TOP MANAGEMENT TEAM FUNCTIONAL DIVERSITY AND MANAGEMENT FORECAST ACCURACY

by

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DISSERTATION ABSTRACT

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Prior literature documents that the diversity of top management team (TMT) functional experiences enhances firm performance through its effect on information processing and sharing between team members. In this study, I examine whether TMT functional diversity affects management forecast accuracy via the information aggregation and communication among top executives. If functional diversity among individuals allows top executives to better process and share information, a greater degree of functional diversity should lead to more accurate management forecasts. TMT functional diversity can take two forms. The first, between-member functional diversity, refers to the heterogeneity in the primary functional domains of each TMT member, and the second, within-member functional diversity, refers to the average intrapersonal breadth of functional experiences of each TMT. I find that both types are positively associated with management forecast accuracy. In cross-sectional analyses, I find that the effect of TMT functional diversity is more important for firms with greater uncertainty and complexity and for firms that are led by CEOs and CFOs who are narrow functional specialists. Collectively, the results suggest that TMT functional diversity plays an important role in management disclosure, thereby shedding light on how the knowledge

composition of top management influences the aggregation and communication of financial information.

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CHAPTER I

INTRODUCTION

A key question of interest to accounting researchers lies in understanding the factors that influence the quality of public firm disclosures. Prior literature documents various economic determinants of disclosure quality such as earnings uncertainty and corporate governance (e.g., Ajinkya, Bhojraj, & Sengupta, 2005; Karamanou & Vafeas, 2005). Recent research in this area finds that "human elements", i.e., top management, also explain a significant proportion of cross-sectional variation in the quality of voluntary disclosure (e.g., Linda Smith Bamber, Jiang, & Wang, 2010; Brochet, Faurel, & McVay, 2011; Davis, Ge, Matsumoto, & Zhang, 2014). Specifically, individual characteristics, such as CEO ability and work experience, and personal connections within the top management team are found to affect voluntary disclosure quality (Baik, Farber, & Lee, 2011; Ke, Li, Ling, & Zhang, 2014; Matsunaga, Wang, & Yeung, 2014). This evidence suggests that individual managers influence disclosure outcomes because they each possess specific knowledge and expertise. However, if top executives work together to exchange, interpret, and integrate unstructured information to project future earnings, it is likely that the knowledge composition of top management, as a whole, impacts the quality of financial information. In this study I provide evidence on this issue by examining the relation between top management team (hereafter, TMT) functional diversity and management forecast accuracy.

An earnings forecast is generally compiled from unaudited internal management reports and formal or informal meetings concerning firm operating, financing, and investing activities (Feng, Li, & McVay, 2009; Li, Minnis, Nagar, & Rajan, 2014). In forming the consolidated forecasts, members of the top management team work together

to gather, analyze, and integrate the forward-looking information which is often non-verifiable at the time of forecast. Each individual executive uses their knowledge and expertise to accumulate and evaluate information in order to derive an expectation of future earnings. As a team, the executives share and discuss the specific information and knowledge each member possesses. As such, the functional diversity of the TMT is likely to impact the team's ability to form an accurate forecast both by influencing the diversity of information considered and the ability to communicate and process the information. As a result, TMT functional diversity should influence the accuracy of forecasted earnings.

TMT members' functional backgrounds are often regarded as an important source of expertise and therefore influence the manner in which information is retrieved and exchanged to reach decisions (Bunderson & Sutcliffe, 2002; Cannella, Park, & Lee, 2008). The literature on TMT research generally defines two concepts of TMT composition based on functional backgrounds. The first is called between-member functional diversity and refers to the heterogeneity in the primary functional experiences of each TMT member. The second, within-member functional diversity, measures the average intrapersonal breadth of functional experiences for each TMT.

Prior literature argues that TMTs with higher between-member functional diversity are able to draw from a greater pool of knowledge and information as each individual contributes their own personal expertise, and thus tend to stimulate more effective decision-making and improve team effectiveness in information processing. Consistent with this argument, empirical studies have shown that between-member functionally diverse teams have better firm performance and are more creative (e.g., Bell, Villado, Lukasik, Belau, & Briggs, 2010; Certo, Lester, Dalton, & Dalton, 2006).

Similarly, the extant TMT research recognizes that within-member functional diversity can benefit team performance. Individuals with broader functional experiences are more likely to share common functional background with others, thus reducing the semantic gap among team members and facilitating effective communication. Cannella et al. (2008) report positive relations between this type of diversity and firm performance. Effective and accurate information retrieval, exchange and integration are particularly important in order for TMTs to issue accurate guidance. Assuming that TMT functional diversity facilitates information processing and sharing, I hypothesize a positive relation between management earnings forecasts and TMT functional diversity.

To test this hypothesis, I start with a sample of S&P 1500 firms during fiscal years from 2001 to 2012. TMT members include the CEO, CFO, and the three other most highly paid executives. Using the BoardEx database which provides biographical information on directors and senior executives of US public and private firms, I construct the Blau index of between-member and within-member functional diversity for each TMT and firm-year (Cannella et al., 2008; Harrison & Klein, 2007). Following a rich TMT literature, I use dominant functional diversity to measure the between-member diversity and intrapersonal functional diversity to measure the within-member diversity. Dominant functional diversity considers the heterogeneity of functional expertise available to a TMT, while intrapersonal functional diversity refers to the aggregate breadth of team members' functional experiences (Bunderson & Sutcliffe, 2002; Cannella et al., 2008). I find evidence that each type of TMT functional diversity improves management forecast accuracy. These findings hold after accounting for the self-selection associated with management forecasts and the potential endogeneity associated with TMT functional diversity. Specifically, I find that a one standard

deviation increase in dominant (intrapersonal) functional diversity is associated with an increase in management forecast accuracy that is equivalent to 6.2% (5.4%) of the sample mean forecast accuracy.

I next conduct a series of cross-sectional analyses to explore the contexts under which TMT functional diversity has a greater impact on management forecast accuracy. If greater functional diversity enhances the quality of information exchanged and integrated in forming the management forecast, I would expect it to have a greater effect on firms with a greater degree of uncertainty in earnings and with more complex structure because in such cases firms are likely to benefit more from the breadth and communication of information in the top management. The evidence supports this contention for both types of functional diversity. In addition, I expect the functional experiences of the CEO or CFO who leads the management forecast task moderate the importance of team diversity. The association between TMT functional diversity and forecast accuracy is found to be less important when the CEO or CFO is a functional generalist, indicating that the presence of a generalist leader reducing the importance of the other TMT members' functional knowledge.

This study contributes to the literature in two ways. First, it contributes to the recent strand of literature examining the "human elements" of management guidance (e.g., Linda Smith Bamber et al., 2010; Davis et al., 2014; Ke et al., 2014). Unlike most studies focusing on the individual manager effects, this study provides evidence on whether the composition of the top management team affects management forecast characteristics. Moreover, unlike recent research that examines how social connections among TMT members affect management forecast accuracy (Ke et al., 2014), this paper focuses on the effect of TMT composition of knowledge and expertise on the accuracy of

management disclosure. It thus provides insights into how an individual's expertise interacts with the expertise of other team members to influence the overall quality of the team's information.

Second, this study provides evidence on how information is exchanged and integrated within a TMT through its members' functional background. This understanding is important since it sheds light on the effective leadership structure of top management teams along the dimension of team members' functional background. This paper differs from and complements studies on the effect of TMT functional diversity on firm performance or strategic decisions by focusing on the information exchange process and assessing a direct result of such exchange, namely, management voluntary information disclosure. The evidence that TMT functional diversity affects voluntary disclosure, a seemingly second-order decision, extends the range of corporate decisions in which TMT knowledge composition is known to play an economically significant role.

CHAPTER II

TMT COMPOSITION, FUNCTIONAL DIVERSITY, AND HYPOTHESIS DEVELOPMENT

Individual Executives, Top Management Team and Corporate Disclosure

Prior literature identifies various economic determinants of voluntary disclosure. These studies find that firms issue less accurate forecasts when earnings are more uncertain and when the proprietary and litigation costs of disclosure are higher (e.g., Ajinkya et al., 2005; L. S. Bamber & Cheon, 1998). Existing research also finds that larger firms with greater analyst following are more likely to issue accurate disclosure and that higher quality governance and internal control are associated with more accurate forecasts (Ajinkya et al., 2005; Feng et al., 2009; Karamanou & Vafeas, 2005; Lang & Lundholm, 1993).

Recently the disclosure literature has focused on "human elements" as an important determinant of management forecast features. Drawing on Hambrick and Mason's (1984) upper echelons theory, which posits that executives impose idiosyncratic influence on corporate decisions, Linda Smith Bamber et al. (2010) find that top paid managers, including CEO, CFO, and General Counsel (GC) each have an individual style that affects the likelihood of the issuance of a forecast and the characteristics of the resulting disclosure. Davis et al. (2014) find evidence that managerial styles influence the tone of earnings conference calls for CEOs and CFOs. Other studies identify underlying individual characteristics that are associated with managerial styles, and find that personal education and career background (Linda Smith Bamber et al., 2010; Davis et al., 2014), CEO ability (Baik et al., 2011), CEO overconfidence (Hribar & Yang, 2013), and CEO's prior CFO experience (Matsunaga et al., 2014) are able to explain the individual

styles. Kwak, Ro, and Suk (2012) find that the presence of a GC on the top management team leads to more frequent, accurate and conservative forecasts. The overall conclusion in this growing literature is that the individual CEO, CFO, or GC influences the quality of management guidance.

It is notable that a firm's policies are generally regarded as collective outcomes of teamwork by its top executives (e.g., Bertrand & Schoar, 2003). The focus in the prior literature on individual officers overlooks the fact that each executive serves as an integral part of the team and team members complement each other's knowledge and expertise (Hayes, Oyer, & Schaefer, 2006). Hambrick (2007) asserts that focusing on the features of TMTs yields stronger explanations of various corporate decisions and outcomes than the customary focus on the individual top manager alone. Investigating whether the top management as a group has an impact on management voluntary disclosures provides insights into how TMTs generate and aggregate information to form guidance.

Research on TMTs often relies on the sociology theories of similarity attraction and social categorization to explain team effectiveness arising from social interactions among team members. This stream of theories advocates that individuals with similar attributes such as age, sex, and race are attracted to each other and tend to categorize themselves as the same social group, thereby leading to more effective and efficient processing of information. Following these theories, Ke et al. (2014) argue that personal connections among top executives that are established from either education (whether they attended the same school for college education) or work experience (whether they worked in the same firm) improve communication within the top management team, and document that the within-TMT social connections are associated with higher accuracy of

the voluntarily disclosed earnings. Thus, top executives as a team can influence management guidance above and beyond the effect of individual executives.

However, social interaction is only one aspect of the top management team processes. The information-processing and cognitive resource theory of TMTs posits that the availability of highly job-related technical knowledge and expertise is vital to the team effectiveness (e.g., Bell et al., 2010; Harrison & Klein, 2007). Researchers have long argued that TMTs with a wider range of knowledge and perspectives are better able to interpret, evaluate, predict, and react to environmental changes (Cannella et al., 2008; Carpenter, 2002). Moreover, prior literature documents that managers voluntarily issue earnings forecasts with greater accuracy as a signal to the market that they are able to identify the underlying economic changes (Baik et al., 2011; Trueman, 1986). Based on these theories, the functional background of team members serves as an important source of knowledge and expertise that influences the degree to which information is processed and shared, alternative perspectives are formed and evaluated, and various decisions are made at the team level.

Two Types of TMT Functional Diversity

Cross-functional teams are prevalent in complex organizations (Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt, 2007). Moreover, research on TMTs has repeatedly demonstrated the significance of functional experience to reveal differences in knowledge, expertise and perspectives of TMT members (C. Boone & Hendriks, 2009; Bunderson, 2003; Bunderson & Sutcliffe, 2002; Certo et al., 2006). Such differences provide important cognitive resources for TMTs to process complex and uncertain information (Donald C. Hambrick, 1995).

Based on prior literature, I use TMT functional background diversity to characterize the team-level differences in knowledge and expertise. Specifically, TMT functional background diversity is conceptualized in two different ways: between-member and within-member TMT functional diversity. The commonly used between-member TMT functional diversity measure, referred to as dominant functional diversity, is defined as the extent to which TMT members differ across the functional domains in which they spend the most time (e.g., C. Boone & Hendriks, 2009; Bunderson & Sutcliffe, 2002; Cannella et al., 2008). The within-member TMT functional diversity measure, referred to as intrapersonal functional diversity, is defined as the average breadth of the functional backgrounds of the individuals on a TMT (e.g., Bunderson & Sutcliffe, 2002; Cannella et al., 2008).

The conceptualization of between-member functional diversity relies on the assumption that each executive brings specific functional knowledge to a TMT because individual experience is typically focused on a particular functional area (Bunderson & Sutcliffe, 2002). This type of diversity reflects the extent to which the backgrounds among team members cover a wide range of functional areas. The extent to which the TMT members' dominant functions are evenly distributed across a range of functional categories is indicative of both the breadth and the balance of knowledge, perspectives, and capabilities that a TMT as a whole can bring to bear in decision-making (Bunderson & Sutcliffe, 2002; Cannella et al., 2008). In contrast, the conceptualization of within-member function diversity recognizes the fact that many executives obtain experiences outside their dominant functional career track. Specifically, TMT intrapersonal functional diversity measures the extent to which the TMT members are functional specialists or generalists, that is, whether the individuals have experiences in a limited or wide range of

functional domains. Section 3.2 details how the two types of TMT functional diversity are measured and provides examples of the calculation.

Hypothesis Development

Prior research documents a variety of benefits arising from TMTs with a high degree of dominant functional diversity. A TMT with higher dominant functional diversity can draw on a greater pool of knowledge and expertise. Therefore, diverse teams can generate a wider range of perspectives, which should lead to better evaluation of alternatives and thus more effective decision making (e.g., Bell et al., 2010; Bunderson & Sutcliffe, 2002; Cannella et al., 2008; Harrison & Klein, 2007). As a result, TMT dominant functional diversity enhances the overall team capacity to interpret, predict and react to the overload of unstructured and forward-looking information, thereby increasing the accuracy of management voluntary disclosure. Thus, my first hypothesis, stated in alternative form, is as follows:

H1: *Ceteris paribus*, TMT between-member functional diversity is positively associated with management forecast accuracy.

H1 predicts a positive effect of TMT between-member functional diversity on management forecast accuracy. However, prior literature on TMTs suggests that TMT between-member functional diversity may carry certain costs. The functional background differences among TMT members can create dysfunctional conflicts, provoke team fragmentation, and slow the decision-making process (Bunderson, 2003; Harrison & Klein, 2007). Thus, the impact of TMT functional diversity on management forecast accuracy is an empirical question.

Intrapersonal functional diversity may benefit TMTs in several ways. First, when individual executives face complex and ambiguous situations that require consideration

of tradeoffs between multiple and often incompatible objectives, they tend to focus on the aspects that reflect their specific experiences and knowledge (Donald C. Hambrick, 2007). Individuals with a breadth of functional backgrounds are likely more open-minded and less susceptible to functionally grounded stereotypes, thereby leading to fewer cognitive biases at the TMT level (Cannella et al., 2008; Raskas & Hambrick, 1992). As a result, TMTs with high intrapersonal function diversity tend to have more effective information sharing and integration (Bunderson & Sutcliffe, 2002). Second, a team of top executives characteristic of high intrapersonal functional diversity tend to have members with overlapping knowledge and perspectives since each individual has a broad background, thus facilitating mutual understanding (Bunderson & Sutcliffe, 2002). Third, generalist executives are more likely to possess sufficient and appropriate knowledge that make them better prepared to understand complex forward-looking information (Burke & Steensma, 1998). Overall, members of TMTs with high intrapersonal functional diversity are better able to share and integrate information, thereby leading to more accurate forecasts. Accordingly, my second hypothesis (in alternative form) is as follows:

H2: *Ceteris paribus,* TMT within-member functional diversity is positively associated with management forecast accuracy.

Admittedly, within-member functional diversity also has some drawbacks. The fact that executives possess a wide range of functional experiences and knowledge might also imply the absence of a deep understanding of any single functional area (Cannella et al., 2008). Moreover, generalist executives might discount the expertise of the other executives, refraining them from consulting their fellow members (Buyl, Boone, Hendriks, & Matthyssens, 2011; Daily & Johnson, 1997). To the extent that functional generalists are limited in their ability to fully understand the deep and specialized

knowledge of their fellow executives, the positive effect of within-member functional diversity on management forecast accuracy would be mitigated.

The foregoing discussion suggests that the TMT between-member and within-member functional diversities are positively associated with management forecast accuracy. In addition, I expect the strength of the relation to differ based on firm characteristics, such as information uncertainty and organizational complexity, and the functional expertise of the CEO and CFO.

It is more challenging for TMT members to interpret, exchange, and integrate forward-looking information in firms with greater uncertainty. If between-member functional diversity leads TMTs to issue more accurate forecasts by offering a greater pool of knowledge, this effect will become more positive as information uncertainty increases. Similarly, if TMTs with greater within-member functional diversity tend to issue more accurate forecasts, the effects of intrapersonal diversity on forecast accuracy are expected to be more positive for firms with greater information uncertainty.

Similarly, it is more difficult for executives to gather and integrate information for more complex firms. Because complex firms operate in multiple product markets and geographical areas, the executives tend to rely on each other to make sense of information dispersed in the segments and to integrate information related to various functional domains. I therefore expect the effects of between-member and within-member functional diversity on forecast accuracy to be stronger for more complex firms.

Based on the above discussion, I form the third hypothesis as follows:

H3a: *Ceteris paribus*, the relation between TMT between-member functional diversity and management forecast accuracy is stronger for firms with greater information uncertainty and more complex organizational structure.

H3b: *Ceteris paribus*, the relation between TMT within-member functional diversity and management forecast accuracy is stronger for firms with greater information uncertainty and more complex organizational structure.

Prior literature finds that CEOs and CFOs are the key players in setting management forecasts (Linda Smith Bamber et al., 2010; Brochet et al., 2011; Hui & Matsunaga, 2014). As the CEO holds the leading position in a TMT and the CFO is the highest ranked officer directly in charge of a firm's disclosure policy, the CEO and CFO likely play a unique and decisive role in management forecasts. I therefore consider whether the association between TMT functional diversity and management disclosure varies with the characteristics of the CEO and CFO. As leaders of the management forecast process, CEOs or CFOs are ultimately responsible for integrating the exchanged information. As such, their ability to bridge diverse knowledge and perspectives are crucial to fulfill their job responsibilities. The presence of a generalist TMT leader causes the other team members' functional knowledge somewhat redundant since the breath of CEO or CFO functional background might substitute for the TMT functional diversity (Buyl et al., 2011). The relation between TMT diversity and forecast accuracy should become less positive with a functionally diverse CEO or CFO. Thus, my last hypothesis (in alternative form) is as follows:

H4a: *Ceteris paribus*, the relation between TMT between-member functional diversity and management forecast accuracy is weaker for firms that are led by CEO or CFO with greater functional diversity.

H4b: *Ceteris paribus*, the relation between TMT within-member functional diversity and management forecast accuracy is weaker for firms that are led by CEO or CFO with greater functional diversity.

It is possible that generalist CEOs or CFOs have more common functional experiences with the other TMT members, thus reducing the semantic gap and facilitating shared understandings (Chattopadhyay, Glick, Miller, & Huber, 1999). In this case, the positive relation between TMT functional diversity and management forecast accuracy can be strengthened. Thus, the overall impact of a generalist CEO or CFO on the relation between functional diversity and management forecast accuracy is an empirical question.

CHAPTER III

SAMPLE AND RESEARCH DESIGN

Sample

In this study, I focus on the CEO, CFO, and other executives who are among the top five compensated executives because they are the group of managers that are most likely to possess the financial information dispersed within the firm (Li et al., 2014). Panel A of Table 1 (See Appendix D for all tables) describes the sample selection process. I begin with a sample of firms included in the BoardEx database of Management Diagnostics Ltd that have compensation data available on Execucomp from 2001 through 2012.[1] My sample period begins in 2001, after the implementation of Regulation Fair Disclosure (Reg FD). I identify the CEO and CFO by their annual titles and other top executives by the total compensation available on ExecuComp.[2] I obtain the complete work experience of the company executives from BoardEx in order to identify their functional backgrounds. I then merge the entire sample with Compustat, CRSP, First Call, I/B/E/S, and Thomson Reuters 13F form to obtain the data on the variables required for the analyses. After deleting firm-years with missing data required for the empirical tests, the final sample consists of 4,473 firm-year observations of the S&P 1500 firms. Panel B of Table 1 provides a breakdown of the sample firms by fiscal year. The percentage of

[1] The BoardEx database of Management Diagnostics Ltd reports the historical profile of each top manager and director since 2000. It collects and compiles biographical information on individual executives and directors of U.S. firms from various resources including SEC filings, U.S. stock, company websites and press releases, and other reliable press sources, such as the *Financial Times* and *Wall Street Journal*.

[2] BoardEx started collecting data in 2003. As a result, firms that were delisted by 2003, but were part of the S&P 1500 index between 2001 and 2003, are not included in the BoardEx universe and thus not in my sample.

firm-years increases from 4% in 2001 to above 8% in 2005 mainly due to the increased coverage by BoardEx. Panel C of Table 1 presents the industry distribution of the sample based on the two-digit SIC classification. Not surprisingly, manufacturing firms account for the majority (42.57%) of the sample.

Measures of TMT Functional Diversity

Following prior literature, I use the Blau index to measure TMT dominant and intrapersonal functional diversity (Bunderson & Sutcliffe, 2002; Cannella et al., 2008; Harrison & Klein, 2007).[3,4] I first obtain each executive's complete work experience from BoardEx and then identify how long an executive has worked in each of the following eight functional domains: accounting and finance; marketing and sales; management; production and operations; R&D and engineering; law; personnel and labor relations; and other (Cannella et al., 2008). In order to measure TMT dominant functional diversity (*Dominant FD*), I identify the functional track an executive has spent the most time in, and then use Blau index to capture the distribution of functional expertise among TMT members (Cannella et al., 2008; Carpenter & Fredrickson, 2001). Specifically, this index is calculated as $1-\Sigma P_i^2$, where P_i is the proportion of a TMT in the *i*th functional area. The

[3] Blau index is widely used by management literature in calculating various kinds of diversity at the TMT level. It has the same arithmetic formula (i.e. $1-\Sigma S_i^2$) as the Herfindal-Hirschman index commonly seen in accounting, finance, and economics literature.

[4] In addition to the Blau index, functional diversity can also be measured by the Teachman (entropy) index (Harrison & Klein, 2007). The Blau index and Teachman index are highly positively correlated (coefficient=0.90 for dominant and 0.86 for intrapersonal functional diversity, respectively). The results are qualitatively similar using the Teachman index instead.

index ranges between zero and one, with values close to one indicative of higher diversity and values close to zero indicative of a TMT dominated by a single functional expertise.

Appendix A illustrates construction of the TMT dominant functional diversity for American Eagle Outfitters (AEO), Hewlett-Packard (HP), and J.C. Penney (JCP). In 2012, HP's TMT was composed of five executives, three with dominant functional background in general management, one in accounting, and one in R&D, leading to a dominant functional diversity score of 0.56. In comparison, only two of the five AEO executives had the same dominant functional background (i.e., sales), and each of the other three executives had a distinct functional experience (i.e., management, accounting, and HR), generating a higher score of 0.72. As discussed above, the maximum dominant diversity is achieved when each of the TMT members has a distinct primary functional domain as shown by JCP in 2011. It should be noted that TMT dominant diversity is different from the total number of dominant functions a team possesses. Suppose that HP's Executive VP, David A. Donatelli, had a dominant functional experience in R&D rather than management. Although the sum of dominant functions remains the same, the diversity would increase to 0.64 (>0.56) because the actual TMT members' dominant functions are highly concentrated on management, with three executives in management and only one in accounting and one in R&D. The hypothetical team is viewed as more diverse than the actual because the former is more balanced in the overall distribution of knowledge than the latter.

To measure within-member functional background diversity, I follow the approach used by Cannella et al. (2008), and measure intrapersonal functional diversity (*Intrapersonal FD*) as the score $(1-\Sigma P_{ij}^2)$, where P_{ij}, the proportion of executive *i*'s time spent in function *j*, is calculated for each TMT member and then the scores are averaged

across the team members. An individual is regarded as having a greater intrapersonal functional diversity if the individual has experiences in multiple functional areas and if the time s/he spent in each functional area is more evenly distributed. The measure also varies between zero and one, with zero the lowest intrapersonal functional diversity and one the highest intrapersonal functional diversity.[5] Compared to AEO, HP's TMT members, on average, possess a broader range of functional experiences. As a result, the TMT intrapersonal functional diversity is higher for HP (0.35) than for AEO (0.26). As discussed above, between-member and within-member functional diversity are two distinct concepts. An extreme case, as shown by J.C. Penney, could be that each TMT member has experience in only one, but different, functional area, thus having the maximum TMT dominant functional diversity while minimum intrapersonal functional diversity because each member is a functional specialist.

Empirical Models for Main Analyses – H1 and H2

In order to test the main hypotheses H1a and H1b, I estimate the following regression:

$$MF\ Accuracy = \alpha_0 + \alpha_1\ Dominant\ FD + \alpha_2\ Intrapersonal\ FD + \Sigma\alpha_\kappa\ Controls_\kappa + \alpha_{\kappa+1}\ IMR + \Sigma Industry\ FE + \Sigma Year\ FE + \mathcal{E} \quad (1)$$

The dependent variable is management forecast accuracy (*MF Accuracy*), measured as the negative of the absolute difference between annual management forecast and actual earnings, scaled by the stock price at the beginning of the fiscal year (e. g., Baik et al., 2011; Linda Smith Bamber et al., 2010). *MF Accuracy* is calculated based on

[5] It is reasonable to assume that an individual manager has sufficient exposure to a certain functional area regardless the length of her/is experience in that area (Cannella et al., 2008). Thus, I calculate intrapersonal functional diversity by assuming that executives spent the same time in each of the functional domains they have worked with and similar results are obtained using this alternative measure for the hypothesis tests.

the point and range forecasts, and for the range estimates, the midpoint is counted as the management estimation. If a firm issued multiple forecasts for a year, I retain the latest forecast in my sample in order to avoid the problem caused by the inter-dependence of the same-year forecasts.[6] The two types of TMT functional diversity, TMT dominant functional background diversity (*Dominant FD*) and intrapersonal functional background diversity (*Intrapersonal FD*) are the independent variables of interest. These functional diversity variables are measured at the beginning of the year so as to alleviate the potential endogeneity between TMT functional diversity and management forecast accuracy. *Firm Controls* are contemporaneous firm-level control variables. *Industry FE* and *Year FE* are industry and year-fixed effects, respectively. Appendix B presents the detailed variable definitions. All continuous variables are winsorized at the 1% and 99% levels in order to mitigate the influence of extreme values. Because the sample consists of panel data, I use two-way (firm and year) cluster-robust standard errors to correct for cross-sectional and time-series dependence in the data (Gow, Ormazabal, & Taylor, 2010; Peterson, 2011).

I control for the percentage of executives in the TMT who have functional experience in accounting and/or finance (*Accounting*) and in law (*Legal*) because Matsunaga et al. (2014) find that CEOs with accounting or finance backgrounds are able to predict earnings more accurately and Kwak et al. (2012) report that TMTs with a GC tend to issue more accurate forecasts. Including these control variables for team functional background mitigates the concern that my proxies for TMT functional

[6] In alternative tests, management forecast accuracy is calculated based on the earliest management forecast or the average of all forecasts if multiple forecasts were issued for the same year. The test results remain similar to those presented in this paper.

diversity merely capture the effect of the presence of accounting/financial and legal experts on the top management whose functional knowledge and experience seem to be more directly related to the task of management forecasts.

Drawing on prior research, I control for a series of firm-specific characteristics that are found to be associated with management forecast accuracy. Controlling for these variables also helps to address the omitted correlated variable concern arising from the potential endogeneity of TMT functional diversity. I first control for firm size (*Ln(MV)*), measured as the natural logarithm of the market value of a firm's common equity at the beginning of the fiscal year (Ajinkya et al., 2005). While larger firms tend to issue more accurate forecasts because they bear lower disclosure costs and face higher legal costs of issuing less accurate forecasts (Lang & Lundholm, 1993), they are also more complex. The ratio of market value to book value of common equity (*Market to Book*) is included to control for proprietary costs and information asymmetry (L. S. Bamber & Cheon, 1998). Prior research has documented that firms tend to issue less accurate forecasts when there is greater risk and earnings are more uncertain (Ajinkya et al., 2005; Baginski & Hassell, 1997; Linda Smith Bamber et al., 2010; Kross, Ro, & Suk, 2011). I include stock return volatility (*StdRet*), earnings volatility (*StdEPS*), and analyst forecast dispersion (*Dispersion*) to control for the underlying uncertainty. Complexity (*Segments*) is included to control for the difficulty in projecting the performance of complex firms (Feng et al., 2009). I also control for the demand for information (*Ln(Analyst)*), the incentive to disclose information (*Litigation*), and operation performance (*Loss* and *ChgROA*). Following studies by Ajinkya et al. (2005) and Karamanou and Vafeas (2005), I include board independence (*Independence*) and institutional ownership (*Institution*) to control for corporate governance quality. In addition, surprise (*MF Surprise*) conveyed

by the forecast and horizon (*Horizon*) of the forecast are included in the model (Ajinkya et al., 2005).

My dependent variable is forecast accuracy and the regression is estimated on a subsample of firms that issue management forecasts. As a result, the sample can be systematically biased because forecast accuracy can be observed only for TMTs who make the decision to issue forecasts. Therefore, I use the Heckman two-stage approach whereby I first model the forecast issuance decision and then use the inverse Mill's ratio (*IMR*) to control for the self-selection bias (Lennox, Francis, & Wang, 2012). In the first-stage, I estimate a *Probit* regression of a dummy variable indicating whether firms issued a forecast on all the control variables as defined in model (1) except *MF Surprise* and *Horizon* which are specific to issuance firms. To successfully control for endogeneity, an additional explanatory variable, which is valid to be excluded from model (1) but is an important determinant of forecast issuance, should be included in the selection model (Larcker & Rusticus, 2010; Lennox et al., 2012). Prior studies have documented that firms that have issued forecasts in the past are more likely to issue a forecast in the current fiscal period (Kasznik & Lev, 1995; Lee, Matsunaga, & Park, 2012). However, the existence of a prior disclosure is not expected to affect the forecast accuracy of current period and there is no such evidence in the literature. Thus, I include the percentage of management forecast occurrence in the past five years (*Prior MF*) as such an exclusion variable in the *Probit* model. The regression results for the first stage are presented in Appendix C.

Empirical Models for Cross-Sectional Analyses – H3 and H4

Hypotheses 3 and 4 examine cross-sectional differences in the relation between TMT between- and within-member functional diversity and management forecast

features based on the firm and TMT-leader characteristics. To test these hypotheses, I estimate the following model:

$$\begin{aligned} MF\ Accuracy = {} & \alpha_0 + \alpha_1 Dominant\ FD + \alpha_2 Dominant\ FD \times Conditional\ Factor + \\ & \alpha_3 Intrapersonal\ FD + \alpha_4 Intrapersonal\ FD \times Conditional\ Factor + \\ & \alpha_5 Conditional\ Factor + \Sigma \alpha_\kappa Controls_\kappa + \alpha_{\kappa+1} IMR + \Sigma Industry\ FE + \\ & \Sigma Year\ FE + \mathcal{E} \end{aligned} \quad (2)$$

The *Conditional Factor* is a conditioning variable that moderates the association between TMT functional diversity and management forecasts, including information uncertainty and organizational complexity (H3a and H3b), and CEO/CFO functional expertise generalism (H4a and H4b). Specifically, *Conditional Factor* is an indicator variable defined as one if the value is above the median of the corresponding characteristics and zero if equal to or below the median. The variable of interest is the interaction term of either *Dominant FD* or *Intrapersonal FD* with *Conditional Factor*, which captures the incremental effects of having a *Conditional Factor* above the median. All other variables are defined as above. As discussed in section 3.3, I include inverse mills ratio (*IMR*) to control for the potential sample selection bias.

Descriptive Statistics

Panel A of Table 2 reports descriptive statistics on the regression variables. The statistics for *Dominant FD* and *Intrapersonal FD* indicate that, by construction, the two measures have values distributed between 0 and 1. As the sample is constructed from the S&P 1500 index, the firms are significantly larger (mean *Ln(MV)* of 7.917), more mature (mean *market to book* of 2.950), more complex (mean *Segments* of 5.458), have better performance (mean *Loss* of 0.072), and better governance (mean *Institution* of 0.780 and mean Independence of 0.792) as compared to the firms covered in the Compustat universe over the same time period (results untabulated). Moreover, both *Dominant FD*

and *Intrapersonal FD* are higher for the TMTs of sample firms than for those of the Compustat firms.

Panel B of Table 2 reports the Pearson correlation table of the key variables. TMT between-member functional diversity is significantly positively correlated with management forecast accuracy (coefficient=0.02). TMT within-member functional diversity is also positively, albeit insignificantly, correlated with forecast accuracy (coefficient=0.01). These correlations suggest that both types of TMT functional diversity might lead managers to issuing more accurate forecasts. It is notable that while TMT intrapersonal and dominant functional diversity are positively correlated, the coefficient (0.05) is relatively low, suggesting that within-member diversity and between-member diversity capture different aspects of TMT composition.

CHAPTER IV

EMPIRICAL RESULTS

Tests of H1 and H2 – Main Analyses

Table 3 reports the OLS test results of H1 and H2 using the aforementioned regression model (1). The coefficient on TMT dominant functional diversity is significantly positive (0.011, *t-statistic*=2.74), suggesting that on average cross-member function diversity enhances management forecast accuracy. The coefficient on TMT intrapersonal functional diversity is also significantly positive (0.011, *t-statistic*=2.42), suggesting a positive association between within-member functional diversity and the accuracy of management issued forecasts. On average, one standard deviation increase in TMT dominant (intrapersonal) functional diversity is associated with an increase in management forecast accuracy by 6.2% (5.4%) of the mean accuracy.

The results for the control variables are generally consistent with prior literature (Ajinkya et al., 2005; Karamanou & Vafeas, 2005). I find that firm size is negatively, and market to book is positively, associated with management forecast accuracy. As expected, the coefficients on stock volatility, analyst forecast dispersion, earnings volatility, segments, loss, absolute change in ROA, management forecast surprise, and forecast horizon are significantly negative.

Overall, the results reported in Table 3 are consistent with H1 and H2 which predicts that between-member and within-member functional diversities are positively associated with the accuracy of management forecast.

Tests of H3a and H3b – the Conditioning Effects of Firm Characteristics

To test H3a and H3b, I examine whether the relationship between the TMT functional diversity and management forecast accuracy is stronger in firms with greater uncertainty and complexity. I estimate model (2) to conduct this set of tests in which the *Conditional Factor* is set equal to one if the proxy for uncertainty or complexity is above the sample median and zero otherwise. The interaction terms in the model indicate whether the strength of the association between TMT functional diversity and management forecast accuracy is different for firms with higher *Conditional Factor*. The regression results are presented in Panel A and B of Table 4.

The first set of results uses uncertainty in earnings as the conditional factor. The proxies for uncertainty include *StdRet*, *Dispersion*, and *StdEPS*, and the OLS regression results are presented in Panel A. The coefficients on the interaction of TMT dominant and intrapersonal functional diversity with each proxy for uncertainty are significantly positive. In addition, it is noted that the coefficients on *Dominant FD* and *Intrapersonal FD* are no longer significant in these analyses, suggesting that none of the TMT functional diversities affects management forecast accuracy for firms with lower uncertainty in earnings. Overall, the results in Panel A of Table 4 are consistent with the impact of both between-member and within-member functional diversity being stronger in firms with greater uncertainty in earnings where TMTs are more likely to benefit from the availability of a large pool of perspectives and effective communication.

The second firm characteristic examined is business complexity. Specifically, I examine whether the relationship between the TMT functional diversity and management forecast accuracy is stronger in firms with more business segments. The *Conditional Factor* is set equal to one if the number of business segments is above the sample median

and zero otherwise. The interaction term in the model captures whether the strength of the association between TMT function diversity and management forecast accuracy is different for firms with above- or below-the-average complexity. I present the regression results in Panel B of Table 4. I find that the positive effect of TMT dominant and intrapersonal functional diversity on the forecast accuracy is significantly stronger in firms with more diverse geographical and business operations (*t-statistic*=2.69 and 2.02, respectively). However, the coefficients on *Dominant FD* and *Intrapersonal FD* are insignificant in Panel B, indicating that TMT functional diversity does not influence forecast accuracy for firms with less complex organizational structure. Overall, the results in Panel B support the prediction that the impact of each type of functional diversity is stronger in more complex firms where a broader set of knowledge and perspectives leads to more information incorporated in the forecast process.

Tests of H4a and H4b – the Conditioning Effects of TMT Leader Characteristics

To test H4a and H4b, I examine whether the relationship between the TMT functional diversity and management forecast accuracy varies with the characteristics of the executive leading the management forecast process. Specifically, I investigate whether the importance of TMT diversity differs with the breadth of the CEO or CFO's functional background because the CEO or CFO is ultimately responsible for integrating the unstructured information gathered from all other TMT members. Current literature has documented that CEO and CFO both are key players in management forecast activities (Linda Smith Bamber et al., 2010; Brochet et al., 2011). There is also evidence that firms tie CEO and CFO compensation to the accuracy of the management disclosure accuracy (Hui & Matsunaga, 2014). I estimate model (2) by constructing two *Conditional Factors, CEO and CFO generalism*, which is set equal to one when a CEO or CFO has

experience in more functional domains than the sample median and zero otherwise. The interaction term in the model then captures whether the strength of the association between TMT functional diversity and management forecast accuracy is different for CEOs or CFOs with broad work experiences and those with narrow functional background.

Table 5 presents the OLS regression results. The coefficients on the interaction of dominant functional diversity and CEO functional diversity are -0.006 (*t-statistic*=-1.94). This result supports the conclusion that TMT between-member functional diversity enhances management forecast accuracy less when the team is led by a generalist CEO. This finding suggests that CEO functional diversity and between-member functional diversity are substitutes and that the other TMT members' functional knowledge becomes less important due to the presence of a generalist CEO, thereby reducing the ability for the team as a whole to reap the benefits of diverse functional knowledge. [7]

For this set of tests, intrapersonal functional diversity is measured for team members other than the CEO since CEO functional diversity is a separate variable already included in the regression. The correlation between CEO functional diversity and TMT intrapersonal (excluding CEO) functional diversity is 0.154 (results untabulated, *p-value*=0.00), suggesting that a generalist CEO is more likely to attract and recruit other top executives who are also functional generalists. The coefficients on the interaction of intrapersonal function diversity and CEO functional diversity are -0.012 (*t-statistic*=-2.09). Thus, TMT within-member functional diversity seems to enhance management

[7] It is interesting to note that the correlation between CEO functional diversity and TMT (excluding CEO) dominant functional diversity is 0.075 (results untabulated, *p-value*=0.00), suggesting that a TMT led by a generalist CEO is more likely to have other team members who collectively have a broad range of dominant functional experiences.

forecast accuracy less if the team is headed by a generalist CEO than a specialist CEO. The results suggest that a TMT would benefit from having a specialist CEO when the other team members are generalists.

Table 5 also reports the results for CFO functional diversity.[8] The significantly negative coefficients on the interaction term of TMT functional diversity and CFO functional diversity suggest that CFO functional diversity also substitutes for TMT between-member diversity. When a generalist CFO is responsible for the forecast task, the TMT benefits less from being more functionally diverse. Similarly, the association between TMT intrapersonal functional diversity and forecast accuracy is also weaker in the presence of a generalist CFO. Overall, the results in Table 5 support that generalist CFOs with their wide range of functional experiences can substitute for high TMT functional diversity.

[8] The correlation between CFO functional diversity and intrapersonal functional diversity of the rest of the TMT is 0.129 (results untabulated, *p-value*=0.00), suggesting that a generalist CFO is more likely to join a TMT where other top executives are also functional generalists. In contrast, the correlation between CFO functional diversity and TMT (excluding CFO) dominant functional diversity is insignificant (results untabulated, *coef.*=-0.019 and *p-value*=0.20), indicating that CFO functional diversity is not associated with dominant functional diversity of the rest of the TMT.

CHAPTER V

ADDITIONAL ANALYSES AND SENSITIVITY CHECKS

Instrumental Variable Approach

It is possible that TMT functional diversity is endogenously determined by the firm, and the same set of factors may jointly affect both TMT functional diversity and management forecast accuracy. In other words, firms with higher TMT functional diversity may provide more accurate management forecasts even absent the effects of this diversity in top management. To address this issue, I employ the instrumental variable approach using a two-stage model in addition to the OLS regression. There are two endogenous variables in model (1), *dominant FD* and *intrapersonal FD*. The key is to identify proper instrumental variables that satisfy the exclusion and relevance conditions (Kennedy, 2008; Larcker & Rusticus, 2010).

The first set of instruments is motivated by the attraction-selection-attrition (i.e., ASA) theory which posits that certain types of firms attract, select and retain certain types of individuals (e.g., Christophe Boone, Van Olffen, Van Witteloostuijn, & Brabander, 2004; Nielsen, 2009). Firms with higher diversity in either dominant or intrapersonal functional background are likely to emphasize the presence of diverse knowledge and perspectives on the top management. As such, when recruiting new executives, TMTs with higher dominant or intrapersonal functional diversity are more likely to hire individuals who have experience in multiple functional tracks or have distinct functional backgrounds from the existing members so as to maintain the high diversity of functional knowledge in TMTs. The predecessor TMT, from which at least one member is replaced by a new person, is different from the successor TMT because they are composed of different individuals. Thus, there is no reason to expect functional

diversity of the predecessor TMT to affect the management forecast accuracy for the current year. Therefore, I use the predecessor TMT's dominant (*Prior Dominant FD*) and intrapersonal (*Prior Intrapersonal FD*) functional diversity as an instrumental variable for *Dominant FD* and *Intrapersonal FD*, respectively.

The next instrument is firm performance just prior to the formation of the current TMT (*Prior ROE*). Prior studies have documented that firms are urged to change when performance is poor, which triggers hiring more dissimilar managers so as to broaden the pool of skills, knowledge and abilities to fulfill the change (e.g., Christophe Boone et al., 2004). Therefore, I expect firms with lower *Prior ROE* to change their *dominant FD* and *intrapersonal FD* because both types of diversity can help initiate and implement changes by providing necessary knowledge. However, there is little reason to expect prior firm performance, generated by the predecessor management team, to be directly related to current period management forecast activities.

Table 6 reports the 2SLS test results of H1 and H2 using the aforementioned regression model (1). Column (1) and (2) of Table 6 report the first-stage regressions for dominant and intrapersonal functional diversity, respectively. All three instruments are significant in explaining dominant functional diversity (column (1)) and with expected signs. *Prior Intrapersonal FD* and *Prior ROE* are significant in the first-stage regression for intrapersonal functional diversity (column (2)), and the third instrument (*Prior Dominant FD*) has the expected sign, although it is not significant. Specifically, firms are more likely to form a new TMT with high functional diversity when prior firm performance is low and when prior TMT functional diversity is high. Diagnostic tests provide further evidence that the equations are well-specified. The Angrist-Pischke *F*-Statistic for weak identification is 413.10 (p-value<0.001) and 1663.38 (p-value<0.001)

for the first-stage regression on *Dominant FD* and *Intrapersonal FD*, respectively, meaning that the model is adequately identified by the instruments. The Hansen *J*-statistic (*p*-value=0.27) is not significant at the conventional level, indicating that the null hypothesis that the instruments are uncorrelated with the errors in the second-stage regression cannot be rejected and thus the instruments are correctly excluded from the second-stage regression. Column (3) of Table 6 reports the second stage regression results. I find that the coefficients on predicted TMT dominant and intrapersonal functional diversity are significantly positive (t-stat=1.75 and 2.02, respectively). The results indicate that the main findings hold after controlling for potential endogeneity concern.

The 2SLS methodology is also used to address the concern of TMT functional diversity being endogenously determined in the cross-sectional analyses. There are four endogenous variables in model (2), *Dominant FD*, *Intrapersonal FD*, *Dominant FD* × *Conditional Factor*, and *Intrapersonal FD* × *Conditional Factor*, resulting in four first-stage regressions, one for each endogenous variable. In each of these first-stage regressions, I include the three instruments discussed in section 3.3 (i.e., *Prior ROE*, *Prior Dominant FD*, and *Prior Intrapersonal FD*) and the interaction of each of the three instruments with the corresponding *Conditional Factor* (Field, Lowry, & Mkrtchyan, 2013; Wooldridge, 2010 pp. 267-268). The regression results are shown in Table 7.

Panel A of Table 7 shows the set of 2SLS regressions where uncertainty in earnings and firm complexity are the conditional factors. Panel B reports the results concerning CEO and CFO generalism. The diagnostic tests of the 2SLS model suggest that the instruments satisfy the relevance and exclusion requirements for valid IVs. The coefficients on the interaction of TMT dominant and intrapersonal functional diversity

with conditional factors are statistically significant in the expected direction. Overall, the results in Panel A and B of Table 7 suggest that the cross-sectional analyses remain valid after addressing the potential endogeneity problem.

Complements *versus* Substitutes of the Two Types of TMT Functional Diversity

In the main analyses, I find that both dominant functional diversity and intrapersonal functional diversity are associated with greater management forecast accuracy. As discussed above, they represent two distinct types of TMT diversity. If a TMT is composed of executives each having a different, primary functional domain and also possessing a breadth of other functional knowledge, the team will have a large pool of knowledge available for problem solving and better communication among members thanks to the overlap of their knowledge. However, it may not be necessary for a team to be high in both types of TMT functional diversity because high diversity in either one can provide a scope of knowledge and perspectives to the team a whole. As a result, it is not clear, *ex ante*, whether the two are substitutes or complements to each other. To explore this question, I estimate model (1) after including an interaction between dominant and intrapersonal functional diversity. Table 8 reports the regression results. The coefficients on the interaction term are significantly negative, suggesting that the two types of TMT functional diversity are substitutes, rather than complements.

Robustness Checks

Prior research indicates that the GC plays an important monitoring role in management voluntary disclosure, but unlike the CEO or CFO, GC is not always among the top five executives (Kwak et al., 2012). To mitigate the concern that the prior results are driven by the inclusion of GC, I exclude the observations (1,472 firm-years) for which GC is one of the top five and rerun the regressions in table 3 and 4. The unreported

results are similar to those reported in the paper, suggesting that the documented results are robust to the inclusion of GC in TMT.

CHAPTER VI

CONCLUSION

In this study I investigate whether the TMT functional background composition affects the team effectiveness in the context of management voluntary information disclosure. I examine the impact of two distinct types of TMT functional diversity, namely cross-member and within-member diversity, on the management forecast accuracy. I find that both types of functional diversity are associated with more accurate management disclosure. I also find that both the overall breadth of dominant functional expertise distributed across TMT members and the average within-member breadth of functional experience are more important for firms with more uncertainty and greater organizational complexity and for firms that are led by a CEO or CFO who is a narrow functional specialist. Together, these results suggest that TMT functional diversity plays an important role in management disclosure. Overall, this study provides further insights into the human element as determinants of corporate disclosures by documenting how information is shared and integrated by the top management team via their functional knowledge and expertise.

APPENDIX A

EXAMPLES OF DOMINANT AND INTRAPERSONAL FUNCTIONAL DIVERSITY

TMT Member Name	Current Title	Functional Experience
American Eagle Outfitters, Inc. (ended 1/28/2012)		
James V. O'Donnell	Chief Executive Officer	- 26 years in management; - 6 years in production and operations; - 3 years in accounting and finance; - 3 years in other.
Joan Holstein Hilson	Chief Financial Officer	- 24 years in accounting and finance; - 9 years in management.
Roger S. Markfield	Chief Design Officer	- 32 years in sales and marketing; - 9 years in management; - 2 years in R&D and engineering.
Fredrick W. Grover	Executive Vice President – brand merchandising, marketing & AE direct	- 22 years in sales and marketing.
Thomas A. DiDonato	Executive Vice President – human resources	- 29 years in personnel and labor relations.
Dominant FD: Blau index = $1 - \sum_{k=1}^{c} P_k^2 = 1-[(1/5)^2+(1/5)^2+(2/5)^2+(1/5)^2] = 0.72$		
Intrapersonal FD: Blau index = $\sum_{i=1}^{n}(1 - \sum_{k=1}^{c} P_{ik}^2)/n$ = (1-[(26/38)^2+(6/38)^2+(3/38)^2+(3/38)^2]+1-[(24/33)^2+(9/33)^2]+1-[(32/43)^2+(9/43)^2+(2/43)^2] +1-(22/22)^2 +1-(29/29)^2) / 5 = 0.26		
Hewlett-Packard (HP) Co (ended 10/31/2012)		
Margaret C. Whitman	Chief Executive Officer	- 28 years in management; - 5 years in marketing and sales.
Catherine A. Lesjak	Chief Financial Officer	- 13 years in accounting and finance; - 1 year in marketing and sales.
David A. Donatelli	Executive Vice President	- 12 years in management; - 10 years in production and operations; - 3 years in R&D and engineering; - 2 years in marketing and sales.

Giovanni J. Visentin	Executive Vice President	- 23 years in management; - 4 years in R&D and engineering; - 1 year in marketing and sales.
John M. Hinshaw	Executive Vice President	- 15 years in R&D and engineering; - 4 years in management; - 1 year in production and operations.

Dominant FD: Blau index = $1 - \sum_{k=1}^{c} P_k^2 = 1\text{-}[(3/5)^2+(1/5)^2+(1/5)^2] = 0.56$

Intrapersonal FD: Blau index = $\sum_{i=1}^{n}(1 - \sum_{k=1}^{c} P_{ik}^2)/n = (1\text{-}[(28/33)^2+(5/33)^2] +1\text{-}[(13/14)^2+(1/14)^2] + 1\text{-}[(12/27)^2+(10/27)^2+(3/27)^2+(2/27)^2] + 1\text{-}[(23/28)^2+(4/28)^2+(1/28)^2] + 1\text{-}[(15/20)^2+(4/20)^2+(1/20)^2]) / 5 = 0.35$

J.C. Penney Co (ended 01/31/2011)

Myron E. Ullman, III	Chief Executive Officer	- 31 years in management
Robert B. Cavanaugh	Chief Financial Officer	- 16 years in accounting and finance
Michael T. Theilmann	Group Executive Vice President	- 18 years in personnel and labor relations
Thomas M. Nealon	Group Executive Vice President	- 28 years in R&D and engineering
Janet Dhilon	General Counsel	- 20 years in law

Dominant FD: Blau index = $1 - \sum_{k=1}^{c} P_k^2 = 1\text{-}[(1/5)^2+(1/5)^2+(1/5)^2+(1/5)^2+(1/5)^2] = 0.80$

Intrapersonal FD: Blau index = $\sum_{i=1}^{n}(1 - \sum_{k=1}^{c} P_{ik}^2)/n = (1\text{-}(31/31)^2 + 1\text{-}(16/16)^2 + 1\text{-}(18/18)^2 + 1\text{-}(28/28)^2 + 1\text{-}(20/20)^2) / 5 = 0$

This appendix illustrates the calculation of dominant and intrapersonal functional diversity using three firms from my sample. For each firm, I present the TMT member's name, current title, and his/er functional experience up to the beginning of current year, followed by the calculation of the two types of diversity based on the functional background information.

APPENDIX B

VARIABLE DEFINITIONS

Variable	Definition	Source
Dominant FD	Blau index = $1 - \sum_{k=1}^{c} P_k^2$, P_k is the proportion of a TMT in the *k*th category of dominant functional track, *c* is the total number of functional areas under study.	BoardEx
Intrapersonal FD	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*, n is the total number of TMT members.	BoardEx
Prior Dominant FD	*Dominant FD* of the predecessor TMT, where at least one member is replaced by a new executive in the current TMT.	BoardEx
Prior Intrapersonal FD	*Intrapersonal FD* of the predecessor TMT, where at least one member is replaced by a new executive in the current TMT.	BoardEx
CEO generalism	Equal to 1 if the number of functional domains that a CEO has experience in is more than the sample median of the number of functional areas a CEO has, and zero otherwise.	BoardEx
CFO generalism	Equal to 1 if the number of functional domains that a CFO has experience in is more than the sample median of the number of functional areas a CFO has, and zero otherwise.	BoardEx
Accounting	The percentage of TMT members who have functional experience in Accounting or Finance.	BoardEx
Legal	The percentage of TMT members who have functional experience in Law.	BoardEx
MF Accuracy	The negative of the absolute error in the management forecasts that firm *i* issued in year *t* (i.e., –|forecast–actual|, adjusted for stock splitting). Specifically, I use the difference between the management forecast (using point forecasts and the midpoint of the range forecasts) and actual EPS, scaled by beginning stock price.	First Call, I/B/E/S
MF Surprise	The absolute difference between management forecast and the most recent consensus analyst forecast of EPS, deflated by the stock price at the beginning of the fiscal year.	First Call, I/B/E/S
Horizon	The number of days between the management forecast date and the end of the fiscal period of the forecasted earnings number.	First Call, I/B/E/S
Prior MF	The percentage of management forecast occurrence in the past five years.	First Call,

		I/B/E/S
StdRet	Standard deviation of daily stock returns for firm *i* over year *t*.	CRSP
StdRet(0,1)	Equal to one if *StdRet* is above the sample median, and zero otherwise.	CRSP
Dispersion	The standard deviation of analyst forecasts deflated by the absolute value of the median consensus forecast.	I/B/E/S
Dispersion(0,1)	Equal to one if *Dispersion* is above the sample median, and zero otherwise.	I/B/E/S
StdEPS	Standard deviation of firm *i*'s earnings per share over prior five years, deflated by stock price at the end of year *t-1*.	Compustat
StdEPS(0,1)	Equal to one if *StdEPS* is above the sample median, and zero otherwise.	Compustat
Ln(Segments)	Natural logarithm of geographical and business segments.	Compustat Segment
Segments(0,1)	Equal to one if *Segments* is above the sample median, and zero otherwise.	Compustat Segment
Ln(MV)	Natural logarithm of market value of equity ($ millions).	Compustat
Market to Book	The ratio of market value of equity over book value of equity.	Compustat
Loss	Indicator variable that equals 1 if firm *i* reports a loss in year *t*, and 0 otherwise.	Compustat
ChgROA	Absolute value of the change in firm *i*'s ROA from year *t-1* to *t*.	Compustat
Litigation	Coded as 1 if the firm *i* is a member of one of the following high-litigation-risk industries: SIC codes 2833-2836 (biotechnology), 3570-3577 and 7370-7374 (computers), 3600-3674 (electronics), 5200-5961 (retailing), and 8731-8734 (R&D service), and zero otherwise.	Compustat
Ln(Analyst)	Log of the number of analysts providing earnings forecasts for firm *i* in year *t*.	I/B/E/S
Institution	Percentage of firm *i*'s common stock held by institutions in year *t*, from Thomson Financial.	Thomson 13F
Independence	Percentage of independent members of firm *i*'s board of directors during year *t*.	BoardEx
Prior ROE	The rate of return on stockholders' equity just prior to the formation of the current TMT.	Compustat

IMR	The Inverse Mill's Ratio obtained from the *Probit* regression estimating the likelihood of management forecast issuance. See Appendix C for the regression results.

APPENDIX C

ESTIMATION RESULTS OF THE PROBABILITY TO ISSUE MANAGEMENT EARNINGS FORECASTS

VARIABLES	Coef.	z-stat	p-value
Prior MF	2.890***	29.57	0.000
Dominant FD	0.081	0.44	0.659
Intrapersonal FD	0.259	1.36	0.175
StdRet	-6.327*	-1.80	0.071
Dispersion	-0.643***	-7.42	0.000
StdEPS	0.165	0.16	0.871
Ln(Segments)	-0.018	-0.34	0.735
Ln(MV)	-0.002	-0.07	0.948
Market to Book	-0.000	-0.04	0.970
Loss	-0.395**	-2.49	0.013
ChgROA	-0.665***	-7.56	0.000
Litigation	0.119	1.39	0.166
Ln(Analyst)	-0.021	-0.45	0.654
Institution	0.503***	3.65	0.000
Independence	0.256	1.38	0.169
Accounting	-0.106	-1.16	0.244
Legal	1.014**	2.51	0.012
Industry & Year FE	Yes		
Pseudo R^2	0.50		
Obs.	11,125		

This table presents the results of *Probit* regression to estimate the probability to issue a management forecast. All variables are defined as in Appendix B. Industry and year fixed effects and an intercept are included but unreported for brevity. Two-way (firm and year) cluster-robust standard errors are used to correct for cross-sectional and time-series dependence. ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels (two-sided), respectively.

APPENDIX D

TABLES

Table 1. Sample Selection and Description

Panel A: Sample Selection

Procedure	Obs.
Initial firm-year observations on the intersection of BoardEx and ExecuComp from 2001 to 2012	13,417
Less: missing data from BoardEx	273
Less: missing data for management forecast accuracy from First Call and I/B/E/S	7,802
Less: missing data from Compustat and CRSP	403
Less: missing data from I/B/E/S and Thomson 13F	466
Total firm-year observations	4,473

Panel B: Temporal Distribution of the Sample

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Obs.	186	224	286	308	362	483	506	468	387	407	421	435	4,473
%	4.16	5.01	6.39	6.89	8.09	10.80	11.31	10.46	8.65	9.10	9.41	9.73	100

Panel C: Industry Distribution of the Sample

SIC code	Industry Description	Obs.	%
01-09	Agriculture, forestry & fishing	14	0.31
10-14	Mining	59	1.32
15-17	Construction	56	1.25
20-39	Manufacturing	1,904	42.57
40-49	Transportation, communications & utilities	609	13.62
50-51	Wholesale trade	166	3.71
52-59	Retail trade	566	12.65
60-69	Finance, insurance & real estate	349	7.80
70-88	Service industry	739	16.52
	Other	11	0.25
Total		4,473	100.00

In this table, Panel A presents data on the derivation of the sample by firm-years. Panels B and C present the sample distribution by fiscal year and 2-digit SIC industry, respectively.

Table 2.Descriptive Statistics

Panel A: Summary statistics

	Obs.	Mean	Std. Dev.	Median	Q1	Q3
MF Accuracy	4,473	-0.022	0.052	-0.005	-0.002	-0.017
Dominant FD	4,473	0.627	0.124	0.640	0.560	0.720
Intrapersonal FD	4,473	0.472	0.108	0.488	0.407	0.552
StdRet	4,473	0.023	0.011	0.021	0.016	0.028
Dispersion	4,473	0.096	0.203	0.045	0.026	0.086
StdEPS	4,473	0.018	0.023	0.010	0.006	0.021
Segments	4,473	5.458	2.937	5.000	3.000	7.000
Ln(MV)	4,473	7.917	1.392	7.801	6.906	8.862
Market to Book	4,473	2.950	2.919	2.345	1.604	3.557
Loss	4,473	0.072	0.153	0.000	0.000	0.000
ChgROA	4,473	0.041	0.112	0.014	0.007	0.034
Litigation	4,473	0.217	0.412	0.000	0.000	0.000
Analyst	4,473	13.511	9.044	11.000	7.000	18.000
Institution	4,473	0.780	0.162	0.804	0.682	0.903
Independence	4,473	0.792	0.117	0.818	0.727	0.889
Accounting	4,473	0.458	0.194	0.400	0.400	0.600
Legal	4,473	0.076	0.086	0.000	0.000	0.093
MF Surprise	4,473	0.004	0.010	0.001	0.000	0.003
Horizon	4,473	115.034	52.298	103.000	91.000	118.000
CEO Generalism	4,473	0.344	0.475	0.000	0.000	1.000
CFO Generalism	4,473	0.318	0.466	0.000	0.000	1.000

Panel B: Pearson correlation matrix of key variables

	1	2	3	4	5	6	7	8
1. MF Accuracy	1.00							
2. Dominant FD	**0.02**	1.00						
3. Intrapersonal FD	0.01	**0.05**	1.00					
4. StdRet	**-0.32**	0.00	**-0.14**	1.00				
5. Dispersion	**-0.34**	0.00	-0.03	**0.28**	1.00			
6. StdEPS	**-0.37**	**0.02**	**-0.04**	**0.28**	**0.18**	1.00		
7. Ln(Segments)	**-0.04**	**0.09**	**0.14**	**-0.04**	-0.01	-0.02	1.00	
8. CEO Generalism	0.01	**0.09**	**0.45**	**-0.12**	**-0.04**	**-0.06**	**0.13**	1.00
9. CFO Generalism	-0.02	**-0.10**	**0.33**	**-0.06**	0.04	0.00	**0.05**	**0.07**

Panel A and B of Table 2 presents the summary statistics and the Pearson correlation for key variables, respectively. Correlations in bold are significant at the 10% level or better.

Table 3.TMT Functional Diversity and Management Forecast Accuracy

	Pred.	Coef.	t-stats
Dominant FD	+	0.011***	2.74
Intrapersonal FD	+	0.011**	2.42
StdRet		-0.342**	-2.15
Dispersion		-0.035***	-4.07
StdEPS		-0.292**	-2.23
Ln(Segments)		-0.004**	-2.57
Ln(MV)		-0.004***	-8.30
Market to Book		0.001***	4.68
Loss		-0.053***	-4.21
ChgROA		-0.150**	-2.20
Litigation		0.002	0.58
Ln(Analyst)		0.001	0.80
Institution		-0.008	-1.26
Independence		-0.007	-0.60
Accounting		0.002	0.42
Legal		-0.003	-0.38
MF Surprise		-0.879***	-3.82
Horizon		-0.000***	-5.73
IMR		0.004*	1.87
Industry & Year FE		Included	
Adj. R^2		0.42	
Obs.		4,473	

Table 3 presents the results of OLS regressions to test H1 and H2. All variables are defined as in Appendix B. Industry and year fixed effects and an intercept are included but unreported for brevity. Two-way (firm and year) cluster-robust standard errors are used to correct for cross-sectional and time-series dependence. *t*-statistics are reported in parentheses. ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels (two-sided), respectively.

Table 4.TMT Functional Diversity and Management Forecast Accuracy Conditional on Firm Characteristics

Panel A: Uncertainty							
		StdRet		Dispersion		StdEPS	
	Pred.	Coef.	t-stats	Coef.	t-stats	Coef.	t-stats
Dominant FD		-0.002	-0.52	-0.001	-0.26	-0.000	-0.11
Intrapersonal FD		-0.001	-0.24	-0.006	-1.19	-0.003	-0.77
Dominant FD × StdRet(0,1)	+	0.028**	2.14				
Intrapersonal FD × StdRet(0,1)	+	0.014**	2.33				
StdRet(0,1)		-0.028***	-2.68				
Dominant FD × Dispersion(0,1)	+			0.025***	2.84		
Intrapersonal FD × Dispersion(0,1)	+			0.020*	1.92		
Dispersion(0,1)				-0.028***	-3.16		
Dominant FD × StdEPS(0,1)	+					0.016***	2.71
Intrapersonal FD × StdEPS(0,1)	+					0.019*	1.77
StdEPS(0,1)						-0.024**	-2.41
StdRet				-0.358**	-2.50	-0.560**	-2.59
Dispersion		-0.041***	-4.15			-0.030***	-2.86
StdEPS		-0.212**	-2.23	-0.170*	-1.78		
Ln(Segments)		-0.004**	-2.44	-0.003**	-2.36	-0.003***	-2.73
Ln(MV)		-0.003***	-3.54	-0.003***	-6.93	-0.004***	-6.14
Market to Book		0.001***	4.62	0.001***	4.43	0.001***	4.99
Loss		-0.057***	-4.97	-0.068***	-5.45	-0.060***	-4.33
ChgROA		-0.207***	-2.75	-0.158**	-2.25	-0.221***	-2.72
Litigation		-0.000	-0.19	-0.001	-0.44	0.000	0.15
Ln(Analyst)		0.000	0.21	0.000	0.07	0.001	1.52
Institution		-0.008	-1.22	-0.006	-1.00	-0.011	-0.79
Independence		0.003	0.38	-0.003	-0.25	-0.004	-0.44
Accounting		0.003	0.67	0.002	0.38	0.002	0.31
Legal		-0.005	-0.58	-0.001	-0.13	-0.005	-0.75
MF Surprise		-0.919***	-4.13	-0.960***	-4.12	-0.861***	-3.19
Horizon		-0.000***	-5.15	-0.000***	-5.32	-0.000***	-13.12
IMR		0.005**	2.38	0.003	1.46	0.004	1.43
Industry & Year FE		Included		Included		Included	
Adj. R^2		0.44		0.39		0.43	
Obs.		4,473		4,473		4,473	

Panel B: Complexity			
		Segments	
	Pred.	Coef.	t-stats
Dominant FD		-0.001	-0.15
Intrapersonal FD		-0.001	-0.41
Dominant FD × Segments(0,1)	+	0.023***	2.69
Intrapersonal FD × Segments(0,1)	+	0.019**	2.02
Segments(0,1)		-0.026***	-3.09
StdRet		-0.564**	-2.38
Dispersion		-0.031***	-4.04
StdEPS		-0.229**	-2.31
Ln(MV)		-0.004***	-5.34
Market to Book		0.001***	4.51
Loss		-0.058***	-5.43
ChgROA		-0.206***	-2.67
Litigation		-0.002	-0.83
Ln(Analyst)		0.000	0.02
Institution		-0.009	-1.49
Independence		-0.007	-0.68
Accounting		0.003	0.54
Legal		-0.004	-0.52
MF Surprise		-0.854***	-3.32
Horizon		-0.000***	-5.26
IMR		0.006***	2.62
Industry & Year FE		Included	
Adj. R^2		0.45	
Obs.		4,473	

Panel A of Table 4 presents the results of OLS regressions to test H3a and H3b concerning the relation between TMT functional diversity and management forecast accuracy conditional on earnings uncertainty measured by *StdRet*, *Dispersion* and *StdEPS* respectively. Panel B presents the results of OLS regressions using organizational complexity as the conditioning factor. All variables are defined as in Appendix B. Industry and year fixed effects and an intercept are included but unreported for brevity. Two-way (firm and year) cluster-robust standard errors are used to correct for cross-sectional and time-series dependence. *t*-statistics are reported in parentheses. ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels (two-sided), respectively.

Table 5.TMT Functional Diversity and Management Forecast Accuracy Conditional on CEO/CFO Characteristics

	Pred.	CEO		CFO	
		Coef.	t-stats	Coef.	t-stats
Dominant FD		0.011*	1.76	0.014*	1.83
Intrapersonal FD		0.016**	1.99	0.018*	1.91
Dominant FD × CEO Generalism	−	-0.006*	-1.94		
Intrapersonal FD × CEO Generalism	−	-0.012**	-2.09		
CEO Generalism		0.017*	1.86		
Dominant FD × CFO Generalism	−			-0.011*	-1.75
Intrapersonal FD × CFO Generalism	−			-0.014*	-1.68
CFO Generalism				0.022	1.26
StdRet		-0.561**	-2.38	-0.508**	-2.37
Dispersion		-0.031***	-4.08	-0.031***	-4.19
StdEPS		-0.224**	-2.39	-0.203**	-2.21
Ln(Segments)		-0.003**	-1.99	-0.003**	-2.31
Ln(MV)		-0.004***	-4.79	-0.004***	-4.53
Market to Book		0.001***	4.40	0.001***	4.83
Loss		-0.058***	-5.31	-0.060***	-5.63
ChgROA		-0.204***	-2.65	-0.204***	-2.70
Litigation		-0.003	-0.80	-0.000	-0.04
Ln(Analyst)		-0.000	-0.14	0.000	0.21
Institution		-0.011	-0.93	-0.008	-1.62
Independence		-0.005	-0.47	-0.006	-0.61
Accounting		0.002	0.43	0.002	0.41
Legal		-0.001	-0.13	-0.004	-0.40
MF Surprise		-0.865***	-3.42	-0.877***	-3.46
Horizon		-0.000***	-5.54	-0.000***	-5.52
IMR		0.005**	2.11	0.005***	2.63
Industry & Year FE		Included		Included	
Adj. R^2		0.45		0.44	
Obs.		4,473		4,473	

Panel A and B of Table 5 present the results of OLS regressions to test H4a and H4b concerning the relation between TMT functional diversity and management forecast accuracy conditional on CEO and CFO functional diversity, respectively. All variables are defined as in Appendix B. Industry and year fixed effects and an intercept are included but unreported for brevity. Two-way (firm and year) cluster-robust standard errors are used to correct for cross-sectional and time-series dependence. *t*-statistics are reported in parentheses. ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels (two-sided), respectively.

Table 6.TMT Functional Diversity and Management Forecast Accuracy – Instrumental Variables Approach (2SLS)

		(1) Dominant FD		(2) Intrapersonal FD		(3) MF Accuracy	
	Pred.	Coef.	t-stats	Coef.	t-stats	Coef.	t-stats
Predicted Dominant FD	+					0.014*	1.75
Predicted Intrapersonal FD	+					0.015**	2.02
Prior Dominant FD		0.641***	29.53	0.015	1.52		
Prior Intrapersonal FD		0.031*	1.83	0.779***	59.45		
Prior ROE		-0.009**	-2.16	-0.015**	-2.07		
StdRet		-0.491	-1.13	0.065	0.68	-0.394	-1.60
Dispersion		0.007	0.70	0.008	1.17	-0.028***	-4.02
StdEPS		0.151**	1.99	-0.018	-0.34	-0.181*	-1.82
Ln(Segments)		0.002	0.43	0.000	0.07	-0.003**	-2.24
Ln(MV)		-0.002	-0.79	0.005***	3.69	-0.003***	-3.46
Market to Book		0.001	1.22	0.001***	3.09	0.001***	3.69
Loss		0.003	0.22	0.014	1.39	-0.070***	-5.84
ChgROA		-0.021	-1.20	-0.020	-1.38	-0.223***	-2.68
Litigation		-0.002	-0.29	-0.002	-0.39	-0.002	-0.87
Ln(Analyst)		0.000	0.05	-0.006***	-3.75	-0.002	-1.10
Institution		0.008	0.47	0.010	1.39	-0.008	-1.44
Independence		0.027	1.26	0.021	1.30	-0.010	-0.98
Accounting		-0.038***	-3.83	0.048***	7.68	0.003	0.69
Legal		0.146***	3.35	-0.035	-1.22	-0.005	-0.38
MF Surprise		-0.040	-0.26	-0.019	-0.20	-0.967***	-3.34
Horizon		-0.000	-0.87	0.000	0.66	-0.000***	-4.76
IMR		-0.001	-0.29	0.001	0.43	0.005**	2.36
Industry & Year FE		Included		Included		Included	
Adj. R^2		0.44		0.73		0.46	
Obs.		3,420		3,420		3,420	
Angrist-Pischke *F*-statistic		413.10***		1663.38***			
p-value for Hansen *J*-statistic						0.27	

Table 6 presents the results of 2SLS regressions to test H1 and H2. All variables are defined as in Appendix B. Industry and year fixed effects and an intercept are included but unreported for brevity. Two-way (firm and year) cluster-robust standard errors are used to correct for cross-sectional and time-series dependence. *t*-statistics are reported in parentheses. ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels (two-sided), respectively. The Angrist-Pischke *F*-Statistic for weak identification are significant at the 1% level, rejecting the null hypothesis that the instruments

weakly identify the model. The *p*-value for Hansen J statistic is >0.10, suggesting that the instruments are uncorrelated with the error terms and are correctly excluded from the second-stage regressions.

Table 7. TMT Functional Diversity and Management Forecast Accuracy Conditional on Firm and CEO/CFO Characteristics – Instrumental Variables Approach (2SLS)

Panel A: Uncertainty and Complexity									
		(1) StdRet		(2) Dispersion		(3) StdEPS		(4) Segments	
	Pred.	Coef.	t-stats	Coef.	t-stats	Coef.	t-stats	Coef.	t-stats
Predicted Dominant FD		-0.000	-0.01	0.001	0.12	-0.002	-0.30	0.033	1.09
Predicted Intrapersonal FD		0.007	1.21	-0.006	-1.08	-0.002	-0.36	0.015*	1.80
Predicted Dominant FD × StdRet(0,1)	+	0.029*	1.76						
Predicted Intrapersonal FD × StdRet(0,1)	+	0.018*	1.91						
StdRet(0,1)		-0.026**	-2.05						
Predicted Dominant FD × Dispersion(0,1)	+			0.020**	2.48				
Predicted Intrapersonal FD × Dispersion(0,1)	+			0.032***	3.44				
Dispersion(0,1)				-0.027***	-4.13				
Predicted Dominant FD × StdEPS(0,1)	+					0.025*	1.87		
Predicted Intrapersonal FD × StdEPS(0,1)	+					0.028***	3.44		
StdEPS(0,1)						-0.035***	-3.70		
Predicted Dominant FD × Segments(0,1)	+							0.036*	1.75
Predicted Intrapersonal FD × Segments(0,1)	+							0.025*	1.78
Segments(0,1)								-0.028*	-1.84
Controls		Included		Included		Included		Included	
Industry & Year FE		Included		Included		Included		Included	
Adj. R^2		0.46		0.41		0.45		0.42	
Obs.		3,420		3,420		3,420		3,420	

Panel B: CEO and CFO Functional Diversity					
		CEO		CFO	
	Pred.	Coef.	t-stats	Coef.	t-stats
Predicted Dominant FD		0.025**	2.02	0.041**	2.19
Predicted Intrapersonal FD		0.026*	1.67	0.032*	1.72
Predicted Dominant FD × CEO Generalism	−	-0.019*	-1.64		
Predicted Intrapersonal FD × CEO Generalism	−	-0.018*	-1.68		
CEO Generalism		0.040**	2.03		
Predicted Dominant FD × CFO Generalism	−			-0.024**	-2.02
Predicted Intrapersonal FD × CFO Generalism	−			-0.021*	-1.85
CFO Generalism				0.034**	1.97
Controls		Included		Included	
Industry & Year FE		Included		Included	
Adj. R^2		0.45		0.45	
Obs.		3,420		3,420	

Table 7 presents the results of 2SLS regressions to test H3 and H4 concerning the relation between TMT functional diversity and management forecast accuracy conditional on firm (Panel A) and CEO/CFO (Panel B) characteristics, respectively. All variables are defined as in Appendix B. Industry and year fixed effects and an intercept are included but unreported for brevity. Two-way (firm and year) cluster-robust standard errors are used to correct for cross-sectional and time-series dependence. *t*-statistics are reported in parentheses. ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels (two-sided), respectively. The first-stage regressions of 2SLS are unreported for brevity. For all first-stage regressions, the Angrist-Pischke *F*-Statistic for weak identification are significant at the 1% level, rejecting the null hypothesis that the instruments weakly identify the model. The *p*-value for Hansen J statistic is >0.10 in all cases, suggesting that the instruments are uncorrelated with the error terms and are correctly excluded from the second-stage regressions.

Table 8. Complements *versus* Substitutes of the Two Types of TMT Functional Diversity

	MF Accuracy	
	Coef.	t-stats
Dominant FD	0.040**	2.38
Dominant FD × Intrapersonal FD	-0.060**	-2.13
Intrapersonal FD	0.041**	2.45
StdRet	-0.277**	-2.01
Dispersion	-0.033***	-3.82
StdEPS	-0.276***	-2.64
Ln(Segments)	-0.003***	-3.06
Ln(MV)	-0.003***	-4.45
Market to Book	0.001***	4.16
Loss	-0.055***	-4.11
ChgROA	-0.151***	-2.65
Litigation	-0.000	-0.37
Ln(Analyst)	0.000	0.61
Institution	-0.006	-1.06
Independence	-0.003	-0.28
Accounting	0.002	0.34
Legal	-0.002	-0.29
MF Surprise	-0.881***	-3.42
Horizon	-0.000***	-3.93
IMR	0.004***	2.84
Industry & Year FE	Included	
Adj. R^2	0.41	
Obs.	4,473	

Table 8 presents the regression results testing whether the two types of functional diversity are complements or substitutes to each other. All variables are defined as in Appendix B. Industry and year fixed effects and an intercept are included but unreported for brevity. Two-way (firm and year) cluster-robust standard errors are used to correct for cross-sectional and time-series dependence. *t*-statistics are reported in parentheses. ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels (two-sided), respectively.

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