounting and non-accounting financial expert negatively affect prospectors' tax avoidance policy. Firms that follow a prospector-type strategy have higher *Cash ETR* and *GAAP ETR* and lower *BTD* when there is a presence of accounting and/or non-accounting expertise. This evidence is consistent with prior studies and suggests that the SEC's wide-ranging definition of financial expertise may not be a compromise to allay public criticism but rather a reflection of the need for broader (i.e., financial and supervisory) expertise on the board.

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Appendix A: Variable Definitions

<i>Tax Avoidance Measures</i>	
CASH ETR	Cash effective tax rate, defined as the sum of cash tax paid (TXPD) divided by the sum of pre-tax book income (PI) before special items (SPI). Cash ETR with negative denominators are deleted. The remaining non-missing ETRs are winsorized (reset) so that the largest observation is equal to 1 and the smallest is equal to 0.
GAAP ETR	GAAP effective tax rate, defined as the total tax expense (TXT) divided by the sum of pre-tax book income (PI) before special items (SPI). GAAP ETR with negative denominators are deleted. The remaining non-missing ETRs are winsorized (reset) so that the largest observation is equal to 1 and the smallest is equal to 0.
BTD	Book tax difference, calculated as pre-tax income less estimated taxable income scaled by average assets (AT). Pre-tax book income is defined as pre-tax income (PI). Taxable income is defined as the sum of current federal tax expense (TXFED) and current foreign tax expense (TXFO) divided by the top U.S. statutory tax rate less the change in net operating loss carry forward (TLCF). If current federal or foreign tax expense is missing, then we calculate tax expense as the difference between total tax expense (TXT) and the sum of deferred tax expense (TXDI).
<i>Board Measures</i>	
FEDIR1	Dummy variable equals to one if there is at least one independent financial expert on the audit committee and zero otherwise.
ACCDIR1	Dummy variable equals to one if there is at least one independent accounting expert on the audit committee and zero otherwise.
NonACC_FEDIR1	Dummy variable equals one if there is no accounting expert but at least one non-accounting financial expert directors on the audit committee and zero otherwise.
BOARD_SIZE	Log value of one plus the number of directors sit on the board
BOARD_IND	Percentage of outside directors on the board
AUD_SIZE	Log value of one plus the number of directors on the audit committee
AUD_IND	Percentage of outside directors on the audit committee
<i>STRATEGY Components</i>	
RD5	Five year rolling average (year t-5 through year t-1) of the yearly ratio of research and development expense (XRD) to total sales (SALE).
EMP5	Five year rolling average (year t-5 through year t-1) of the yearly ratio of the total number of employees (EMP) to total sales (SALE).
REV5	One-year percentage change in total sales (SALE) computed over a rolling five year period (year t-5 through year t-1)
SGA5	Five year rolling average (year t-5 through year t-1) of the yearly ratio of SG&A (XSGA) to total sales (SALE)
SD_EMP5	Standard deviation of the total number of employees (EMP) computed over a rolling prior five year period (year t-5 through year t-1).
CAP5	Five year rolling average (year t-5 through year t-1) of the yearly ratio of net property, plant and equipment (PPENT) to total assets (AT)

<i>Control variables</i>	
SIZE	Log value of total assets (AT)
R&D	Log value of one plus Research and development expense (XRD); when missing, reset to 0.
ROA	Income before extraordinary items (IB), scaled by lagged value of total assets (AT).
CAPITAL	Capital expenditures (CAPX) divided by gross property, plant and equipment (PPEGT)
LEVERAGE	Sum of long-term debt (DLTT) and long-term debt in current liabilities (DLC) dividend by lagged value of total assets (AT)
OPERATIONS	An indicator if the firm has a non-missing, non-zero value of pre-tax income from foreign operations (PIFO).
PPNE	Net property, plant and equipment (PPNET) dividend by lagged value of total asset (AT).
NOL	An indicator equals one if the firm has a non-missing value of tax loss carry-forward (TLCF), zero otherwise.
Δ NOL	Change in tax loss carry-forward (TLCF) dividend by lagged value of total assets (AT).
INTANGIBLE	Intangible assets (INTANG) dividend by lagged value of total assets (AT)

APPENDIX B: Business Strategy Characteristics

	Prospector	Analyzer	Defender
Research and Development (RD5)	Extensive R&D to identify new products and market opportunities	Extensive R&D to identify new products and market opportunities	Minimal R&D, which is usually related to existing products
Employees (EMP5)	More employees per dollar of sales	Moderate employees per dollar of sales	Fewer employees per dollar of sales because Defenders focus on organizational efficiency
Growth (REV5)	Growth occurs in spurts through product and market development.	Steady growth through both market penetration and product and market development	Cautious and incremental growth and advances in productivity
Marketing (SGA5)	Strong focus on marketing.	Strong focus on marketing in innovative sector.	Strong emphasis on financial and production functions and less on marketing.
Employee turnover (σ EMP5)	Higher employee turnover focusing on shorter employee tenure	Moderate employee turnover	Low employee turnover focusing on lengthy employee tenure and promotion from within the firm
Capital Intensity (CAP5)	Low degree of mechanization and routinization to avoid a lengthy commitment to a single technological process	Moderate degree of mechanization and routinization while remaining flexible enough to pursue new business activities	High degree of mechanization and routinization focusing on a single core-efficient technology

Table 1 Descriptive Statistics and Correlation

	<u>N</u>	<u>Mean</u>	<u>STD</u>	<u>Q1</u>	<u>Median</u>	<u>Q3</u>
GAAP ETR	11,269	0.248	0.195	0.109	0.233	0.334
CASH ETR	11,269	0.288	0.159	0.217	0.315	0.367
BTD	11,089	0.020	0.074	-0.001	0.019	0.046
STRATEGY	11,269	16.83	3.68	14.00	17.00	19.00
SIZE	11,269	7.63	1.61	6.47	7.45	8.64
ROA	11,269	0.07	0.07	0.03	0.06	0.10
R&D	11,269	1.78	2.27	0.00	0.00	3.64
CAPTIAL	11,269	0.11	0.07	0.06	0.09	0.14
LEVERAGE	11,269	0.23	0.21	0.04	0.20	0.34
INTANGIBLE	11,269	0.22	0.23	0.03	0.15	0.34
PPNE	11,269	0.29	0.26	0.09	0.20	0.42
NOL	11,269	0.45	0.50	0.00	0.00	1.00
ΔNOL	11,269	0.00	0.05	0.00	0.00	0.00
FOREIGN_OPERATION	11,269	0.57	0.49	0.00	1.00	1.00
FEDIR1	11,269	0.86	0.33	1.00	1.00	1.00
ACCDIR1	11,269	0.10	0.31	0.00	0.00	0.00
NonACC_FEDIR1	11,269	0.46	0.49	0.00	0.00	1.00
# of Directors	11,269	11.47	4.44	8.00	10.00	14.00
BOARD_IND	11,269	0.69	0.15	0.58	0.70	0.80
# of Audit Committee Members	11,269	3.72	1.02	3.00	4.00	4.00
AUD_IND	11,269	0.96	0.12	1.00	1.00	1.00

The descriptive statistics are based on 11,269 observations in the period 2004-2012. We require all observations to have sufficient data to calculate GAAP ETR and CASH ETR. We require five years of data (1999 through 2003) to compute STRATEGY for the first year (2004) of our sample period. We also require an additional year (1998) to create lagged variables. In addition, we drop observations without board and audit committee data from Corporate Library or RiskMetrics. See Appendix for variable measurements.

Table 2 Correlation Table

	CASHE TR	GAAP ETR	BTD	STRAT EGY	FEDIR1	ACC DIR1	Non ACC FEDIR1	SIZE	ROA	BOARD SIZE	BOARD IND	AUD SIZE
GAAP ETR	0.25											
	<.0001											
BTD	-0.26	-0.00										
	<.0001	0.89										
STRATEGY	-0.01	0.01	-0.04									
	0.45	0.13	<.0001									
FEDIR1	0.04	-0.01	-0.02	0.01								
	0.00	0.14	0.02	0.14								
ACCDIR1	0.01	0.01	0.01	-0.01	0.14							
	0.27	0.35	0.30	0.17	<.0001							
NonACC FEDIR1	0.08	0.03	-0.10	0.03	0.37	-0.33						
	<.0001	0.00	<.0001	0.01	<.0001	<.0001						
SIZE	-0.06	-0.05	0.05	-0.10	0.03	-0.01	-0.08					
	<.0001	<.0001	<.0001	<.0001	0.00	0.16	<.0001					
ROA	-0.08	0.07	0.42	-0.02	0.01	0.03	-0.02	-0.11				
	<.0001	<.0001	<.0001	0.04	0.47	0.00	0.03	<.0001				
BOARD SIZE	0.07	-0.02	-0.09	-0.07	0.12	0.13	0.29	0.42	-0.12			
	<.0001	0.04	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001			
BOARD IND	-0.07	-0.06	0.07	-0.05	0.12	-0.06	-0.29	0.23	-0.02	-0.10		
	<.0001	<.0001	0.04	<.0001								
AUDSIZE	0.01	0.00	0.01	-0.07	0.06	-0.01	-0.04	0.35	-0.07	0.30	0.25	
	0.44	0.79	0.15	<.0001	<.0001	0.14	<.0001	<.0001	<.0001	<.0001	<.0001	
AUDIND	0.02	-0.01	0.01	0.01	0.23	0.03	-0.03	0.02	0.01	-0.02	0.42	0.04
	0.05	0.32	0.40	0.27	<.0001	0.01	0.00	0.03	0.43	0.03	<.0001	<.0001

Table 3 Effect of financial experts on tax avoidance contingent upon business strategy

	Cash_ETR	GAAP_ETR	BTD
	(1)	(2)	(3)
FEDIR1 _t	-0.028***	-0.025***	0.007*
	[-2.833]	[-3.277]	[1.947]
FEDIR1 _t *STRATEGY _t	0.002***	0.002*	-0.001**
	[2.613]	[1.789]	[-2.125]
STRATEGY _t	-0.003***	-0.003***	0.000
	[-3.429]	[-2.577]	[0.027]
SIZE _t	-0.003	-0.002	0.002***
	[-1.533]	[-1.384]	[2.929]
ROA _t	-0.259***	0.110*	0.510***
	[-5.278]	[1.746]	[5.307]
R&D _t	-0.006***	-0.007***	0.001
	[-3.955]	[-4.064]	[1.239]
CAPTIAL _t	-0.058	0.074**	-0.031**
	[-1.459]	[1.993]	[-2.059]
LEVERAGE _t	-0.074***	-0.042***	0.002
	[-4.297]	[-4.981]	[0.550]
INTANGIBLE _t	0.003	0.034**	-0.001
	[0.198]	[2.528]	[-0.090]
PPNE _t	-0.040	0.025***	0.018*
	[-1.474]	[2.900]	[1.814]
NOL _t	-0.024***	-0.011***	0.007***
	[-5.786]	[-3.342]	[4.302]
ΔNOL _t	0.186***	0.027	0.909***
	[3.081]	[0.907]	[22.526]
FOREIGN_OPERATION _t	0.016***	-0.008*	-0.002
	[2.641]	[-1.845]	[-1.180]
BOARD_SIZE _t	0.003	-0.009	-0.003
	[0.351]	[-0.934]	[-1.447]
BOARD_IND _t	-0.032	-0.017	0.011*
	[-1.299]	[-0.902]	[1.736]
AUD_SIZE _t	0.023**	0.021***	-0.002
	[2.327]	[3.208]	[-0.602]
AUD_IND _t	0.048*	0.014	0.000
	[1.796]	[0.869]	[0.035]
Observations	11,269	11,269	11,089
R-squared	0.102	0.078	0.583

STRATEGY is constructed following Higgins, Omer and Phillips (2012). We rank each of the six STRATEGY components (Appendix A) by forming quintiles within each 2-digit SIC industry-year. Within each industry-year, observations in the top quintile receive a score of 5, those in the next quintile receive a score of 4, etc., and those in the lowest quintile are given a score of 1. Then, for each firm-year, we sum the scores across the six variables such that the maximum score a firm could receive is 30, and the minimum score a firm could receive is 6. By subtracting 6 from the score, our STRATEGY variable has minimal value as 0 and maximal value as 24. FEDIR1 equals to one if there is at least one

independent financial expert on the audit committee and zero otherwise. See Appendix A for other variables definitions. Intercept is included but not report. Year and industry dummies are included. Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level and year level *** p<0.01, ** p<0.05, * p<0.1

Table 4 Panel A Effect of financial experts on tax avoidance: Defender

	CASH_ETR	GAAP_ETR	BTD
	(1)	(2)	(3)
FEDIR1 _t	-0.052**	-0.020	0.007
	[-2.563]	[-1.050]	[1.243]
SIZE _t	-0.008	-0.007	0.006***
	[-1.040]	[-1.325]	[3.358]
ROA _t	-0.279**	0.069	0.517***
	[-2.248]	[0.540]	[5.005]
R&D _t	-0.003	-0.004	-0.001
	[-0.671]	[-0.959]	[-0.546]
CAPTIAL _t	-0.012	0.146*	-0.079**
	[-0.101]	[1.834]	[-2.194]
LEVERAGE _t	-0.108**	-0.026	0.005
	[-2.358]	[-0.639]	[0.369]
INTANGIBLE _t	-0.014	0.035	-0.021***
	[-0.369]	[1.216]	[-2.716]
PPNE _t	-0.104	-0.023	0.008
	[-1.519]	[-0.613]	[0.630]
NOL _t	-0.038***	-0.010	0.008**
	[-2.880]	[-1.129]	[2.416]
ΔNOL _t	0.361***	-0.121	0.858***
	[11.976]	[-1.100]	[29.808]
FOREIGN_OPERATION _t	0.014	-0.008	-0.011**
	[0.955]	[-0.491]	[-2.511]
BOARD_SIZE _t	-0.019	-0.019	-0.001
	[-0.561]	[-0.811]	[-0.189]
BOARD_IND _t	-0.007	-0.120***	0.014
	[-0.111]	[-2.593]	[1.230]
AUD_SIZE _t	0.085***	0.070**	-0.019*
	[3.520]	[2.062]	[-1.924]
AUD_IND _t	-0.038	0.009	0.035**
	[-0.644]	[0.096]	[2.207]
Observations	1,333	1,333	1,310
R-squared	0.179	0.127	0.621

We rank STRATEGY scores by forming quintiles within each 2-digit SIC industry-year. Defender equals one for the firm that has strategy score below 12, and zero otherwise. See Appendix A for other variables definitions. Year and industry dummies are included. Intercept is included but not report. Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level and year level *** p<0.01, ** p<0.05, * p<0.1

Table 4 Panel B Effect of financial experts on tax avoidance: Prospector

	CASH_ETR	GAAP_ETR	BTD
	(1)	(2)	(3)
FEDIR1 _t	0.072*** [4.351]	0.075*** [3.679]	-0.019*** [-7.081]
SIZE _t	0.030*** [2.862]	0.019 [1.622]	0.002 [0.860]
ROA _t	-0.333 [-1.580]	-0.132 [-1.244]	0.618*** [7.362]
R&D _t	-0.017 [-1.502]	-0.019 [-1.437]	0.001 [0.198]
CAPTIAL _t	-0.057 [-0.500]	0.138 [1.044]	-0.073*** [-2.816]
LEVERAGE _t	-0.091 [-1.626]	-0.151*** [-2.819]	-0.058** [-2.489]
INTANGIBLE _t	0.089 [1.536]	0.129** [2.201]	0.015 [1.122]
PPNE _t	-0.023 [-0.494]	0.035 [0.796]	0.030 [1.445]
NOL _t	-0.002 [-0.071]	0.027 [1.066]	0.005 [1.416]
ΔNOL _t	-0.059 [-0.596]	0.030 [0.378]	1.025*** [12.145]
FOREIGN_OPERATION _t	0.020 [0.717]	0.024 [0.769]	-0.009 [-0.893]
BOARD_SIZE _t	-0.052 [-1.484]	-0.079* [-1.916]	-0.005 [-0.430]
BOARD_IND _t	0.188*** [2.682]	0.015 [0.156]	-0.033 [-1.190]
AUD_SIZE _t	-0.045 [-1.026]	-0.026 [-0.399]	-0.008 [-0.623]
AUD_IND _t	0.013 [0.092]	-0.096 [-0.757]	-0.033* [-1.848]
Observations	474	474	458
R-squared	0.310	0.226	0.691

We rank STRATEGY scores by forming quintiles within each 2-digit SIC industry-year. Prospector equals one for the firm that has strategy score above 24, and zero otherwise. See Appendix A for other variables definitions. Year and industry dummies are included. Intercept is included but not report. Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level and year level *** p<0.01, ** p<0.05, * p<0.1

Table 5 Panel A Effect of accounting experts on tax avoidance: Defender

	CASH_ETR	GAAP_ETR	BTD
	(1)	(2)	(3)
ACCDIR1 _t	-0.046**	-0.040*	0.007
	[-2.409]	[-1.702]	[1.155]
NonACC_FEDIR1 _t	-0.044**	-0.016	0.007
	[-2.094]	[-0.691]	[0.928]
SIZE _t	-0.002	-0.009	0.007***
	[-0.208]	[-1.334]	[3.177]
ROA _t	-0.291**	0.079	0.539***
	[-1.969]	[0.475]	[4.134]
R&D _t	-0.007	-0.002	-0.001
	[-1.473]	[-0.323]	[-0.370]
CAPTIAL _t	0.082	0.128	-0.101***
	[0.567]	[1.280]	[-2.628]
LEVERAGE _t	-0.085*	-0.025	-0.001
	[-1.729]	[-0.524]	[-0.093]
INTANGIBLE _t	-0.032	0.048	-0.029***
	[-0.684]	[1.365]	[-3.294]
PPNE _t	-0.129	-0.005	0.013
	[-1.475]	[-0.110]	[1.137]
NOL _t	-0.041***	-0.010	0.007**
	[-3.576]	[-1.030]	[2.409]
ΔNOL _t	0.369***	-0.088	0.852***
	[9.534]	[-0.760]	[19.484]
FOREIGN_OPERATION _t	0.011	-0.016	-0.009**
	[0.595]	[-0.719]	[-1.974]
BOARD_SIZE _t	-0.042	-0.024	0.001
	[-1.147]	[-0.972]	[0.167]
BOARD_IND _t	-0.029	-0.141**	0.009
	[-0.388]	[-2.407]	[0.548]
AUD_SIZE _t	0.086***	0.062	-0.018
	[2.782]	[1.538]	[-1.417]
AUD_IND _t	-0.046	0.023	0.041**
	[-0.698]	[0.247]	[2.494]
Observations	936	936	917
R-squared	0.199	0.131	0.654

ACCDIR1 equals to one if there is at least one independent accounting expert on the audit committee (i.e. accountant, CAP, controller, Chief Financial Officer, etc) and zero otherwise. NonACC_FEDIR1 equals one if there is no accounting expert but at least one non-accounting financial expert directors on the audit committee and zero otherwise. Control variables are included. See Appendix A for other variables definitions. Intercept is included but not report. Year and industry dummies are included. Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level and year level *** p<0.01, ** p<0.05, * p<0.1

Table 5 Panel B Effect of accounting experts on tax avoidance: Prospectors

	CASH_ETR	GAAP_ETR	BTD
	(1)	(2)	(3)
ACCDIR _t	0.110**	0.090*	-0.030***
	[2.467]	[1.873]	[-2.878]
NonACC_FEDIR _t	0.076***	0.090***	-0.022***
	[4.557]	[2.948]	[-7.763]
SIZE _t	0.024**	0.023	0.005*
	[1.993]	[1.489]	[1.792]
ROA _t	-0.537***	-0.270**	0.625***
	[-2.928]	[-2.504]	[6.865]
R&D _t	-0.023	-0.019	0.003
	[-1.374]	[-1.148]	[0.391]
CAPTIAL _t	-0.005	0.222	-0.116***
	[-0.025]	[1.123]	[-3.930]
LEVERAGE _t	-0.067	-0.129*	-0.074***
	[-0.921]	[-1.826]	[-2.791]
INTANGIBLE _t	0.103	0.139*	0.017
	[1.556]	[1.816]	[1.518]
PPNE _t	-0.053	-0.017	0.040*
	[-0.923]	[-0.315]	[1.682]
NOL _t	-0.021	0.032	0.003
	[-0.517]	[0.865]	[1.043]
ΔNOL _t	-0.090	0.104	0.984***
	[-0.743]	[1.479]	[10.393]
FOREIGN_OPERATION _t	0.055	0.055	-0.018*
	[1.432]	[1.120]	[-1.725]
BOARD_SIZE _t	-0.088*	-0.115***	-0.011
	[-1.945]	[-2.783]	[-0.980]
BOARD_IND _t	0.251***	0.073	-0.065***
	[3.342]	[0.618]	[-4.114]
AUD_SIZE _t	-0.082	-0.081	0.006
	[-1.566]	[-1.100]	[0.358]
AUD_IND _t	-0.007	-0.087	-0.015
	[-0.045]	[-0.479]	[-0.708]
Observations	339	339	326
R-squared	0.347	0.274	0.707

ACCDIR1 equals to one if there is at least one independent accounting expert on the audit committee (i.e. accountant, CAP, controller, Chief Financial Officer, etc) and zero otherwise. NonACC_FEDIR1 equals one if there is no accounting expert but at least one non-accounting financial expert directors on the audit committee and zero otherwise. Control variables are included. See Appendix A for other variables definitions. Intercept is included but not report. Year and industry dummies are included. Numbers in parentheses are test statistics based on robust standard errors clustered at the firm level and year level *** p<0.01, ** p<0.05, * p<0.1