Top Management Team Intrapersonal Functional Diversity and Tax Avoidance

James M. Plečnik*
Loyola Marymount University
plecnik.james@gmail.com
james.plecnik@lmu.edu

Shan Wang
Loyola Marymount University
shan.wang@lmu.edu

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* Corresponding Author Telephone: +1 310 568 7168; fax +1 310 338 3000
Email address: plecnik.james@gmail.com (James M. Plečnik)

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ABSTRACT

Members of the top management team (TMT) have been shown to influence tax avoidance; however, the TMT functional backgrounds that lead to higher levels of tax avoidance have not been identified. This paper studies whether tax avoidance is impacted by TMT intrapersonal functional diversity, which captures the average heterogeneity of the TMT members' work experience. The skills associated with intrapersonal functional diversity may allow managers to better understand and communicate with various parties related to firm tax policies, thereby facilitating tax avoidance. We find that TMTs with higher levels of intrapersonal functional diversity achieve lower cash effective tax rates and that these TMTs do not select tax strategies that pose high risk. Overall, our results suggest that TMTs characterized by high levels of intrapersonal functional diversity successfully manage firm tax avoidance strategies.

Keywords: Top Management Team; Intrapersonal Functional Diversity; Tax Avoidance

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

I. INTRODUCTION

Understanding the economic determinants of tax avoidance is a major area of accounting research. Prior research has identified various determinants including firm characteristics and constraints (e.g., Law and Mills 2015; Zimmerman 1983), tax avoidance opportunities (e.g., Rego 2003), and corporate governance (e.g., Armstrong, Blouin, Jagolinzer, and Larcker 2015). Recently, studies have begun to investigate whether top managers affect tax avoidance. Notably, influential research conducted by Dyreng, Hanlon, and Maydew (2010) documents that top executives play a significant role in determining the level of tax avoidance undertaken by their firms. Subsequent studies (e.g., Law and Mills 2017; Francis, Hasan, Wu, and Yan 2014) have begun to explore whether specific managerial characteristics, such as military experience or narcissism, are associated with tax avoidance. However, significant issues remain unresolved. First, although anecdotes suggest that various forms of functional expertise such as personnel and technology are helpful to managing firm tax planning (e.g., Deloitte 2017a; Deloitte 2017b), research has not explored whether these and other managerial functional backgrounds are associated with tax avoidance. Second, although Dyreng et al. (2010) document that the CEO, CFO, and other top executives affect tax avoidance, subsequent studies (e.g., Law and Mills 2017; Olsen and Stekelberg 2016; Francis et al. 2014) focus on individual managers (i.e., CEO/CFO), rather than the broader top management team (TMT). This paper fills these voids by studying the impact of TMT intrapersonal functional diversity on tax avoidance.

TMT intrapersonal functional diversity refers to the average heterogeneity of functional experiences possessed by TMT members, that is, generalist work experience. TMT members with broader functional experiences generate broader perspectives and are more likely to share common functional backgrounds with the various individuals and groups they interact with. This

leads to more effective communication and understanding both inside and outside of the TMT, and supports TMTs in running complex cross-functional firm processes (e.g., Bunderson and Sutcliffe, 2002; Cannella, Park, and Lee 2008).

As prior tax research argues that the TMT does not directly engage in tax avoidance (Christensen, Dhaliwal, Boivie, and Graffin 2015; Dyreng et al. 2010), specialist-focused TMTs may be unable to apply their specialties in the tax setting. In contrast, TMTs characterized by high intrapersonal functional diversity (i.e., TMTs comprised of generalists) may be beneficial. The modern tax function regularly communicates with the C-suite and must be involved in all firm functions to extract relevant information and enact tax strategies (e.g., PwC 2017, p. 12). Therefore, to assist, understand, and communicate with or on behalf of the tax function, top executives may be required to possess broad functional expertise.

While it may be apparent how the ability to work with certain divisions such as accounting or law could aid the TMT in facilitating tax avoidance, as scholars argue that tax planning involves virtually all aspects of firm operations (Erickson, Hanlon, Maydew, and Shevlin 2019), we propose that the understanding of virtually any function can benefit firm tax avoidance. For example, the operations function generally handles inventory and supply chains, and is thereby critical to supporting the enactment of transfer pricing (PwC 2013). As another example, the personnel function is required to monitor and manage employee locations in order to support the pursuit of regional labor tax incentives (Deloitte 2017a). While TMT members are unlikely to be directly involved in the above forms of functionally-centric tax avoidance, their knowledge of these and other functions allows them to use their authority to lead the tax planning process by interfacing with and extracting information from various firm functions.[1]

[1] Excerpted from interview with former Fortune 500 top manager.

Overall, as taxation is intertwined with all firm functions, intrapersonal functional diversity may provide the TMT with the ability to work across functions in support of tax avoidance.

We note that the ability provided by intrapersonal functional diversity differs substantially from the broad construct of managerial ability (Demerjian et al. 2012) found to be relevant to the tax setting (Koester et al. 2017). Specifically, managerial ability captures how effectively both the TMT and all other managers utilize firm resources — including those managers directly involved in tax avoidance such as tax managers. In contrast, intrapersonal functional diversity focuses on one directly observable trait of the TMT, allowing for a clear analysis of the TMT's influence on the tax function. Further, while managerial ability is mechanically dependent on firm efficiency and performance, intrapersonal functional diversity is independent of performance, having costs and benefits contingent on the situation. That is, while some settings require in-depth, specialist experience (e.g., Gounopoulos and Pham 2018), broader experience is beneficial in other settings (e.g., Cannella et al. 2008).

Overall, the generalism provided by intrapersonal functional diversity may help a TMT to understand and communicate with the various firm functions that can support the tax function, and we hypothesize that TMT intrapersonal functional diversity will lead to higher levels of tax avoidance. We test our hypothesis on a sample consisting of 12,431 firm years spanning the period of 2000 through 2016. We define tax avoidance broadly to encompass anything that reduces taxes paid relative to pretax income. Therefore, we focus on the cash effective tax rate (herein *Cash ETR*) as this measure captures a range of both permanent and temporary forms of tax planning that retain cash resources within the firm (Hanlon and Heitzman 2010).[2]

We find that the generalism captured by TMT intrapersonal functional diversity, rather than the concentration of a certain specialty, is significantly negatively associated with *Cash*

[2] We find similar results for GAAP ETR, but do not tabulate these results for brevity.

ETR. Expanding on this finding, we explore whether alternative measures of generalism (e.g., Custódio, Ferreira, and Matos 2013) better explain our results. We find that intrapersonal functional diversity more strongly relates to tax avoidance than these alternatives. Next, we explore a spectrum of somewhat benign to more aggressive forms of tax avoidance,[3] and find that TMTs with higher intrapersonal functional diversity do not rely on risky forms of tax avoidance. Instead, our results imply that these TMTs have the ability to reduce tax liabilities using somewhat less risky forms of tax incentive seeking.

Our results are economically significant. Holding other factors constant, replacing one TMT member having low intrapersonal functional diversity with an individual high in the trait results in a 2.09 percent decrease in mean *Cash ETR*. This implies a tax savings of around $3.25 million.[4] Our findings are decision useful as intrapersonal functional diversity is easily observable. While broad measures of managerial ability are difficult to operationalize as they capture all firm managers and all managerial traits, firms can operationalize intrapersonal functional diversity and improve tax avoidance outcomes by selecting top managers with broad functional backgrounds.

Our study contributes to the literature in several ways. First, this study contributes to the strand of accounting literature examining the influence of managers on tax avoidance and identifies TMT intrapersonal functional diversity as a determinant. This finding is in contrast to prior literature in accounting which is generally concerned with the impact of theoretically applicable specialties and rarely discusses the value of generalists. Second, our study documents that tax avoidance is driven by a group of top managers rather than a single individual. This is

[3] That is, we consider three risky forms of tax avoidance (unrecognized tax benefits, discretionary permanent book-tax differences, and sheltering) as dependent variables. We also investigate two variables capturing less risky forms of tax avoidance (permanent book-tax differences and total book-tax differences).
[4] We define high/low intrapersonal functional diversity as above/below sample median. The amount of tax savings is based on mean pre-tax income (before special items) of about $650 million in our sample.

opposed to much of prior literature which focuses on individual executives (e.g., CEO/CFO). Finally, prior studies in management have focused on firm performance (e.g., Bunderson and Sutcliffe, 2002; Cannella et al. 2008) and innovation (e.g., Park, Lim, and Birnbaum More 2009) as outcomes of functional diversity. Our study finds that TMT intrapersonal functional diversity impacts tax avoidance — a financial outcome indirectly managed by the TMT.

The remainder of this paper is organized as follows. Section II discusses prior research and develops our hypothesis; Section III describes our sample selection and research design; Section IV presents our descriptive statistics and main empirical results; Section V explores the elements of functional diversity that drive our results and studies various additional measures of tax avoidance; Section VI discusses additional analyses; and finally, Section VII concludes.

II. PRIOR RESEARCH AND HYPOTHESIS DEVELOPMENT

Prior Research — Tax Avoidance

Despite a significant increase in tax avoidance research (Hanlon and Heitzman 2010) and public interest in tax avoidance,[5] empirical tax research has largely focused on firm and governance characteristics as determinants of tax avoidance (Hanlon and Heitzman 2010; Graham 2003; Shackelford and Shevlin 2001). While only a small portion of the tax avoidance literature has studied the impact of managers on tax avoidance, research in the area is increasing. Desai and Dharmapala (2006) indirectly study managers' effect on tax avoidance by analyzing the relationship between incentive compensation and tax sheltering. They argue that shareholders are averse to sheltering and that incentive compensation reduces this form of tax avoidance. Dyreng et al. (2010) are the first to study the impact of specific top managers on tax avoidance,

[5] https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-global-debates-on-responsible-tax-anti-avoidance-and-beps.pdf

tracking the movement of 908 executives to quantify the TMT's impact on firm tax avoidance. They find that the economic impact of executives on tax avoidance is large. However, they do not find strong associations between specific executive skills/backgrounds (e.g., education, experience as CFO) and tax avoidance.

Building on Dyreng et al.'s (2010) finding that the TMT influences tax avoidance, subsequent research attempts to isolate specific managerial characteristics associated with tax avoidance. Chyz (2013) finds that executives suspected of personal tax evasion are more likely to direct their corporations to engage in tax sheltering. Francis et al. (2014) find that female CFOs engage in lower levels of aggressive tax behavior. Christensen et al. (2015) find that conservative executives engage in less tax avoidance. Olsen and Steckelberg (2016) utilize a proxy for CEO narcissism based on CEO pay and prominence in the annual report and find that narcissistic CEOs engage in more tax sheltering. Law and Mills (2017) document the association between CEO military backgrounds and tax avoidance, finding that managers with military experience pay an estimated $1-2 million more in corporate taxes per firm-year. Next, using the measure of managerial ability established in Demerjian et al. (2012), Koester et al. (2017) find that higher ability managers engage in more tax avoidance. Finally, Hsieh, Wang, and Demirkan (2018) find that firms with overconfident CEOs and CFOs engage in more tax avoidance.

While the above studies illustrate an emerging literature focused on managerial characteristics and tax avoidance, they also demonstrate that a connection between tax avoidance and management functions/skills remains largely unexplored. Given that anecdotes suggest that various functions are involved in tax planning, we therefore study whether broad functional experiences as captured by intrapersonal functional diversity affect firm tax avoidance outcomes.

Prior Research — Intrapersonal Functional Diversity

As the influence of managerial backgrounds on tax avoidance is an emerging area of research, intrapersonal functional diversity has not been studied in the context of taxation or accounting. Prior management literature argues that intrapersonal functional diversity results in superior communication and understanding skills that stem from a generalist manager's resume (e.g., Cannella et al. 2008; Bunderson and Sutcliffe 2002). Being embedded in various firm functions (e.g., accounting, legal, engineering) implies both an understanding of those functions and an understanding of groups that interact with those functions. For example, experience in accounting may indirectly lead to experience dealing with various other firm functions that regularly work with accounting (e.g., the legal function on merger issues). Accounting experience may also lead to an understanding of board oversight related to tax avoidance. As such, beyond the direct experiences obtained from having a broad functional background, intrapersonal functional diversity provides numerous beneficial indirect experiences (Burke and Steensma 1998). These various direct and indirect experiences lead to enhanced understanding and communication skills which reduce the semantic gap between the TMT and the various individuals and groups with which they interact (Cannella et al. 2008; Chattopadhyay, Glick, Miller, and Huber 1999). Overall, these benefits result in managers who "have a good perception of where … knowledge is and how to tap into it" (Bunderson 2003, 460).

Managers with high intrapersonal functional diversity are beneficial to firms in various settings. For example, Bunderson and Sutcliffe (2002) study the impact of intrapersonal functional diversity on 44 business unit management teams of a Fortune 100 company and find that the trait improves team communication and firm performance. Cannella et al. (2008) study 207 U.S. firms and also find a positive relationship between TMT intrapersonal functional

diversity and firm performance. Intrapersonal functional diversity has also been tied to firm innovation outcomes. Specifically, Park et al. (2009) find that intrapersonal functional diversity is beneficial to product innovativeness and new product development time efficiency.

Hypothesis Development

Our paper does not primarily focus on specific functions/skills and their association with tax avoidance. Instead, in line with management theories on generalism and practitioner reports which argue that various specialties can benefit the tax function, it may be intrapersonal functional diversity that facilitates tax avoidance. Prior literature argues that those with broader functional backgrounds are more effective in understanding and integrating information from various parties (e.g., Cannella et al. 2008; Hambrick 2007; Bunderson and Sutcliffe 2002). Intrapersonal functional diversity also provides an executive with a greater ability to communicate in the language of various groups (e.g., Buyl et al. 2011; Bunderson and Sutcliffe 2002). TMTs with high intrapersonal functional diversity have dealt with various firm divisions both directly and indirectly, and these aggregated experiences result in TMTs that are more capable of handling complex interdepartmental issues (Burke and Steensma 1998).

The decision to engage in tax avoidance is an example of one such complex interdepartmental organizational issue, and the complex nature of tax avoidance increases the need for broad organizational understanding. Modern tax departments must be integrated with all firm departments. TMTs with broad cross-functional understandings have knowledge of and connections with the various departments that the tax function must be integrated with, and thus, may be more capable of leading tax departments. For example, when a firm is involved with tax avoidance related to depletion/depreciation, tax departments require information on various items (e.g., equipment, intangibles) housed in various functions. Top executives who understand

these functions (e.g., operations and R&D) are aware of the information housed within these functions, can effectively communicate with technically minded leaders in these functions, have the authority to request relevant information to support the tax function, and may be able to identify circumstances in which requested information is incomplete based on their knowledge of these functions.[6]

We argue that an understanding of and the ability to communicate with nearly every major firm function can support tax avoidance due to the systemic involvement of taxation in virtually all aspects of business strategy and operation (e.g., Erickson et al. 2019; PwC 2017). While a TMT member's functional experience may not directly be used to enact tax strategies, it can be used to work with the many functions in which those tax strategies can be enacted. The more functions that a TMT member has experience in, the more capable they are of using their authority to facilitate tax avoidance across various functions.

Overall, TMTs characterized by high levels of intrapersonal functional diversity may have the broad cross-functional understanding and firm authority to support and facilitate tax avoidance strategies. Based on this discussion, we state our hypothesis as follows:

H1: Firms with higher TMT intrapersonal functional diversity avoid more tax.

III. RESEARCH DESIGN

Data and Sample:

In line with prior literature, we define the TMT as the CEO, CFO, and the other three highest compensated managers (e.g., Bertrand and Schoar, 2003; Dyreng et al. 2010).[7] The top five managers have been identified as a group that influences corporate tax avoidance (Dyreng et

[6] Depreciation/Depletion example excerpted from interview with former Fortune 500 top manager.
[7] Defining the top five via compensation is the most common approach used in accounting and finance research as the Securities and Exchange Commission requires that the compensation of the CEO, CFO, and other three highest executives is disclosed in annual filings.

al. 2010) as well as various other firm outcomes such as earnings management (Cheng et al. 2016) and voluntary disclosure (Ke et al. 2019). We identify the CEO and CFO by their titles reported in ExecuComp or BoardEx and require that ExecuComp reports total compensation for other firm executives so that we can identify the other members of the top five. We obtain TMT functional backgrounds from BoardEx to construct our measure of TMT Intrapersonal Functional Diversity.[8] As BoardEx began reporting the work experience of top executives in 2000 and the measure of managerial ability is available up to 2016, our initial sample is drawn from the intersection of BoardEx and ExecuComp for the period of 2000 to 2016. Compustat provides the financial information used to calculate our measure of tax avoidance (*Cash ETR*) as well as the majority of the study's control variables. ExecuComp provides the data used to calculate the control variable for managerial incentives. Overall, after following the above selection procedures and dropping all observations with missing data, the resulting sample contains 12,431 firm-year observations spanning the years of 2000 to 2016.

Measurement of Tax Avoidance:

The dependent variable in our regressions is *Cash ETR*, which captures the actual current year cash disbursements made for all income tax expenses. *Cash ETR* is relevant to our setting as managers often treat tax avoidance as a method of decreasing cash taxes paid in order to bolster firm operations (Hanlon and Heitzman 2010). *Cash ETR* is calculated by dividing cash taxes paid by pretax book income less special items. Our study excludes observations with negative

[8] BoardEx provides biographic information for managers and directors. Regarding the focus of our study, work experience, BoardEx contains both past employment history and the current employment status of each TMT member. The database contains the job title(s), provides a role description, and reports the starting and ending dates of the various positions an individual manager has held in his/her professional experience. This data enables us to extract the functional experiences of each TMT member. While BoardEx provides a robust source for background data, it has certain weaknesses (e.g., McWilliams et al. 2019). Relevant to our setting, certain employment start/end dates are sometimes omitted or incomplete. To alleviate this problem, we repeat all tests using a version of the Blau index which weighs each functional experience equally regardless of the time served in the given function (e.g., Cannella et al. 2008), thereby making start/end dates irrelevant. We find similar results across all tests.

denominators tax avoidance is a lower priority for loss firms (Dyreng et al., 2008; McGuire et al., 2012). Further, negative pretax incomes result in *Cash ETR*s that are difficult to interpret (Henry and Sansing 2018).[9] We winsorize the remaining non-missing *Cash ETRs* at [0,1] to reduce the influence of outliers. A lower value for *Cash ETR* indicates more tax avoidance.

Measurement of Top Management Team Intrapersonal Functional Diversity (IFD):

Following the majority of prior studies (e.g., Bunderson and Sutcliffe 2002; Cannella et al., 2008), we measure TMT *intrapersonal functional diversity* (*IFD*) using the Blau Index.[10] To construct this index, we obtain the work experience of each executive in our sample, and identify how long the executive has worked in the following functions: accounting/finance, marketing/sales, R&D/engineering, management, production/operations, law, personnel/labor relations, and other (e.g., Cannella et al., 2008). We use these eight functional classifications as our sample incorporates companies across various industries (manufacturing, agriculture, etc.), and prior literature documents that these eight categories are common across various industries (Zhang 2019; Cooper et al. 2014; Cannella et al. 2008; Chattopadhyay et al. 1999).[11]

We then use this information to calculate the Blau Index $\sum_{i=1}^{n}(1-\sum_{k=1}^{c}P_{ik}^{2})/n$, where for a TMT of n members, P_{ik} is the proportion of member i's time spent in the kth functional area. That is, the score $1-\sum_{k=1}^{c}P_{ik}^{2}$ is calculated for each TMT member and then the scores are averaged across all of the team members to obtain the Blau Index for the TMT. A manager is considered to have higher intrapersonal functional diversity if the individual has diverse and evenly distributed work experience. At the TMT level, this index ranges between zero and one,

[9] A firm with positive taxes paid of 20 but a pretax accounting loss of 100 would have the same Cash ETR as a firm with a tax refund of 20 and positive pretax accounting income of 100 (Henry and Sansing 2018, p. 1043).
[10] In untabulated robustness tests, we find qualitatively similar results using the Teachman Index (e.g., Murray, 1989; Pelled, Eisenhardt and Xin, 1999; Harrison and Klein, 2007) to replace the Blau index.
[11] This classification system is somewhat different than the one used in Bunderson and Sutcliffe (2002). Most importantly, Bunderson and Sutcliffe (2002) provide greater detail regarding the manufacturing function (they separate Production/Operations into Manufacturing, Distribution/Warehouse, and Equipment Management). As a survey-based study, Bunderson and Sutcliffe (2002) are able to provide these additional manufacturing details.

with higher values indicating higher levels of functional diversity.

In Appendix A we display three examples with varying levels of *IFD* as well as the associated Blau index calculations. Panel A displays the TMT of J.C. Penny, which demonstrates the minimum *IFD* (i.e., Blau index = 0.00) as each member of the TMT has worked in only one function. In Panel B, Beam Incorporated's TMT has some functional breadth, but is still below median. Finally, the TMT of Intersil in Panel C displays an above-median level of *IFD*.

As opposed to the TMT in Panel A, the higher levels of *IFD* in Panels B and C should better support the tax avoidance process for two reasons. First, high levels of *IFD* indicate more evenly distributed experiences and imply that superficial (short duration) experiences do not comprise the majority of the TMT's direct and indirect experiences. This should allow for a substantive understanding of a function and those groups that work with it, enabling management to understand and work with that function to facilitate tax avoidance. Second, TMTs benefit from having multiple members each possessing a breadth of functional experiences because most managers at large firms have a somewhat defined sphere of influence which often does not overlap with other TMT members on a regular basis (e.g., Carpenter and Sanders 2004).

For example, the VP of power management products at Intersil benefits from having broad functional experiences when working to understand and communicate with the various functions that create and distribute the firm's power management line (e.g., research, production, sales, etc.). Similarly, the VP of consumer products benefits from broad functional experiences when managing the diverse functions that support the consumer line (e.g., research, production, sales, etc.). This argument also applies to TMTs segmented by geography. For example, Beam's President of Europe/Middle East/Africa operations and their President of North American operations each require broad functional expertise to communicate with and understand the

various functions in their respective regions. Both regions have substantially all major functions, and both regional leaders benefit from the ability to better work with various functions. Finally, similar arguments apply to TMTs with functionally defined roles. While the CMO and the COO regularly interact with most firm functions (e.g., Deloitte 2018; EY 2013), relating to the R&D function, the COO may be focused on the execution side (EY 2014) while the CMO may be focused on inspiring product innovations based on the customer experience (Deloitte 2016). Each top manager interacts with different aspects of each function, and each portion of a function contains expenses and investments that may qualify for tax incentives. As such, each manager may benefit from a diverse function background that allows them to understand and communicate with the various employees across the functions that they regularly interact with.

Overall, in modern, complex firms, we make the intuitive argument that most TMT members have only certain groups with which they regularly interact. Therefore, TMTs benefit from being comprised of multiple members each possessing a breadth of functional experiences. These generalists can effectively understand and communicate with the subsections of the firm with which they normally interact.

Empirical Model for Main Analysis:

We utilize the following regression to test the impact of *IFD* on tax avoidance.

$$Cash\ ETR_{i,t} = \alpha_0 + \alpha_1 IFD_{i,t-1} + \sum \alpha_m TMT\ Controls_{i,t-1} + \sum \alpha_n Firm\ Controls_{i,t} + \sum Firm\ FE + \sum Year\ FE + \varepsilon \quad \textbf{(1)}$$

where $Cash\ ETR_{i,t}$ represents the cash effective tax rate and $IFD_{i,t-1}$ represents TMT intrapersonal functional diversity. $TMT\ Controls_{i,t-1}$ are TMT characteristics other than *IFD*, while $Firm\ Controls_{i,t}$ represents the contemporaneous firm-level control variables discussed below. We measure *IFD* and *TMT Controls* at the end of the prior year to reduce endogeneity concerns. All

continuous variables are winsorized at the 1st and 99th percentiles to mitigate the influence of extreme values. All variables are defined in Appendix B.

We first discuss our *TMT Controls,* beginning with dominant functional diversity (*Dominant Functional Diversity*). While we do not hypothesize a relationship between this form of diversity and tax avoidance, studies in management generally consider both dominant and intrapersonal functional diversity together (e.g., Buyl et al. 2011; Cannella et al. 2008).[12] We measure *Dominant Functional Diversity* using the same eight functional categories we use for *IFD*, and define the function an executive spent the most time in as their dominant function (e.g., Cannella et al., 2008; Carpenter and Fredrickson 2001). We then use the Blau Index to capture the diversity of the dominant functional experiences held by a TMT. Next, to ensure that *IFD* is not capturing the influence of various other forms of diversity, we control for the diversity of tenure (*Tenure Diversity*), age (*Age Diversity*), education (*Education Diversity*), and gender (*Gender Diversity*)[13] in line with Cannella et al. (2008).

We also control for other TMT characteristics that are expected to affect tax avoidance. We control for TMT age (*Age*) as prior research argues that younger managers are more likely to pursue risky strategies (Hambrick and Mason 1984). Managers with higher tenure may be more experienced and effective communicators when dealing with various firm groups, so we control for the average tenure (*Tenure*) of TMT members (Plöckinger et al. 2016). Next, we control for

[12] That is, our theory indicates that the TMT impacts tax avoidance by interfacing with firm functional units. *Dominant Functional Diversity*'s impact, often in opposition to *IFD*, is attributed to within team communication breakdowns caused by disparate primary specialties (e.g., Bunderson and Sutcliffe 2002). Due to the within-team focus of *Dominant Functional Diversity*, we do not expect a relationship with tax avoidance. However, it is possible that different functions are associated with different levels of tax conservatism or aggression, which may cause disagreements between members of a TMT with high *Dominant Functional Diversity*. We therefore control for *Dominant Functional Diversity*. To the extent that the within-TMT communication/disagreement affects tax avoidance, we may find tax payments being affected by *Dominant Functional Diversity*.

[13] The *Gender Diversity* variable may be specifically relevant in the tax setting as Francis et al. (2014) document that female managers engage in less aggressive tax avoidance than their male counterparts. As gender is a binary variable in our sample, we do not control for both *Gender* (i.e., the percentage of female TMT members) and *Gender Diversity*. We obtain similar results when controlling for *Gender* only.

TMT members' military experience (*Military*) as CEOs with military experience engage is less tax avoidance (Law and Mills 2017). Finally, we control for managerial ability (*Managerial Ability*) as higher ability managers engage in more tax avoidance (Koester et al. 2017).

We then include a range of variables (i.e., *Firm Controls*$_{i,t}$) commonly used in tax avoidance research to control for the effects of firm performance, earnings quality, and other firm characteristics (e.g., Dyreng et al. 2010; Frank et al. 2009). Specifically, we control for firm size (*Size*), growth opportunities (*Market to Book*), foreign operations (*Foreign*), profitability (*ROA),* decreases in net operating losses *(NOL Decrease*), operating risk (*StdROA*), managerial incentives (*Option Value*), leverage (*Leverage*), as well as other firm characteristics (i.e., *R&D, Intangible*, *Advertising, Free Cash Flow, Cash, Equity Income*, *PPE*, *Capital Expenditures*) that may affect tax avoidance. We include performance-matched abnormal accruals (*Abnormal Accruals*) to control for earnings quality. Finally, we include firm and year fixed effects to control for firm- and time-invariant factors that could affect tax avoidance. Therefore, the *IFD* coefficient captures the association between *Cash ETR* and *IFD* within each firm overtime. Including firm fixed effects addresses the concern that *IFD* might capture stationary firm characteristics and removes the cross-firm variation in each variable.

IV. RESULTS

Descriptive Statistics:

<Insert Table 1 Here>

Table 1 presents the summary statistics for the variables in our study. *IFD* has a mean (median) of 0.384 (0.389). *Cash ETR* has a mean (median) of 0.239 (0.227) in line with prior

literature studying the impact of management characteristics on tax avoidance (e.g., Law and Mills 2017; Dyreng et al. 2010).

<Insert Table 2 Here>

Table 2 presents the Pearson correlation coefficients for *Cash ETR*, *IFD*, all other managerial trait variables, and *ROA*. We find preliminary support for a relationship between *IFD* and tax avoidance. That is, *IFD* is negatively correlated with *Cash ETR* ($p < 0.01$).[14] We note that while *IFD* and *Managerial Ability* are positively correlated ($p < 0.01$), the correlation coefficient is only 0.11, indicating that the two measures capture different information.

Hypothesis Testing:

<Insert Table 3 Here>

Table 3 presents the results for our hypothesis, which expects that firms with higher *IFD* avoid more tax (Equation 1). Column 1 presents the baseline model excluding our variable of interest. The results for our control variables are consistent with prior literature (e.g, Koester et al. 2017; Rego, 2003; Mills, 1998), and we discuss these variables in greater detail later in this section. Moving to Column 2 and the direct testing of our hypothesis, we find that TMTs characterized by high levels of *IFD* avoid more taxes. Specifically, in Column 2, *IFD* has a coefficient of -0.055 ($p < 0.05$). This finding indicates that the broad functional understanding of a generalist coupled with the authority held by a top manager is beneficial to assisting the tax department's interactions with the various firm functions. The beneficial influence of certain types of TMT functional knowledge are intuitive. For example, TMT knowledge of the R&D function may allow the TMT to effectively work with R&D division employees. These employees are often responsible for identifying and classifying various activities into categories

[14] While not correlated at the 0.05 level or better, *Dominant Functional Diversity* is correlated with *Cash ETR* at the 0.1 level. This finding is reasonable as *Dominant Functional Diversity* and *IFD* are correlated in line with prior research (e.g., Bunderson and Sutcliffe 2002).

that may be eligible for R&D tax credits. However, in line with the argument that taxation can and should be involved with all aspects of a business (Erickson et al. 2019), anecdotes argue that divisions which initially appear separate from taxation can also serve the tax function. For example, the personnel function can assist in placing operations in different cities, states, and nations in order to seek tax incentives (Deloitte 2017a).

Overall, our findings in Columns 1 and 2 of Table 3 indicate that *IFD* provides the broad-based understanding and communication abilities which allow the TMT to lead their firms toward successful tax avoidance strategies. However, one may argue that *IFD* simply captures the effect of certain potentially influential functions. Therefore, in Column 3 of Table 3, we test whether teams focused on certain functions drive tax avoidance. We find that none of the functional specialties tested are associated with tax avoidance, in line with the education-based skills analysis conducted in Dyreng et al. (2010).[15] While each function may provide some benefit, we argue that each specific functional domain captures only one portion of the functional background required to support the interdepartmental tax avoidance process.

As noted above, our control variables are consistent with prior literature. We first examine our control variables that relate to firm characteristics. Larger firms (*Size*) avoid less taxes as they face greater reputational costs (e.g., Rego 2003). Net operating loss utilization (*NOL Decrease*) results in a lower *Cash ETR* due to statutory tax incentives (e.g., Koester et al. 2017). Consistent with the notion that growing firms may make more investments in tax-favored assets (Chen et al. 2010), we find negative coefficient on *Market to Book*. Firms with strong cash flows *(Free Cash Flow)* avoid less taxes as they have a less immediate need for tax avoidance (e.g., Koester et al. 2017). *Option Value* is negatively related to *Cash ETR* as management

[15] That is, Dyreng et al. (2010) test whether or not various educational backgrounds such as law, accounting, or general management lead to increased tax avoidance, but find nonsignificant results (Dyreng et al. 2010, p. 1184).

incentives can encourage tax avoidance (e.g., Rego and Wilson 2012). Firms with higher pretax income (*ROA)* have both a greater need and proclivity for tax avoidance (McGuire et al. 2012). Firms with large cash holdings (*Cash*) avoid more taxes, potentially due to unrepatriated cash reserves generated from international tax avoidance strategies (e.g., Foley, Hartzell, Titman, and Twite 2007). As firm complexity creates various incentives and opportunities for tax avoidance (McGuire et al. 2012), firms with greater *Equity Income* avoid more taxes. Finally, consistent with Koester et al. (2017), we also find the within firm variation of *Capital Expenditures* is positively associated with *Cash ETR*. We also find that *Abnormal Accruals* are positively associated with *Cash ETR* consistent with McGuire et al. (2012).

Focusing on our TMT managerial characteristic variables, we find a negative coefficient on *Age Diversity,* suggesting that the age heterogeneity among TMT members increases tax avoidance. Notably, the conservatism (*Military*) associated with military experience leads to less tax avoidance in line with Law and Mills (2017). Finally, *Managerial Ability* is negative but insignificant, and we further explore this finding in Section VI of the paper.[16]

V. EXPLORING DIVERSITY AND TAX AVOIDANCE

Exploring Relevant Aspects of Diversity

While we argue that *IFD* allows the TMT to interface with different firm functions leading to a greater ability to carry out tax avoidance, various alternative explanations exist. We identify four

[16] For robustness, we also use the decile rank of Demerjian et al.'s *Managerial Ability* to make the score more comparable across time and industries and to mitigate the influence of extreme observations (Demerjian, Lev, Lewis, and McVay 2013; Demerjian et al. 2012). The decile rank is also non-significant, and we do not tabulate these findings for brevity.

different explanations for how certain forms of diversity may drive our results, and we test four empirical proxies in order to determine which explanation is most appropriate.[17]

First, Custódio, Ferreira, and Matos (2013) create a CEO *Generalism Index* comprised of: number of positions held, number of firms worked at, number of industries worked in, former CEO experience, and experience in conglomerate firms. Custódio et al. (2013) argue that CEOs are better paid when they have high levels of general managerial skills as measured by their *Generalism Index*. We adapt their *Generalism Index* to include all members of the TMT (see Appendix B). It is possible this broad set of general managerial skills drives our findings and that *IFD* significantly overlaps with this measure (e.g., individuals who have worked in multiple positions across multiple industries are more likely to have more functional experiences). Second, while we argue that *IFD* facilitates tax avoidance by allowing top management to interface with firm functions rather than each other, it is possible that tax avoidance is facilitated by within-TMT communication which may be assisted by the overlap in functional experiences between TMT members (e.g., Richard, Wu, Markoczy, and Chung 2019). Specifically, prior literature credits *IFD* with various benefits arising from within-TMT communication (e.g. Bunderson and Sutcliffe 2002); therefore, the functional overlap (O*verlap*) between TMT members may be the driving force behind the association we find for *IFD* and *Cash ETR*. Next, we test both the percentage of functionally broad TMT members (*% High IFD*) and the aggregate intrapersonal functional diversity of a TMT (*Aggregate IFD*). These variables will allow us to determine whether a TMT with multiple managers each possessing broad functional backgrounds (*% High IFD*) is more effective than having a TMT which, in aggregate, exhibits a broad range of skills (*Aggregate IFD*). While we argue that having multiple TMT members with broad experiences allows the TMT to effectively interact with disparate firm functions (as no

[17] We thank an anonymous referee for suggesting this line of inquiry.

manager can consistently interact with all firm units), we acknowledge the possibility that *Aggregate IFD* drives our results.

<Insert Table 4 Here>

Table 4 presents the results for how each of the four measures discussed above are associated with tax avoidance, but suppresses the coefficients and *t*-statistics on all *Firm Controls* for brevity. In Column 1, using the *Generalism Index*, we find non-significant results. We further explore this result and find that none of the five components of this measure are significant at conventional levels. In Column 2, we find that *Overlap* is non-significant, implying that *IFD* is not beneficial due to increased communication effectiveness within the TMT. Rather, in line with our main argument, *IFD* may be beneficial due to the potential background overlaps with the non-TMT members of a firm. In Columns 3 and 4, we find that *Aggregate IFD* is non-significant, but that (*% High IFD*) is significant. That is, a TMT is more effective in implementing tax avoidance when more generalists are present, not when a TMT contains a number of different functional specialties spread across the group. This supports our main argument that various functionally broad TMT members are helpful in enacting tax avoidance within the groups they regularly interact with. Overall, by considering these various alternative measures and counterarguments, we increase our confidence that the form of generalism most relevant in the tax setting is TMT intrapersonal functional diversity.

Exploring Tax Strategies Employed

We next explore the tax avoidance approaches employed by firms with high *IFD*. Much of prior research (e.g., Armstrong, Blouin, and Larcker 2012; Robinson, Sikes, and Weaver 2010; Philips 2003) demonstrates that managers are incentivized to engage in tax avoidance because, ceteris paribus, tax avoidance leads to increased cash flow, share appreciation, dividend increases (Mills 1998; Mills 1996), and the reduction of a dead-weight cost (Feldstein 1999).

Due to these clear benefits, increased tax avoidance is an overarching goal for firm management. Therefore, it is possible that TMTs characterized by high levels of *IFD* have both the capability and the goal of pushing tax avoidance to its often risky limits. On the other hand, TMTs characterized by high levels of *IFD* may wish to avoid the substantial risks associated with tax avoidance (e.g., Austin and Wilson 2017; Hanlon and Slemrod 2009)[18] and rely on less risky (but still effective) forms of tax avoidance. That is, C-suite leadership teams may "participate in [tax] decision making to minimize tax risks and to invest in making their tax functions more efficient and robust" (EY 2017, p. 18). In line with this anecdote, prior literature argues that the broad exposure obtained by generalists results in risk-conscious management teams that are more highly compensated and beneficial to their firms (Hughes-Morgan, Ferrier, and Labianca 2011).

In order to determine the level of tax risk TMTs characterized by high levels of *IFD* engage in, we consider a broad spectrum of tax avoidance measures which capture varying levels of tax aggressiveness and risk. Specifically, we add five additional dependent variables to our study: predicted unrecognized tax benefits (*UTB*), Wilson's (2009) shelter score (*Shelter*), Frank et al.'s (2009) discretionary permanent book-tax differences (*DTax*), permanent book-tax differences (*PermBTD*), and total book-tax differences (*BTD*). Prior literature argues that *Cash ETR* is the broadest and least aggressive metric of tax avoidance, while these additional five measures capture varying levels of aggressiveness from least to most aggressive (e.g., Goh, Lee, Lim, and Shevlin 2016; Lisowsky, Robinson, and Schmidt 2013; Hanlon and Heitzman 2010).[19] For additional details on these five measures, see Appendix B.

[18] For example, aggressive tax avoidance is associated with stock price crash risk (Kim, Li, and Zhang 2011; Hanlon and Slemrod 2009), reputational concerns (Austin and Wilson 2017; Dyreng et al., 2016), and the risk of drawing the attention of regulatory enforcement (Kubick, Lynch, Mayberry, and Omer 2016; Hoopes, Mescall, and Pittman 2012). This attention may lead to tax audits and tax liability revisions (Hanlon and Slemrod 2009).

[19] In line with Goh et al. (2016), we acknowledge that *Cash ETR*, *BTD*, and *PermBTD* each capture some amount of aggressive tax behavior; however, these three measures are much less reflective of tax aggressiveness than alternatives such as *DTax*, *Shelter*, and *UTB*.

We regress these additional measures of tax avoidance on *IFD* while controlling for the same set of variables used in Equation (1). We present our findings in Table 5.

<Insert Table 5 Here>

We first note that our measures which capture tax aggressiveness and risk (*UTB* in Column 1, *Shelter* in Column 2, and *DTax* in Column 3) are all non-significant. This suggests that these risky methods are not the primary mechanisms used by firms with high *IFD*. Rather, we find that *PermBTD* is significant at the 0.05 level (Column 4), and that *BTD* is significant at the 0.1 level (Column 5). Our finding for *PermBTD* indicates that *IFD* drives tax avoidance through various tax incentive seeking activities. We argue that this finding supports our previous arguments, as our measurement of *PermBTD* captures a wide range of complex but "legitimate"[20] tax planning processes that require working with various firm functions. For example, *PermBTD* captures the effect of tax credits, such as those for R&D, which require collaboration with a firm's research, engineering, and operations functions (KPMG 2019). *PermBTD* also captures tax rate differentials from placing operations in different cities, states, and nations — requiring the assistance of personnel functions (Deloitte 2017a). As a final example, *PermBTD* captures all statutory tax incentives, which include complex tax provisions such as the domestic production activities deduction.[21]

As noted above, *BTD* (Column 5) is significant at the 0.1 level. This finding may indicate that firms with high *IFD* utilize tax incentives relating to permanent differences as well as tax

[20] That is, *PermBTD* captures the normal pursuit of various tax incentives, while "*DTax* measures permanent *BTD* (i.e., *PermBTD*) unexplained by legitimate tax positions" (Lisowsky et al. 2013, p. 591).
[21] In order to utilize this deduction, engineering information, construction information, and fixed asset allocation are required (KPMG 2016) — leading to required inter-functional collaboration. This provision was repealed and replaced with other tax subsidies in 2017, but is present during the majority of our sample period.

strategies which result in temporary differences which defer taxation.[22] However, additional analyses indicate that the temporary component of *BTD* is non-significant, indicating that this finding is driven by the underlying permanent differences captured by *BTD*.[23]

VI. ADDITIONAL ANALYSES

In this section, we conduct several additional analyses. First, we replicate Koester et al. (2017) and reconcile our findings to their study to better differentiate *IFD* from *Managerial Ability*. Next, we explore whether *IFD* allows the TMT to manage the barriers to tax avoidance presented by institutional investors, audit committees, and boards. Finally, we address endogeneity concerns.

Top Management Team Intrapersonal Functional Diversity and Managerial Ability

While we control for *Managerial Ability*, we acknowledge that it can be argued that firms with high *IFD* have high levels of *Managerial Ability*, and that *Managerial Ability* drives our results. In order to alleviate this concern, we first replicate the main finding of Koester et al. (2017), then introduce *IFD* as an additional variable to identify what factors drive our findings. If *IFD* is the cause of the non-significant results on *Managerial Ability* reported in Tables 3 and 4, *IFD* may constitute a component of *Managerial Ability* rather than a distinct construct.

<Insert Table 6 Here>

In Table 6, Column 1, we replicate the results in Koester et al. (2017) using their model.

[22] For example, various depreciation-based strategies such as cost segregation can be used to significantly accelerate deductions (Lassar, Duncan, and Everett 2006). Temporary differences may also result from various income deferral strategies such as the use of installment sales or like-kind exchanges.

[23] We thank an anonymous referee for their various suggestions which improved this section.

Similar to Koester et al. (2017), we find that *Managerial Ability* is significant at the .05 level.[24] All control variables are calculated as in Koester et al. (2017). In Column 2, we add our variable of interest, *IFD*, into their model. Adding *IFD* results in somewhat weaker results for *Managerial Ability*, that is, *Managerial Ability* is significant at the .10 level while *IFD* is significant at the .05 level (although the magnitude of the coefficient on *Managerial Ability* is similar). This result implies that, while *Managerial Ability* and *IFD* overlap somewhat as evidenced by both this test and the correlation coefficient in Table 2, the two measures are largely distinct. The major source of this difference likely stems from the fact that *Managerial Ability* is intrinsically related to firm efficiency and performance (Koester et al. 2017),[25] while *IFD* is independent of performance measures such as *ROA*. Though firms with high *IFD* may generate increased efficiency and firm performance in some cases (leading to some overlap with *Managerial Ability*), certain settings benefit from the skills *IFD* provides (e.g., dealing with environmental uncertainty; Cannella et al. 2008), while other settings benefit from specialists (e.g., bringing a private firm to its IPO; Gounopoulos and Pham 2018). In line with the argument that *Managerial Ability* is similar to *ROA*, we find that it is the addition of *ROA* rather than the other control variables that eliminates the significance of *Managerial Ability* (Table 6, Column 3).[26]

[24] Koester et al. (2017) find that *Managerial Ability* is significant at 0.01 level. Further investigations reveal that this reduced significance is due to the fact that we use Demerjian's updated version of the *Managerial Ability* score, the estimation procedure for which is somewhat different from the version employed by Koester et al. (2017). The updated data can be retrieved at: http://faculty.washington.edu/pdemerj/data.html

[25] That is, Koester et al. (2017, p. 3308) state that they do not control for pre-tax return on assets in their main tests as "accounting-based measures similar to pretax return on assets have been used as proxies for managerial ability (e.g., Baik et al. 2011)." They further state that "including [pretax] ROA as a control variable in Equation (1) could figuratively 'throw the baby out with the bathwater'" in their setting.

[26] Further exploring this result, we find that *ROA* is the cause of the non-significant coefficient on Managerial Ability in Column 2 of Table 3. However, we note that Koester et al. (2017) find that adding *ROA* to their model does not eliminate significance on *Managerial Ability* if the standard battery of control variables is excluded. We are able to replicate this finding using their definition of *Managerial Ability*, i.e., the original method of calculating *Managerial Ability* as outlined in Demerjian et al. (2012). Using Demerjian's updated *Managerial Ability* score and adding *ROA*, even in the absence of control variables, we find non-significant results for *Managerial Ability*.

Overcoming Resistance to Tax Avoidance

Our main tests suggest that *IFD* provides the understanding and communication skills to support tax avoidance. In this section, we explore whether these broad skills are beneficial outside of functional-unit interactions. Various groups both within and outside of the firm are averse to tax avoidance, and even tax incentive seeking can cause risks and be perceived negatively.[27] This may lead certain groups to push management to focus on general business operations rather than tax avoidance (e.g., Khurana and Moser 2012; Hoopes et al. 2012).

Anecdotes argue that members of the C-suite should understand tax avoidance so that they can work with investors and other groups that may be resistant to the practice.[28] TMTs characterized by high *IFD* have the ability to support the tax function and therefore likely have some understanding of firm tax strategies. These TMTs also have *IFD*-provided communication skills (i.e., can speak in the language of various groups with various backgrounds) and have access to resistant parties (e.g., investors) due to their high firm status.

We first study whether *IFD* allows the TMT to overcome institutional investor resistance to tax avoidance. As our purpose is to study institutional investors that are risk averse and less likely to be supportive of investee firm tax avoidance, we study large blockholders. Large blockholders have the influence to monitor firm tax policies and also bear more risk if an investee improperly utilizes their tax function (Khurana and Moser 2012; Hoopes et al. 2012).[29]

[27] For example, increased use of the R&D credit has been targeted by various oversight groups. https://www.gao.gov/assets/160/154446.pdf Similarly, various complex oil industry incentives can cause controversy. https://www.wsj.com/articles/does-the-oil-and-gas-industry-still-need-tax-breaks-1479092522

[28] Remarks from an interview in 2017 with EY Americas Tax Policy Leader Cathy Koch. https://daily.financialexecutives.org/tax-belongs-c-suite-qa-eys-cathy-koch/

[29] Certain types of less active and less policy-change oriented institutions (e.g., those which automatically invest a small amount of capital in all firms in a stock market index) may be less concerned with the risks of tax avoidance due to their small stake in investee firms (Khan, Srinivasan, and Tan 2017).

<Insert Table 7 Here>

We display our results for how institutional investors interact with TMTs characterized by high levels of *IFD* in Table 7, Columns 1 and 2. We measure large blockholders using a Herfindahl Index of institutional investor ownership concentration (e.g., Ajinkya, Sanjeev, and Bhojraj 2005; Hartzell and Starks 2003) in Column 1 (*Institutional Concentration)*, and by a dummy variable denoting the existence of institutional blockholders (5% ownership threshold) in Column 2 (*Institutional Blockholder*). We find that the coefficient on *Institutional Concentration* is positive and significant ($p < 0.10$), indicating that institutional investors with large ownership interests reduce investee tax avoidance. However, the interaction between *IFD* and *Institutional Concentration* is negative and significant ($p < 0.05$). This indicates that *IFD* helps firms to effectively manage relationships with institutions in order to reduce barriers to tax avoidance. We find similar but somewhat weaker results in Column 2 using *Institutional Blockholder*.

Similarly, we also explore whether *IFD* can overcome audit committee and board resistance to tax avoidance (e.g., Richardson et al. 2013). In Table 7, Column 3, we find that the coefficient on *Audit Committee Independence*[30] is positive ($p < 0.05$). This indicates that independent audit committees may be less financially aggressive and less willing to invest firm resources in tax avoidance, consistent with Richardson et al. (2013). However, the interaction between *IFD* and *Audit Committee Independence* is negative and significant ($p < 0.05$), indicating that firms with high-*IFD* are able to confront the resistance of audit committees. We do not find results for either the standalone *Board Independence* variable or the interaction

[30] We set *Audit Committee Independence* to 1 if the board has independent directors, 0 otherwise. We find similar results when using the percent of independent audit committee members.

between *IFD* and board independence (Table 7, Column 4), implying that the audit committee is a more significant obstacle to tax avoidance than the wider board.[31]

Addressing Endogeneity Concerns

While firm fixed effects help to alleviate time invariant omitted variable bias, we note that it is still possible that *IFD* is endogenously determined by the firm, and that the same set of factors may jointly affect both *IFD* and tax avoidance. We adopt an instrumental approach to address this concern. Our first instrumental variable is the industry-year median of *IFD* (*IFD - Industry Median*). Prior research argues that industry-specific TMT characteristics are likely to be exogenous as they are not under firms' control (e.g., Kale et al. 2009). Our second instrumental variable is the occupational diversity of the state in which a firm's headquarters is located (*State Occupational Diversity*). Even when considering the highest level of TMT positions (CEO), firms and job candidates have strong regional biases and firms generally hire locally (e.g., Yonker, 2016). Therefore, we argue that the functional diversity of a job candidate is contingent on the functional diversity in the region of a firm's headquarters.[32]

<Insert Table 8 Here>

Table 8, Column 1, reports our first-stage regression, and our first instrument (*IFD - Industry Median*) is positively significant in explaining *IFD*. The second instrument (*State Occupational Diversity*) has the expected sign, but is not significant. Overall, these results imply that firms are more likely to have a high *IFD* when industry-level functional diversity is high.

[31] In line with anecdotes from former Fortune 100 CFO.
[32] Specifically, a firm headquartered in a location that has a functionally diverse workforce will have a greater likelihood of hiring capable individuals with various functional experiences.

Diagnostic tests provide evidence that the equations are well-specified.[33] Table 8, Column 2, reports the second stage results. We find that the coefficient on predicted *IFD* is significantly negative, indicating that the main findings hold after controlling for endogeneity concerns.

While we argue that TMT hiring is influenced by industry and regional executive availability, we admit that the interpretation of our results are subject to caveats. Specifically, hiring decisions may be influenced by executive self-selection and board selection. Most relevant to our setting, boards aware of the tax benefits of *IFD* may choose to hire TMT members with broad functional backgrounds in order to improve firm tax outcomes. If boards choose to hire for *IFD*, managerial incentives may be a useful method to ensure that TMTs characterized by high levels of *IFD* leverage their broad skills to support the tax function.[34] Without incentives, some TMTs may consider tax to be the domain of specialty divisions and focus their efforts on general business operations.

VII. CONCLUSION

The modern tax function is increasingly integrated with all facets of a firm, meaning that proper tax function management may be best supported by TMT members with experience in various functions. In line with this argument, we find that TMT intrapersonal functional diversity leads to higher levels of tax avoidance, and that TMTs characterized by intrapersonal functional diversity achieve these tax avoidance outcomes without relying on risky tax avoidance.

Our findings inform the literature in a number of ways. First, we provide a partial answer to the questions raised in Dyreng et al. (2010). Dyreng et al. (2010) find that executives have a

[33] The Sanderson-Windmeijer F-Statistic for weak identification is 87.95 (p-value<0.01) for the first-stage regression on TMT IFD, meaning that the model is adequately identified by the instruments. The Hansen J-statistic (p-value=0.20) is not significant at conventional levels, indicating that the null hypothesis that the instruments are uncorrelated with the errors in the second-stage regression cannot be rejected.

[34] Overall, prior literature argues that managerial incentives improve firm tax avoidance outcomes (e.g., Seidman and Stomberg 2017; Gaertner 2014). However, some prior studies argue that certain forms of tax avoidance serve as opportunities for managerial rent extraction (e.g., Desai and Dharmapala 2009; Desai and Dharmapala 2006).

large influence on tax avoidance; however, they do not find that the specific skills and background characteristics explored explain this influence. We find that the various functions comprising intrapersonal functional diversity allow the TMT to successfully lead the firm tax function. Next, prior management literature has demonstrated a positive relationship between intrapersonal functional diversity and team (Bunderson and Sutcliffe 2002) or firm (Cannella et al. 2008) performance. However, this is the first study that argues intrapersonal functional diversity supports the TMT in indirectly facilitating a financial function outcome. Tax avoidance is an ideal setting to provide support for this argument, as it is an accounting outcome that the TMT is not likely to be directly involved (e.g., Christensen et al. 2015; Dyreng et al. 2010).

Our findings raise questions for future research. While the tax avoidance setting is largely separate from the direct skill-based influence of the TMT, other financial outcomes are not. Future research can consider whether intrapersonal functional diversity is influential in settings where certain legal/accounting skills may be directly useful (e.g., financial reporting quality).

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APPENDIX A
Examples of Intrapersonal Functional Diversity

Appendix A illustrates the calculation of intrapersonal functional diversity (i.e., *IFD*) using the Blau index $\sum_{i=1}^{n}(1-\sum_{k=1}^{c}P_{ik}^{2})/n$. For each firm, we present each TMT member's name, title, and his or her functional experience up to the beginning of the current year, followed by the calculation of individual intrapersonal functional diversity $(1-\sum_{k=1}^{c}P_{ik}^{2})$ based on the TMT member's functional background information. We then present the calculation of *IFD* for the entire TMT.

TMT Member Name	Title	Functional Experience	Individual Intrapersonal Functional Diversity $(1-\sum_{k=1}^{c}P_{ik}^{2})$
Panel A: J.C. Penney Co (ended 01/31/2011)			
Myron E. Ullman, III	Chief Executive Officer	- 31 years in management	1 - $(31/31)^2$ = 0
Robert B. Cavanaugh	Chief Financial Officer	- 16 years in accounting and finance	1 - $(16/16)^2$ = 0
Michael T. Theilmann	Group Executive Vice President	- 18 years in personnel and labor relations	1 - $(18/18)^2$ = 0
Thomas M. Nealon	Group Executive Vice President	- 28 years in R&D and engineering	1 - $(28/28)^2$ = 0
Janet Dhilon	General Counsel	- 20 years in law	1 - $(20/20)^2$ = 0
IFD: Blau index = $\sum_{i=1}^{n}(1-\sum_{k=1}^{c}P_{ik}^{2})/n$ = (0 + 0 + 0 + 0 + 0) / 5 = **0**			
Panel B: Beam Inc. (ended 12/31/2012)			
Matthew Shattock	Chief Executive Officer	- 21 years in management - 3 years in operations	1 - $[(21/24)^2 + (3/24)^2]$ = 0.219
Robert Probst	Chief Financial Officer	- 16 years in accounting - 3 years in R&D	1 - $[(16/19)^2 + (3/19)^2]$ = 0.266
William Newlands	President of North America	- 12 years in management - 4 years in sales	1 - $[(12/16)^2 + (4/16)^2]$ = 0.375
Albert Baladi	President of Europe / Middle East / Africa	- 12 years in sales - 7 years in management - 3 years in other - 1 year in operations	1 - $[(12/23)^2 + (7/23)^2 + (3/23)^2 + (1/23)^2]$ = 0.616
Philip Baldock	President of Asia Pacific / South Africa	- 15 years in management - 7 years in other	1 - $[(15/22)^2 + (7/22)^2)]$ = 0.434
IFD: Blau index = $\sum_{i=1}^{n}(1-\sum_{k=1}^{c}P_{ik}^{2})/n$ = (0.219 + 0.266 + 0.375 + 0.616 + 0.434) / 5 = **0.382**			

Panel C: Intersil Corp. (ended 12/31/2011)

David Bell	Chief Executive Officer	- 11 years in management - 7 years in R&D - 1 year in operations	$1 - [(11/19)^2 + (7/19)^2 + (1/19)^2] = 0.526$
Jonathan Kennedy	Chief Financial Officer	- 15 years in accounting/finance	$1 - (15/15)^2 = 0$
Susan Hardman	Senior Vice President of Analog & Mixed Signal Products Group	- 16 years in sales - 6 years in R&D - 5 years in management	$1 - [(16/27)^2 + (6/27)^2 + (5/27)^2] = 0.565$
Andrew Cowell	Senior Vice President of Consumer Products	- 13 years in R&D - 7 years in sales - 5 years in other	$1 - [(13/25)^2 + (7/25)^2 + (5/25)^2] = 0.611$
Peter Oaklander	Senior Vice President of Power Management Products Group	- 7 years in R&D - 4 years in sales - 4 years in operations - 4 years in management - 4 years in other	$1 - [(7/23)^2 + (4/23)^2 + (4/23)^2 + (4/23)^2 + (4/23)^2] = 0.786$

IFD: Blau index = $\sum_{i=1}^{n}(1 - \sum_{k=1}^{c} P_{ik}^2)/n$ = (0.526 + 0 + 0.565 + 0.611 + 0.786) / 5 = **0.498**

APPENDIX B
Variable Definitions

Variable Name	Variable Definition	Source
TMT Characteristics		
Intrapersonal Functional Diversity (i.e., IFD)	Blau index = $\sum_{i=1}^{n}(1-\sum_{k=1}^{c} P_{ik}^2)/n$, P_{ik} is the proportion of executive i's total years spent in function k, and n is the total number of TMT members. Following prior literature, we consider eight functional areas: accounting/finance, marketing/sales, R&D/engineering, management, production/operations, law, personnel/labor relations, and other.	BoardEx
Functional Specialty	Percentage of TMT members that have experience in one of the eight functional areas under study: i.e., accounting/finance, marketing/sales, R&D/engineering, management, production/operations, law, personnel/labor relations, and other.	BoardEx
Generalism Index	The average generalism indices of the TMT members following Custódio et al. (2013). For each TMT member, the generalism index is the first principal component of the following variables: number of past positions, number of firms, number of industries, prior experience in the same position, and conglomerate experience.	BoardEx
Overlap	Total number of pairwise overlapping in functional experience among TMT members scaled by the total number of possible overlaps within the executive team (i.e., the percent of experience overlap on the TMT).	BoardEx
Aggregate IFD	Blau index =$1-\sum_{k=1}^{c} P_k^2$, P_k is the proportion of TMT's total years spent in function k (i.e., one of the eight possible functional areas).	BoardEx
% High IFD	The percent of high-intrapersonal functional diversity individuals on the TMT, where high- (or low-) intrapersonal functional diversity is defined as managers with above (or below) the median individual intrapersonal functional diversity.	BoardEx
Dominant Functional Diversity	Blau index = $1-\sum_{k=1}^{c} P_k^2$, P_k is the proportion of a TMT in the kth category of dominant functional track, c is the total number of functional areas under study.	BoardEx
Education Diversity	Blau index = $1-\sum_{k=1}^{c} P_k^2$, P_k is the proportion of a TMT in the kth category of highest degree awarded, c is the total number of education areas under study. Following prior literature, we consider: arts, sciences, engineering, business and economics, and law.	BoardEx
Tenure	Logarithm of the average tenure (i.e. the number of years a manager has spent in the team) of the TMT members.	BoardEx
Tenure Diversity	Coefficient of variation of team tenure, i.e. standard deviation of TMT members' tenures scaled by the mean of tenures.	BoardEx
Age	Logarithm of the average age of the TMT members.	BoardEx
Age Diversity	Coefficient of variation of age, i.e. standard deviation of TMT members' ages scaled by the mean of ages.	BoardEx
Gender Diversity	Blau index = $1-\sum_{k=1}^{2} P_k^2$, P_k is the proportion of a TMT in the kth category of gender.	BoardEx
Military	The percentage of TMT members that have military experience.	BoardEx
Managerial Ability	The continuous managerial ability score created by Demerjian et al. (2012) and recently updated to the year 2016 by the authors. Managerial ability is captured using a two-stage approach. In the first stage, data envelopment analysis is used to determine how efficiently a firm utilizes a vector of inputs to generate total sales, and this information is used to generate a firm efficiency score. In the second stage, firm e□ciency is regressed on various firm characteristics including total assets, market share, and free cash flow etc. The residual of this regression is the managerial ability score.	http://faculty.washington.edu/pdemerj/data.html
Firm Characteristics and Other Variables		
Cash ETR	Cash effective tax rate defined as cash tax paid (TXPD) divided by pre-tax book income (PI) before special items (SPI). Cash ETRs with negative denominators are deleted. The remaining non-missing Cash ETRs are winsorized to the range [0,1].	Compustat
Size	Logarithm of total assets (AT) at the beginning of year.	Compustat
Foreign	Indicator coded equal to one if pretax foreign income from operations (PIFO) is nonzero	Compustat

	and coded equal to zero otherwise.	
R&D	Logarithm of research and development expense (XRD). Missing values set to zero.	Compustat
Intangible	Intangible assets (INTANG) scaled by lagged assets (AT).	Compustat
Leverage	Leverage ratio defined as long-term debt (DLTT) plus long-term debt in current liabilities (DLC) deflated by total assets (AT).	Compustat
Advertising	Advertising expense (XAD) deflated by sales (SALE).	Compustat
NOL Decrease	Indicator variable coded equal to one if the value of the NOL carry-forward (TLCF) decreased in year t and zero otherwise.	Compustat
Market to Book	Ratio of market value of equity (CSHO × PRCC_F) over book value of equity (CEQ).	Compustat
Free Cash Flow	Pretax free cash flows, defined as the total of (operating cash flows (OANCF) - capital expenditures (CAPX) + cash taxes paid (TXPD)) scaled total assets (AT).	Compustat
Option Value	The average annual value realized from exercise of options for the top executives grossed up by the share of options owned by the executives, scaled by lagged total assets.	ExecuComp
ROA	Pretax book income (PI) divided by lagged total assets (AT).	Compustat
StdROA	Standard deviation of ROA over the previous three fiscal years.	Compustat
Cash	Cash and cash equivalents (CHE) scaled by total assets (AT).	Compustat
Equity Income	Equity income for year t (ESUB) scaled by total assets at the beginning of the year (AT).	Compustat
PPE	Property, plant, and equipment (PPENT) scaled by lagged assets (AT).	Compustat
Capital Expenditures	Ratio of capital expenditures (CAPX) to gross property, plant, and equipment (PPEGT).	Compustat
Abnormal Accruals	Abnormal accruals for year t based on performance-adjusted modified Jones Model.	Compustat
UTB	Predicted unrecognized tax benefits calculated as in Rego and Wilson (2012): $UTB = \alpha_0 + \alpha_1 PT\_ROA + \alpha_2 SIZE + \alpha_3 FOR\_SALE + \alpha_4 R\&D + \alpha_5 LEV + \alpha_6 DISC\_ACCR + \alpha_7 SG\&A + \alpha_8 MTB + \alpha_9 SALES\_GR$	Compustat
Shelter	Probability that the firm engages in tax sheltering as defined in Wilson (2009): $Shelter = -4.86 + 5.20 \times BTD + 4.08 \times DAP - 1.41 \times LEV + 0.76 \times SIZE + 3.51 \times ROA + 1.72 \times FOREIGN\ INCOME + 2.43 \times R\&D$	Compustat
DTax	Discretionary permanent differences, as defined in Frank et al. (2009), equals the residual of the following equation: $PERMDIFF = \alpha_0 + \alpha_1 INTANG + \alpha_2 UNCON + \alpha_3 MI + \alpha_4 CSTE + \alpha_5 \Delta NOL + \alpha_6 LAGPERM + \varepsilon$	Compustat
BTD	Total book-tax difference calculated as book income less taxable income scaled by lagged total assets. Book income is pre-tax income (PI). Taxable income is calculated by grossing up the sum of the current federal tax expense (TXFED) and the current foreign tax expense (TXFO) and subtracting the change in loss carryforward (TLCF).	Compustat
PermBTD	Permanent book-tax difference calculated as total book-tax difference (BTD) less temporary BTD (TXDI) grossed up by statutory tax rate scaled by lagged total assets.	Compustat
Institutional Concentration	The Herfindahl-Hirschman index of institutional ownership: $\sum_{i=1}^{n} P_i^2$, where P_i is the percentage of total shares held by institution i.	Thomson Reuters 13f
Institutional Blockholder	Equals one if there exists a block institutional investor (i.e., ownership > 5%), and zero otherwise.	Thomson Reuters 13f
Audit Committee Independence	Equals one if the firm's audit committee has independent directors only, zero otherwise.	BoardEx
Board Independence	The percentage of independent directors on firm board.	BoardEx
State Occupational Diversity	One minus the sum of the squares of the number of employed workers in each functional area scaled by total employment in all functional areas for each state.	Bureau of Labor Statistics

TABLE 1
Summary Statistics

	N	Mean	Std. Dev.	P25	Median	P75
TMT Characteristics						
Intrapersonal Functional Diversity (IFD)	12,431	0.384	0.116	0.303	0.389	0.470
Functional Specialty – Accounting/Finance	12,431	0.408	0.182	0.200	0.400	0.600
Functional Specialty – Marketing/Sales	12,431	0.229	0.206	0.000	0.200	0.400
Functional Specialty – R&D/Engineering	12,431	0.156	0.187	0.000	0.200	0.200
Functional Specialty – Management	12,431	0.795	0.178	0.600	0.800	1.000
Functional Specialty – Production/Operations	12,431	0.345	0.214	0.200	0.400	0.400
Functional Specialty – Law	12,431	0.092	0.116	0.000	0.000	0.200
Functional Specialty – Personnel	12,431	0.148	0.165	0.000	0.200	0.200
Generalism Index	12,431	-0.021	0.559	-0.456	-0.144	0.300
Overlap	12,431	0.141	0.064	0.100	0.129	0.186
Aggregate IFD	12,431	0.711	0.083	0.671	0.730	0.770
% High IFD	12,431	0.459	0.243	0.200	0.400	0.600
Dominant Functional Diversity	12,431	0.627	0.128	0.560	0.640	0.720
Education Diversity	12,431	0.680	0.181	0.600	0.680	0.800
Tenure	12,431	1.613	0.465	1.316	1.648	1.947
Tenure Diversity	12,431	0.613	0.264	0.435	0.592	0.770
Age	12,431	3.960	0.077	3.908	3.967	4.015
Age Diversity	12,431	0.121	0.050	0.084	0.114	0.150
Gender Diversity	12,431	0.104	0.163	0.000	0.000	0.320
Military	12,431	0.021	0.061	0.000	0.000	0.000
Managerial Ability	12,431	0.015	0.147	-0.077	-0.026	0.061
Firm Characteristics and Other Variables						
Cash ETR	12,431	0.239	0.187	0.109	0.227	0.324
Size	12,431	7.572	1.527	6.466	7.447	8.605
Foreign	12,431	0.360	0.480	0.000	0.000	1.000
R&D	12,431	2.241	2.439	0.000	1.727	4.151
Intangible	12,431	0.237	0.235	0.046	0.177	0.360
Leverage	12,431	0.189	0.169	0.027	0.170	0.287
Advertising	12,431	0.014	0.030	0.000	0.000	0.012
NOL Decrease	12,431	0.252	0.434	0.000	0.000	1.000
Market to Book	12,431	3.240	3.600	1.624	2.480	3.917
Free Cash Flow	12,431	0.103	0.096	0.046	0.093	0.150
Option Value	12,431	0.008	0.018	0.000	0.001	0.006
ROA	12,431	0.110	0.095	0.049	0.095	0.156
StdROA	12,431	0.053	0.063	0.016	0.032	0.064
Cash	12,431	0.177	0.192	0.038	0.108	0.250
Equity Income	12,431	0.001	0.004	0.000	0.000	0.000
PPE	12,431	0.263	0.215	0.101	0.194	0.365
Capital Expenditures	12,431	0.114	0.072	0.063	0.094	0.143
Abnormal Accruals	12,431	-0.051	1.553	-0.154	-0.013	0.110
UTB	12,431	0.013	0.010	0.007	0.012	0.018
Shelter	12,431	0.269	1.942	-0.569	0.400	1.434
DTax	12,395	0.092	1.058	-0.038	0.020	0.195
BTD	12,431	0.020	0.075	-0.007	0.015	0.042
PermBTD	12,431	0.013	0.064	-0.007	0.008	0.028
Institutional Concentration	12,337	0.044	0.038	0.026	0.034	0.045
Institutional Blockholder	12,337	0.905	0.293	1.000	1.000	1.000
Audit Committee Independence	12,431	0.931	0.254	1.000	1.000	1.000
Board Independence	12,431	0.759	0.142	0.667	0.800	0.875
IFD – Industry Median	12,431	0.387	0.048	0.358	0.389	0.423
State Occupational Diversity	12,185	0.079	0.004	0.076	0.079	0.082

This table presents descriptive statistics on all variables. Appendix B provides detailed definitions for the variables.

TABLE 2
Pearson Correlation Table

		1	2	3	4	5	6	7	8	9	10	11
1	Cash ETR	1.00										
2	Intrapersonal Functional Diversity (IFD)	**-0.04**	1.00									
3	Dominant Functional Diversity	-0.02	**0.06**	1.00								
4	Education Diversity	**0.07**	**-0.21**	**0.03**	1.00							
5	Tenure	**0.02**	-0.01	**-0.06**	**0.05**	1.00						
6	Tenure Diversity	**0.03**	0.02	-0.01	-0.01	**-0.04**	1.00					
7	Age	**0.05**	**0.04**	**-0.08**	**0.09**	**0.41**	**0.02**	1.00				
8	Age Diversity	0.00	**-0.17**	**-0.01**	**0.10**	-0.00	**0.04**	**-0.09**	1.00			
9	Gender Diversity	**0.03**	**0.02**	**0.04**	**0.04**	**-0.04**	**0.05**	**-0.05**	0.00	1.00		
10	Military	-0.01	**0.04**	**-0.04**	**-0.05**	0.00	0.00	**0.10**	**0.04**	**-0.02**	1.00	
11	Managerial Ability	-0.01	**0.11**	0.01	**-0.06**	**-0.02**	0.01	**-0.06**	**-0.07**	**0.03**	**-0.03**	1.00
12	ROA	-0.01	**-0.05**	**-0.02**	**0.07**	**0.06**	**-0.06**	**-0.04**	0.02	**0.03**	0.01	**0.27**

This table reports Pearson correlation matrix for the main regression variables. All correlations that are statistically significant at the 5% level or better based on two-tailed tests are shown in bold. Appendix B provides definitions on all the variables.

TABLE 3
TMT Intrapersonal Functional Diversity and Tax Avoidance

	(1) Cash ETR	(2) Cash ETR	(3) Cash ETR
Intrapersonal Functional Diversity (IFD)		-0.055**	
		(-2.08)	
Functional Specialty – Accounting/Finance			-0.005
			(-0.44)
Functional Specialty – Marketing/Sales			-0.014
			(-0.90)
Functional Specialty – R&D/Engineering			-0.018
			(-0.75)
Functional Specialty – Management			-0.019
			(-1.04)
Functional Specialty – Production/Operations			0.001
			(0.07)
Functional Specialty – Law			-0.005
			(-0.19)
Functional Specialty – Personnel			0.001
			(0.04)
Dominant Functional Diversity	0.006	0.008	0.002
	(0.29)	(0.38)	(0.11)
Education Diversity	-0.003	-0.005	-0.003
	(-0.21)	(-0.31)	(-0.19)
Tenure	-0.003	-0.002	-0.003
	(-0.30)	(-0.27)	(-0.29)
Tenure Diversity	0.011	0.011	0.012
	(1.19)	(1.16)	(1.29)
Age	0.074	0.073	0.080
	(1.33)	(1.31)	(1.41)
Age Diversity	-0.094*	-0.096*	-0.101**
	(-1.82)	(-1.86)	(-1.98)
Gender Diversity	0.014	0.013	0.011
	(0.98)	(0.88)	(0.70)
Military	0.084***	0.089***	0.090***
	(2.82)	(3.04)	(2.90)
Managerial Ability	0.010	0.010	0.012
	(0.47)	(0.47)	(0.56)
Size	0.027***	0.027***	0.022***
	(3.21)	(3.24)	(2.60)
Foreign	-0.006	-0.006	-0.006
	(-0.98)	(-0.98)	(-0.96)
R&D	-0.002	-0.002	-0.000
	(-0.41)	(-0.37)	(-0.02)
Intangible	-0.019	-0.018	-0.047**
	(-1.19)	(-1.12)	(-2.01)
Leverage	-0.009	-0.009	-0.009
	(-0.44)	(-0.47)	(-0.47)
Advertising	0.058	0.074	0.072
	(0.29)	(0.38)	(0.36)

NOL Decrease	-0.013***	-0.013***	-0.012**
	(-2.61)	(-2.59)	(-2.49)
Market to Book	-0.003**	-0.003**	-0.003**
	(-1.98)	(-2.00)	(-2.27)
Free Cash Flow	0.396***	0.395***	0.405***
	(6.65)	(6.68)	(6.93)
Option Value	-0.675***	-0.676***	-0.749***
	(-3.27)	(-3.31)	(-3.39)
ROA	-0.531***	-0.532***	-0.593***
	(-6.21)	(-6.24)	(-7.02)
StdROA	-0.099	-0.100	-0.110*
	(-1.49)	(-1.51)	(-1.68)
Cash	-0.090***	-0.090***	-0.113***
	(-3.94)	(-4.00)	(-2.87)
Equity Income	-3.015*	-2.972*	-3.002*
	(-1.91)	(-1.88)	(-1.91)
PPE	0.055	0.054	0.032
	(1.22)	(1.20)	(0.70)
Capital Expenditures	0.213***	0.211***	0.201***
	(3.77)	(3.76)	(3.53)
Abnormal Accruals	0.005***	0.005***	0.005***
	(3.76)	(3.79)	(3.84)
Observations	12,431	12,431	12,431
Adjusted R-squared	0.28	0.28	0.28
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes

***, **, * Indicate statistical significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. *t*-statistics are in parentheses. Standard errors are two-way clustered by firm and year to correct for cross-sectional and time-series dependence (Peterson 2009; Gow et al. 2010). See Appendix B for variable definitions.

TABLE 4
Driving Factors of Tax Avoidance

	(1) Cash ETR	(2) Cash ETR	(3) Cash ETR	(4) Cash ETR
Generalism Index	-0.008			
	(-1.20)			
Overlap		-0.070		
		(-1.23)		
Aggregate IFD			-0.032	
			(-0.75)	
% High IFD				-0.025***
				(-2.61)
Dominant Functional Diversity	0.006	0.001	0.017	0.005
	(0.32)	(0.04)	(0.68)	(0.25)
Education Diversity	-0.005	-0.006	-0.003	-0.005
	(-0.31)	(-0.35)	(-0.20)	(-0.28)
Tenure	-0.004	-0.003	-0.002	-0.004
	(-0.50)	(-0.30)	(-0.28)	(-0.40)
Tenure Diversity	0.010	0.011	0.011	0.010
	(1.08)	(1.17)	(1.18)	(1.15)
Age	0.078	0.077	0.072	0.078
	(1.40)	(1.41)	(1.29)	(1.41)
Age Diversity	-0.101*	-0.095*	-0.098*	-0.097*
	(-1.92)	(-1.86)	(-1.94)	(-1.86)
Gender Diversity	0.015	0.013	0.014	0.014
	(1.05)	(0.87)	(0.98)	(0.97)
Military	0.086***	0.087***	0.085***	0.087***
	(2.86)	(2.93)	(2.90)	(2.93)
Managerial Ability	0.010	0.010	0.010	0.009
	(0.46)	(0.48)	(0.47)	(0.42)
Firm Controls	Yes	Yes	Yes	Yes
Observations	12,431	12,431	12,431	12,431
Adjusted R-squared	0.28	0.28	0.28	0.29
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

***, **, * Indicate statistical significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. *t*-statistics are in parentheses. Standard errors are two-way clustered by firm and year to correct for cross-sectional and time-series dependence (Peterson 2009; Gow et al. 2010). See Appendix B for variable definitions.

TABLE 5
Spectrum of Tax Aggressiveness and Avoidance

	(1) UTB	(2) Shelter	(3) DTax	(4) PermBTD	(5) BTD
Intrapersonal Functional Diversity (IFD)	0.000	-0.037	-0.247	0.018**	0.013*
	(0.09)	(-0.12)	(-1.44)	(1.99)	(1.74)
Dominant Functional Diversity	-0.000	0.083	-0.116	0.005	0.003
	(-0.57)	(0.29)	(-1.07)	(0.51)	(0.40)
Education Diversity	0.000	-0.054	0.004	0.007	0.008
	(0.27)	(-0.26)	(0.04)	(1.05)	(1.20)
Tenure	0.000	0.025	-0.053	-0.001	-0.001
	(0.15)	(0.26)	(-1.25)	(-0.43)	(-0.47)
Tenure Diversity	0.000	0.119	-0.053	-0.004	-0.004
	(0.71)	(0.88)	(-1.14)	(-0.96)	(-1.22)
Age	0.003	0.926*	0.271	-0.011	-0.008
	(1.22)	(1.93)	(0.75)	(-0.71)	(-0.55)
Age Diversity	0.001	-0.804	0.021	0.004	0.013
	(0.34)	(-1.21)	(0.06)	(0.19)	(0.66)
Gender Diversity	0.001	0.160	0.026	0.002	-0.001
	(1.44)	(0.82)	(0.31)	(0.42)	(-0.25)
Military	-0.002	-0.362	-0.207	-0.036**	-0.017
	(-1.41)	(-0.79)	(-0.69)	(-2.10)	(-1.02)
Managerial Ability	0.001	0.017	-0.315	0.006	0.002
	(0.81)	(0.04)	(-1.15)	(0.48)	(0.20)
Firm Controls	Yes	Yes	Yes	Yes	Yes
Observations	12,431	12,431	12,395	12,431	12,431
Adjusted R-squared	0.65	0.50	0.14	0.21	0.26
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes

***, **, * Indicate statistical significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. *t*-statistics are in parentheses. Standard errors are two-way clustered by firm and year to correct for cross-sectional and time-series dependence (Peterson 2009; Gow et al. 2010). See Appendix B for variable definitions.

Table 6
Sensitivity Test: Managerial Ability

	(1) Cash ETR	(2) Cash ETR	(3) Cash ETR
Intrapersonal Functional Diversity (IFD)		-0.045**	-0.047**
		(-2.07)	(-2.22)
Managerial Ability	-0.047**	-0.046*	0.008
	(-2.05)	(-1.80)	(0.40)
ROA			-0.342***
			(-6.86)
Size	0.055***	0.055***	0.040***
	(7.66)	(6.62)	(5.44)
Foreign	0.005	0.006	0.004
	(0.61)	(0.60)	(0.38)
R&D	-0.005	-0.005	-0.002
	(-1.04)	(-1.23)	(-0.64)
Intangible	-0.021	-0.020	-0.010
	(-0.82)	(-1.25)	(-0.67)
Leverage	-0.015	-0.016	-0.030*
	(-0.65)	(-1.02)	(-1.95)
Capital Expenditures	0.214**	0.209**	0.322***
	(2.24)	(2.18)	(3.41)
Advertising	0.079	0.021	-0.133
	(0.37)	(0.08)	(-0.50)
NOL Decrease	-0.012**	-0.012**	-0.012**
	(-2.38)	(-2.33)	(-2.29)
Observations	12,431	12,431	12,431
Adjusted R-squared	0.27	0.27	0.27
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes

***, **, * Indicate statistical significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. *t*-statistics are in parentheses. Standard errors are two-way clustered by firm and year to correct for cross-sectional and time-series dependence (Peterson 2009; Gow et al. 2010). See Appendix B for variable definitions.

TABLE 7
TMT Intrapersonal Functional Diversity and Tax Avoidance
Conditioning on Resistance to Avoidance

	(1) Cash ETR	(2) Cash ETR	(3) Cash ETR	(4) Cash ETR
Intrapersonal Functional Diversity (IFD)	-0.009	0.035	0.052	-0.114**
	(-0.32)	(0.72)	(0.79)	(-1.96)
Intrapersonal Functional Diversity (IFD) * Institutional Concentration	-0.796**			
	(-2.05)			
Institutional Concentration	0.283*			
	(1.85)			
Intrapersonal Functional Diversity (IFD) * Institutional Blockholder		-0.083*		
		(-1.74)		
Institutional Blockholder		0.028		
		(1.41)		
Intrapersonal Functional Diversity (IFD) * Audit Committee Independence			-0.120**	
			(-2.02)	
Audit Committee Independence			0.071**	
			(2.12)	
Intrapersonal Functional Diversity (IFD) * Board Independence				0.065
				(1.02)
Board Independence				-0.018
				(-0.52)
Dominant Functional Diversity	0.009	0.012	0.003	0.007
	(0.43)	(0.58)	(0.16)	(0.33)
Education Diversity	-0.002	-0.004	-0.000	-0.004
	(-0.11)	(-0.22)	(-0.03)	(-0.29)
Tenure	-0.003	-0.003	-0.006	-0.002
	(-0.34)	(-0.35)	(-0.71)	(-0.26)
Tenure Diversity	0.011	0.015	0.010	0.010
	(1.22)	(1.51)	(1.08)	(1.22)
Age	0.075	0.096*	0.083	0.072
	(1.42)	(1.79)	(1.51)	(1.36)
Age Diversity	-0.092*	-0.142***	-0.090*	-0.090*
	(-1.75)	(-2.61)	(-1.85)	(-1.78)
Gender Diversity	0.013	0.020	0.019	0.010
	(0.84)	(1.17)	(1.28)	(0.68)
Military	0.072**	0.078**	0.078**	0.087***
	(2.49)	(2.29)	(2.51)	(2.91)
Managerial Ability	-0.010	0.013	-0.009	0.017
	(-0.44)	(0.54)	(-0.41)	(0.88)
Firm Controls	Yes	Yes	Yes	Yes
Observations	12,337	12,337	12,431	12,431
Adjusted R-squared	0.29	0.28	0.30	0.29
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

***, **, * Indicate statistical significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. *t*-statistics are in parentheses. Standard errors are two-way clustered by firm and year to correct for cross-sectional and time-series dependence (Peterson 2009; Gow et al. 2010). See Appendix B for variable definitions.

TABLE 8
Two-Stage Least Squares

	1st stage	2nd Stage
	Intrapersonal Functional Diversity (IFD)	Cash ETR
IFD – Industry Median	0.441***	
	(13.81)	
State Occupational Diversity	0.958	
	(1.11)	
Intrapersonal Functional Diversity (IFD) – Fitted		-0.283***
		(-2.59)
Dominant Functional Diversity	0.037***	0.019
	(3.20)	(0.93)
Education Diversity	-0.028**	-0.009
	(-2.40)	(-0.60)
Tenure	0.002	-0.002
	(0.29)	(-0.22)
Tenure Diversity	-0.007	0.010
	(-1.39)	(1.10)
Age	-0.018	0.067
	(-0.56)	(1.27)
Age Diversity	-0.020	-0.100**
	(-0.55)	(-1.97)
Gender Diversity	-0.023**	0.011
	(-2.09)	(0.72)
Military	0.092***	0.106***
	(3.16)	(3.39)
Managerial Ability	-0.001	0.008
	(-0.11)	(0.36)
Firm Controls	Yes	Yes
Observations	12,185	12,185
Firm Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Sanderson-Windmeijer *F*-statistic	91.54	
p-value for Hansen *J*-statistic		0.39

***, **, * Indicate statistical significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests. *t*-statistics are provided in parentheses below each coefficient. Standard errors are two-way clustered by firm and year to correct for cross-sectional and time-series dependence (Peterson 2009; Gow et al. 2010). For the first-stage regression, the Sanderson-Windmeijer *F*-Statistic for weak identification is significant at the 1% level, rejecting the null hypothesis that the instruments weakly identify the model. For the second-stage regression, the *p*-value for Hansen *J*-statistic is >0.10, indicating that the instruments are uncorrelated with the error terms and are correctly excluded from the main regression. All variables are defined as in Appendix B.