



IE BUSINESS SCHOOL

DOCTORAL DISSERTATION

APPORTIONING SLICES OF A GROWING PIE:
EXAMINING THE INFLUENCE OF TOP
MANAGEMENT TEAM (TMT) CREDENTIALS ON
FIRM VALUE CREATION AND ITS DISTRIBUTION
BETWEEN THE FIRM'S SHAREHOLDERS AND
IT'S TMT

TIMOTHY LEWIS CECIL

SEGOVIA, 2021



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ABSTRACT

The role of the top management team (TMT) demands that executives be able to apply their skills, knowledge and experiences to create value for shareholders and in turn be rewarded for their results. Executive pay has grown exponentially over the last 30 years with CEO pay at large United States (U.S.) headquartered companies growing over 500% since 1990 (Bachelder, 2018) and from 1980 to 2015 the multiplier of CEO to worker pay has increased from 40 times to more than 335 times (Hermalin and Weisbach 2017). Although management literature today presents an abundant amount of research on value creation (Datta and Iskandar-Datta, 2014, Boyd, Bergh and Ketchen, 2010) executive compensation and firm performance, there is a gap in the literature addressing how the value that is created is then subsequently apportioned between the TMT and shareholders of the firm and to what extent TMT member human and social capital characteristics, such as work experience and education, may contribute to this value creation (Qian et al., 2017). This limitation makes it difficult for the board to determine whether or not the TMT members of an organization are compensated for the value that they have created for shareholders and whether or not TMT compensation plans are aligned properly with shareholder value.

In response to this limitation, this study examines whether TMT's with elite credentials (as defined by having education from top tier institutions or prior experience from top tier companies) are compensated more highly and/or create larger profits and the moderating effects that the degree of internationalization of the firm may have on this rent premium. I then extend the findings to examine whether TMT credentials influence the board and whether these TMT, in turn, receive a rent premium at the expense of shareholders when value is created (positive excess returns) and/or when value is destroyed (negative excess returns). This dissertation draws on upper echelon, the resource-based view and absorptive capacity theories to extend the literature on top management team contribution to firm performance through consideration of causal ambiguity and the signaling effects that TMT member credentials have on the board's distribution of rewards for performance. Detailed hypotheses are presented in the dissertation.

To empirically investigate these research questions, detailed biographical information is coded for a large sample of top management teams by individual and by

collective teams for a sample of S&P 1500 financial services US firms over a 20-year period (2000 - 2019) to identify differentiated educational and work experience credentials that are indicative of skills which could lead to the creation of value. This dataset is developed using a combination of third-party data available from Center for Research in Security Prices (CRSP), Compustat, BoardEX, Bloomberg, S&P and SEC Filings. Ordinary Least Squares (OLS) multi-variate regression analyses are used to assess the relationship between firm performance, compensation and TMT credentials.

The findings are discussed in detail followed by an in-depth consideration of implications for both management literature and management practice. This dissertation contributes to management practice by shedding light on the effect which TMT credentials have on TMT compensation, TMT performance and the distribution of profits between TMT members and shareholders.

This thesis is dedicated to my parents (Robert and Melodie) and my life partner (Karin).

For their endless love, support and encouragement.

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I am eternally grateful and blessed to have such incredible parents and siblings, who gave me unconditional love and support throughout my life. Thank you to my mother, Melodie Cecil, for her kindness, selflessness and for her inspiration she gave me to explore new and exciting challenges over my lifetime. Thank you to my father, Dr. Robert Cecil, who has demonstrated authenticity, integrity and passion throughout his lifetime and has inspired me to think deeper (not only in our chess matches) but also in the pursuit of knowledge and ultimately, he was the catalyst for my desire to pursue a doctorate degree. To my two wonderful sisters (Lynn and Gail) who are both extremely accomplished but are incredibly humble and have brought so much happiness and joy to my life.

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CHAPTER 1 – INTRODUCTION AND THEORETICAL MODEL

A plethora of prior research on the experience and skills of top executives has attempted to find associations between executive compensation and firm performance (Payne et al., 2011; Zaheer and Bell, 2005), but with rather mixed results. A large number of these studies looked at rather general measures of these skills and experiences such as number of years of work experience in a specific industry (Combs and Ketchen, 1999) or years of education (Newbert, 2007; Zaheer and Bell, 2005).

An individual's set of skills and knowledge, which are usually developed through work experience, education and assorted experiences is referred to as human capital (Becker, 1993). There is a dearth of empirical results on specific elements of executive human capital and the ones available are not conclusive with regards to the relationship between human capital and firm performance. This might be due to the challenges faced by researchers in finding appropriate ways to measure executive's human capital, the most valuable follow the logic of the resource-based view (Barney, 1991) are the resources that are rare, imperfectly imitable and not substitutable with another resource of a competing firms. In addition, "most of the previous studies on human capital does not focus on constructing human capital metrics that enable companies to compete in the international context" (Chen and Lin, 2003: 379).

An individual's capability to access resources through relationships is referred to as social capital (Burt, 1992). Executives that have valuable social capital can be generously rewarded for the potential quality of the relevant and timely information they can bring to their firms (Horton et al., 2012). However, social capital measures also suffer from inconclusive findings due to social capital proxies that are not rare, imperfectly imitable and not substitutable with another resource by competing firms (Combs and Ketchen, 1999).

I investigate this issue by delineating two component parts of human and social capital (i.e. elite education and elite work experience of TMT members) and by assessing the effect of this capital not only on the compensation of the TMT and firm performance but also on the investigation of the individuals who receives this value created.

Elite Education and Elite Work Experience

The TMT characteristics of elite education and elite work experience provide proxies for underlying variabilities in the dimensions of human and social capital that are neither easy to observe nor to measure (Sperber and Linder 2018). Although the measure is far from perfect in its inability to capture all of the human or social capital of an executive, the measure does ameliorate many of the shortcomings of prior work. A large number of previous studies examined rather general measures of human capital skills that were neither rare nor particularly valuable, such as years of work experience (Combs and Ketchen, 1999) or years of education (Newbert, 2007; Zaheer and Bell, 2005), provided very little variability amongst the upper echelon skill set and results were inconclusive.

Education from selective institutions arguably should provide a hiring firm with a more valuable resource to the extent that selective institutions by definition only produce a comparatively small number of graduates and are also relatively rare. Employees at elite firms who are promoted within those firms may be seen as exceptionally talented, further raising their worth in the labor market (Bidwell et al., 2015). The higher the position someone holds within an elite firm the rarer that position is, and this status is not only persistent but the benefits to the individual allows them to retain their status over time (Benjamin and Podolny, 1999; Bidwell et al., 2015). A TMT member in our study only qualifies for elite work experience if he or she has worked at the vice president level or higher. Elite education and work experience are concepts designed to describe and therefore measure valuable and rare skills which still holds true at large (successful) S&P 1500 financial services firms where TMT members attending or working in these elite institutions are relatively uncommon. Therefore, if a firm's TMT is able to stand out from that of other firms by having a greater aggregate of these skills as a collective management team, this aggregated skill then becomes an intangible asset that is rare.

Constructing a TMT of executives with elite credentials is not freely tradeable in the open markets as executives move individually between companies and top management teams rather than as an intact team. This intangible asset bundle has to be acquired over a period of time and the executives have to have the willingness to join a specific firm regardless of the amount of compensation offered. The reputation, size and scope of the firm and existing TMT members are all factors that determine the talent of executives that a firm can attract. The resource-based view (RBV) of the firm

posits that an asset which is rare, imperfectly imitable and not substitutable with another resource by competing firms can provide a sustained competitive advantage (Ling and Jaw, 2006). Although executives can be substituted within a given TMT, there is a finite talent pool to draw from in efforts to match particular firm's particular needs. In addition, these elite credentials are actually possible to measure, whereas deeper measurements are hard to come by, especially for TMT members. Similarly, for practical implications, having a measure that can be collected makes the recommendations more replicable and salient for practitioners.

Three studies have touched on these elements of executive capital; however, all have short comings that will be examined in this study. Falato, Li and Milbourn, (2015) in their CEO's signaling skills-based credentials model found a positive relationship between the CEO's credentials and both compensation and performance based on the succession of a new CEO. The performance measurement was based a time frame of three years before and three years after the succession year of the CEO. It was undetermined whether the results would hold up during period of time outside this succession period window. Custodio et al. (2013) created one of the first studies to test whether general managerial skills had an impact on CEO pay. The General Ability Index (GAI) demonstrated that executives were compensated for their general skills but actually had a slightly negative impact on performance. This was perhaps caused by not examining the skills of the remaining non-TMT members or the CEO extracted a rent premium greater than the additional performance created. To my knowledge, there is only one study that examined the TMT's elite educational credentials on firm performance and no study that examines TMT's elite work experience on firm performance. Joh and Jung (2016) discovered TMT academic credentials from prestigious universities in South Korea had a positive impact on performance on non-financial firms in South Korea.

In order to accomplish the above aims this study examines the impact of upper echelon elite education and elite work experience on TMT compensation, firm-level performance, and division of profits with a research focus that contributes to the existing body of upper-echelon theory. With extensive use of the relevant wide-ranging literature on executive skills and experience, in this study questions relating executives to their compensation, firm performance and the allocation of profits will be investigated.

Excess Returns and Rent Premiums

In order to determine excess returns, I turned to the compensation literature to see how firms measured performance for compensating their TMT. Two market-based measures (Jensen's Alpha and Total Stock Return) and two accounting-based measures (Excess Return on Equity and Return on Equity) were used. All four measures were ranked in quartiles to identify whether the firms were overperformers or underperformers. See the methodology section for a full description.

In order to calculate a rent premium, I subtracted the expected total compensation from the actual total compensation for each TMT member. The expected total compensation was determined by using a multiple regression of the dependent variable (natural log of total compensation) against the independent variables (individual characteristics, firm characteristics, sub-industry and year fixed effects) for only the CEOs. The same regression was run separately for the non-CEO TMT members. See the methodology section for a full description.

Interrelations of Performance with Compensation

Performance and compensation are interrelated measures. A firm's performance is partially used to determine TMT members compensation. TMT members compensation is deducted from firm profits and impacts the performance of the company. Excess returns and rent premiums have the same challenge. A TMT could collectively extract rent premiums large enough that they actually underperform their peer group. Conversely a TMT could collectively have a negative rent premium large enough that they overperform their peer group. By examining performance based on quartiles it is possible to compare wider margins of performance and the rent extraction by TMT members at each quartile. A means tests on the difference between quartiles to determine if the relationship between rent extraction from overperformance versus underperformers is statistically significant.

Prisoner's Dilemma and External Tournament Theory

The relationship between rent extraction, elite credentials and performance is complicate as performance is a team measurement that is difficult if not impossible to determine the individual TMT members contributions. Rent extraction is explored through how signaling effects and causal ambiguity are catalysts for TMT members to extract rent premiums. The demand side of shareholders needs for superior skills and

the supply side of TMT members who possess these superior skills will be examined separately. The demand side will be examined through the lens of a prisoner's dilemma payoff matrix. Finally, from the supply side, drawing on tournament theory (Lazear and Rosen, 1981), I will extend the examination to consider how an external tournament amongst external horizontal referents (Lim, 2019) influences how the collective TMT might extract additional rent premiums for all of its individual executive members.

Internationalization

The complexity resulting from adding operations in an international expansion process generates additional information processing needs (Penrose, 1959; Gorman and Cook, 2011) for the TMT team, further complicating the coordination of change and making strategic decisions (Hutzschenreuter and Horstkotte, 2013). Although the CEO duties do not necessarily diminish, additional tasks need to be transferred to the collective effort of the TMT to cope with the added processing needs. This enhanced reliance on TMT members requires commensurately better education, training and work experience (Carpenter and Sanders, 2004: 512).

It has been argued that the prior relevant experience that TMT members bring to their tasks is a "particularly important factor that influences information processing. Through experience executives gain tacit and explicit knowledge, form unique skills and competencies, and build networks of external ties" (Hutzschenreuter and Horstkotte, 2013: 262). Interactions with network members impact how they perceive and interpret knowledge about the external environment and evaluate the possibilities for the firm (Kor and Mesko, 2013). In an MNE environment where the TMT often faces overwhelming amounts of information, discussions with confidant network members could help them choose what additional information to gather, which stimuli to focus on, and the most efficient and coherent manner to process data (Mintzberg, 2009). Over 30% of firms in the dissertation sample are multi-national enterprises (MNE). These firms not only add additional complexity but also require the precise skill set drawn from executives with elite education and elite work experience backgrounds to navigate through the complexity. Therefore, I use the degree of internationalization (DOI) as a moderating variable to see the interactive effects on compensation, performance and excess rent premiums received by TMT members.

Empirical Setting – The Financial Services Industry

Propelled by international expansion, financial services companies have come to heavily populate the ranks of the world's largest companies. In early 2020, the world's 60 largest companies in terms of assets were all financial services companies, and almost all were MNEs. At the start of 2020, financial service firms accounted for about a sixth of the overall U.S. stock market, in terms of market capitalization (Bloomberg, 2020). Yet, it is common practice for empirical researchers to exclude financial services firms from their sample data altogether (Forester and Sapp, 2005).

Firms often imitate the industry leader strategy of entering new international markets and follow their lead (Hitt et al., 2006). Yet imitation in itself does not create a competitive advantage and the TMT can only be successful if they possess the appropriate resources and strategy to out maneuver their competitors. If the firm's TMT possesses a lower set of human or social capital it would seem likely that the firm may fall behind industry leading performance or even fail altogether (Hitt et al., 2006). The global economy has created an increasing complex decision-making environment illustrated by uncertainty, information overabundance, and ambiguity in which human and social capital is especially valuable.

In order to exploit opportunities in the professional services environment the TMT requires considerable cognitive abilities (Bartlett and Ghoshal, 1989; Levy, 2005). Finkelstein and Hambrick (1990) suggest that high environmental discretion influences the association between managerial characteristics and organizational outcomes. Hence, when executives operate in a highly dynamic environment that would tend to provide them with more personal discretion, we should expect a larger deviation in organizational outcomes. In such an environment information processing has a more crucial role in shaping strategic choices and firm outcomes (Levy, 2005). This issue is exacerbated in the financial services industry, which is characterized by high knowledge intensity, a professionalized workforce and low capital intensity (Kianto and Hurmelinna-Laukkanen, 2010). In fact, Goldin and Katz (2008) reported a large increase in the number of Harvard undergraduates who worked in the financial services industry from 1970 on, due to a less regulated environment, higher skill demand and increased compensation in this area.

Until recently the literature did not focus on the skills of finance employees within the financial services industry (Philippon, 2012). Instead the focus was largely on the overall size of financial markets but did not consider the TMT's skillsets or

remuneration (Philippon, 2012). More recently, research (Philippon et al., 2012) has focused on the human capital skills of finance firms' employees. Evidence confirms that the financial services industry may lure talent away from other industries (Baumol, 1990), and emphasizes the impact of higher wages within the industry for talented individuals (Murphy, Shleifer, and Vishny 1991). Until 1990, US finance workers earned the same education-adjusted wages as other workers, but their compensation grew to a premium of over 50% by 2006 (Gabaix and Landier, 2008). "Using micro data, we show that this result holds even if we control for unemployment risk and unobserved individual heterogeneity. During this period chief executive officers (CEOs) in finance earned a 250% premium relative to CEOs elsewhere. A benchmark compensation series based on Gabaix and Landier (2008) found that the market value of the firm model can account for about 50 percentage points, leaving an unexplained premium of about 200%" (Philippon and Reshef, 2012: 1553).

The recent interest in intellectual capital, which encompasses a range of TMT skills, appears to be driven, in part, by the need to explain the apparent sizeable growth of unrecognized intangible assets (Abdel-khalik, 2003). Over the past three decades large increases in market-to-book ratios provide evidence of this growth (Mouritsen et al., 2001) and reflect omitted intangibles (Abdel-khalik, 2003). It seems plausible that some of the intangible value is driven by the TMTs who possess more individuals with elite credentials and as a team are able to create 'routines' that allow them to generate larger profits than their peers. Due to the ambiguity of the performance these powerful TMTs within the financial services industry may be able to essentially 'rig the game' and extract a rent premium not only when they outperform their peers but also extract a rent premium during underperformance. Hence the financial services industry is ripe for additional research exploring the impact of elite education and elite work experience (credentials) of the TMT on executive compensation, firm performance and the allocation of profits. It is this realm of enquiry which is the central focus of this dissertation and the empirical study which I introduce in the balance of this chapter.

The Research Questions

This study will investigate the influence of elite education and elite work experience on firm performance and executive's compensation. More specifically, this study examines the following three questions:

- (i) How do the characteristics of TMT members, such as elite education and elite work experience influence TMT compensation?
- (ii) How, together, do these characteristics of the TMT and of the firm interact to create additional value?
- (iii) Can the TMT with their elite credentials extract a rent premium at the expense of shareholders when value is created and/or when value is destroyed?

Extant Literature and The Scope of the research problem

As a point of departure, I now consider the scope of the executive remuneration scale by using the company Countrywide Financial to illustrate the parameters of the research concerns. Countrywide Financial yielded a negative 6% return to its shareholders in 2005, while in the same year the S&P 500 Financial Index yielded a positive 6% return. Countrywide Financial's CEO was rewarded by receiving a \$57 million USD compensation package, ninth highest of all S&P 500 CEO's (Forbes, 2005) including a \$20 million USD cash bonus. The company's other top four highest paid management team members received individual cash bonuses of over \$5 million USD on average (ExecuComp).

The phenomenon has been remarkable in the recent past. Over the last three decades, skyrocketing top management pay packages continue to climb ever higher. Since 2001, there has been an increased amount of attention directed to executive compensation by shareholders, the media, politicians, and academics all of which have criticized companies with enormous TMT pay packages (Bebchuk and Fried, 2004; Horton et al., 2012), yet the link between compensation, performance and value creation remains obscure (Shiwakoti et al, 2004).

Academics have shown a continued interest in understanding the elements of executive compensation (Datta and Iskandar-Datta, 2014; Pandher and Currie, 2013; and Finkelstein, Hambrick, and Cannella, 2009) and the impact of executives on firm performance (Shiwakoti et al, 2004). However, previous research has focused primarily on the Chief Executive Officer (CEO), leaving very little understanding in the literature of the impact of other non-CEO TMT members (Datta and Iskandar-Datta, 2014). Yet, TMTs are increasingly becoming more crucial in the upper echelons of business as MNE continue to expand (Hutzschenreuter and Horstkotte, 2013).

It appears reasonable to assume that if upper echelon members possess better quality education credentials and better quality work experience, the quality of decision-making and subsequent firm performance will improve. Yet, Newbert (2007) reported that of the thirty-three tests of education, training and work experience on performance relationships he identified in the literature, only eleven empirical tests (33%) supported the notion of a positive and significant correlation with performance.

There are a number of possible explanations for the weak relationships and inconclusive results. In the context of upper echelons research, work experience and education “is conceptualized as a general construct exhibiting uniform effects regardless of particular dimensions to which it is empirically applied. Research typically makes no distinction at the theoretical level” (Tacheva, S., 2007:2) between different skills, such as education and work experience. (Jackson, 1992). Typically, hypotheses formulated to examine the relationships between such skills and performance expect outcomes that stress similarities rather than differences in their benefits, negative effects and consequences for top-level executives (e.g., Combs and Ketchen, 1999; Shrader and Siegel, 2007). However, even though many executives bring impressive portfolios of skills, researchers have also noticed the significant homogeneity, in terms of skills, of the upper echelon (Finkelstein and Hambrick, 1996). Great skills on standalone basis are not sufficient to lead to differential performance, focal executives need to bring more outstanding skills to the job than their peers. These aggregate skills are vital for bringing in valuable information from outside sources, assimilate this knowledge and apply it to profitable commercial outcomes (Cohen and Levinthal, 1990). The combined knowledge of these executives through their education and work experience accumulated over many years can contribute to knowledge stocks (Dierickx and Cool, 1989) and create a competitive advantage.

A considerable amount of “the research on human capital theory has operationalized general human capital in terms of years of schooling; the empirical support for a positive relationship between education and performance at a particular task is mixed” (Dimova and Shepherd, 2005: 8). For example, while there is a positive association between education and firm survival (Pennings et al., 1998) and between education and productivity (Jones, 2001; Corvers, 1997), there is no well-defined effect between education and other signs of performance such as market returns or accounting metrics (Wayne et al., 1999). Furthermore, Murray (1989) found that the relationship between TMT composition variables and financial performance indicators moderated

by a variety of factors, including the industry studied, the composition of variables considered, the performance measures used, the length of the time assumed to be necessary for effects to appear, and how the TMT was defined.

Finklestein et al. (2009) have explained that human capital is advantageous for reaching the top echelons of the firm, but it is less clear how it translates into increases in compensation. Specifically, Finkelstein et al. (2009) explains that if executive skills and experience are valuable then boards should be willing to reward them. This makes sense but the challenge is to identify what is “valuable” (Carpenter, Sanders, and Gregersen, 2001). While at a first review of the data it is clearly evident that selected executives are compensated more for their skill sets, “the problem may be the occasional disconnect between the primary research idea being investigated and the relative lack of sophistication in effectively testing that idea” (Finklestein et al., 2009:307). The lack of sophistication in using homogenous generic variables for education and work experience for testing compensation of a TMT member and or the impact on performance of firm is a possible example where inconclusive results may arise from lack of variability of independent variables. In the early 1960’s two convenient proxies, years of schooling and years of work experience, were proposed to measure human capital. Compensation for employees and lower level or mid-level managers has been found to be highly correlated to the education level and work experience they possess (Crook et al., 2011) but at the TMT level inconclusive (Diaz-Fernandez, 2015, Crook et al., 2011; Dimova and Shepherd, 2005). This is likely a result at the TMT level for publicly traded companies, education levels and years of work experience are homogenous with a majority of executives having graduate degrees and more than 20 years of work experience (Felicelli, 2008). Even 50 years after the development of the human capital model (Becker, 1962), measuring human capital remains very difficult. “The resource-based view of the firm advocates that sustained competitive advantages in certain situations can be achieved through the leverage of a firm’s human capital, which is unique or rare, imperfectly imitable and not substitutable with another resource by rival firms” (Ling and Jaw, 2006: 381). Therefore, only the human capital related to core skills captures the attention and investments from companies (Ling and Jaw, 2006).

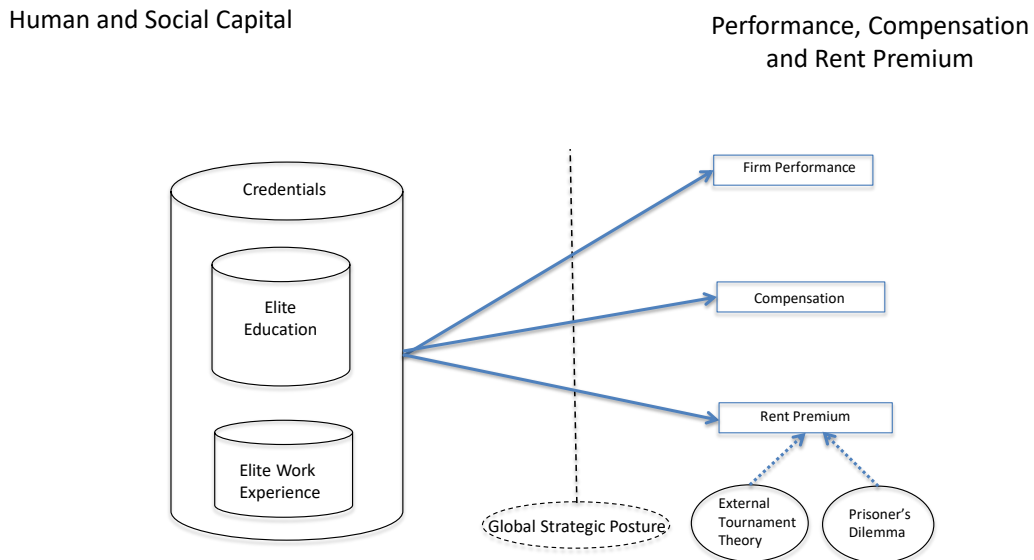
The social capital model is still in its infancy stage of development and struggles with the same difficulties as human capital (Grootaert and Van Bastelaer, 2002). Research on social capital and compensation is extremely sparse. The few studies

conducted on the relationship between social capital and compensation at the upper echelon level have focused on the CEO's social network and its association with compensation packages (Larcker et al., 2005; Barnea and Guedj, 2007; Brown et al., 2008; Hwang and Kim, 2011; and Horton et al., 2012). Results of such studies have been mixed. Valuable social capital skills that executives bring to their firms should not only impact their compensation but also have a positive effect on firm performance. Executives with valuable social capital can be generously rewarded for the potential quality of the relevant and timely information they can bring to their firms (Horton et al., 2012). Therefore, examining specific skills that encapsulate selective human and social capital of the TMT may provide critical insight into compensation, firm performance and the interconnectedness between those variables in the distribution of the value that is created.

Dissertation Research Model

To investigate the three research questions presented, I have developed the following dissertation research model, presented in Figure 1 below. This model is an illustration of the scope of this dissertation research. The two quantitative studies which comprise the empirical work of this dissertation are presented in subsequent chapters, three and four, in which I present the hypothesized measurement models specific to the two empirical studies, along with detailed hypotheses for each. In the illustrative research model below, the scope of the overall dissertation research topic is presented. From left to right, the cylinder is comprised of the credentials for Elite Education and Elite Work Experience, including the two core components introduced earlier in this chapter, social and human capital. Credentials then, as components of human and social capital, are hypothesized to be related to performance and compensation outcomes as specified below. They include: firm performance, TMT compensation and individual TMT member's rent premiums. The Prisoner's Dilemma and External Tournament Theory are the lenses used for examining the outcomes of the rent premiums which are extracted. This model indicates the need for a new conceptual framework to examine the complex relationships that exist between individual executive human capital attributes and associated outcomes including firm performance, compensation and the division of value creation between TMT and shareholders.

Figure 1 – Dissertation Research Model (Illustrative)



The next section introduces the expected contribution of this dissertation research. Chapter two which follows presents a systematic review of existing literature and empirical research on the topics of the research questions presented.

Expected Contribution of the dissertation research

Contribution to management literature: This dissertation has two main contributions. First, the two studies which comprise the dissertation empirical work together extend the current knowledge of executive compensation and performance beyond a primary focus on that of the CEO. The research does so by extending consideration to the focus on TMT performance and value creation. Second, this dissertation examines the distribution of profits between the firm’s TMT and its shareholders, arising from both underperformance and over performance. Specifically, this dissertation considers, when value is created, is there a rent premium that TMT members receive for outperforming their peers or can elite credentials allow the TMT to extract a rent premium through a prisoner’s dilemma situation regardless if value is created at the expense of shareholders? The aim of the dissertation is that results from the study will yield strategic insights and predictions on the interplay between

credentials embodied in the TMT, compensation, performance and the distribution of value creation. The interplay will not only have an impact on management practice but will make contributions to upper-echelon theory and the resource-based view literatures.

The dynamic setting of the financial services industry is characterized by high knowledge intensity, a professionalized workforce, and low capital intensity, which consequently provides a fertile environment to examine the impact of credentials on TMT compensation and firm performance. By drawing upon the global strategic posture of the firm, this thesis contributes to the growing stream of research extending upper echelon theory to the international context at the TMT level of analysis. Moreover, by looking carefully at the background characteristics and experiences of top managers, this dissertation investigates how certain profiles of TMT are associated with both domestic and MNE firm performance.

Implications for management practice: This study is relevant to management practice for several reasons. First, understanding the impact of TMT credentials on how value creation is distributed may provide the board an additional instrument to evaluate executive candidates and design incentive plans more aligned with value creation. Furthermore, the findings of this study may assist executive search firms in evaluating individual executive profiles that possess elite educational and/or work experience, and their differentiated potential value to the organization. Second, insights about the strategic and performance consequences of TMT skill sets and, in particular, complementarities between managerial backgrounds and experiences are of direct relevance to the management of TMT dynamics. Finally, grasping the TMT skills that benefit companies in the process of growing their international operations, especially as a firm's ability to deal with the challenges of globalization through managerial cognition (Levy, 2005) is becoming increasingly important. This study expects to shed light on the influence of credentials, global strategic posture, value creation and the distribution of profits.

This dissertation is structured as follows: Chapter two presents a systematic review of existing literature and empirical research on the topics of the research questions presented. These topics are: Human capital and the TMT; Social Capital and the TMT; Resource-Based-View and the TMT; TMT and Credentials; Compensation; Firm Performance, conceptual links between these issues; the RBV Talent Based Model; and Elite Education and Elite Work Experience as Key Credentials from a

Resource Base View. Chapter three builds on this literature review to examine the first of two dissertation empirical studies which considers the relationship between TMT credentials effect on firm performance and individual members compensation and the resulting findings. The second quantitative study in this dissertation is presented in chapter four, empirically investigates whether or not the TMT receives a rent premium at the expense of the shareholders during below average performance and when value is created. Chapter five presents the methodology used in this dissertation including presentation of sample and sampling strategy. The final chapter six presents the integrated discussion of the findings from chapters three and four and concludes the dissertation.

CHAPTER 2 - LITERATURE REVIEW

Human Capital and the Top Management Team

Introduction

The literature on human capital dates back to the theorizing and empirical work of Becker (1962) with his article, “Investment in Human Capital: A Theoretical Analysis”, which argued that there are resources embedded within employees which influence future real income. Becker described several ways of investing in human capital including, “schooling, on-the-job training, medical care, vitamin consumption, and acquiring information about the economic system” (Becker, 1962:9). Education, training and experience are the most commonly used measures for research (Hitt et al., 2001). Literature pertaining to human capital has been of interest to researchers over the last 50 years. Researchers divide human capital into a number of classifications based on the mobility of the capital for the individual. The categories include general human capital (completely portable), industry specific human capital (portable within the same or similar industries) and company-specific human capital (portable within one company) (Harris and Helfat, 1997; Buchholtz et al., 2003).

Portability essentially means that more specific human capital loses its value when applied in a different context, while more general capital maintains its value. General human capital is in higher demand and can be traded in the competitive labor markets more easily. For example, stockbrokers who possess mostly general capital who become disenchanted for being underpaid can apply their skills in other contexts and in the process bid up wages (Crook et al., 2011). General managerial skills have recently become more critical than firm-specific skills for the CEO function (Murphy and Zbojnik, 2004). This at first appears illogical given that general skills, by definition, would be more available to candidates than specific skills. Datta et al. (2014) helps resolve this conundrum in that the general skills become valuable when they are “strategic” generalist skills derived from a scarcer resource in higher demand by firms such as credentials obtained from elite organizations, which is precisely the type of generalist skills that will be examined in this dissertation.

The majority of human capital belongs to the individual as opposed to the firm and is mobile as the individual can move from one firm to another (Berkowitz, 2001). As opposed to physical capital, human capital is more likely to demonstrate

inconsistency among industries and firms (Coff, 2002). Firms with a substantial amount of organizational human capital relative to physical capital tend to have greater variability of returns (Mishra, 2014). The measurement of outputs of human capital are more problematic than measuring the results of other forms of capital (Adler and Kwon, 2002) and finding the appropriate proxies that can measure the variability between firms is crucial.

Compensation

Human capital research originated in the economics literature and has been predominantly used to predict an individual's job mobility or compensation (Mincer, 1997, Khanna et al., 2014). The unit of analysis to predict higher wages for human capital in the management literature has primarily been the CEO. The potential lack of studies on TMT compensation may stem from researchers commonly assuming that the finding and theory applicable to the CEO will generalize to other TMT members, or it may be simply be a matter of data availability issues (Carpenter et al., 2004). Accordingly, "there is great practical and theoretical need to recognize the importance of the TMT as a unit of analysis in executive compensation research" (Carpenter et al., 2004: 510). Previous studies have focused chiefly on the CEO, leaving us with very little understanding regarding the influence of other TMT members (Datta and Iskandar-Datta, 2014).

Performance

A key feature of upper echelon theory that differentiates it from other strategic leadership research is its focus on top management groups, rather than individuals (e.g., CEOs), as the key decision makers in organizations (Jackson 1992; Shipilov and Danis, 2006). Hambrick and Mason (1984) examined upper echelon characteristics that may become reflected in organizational outcomes (performance). The observable demographic factors studied were age, functional track, education and socioeconomic roots, financial position and group characteristics.

A plethora of research has developed linking TMT characteristics with a number of performance outcomes. As pointed out previously above, Newbert (2007) reported that of the thirty-three tests of human capital/performance relationships that he identified in the literature, only eleven (33%) supported the notion of a positive and significant performance effect. Diaz-Fernandez et al, (2015) looked at variety of studies

analyzing the relationship between demographic characteristics and managerial performance and also reported contradictory findings for those studies. In fact, several researchers emphasized the impossibility of testing the hypotheses and concluded that this relationship is merely a black box (Hope et al., 1999) or, as Murray (1989) exemplifies, admitted to a procedural weakness. Other researchers, such as Diaz-Fernandez et al. (2015), stated that the goal of their paper was to add to the great interest manifested by many researchers to continue investigating the characteristics of TMT and their impact on firm performance. They made it clear that they were very concerned with the lack of reliability of the findings and with the contradictory results that appeared in other studies. The assortment of findings in the literature cited reinforces the need for an approach such as the one pursued here.

Yet again the lack of a consistent link between human capital or demographics and performance may be due to researchers' lack of attempts to measure and isolate exactly those elements of human capital that are rare, imperfectly imitable and not substitutable with another resource by competing firms (Chen and Lin, 2003). This appears common, for example a researcher who measures the impact of education on compensation or performance by using binary variable (0 or 1) to measure university education for a CEO or TMT member would likely see homogenous results (most CEOs and TMT members having a university degree, therefore no advantage to a firm as there is no variance in the data to disguise difference in skill sets. Conversely, I argue that measuring elite education institutions may offer one potential avenue to identify whether a TMT member (team) indeed possess rare or unique capital securing an advantage versus their peers. It follows that there is a vital need to focus on distilling the key, rare and valuable, variables of executives and assessing the effects of this capital on performance, value creation and who benefits from value creation. Therefore, selecting valuable and rare crucial skills and experience is a key element of this dissertation.

Social Capital and the Top Management Team

Like human capital, also the social bridging relationships that TMT members may have accumulated are very likely to facilitate valuable resources accruing to the firm. Acquaah (2007: 1239), for instance, states that "Several studies have shown that when managers develop networking relationships with top managers of other firms, they are able to acquire resources, valuable information, and knowledge, which are used

to mitigate uncertainties and thus enhance performance.” For example, networking relationships with customers may increase sales through customer and brand loyalties (Park and Luo, 2001). Similarly, network ties with competitors may also lead to the sharing of information (Acquaah, 2007) and increasing the efficiency of firms through reduced operating costs (von Hippel, 1988).

Characteristically, prior research framed the concept of social capital through qualitative attributes identified via the use of surveys or focused on the organizational network aspects of social capital using social networks (ABS, 2004). In their article titled “Multilevel Challenges and Opportunities in Social Capital Research,” Payne et al. (2011) analyzed 20 years of relevant peer reviewed management journal articles beginning with Coleman (1988) who is widely recognized as writing the founding paper on social capital. These articles were categorized into four quadrants according to the type of ties (internal versus external) and level of analysis (individual social capital versus collective social capital (Payne et al., 2011). Table 2.1 below illustrates the four quadrants of social capital as it pertains to compensation and performance in this study.

Table 2.1 - Typology of Empirical Studies of Social Capital

Internal Ties	Quadrant 1: Individual/Internal	Quadrant 2: Collective/Internal
	Quadrant 3: Individual/External (Individual TMT Members)	Quadrant 4: Collective/External (Combined TMT Members)
External Ties	Individual Social Capital	Collective Social Capital

Source: Payne et al., (2011)

Overall, there has been considerable variety in social capital research to date, both within and across levels. In general, authors of various studies discovered that a vast majority of empirical social capital studies involve a single level of analysis

(Acquaah, 2007; Westphal and Milton, 2000) as compared to the relatively limited multilevel empirical studies (Oh et al., 2004). Payne et al. (2011) also see opportunities for macro-level studies falling within broad topic areas of upper echelons of multinational corporations and revealing a “specific interest in understanding how social capital, both individual (e.g., CEO) and collective (e.g., TMT), influences firm outcomes such as financial performance” (Payne et al., 2011: 511). From a business strategy perspective, they suggested a potential research question could involve the relationship between human capital, social capital, TMT and firm performance (Payne et al., 2011) which is exactly the topic in the first part of this dissertation and expands on the question to determine who receives the value that is created.

The theoretical approaches to conceptualizing social capital vary amongst researchers. Seibert et al. (2001) examined social capital as it pertained to career success using three different theoretical approaches - weak tie theory (Granovetter, 1973), structural holes theory (Burt, 1992), and social resource theory (Lin, 1999). Nahapiet and Ghoshal (1998) “categorized social capital into three dimensions: structural, relational, and cognitive. Each of these dimensions has been shown to affect the information acquisition for organizations” (Lindstrand et al., 2011: 197). The structural dimension determines what information is available through the structure. The relational dimension is the content derived from personal relationships that individuals have developed. The cognitive dimension “manifests the narratives, values, language, perspectives, and goals that the individual members share with each other” (Lindstrand et al., 2011: 197). The three dimensions can be studied collectively or on an individual basis. Payne et al. (2011) examined eight major theoretical perspectives used to conceptualize social capital from a sample of 80 empirical articles selected within a 20-year time frame from 1989 - 2008. The eight theoretical categorizations in order of descending popularity are bridging of structural holes; strong ties and networks; embeddedness; social resource theory; strength of weak ties; multiple dimension of social capital and model of social capital. These theories are not mutually exclusive, as researchers can combine theories and or work in aggregated form because they focus on different roles in the process of accumulating social capital (Seibert et al., 2001).

Compensation

The empirical research examining social capital theory and compensation is still sparse, yet it has been growing over the last three decades. Seibert, et al. (2001), using the same three lenses mentioned above (weak tie theory, structural hole theory and social resource theory), found how social capital was pertinent to compensation of employees. Their sample of 448 randomly selected undergraduate business, MBA and engineering school graduates was the first empirical study to demonstrate that social resources was positively related to compensation for all three-network properties.

Previous studies on compensation on upper echelons members examined the use of social ties by CEO's to gain status and power relative to the board and its remuneration process (e.g., Belliveau, O'Reilly, and Wade, 1996). Such research has been unsuccessful in establishing evidence that CEO networks constitute a valuable firm resource (Geletkanycz et al., 2001). Geletkanycz et al., (2001), in a study examining 460 CEOs from Fortune 1000 firms found that "in general, only a marginal effect is observed between CEO networks and pay. However, when firms are more diversified— i.e., face greater external challenges—a substantial premium is levied on CEOs' external ties. This pattern seems to suggest that CEO external networks are rewarded on a sliding scale, largely in accordance with the laws of demand (for their benefits)" (Geletkanycz et al., 2001: 896). Yet, it is not clear whether executives are rewarded for offering valuable resources to their firms through their network ties or are compensated with the "managerial power" offered through their network ties that allows them to opportunistically extract economic rents without helping performance (Bebchuk and Fried, 2004). Economic rent extraction through managerial power occurs when executives use their positional or expert power to leverage their connections to influence the board and negotiate a more favorable compensation package (Westphal and Zajac, 1995) beyond the value the connections bring to the firm.

Research conducted on compensation examined through a social capital lens has been remarkably limited, particularly in the number of studies that consider compensation and social capital for the TMT. The few studies that were conducted on social capital and compensation at the upper echelon level have tended to focus on the CEO's social network and the association with compensation packages (Larcker et al., 2005; Barnea and Guedj, 2007; Brown et al., 2008; Hwang and Kim, 2011; and Horton et al., 2012). Payne et al. (2011) examining twenty years of social capital research revealed only four studies on compensation and social capital. Horton et al. 2012, using

the entire population of UK listed firms from 2000 - 2007 found empirical evidence that the better connected an inside or outside director was they would receive a rent premium. This thesis examines not only whether the TMT members receive a rent premium for their valuable resources, but extends this examination to consider whether these valuable resources increase firm performance.

Performance

In theory if an executive's social capital generates beneficial resources for a firm then the aggregate of the TMT social capital should be related to an organization's performance. This is only true if the value created from the social capital is greater than the rent extracted from the executives that possess this capital. An organization whose executives are more central to its network will have a greater ability to access all network information on a timely basis. Society and the firm can benefit from each other by the positive synergies created and materialized through business links (Drucker, 2003; Diaz-Fernandez et al., 2015). Diaz-Fernandez et al. (2015) look at identifying not only elements influencing the performance of a firm but also how a high level of performance can be achieved through a specific TMT. Such work would constitute an important achievement in this type of research, as evidenced from the following quote from the authors: "This purpose has been widely pursued but not yet achieved" (Diaz-Fernandez et al., 2015: 376).

Only a handful of studies have shown an association between social capital and a firm's financial performance. Geletkanycz and Hambrick (1997) found that alignment of executives' external ties with the informational requirements of the firm's strategy improves a firm's performance. Geletkanycz, et al. (2001) found clear evidence that interlocking directorates improve performance when there is high uncertainty and Horton et al. (2012) established executives' connectedness was positively associated with the firm's future performance. Unlike previous studies on individual ties and compensation, Horton et al. (2012) were able to infer that connectedness enhances firm performance and does not inevitably result in managerial power being able to extract a rent premium larger than the value these networks provide for shareholders. Zaheer and Bell (2005) reported previous studies found executives were able to extract economic rents greater than the value of their connectedness because they had 'resource-poor' external networks that were worth less than the value they were able to extract.

Horton et al. (2012) to best of their knowledge were the first to provide empirical evidence that the better-connected executives, inside directors and outside directors the greater the benefits accruing to these individuals and the greater their firm's performance. Unlike other studies these resources not only compensated the individuals for their ties but also the connectedness was beneficial to the firm and did not necessarily result in managerial power for the individual executives. Horton et al. (2012) acknowledge that social and human capital is deeply intertwined in individual's biographical history and has an impact on both individual compensation and firm performance. They included a number of control variables in an attempt to capture and control for the human capital of individuals. For instance, a formal human capital variable (education) was used to determine if the directors went to a top school as defined by a small cohort of Oxford, Cambridge, Harvard and top London based universities. Although this study focused on directors of firms rather than the TMT specifically and pointed out the challenges of separating social and human capital it critically points out the value that a strong social network brings to both the individual and the firm.

Resource-Based-View

At the TMT level an examination of generic and easily replicated features such as years of education and years of work experience, among other commonly studied attributes for human and or social capital, provide very low differentiation between TMTs of large publicly listed firms. Since the 1990's many scholars who focus on the resource-based view have contended that intangible assets are the most important drivers of competitive advantage (Castanias and Helfat, 1991; Conner and Prahalad, 1996; Grant, 1996; Quinn, 1992). A key explanation for this is that rival firms find it harder to imitate intangible assets as opposed to physical or tangible assets (Youndt et al., 2004). Whatever the specific knowledge, skills, or abilities, TMT with rare human capital can significantly influence firm performance (Bertrand and Schoar, 2003; Mackey, 2008). As such, human capital and social capital, if it is scarce, hard to imitate and can be kept from rivals can be at the core of a resource-based advantage. Nevertheless, human capital is not owned, or controlled, by the firm and employees are free to resign at will and take their human capital (Campbell et al., 2012) or social capital to alternative employers.

Through labor markets by moving to firms that pay more for their resources or by extracting higher pay from current employers using the threat of walking away (He, Shaw and Fang, 2017) TMT members are able to divide the ‘pie’ of value or benefits between themselves and the firm. Yet, causal ambiguity stemming from interconnectedness among resource bases may allow the firm to appropriate some of the rents as it makes it more difficult for the TMT member(s) to leave the firm and take their full performance with them, in a sense the firm, by being the locus of this net or web of resources is itself a valuable and rare resource bundle that allows the TMT to unfold its own value. I will explore this in greater detail in chapter four through the lenses of the prisoner’s dilemma and external tournament theory. Researchers have indicated a greater importance and dependence upon general managerial skills. General skills that are transferable between firms are fully captured in an executive’s compensation whereas the surplus from specific skills has to be shared with the company (Elson and Ferrere, 2013). As mentioned previously the general skills have to be strategic in nature and derived from a source that is scarce to increase compensation and potentially performance.

In a meta-analysis Crook et al. (2011) analyzed the results drawn from sixty-six studies of the human capital firm performance relationship using a resource-based theory. Crook et al. “found that human capital relates strongly to performance, especially when the human capital in question is not readily tradable in labor markets and when researchers use operational performance measures that are not subject to profit appropriation” (Crook et al., 2011: 443). It was suggested by Crook et al. (2011) in contrast to the RBV human capital findings, that the types of human capital examined by Newbert (2007) were not rare, valuable or hard to imitate and that this issue might have been an important determinant of why a majority of the studies did not find an association with firm performance.

Revisiting the work of Crook et al. (2011) we see that of the sixty-six studies they examined only six dealt with the association of work experience or educational backgrounds of TMT members and firm performance. These six studies were quite varied including two papers on technology based firms TMT experience and performance, where one had a weak link with performance (Shrader and Siegel, 2007) and the other a positive association with performance (Kor and Mahoney, 2005); a study on small businesses owners in Bulgaria showed a positive association between human and social capital and performance (Manev et al., 2005); in publicly held

restaurant chains the link between TMT experience and performance was not supported for ROE and market-to-book value (Combs and Ketchen, 1999); and finally in two studies involving law firm partners human capital (measured by the quality of the law school attended) and performance both had positive associations (Hitt et al., 2001; Hitt et al., 2006). The methodology to measure TMT human capital (work experience) used in the Combs and Ketchen (1999) study was the total number of years of executive-level food service experience and the total number of years in the firm, proxies of a type of human capital that arguably is not too difficult to substitute. Conversely, the human capital measured by the quality of law school attended by a partner in the Hitt et al. (2001) and Hitt et al. (2006) studies would seem to be more difficult to substitute.

A number of studies (e.g., Lester et al., 2006) suggest that prestigious TMTs may be associated with a higher equity value of a firm in its initial public offer (IPO). Academics have become particularly interested in the effects of associates in dealings with entities that are prominent and socially central, on the market valuations of IPO (Pollock et al., 2010). Pollock et al. (2010) found strong support for the suggestion that the number of prestigious executives on an IPO firm's TMT is positively related to IPO valuations. The results were additive and linear in nature. A TMT member was considered prestigious in a binary manner if he or she fit into one or more of the following categories: (A) currently or previously employed at a prestigious firm (as predominantly measured by the market capitalization of the firm) at the level of vice president or higher, and/or sat on a prestigious firm's (blue chip company - member of S&P 100 index) board of directors; (B) A person was coded as having a prestigious education if he or she had a degree (undergraduate or graduate) from an elite institution. Recently, Datta and Iskandar-Datta (2014) examined CFOs on general versus specific human skills and determined an association between CFOs with an elite MBA (generalist skills) and compensation. A pay premium was received for generalist skills versus specialist skills (professional accounting designation) (Datta and Iskandar-Datta, 2014). I would argue that Datta and Iskandar-Datta. (2014) specialist skills (accounting designation) are still general when it comes to moving between firms. The true 'specific skills' mentioned earlier are things that are only relevant within a firm. The accounting designation will be applicable in many firms just not very rare. These authors considered "CFOs with elite MBA credentials to represent a scarcer resource to the firm, and hence would be even more valuable to the firm in need of their talent and social network" (Datta and Iskandar-Datta, 2014: 1854). It is not unexpected then that

greater investment in human capital, in the form of educational prestige, is associated to a firm's profitability (Hitt et al., 2001) and the probability of its success (Phillips 2001). Falato, Li and Milbourn (2015) propose that CEOs educated at more selective university are paid at a premium, and this effect is associated with a valuable skill set and more powerful network to draw from. Zaheer and Bell (2005) examined how innovative capabilities, accessed through their networks, influenced the performance of Canadian mutual fund companies. They went beyond the assumption that a superior network position automatically generates firm performance by studying how the actors' demographic characteristics combined with network structure influenced performance. This paper argues that better TMT credentials, which are rare, valuable and hard to imitate and embodies intertwined elements of human and social capital skills will lead to value creation and a larger "pie" to split between the firm's shareholders and the firm's TMT.

Studying the TMT as a Collective Unit from a Resource Based View

In this research focus, a large number of indexes have been constructed in various studies to examine the effects of TMT diversity on performance using demographic variables. In stark contrast to studies using diversity indexes only a few studies use indexes to examine general human capital indexes that are primarily constructed to examine the association of human capital with compensation and to a lesser degree performance. The existing diversity indexes focus in their unit of analysis on the TMT or some other group of individuals at different levels of the organization, while the general human capital indexes focus almost exclusively on the CEO (Bell et al., 2011, Horwitz and Horwitz, 2007; Webber and Donahue, 2001, Mishra, 2014).

In the next sections, I will first examine the TMT diversity studies in more detail. I will then examine two specific resourced based view models (General Ability Index and the CEO Credential Model). The detailed review argues that although certain studies have properties that are important to the current study, there are limitations to each. Therefore, in chapter three I will construct and present two credentials which specifically measure the full set of variables identified in the research questions and hypotheses. The TMT diversity index will be examined from a macro level, while the General Ability Index and the CEO Credential Model will be examined by looking at a particular index to point out the drawbacks of extant studies.

TMT Diversity

Research on social and human capital within the ranks of upper echelon business executives tends to be conceptualized as a general construct, seen to exhibit uniform effects across the board regardless of particular dimensions to which it is empirically applied. This dissertation is an effort to pin down differences in order to stress the overlooked impact of specific incremental differences in qualifications of members of the TMT. The work goes beyond accepting generic attributes of executives, rather stressing the importance of differences in human attributes for the wellbeing of the firm and the individual TMT member.

At this point, a number of empirical research studies have explored TMT diversity and firm performance using a diversity index (Bell et al., 2011). However, although team diversity research is flourishing, unclear results and mixed conclusions are pervasive. In the present research the specific demographic variables that determine the strength and direction of the relationship between diversity and team performance is a point that is kept foremost in the concepts proposed here.

Bell et al. (2011) examined demographic diversity and team performance in a meta-analysis study. The results were mixed and depended on the unit of analysis studied and the surrounding circumstances. For example, they found that educational background diversity in terms of categorical differences (variety) among team members and team performance was unrelated (Bell et al., 2011). Further, they found “a positive relationship between educational background diversity and team performance when the team performance criterion was creativity or innovation” (Bell et al., 2011: 717), however this relationship was not identified when considering general performance (Bell et al., 2011). Team tenure diversity, education-level diversity and organizational tenure diversity were consistently unrelated to team performance (Bell et al., 2011). Mixed results permeate the team diversity literature, which offers a limited path to both researchers and practitioners alike (Bell et al., 2011).

General Ability Index

Custodio et al. (2013) created one of the first studies to test whether general managerial skills that were transferable across firms and industries were a determinant of CEO pay. The General Ability Index (GAI), which a number of other studies have subsequently adopted to examine performance (e.g., Mishra, 2014) and compensation (e.g., Campbell and Thompson, 2015; Peters and Wagner, 2014), warrants closer

observation. Custodio et al. (2013) found that the average GAI has risen over the last 15 years and that it is positively and significantly associated with total CEO pay. The effect was also economically important, as a one standard deviation increase in the index of general managerial ability was associated with an increase of 12% in annual total CEO pay. Moreover, generalist CEOs (those with a GAI value above the median) earned a premium of 19% in annual pay, or nearly a million US dollars in additional pay per year on average. The generalist pay premium was pervasive across industries, and it was higher in industries that have experienced regulatory and technological shocks in the last two-decade. Ironically, although the difference was small but statistically significant, firm performance measured by both accounting performance and stock market performance was slightly lower for generalist CEOs with high generalist ability scores (Custodio et al., 2013). It is highly possible these general skills are quite common among CEOs and although they allow for rent extraction they have little or even adverse impact on performance. The GAI model was a valuable contribution to the literature because it provided direct evidence of the increased importance of general managerial skills over firm-specific human capital for CEOs and has a direct positive impact on CEOs compensation (Custodio et al., 2013). However, it is insufficient to fully explain industry specific effects and firm performance.

The CEO Credential Model

A recent study, measuring publicly observable signals of CEO skills based on the quality of CEO education, professional experience achievements, and the CEO's outside reputation, described collectively as 'CEO credentials', applied factor analysis to combine the components measured with weights chosen in a way that uses proxy measures to capture the CEO abilities (Falato, Li and Milbourn, 2015). The three proxies were, 'Press' as a reputational signal that captures external parties' perceptions of CEO reputation; 'Fast-Track Career', as the labor market signal that measures the quality of the CEO's career track records based on how fast they cleared the bar for their first CEO jobs and the third proxy, 'Selective College', as the schooling signal and measures the quality of the CEO's educational background. They found newly appointed CEOs earn up to a 5% or \$280,000 total pay premium per credentials decile and the credentials have a positive impact on firm performance. This was one of the first talent-based indexes to look at a combination of skills that were rare and difficult to imitate with a focus on their impact on compensation. The CEO Credential Model

may be valuable in informing future research on positive and economically significant associations between selective skills, compensation, performance and value creation.

Human and Social Capital and the TMT

The unit of analysis of using credentials that have embedded features of human and social capital has almost exclusively been examined at the CEO or individual unit of analysis for both compensation and performance. Custodio et al. (2013) using general ability skills for the CEO in the GAI model found a positive relationship between CEO skills and compensation but a slightly negative relationship between CEO skills and performance. Perhaps the skills measured were able to extract more rents for the holder of these skills at the expense of the shareholders. Falato, Li and Milbourn, (2015) in their CEO's signaling skills-based credentials model found a positive relationship between the CEO's credentials and both compensation and performance. Their study was the first direct attempt at measuring the effect of CEO skills on both pay and performance. Firm performance in the Falato, Li and Milbourn (2015) study was measured by examining the cumulative abnormal returns (CARs) between two days before and two days after the announcement of a new CEO appointed to a firm. This is an incredibly short period of time to measure shareholders views on the value of the company. Performance was also measured by using OLS regressions of long-term operating firm performance such as return on assets (ROA); operating return on assets (OROA); operating return on sales; (OROS), return on equity (ROE), on measures of CEO credentials from 1993 to 2005 for newly appointed CEOs over a three-year period subsequent to the CEO appointment and three years afterwards. Even though the results were almost universally positive and significant for all performance measures used it is important to point out that this study did not determine how strong or weak the previous CEO's credentials were from a baseline and comparison point of view. The perceived heightened performance of the newly incumbent CEO might have more to do with incompetence of the previous CEO.

The aforementioned research on social capital and human capital within the ranks of upper echelon business executives tends to be conceptualized as a general construct, seen to exhibit uniform effects across the board regardless of particular dimensions to which it is empirically applied. At the TMT level there is anemic amount of research examining collective skills from an RBV lens on firm performance. TMT diversity research is flourishing but the unclear results and mixed conclusions on

performance still prevail. Two skill sets that have embedded human and social capital and have demonstrated, at the individual level of analysis, to have a positive relationship on CEO's compensation are elite education and elite work experience. As previously Joh and Jung (2016) discovered TMT academic credentials from prestigious universities in South Korea had an impact on performance on non-financial firms in South Korea. In the next section elite education and elite work experience will be examined from an RBV as key credentials for TMT members.

Elite Education and Elite Work Experience as Key Credentials from a Resource Based View

The RBV of the firm posits that the leverage of a firm's human capital, which is unique or rare, imperfectly imitable and not substitutable with another resource by competing firms in certain circumstances, can provide a sustained competitive advantage (Ling and Jaw, 2006). The value of human capital is fundamentally dependent upon its potential to contribute to the core competence or competitive advantage of the firm (Lepak and Snell, 1999). Social capital can be approached with an RBV lens as the elite or more prestigious networks that can give access to critical resources that create value (Judge et al., 1995; Dacin et al., 2007). A recent study by Datta and Iskandar-Datta (2014), considered CFOs with elite MBA credentials to represent a scarcer resource to the firm in need of their human capital (talent) and social capital (social networks). Their study showed "that the CFO labor market assigns a compensation premium only for elite strategic CFOs, which can be attributed to the scarcity of their superior cognitive abilities and generalist training, as well as to their elite social/professional networks, both of which are valuable to the hiring firm" (Datta and Iskandar-Datta, 2014: 1864). Their results supported the view that unique complementarities between scarce highly skilled executives and the firm increase the bargaining power of these executives (Datta and Iskandar-Datta, 2014:1864). This study also demonstrated how certain skills (such as holding a degree from an elite university) could encapsulate both human and social capital skills (Datta and Iskandar-Datta, 2014).

Researchers found TMT members that possess work experience at more selective firms had an abundance of human and social capital from their valuable social networks, access to valuable information and resources, and more influence through prestige and sophistication (Pfeffer and Salancik, 1978; Boeker, 1997 and Bidwell et

al., 2015) which lead to positive firm performance and compensation. This paper argues that higher aggregate levels of two key variables (elite education and elite work experience) from the TMT, which are rare, valuable and hard to imitate and embodies intertwined elements of human and social capital skills will lead to not only value creation and a larger “pie” to split between shareholders and the TMT but also additional compensation to individual TMT members who possess it.

Conclusion

This chapter has presented a systematic review of existing literature and empirical research on the topics of executives human and social capital and the resulting impact on firm performance and individual compensation which aligned closely with the scope of the dissertation research questions presented. It has become evident that there is a great opportunity to combine upper echelon skills to explore the associations of this factor with both performance (creating a larger pie) and determining who receives the value created (how the pie is shared) as our empirical understanding of this is limited in the extant literature. Recent general ability (Custodio et al., 2013) and CEO credential-based (Falato, Li and Milbourn, 2015) models have been both statistically and economically significant in measuring rent premiums and performance, which shows great promise for additional research on TMT credentials and the division of the profits generated. This dissertation presents a close examination of these questions which are not currently addressed in the literature.

Drawing on these foundations in the literature as presented in this review, this dissertation will extend the upper echelon executive compensation and performance research beyond the CEO, to specifically include the TMT, applying a RBV perspective. Further, it will also examine how the managerial incentives that align the interests of agents and principals are distributed when additional value is created. At this time, the author is not aware of any existing or prior study, which examines these topics in this light. Therefore, this is the first multilevel empirical study that examines the relationship between TMT skills and firm performance and the division of value creation from an RBV perspective. In chapter three which follows, I introduce the first of the two empirical studies which comprise this dissertation.

CHAPTER 3

TOP MANAGEMENT TEAM CREDENTIALS, VALUE CREATION AND COMPENSATION

Introduction

This chapter presents the first of the two empirical studies in this dissertation. As the review of the literature has shown, the extant work on human and social capital and their impact on compensation and performance have provided rather mixed results. I believe that a reasonable explanation for these weak results lies in the fact that most prior studies have not differentiated clearly enough between ‘capital’ elements which provide a base for competitive levels of performance and those that are likely to provide the capital holder, and by implication the hiring firm, with a real advantage in the market place. Accordingly, the aim of this chapter is to develop our understanding of the credentials which integrate human and social capital elements by specifically drawing on the incidence of two variables, elite education and elite work experience, as a proxy for talent as an intangible asset possessed by a given top management team (TMT). The intangible asset of a TMT will be examined through the lens of absorptive capacity to determine the size of the pie created for both TMT and shareholders. To shed light on how the market values elite credentials I will examine the relationship between TMT member credentials and individual TMT member compensation. A moderating variable, degree of internationalization, will be examined to determine the impact on both performance and compensation.

TMT as the Unit of Measurement

In previous studies, the study of credentials which contain the embedded features of human and social capital has almost exclusively been examined at the CEO or individual unit of analysis, for both compensation and performance. Although measuring general ability skills from an RBV perspective has found a positive relationship between a CEO and compensation, the relationship between CEO and performance has been inconclusive or negative (Custodio et al., 2013). In context of firm performance, the CEO role is to that of a conductor in the sense that the individual incumbent in the role has the critical job of orchestration of the firm’s assets to foster complementarities and productive exchanges within the company (Kor and Mesko, 2013). Even those CEOs with the most talent are likely to benefit from a team approach

to strategic decision-making. Yet, the product of this effort can only be as strong as the overall quality of the TMT's internal and external cognitive abilities (Virany, Tushman, and Romanelli, 1992).

TMT Aggregated Credentials as an Intangible Asset

In chapter one in the section labeled, "Elite Education and Elite Work Experience" I explain the reasons why the TMT characteristics of elite education and elite work experience provide good proxies for underlying variabilities in the dimensions of human and social capital. In addition, it is mentioned the benefits that these elite credentials are actually possible to measure, whereas deeper measurements are hard to come by, especially for TMT members; and having a measure that can be collected makes the recommendations more replicable and salient for practitioners.

Adner and Helfat (2003) identified the three characteristics underpinning dynamic managerial capabilities, as first, the managerial human capital, second, the managerial social capital, and third, managerial cognition. All three characteristics are seen as priority in the set of characteristics which elite education institutions look for in their selection of students and elite work institution seek to find in their new hires. During the time attending or working within these institutions, these skills are further developed and nurtured through the vast amount of firm resources available, training received and equally capable peer group to challenge, compete and push them (Cappelli and Hamori, 2005; Brymer, Molloy and Gilbert, 2014). These highly developed skills and are in demand and are the skills most relevant to the demands of senior executives (Zhang, 2012; Lazear, 2001; Lazear and Shaw, 2007).

Diaz-Fernandez et al. (2015) identified intellectual capital, especially in extremely intensive knowledge capital-based firms, as a vital intangible asset in business. This sustainable source of competitive advantage is driven from three sources of capital: human capital, relational capital and structural capital. As mentioned, elite education and elite work experience are an important provider of human and relational sources of capital (Abdullah and Sofian, 2012) and the aggregation of these sources of capital by the TMT provides the raw materials for a competitive advantage that can be harnessed through absorptive capacity.

TMT Aggregated Credentials and Absorptive Capacity

In this study I draw upon Kor and Mesko (2013) definition of TMT absorptive capacity as the collective capacity of the executives to combine their existing knowledge with the absorption of newly acquired knowledge and repositories to form new insights and dynamic organizational capabilities. The configuration of the TMT competencies directly shapes the absorptive capacity of the team. This crucial function involves selecting the relevant bundle of general managerial skills, network access and specialized skills (Kor and Mesko, 2013). In a highly knowledge-based industry such as financial services sector, executives which collectively possess stronger human and social capital skills provide important inputs to the building blocks of a firm's intellectual capital and its ability to increase the effectiveness of its absorptive capacity and hence provide a competitive advantage. Absorptive capacity will be the lens used to examine the competitive advantage of elite credentials and the resulting impact on firm performance.

Absorptive capacity is a multidimensional conceptualization “where potential absorptive capacity includes the acquisition and assimilation of knowledge and realized absorptive capacity involves the transformation and exploitation of knowledge” (Ramachandran, 2018:1844). Zahra and George, (2002) pointed out that absorptive capacity generated through a set of organizational routines and processes by which the TMT is able to acquire, assimilate, transform, and exploit knowledge will in itself produce a dynamic organizational capability. Examining individually how the management capabilities to acquire, assimilate, transform, and exploit are enhanced by the TMTs elite credentials reveals the additional synergies that contribute to a competitive advantage. The relationship between TMT elite credentials and each component of absorptive capacity are examined in sequence.

TMT elite credentials and acquisition: In order to transform and exploit knowledge one needs to first acquire and assimilate new knowledge. The prior investment by TMT members in attending elite schools and working for elite firms would provide prior knowledge, skills and strong external networks that would be beneficial for the speed of learning, quality of learning and sourcing new connections (Zhang, 2012; Lazear, 2001; Lazear and Shaw, 2007). Higher levels of skills, knowledge and cognitive ability among the TMT collectively then become a source of expert and prestige power (Daily and Johnson, 1997; Finkelstein, 1992), which

influences the capability of the company to compete and get things accomplished (Finkelstein, 1992). Moreover, higher levels of TMT skills, knowledge and cognitive ability are likely to reduce the need for extensive information searches that can delay the decision-making process (Mintzberg, Raisininghani, and Theoret, 1976).

Working at higher profile firms not only has the potential to lead to better peer training as workers are surrounded by more able colleagues, but also enable workers to build more valuable social networks (Bidwell et al., 2015). This industry expertise also brings bridging social capital through relationships with suppliers, customers and regulators (Groysberg et al., 2006). Bridging capital provides two direct benefits: first, that social capital helps facilitate access to information, which is critical for developing business opportunities (Shane and Venkataraman, 2000); and second that it helps to accelerate the relevance, timing and quality of information (Adler and Kwon, 2002). Higgins and Gulati (2006) explained how prestigious horizontal employment associations derive from top manager employment at firms in the same sector can enhance a firm's competitive capabilities through valuable insight into sector knowledge as well as competitor policies and practices (Geletkanycz and Hambrick, 1997). Executives from elite schools benefit from networking with high-ranking government officials and business leaders from their alma mater (Finkelstein, 1992; Palmer and Barber, 2001; Abdullah and Sofian, 2012). Goldman Sachs and other prestigious firms, for instance, have placed former executives in high-level government positions (Brymer, Molloy and Gilbert, 2014). These extant relationships can be seen as 'coordinating mechanisms' which have been shown to have led to higher growth through public-private associations (Shrader and Siegel, 2007; and Joh and Jung, 2018).

Similarly, directors selected to board seats tend to come from high status firms or elite educational affiliations in order to enhance their firm's prestige (Acharya and Pollock, 2013). Firms also seek to place their own executives on boards of companies in attempts to heighten the firm's status (Galaskiewicz et al., 1985; Johnson, Schnatterly and Hill, 2013). Galaskiewicz et al. (1985) found that executives in elite circles targeted interlocks with each other. Strong external network would in turn enhance the external knowledge sources and compliment the internal existing knowledge base within the organization.

TMT elite credentials and assimilation: Zahra and George (2002) define the company's ability to "analyze, process, interpret, and understand" newly acquired

knowledge as the assimilation capability of absorptive capacity. In the absence of such a capability, initial problems during the integration of received knowledge may be the reason for terminating its use (Szulanski, 1996). Elite schools assess students for their cognitive intelligence and superior scholarly achievements evaluated by conventional measures. They also look for candidates who are clear in thought, communicate and interact well with their peers (Miller and Xu, 2020). Strong alumni networks are associated with graduates of prestigious educational institutions, which increase cohesion between elites (Mills, 1956; Chen, Trevino and Hambrick, 2009). Many elite firms are considered ‘academy companies’ which are known for their personnel development, socialization and distinctive screening criteria (Cappelli and Hamori, 2005). Academy companies are difficult to be hired into which provides a market signal of the individual’s quality (Spence, 1973). They usually provide world-class leadership development programs and make a significant financial commitment to training, problem solving skills and work experience diversity (Brymer, Molloy, Gilbert, 2014). A TMT comprised of prominent work or educational backgrounds are likely to have internalized commonly accepted norms of behavior which will help facilitate sharing of information and access to their elite external networks (Useem and Karabel 1986). A TMT with strong cognitive capabilities, problem solving abilities and the willingness to share knowledge will be expected then to more effectively leverage the assimilation of new knowledge within the firm.

TMT elite credentials and transformation: Transformation represents a firm's ability to advance and improve the routines that facilitate combining the newly acquired and assimilated knowledge with existing knowledge. This is done by adding or deleting knowledge, or by interpreting the same knowledge in a different way (Zahra and George, 2002). The ‘academy companies’ mentioned earlier would have many of the firm characteristics that an executive with elite credentials would look to be part of as opposed to the newer, smaller or lesser known firms. For example, if a firm recognized as having a great reputation is crucial for attracting TMT members with elite credentials this reputation would likely have “to be built (rather than bought) by following a consistent set of production, quality control and policies over some period of time” (Dierickx and Cool, 1989:1506). Having existing knowledge structures within the firm that has accumulated a strong stock of knowledge over a long period of time will arguably provide a competitive advantage when assimilating with new knowledge.

Dierickx and Cool (1989) also differentiated between stocks and flows of assets. They explained the stock of asset is a cumulation of the flows of assets overtime; although flows can be adjusted instantaneously stocks cannot. Similar to the assimilation capability, the collective cognition of the TMT members is advantageous given that a wider scope of information is available to adopt and ultimately store the new knowledge within the company (Daspit, Ramachandran and D'Souza, 2014). The transformation takes place when the bisociation of the new information is creatively combined with the existing information to form a transformation capability (Zahra and George, 2002).

TMT elite credentials and exploitation: The final stage of absorptive capacity is exploitation which is the application of acquired, assimilated and transformed knowledge. “Exploitation as an organizational capability is based on the routines that allow firms to refine, extend, and leverage existing competencies or to create new ones by incorporating acquired and transformed knowledge into its operations” (Zahra and George, 2002:190). Exploitation reflects a firm's ability to produce and incorporate existing knowledge into its current operations. The TMT aggregate source of talent, working together and sharing their external sources of knowledge combined with their internal knowledge stocks would provide a larger resource base for strategic decision making. New undertakings that gather information from a wide knowledge base including alumni connections, ex-colleagues from leading firms, government connections would give unique insights into their market, competition and customers to create new competencies (Zahra and George, 2002).

Examining the four knowledge management capabilities for absorptive capacity reveals the many synergies that elite education and elite work experience contribute to a firm's competitive advantage. The absorptive capacity would be further insulated from competitor's ability to imitate as causal ambiguity although is already inherent in the absorptive capacity process itself it is even more innate within knowledge-based industries (Bowman and Swart, 2007). This allows firms which have created a competitive advantage to form a moat around their competitors and stop them from imitating their valuable competencies (King and Zeithaml, 2001) that would lead to stronger and more sustained firm performance. I argue through the lens of absorptive capacity that the TMT association between action and performance in large firms is complex, path dependent and subject to causal ambiguity which almost assures the

presence of uncertain imitability (Lippman and Rumelt, 1982). This argument leads to the first set of hypotheses:

Hypothesis 1a: The TMT aggregate elite educational credentials will be positively related with firm performance.

Hypothesis 1b: The TMT aggregate elite work experience credentials will be positively related with firm performance.

TMT Compensation

Prior research on compensation has focused primarily on the CEO, contributing little to our understanding of the drivers of compensation for other non-CEO executives (Datta and Iskandar-Datta, 2014). However, researchers have argued that companies which remunerate their TMT with high compensation levels relative to their competitors possess potentially more capable executives and compensate in this way intentionally in order to retain these highly qualified executives who have relatively higher mobility in the outside labor market (Ridge, Hill and Amie, 2014). It has been shown in the literature that the key skills derived from elite education and elite work experience provide selective human and social capital and each form of capital has been shown to be valuable for both the individual and the company (Datta et al., 2014; Eddleston, 2009; Judge et al, 1995; Gottesman and Morey 2006; Falato, Li and Milbourn, 2015; Zhang, 2012; Lazear, 2001; Lazear and Shaw, 2007). Employees at higher status firms who are promoted within those firms may be seen as exceptionally talented, further raising their worth in the labor market (Bidwell et al., 2015). The higher the position someone holds within a high-status firm, the rarer that position is and the more valuable that human capital is to the firm (Benjamin and Podolny, 1999; Bidwell et al., 2015). The greatest labor market signal of employee excellence may be whether employees have gained specific skills at other firms (Sauer et al., 2010).

Further, researchers have identified a greater importance and dependence by firms on general managerial skills that are valuable, rare and difficult to substitute (Acharya and Pollock, 2013; Datta and Iskandar-Datta, 2014). This trend should intuitively cause both increasing external opportunities for TMT members and increased compensation to the executive. The rarer the TMT general skills are in the overall market for executive labor, the more valuable they are to the company (Datta and Iskandar-Datta, 2014). It seems almost paradoxical that “general skills” are more

valuable to a company than firm specific knowledge yet the general skills are derived from elite institutions that combines both codified and tacit knowledge are difficult to imitate and rare. As Kryscynski et al. (2020:388) stated, “If an employee changes jobs, her firm-specific human capital creates less value in the new firm. In contrast, general human capital holds its value across firms.” This is especially true if the general human capital is derived from an elite skillset.

TMT members are also likely to compare their compensation against the characteristics of referent groups within the organization (Lim, 2019) such as whether they possess an “elite education” (Ridge, Hill and Aime, 2014) or elite work experience. TMT classify themselves based on perceived similarities in demographic characteristics, structural position, prestige, or social standing and these characteristics impact compensation dispersion among the TMT members. These social-psychological factors that impact comparisons among members of the TMT influence the board’s pay setting process, which in turn affects compensation (Fredrickson, Davis-Blake and Sanders, 2010). Therefore, TMT members expect to be more generously compensated for their elite skill-set and cognitive abilities, as these are in more scarce supply. Drawing on these arguments, I propose the following hypotheses:

Hypothesis 2a: The TMT member’s elite educational credentials will be positively associated with compensation.

Hypothesis 2b: The TMT member’s elite work experience credentials will be positively associated with compensation.

The Moderating Effects of Internationalization on Performance

Given the importance of the extra complexity that firm internationalization is likely to produce on the need for an elite skill sets that will impact both performance and compensation I will now analyze the impact. Upper echelons theory (Hambrick and Mason, 1984) argues that the idiosyncratic experiences of executives affect their interpretations of strategic decision-making situations and, in turn, affect their strategic choices and performance levels (Nielsen and Nielsen (2011). Drawing on upper echelon theory, it would follow that individual differences among executives will be most salient when the firm’s requirements for strategic decision-making are complex and ambiguous. Firms with greater degrees of internationalization would be expected to experience such complexity given their expansion into multiple institutional contexts, markets and geographic economic systems (Sanders and Carpenter, 1998).

Hutzschenreuter and Horstkotte (2013) believed the performance effects of internationalization and the TMT has been largely neglected. The TMT as the strategic apex of an organization has the responsibility of coordinating change and making strategic decisions, such as the growth into foreign countries, can alter performance. Integrated as a coordinated team the TMT are challenged by the information processing requirements in the internationalization process and in order to handle this complexity they need to acquire; share; and then jointly analyze and integrate this information into their operations (Hutzschenreuter and Horstkotte, 2013; Hinsz, Tindale, and Vollrath, 1997).

Hitt et al. (2006) found intangible resources moderate the association between internationalization strategy and firm performance which support the argument that valuable intangible resources are likely to create value for an organization and contribute to a competitive advantage. Advances in the global economy have shaped an increasingly complex decision-making environment characterized by information overabundance, uncertainty, and ambiguity (Levy, 2005). The degree of global strategic posture of a multi-national enterprise (MNE) has increased the level of responsibility of TMT members (Bartlett and Ghoshal, 1989; Sanders, 2004). This has created a greater reliance on non-CEO TMT members due to the information-processing needs that is shifted towards their collective effort (Sanders, 2004). High environmental discretion influences both the association between managerial characteristics and organizational outcomes (Finkelstein and Hambrick, 1990). “When TMT ability to process information is overstretched it may even neglect the management of existing business operations damaging both the performance of existing subsidiaries and that of newly founded ones” (Hutzschenreuter and Horstkotte, 2013: 262). Thus, in dynamic environments, such as global financial services markets, TMTs play a significant role in determining the strategic choices of firms and TMT performance is more strongly reflected in organizational outcomes (Levy, 2005). Organizations with TMTs that are highly educated and have greater work expertise are more capable of managing the complexity inherent in a higher level of international diversification, reducing the cost derived from strategic complexity (Díaz-Fernandez, 2015). Internationalization adds to the complexity and the TMT’s need for having elite education and work-based skills. As a firm’s degree of internationalization increases so, too, does the need for the level of these skills. Therefore, the following is hypothesized:

Hypothesis 3a: The positive relationship between the TMT's aggregate elite educational credentials and performance is moderated by the degree of internationalization.

Hypothesis 3b: The positive relationship between the TMT's aggregate elite work experience credentials and performance is moderated by the degree of internationalization.

The Moderating Effects of Internationalization on Compensation

Individual competence in complex information processing will be rewarded in the market for executive labor because the ability to cope with large volumes of diverse information is likely to be both a rare TMT member competence and one of critical relevance to competitive organizational performance. The value of social capital embedded in executives, more specifically in their access to resources through their networks, has empirically been found to be considered when establishing executive rewards (Geletkanycz et al., 2001). When firms faced greater external challenges there appears to be a substantial premium levied on the social capital, which is remunerated principally in accordance with the laws of supply and demand (Geletkanycz et al., 2001). Social capital denotes the individuals' and firms' ability to develop ongoing international business (Lindstrand et al., 2011). Therefore, both elite educational and elite work experience credentials will be more important in firms with more complexity, greater information processing needs and value attributed to strong external networks. As a result, increased elite educational and elite work experience credentials will be more valued by international firms, which leads to the following hypotheses:

Hypothesis 4a: The positive relationship between the TMT member's elite educational credentials and compensation is moderated by the degree of internationalization.

Hypothesis 4b: The positive relationship between the TMT member's elite work experience and compensation is moderated by the degree of internationalization.

The hypotheses presented in this chapter are examined using the OLS regression analyses approach as presented in the methodology chapter. Findings are presented in detail in chapter six.

CHAPTER 4

TOP MANAGEMENT TEAMS – WHO APPROPRIATES VALUE CREATED?

Introduction

In chapter three, I hypothesized that elite credentials for an individual top management team member would have a positive impact on their compensation and that the aggregate elite credentials of a TMT would have a positive impact on firm performance. In the current chapter, I focus on the interconnection between elite credentials, performance and compensation at both the individual and the TMT level and the moderating effects of the degree of internationalization.

The war for talent at the TMT level is fierce (Suseno and Pinnington, 2017). It is vital that financial services firms retain their talented executives and that firms defend their talent against attempts by competitors to poach or steal TMT talent in order to protect the value created (if any) by these executives. Finance theory (Khoury et al., 2013) would predict that in a liberal capital market, shareholders would receive an amount of return commensurate with the capital they invest. Management, in turn, would be expected to receive compensation commensurate with the skills and experience they contribute through their managerial capital (Wang et al., 2015) to create a return on capital. However, when economic value is created in a firm that exceeds the ex-ante expectations of a fair return to both shareholders and management how does this impact the way additional value created is distributed to those with elite credentials? That is, does the division of the value created between the TMT members (in the form of a “rent premium”) who possess elite credentials and company shareholders vary with overperformance versus underperformance?

In order to examine the link between superior managerial skills, performance and the rent premium (if any) received by the TMT members we first have to determine what constitutes a “rent premium” and define the distinction between “under” versus “over” performance. Building on the connection established in the previous chapter between intangible assets and elite credentials I will in the following explore how signaling effects and causal ambiguity are catalysts for TMT members to extract rent premiums. I will do so adopting an analogy of sports teams. The relationship between rent extraction, elite credentials and performance will then be examined through the demand side of shareholders needs for superior skills and the supply side of TMT

members who possess these superior skills. The demand side will be examined through the lens of a prisoner's dilemma payoff matrix. Finally, from the supply side drawing on tournament theory (Lazear and Rosen, 1981), I will extend to an external tournament amongst external horizontal referents (Lim, 2019) how the TMT as a whole can extract additional rent premiums for all of its members.

Theoretical foundations and hypotheses

To empirically examine the research question above, this dissertation draws on the top management team literature empirical knowledge of incentives; the use of pay and rewards systems for executive pay for performance and on tournament theory. In the section which follows, I present a review of these foundations in light of the question of how economic value created is appropriated between shareholders and the TMT.

TMT Members Rent Premium

A rent premium in this this paper is defined as the difference between the actual annual compensation a TMT member receives less the estimated expected compensation a TMT should receive. In order to calculate a TMT member's rent premium, we need to first determine both their actual compensation and their expected compensation. In management practice, it is seen as reasonable to compare a TMT member with his or her potential replacement, such that this is known to be frequently done by the BOD especially with regard to CEOs. Gabaix and Landier (2008) ranked CEOs by talent based on the assumption talent increases with the size of the firm under their helm. Based on Gabaix and Landier (2008) competitive assignment model the replacement of the 250th most talented CEO with the number one CEO would increase firm value only by .016%. This very small difference in talent multiplied by the firm size, however, can have considerable compensation differentials for executives. This was indeed true as their calibration model correctly predicted the number one ranked CEO would be paid over 500% more than the 250th ranked CEO. CEOs and other TMT members are paid based on their expected marginal productivity (Gabaix and Landier, 2008).

Many researchers recognize that the CEO can make a difference in the value of a firm and, to the extent to which this idea holds true, it becomes more important to determine compensation on a marginal product basis. The challenge for academics who

attempt to address this question is finding suitable methods of measuring a CEO's potential marginal product that reflect the actual CEO and not just the environment in which he or she works in (Finkelstein and Boyd, 1998). Clearly this case applies directly to other non-CEO TMT members as well.

If the CEO or other TMT members take home their entire marginal product, shareholders might reasonably ask what is left for 'the firm' or 'the owner'? There is usually only one discrete organisational position for each given TMT mandate and their compensation is determined on a yearly basis by the remuneration committee of the board. Unlike firm size in Gabaix and Landier (2008) model as the driving factor for the marginal product of the CEO, Finkelstein and Boyd (1998) pointed out that there are many factors that impact the notion of the potential marginal product and ultimately compensation, including industry fixed effects, firm fixed effects and performance of the firm. In fact, research has shown that the labour market for TMT members does not fit the model of perfect competition as a TMT member may be over or underpaid for a number of reasons (Aguinis, Gomez-Mejia, Martin and Joo, 2018). For instance, *"it is impossible to know how well an alternative executive would perform in comparison to the incumbent, the pay of the CEO at the helm cannot be based only on observed firm performance (it might be that no one else – or everybody can deliver better performance results). Therefore, although firm performance is often used as a proxy for CEO performance, it is an imperfect indicator of the CEO's marginal contributions"* (Aguinis, Gomez-Mejia, Martin and Joo, 2018:124). In the current study, multiple inputs are used to determine the marginal productivity of a TMT member which is in line with Finkelstein and Boyd (1998) thinking that many factors impact marginal productivity. The individual TMT member's marginal productivity is used as a proxy for their expected compensation.

In the current study, the adopted methodology used to calculate expected compensation and rent premium is the methodology used by Vergne et al (2018). They calculated the executive compensation "as the (logged) total annual value of all salary, bonuses, restricted stock grants, long-term incentive-plan payouts, and option grants valued using the Black–Scholes formula and all other income paid to the CEO. They then calculated the anticipated CEO compensation through annual cross-sectional regressions of the natural logarithm of total pay on an array of well-proven economic determinants of compensation (including industry controls, year effects, individual and firm characteristics)" (Vergne et al., 2018:802). In the current study the same regression

was run separately for the non-CEO TMT members. To reduce heteroskedasticity, this study also used the natural logarithm for total compensation in-line with the treatment by many previous studies of executive compensation (Tien, Chen and Chaung, 2013; Falato, Li and Milbourn, 2015). The formulas below present the expected compensation regression equations for both CEO's and non-CEO's taking into consideration the following variables: individual and firm characteristics, year fixed effects and sub financial industry fixed effects.

Expected Compensation Equations for CEO's and Non-CEO TMT Members

$$EXP_TOTAL_PAY_CEO = \text{Log}(TOTAL_PAY_CEO) = \beta_0 + \beta_1 FIRM_SIZE + \beta_2 MEMB_AGE + \beta_3 VOLATILITY + \beta_4 LEVERAGE + \beta_5 ROA + \beta_6 ROE + \beta_7 TOBIN'S_Q + \beta_8 STOCK_RETURNS + \beta_9 PRB_DEFAULT + \beta_{10} DOI + \beta_{11} YEAR + \beta_{12} SUB_INDUSTRY + \epsilon \quad (1)$$

$$EXP_TOTAL_PAY_NON_CEO = \text{Log}(TOTAL_PAY_NON_CEO) = \beta_0 + \beta_1 FIRM_SIZE + \beta_2 MEMB_AGE + \beta_3 VOLATILITY + \beta_4 LEVERAGE + \beta_5 ROA + \beta_6 ROE + \beta_7 TOBIN'S_Q + \beta_8 STOCK_RETURNS + \beta_9 PRB_DEFAULT + \beta_{10} DOI + \beta_{11} YEAR + \beta_{12} SUB_INDUSTRY + \epsilon \quad (2)$$

The rent premium was then calculated by taking the difference between the actual total compensation for the individual TMT member and the expected compensation for the individual TMT member as outlined in the two equations below.

Rent Premiums for CEO's and Non-CEO TMT Members

$$RENT_PREM_CEO = \text{Log}(TOTAL_PAY_CEO) - \text{Log}(EXP_TOTAL_PAY_CEO) \quad (3)$$

$$RENT_PREM_NON_CEO = \text{Log}(TOTAL_PAY_NON_CEO) - \text{Log}(EXP_TOTAL_PAY_NON_CEO) \quad (4)$$

The marginal productivity or expected compensation for that individual TMT member, which is approximated by the first two equations, is assumed to be the fair market rate for compensation. Any overpayment or underpayment is considered a positive or negative rent premium to the TMT member at the expense or benefit of the shareholders.

Examining Underperformance Versus Over Performance: Four Key Metrics

A closer look at executive compensation plans adds insight into how the industry currently treats performance pay and top-management incentives. Executive

compensation plans for Short Term Incentives Plans (STIP) include salary and cash bonuses and for Long Term Incentive Plans (LTIP) include options, restricted shares and cash payments amongst other instruments. The performance incentives are defined in advance of the performance and targets are defined in the form of quantitative and qualitative goals as set by the remuneration committee of the Board, which then determine the subsequent payout of individual executive rewards. Quantitative firm performance goals may include such factors as stock price performance relative to peers, revenue growth, return on common equity, credit quality, earnings per share growth and other management indicators. Qualitative measures may include improving client satisfaction; achieving market leadership positions in key businesses; the committee's assessment of the executive's success in establishing, refining, and executing the firm's long-term strategic plan; improving operational efficiency; and developing future leaders" in the business for an example see JP Morgan Schedule 14A, (2002). Although any of the aforementioned measurements may be used, in reality the dominant performance and incentive compensation metrics applied are the predetermined quantitative metrics (Van Clieaf et al., 2014). Although individual executive rewards are determined by the board, the main payout of these rewards are driven by firm performance metrics. The board has discretion to predetermine the magnitude of these rewards received by individual members based on firm performance.

Gong et al. (2011) studied whether the use of accounting-based and market-based measures as it pertains to executive compensation plans for S&P 500 firms, has changed over time. Their sample only included plans that apply relative performance evaluation, which entails the use of peer performance in evaluating the TMT's performance. Their findings indicated that the use of market-based (stock returns) measures had increase by 36% between 1993 and 2003, whereas over the same period accounting based (ROE, ROA) measured had decreased by 38%. The mix between LTIP and STIP were quite different. In LTIP market-based measures increased from 61% to 85% whereas accounting based measures decreased from 47% to 22% and a small percentage of firms used both type of measures. For STIP market-based measures stayed relatively constant at 37% whereas accounting based measures dropped slightly from 77% to 70% but were still the dominant form of measurement. Under the SEC's 2006 executive compensation disclosure rules, Gong, Li and Shin (2011) found only 25% of the S&P 1500 firms used peer comparisons and the remaining firms used an

absolute performance measure or purely a time-based measure with no performance measures. They also showed that the majority of the firms that compared performance against a peer group used market-based measures for LTIP (i.e. restricted stock, stock options) and accounting base measures for STIP (cash-based bonuses).

The article entitled “The Alignment Gap Between Creating Value, Performance Measurement, and Long-Term Incentive Design” written by Van Clieaf et al. (2014) stated that the use of performance-based incentives for TMT LTIP increased every year from 52% in 2009 to 76% in 2013. The dominant performance metric among these performance-based awards, total shareholder return (TSR), was used by approximately 50% of the firms in 2000, decreased to 35% of firms in 2006 and then steadily grew back to 50% by 2013. Over the same time period accounting based returns were used by 25% to 30% of firms. The use of peer group comparison and absolute measures were split between TSR and accounting based measures. Van Clieaf et al. (2014) expressed their concerns that TSR obscures more than it discloses as this capital market performance metric is heavily influenced by industry and market factors outside of the control of the TMT. Van Clieaf et al. (2014) also discovered that during 2013 nearly 60% of companies changed their performance metrics for incentive design and one-third of companies changed 25% or more of their peer group. Gong, Li and Shin (2011) evidenced rent-extraction behavior among firms using peer comparison in the pay-setting process. Peer comparison using firms were more likely to select peers that are expected to perform poorly based on analysts’ target price forecasts. They also found a pattern in intertemporal changes in peer-group composition such that focal firms added peers that were more similar in size to themselves but displayed weaker performance than the peers that were dropped.

Over the last 20 years STIP and LTIP performance measurements have been based on a mixture of market-based, accounting based and time-based measures. The time-based measures require no performance metrics to be achieved although the TMT member has to be with the company for a certain period of time for these rewards to vest and be able to receive these rewards. The metrics for market-based and accounting based measurements are segmented further by whether they are based on relative peer evaluation or absolute evaluation. In order to categorized performance as underperformance versus overperformance we will use four different measurement approaches to calculate whether firm value was created and then analyze the quartiles for each measure as follows:

Jensen's Alpha: Performance using Risk Adjusted Absolute Market Based Measure

Underlying the use of this measure is the assumption that capital markets are efficient in the semi-strong form (Fama 1970). This implies that all currently available public information as well as historical information for any security (stock) has been incorporated into its price and adjusts instantaneously to the public release of new information. The beta (β_i) is estimated for each security i over a one-year (monthly returns) period. The difference between the actual returns and the expected returns for each firm are the abnormal returns 'Jensen's Alpha' and are calculated as follows: $\alpha = R_{it} - [R_f + \beta_i M^*(R_{MT} - R_f)]$

Excess Returns (ER): STOCK_RETURN - [$R_f + \beta_i M^*(R_{MT} - R_f)$]

Excess Total Stock Return (TSR): Performance using RPE Market Based Measure

The point-to-point measurement of the percentage gain or loss to shareholders, which is the following: (share price end of period minus share price beginning of period) plus dividends divided by share price beginning of period (Van Clieaf et al., 2014).

Excess TSR (EXCESS_TSR): TSR Firm – [TSR of Sub Industry during firm year]

Excess ROE: Performance using RPE Accounting Based Measure

Excess returns are calculated as a firm's financial returns in excess of the average return of the industry index.

Excess ROE (EXCESS_ROE_ROE_IND): ROE Firm – [ROE of Sub Industry during firm year]

ROE: Performance using Absolute Accounting Based Measure

ROE: Return on Equity Ratio of net income to common equity

The aforementioned performance measures are all causally ambiguous embedded team measures as they reflect the total firm performance in absolute terms

or relative to industry peers. In terms of compensation, using such a broad measure of performance that lacks any obvious measures of individual contributions could, of course, lead to opportunistic rent-extraction behavior by TMT members. The next two sections of the paper will examine signaling effects and causal ambiguity which are important factors in determining whether executives can extract rents and what role elite credentials play in this context. I will examine this from the lens of a prisoner's dilemma situation as well as a modified tournament theory that compares TMT members with both internal horizontal referents (the compensation of other TMT members within their firm), and external horizontal referents (compensation from TMT members from other firms).

Signaling Effects

There appear to be two crucial elements that factor into the determination of the 'quality' of a talented executive which are the specific, unique characteristics of the individual as well as the interaction of this individual with their former elite organizations. The labor market in professional sports offers a vivid analogy and helpful illustration of the effect of signaling in the recruitment of the most talented players from university or college to the highest level of professional sports. In this section I will draw on signaling theory (Spence, 1973) to consider how signaling theory can be used to explain variance in the compensation of top talent entering the National Football League. I will then subsequently apply this insight to empirical study using a constructed dataset from the corporate executive labor market.

Consider the most profitable professional sports league in the world, the National Football League (NFL) – an organization with revenues exceeding \$15 billion U.S. dollars in 2019. Despite a large volume of data on player performance in college games (i.e., measures of individual skill levels), NFL recruiters still rely on signaling effects to identify and select players in a college draft. Kitchens (2015) examined players prior to joining the NFL who competed on college teams that have different levels of success. The performance of college football teams is assessed weekly throughout the college season resulting in a final ordinal ranking of all teams in the National Collegiate Athletic Association (NCAA) by division (Kitchens, 2015). Research has shown that players entering the NFL from successful institutions are given better employment opportunities than equally skilled players from less successful institutions. "The results show that playing on a highly ranked team improves a

prospect's draft position by 0.39 positions" Kitchens (2015). Players drafted slightly later in the draft receive significantly lower compensation than players making similar contribution on the field who were drafted above them (Kitchens, 2015). The difference in draft position had an especially monumental impact on top draft picks compensation due to the league's steep salary gradient for new draftees. In fact, the average four-year contract value in round one (of the top 32 draft picks) of the 2020 NFL draft was \$18 million USD versus the average contract value of \$7 million in round two (33-64 draft picks) (sportrac.com, 2020). A drop of .39 of a position in round one of the NFL draft, (i.e. from the number one position to the number 13th position) was a difference of over \$20 million USD in compensation and the average rent premium received by a player recruited from a highly ranked team was 12%. A third of the 254 players in the 2020 NFL drafted and over half of round one players came from ten college programs (all highly ranked), yet these programs make up less than 4% of eligible teams in NCAA division I & II to draft from.

Hendricks et al. (2003) examined the signal quality of job candidates using the NFL draft process and found evidence of statistical discrimination confirming that there was no statistical difference in performance once these players from lower ranking programs then subsequently played in the NFL. I would argue this is a narrow view as teams may be selecting the best fit for their overall organization based on information going beyond the published statistics. Professional sports organizations based on their past experience may have deeper information that two 'identical' players statistically are not actually identical. Since players who are eligible for the NFL draft have similar physical skillsets, recruiters have to also focus on personal human and social characteristics that may not necessarily account for the variability in their professional achievement on the field but determine their durability and longevity; how they function off the field and their reputation that is reflected on the organization that recruits them. Yang et al. (2009) also pointed out a star athlete can create value for an organization beyond the increased productivity of the team's performance. Teams also match players that are a good corporate fit for their organization to create value through brand alliance (Yang et al., 2009). Disney (2006) noted this brand affiliation, based on high visibility and sporting achievement allows superstars to benefit from the personal scale of operations. Although not all facets of a superstar can be straightforwardly measured as there are indefinable features on status arising from character, media presence and other hard to measure characteristics (Disney, 2006). These intangibles

which may be hard to measure can be attributed to individual superstar and organization joint production function.

Smart and Wolfe (2000) used the resource-based view (RBV) to examine the sustainable competitive advantage of Penn State University (PSU) football program, one of the most successful college football teams and top manufacturers of players to the NFL. They concluded the success of PSU versus less successful football programs were due to the levels of trust, teamwork, strength of culture and commitment instilled into the players by the PSU coaching staff (Smart and Wolfe, 2000). They also argued that the PSU's competitive advantage was determined by both their resource and institutional capital. Their value enhancing assets and competencies (resource capital) was composed of PSU's physical and human resources and their organizations' capability to effectively exploit its resource capital (institutional capital) was derived from PSU's vast organization resources. The top football programs which are able to signal the intangibles assets (i.e. the additional skills developed beyond the statistics) that these players are bringing to their new organization may justify some if not all of the rent premiums which the programs are bestowing onto these players. Likewise, the recruiting process for elite firms in businesses operates in similar context to professional football.

The elite firms in business are able to attract the brightest and the most talented students from elite universities (Schumpeter, 2015). A third of the graduates are recruited into investment banks, management consulting, and big laws firms from the world's best universities. The elite firms from this triad can attract the *crème de la crème* of the recruitment candidate pool and provide a career ladder to the top echelon positions and an elite set of external networks. For instance, McKinsey reports that more than 440 of its alumni lead commercial businesses with annual revenues of at least \$1 billion USD (Schumpeter, 2015). Graduates from more prestigious universities command higher starting salaries and have greater opportunities to work at elite or more prestigious firms. As I discussed earlier, the intangible assets (human capital and social capital) that individuals from previous elite institutions bring to their organization and the collective intangible assets of the TMT (absorptive capacity capabilities) brought to their organization are not dissimilar to the assets provided by players from elite programs recruited onto an NFL team.

Once reaching the highest level in business (a TMT member of a publicly listed company) there is a divergence from the highest level of sports (a player on a

professional sports team) in the ability for shareholders (sports team owners) to measure individual contributions to team performance and compensate them based on their individual performance. This is especially relevant in a knowledge-based industry, such as financial services, where it is extremely difficult if not impossible to determine the individual contribution to team performance due to the causal ambiguity naturally occurring in this industry.

Causal Ambiguity in Knowledge Based Industries and Individual Performance Measurement

Upper Echelon Theory (Hambrick & Mason, 1984) predicts that individual differences between TMT members will be most significant when the decision-making situations are complex and ambiguous, as would be the case for financial services firms. One study (Mackey et al., 2014) found support for a complementary relationship between managerial human capital and firm resources such that the combination of these resources results in additional value as compared to what these resources could create separately. I argue that this complementary bond between human capital and a firm's resources in financial services firms is deeply similar to other professional services industries and fundamentally different than in other labor markets in which resources such as technology can substitute for scarce human capital. The financial services industry is a knowledge-based industry where separable and embodied forms of capital are interdependent in value creation and the value capture processes. Bowman and Swart (2007) explain how companies and individual employees co-exist, and it is not only human and social capital that is critical to the success of knowledge-based firms, but also the embedded capital within the relationship between the firm and the individual. *“Embedded capital exists where there is ambiguity surrounding the rent creating contributions of human capital. This ambiguity is due to the interactions in the processes of value creation of capital that can exist in a form separated from individual employees and human capital that is embodied in individuals. These interactions are difficult to disentangle, and as a result it is not possible to clearly attribute the creation of value to the component parts of embedded capital”* (Bowman and Swart, 2007: 489). Valuable human resources, such as experienced senior executives, or resources that take the form of tacit routines performed by a TMT member, tend to be hard to replicate and enable a company to earn higher profits and therefore advocates of the RBV argue that human resources are one source of above normal financial returns (Castanias and

Helfat, 1991). Thus, when neither the firm nor its rivals can easily determine or attribute the contribution of firm performance to an individual TMT member, the board of directors and the external labor market must rely on other factors to determine the expected contribution of an executive to firm performance, such as signaling of their value or competence. Revisiting the highest level of sports, I will now examine whether there is evidence of a rent premium being distributed to ‘superstars’ for their individual performance.

Rent Premium and Superstar Performance

Once a player enters professional sports there is a plethora of statistics on the players to compare individual performance as input to compensation decisions, which illustrates that signaling is occurring through tangible individual measurable performance tied to economic outcomes as illustrated in Major League Baseball (MLB). Yet, it appears that even with all the statistics available to measure individual performance, “superstars” in sports are still able to extract rent above their marginal productivity and make the owners less well off than without the superstar’s performance.

Economists have found baseball, a game that provides a great deal of performance statistics on teams and individual players, to be a fascinating labour market to study, especially given its potential for valuation of individual productivity. The analysis of the relationship between productivity and salary could potentially yield insights into markets where the estimation of individual productivity is more challenging (MacDonald and Reynolds, 1994) such as in business. Barnes and Bjarnadottir (2016) in their article titled, “Great Expectations: An Analysis of Major League Baseball Free Agent Performance” explored whether “free agents” (which is a player who is eligible to sign freely with any club or franchise and is not under contract to any specific team at the beginning of the year) in MLB meet the expectations set forth by newly signed contracts. They measured predicted value of free agent contracts by using several supervised machine-learning algorithms to train the model. Barnes and Bjarnadottir (2016) found that, “all else being held constant, players who were well paid in the past were likely to continue to be well paid in the future. In a sense, the current salary of a given player is a proxy for all of the information used to determine the duration and value of that player’s previous contract” (Barnes and Bjarnadottir, 2016:298). This would also infer that the premium for personal human and social

characteristics that may not necessarily account for the variability in their professional achievement on the field such as a star athlete's brand equity to attract fans would at least in part travel with them from one employer to the next.

To determine the assessed value of a composite measure of a player's performance (performance model), "wins above replacement (WAR)", which represents team wins from the contribution of an individual player relative to a replacement level player has become the standard. The most important feature for all players was the WAR number produced in the year prior to the new contract as a free agent. Players who generated high WAR were expected to continue to perform well in the near future (Barnes and Bjarnadottir, 2016). Quirk and Fort (1992) found that 'average-talent' free agent pay is more likely to be close to its marginal product¹ (neither under nor over paid), suggesting an efficient market. They also found owners overpay superstars, 'high-performing' free agents are likely to be paid more than their marginal product. This suggests during free agency when players outperform their peers and contribute more to their team's performance than other players, they will receive a premium above and beyond their fair value (marginal product). A possible explanation for the premium is baseball owners are more likely to pay their free agents on comparative performance than on a marginal product grounded on a pure piece rate basis. Teams compete in a match-like scheme at the aggregate level, relative comparisons at the individual level are consistent with an owner wanting to produce the "best" MLB team. Rewards are assigned on a categorical scale rather than a scale based on the deviation of a player's performance (Poppo and Weigelt, 2000). Although numerous studies have examined Lazear and Rosen's (1981) tournament theory in MLB with mixed results for team performance (Tao, Chuang and Lin, 2016), it is evident that the pay dispersion between superstars and the other players is vast and

¹ "Using the estimated value of marginal products, determine the amount of rents that accrue to the team owner for each player... The marginal revenue product (MRP) of professional baseball players, determined by the marginal revenue attributed to various performance measures, is estimated for each year... The MRPs are calculated by first estimating each production category's contribution to team output: wins. The second step entails estimating the impact of team wins on the team's total revenue. Combined, the two sets of regression estimates facilitate an estimate of each production category's contribution to total revenue. Using end-of-season production statistics, it is possible to estimate each player's contribution to team revenue, or MRP, and how this compares to a player's salary (Depken and Wilson, 2004: 12-13)".

owners may overpay superstars to increase their chance at winning championships (Wang, Cheng and Jane, 2014). I would argue the marginal revenue may also be considering the player's embeddedness into their current team if the owner retains the free agent. Pepper (2018) explained this suboptimal behavior in professional sports as due to a prisoner's dilemma situation where teams overpay for talent.

In business, TMT members in the United States are essentially free agents due to the "At-Will Employment" contracts for executive employment which allow either the executive or the company to terminate the executive's employment at any time, for any or no reason, with or without cause. TMT members who have led their firm to better performance than their TMT peers in other companies during the most recent year are arguably in a better position to increase their amount of rent appropriation than their TMT peers with poorer relative performance due to outside labor market opportunities (Cazier and McInnis, 2010). Many theoretical models on the demand for managerial talent have assumed that the labor market in business uses firm performance as an indicator of managerial ability, although the empirical validity of this key assumption for corporate executives has not been thoroughly examined (Fee and Hadlock, 2003). Unlike professional baseball and professional team sports in general where there is a readily available wealth of statistics measuring the individual athlete's contribution towards their respective team's performance, in the corporate market no such statistics or scorecard in general is available on individual TMT members' direct contribution to performance.

The CEO, as the most important member of the TMT who is responsible for formulating a firm's strategy, is often followed in the media (Falato, Li and Milbourn, 2015) and his or her track record at the CEO level is highly visible but still outsiders would be hard pressed to disentangle the individual contribution of the CEO from the team performance of the enterprise as a whole. The remaining TMT members who are responsible for executing the strategy usually have a reputation or performance record that is far less visible than that of the CEO (Diaz-Fernandez et al, 2015). Accordingly, board of directors looking for TMT talent have the difficult challenge of separating below average quality TMT members from above average quality TMT members. Economists view human capital as a skill that can be estimated by the life cycle earning capacity of the executive, whereas accountants are more interested in calculating the value of human capital as a resource to the employer (Abdel-khalik, 2003). In neither case, however, is the approach for placing monetary values on human capital well

established because the skills embodied in executives are inherently challenging to measure (Abdel-khalik, 2003). I therefore suggest that, just as in professional sports, game theory and more specifically the “Prisoner’s dilemma” could shed light on how the board of directors selects talent.

The Prisoner’s Dilemma and Executive Compensation

Pepper (2018) described in the context of professional sports that if a team pays well above the market for players, then they would be able attract the best talent, attract massive crowds, arrange the best sponsorship deals and win championships. The problem is that other teams may apply the same logic so paying higher compensation becomes a dominant strategy and leads to a self-reinforcing cycle. This results in a suboptimal behavior for every team as no one wants to be left with the least capable players and run the risk of a disastrous performance on the field and its financial implications, thereby continuously driving up pay.

Firms face a prisoner’s dilemma when it comes to hiring and retaining elite TMT members. I will illustrate this through an extension of the prisoner’s dilemma example which Pepper (2018) provided for CEO’s in his research. I first assume that from the rationale argued in the previous chapter that TMT members with elite education and elite work experience will, on average, bring value enhancing skills to a firm. I also assume that these “Elite TMT members” are basically compensated equally with variation of pay justified by their position, size of the firm and various firm and sub-industry fixed affects which is consistent with the expected compensation model. From this pool of Elite TMT members 25% are assumed to have superior skills that would increase the value of the firm by more than an average Elite TMT member. Equally, 10% are assumed to have inferior skill to the other Elite TMT members and would destroy firm value if employed by a firm. If all firms offered modest remuneration, then it would be in the interests of an individual company to defect and pay over the odds. By doing so, they may attract the superior elite TMT members and increase the odds of being more successful than their peers. By contrast, a firm would not want to be in a situation of paying significantly below the mean compensation which the better Elite TMT members would likely shy away from these firms. Shareholders would not congratulate the board for saving money if the result is an inferior TMT. Offering superior compensation is the leading strategy even though by doing so firms will be no better off (in performance terms) than if they compensated

the Elite TMT member with an average compensation. Table 4.1 below is an illustration I have modified from Pepper (2018) who presented this remuneration committee dilemma expected payoff matrix for CEOs in his research.

Table 4.1 - Remuneration Committee's Dilemma

		Competitor's	
		Pay Market Rate	Pay Above Rate
Company X	Pay Market Rate	Scenario 1 (0,0)	Scenario 3 (-10,0)
	Pay Above Rate	Scenario 2 (+5,0)	Scenario 4 (-5,-5)

+5 = strong preference for (get top elite performer)
 0 = marginal preference for (get satisfactory elite performer) at market rate
 -5 = marginal preference against (get satisfactory performer) at above market rate
 -10 = very strong preference against (get inferior elite performer)

Scenario 1 is the neutral option where firms pay the market rate and accepts the quality of the Elite TMT member they receive. In scenario 2 the competitors pay above the average hoping to get a superior Elite TMT member who will increase the value of the company. Scenario 3 firm pays market rate and everyone else pays above average rates running the risk of hiring an inferior Elite TMT member and destroying firm value. In the final scenario 4, the dominant strategy, everyone pays above market rates which gives no firm the advantage of recruiting superior elite TMT members.

Once the TMT elite members join an organization their current salary as we have seen in professional sports is a proxy for all of the information used to determine their value to the firm. The hiring firm would have relied on past private knowledge of the capabilities (social and human capital) these talented executives bring to their firm and the rent premium they have paid. Therefore, if their firm overperforms the TMT member with elite credentials will receive a rent premium which leads to the following hypotheses:

- Hypothesis 5a: There will be a positive relationship between a TMT member's elite educational credentials and a rent premium received for overperformance*
- Hypothesis 5b: There will be a positive relationship between the TMT member's elite work experience credentials and a rent premium received for overperformance*

Once hired the difficulty, as mentioned previously, is a high degree of causal ambiguity of TMT performance within knowledge-based industries, where it is extremely hard if not impossible to determine which TMT member has contributed to what extent to the firm's performance. TMT members due to the causal ambiguity of performance may actually benefit from the "Matthew Effect" where high-status (for which elite backgrounds are an important signal) executive's pay pattern is established over a tenure when they first get hired and thus the initial compensation is more important to determine future pay than their actual performance. Fralicha and Bitektine, (2020) noted these high-status executives derive greater rewards for performing an equal task compared to low-status executives who receive less rewards for the same achievement. The Matthew Effect also benefits high-status executives when they underperform in that they do not get penalized (unless exposed), while low-status executives suffer adverse consequences.

Ironically, while the prisoner dilemma described above sub-optimally increases the compensation of an executive, researchers also suggest that high compensation levels increase the mobility of these executives in the outside labor market (Ridge, Hill and Amie, 2014). Over the past number of decades large public firms are increasingly filling executive vacancies through external hires rather than within the firm. From 2000 to 2005, 32.7% of the CEOs were hired externally compared to 26.0% in the 90's and only 17.1% in the 80's (Larcker and Tayan, 2015). TMT members possessing elite credentials also increase their marketability to the outside labor market through signaling from their profile that they graduated from an elite school or worked at a prestigious firm. (Pfeffer and Salancik, 1978; Wasserman, 2003). Hiring firms observe signaling effects to help guide their decisions and to attempt to avoid costly mistakes for their firm in hiring the wrong candidate. "Although board consideration of external candidates enlarges the pool of potential CEOs, the evaluation of external candidates augments the information problem boards encounter when tasked with the selection of a new CEO. Boards must rely on a smaller set of imperfect signals to infer external candidates' managerial ability" (Fee and Hadlock, 2003). Khurana (2002a) argues that hiring executives from previously successful firms shelters board members from criticism if the recruited candidate does not perform as expected. Although firms tend to hire TMT members from top performing firms (Cazier and McInnis, 2010), the measurement of what constitutes superior performance seems highly ambiguous and

accounting and market-based measurements can provide differing indications regarding a TMT's performance.

The research on performance measures used for executive compensation plans which ultimately determines TMT member annual compensation is highly inconsistent between firms (Gong et al., 2010). Firms use a mixture of market-based, accounting based and time-based measures that are further segmented into an absolute evaluation or an evaluation against a peer group (Van Clief et al., 2014). In the pay-setting process there was evidence of rent-extraction behavior among firms (Gong, Li and Shin, 2011) including selecting peers who were likely to perform poorly based on analysts' forecasts and changing the performance metrics often within a short time span. The causal ambiguity embedded in determining both the individual TMT member's contribution to firm performance and the actual performance measures used to determine compensation provides an opportunity for TMT members with elite credentials to extract a rent premium. In addition, the Matthew Effect allows TMT members with elite credentials to be generously compensated without a direct link to performance leads to the following hypotheses:

Hypothesis 6a: There will be a positive relationship between a TMT member's elite educational credentials and a rent premium received for underperformance

Hypothesis 6b: There will be a positive relationship between the TMT member's elite work experience credentials and a rent premium received for underperformance

Paradoxically the prisoner's dilemma in hiring executives with elite credentials creates a new prisoner's dilemma in retaining these executives due to the Matthew Effect and the increase demand on their skillsets from competitors. The following section discusses how the implications of the external tournament theory exacerbate the prisoner's dilemma for shareholders; specifically, I argue that as the aggregate level of TMT's credential increase so does the amount of extraction of rent premiums by the TMT.

External Tournament Theory

Under competitive conditions executives in theory are paid their marginal products. Yet, in competitive lotteries such as in the case of tournament theory the large prize of a TMT member becoming the next CEO may be a more efficient incentive structure (Lazear and Rosen, 1981). Tournament theory posits the CEO of the company

as the winner of a competition to reach the top. The CEO's compensation represents a "trophy" rather than a reward for actual performance outcomes during the executive's stewardship (Aguinis, Gomez-Mejia, Martin and Joo, 2018). TMT members may be willing to receive compensation below their marginal product (while supplying high levels of effort) for some period of performance in order to eventually, at some future time, win the grand prize. I argue that joining a tournament where a TMT member has the highest likelihood of winning the tournament may not be optimal for the individual. In fact, joining a tournament with a more talented TMT and a lower likelihood of winning the tournament creates an "external tournament" with a potentially higher payout ratio.

Drawing on tournament theory from the worker's perspective, all workers would be expected to prefer to work in what would be considered to be the "bigger leagues" and have access to winning "bigger prizes". This is consistent with board and shareholders in all leagues wanting to recruit the superior TMT members within their peer group in order to access greater firm performance. Executives do not self-sort into their own "leagues" and as a result, "tournament structures naturally require credentials and other non-price signals to differentiate people and assign them to the appropriate contest (Lazear and Rosen, 1981:858)". Scholars identify three referents to which TMT members compare compensation. They are vertical referents (the compensation of the incumbent CEO), internal horizontal referents (the compensation of other TMT members within their firm), and external horizontal referents (which refers to the compensation available in the external market or TMT members in similar firms) (Cazier and McInnis, 2010). Ridge, Hill and Amie, (2014) suggest when constructing compensation, firms must consider not only tournament incentives that may result from vertical pay disparities internally but also cross-firm comparison of similar positions which lead to greater stability of employment at the executive level. This cross-firm comparison for executive remuneration has become more prevalent over the past 20 years (Van Clieaf et al., 2014) and is now common practice.

Whereas studies based on economic theory often attempt to demonstrate that executive compensation conforms to a theoretical perspective, a more realistic approach adopts the principle that the compensation-setting process also relies on the insights and debates of the firm's compensation committee and as such, may be affected by a number of psychological and political processes that shape both individual and group decisions everywhere (Finkelstein and Hambrick, 1990; Belliveau, O'Reilly, and

Wade, 1996). Fredrickson, Davis-Blake and Sanders (2010) observed TMT members classify themselves based on perceived similarities in demographic characteristics, structural position, prestige, or social standing and these characteristics impact compensation dispersion among the TMT members. O'Reilly, Main and Crystal (1988) invoke social comparison theory as an explanation for the reason why CEO compensation varies so widely.

As discussed in length previously TMT member elite credentials provide important inputs to the building blocks of a firm's intellectual capital and its ability to increase the effectiveness of its absorptive capacity used to create value for shareholders. A perfect example just recently occurred in the autonomous transportation industry with a company called Aurora whose three founders are legendary engineers from Google, Tesla and Uber are leading the way to make self-driving cars a reality. In just three years they created a 2.5 billion USD company (Los Angeles Times, 2019). TMT's who have more TMT members with elite credentials, greater skills, better networks and more absorptive capacity increase their chance of outperforming their rivals. For perceived fairness of the compensation methods the TMT members should then be compensated for their marginal product plus the appropriate contribution they made to the team effect in the joint production function. Although the employers would prefer to compensate TMT members only on individual effects, as with causal ambiguity the true value created by the team effect that is due to individual members is almost impossible to measure. It is also difficult to anticipate how a specific member would have done in a different team, surrounded by a different TMT with, for example, less skilled TMT members. This concept can be supported in a sporting analogy where Burger and Walters (2003) estimated that each additional victory in MLB for teams in the largest markets versus the smaller markets was worth six times more marginal revenue. It is no coincident that the New York Yankees payroll is the highest in MLB (up to 5 times larger than the bottom payroll) and they have won the most world series in history. It was also shown that teams overpay for superstars (Quirk and Fort, 1992) but for example in cases like the Yankees one could argue they are splitting some of the production efficiencies and the superstars are contributing significantly to the team effect. In the corporate world, building and retaining a highly skilled TMT is crucial for the success of a firm. The risk of losing one of these highly skilled TMT members to a competitor is likely higher due to the fact members are highly paid, are on a high-status firm and have a better chance of outperforming their

peers (Cazier and McInnis, 2010), which increases their chance of winning an “external tournament” especially if they receive inequitable pay. Such turnover not only results in the loss of the departing executive’s talent and tacit knowledge but it also increases the costs of disruption for the TMT (i.e., the team effect) caused by the turnover itself (Pissaris, Heavey and Golden, 2017) and usually results in an adverse market reaction to the stock (Fee and Hadlock 2003).

A TMT member with elite credentials has all the same advantages that apply to the prisoner’s dilemma example described previously, however the external tournament theory also involves the social comparison of compensation to both internal horizontal referents and external horizontal referents that also possess strong credentials themselves. Laschever (2013) in his article, “Keeping up with CEO Jones: Benchmarking and Executive Compensation”, found firms benchmark peers with similar characteristics, for CEO compensation, but tended to select firms with higher-than-own CEO compensation. A CEO with higher aggregate levels of elite credentials would be benchmarked against other CEO’s with similar characteristics. Correspondingly, this would be similar for non-TMT CEO members who would be benchmarked against their own non-TMT CEO members with similar elite credentials. As exemplified by the New York Yankees major league baseball team having won the world series 7 times since 1996 with teams constructed of highly paid superstars, are well aware there is an insurance premium required to keep these superstars when their contracts are up. This implies that remuneration committees and hence shareholders are faced with an exacerbated prisoner’s dilemma where in order retain the TMT members with elite credentials a larger rent premium is required or they stand to lose them to the “Yankees” or a firm who puts a higher value on their joint production efficiency.

Finally, in addition to comparisons between vertical referents, internal horizontal referents and external horizontal referents, the board of directors may also make social comparisons than can positively impact the compensation of TMT with higher aggregate levels of elite credentials. Prestigious directors build their standing overtime by earning elite educational and employment credentials themselves and serving on boards of successful firms (Chen et al., 2008; Acharya and Pollock, 2013). Drawing on homosocial reproduction which explains that through social processes people prefer and therefore recruit those who have similar demographic characteristics to themselves (Stafsudd, 2006), Oehmichen et al. (2017) argued that successful firms tends to possess TMT members with similar credentials to themselves. The members

of this elite group tend to protect their status and belong to an elite inner circle (Acharya and Pollock, 2013). These prestigious directors may be driven to act in the best interests of other members in the elite circle rather than shareholders (Oehmichen et al., 2017). O'Reilly, Main and Crystal (1988) claimed that members of the remuneration committees determine compensation based on their own frame of reference about how much an executive should receive. Their frame of reference is often biased by how much the committee members themselves are paid at their own firms (O'Reilly, Main and Crystal, 1988). It seems logical that board members with elite credential who are compensated generously at the firms they work for are more willing to pay generously for executives with elite credentials on the boards they sit on. This becomes a self-reinforcing mechanism where TMTs with higher elite credentials receive a larger rent premium. The TMT members who belong to TMTs with high levels of elite credentials who stay with their current firm even if they do not win the “internal tournament” it seems reasonable they would win the “external tournament” and receive a greater rent premium than the rent premium received for being on a TMT with weaker aggregate credentials. I coin the term “grouping effect” as the comparison of the average amount of elite credentials a TMT as a whole possesses versus the amount of elite credentials an individual TMT member possess. An increase in elite credentials for a TMT as whole is able to extract a larger rent premium than an increase in elite credentials of an individual TMT member. I further argue it is more important to be on a team with stronger elite credentials to receive a rent premium than possess strong credentials and be on a team with weaker elite credentials. This rent premium received for the “grouping effect” of elite credentials leads to the following hypotheses:

Hypothesis 7a: A TMT grouping effect of elite education credentials for both underperformance and overperformance will result in extraction of a larger rent premium

Hypothesis 7b: A TMT grouping effect of elite work experience credentials for both underperformance and overperformance will result in extraction of a larger rent premium

Internationalization Impact on Prisoner’s Dilemma and External Tournament Theory

The skills, knowledge and capabilities of a TMT are critical to foreseeing and responding to external opportunities and pressures in order to adopt and implement the

strategy which will be most effective in achieving competitive firm performance. I argue that this applies particularly when organizations engage in the extra complexities that come with internationalization. In fact, organizations with TMTs that are better educated and have greater expertise ought to be able to more effectively manage the complexity inherent in a higher level of international diversification, thereby reducing the cost derived from strategic complexity (Díaz-Fernandez, 2015). The multinational firm with a TMT that possesses greater human capital in the form of strong functional skills should have greater information-processing capacity. Teams are expected to provide information-processing benefits over and above those provided by individuals or collections of individuals (Carpenter and Sanders, 2004). Information-processing demands will be rewarded in the market for executive labor because the ability to cope with large volumes of diverse information is likely to be both rare and critical to organizational performance (Henderson and Fredrickson, 1996). Thus, it stands to reason that the most complex MNEs should place the greatest value on having executives with better educations and stronger work experience credentials. However, these TMT members who possess a combination of skills that are rare and difficult to imitate are even more valuable to their firm. The prisoner's dilemma and the external tournament theory would suggest additional rent premiums would be extracted from firms with a more global posture. This leads to the following hypotheses.

Hypothesis 8a: This positive relationship between a TMT member's elite educational credentials and a rent premium received for both underperformance and overperformance is moderated by the degree of internationalization.

Hypothesis 8b: This positive relationship between a TMT member's elite work experience credentials and a rent premium received for both underperformance and overperformance is moderated by the degree of internationalization.

Hypothesis 8c: TMT grouping effect of elite education credentials for both underperformance and overperformance will be able to extract a larger rent premium is moderated by the degree of internationalization

Hypothesis 8d: TMT grouping effect of elite work experience credentials for both underperformance and overperformance will be able to extract a larger rent premium is moderated by the degree of internationalization

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CHAPTER 5 – METHODOLOGY

Introduction

As presented in the introduction of this dissertation, the aim of this dissertation is to examine the relationship of top management team (TMT) elite credentials with corporate profitability, compensation, and the division of profits. A review of the extant theoretical and empirical literature on human and social capital pertaining to the dissertation research questions was presented in chapter two. Chapter three presented the first of two empirical studies in this dissertation, which closely examines the relationship between TMT credentials and firm performance and individual members compensation. Chapter four presents the second of two empirical studies in this dissertation, which investigates whether or not the TMT receives a credential premium at the expense of the shareholders for both above or below average returns. The final chapter in this dissertation, chapter six, presents an integrated discussion of the findings of the two empirical studies which comprise the empirical work of this dissertation (chapters three and four), presents the overall contribution of this dissertation to the literature, presents a consideration of practical management implications arising from these findings, and finally, concludes the dissertation. In the current chapter five the methodology and research design are presented in detail.

This chapter is comprised of five sections including an introduction of the empirical strategy, rationale for selection of the sample and description of the data followed by a presentation of the data collection and data analysis methods. The empirical strategy discusses the rationale for the selection of the financial services industry as the context from which the sample was collected and explains the overarching methodology connecting the two studies in chapters three and four. The sample consists of the individual top management team members of firms from the GICS® financials sector. The data collected is individual level data, representing TMT teams in the firms included within the sample. All variables and measures are defined including the independent variables, dependent variables and control variables. The last two sections describe the data collection and analytical methods.

Empirical Strategy

The main purpose of the dissertation is to investigate how elite educational and elite work experience credentials impact performance, compensation and the division of profits between the TMT and shareholders. The body of empirical work within the dissertation is comprised of two complementary studies. The first study, presented in chapter three, examines the effect TMT credentials has on firm performance and individual members compensation. The second study, presented in chapter four, examines for the case for above or below average performance what impact TMT members credentials have on the allocation of profits between themselves and shareholders. These two studies draw on the same initial data sample, independent variables, moderating variables and many of the same control variables. Given the common elements of the two studies, including the literature foundations, the variables measured and the sample used in the studies, this chapter presents one integrated methodological approach applied in this dissertation across the two studies. This methods chapter serves to introduce and present in detail, the methods used in the design and implementation of the two empirical studies of this dissertation.

The financial services industry was chosen as the setting for this study because its characteristics of high knowledge intensity, a professionalized workforce and low capital intensity provide a fertile environment to examine the impact of elite credentials on TMT compensation and firm performance. The additional complexities involved in managing a firm in multiple jurisdictions provides the TMT added discretion to manage the firm outcomes, which offers the ability to test the impact of the moderating variable (degree of internationalization) on TMT credentials and the resulting performance of the firm and compensation to the individual.

Sample Selection and Data Description

To create the sample for this study, I have drawn primarily on data from Wharton WRDS and Compustat, specifically Compustat Executive Compensation (ExecuComp). ExecuComp includes the S&P 1500 plus companies removed from the index that are still trading. I am using the Global Industry Classification Standard (GICS) developed in 1999 by Standard & Poor's (S&P) Dow Jones Indices and Morgan Stanley Capital International (MSCI) to classify the data. The initial sample from 2000 to 2019 was drawn from the financial sector of the GICS classification system which

consists of three industry groups, seven industries, and seventeen subindustries as outlined in Table 5.1 below.

TABLE 5.1 - SECTOR: FINANCIALS (GICS CODE: 40)

Industry Group		Industry		Sub Industry	
4010	Banks	401010	Banks	40101010	Diversified Banks
		401020	Thrifts & Mortgage Finance	40101015	Regional Banks
4020	Diversified Financials	402010	Diversified Financial Services	40102010	Thrifts & Mortgage Finance
				40201020	Other Diversified Financial Services
		402020	Consumer Finance	40201030	Multi-Sector Holdings
				40201040	Specialized Finance
		402030	Capital Markets	40202010	Consumer Finance
				40203010	Asset Management & Custody Banks
				40203020	Investment Banking & Brokerage
402040	Mortgage Real Estate Investment Trusts (REITs)	40203030	Diversified Capital Markets		
		40203040	Financial Exchanges & Data		
4030	Insurance	403010	Insurance	40204010	Mortgage REITs
				40301010	Insurance Brokers
				40301020	Life & Health Insurance
				40301030	Multi-line Insurance
				40301040	Property & Casualty Insurance
40301050	Reinsurance				

To be eligible for inclusion in the sample, the firm must have been a member of the S&P Composite 1500 Financials Index and trading on a stock exchange for two or more years during the twenty-year period measured. The TMT was defined as the CEO and the top four highest compensation executives each year. Researchers commonly consider the top five highest paid as a representative sample of the TMT (Henderson and Fredrickson, 2001).

The sample originally had 416 firms that provided 28,365 executives years with compensation data. There were twenty-seven firms that had four or less executives that provided compensation data so they were excluded from the database. Other firms provided compensation data for up to twelve executives, in these cases only the top five highest compensated executives, including the CEO, were selected. Twenty-two firms that had only one year of trading on an exchange were also dropped from the database, as were eleven firms that had insufficient corporate information.

Through a process of data matching, the executives in ExecuComp in a specific year are matched with profiles in the BoardEx database in order to access data on their characteristics including all prior professional experience (regardless of position or firm). Missing information was obtained from other reliable and verifiable sources, including firm-specific proxy statements, Bloomberg, Annual Reports, Company Websites and LinkedIn. The resulting sample was matched up with market data and

firm characteristic data. Market data and firm characteristics data was obtained from the Centre for Research in Security Prices (CRSP), Compustat, Bloomberg, S&P credit ratings and SEC filings. The final sample with complete data on all variables consists of a set of 356 different firms; with 4,363 firm years, 21,815 top management team (TMT) member-firm-years and 4,379 individual executives.

Independent Variables

Measure of Credentials Based on Elite Education

I argue that attending an elite school signals and measures the quality of the TMT's educational background and skills developed. "This variable provides a signal of skills based on theories of education where employees invest in costly acquisition of education credentials to send a signal about their skills to potential employers" (Falato et al., 2015; Spence 1974).

I follow Finkelstein's (1992) elite education measurement approach with a slight modification and create an ordinal variable, with values ranging from 0 to 2, coded 0 if a person has no elite education; 1 if the undergraduate degree or graduate degree (but not both) is elite; and 2 if both undergraduate and graduate schools are elite. The TMT elite education variable was calculated by taking the sum of the five individual TMT member's elite educational scores divided by 5 with values ranging from 0 to 2. Finkelstein (1992) developed a comprehensive list of elite educational institutions from the work by Useem and Karabel (1986) and Pierson (1969). Pollock et al. (2010) used the list of elite educational institutions provided by Finkelstein (1992) to code their prestigious education variable but modified the scoring system to one point if a person had either an elite undergraduate or graduate degree, and zero otherwise. Finkelstein (1992) granted one additional point for a non-elite undergraduate or graduate degree and had values ranging from 0 to 3. In my sample over 97% of executives had an undergraduate or graduate degree from either an elite or non-elite university and many of the executives whose degree was not from an elite school did not list their degree on BoardEx or Bloomberg. Changing from a three-point to a two-point scoring system did not alter the results.

As an additional robustness check education was also calculated using a maximum of one point using the same methodology as Pollock et al. (2010) with the same directional results. A total of 3,522 points were awarded for elite undergraduate

degrees or 16.1% of the 21,815 top management team (TMT) member-firm-years. A total of 4,480 points were awarded for elite graduate degrees or 20.5% of the 21,815 top management team (TMT) member-firm-years. Approximately one-third of the elite degrees were held by individuals with both an elite undergraduate and elite graduate degree. A complete list of the elite schools and a breakdown of the points assigned are provided in Appendix I and II.

Member Elite Education (MEMB_ELITE_EDU): A variable that ranges from 0 to 2 based on the TMT member's educational institution (BoardEx).

Team Elite Education (TEAM_ELITE_EDU): A variable that ranges from 0 to 2 based on the sum of the five TMT member's elite educational score divided by 5 (BoardEx).

Measure of Credentials Based on Elite Work Experience

Pollock et al. (2010) considered an executive as having elite work experience if he or she possessed one or more of the following credentials: worked for a prominent firm in the focal industry or previously held a role in a blue-chip corporation. They considered a company to be a blue-chip company if it was a member of the Standard & Poor's (S&P) 100 index between 1993 and 1995, which was similar to the date range of their data sample (1994-1996). The S&P 100 is a subsection of the S&P 500 that includes the most consistently profitable, liquid and largest companies.

I have adapted the measure of elite work experience used by Pollock et al. (2010). Values for the variable were set to range from 0 to 3 as follows: 0, no blue-chip or elite professional service firm experience; 1, blue-chip or an elite professional services firm (but not both); 2, blue-chip and an elite professional service firm or no blue-chip and at least two elite professional service firms in different subsections of the industry; 3, both blue-chip and at least two elite professional service firms in different subsections of the industry. The TMT elite work experience variable was calculated by taking the sum of the five individual TMT member's elite work experience scores divided by 5 with values ranging from 0 to 3. Working in two or more subsections of the elite professional service industry provides a bridging of different experiences that allow executives to be more aware of alternative conventions and "transpose" new ideas (Greenwood and Suddaby, 2006). A 'bridging capital' variable was collected for a TMT member with a score of three. These structural holes can provide access to distinct global networks, which allows access to valuable information and connections.

A blue-chip company is defined in this dissertation as a member of the Standard & Poor's (S&P) 100 index or S&P Global 100 index between 2001 and 2019 – and I count as blue-chip work experience any assignments of an executive who was previously employed in any of these firms at the level of Vice President or higher. The S&P Global 100 index measures the performance of multi-national, blue chip companies of major importance in the global equity markets and was not included in Pollock et al. (2010) definition of a blue-chip. There was a total of 137 eligible S&P Global 100 index companies and 176 eligible S&P 100 index companies of which 50 were included in both indexes. From the eligible 263 companies' executives had worked at 97 of these firms at the Vice President level or higher. A total of 3,585 points were awarded or 16.4% of the 21,815 top management team (TMT) member-firm-years. Appendix III provides a breakdown of the points distributed across the eligible companies.

An elite professional services firm is defined as an elite investment banking firm, law firm, management consulting firm (Rivera, 2012) or accounting firm (Greenwood and Suddaby, 2006) where the executive was currently (during the firm year) or previously employed at the Vice President level or higher. The elite accounting firms are defined in this dissertation as those that are perceived as the most prominent global accounting firms, known as the "Big Five" (Arthur Andersen – until 2002, Deloitte Touche, Ernst & Young, KPMG, PricewaterhouseCoopers). The Big Five benefit from superior access to new opportunities that they gained because of their structural position within the organizational field (Greenwood and Suddaby, 2006:37). Appendix IV provides a breakdown of the points distributed across the five companies.

In addition, McKinsey & Co., Bain & Co. and Boston Consulting Group have a ubiquitous presence in industry and their influence and alumni networks spread deep into boardrooms, academia and government. These companies are considered the top three elite consulting firms worldwide, based on the Vault Consulting Firm Prestige Index every year (2007-2020) since the index began (Vault: online). Because these three elite consulting firms provide a unique general human capital element as well as a bridging social capital element, I argue that inclusion in the category of elite professional services firms used in this dissertation is warranted. Alumni from these three firms can draw upon knowledge reserves and networks that cross virtually every industry (e.g. finance, technology, manufacturing etc.) and, in addition to every emerging and developed country on the planet. Moreover, these elite consulting firms

hire entry-level analysts mostly from elite undergraduate educational institutions and a typical route for getting promoted from analyst to associate is via a return to an elite MBA program to “get your ticket punched” (Isiadinso, 2008: 1). There is a self-reinforcing cycle of elite students successfully exiting elite schools accepting positions at elite firms which may further support elite firm development of general human and bridging capital (Boyd, Bergh, Ketchen, 2010). Appendix IV provides a breakdown of the points distributed across the three companies.

The elite investment banking firms consist of the ‘bulge bracket’ (Fang, 2005) investment banks. The bulge bracket firms (Fang, 2005) are composed of the most profitable multi-national investment banks that rank at the top of the league tables on multiple investment banking and capital markets products. They possess a global reach across the world's major regions (The Americas, EMEA, and Asia-Pacific) and are considered elite prestigious firms. Fang (2005:7) classified, “Goldman Sachs, Merrill Lynch, Morgan Stanley, Salomon Brothers, CSFB, Lehman Brothers, JP Morgan, and DLJ as ‘reputable’, and the rest as ‘less reputable’. The selection criteria were “made on the basis of the fact that these eight banks appear almost every year among the ‘top 10 list’ in Investment Dealers Digest’s annual league tables, and thus there is a sense of stability of their reputation over time. These names are considered to be the ‘blue-chips’ on Wall Street”. The Thomson Reuters League Tables was also used to determine five additional (Barclays Bank PLC, Bear Stearns, Citigroup, Deutsche Bank, and UBS) members to the bulge bracket list. Appendix IV provides a breakdown of the points distributed across the 12 firms.

“Elite law firms are large, urban law firms that serve large national multinational corporations. Such law firms dominate the market for private legal services in the United States. Students at highly ranked law schools compete fiercely for entry opportunities before and after graduation (Chambliss and Uggen, 2000:46)”. Rider and Negro (2015) defined elite law firms as one of the top 25 firms in the “Vault Guide to the Top 100 Law Firms (2002)”. The Vault is best known for its influential rankings, ratings, and reviews on thousands of top employers. Vault’s rankings and ratings are regularly featured and cited by the New York Times, the Wall Street Journal, Bloomberg BusinessWeek, Forbes, Fortune, Money, and countless other news outlets (Vault). The Vault law ranking list is compiled from the most renowned law firms (approximately 150) in the world by reviewing the feedback received from previous surveys, consulting previous lists, poring over legal newspapers, talking to lawyers in

the field and checking out other published rankings. The firms were then ranked in order, on the perceptions of currently practicing lawyers at peer firms (Vault). The elite law firms in this study are any firms that were in the top 25 firms from the “Vault Guide to the Top 100 Law Firms” from 2007 to 2019. This produced a list of 31 eligible firms of which executives had worked at 24 of these firms. A complete list is provided in Appendix V.

Executives during a firm year in which their company was part of either the S&P 100 index or S&P 100 Global index did not receive points unless they had previously worked for an additional firm listed on one of the indexes. Most of the bulge bracket investment banks were included within the S&P 100 index or S&P 100 Global index and this exclusion prevented doubling elite work experience points for working at the same firm. Of the total of 6,974 elite points awarded for work experience only 3% of the executives with elite work experience received three points, 32% received two points and vast majority (65%) received only one point. As a robustness check elite work experience was also calculated using a maximum of one point of elite work experience per executive with the same conclusions.

Member Elite Work Experience (MEMB_ELITE_WORK): A variable that ranges from 0 to 3 based on the TMT member’s elite work experience (BoardEx).

Team Elite Work Experience (TEAM_ELITE_WORK): A variable that ranges from 0 to 3 based on the sum of the five TMT member’s elite work experience score divided by 5 (BoardEx).

Dependent Variables

Firm Performance Actual

“A common gauge of organizational profitability, ROA, captures the degree to which management has effectively deployed firm assets; and it is useful in assessing the performance implications of business strategies” (Geletkanycz and Hambrick, 1997: 15). Since ROA suffers from variability due to accounting choices it appears necessary to apply additional measures of performance. To test the robustness of support for the hypotheses across both accounting and market measures, firm performance was measured as return on assets; return on equity; Tobin’s Q and stock returns following the measurements used by Custodio et al. (2013). These accounting and market measures are also used as control variables in the compensation models.

Return on Assets (ROA): Defined as ratio of operating income after depreciation to book value of assets (Bloomberg)

Return on Equity (ROE): ratio of net income to common equity (Bloomberg)

Tobin's Q (TOBIN'S_Q): ratio of the market value of assets to the book value of assets. Market value of assets is the book value of assets plus the market value of common equity less the sum of the book value of common equity and balance sheet deferred taxes (Compustat, Bloomberg)

Stock Market Returns (STOCK_RETURNS): annual stock return (fiscal year-end) (Compustat)

Excess Returns using Jensen's Alpha:

Underlying the use of this measure is the assumption that capital markets are efficient in the semi-strong form (Fama 1970). This implies that all currently available public information as well as historical information for any security has been incorporated into its price and adjusts instantaneously to the public release of new information.

The adjusting for risk compares the actual stock return over a period of time for firm i with the expected return $E(R_{it})$. The stock return is the percentage change in the stock price between time $t-1$ and t , adjusted for dividends.

$$(1) R_{it} = [P_{it} + \text{Dividends} - P_{it-1}] / P_{it-1}$$

The expected return $E(R_{it})$ to firm i at time t is a linear function of the returns from a historical relationship with the market.

$$(2) E(R_{it}) = R_f + \beta_i M^*(R_{MT} - R_f) + e_{it} \text{ where:}$$

R_{it} = return on the stock price of firm i at time t

R_{MT} = return on the market portfolio at time t . For this study the corresponding Market Return of the S&P Composite 500 was used.

β_i = parameters of the statistical relationship between the return on the individual firm's stock price and that of the market; and

e_{it} = residual of the relationship at time t , assumed to be distributed normally with mean equal to zero, a constant variance over the control and prediction periods, and zero correlation between residuals over time

The beta (β_i) is estimated for each security i over a one-year (daily returns) period. The difference between the actual returns and the expected returns for each firm are the abnormal returns 'Jensen's Alpha' and are calculated as follows:

$$(3) \alpha = R_{it} - [R_f + \beta_i M^*(R_{MT} - R_f)];$$

Excess Returns (ER): STOCK_RETURNS (Compustat) – [$R_f + \beta_i M^*(R_{MT} - R_f)$]

Excess Total Stock Return (TSR)

The point-to-point measurement of the percentage gain or loss to shareholders, which is the following: (share price end of period minus share price beginning of period) plus dividends divided by share price beginning of period (Van Clieaf et al., 2014).

Excess TSR (EXCESS_TSR): TSR Firm – [TSR of Sub Industry during firm year]

Excess ROE

Excess returns are calculated as a firm's financial returns in excess of the average return of the industry index.

Excess ROE (EXCESS_ROE_ROE_IND): ROE Firm – [ROE of Sub Industry during firm year]

ROE

ROE: Return on Equity Ratio of net income to common equity

Actual Compensation

TMT member compensation level is measured as the total of all forms of compensation granted (Sanders, 2001). The CEO compensation has attracted considerable attention relative to other TMT members due to the larger amount of compensation received (Horton et al., 2012). I am following Horten et al.'s, (2012) treatment in separating the comparison of the CEO compensation with other CEO's and the remaining top four TMT members with other remaining top four TMT's. The CEOs and the top four highest paid other executives were separated into two separate categories to determine expected compensation as follows:

TOTAL_PAY = Natural Log of TMT Member's pay in thousands of dollars, which consists of salary, bonus, value of restricted stock granted, value of options granted, long-term incentive payout, and other compensation (ExecuComp).

TOTAL_PAY_CEO = Natural Log of the CEO's pay in thousands of dollars, which consists of salary, bonus, value of restricted stock granted, value of options granted, long-term incentive payout, and other compensation (ExecuComp).

TOTAL_PAY_NON_CEO = Natural Log of the other individual (Non-CEO) TMT members pay in thousands of dollars, which consists of salary, bonus, value of restricted stock granted, value of options granted, long-term incentive payout, and other compensation (ExecuComp).

TEAM_AVE_TOTAL_PAY = The sum of the natural Log of the five TMT Member's pay in thousands of dollars, which consists of salary, bonus, value of restricted stock granted, value of options granted, long-term incentive payout, and other compensation divided by five compensation (ExecuComp).

Expected Compensation

The methodology to calculate expected compensation and rent premium is the methodology used by Vergne, Wernicke and Brenner, (2018). A multiple regression of the dependent variable Log (TOTAL_PAY_CEO) was run against the independent variables for the 4,363 CEO's (firm year). The same regression was run for the 17, 452 NON_CEO TMT members (firm years). To reduce heteroskedasticity, this study used the natural logarithm for TOTAL_PAY in-line with many previous studies' treatment of executive compensation (Tien, Chen and Chaung, 2013; Falato, Li and Milbourn, 2015). As a robustness check both the CEO and Non-CEO TOTAL_PAY was regressed against the same independent variables with the addition of a dummy variable = 1 for CEO's and zero otherwise. The results were virtually identical with 52% of the executives receiving a positive rent premium and 48% a negative rent premium.

$$\text{EXP_TOTAL_PAY_CEO} = \text{Log}(\text{TOTAL_PAY_CEO}) = \beta_0 + \beta_1\text{FIRM_SIZE} + \beta_2\text{MEMB_AGE} + \beta_3\text{VOLATILITY} + \beta_4\text{LEVERAGE} + \beta_5\text{ROA} + \beta_6\text{ROE} + \beta_7\text{TOBIN'S_Q} + \beta_8\text{STOCK_RETURNS} + \beta_9\text{PRB_DEFAULT} + \beta_{10}\text{DOI} + \beta_{11}\text{YEAR} + \beta_{12}\text{SUB_INDUSTRY} + \epsilon$$

$$\text{EXP_TOTAL_PAY_NON_CEO} = \text{Log}(\text{TOTAL_PAY_NON_CEO}) = \beta_0 + \beta_1\text{FIRM_SIZE} + \beta_2\text{MEMB_AGE} + \beta_3\text{VOLATILITY} + \beta_4\text{LEVERAGE} + \beta_5\text{ROA} + \beta_6\text{ROE} + \beta_7\text{TOBIN'S_Q} + \beta_8\text{STOCK_RETURNS} + \beta_9\text{PRB_DEFAULT} + \beta_{10}\text{DOI} + \beta_{11}\text{YEAR} + \beta_{12}\text{SUB_INDUSTRY} + \epsilon$$

Rent Premium

I operationalized TMT member rent premium as the difference between EXP_TOTAL_PAY and the TOTAL_PAY using the whole ExecuComp database as the sample. Rent Premium was computed as follows (Vergne, Wernicke and Brenner, 2018):

$$\begin{aligned} RENT_PREM_CEO &= \text{Log}(\text{TOTAL_PAY_CEO}) - \text{Log}(\text{EXP_TOTAL_PAY_CEO}) \\ RENT_PREM_NON_CEO &= \text{Log}(\text{TOTAL_PAY_NON_CEO}) - \text{Log}(\text{EXP_TOTAL_PAY_NON_CEO}) \end{aligned}$$

Moderator Variable

Degree of Internationalization

The degree of internationalization is defined as percentage of the organization's total annual sales that comes from countries other than the home country (Hamori and Koyuncu, 2011). This measure is commonly used in research to measure firm internationalization (Carpenter and Fredrickson 2001; Carpenter and Sanders 2004). Carpenter and Fredrickson (2001) also experimented with finer grained measures that captured the breadth in terms of numbers of countries or length of experience by country and found that these measures provided no further explanatory power in their models; accordingly, they suggested that using a single measure for internationalization is the most conservative approach and also provides the largest sample on which to test the theorized relationships. Bloomberg and BoardEx provided approximately 95% of the information to calculate the DOI. The remaining 5% was collected by extracting the information from the yearly 10-K SEC filings.

$$\text{Degree of Internationalization (DOI)} = (\text{Foreign Sales}) / (\text{Total Sales}) \text{ (BoardEx, Bloomberg, SEC Filings)}$$

Control Variables

In the empirical work of this dissertation, several control variables are used. They are: CEO flag, TMT member age (in years), volatility, firm size, leverage, international work experience and network size. The measures for each are presented below.

The CEO flag was dummy variable to designate if a TMT member was the CEO of the TMT.

CEO_FLAG: Dummy variable that takes a value of one if TMT member is the CEO during the firm year and zero otherwise (BoardEx).

The members age was a proxy variable used to control for the amount experience an executive possessed.

TMT Members Age (MEMB_AGE): Age of TMT member in years (BoardEx)

Volatility, defined as the volatility of returns, is used as a proxy for a turbulent, volatile corporate environment (Joh and Jung, 2016).

VOLATILITY: Annualized standard deviation of monthly stock returns, (Compustat)

The proxy for firm size is defined as the market capitalization of the firm (VakkurHerrera-Vakkur, 2012). Firm size is measured as the natural logarithm of market capitalization. “Firm size is typically related to the level of executive compensation as well as the complexity and information processing demands placed on them” (Carpenter and Sanders, 2004: 518). Firm size has also been viewed as a predictor of firm performance (Kimberly, 1976). A positive association between firm size and pay is forecasted due to the larger economic impact an executive can have when larger resources are under his or her control (Datta and Iskandar-Datta, 2014).

FIRM_SIZE: Natural logarithm of market capitalization (Compustat)

Leverage ratio is defined as the use of debt to increase returns from an investment for equity holder (Hoyt and Liebenberg, 2011). Leverage is measured by taking the total debt of a firm and divide it by the total capital of the firm (Mishra, 2014). Firm risk can impact an executive’s compensation because it reflects the risk in

the operating environment (Datta and Iskandar-Datta, 2014) that an executive taking on additional risk may receive additional compensation.

Leverage (LEV): Measured as total debt to total capital (Bloomberg)

Probability of Default (PROB_DEFAULT): The probability of the firm defaulting on their debt within 5 years (Bloomberg)

The international work experience variable measured an executive who had worked outside of the United States as an employee. Non-executive director roles did not qualify for international experience. The international experience had to occur prior to the year (s) the executive year (s) being measured.

MEMB_INT_EXP: Dummy variable that takes a value of one if TMT member has international work experience outside of the United States and zero otherwise (BoardEx).

The network size of an executive measured the overlaps through employment, education and other activities had with other executives. This was a good proxy to examine effects of social capital through education and work networks.

The following four variables below were aggregated control variables to measure the team control variable for performance.

MEMB_NETWORK_SIZE: Natural logarithm of the network size of the selected individual (number of overlaps through employment, other activities, and education) [BoardEx]

TMT Average Age (TEAM_AGE): For TMT the average age is the sum of the TMT member's age divided by 5

TEAM_INT_EXP: Dummy variable that takes a value of one if TMT member has international work experience before the firm year and zero otherwise (BoardEx). The sum of the five TMT member's international work experience score divided by 5.

TEAM_NETWORK_SIZE: The sum of the five TMT member's network size divided by 5 (BoardEx)

Data Collection

The primary sources drawn on for the collection of the required data for the sample described earlier in this chapter are the following: *BoardEx*; *ExecuComp*; *CRSP and Compustat*. From these four extant third-party databases, I built a bespoke dataset for coding and analysis in the two studies which comprise the body of dissertation empirical work.

Once collected from the four third-party databases, I prepared the data for analysis by coding specific characteristics of each of the five TMT members from the S&P Composite 1500 Financials Index between 2000 to 2019 using the BoardEx database. The BoardEx database provides access to detail level data on executives' prior education and professional work experience from 1997 onwards, which was coded and used to calculate the elite education and elite work experience independent variables.

These data were matched with the compensation data (ExecuComp) from each executive, while the CRSP/Compustat Merged (CCM) database was used to match security-level data in the CRSP database with company-level data in the Compustat database (Quigley and Hambrick, 2015). Bloomberg data was matched up with Compustat, ExecuComp and BoardEx data through ticker symbols and other unique identifiers. The data was manipulated to examine aggregated TMT data for performance measures and individual level data for compensation measures. An over/under rent premium for each TMT member was calculated by using their actual compensation minus their expected compensation.

The Securities and Exchange Commission (SEC) requires firms to disclose the compensation of their CEO and the four highest paid executives who are not the CEO (Fredrickson, Davis-Blake and Sanders, 2010). Therefore, the TMT was defined as the five highest paid executives, which included the CEO. This classification is based on definitions of including the CEO as part of the TMT used by Carpenter and Sanders (2002) and Henderson and Fredrickson (2001). Upper echelon studies typically report the top teams to be between three and seven people (including the CEO) as the "inner circle" (Carpenter and Sanders, 2002) and because compensation serves as a good representation for hierarchical level (Finkelstein and Hambrick, 1996) this was used as a representative sample for the TMT.

Missing Data

In my methodological approach, I tried to preserve both the granularity of the data and keep as much data as possible by using additional sources and finding highly correlated proxies. The following variables with missing data were treated as follows:

Member Elite Education: This measurement came from BoardEx of which just over 5% of the executives (222 out of 4,379) did not have a BoardEx identifier. Another 100 executives although they had a BoardEx identifier, education details were not provided. Approximately 60% of the missing education data was located on Bloomberg and the remaining 40% was located and mapped from SEC filings; annual reports; company websites and LinkedIn.

Member Elite Work Experience: This measurement came from BoardEx of which just over 5% of the executives (222 out of 4,379) did not have a BoardEx identifier. Approximately 70% of the missing work experience data was located on Bloomberg and the remaining 30% was located and mapped from SEC filings; annual reports; company websites and LinkedIn.

Degree of Internationalization: The moderating variable degree of internationalization using BoardEx and Bloomberg provide data for approximately 80% of the international companies. From the 10K's / annual reports I was able to manually pull out the information on all of the remaining companies.

Only a limited amount of insurance / reinsurance companies provided revenues by geographical location. The missing data which represented less 2.5% of the 21,815 sample I used a proxy from the 10K's "*foreign gross written premiums over total written premiums*". The correlation between premiums and revenues was above 98%.

Tobin's Q: Tobin's Q were manually calculated when the data was not available from the relevant databases. I was able to capture all of the missing compensation data by using the 10Ks or other commercial sources.

Network Size: This measurement came from BoardEx in which 4% of the sample was missing. The missing value were filled in using the median natural logarithm of network size. I ran without success correlations between network size and a number of other variables such as firm size to see if I could find a better proxy of determining network size other than the median network size.

Probability of Default: Less than 1% (205/21815) of the 5-year probability of default data was missing from Bloomberg. For the missing values I matched the credit rating for the individual firms by firm year and mapped this to the S&P 5-year

probability of default rate tables. I tested the proxy S&P default rating on a sample with both Bloomberg and S&P data and the correlation was greater than 80% which indicated a good proxy match.

Data Analysis Methods

Method for measuring the impact of TMT Credentials on Firm Performance and Compensation

OLS regression analyses was used to assess the relationship between firm performance and TMT credentials.

Performance

The following specification is the base model for performance (ROA) used in the analysis:

$$\text{PERFORMANCE} = \text{ROA} = \beta_0 + \beta_1\text{FIRM_SIZE} + \beta_2\text{TEAM_AGE} + \beta_3\text{VOLATILITY} + \beta_4\text{LEVERAGE} + \beta_5\text{TEAM_INT_EXP} + \beta_6\text{TEAM_NETWORK_SIZE} + \beta_7\text{TEAM_AVE_TOTAL_PAY} + \beta_8\text{PRB_DEFAULT} + \beta_9\text{DOI} + \beta_{10}\text{YEAR} + \beta_{10}\text{SUB_INDUSTRY} + \beta_{11}\text{TEAM_ELITE_EDU}^* + \epsilon$$

**Models run separately for Elite Education and Elite Work Experience*

The following specification is the base model for performance (ROA) used in the analysis with the moderating variable Degree of Internationalization:

$$\text{PERFORMANCE} = \text{ROA} = \beta_0 + \beta_1\text{FIRM_SIZE} + \beta_2\text{TEAM_AGE} + \beta_3\text{VOLATILITY} + \beta_4\text{LEVERAGE} + \beta_5\text{TEAM_INT_EXP} + \beta_6\text{TEAM_NETWORK_SIZE} + \beta_7\text{TEAM_AVE_TOTAL_PAY} + \beta_8\text{PRB_DEFAULT} + \beta_9\text{DOI} + \beta_{10}\text{YEAR} + \beta_{10}\text{SUB_INDUSTRY} + \beta_{11}\text{TEAM_ELITE_EDU}^* + [\beta_{12}\text{TEAM_ELITE_EDU}^* \times \text{DOI}] + \epsilon$$

**Models run separately for Elite Education and Elite Work Experience*

The following specification is the base model for performance (ROA) used in the analysis with the moderating variable Degree of Internationalization and International Work Experience:

$$\text{PERFORMANCE} = \text{ROA} = \beta_0 + \beta_1\text{FIRM_SIZE} + \beta_2\text{TEAM_AGE} + \beta_3\text{VOLATILITY} + \beta_4\text{LEVERAGE} + \beta_5\text{TEAM_INT_EXP} + \beta_6\text{TEAM_NETWORK_SIZE} + \beta_7\text{TEAM_AVE_TOTAL_PAY} + \beta_8\text{PRB_DEFAULT} + \beta_9\text{DOI} + \beta_{10}\text{YEAR} + \beta_{10}\text{SUB_INDUSTRY} + \beta_{11}\text{TEAM_ELITE_EDU}^* + [\beta_{12}\text{TEAM_ELITE_EDU}^* \times \text{DOI}] + [\beta_{13}\text{TEAM_ELITE_EDU}^* \times \text{TEAM_INT_EXP}] + [\beta_{14}\text{TEAM_ELITE_EDU}^* \times \text{DOI} \times \text{TEAM_INT_EXP}] + \epsilon$$

**Models run separately for Elite Education and Elite Work Experience*

Compensation

The following specification is the base model for compensation used in the analysis:

$$\text{TOTAL_PAY} = \text{Log}(\text{TOTAL_PAY}) = \beta_0 + \beta_1\text{FIRM_SIZE} + \beta_2\text{MEMB_AGE} + \beta_3\text{VOLATILITY} + \beta_4\text{LEVERAGE} + \beta_5\text{ROA} + \beta_6\text{ROE} + \beta_7\text{TOBIN'S_Q} + \beta_8\text{STOCK_RETURNS} + \beta_9\text{PRB_DEFAULT} + \beta_{10}\text{CEO_FLAG} + \beta_{11}\text{DOI} + \beta_{12}\text{YEAR} + \beta_{13}\text{SUB_INDUSTRY} + \beta_{14}\text{MEMB_ELITE_EDU}^* + \epsilon$$

**Models run separately for Elite Education and Elite Work Experience*

The following specification is the base model for compensation used in the analysis with the moderating variable Degree of Internationalization:

$$\text{TOTAL_PAY} = \text{Log}(\text{TOTAL_PAY}) = \beta_0 + \beta_1\text{FIRM_SIZE} + \beta_2\text{MEMB_AGE} + \beta_3\text{VOLATILITY} + \beta_4\text{LEVERAGE} + \beta_5\text{ROA} + \beta_6\text{ROE} + \beta_7\text{TOBIN'S_Q} + \beta_8\text{STOCK_RETURNS} + \beta_9\text{PRB_DEFAULT} + \beta_{10}\text{CEO_FLAG} + \beta_{11}\text{DOI} + \beta_{12}\text{YEAR} + \beta_{13}\text{SUB_INDUSTRY} + \beta_{14}\text{MEMB_ELITE_EDU} + \beta_{14}\text{MEMB_ELITE_WORK} + [\beta_{15}\text{MEMB_ELITE_EDU}^* \times \text{DOI}] + \epsilon$$

**Models run separately for Elite Education and Elite Work Experience*

The following specification is the base model for compensation used in the analysis with the moderating variable Degree of Internationalization and International Work Experience:

$$\text{TOTAL_PAY} = \text{Log}(\text{TOTAL_PAY}) = \beta_0 + \beta_1\text{FIRM_SIZE} + \beta_2\text{MEMB_AGE} + \beta_3\text{VOLATILITY} + \beta_4\text{LEVERAGE} + \beta_5\text{ROA} + \beta_6\text{ROE} + \beta_7\text{TOBIN'S_Q} + \beta_8\text{STOCK_RETURNS} + \beta_9\text{PRB_DEFAULT} + \beta_{10}\text{CEO_FLAG} + \beta_{11}\text{DOI} + \beta_{12}\text{YEAR} + \beta_{13}\text{SUB_INDUSTRY} + \beta_{14}\text{MEMB_ELITE_EDU} + [\beta_{15}\text{MEMB_ELITE_EDU}^* \times \text{DOI}] + [\beta_{16}\text{MEMB_ELITE_EDU}^* \times \text{MEMB_INT_EXP}] + [\beta_{15}\text{MEMB_ELITE_EDU}^* \times \text{DOI} \times \text{MEMB_INT_EXP}] + \epsilon$$

**Models run separately for Elite Education and Elite Work Experience*

Excess Returns and Rent Premium

To examine excess returns, I split the sample into quartiles to examine the effects of differences (Mishra, 2014). I investigate the difference in compensation premiums of the elite education and elite work experience coefficients by comparing the first quartile (Q1): the highest 25% of numbers; second quartile (Q2): between 25% and 50% (above the median); third quartile (Q3): 50% to 75% (below the median); fourth quartile (Q4): the lowest 25% of the excess return's samples. A means test was used to calculate the coefficient of the independent variables (elite education and elite work experience) for the top 25% versus the bottom 25% to test for statistical difference (Mishra, 2014).

The following specifications are the base models for rent premium used in the analysis for the different quartiles for Elite Education:

Sample 1 – Rent Premium Individual (Elite Education)

$$RENT_PREM = \beta_0 + [\beta_1 MEMB_ELITE_EDU \times Q1_JENSEN'S_ALPHA] + [\beta_2 MEMB_ELITE_EDU \times Q2_JENSEN'S_ALPHA^*] + [\beta_2 MEMB_ELITE_EDU \times Q3_JENSEN'S_ALPHA^*] + [\beta_2 MEMB_ELITE_EDU \times Q4_JENSEN'S_ALPHA^*] + \epsilon$$

Sample 2 – Rent Premium Team (Elite Education)

$$RENT_PREM = \beta_0 + [\beta_1 TEAM_ELITE_EDU \times Q1_JENSEN'S_ALPHA] + [\beta_2 TEAM_ELITE_EDU \times Q2_JENSEN'S_ALPHA^*] + [\beta_2 TEAM_ELITE_EDU \times Q3_JENSEN'S_ALPHA^*] + [\beta_2 TEAM_ELITE_EDU \times Q4_JENSEN'S_ALPHA^*] + \epsilon$$

*A dummy variable = 1 if true, zero otherwise; *Models run separately for Elite Education and Elite Work Experience

The following specifications are the base models for rent premium used in the analysis with the moderating variable Degree of Internationalization for Elite Education:

Sample 1 – Rent Premium Individual (Elite Education)

$$RENT_PREM = \beta_0 + [\beta_1 MEMB_ELITE_EDU \times Q1_JENSEN'S_ALPHA] + [\beta_2 MEMB_ELITE_EDU \times Q2_JENSEN'S_ALPHA^*] + [\beta_2 MEMB_ELITE_EDU \times Q3_JENSEN'S_ALPHA^*] + [\beta_2 MEMB_ELITE_EDU \times Q4_JENSEN'S_ALPHA^*] + [\beta_5 MEMB_ELITE_EDU \times Q1_JENSEN'S_ALPHA] \times [DOI] + [\beta_6 MEMB_ELITE_EDU \times Q2_JENSEN'S_ALPHA^*] \times [DOI] + [\beta_7 MEMB_ELITE_EDU \times Q3_JENSEN'S_ALPHA^*] \times [DOI] + [\beta_8 MEMB_ELITE_EDU \times Q4_JENSEN'S_ALPHA^*] \times [DOI] + \epsilon$$

Sample 2 – Rent Premium Team (Elite Education)

$$RENT_PREM = \beta_0 + [\beta_1 TEAM_ELITE_EDU \times Q1_JENSEN'S_ALPHA] + [\beta_2 TEAM_ELITE_EDU \times Q2_JENSEN'S_ALPHA^*] + [\beta_2 TEAM_ELITE_EDU \times Q3_JENSEN'S_ALPHA^*] + [\beta_2 TEAM_ELITE_EDU \times Q4_JENSEN'S_ALPHA^*] + [\beta_5 TEAM_ELITE_EDU \times Q1_JENSEN'S_ALPHA] \times [DOI] + [\beta_6 TEAM_ELITE_EDU \times Q2_JENSEN'S_ALPHA^*] \times [DOI] + [\beta_7 TEAM_ELITE_EDU \times Q3_JENSEN'S_ALPHA^*] \times [DOI] + [\beta_8 TEAM_ELITE_EDU \times Q4_JENSEN'S_ALPHA^*] \times [DOI] + \epsilon$$

*A dummy variable = 1 if true, zero otherwise; *Models run separately for Elite Education and Elite Work Experience

Regressions are estimated employing fixed effects, consistent with previous studies. “To limit the influence of outliers, firm variables are winsorized at the one percent cutoff at both tails” (Datta and Iskandar-Datta, 2014: 1858).

For a complete list of variables and description see Table 5.2 below.

Chapter Conclusion

This chapter has presented the overarching empirical strategy for the dissertation as a detailed introduction to the empirical work which preceded this chapter. In doing so, I have presented a detailed description of the data collection drawing on four extant databases to create a bespoke dataset for the purposes of this dissertation. I then presented the set of variable measures and the data analysis methods. The following chapter in this dissertation, chapter six, presents an integrated discussion of the findings of the two empirical studies.

TABLE 5.2 - VARIABLE DEFINITIONS

COMPENSATION	DESCRIPTION AND CALCULATION
TOTAL_PAY	Natural Log of TMT Member's pay in thousands of dollars, which consists of salary, bonus, value of restricted stock granted, value of options granted, long-term incentive payout, and other compensation (EXECUCOMP).
TOTAL_PAY_CEO	Natural Log of the CEO pay in thousands of dollars, which consists of salary, bonus, value of restricted stock granted, value of options granted, long-term incentive payout, and other compensation (EXECUCOMP).
TOTAL_PAY_NON_CEO	Natural Log of the other individual (Non CEO) TMT members pay in thousands of dollars, which consists of salary, bonus, value of restricted stock granted, value of options granted, long-term incentive payout, and other compensation (EXECUCOMP).
TEAM_AVE_TOTAL_PAY	The sum of the natural Log of the five TMT Member's pay in thousands of dollars, which consists of salary, bonus, value of restricted stock granted, value of options granted, long-term incentive payout, and other compensation divided by five (EXECUCOMP).
RENT PREMIUM	
EXCESS_COMP_CEO	Log(Actual Total Compensation CEO) – Log(Expected Total Compensation CEO)
EXCESS_COMP_NON_CEO	Log(Actual Total Compensation Non CEO Executive) – Log(Expected Total Compensation Other Non CEO Executive)
FIRM PERFORMANCE	
ROA ⁽⁺⁾	Defined as ratio of operating income after depreciation to book value of assets (Bloomberg)
ROE ⁽⁺⁾	Ratio of net income to common equity (Bloomberg)
STOCK_RETURNS ⁽⁺⁾	Annual stock return [Bloomberg $[P(t) - P(t-1)]/P(t-1)$].
TOBIN'S_Q ⁽⁺⁾	Ratio of the market value of assets to the book value of assets. Market value of assets is the book value of assets plus the market value of common equity less the sum of the book value of common equity and balance sheet deferred taxes (Compustat)
EXCESS RETURNS	
JENSEN'S_ALPHA	The beta (β_i) is estimated for each security i over a one year (monthly returns) period. The difference between the actual returns and the expected returns for each firm are the abnormal returns 'Jensen's Alpha' and are calculated as follows: $\alpha = R_{it} - [R_f + \beta_i M^*(R_{MT} - R_f)]$ (Bloomberg)
EXCESS_TOTAL_STOCK_RETURN (TSR)	Excess TSR (EXCESS_TSR): TSR Firm – [TSR of Sub Industry during firm year]
ROE	Return on Equity Ratio of net income to common equity
EXCESS_ROE_RET_ROE_IND	ROE Firm – [ROE of Sub Industry during firm year]

TABLE 5.2 - VARIABLE DEFINITIONS (continued)

TMT INDIVIDUAL CHARACTERISTICS	
MEMB_ELITE_EDU	A variable that ranges from 0 to 2 based on the TMT member's education; 1 point for an Elite Undergraduate Degree and 1 point for Elite Graduate Degree (BoardEx).
MEMB_ELITE_WORK	A variable that ranges from 0 to 3 based on the TMT member's elite work experience (BoardEx).
MEMB_AGE ⁽⁺⁾	The age of the TMT member during the firm year (BoardEx)
CEO_FLAG	Dummy variable that takes a value of one if TMT member is the CEO during the firm year and zero otherwise (BoardEx).
MEMB_INT_EXP	Dummy variable that takes a value of one if TMT member has international work experience outside of the United States and zero otherwise (BoardEx).
MEMB_NETWORK_SIZE	Natural logarithm of the network size of the selected individual (number of overlaps through employment, other activities, and education) [BoardEx]
TMT TEAM CHARACTERISTICS	
TEAM_ELITE_EDU	A variable that ranges from 0 to 2 based on the sum of the five TMT member's elite education scores divided by 5 (BoardEx).
TEAM_ELITE_WORK	A variable that ranges from 0 to 3 based on the sum of the five TMT member's elite work experience score divided by 5 (BoardEx).
TEAM_AGE ⁽⁺⁾	The sum of the five TMT member's age divided by 5 (BoardEx)
TEAM_INT_EXP	Dummy variable that takes a value of one if TMT member has international work experience before the firm year and zero otherwise (BoardEx 2020). The sum of the five TMT member's international work experience score divided by 5.
TEAM_NETWORK_SIZE	The sum of the five TMT member's network size divided by 5 (BoardEx)
FIRM CHARACTERISTICS	
FIRM_SIZE	Natural logarithm of market capitalization. (Bloomberg)
DOI	Degree of Internationalization (DOI) = (Foreign Sales) / (Total Sales) (BoardEx, Bloomberg, SEC Filings)
LEVERAGE ⁽⁺⁾	Measured as total debt to total capital (Bloomberg)
VOLATILITY ⁽⁺⁾	Annualized standard deviation of monthly stock returns (CRISPS)
PROB_DEFAULT ⁽⁺⁾	The probability of the firm defaulting on their debt within 5 years (Bloomberg)
ROA ⁽⁺⁾	Defined as ratio of operating income after depreciation to book value of assets (Bloomberg)
ROE ⁽⁺⁾	Ratio of net income to common equity (Compustat)
STOCK_RETURNS ⁽⁺⁾	Annual stock return [Bloomberg $[P(t) - P(t-1)]/P(t-1)$] (Bloomberg)
TOBIN'S_Q ⁽⁺⁾	Ratio of the market value of assets to the book value of assets. Market value of assets is the book value of assets plus the market value of common equity less the sum of the book value of common equity and balance sheet deferred taxes (Compustat)
MODERATOR	
DOI	Degree of Internationalization (DOI) = (Foreign Sales) / (Total Sales) [BoardEx, Bloomberg, SEC Filings]
FIXED EFFECTS	
SUB_INDUSTRY	A fixed effect variable consisting of 17 Sub Financial Services Industries from the Global Industry Classification Standard (GICS). The industry taxonomy was developed in 1999 by MSCI and Standard & Poor's (S&P)
YEAR	A fixed effect variable for the years 2000-2019

(+) - variable winsorized within (1,99) interval;

CHAPTER 6 – RESULTS, DISCUSSION AND CONCLUSION

In this chapter I present the empirical results of hypothesis testing. This is followed by a detailed discussion of the findings and the contributions to the literature which the dissertation makes. Implications for management are presented along with limitations of the studies and recommendations for future research, following which the dissertation is concluded.

Empirical Analysis

Ordinary least squares (OLS) regression was used to test my hypotheses. The main assumptions of OLS regression is first there is a linear relationship between the independent and dependent variables and second homoscedasticity is present as the variance of errors is the same across all values of the independent variables. In order to confirm these assumptions both the residual plots and data were plotted. This checked for and confirmed the normality of the distribution and was used to identify outliers.

Although some of the measurements of independent variables used composite scores, as a further robustness check, I also used alternative measurements for independent variables to see the specific influence on the dependent variable. For example, I used a scoring range from 0 to 2 for elite education. A score of two was obtained if both undergraduate and graduate degrees were elite. Finkelstein (1992) granted one additional point for a non-elite undergraduate or graduate degree and had values ranging from 0 to 3 whereas Pollock et al. (2010) used a maximum of one point if the individual possessed an elite undergraduate or graduate degree.

In previous studies the moderating variable DOI has produced different performance results based on the level of a firm's expansion into foreign countries. Riahi-Belkaou (1998) found DOI between 0%-14% had a negative impact on performance, between 14% and 47% had a positive impact and above 47% reverted back to being negative. I used the exact same methodology but found no significant difference in performance when using the three different bands. I also check the slopes at different intervals of DOI. A number of other additional robustness checks on individual, team, fixed industry effects and moderating variables were conducted.

As presented in detail in the methods chapter of this dissertation, the regression model and the beta coefficients that correspond to the independent and moderating variables were used to test the hypotheses for statistical significance. I examined the

effect of the predictor variables on the dependent variables by accounting for changes in the variance explained. The magnitude of the beta coefficients as an indicator of relevance between the independent and dependent variables was also examined.

Empirical Results

Table 6.1 summarizes the statistics of the variables. This table presents the mean, standard deviation, minimum, maximum and frequency of observations for each variable. The sample consists of the ExecuComp firms for which TMT member profiles are available from the BoardEx database in the period 2000-2019. All variables marked with a “+” are Winsorized at the first and the ninety-ninth percentile values.

TABLE 6.1 SUMMARY STATISTICS

VARIABLE	STANDARD			NUMBER OF OBSERVATIONS	
	MEAN	DEVIATION	MINIMUM MAXIMUM		
COMPENSATION					
TOTAL_PAY (\$ thousands)	3,351	5,322	1	230,034	21,815
TOTAL_PAY (Natural Log)	3.2576	0.4656	0.1000	5.3618	21,815
TOTAL_PAY_CEO (\$ thousands)	6,077	8,123	1	230,034	4,363
TOTAL_PAY_CEO (Natural Log)	3.5526	0.4525	0.1000	5.3618	4,363
TOTAL_PAY_NON_CEO (\$ thousands)	2,669	4,073	1	83,313	17,452
TOTAL_PAY_NON_CEO (Natural Log)	3.1838	0.4388	0.1000	4.9207	17,452
TEAM_AVE_TOTAL_PAY (\$ thousands)	3,351	4,204	196	73,251	21,815
TEAM_AVE_TOTAL_PAY (Natural Log)	3.3181	0.4151	2.2929	4.8648	21,815
RENT PREMIUM					
EXCESS_COMP_CEO (Natural Log)	(0.0290)	0.3380	(3.6744)	1.5909	4,363
EXCESS_COMP_NON_CEO (Natural Log)	0.047	0.3074	(3.1516)	1.5793	17,452
FIRM PERFORMANCE					
ROA ⁽⁺⁾	0.0245	0.0492	(0.1248)	0.2504	21,815
ROE ⁽⁺⁾	0.1036	0.1501	(0.6149)	0.7053	21,815
STOCK_RETURNS ⁽⁺⁾	0.0907	0.3453	(0.7556)	1.4339	21,815
TOBIN'S_Q ⁽⁺⁾	1.2832	0.7931	0.8401	6.2403	21,815
EXCESS RETURNS					
JENSEN'S_ALPHA	(0.0078)	0.4456	(1.3210)	10.7440	21,815
EXCESS_TOTAL_STOCK_RETURN (TSR)	0.0000	0.3664	(1.6210)	9.2120	21,815
ROE	0.1147	0.2931	(1.9480)	4.9910	21,815
EXCESS_ROE_RET_ROE_IND	0.0111	0.2669	(1.8940)	4.6330	21,815
TMT INDIVIDUAL CHARACTERISTICS					
MEMB_ELITE_EDU	0.3668	0.6499	-	2.0000	21,815
MEMB_ELITE_WORK	0.3197	0.6416	-	3.0000	21,815
MEMB_AGE ⁽⁺⁾	52.7145	7.2977	36.0000	72.0000	21,815
CEO_FLAG	0.2000	0.4000	-	1.0000	21,815
MEMB_INT_EXP	0.2400	0.4271	-	1.0000	21,815
MEMB_NETWORK_SIZE	2.7705	0.5640	1.4472	3.8998	21,815
TMT TEAM CHARACTERISTICS					
TEAM_ELITE_EDU	0.3668	0.3831	-	2.0000	21,815
TEAM_ELITE_WORK	0.3197	0.3967	-	2.2000	21,815
TEAM_AGE ⁽⁺⁾	52.7145	3.9891	38.6000	65.4000	21,815
TEAM_INT_EXP	0.2400	0.2543	-	1.0000	21,815
TEAM_NETWORK_SIZE	2.9334	0.3794	1.4472	3.8850	21,815
FIRM CHARACTERISTICS					
FIRM_SIZE	3.4742	0.6749	0.7605	5.6334	21,815
DOI (Moderating Variable)	0.0844	0.1617	-	0.9065	21,815
LEVERAGE ⁽⁺⁾	0.4276	0.2499	-	0.9752	21,815
VOLATILITY ⁽⁺⁾	0.3688	0.2290	0.1399	1.4093	21,815
PROB_DEFAULT ⁽⁺⁾	0.0221	0.0210	0.0009	0.1284	21,815
FIRM PERFORMANCE (See Above)					

(+) - variable winsorized within (1,99) interval;

Table 6.2 presents the Pearson correlations for the sample firms for the years 2000 to 2019.

**TABLE 6.2 PEARSON CORRELATIONS FOR SAMPLE FIRMS FROM 2000
–2019**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) TOTAL_PAY	1	.866**	.793**	.100**	.145**	.034**	.063**
(2) TEAM_AVE_TOTAL_PAY	.866**	1	.715**	.110**	.168**	.042**	.071**
(3) EXCESS_COMP_MEMB	.793**	.715**	1	.054**	.065**	-.031**	.081**
(4) ROA	.100**	.110**	.054**	1	.720**	.181**	.741**
(5) ROE	.145**	.168**	.065**	.720**	1	.269**	.442**
(6) STOCK_RETURNS	.034**	.042**	-.031**	.181**	.269**	1	.157**
(7) TOBIN'S_Q	.063**	.071**	.081**	.741**	.442**	.157**	1
(8) JENSEN'S_ALPHA	.021**	.029**	-.033**	.163**	.228**	.881**	.141**
(9) EXCESS TOTAL STOCK RETURN	-0.013	-0.011	-.022**	.114**	.155**	.656**	.096**
(10) EXCESS_ROE_RET_ROE_IND	.052**	.057**	.047**	.525**	.706**	.136**	.392**
(11) MEMB_ELITE_EDU	.286**	.291**	.213**	.094**	.066**	.021**	.115**
(12) MEMB_ELITE_WORK	.280**	.308**	.234**	-.037**	-0.008	0.008	-.016*
(13) MEMB_AGE	.094**	-0.001	-.029**	-.057**	-.022**	-0.010	-.084**
(14) CEO_FLAG	.317**	0.000	-.097**	0.000	0.000	0.000	0.000
(15) MEMB_INT_EXP	.123**	.132**	.087**	.030**	-0.011	-0.004	.020**
(16) MEMB_NETWORK_SIZE	.383**	.392**	.292**	-.017*	.023**	0.004	.017*
(17) TEAM_ELITE_EDU	.437**	.494**	.340**	.160**	.113**	.036**	.195**
(18) TEAM_ELITE_WORK	.445**	.498**	.363**	-.060**	-.013*	0.013	-.027**
(19) TEAM_AGE	.013*	-0.002	-.042**	-.103**	-.041**	-.017**	-.153**
(20) TEAM_INT_EXP	.194**	.221**	.127**	.051**	-.019**	-0.006	.033**
(21) TEAM_NETWORK_SIZE	.522**	.583**	.433**	-.025**	.034**	0.006	.026**
(22) FIRM_SIZE	.695**	.780**	.451**	.135**	.279**	.113**	.078**
(23) DOI	.386**	.435**	.257**	.130**	.076**	-0.011	.160**
(24) LEVERAGE	.086**	.099**	.197**	-.254**	-.021**	-.053**	-.172**
(25) VOLATILITY	-.109**	-.118**	.115**	-.197**	-.418**	-.182**	-.034**
(26) PROB_DEFAULT	-.027**	-.027**	.124**	-.277**	-.400**	-.304**	-.138**

N = 21,815

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

**TABLE 6.2 PEARSON CORRELATIONS FOR SAMPLE FIRMS FROM 2000
–2019 (CONTINUED)**

	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) TOTAL_PAY	.021**	-0.013	.052**	.286**	.280**	.094**	.317**
(2) TEAM_AVE_TOTAL_PAY	.029**	-0.011	.057**	.291**	.308**	-0.001	0.000
(3) EXCESS_COMP_MEMB	-.033**	-.022**	.047**	.213**	.234**	-.029**	-.097**
(4) ROA	.163**	.114**	.525**	.094**	-.037**	-.057**	0.000
(5) ROE	.228**	.155**	.706**	.066**	-0.008	-.022**	0.000
(6) STOCK_RETURNS	.881**	.656**	.136**	.021**	0.008	-0.010	0.000
(7) TOBIN'S_Q	.141**	.096**	.392**	.115**	-.016*	-.084**	0.000
(8) JENSEN'S_ALPHA	1	.825**	.113**	.024**	.022**	-0.010	0.000
(9) EXCESS TOTAL STOCK RETURN	.825**	1	.106**	0.013	.023**	-.013*	0.000
(10) EXCESS_ROE_RET_ROE_IND	.113**	.106**	1	.042**	0.007	-0.007	0.000
(11) MEMB_ELITE_EDU	.024**	0.013	.042**	1	.227**	0.003	.054**
(12) MEMB_ELITE_WORK	.022**	.023**	0.007	.227**	1	-.026**	0.000
(13) MEMB_AGE	-0.010	-.013*	-0.007	0.003	-.026**	1	.227**
(14) CEO_FLAG	0.000	0.000	0.000	.054**	0.000	.227**	1
(15) MEMB_INT_EXP	-0.006	-0.009	0.005	.023**	.130**	-.057**	-0.002
(16) MEMB_NETWORK_SIZE	0.009	0.008	.023**	.393**	.383**	-.069**	.083**
(17) TEAM_ELITE_EDU	.040**	.022**	.071**	.589**	.257**	-.043**	0.000
(18) TEAM_ELITE_WORK	.035**	.037**	0.012	.245**	.618**	-.020**	0.000
(19) TEAM_AGE	-.019**	-.024**	-0.013	-.047**	-.023**	.547**	0.000
(20) TEAM_INT_EXP	-0.011	-.016*	0.009	.061**	.143**	-.070**	0.000
(21) TEAM_NETWORK_SIZE	0.013	0.012	.034**	.326**	.380**	-.043**	0.000
(22) FIRM_SIZE	.087**	.031**	.154**	.242**	.258**	.068**	0.000
(23) DOI	-0.012	-.033**	.089**	.158**	.161**	-.051**	0.000
(24) LEVERAGE	-.029**	-0.004	.067**	.031**	.112**	0.002	0.000
(25) VOLATILITY	-.122**	.017*	-.195**	0.003	.024**	-.105**	0.000
(26) PROB_DEFAULT	-.269**	-.129**	-.233**	0.005	.023**	-.078**	0.000

N = 21,815

** . Correlation is significant at the

* . Correlation is significant at the 0.05

**TABLE 6.2 PEARSON CORRELATIONS FOR SAMPLE FIRMS FROM 2000
–2019 (CONTINUED)**

	(15)	(16)	(17)	(18)	(19)	(20)
(1) TOTAL_PAY	.123**	.383**	.437**	.445**	.013*	.194**
(2) TEAM_AVE_TOTAL_PAY	.132**	.392**	.494**	.498**	-0.002	.221**
(3) EXCESS_COMP_MEMB	.087**	.292**	.340**	.363**	-.042**	.127**
(4) ROA	.030**	-.017*	.160**	-.060**	-.103**	.051**
(5) ROE	-0.011	.023**	.113**	-.013*	-.041**	-.019**
(6) STOCK_RETURNS	-0.004	0.004	.036**	0.013	-.017**	-0.006
(7) TOBIN'S_Q	.020**	.017*	.195**	-.027**	-.153**	.033**
(8) JENSEN'S_ALPHA	-0.006	0.009	.040**	.035**	-.019**	-0.011
(9) EXCESS TOTAL STOCK RETURN	-0.009	0.008	.022**	.037**	-.024**	-.016*
(10) EXCESS_ROE_RET_ROE_IND	0.005	.023**	.071**	0.012	-0.013	0.009
(11) MEMB_ELITE_EDU	.023**	.393**	.589**	.245**	-.047**	.061**
(12) MEMB_ELITE_WORK	.130**	.383**	.257**	.618**	-.023**	.143**
(13) MEMB_AGE	-.057**	-.069**	-.043**	-.020**	.547**	-.070**
(14) CEO_FLAG	-0.002	.083**	0.000	0.000	0.000	0.000
(15) MEMB_INT_EXP	1	.052**	.061**	.138**	-.076**	.595**
(16) MEMB_NETWORK_SIZE	.052**	1	.372**	.413**	-.053**	.097**
(17) TEAM_ELITE_EDU	.061**	.372**	1	.415**	-.079**	.103**
(18) TEAM_ELITE_WORK	.138**	.413**	.415**	1	-.037**	.232**
(19) TEAM_AGE	-.076**	-.053**	-.079**	-.037**	1	-.128**
(20) TEAM_INT_EXP	.595**	.097**	.103**	.232**	-.128**	1
(21) TEAM_NETWORK_SIZE	.086**	.672**	.554**	.614**	-.078**	.145**
(22) FIRM_SIZE	.064**	.360**	.411**	.417**	.125**	.107**
(23) DOI	.267**	.218**	.268**	.260**	-.092**	.449**
(24) LEVERAGE	-.071**	.157**	.053**	.181**	0.003	-.119**
(25) VOLATILITY	.014*	0.013	0.006	.038**	-.192**	.024**
(26) PROB_DEFAULT	0.007	.042**	0.008	.037**	-.144**	0.012

N = 21,815

** . Correlation is significant at the

* . Correlation is significant at the 0.05

**TABLE 6.2 PEARSON CORRELATIONS FOR SAMPLE FIRMS FROM 2000
–2019 (CONTINUED)**

	(21)	(22)	(23)	(24)	(25)	(26)
(1) TOTAL_PAY	.522**	.695**	.386**	.086**	-.109**	-.027**
(2) TEAM_AVE_TOTAL_PAY	.583**	.780**	.435**	.099**	-.118**	-.027**
(3) EXCESS_COMP_MEMB	.433**	.451**	.257**	.197**	.115**	.124**
(4) ROA	-.025**	.135**	.130**	-.254**	-.197**	-.277**
(5) ROE	.034**	.279**	.076**	-.021**	-.418**	-.400**
(6) STOCK_RETURNS	0.006	.113**	-0.011	-.053**	-.182**	-.304**
(7) TOBIN'S_Q	.026**	.078**	.160**	-.172**	-.034**	-.138**
(8) JENSEN'S_ALPHA	0.013	.087**	-0.012	-.029**	-.122**	-.269**
(9) EXCESS TOTAL STOCK RETURN	0.012	.031**	-.033**	-0.004	.017*	-.129**
(10) EXCESS_ROE_RET_ROE_IND	.034**	.154**	.089**	.067**	-.195**	-.233**
(11) MEMB_ELITE_EDU	.326**	.242**	.158**	.031**	0.003	0.005
(12) MEMB_ELITE_WORK	.380**	.258**	.161**	.112**	.024**	.023**
(13) MEMB_AGE	-.043**	.068**	-.051**	0.002	-.105**	-.078**
(14) CEO_FLAG	0.000	0.000	0.000	0.000	0.000	0.000
(15) MEMB_INT_EXP	.086**	.064**	.267**	-.071**	.014*	0.007
(16) MEMB_NETWORK_SIZE	.672**	.360**	.218**	.157**	0.013	.042**
(17) TEAM_ELITE_EDU	.554**	.411**	.268**	.053**	0.006	0.008
(18) TEAM_ELITE_WORK	.614**	.417**	.260**	.181**	.038**	.037**
(19) TEAM_AGE	-.078**	.125**	-.092**	0.003	-.192**	-.144**
(20) TEAM_INT_EXP	.145**	.107**	.449**	-.119**	.024**	0.012
(21) TEAM_NETWORK_SIZE	1	.535**	.324**	.234**	.019**	.062**
(22) FIRM_SIZE	.535**	1	.355**	.111**	-.311**	-.220**
(23) DOI	.324**	.355**	1	-.107**	-.053**	-0.010
(24) LEVERAGE	.234**	.111**	-.107**	1	.136**	.244**
(25) VOLATILITY	.019**	-.311**	-.053**	.136**	1	.671**
(26) PROB_DEFAULT	.062**	-.220**	-0.010	.244**	.671**	1

N = 21,815

** . Correlation is significant at the

* . Correlation is significant at the 0.05

In the remainder of this section, the results of hypothesis testing are presented.

Performance:

Hypothesis 1a: *The TMT aggregate elite educational credentials will be positively related with firm performance.*

Hypothesis 1b: *The TMT aggregate elite work experience credentials will be positively related with firm performance.*

Table 6.3 summarizes the relationship between elite credentials and performance. Models 1, 2 and 4 shows that the coefficients of the interaction terms between aggregated elite educational credentials and ROA, ROE and Tobin's Q has a statistically significant and positive effects, supporting Hypothesis 1a. Thereby suggesting that as aggregate elite education credentials increase, a firm's performance also increases. Model 3 the coefficients of the interaction terms between aggregated elite educational credentials and stock market returns was not statistically significant. The magnitude of aggregate elite education credentials is significant. A one unit change in the credential increases the ROA, ROE and Tobin's Q by 1.1%, 1.6% and .23 on average, all else being constant, which shows the large positive economic magnitude of the credential.

Models 5, 6 and 8 shows that the coefficients of the interaction terms between aggregated elite work experience credentials and ROA, ROE and Tobin's Q has a significant and negative effects, which does not support Hypothesis 1b. This confirms that as aggregate elite work experience credentials increase, a firm's performance decreases. Model 7 the coefficients of the interaction terms between aggregated elite work experience credentials and stock market returns was not statistically significant. The magnitude of aggregate elite work experience credentials is also significant. A one unit change in the credential decreases the ROA, ROE and Tobin's Q by .7%, 1.6% and .07 on average, all else being constant, which shows the large negative economic magnitude of the credential.

TMT average age, TMT network size, the firm's degree of internationalization and higher probability of default all a statically significant negative impact on performance. Whereas the TMT international experience and firm size had a statically significant positive impact on performance. TMT average compensation and leverage had mixed results on performance. The adjusted R-Squared with year and industry fixed effects ranged from a low of .28 to a high of .45 for the models which is consistent with other studies (for example, Joh and Jung, 2016).

Table 6.3 below presents the Top Management Team (TMT) team aggregate elite credentials and firm performance. This table presents estimates of ordinary least squares (OLS) and firm and TMT fixed effects panel regressions of the TMT aggregate team Elite Education and Elite Work Experience on firm performance. The sample consists of ExecuComp firms for which TMT members profile data are available from BoardEx in the 2000–2019 period. Robust t-statistics reported in brackets. *, **, and *** indicates significance at the 10%, 5% and 1% levels.

TABLE 6.3 HYPOTHESES 1A & 1B

Variable	Firm Performance (ROA)	Firm Performance (ROE)	Firm Performance (STOCK RETURNS)	Firm Performance (TOBIN'S Q)	Firm Performance (ROA)	Firm Performance (ROE)	Firm Performance (STOCK RETURNS)	Firm Performance (TOBIN'S Q)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TEAM_ELITE_EDU	1.108*** (12.454)	1.568*** (5.781)	-0.212 (-0.324)	0.225*** (16.584)				
TEAM_ELITE_WORK					-0.76*** (-8.942)	-1.608*** (-6.216)	-0.201 (-0.323)	-0.070*** (-5.409)
TEAM_AGE ⁽⁺⁾	-0.035*** (-4.693)	-0.233*** (-10.176)	-0.416*** (-7.539)	-0.007*** (-5.882)	-0.034*** (-4.499)	-0.232*** (-10.129)	-0.417*** (-7.556)	-0.006*** (-5.487)
TEAM_INT_EXP	0.576*** (4.773)	0.663* (1.803)	1.237 (1.396)	-0.021 (-1.149)	0.665*** (5.443)	0.901*** (2.423)	1.293 (1.445)	-0.021 (-1.115)
TEAM_NETWORK_SIZE	-1.77*** (-17.878)	-4.914*** (-16.278)	-0.311 (-0.428)	-0.205*** (-13.586)	-1.066*** (-11.133)	-3.749*** (-12.87)	-0.336 (-0.479)	-0.089*** (-6.047)
TEAM_AVE_TOTAL_PAY	0.196 (1.533)	2.265*** (5.808)	-5.838*** (-6.22)	-0.172*** (-8.834)	0.440*** (3.422)	2.696*** (6.895)	-5.829*** (-6.191)	-0.136*** (-6.936)
FIRM_SIZE	0.575*** (7.48)	2.673*** (11.407)	5.676*** (10.064)	0.092*** (7.843)	0.702*** (9.112)	2.892*** (12.336)	5.678*** (10.061)	0.111*** (9.459)
DOI	-0.032*** (-14.395)	-0.085*** (-12.649)	-0.132*** (-8.175)	-0.002*** (-7.008)	-0.032*** (-14.306)	-0.084*** (-12.558)	-0.132*** (-8.157)	-0.002*** (-7.077)
LEVERAGE ⁽⁺⁾	-0.04*** (-28.371)	0.029*** (6.664)	0.009 (0.9)	-0.005*** (-21.92)	-0.039*** (-27.53)	0.031*** (7.136)	0.010 (0.926)	-0.005*** (-21.35)
VOLATILITY ⁽⁺⁾	-0.023*** (-11.418)	-0.246*** (-39.616)	0.069*** (4.647)	0.003*** (10.926)	-0.02*** (-9.885)	-0.24*** (-38.425)	0.070*** (4.645)	0.004*** (11.904)
PROB_DEFAULT ⁽⁺⁾	-0.523*** (-28.724)	-1.774*** (-31.942)	-4.029*** (-30.14)	-0.059*** (-21.107)	-0.543*** (-29.745)	-1.809*** (-32.554)	-4.030*** (-30.116)	-0.062*** (-22.025)
Intercept	9.327*** (17.752)	29.233*** (18.25)	11.38*** (2.951)	2.521*** (31.477)	6.34*** (12.16)	24.191*** (15.229)	8.22** (2.09)	1.941*** (23.634)
F-Value	320	322	250	419	317	322	250	409
R-Squared	0.387	0.389	0.331	0.453	0.385	0.389	0.331	0.447
Adj R-Squared	0.386	0.388	0.329	0.452	0.384	0.388	0.329	0.445
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sub Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firms	356	356	356	356	356	356	356	356
Number of Executives	4,379	4,379	4,379	4,379	4,379	4,379	4,379	4,379
Number of Observations	21,815	21,815	21,815	21,815	21,815	21,815	21,815	21,815

(+) - variable winsorized within (1,99) interval;

Hypothesis 3a: *The positive relationship between the TMT's aggregate elite educational credentials and performance is moderated by the degree of internationalization.*

Hypothesis 3b: *The positive relationship between the TMT's aggregate elite work experience credentials and performance is moderated by the degree of internationalization.*

Table 6.4 summarizes the moderating effect of DOI on TMT aggregate elite credentials and firm performance. Models 1 and 2 shows that the moderating effect of DOI on the interaction terms between aggregated elite educational credentials and ROA and ROE has a statistically significant and positive effects, supporting Hypothesis 3a. This confirms that as the DOI increases the aggregate elite education credentials and the interaction between firm's performance also increases. Model 3 and 4 the coefficients of the interaction terms between aggregated elite educational credentials and both stock market returns and Tobin's Q was not statistically significant. The magnitude the of interactive effect between DOI and aggregate elite education credentials is also significant. A 10% change in the interactive effect increases ROE by .8%, on average, all else being constant, which demonstrates the large positive economic magnitude of the interactive effect.

Models 5, 6 and 8 shows that the moderating effect of DOI on the interaction terms between aggregated elite work experience credentials and ROA, ROE and Tobin's Q has a statistically significant and positive effects, supporting Hypothesis 3b. This confirms that as the DOI increases the aggregate elite work experience credentials and the interaction between firm's performance also increases. The magnitude of the interactive effect between DOI and aggregate elite work experience credentials is also significant. A 10% change in the interactive effect increases ROE by .7%, on average, all else being constant, which shows the large positive economic magnitude of the interactive effect. Model 7 the coefficients of the interaction terms between aggregated elite educational credentials and stock market returns was not statistically significant.

Although the R-Squared increases slightly when the moderating effect of DOI is introduced to both elite education and elite work experience, the main impact is elite education and elite work experience are statically significant and economically relevant to performance in an international context. This demonstrates the skills of elite education and elite work experience are more valuable for international firms as they increase their global strategic footprint. Elite work experience only added to the profitability of international firms.

Table 6.4 below presents the moderating effect of DOI on Top Management Team (TMT) team aggregate elite credentials and firm performance. This table presents estimates of ordinary least squares (OLS) and firm and TMT fixed effects panel regressions of the TMT aggregate team Elite Education and Elite Work Experience and the interaction of DOI on firm performance. The sample consists of ExecuComp firms for which TMT members profile data are available from BoardEx in the 2000–2019 period. Robust t-statistics reported in brackets. *, **, and *** indicates significance at the 10%, 5% and 1% levels.

TABLE 6.4 HYPOTHESES 3A & 3B

Variable	Firm Performance (ROA)	Firm Performance (ROE)	Firm Performance (STOCK RETURNS)	Firm Performance (TOBIN'S Q)	Firm Performance (ROA)	Firm Performance (ROE)	Firm Performance (STOCK RETURNS)	Firm Performance (TOBIN'S Q)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TEAM_ELITE_EDU	0.956*** (9.232)	0.607* (1.923)	-0.064 (-0.085)	0.223*** (14.154)				
TEAM_ELITE_WORK					-0.99*** (-10.282)	-2.501*** (-8.542)	-0.622 (-0.881)	-0.14*** (-9.509)
TEAM_ELITE_EDU X DOI	1.274*** (2.871)	8.052*** (5.953)	-1.236 (-0.379)	0.012 (0.182)				
TEAM_ELITE_WORK X DOI					1.725*** (5.073)	6.713*** (6.491)	3.162 (1.269)	0.522*** (10.054)
TEAM_AGE ⁽⁺⁾	-0.036*** (-4.783)	-0.238*** (-10.369)	-0.416*** (-7.523)	-0.007*** (-5.884)	-0.035*** (-4.683)	-0.238*** (-10.368)	-0.42*** (-7.597)	-0.007*** (-5.861)
TEAM_INT_EXP	0.561*** (4.644)	0.568*** (1.543)	1.252 (1.411)	-0.021 (-1.156)	0.584*** (4.746)	0.587 (1.568)	1.145 (1.269)	-0.045** (-2.406)
TEAM_NETWORK_SIZE	-1.749*** (-17.618)	-4.78*** (-15.804)	-0.331 (-0.455)	-0.205*** (-13.535)	-1.029*** (-10.729)	-3.607*** (-12.36)	-0.269 (-0.383)	-0.078*** (-5.291)
TEAM_AVE_TOTAL_PAY	0.197 (1.538)	2.269*** (5.823)	-5.839*** (-6.221)	-0.172*** (-8.833)	0.452*** (3.517)	2.743*** (7.019)	-5.807*** (-6.167)	-0.133*** (-6.766)
FIRM_SIZE	0.574*** (7.47)	2.667*** (11.392)	5.677*** (10.065)	0.092*** (7.842)	0.711*** (9.233)	2.927*** (12.496)	5.694*** (10.088)	0.114*** (9.713)
DOI	-0.037*** (-12.623)	-0.121*** (-13.392)	-0.127*** (-5.823)	-0.002*** (-5.332)	-0.04*** (-14.612)	-0.115*** (-14.009)	-0.147*** (-7.389)	-0.005*** (-11.602)
LEVERAGE ⁽⁺⁾	-0.041*** (-28.514)	0.026*** (5.901)	0.010 (0.939)	-0.005*** (-21.781)	-0.04*** (-27.874)	0.029*** (6.575)	0.009 (0.817)	-0.005*** (-22.165)
VOLATILITY ⁽⁺⁾	-0.023*** (-11.308)	-0.245*** (-39.405)	0.069*** (4.631)	0.003*** (10.925)	-0.02*** (-9.73)	-0.239*** (-38.243)	0.07*** (4.682)	0.004*** (12.235)
PROB_DEFAULT ⁽⁺⁾	-0.522*** (-28.648)	-1.766*** (-31.808)	-4.03*** (-30.139)	-0.059*** (-21.095)	-0.546*** (-29.884)	-1.819*** (-32.742)	-4.034*** (-30.139)	-0.062*** (-22.329)
Intercept	10.147*** (18.841)	35.291*** (21.509)	8.187*** (2.071)	2.419*** (29.467)	7.106*** (13.242)	30.044*** (18.405)	8.176** (2.079)	1.934*** (23.599)
F-Value	313	316	244	409	311	316	244	403
R-Squared	0.388	0.390	0.331	0.453	0.386	0.390	0.331	0.449
Adj R-Squared	0.386	0.388	0.329	0.452	0.385	0.389	0.329	0.448
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sub Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firms	356	356	356	356	356	356	356	356
Number of Executives	4,379	4,379	4,379	4,379	4,379	4,379	4,379	4,379
Number of Observations	21,815	21,815	21,815	21,815	21,815	21,815	21,815	21,815

(+) - variable winsorized within (1,99) interval;

Compensation:

Hypothesis 2a: *The TMT member's elite educational credentials will be positively associated with compensation.*

Hypothesis 2b: *The TMT member's elite work experience credentials will be positively associated with compensation.*

Hypothesis 4a: *The positive relationship between the TMT member's elite educational credentials and compensation is moderated by the degree of internationalization.*

Hypothesis 4b: *The positive relationship between the TMT member's elite work experience and compensation is moderated by the degree of internationalization.*

Table 6.5 summarizes the interaction effects of elite credentials on compensation. Model 1 shows the interaction between the control variables for firm characteristics and compensation with an adjusted R-Squared of .52. The largest positive impact and explanation of variance on compensation is firm size which is supported in the literature firm (VakkurHerrera-Vakkur, 2012). DOI, leverage, volatility, probability of default and ROA all had a positive impact on compensation and were statistically significant yet were small in economic magnitude. ROE and Tobin's Q had a negative impact on compensation and were statistically significant yet were small in economic magnitude.

Model 2 includes the individual member characteristics control variables which increased the adjusted R-Squared to .64. Being a CEO, members network size, and having international experience all had a positive impact on compensation and were statistically significant and large in terms of economic magnitude. Model 3 includes elite education credentials and shows that the coefficients of the interaction terms between compensation has a statistically significant and positive effects. Model 4 includes fixed year and industry effects which increases the R-Squared to .70. The elite education credentials show that the coefficients of the interaction terms between compensation has a statistically significant and positive effects, support Hypothesis 2a. This confirms that as aggregate elite education credentials increase, a TMT member compensation also increases. The magnitude of aggregate elite education credentials is also significant. A one unit change in the credential increases the individual TMT member compensation by 4%, all else being constant, which shows the large positive economic magnitude of the credential.

Model 5 examines elite work experience credentials excluding fixed year and fixed industry effects. It also shows that the coefficients of the interaction terms between compensation has a statistically significant and positive effects. Model 6 includes fixed year and fixed industry effects and still shows that the coefficients of the interaction terms between compensation has a statistically significant and positive effects, support Hypothesis 2b. This confirms that as aggregate elite work experience credentials increase, a TMT members compensation also increases. The magnitude of aggregate elite work experience credentials is also significant. A one unit change in the credential increases the individual TMT members compensation by 5.2%, all else being constant, which shows the large positive economic magnitude of the credential.

Models 7 and 8 shows that the moderating effect of DOI on the interaction terms between aggregated elite credentials and compensation. The DOI moderating effect on elite education credentials and compensation is not statistically significant and does not support Hypothesis 4a. The moderating effect of DOI on the interaction terms between aggregated elite work experience credentials and compensation has a statistically significant and negative effect which does not support Hypothesis 4b.

Table 6.5 below presents Top Management Team (TMT) member Total Pay and elite credentials. This table presents estimates of ordinary least squares (OLS) and firm and TMT fixed effects panel regressions of the logarithm of TMT member Total Pay on Elite Education and Elite Work Experience and other TMT member and firm-level control variables. The sample consists of ExecuComp firms for which TMT members profile data are available from BoardEx in the 2000–2019 period. Robust t-statistics reported in brackets. *, **, and *** indicates significance at the 10%, 5% and 1% levels.

TABLE 6.5 HYPOTHESES 2A, 2B, 4A & 4B

Variable	OLS (1)	OLS (2)	OLS (3)	Fixed Effects (4)	OLS (5)	Fixed Effects (6)	Fixed Effects (7)	Fixed Effects (8)
MEMB_ELITE_EDU			0.035*** (10.913)	0.017*** (5.655)			0.019*** (5.371)	
MEMB_ELITE_WORK					0.036*** (11.358)	0.022*** (7.191)		0.026*** (7.366)
[MEMB_ELITE_EDU]_X_[DOI]							-0.017 (-1.099)	
[MEMB_ELITE_WORK]_X_[DOI]								-0.032** (-2.343)
MEMB_NETWORK_SIZE		0.125*** (32.428)	0.110*** (27.304)	0.093*** (24.135)	0.113*** (28.309)	0.093*** (24.723)	0.092*** (24.078)	0.092*** (24.606)
CEO_FLAG		0.343*** (69.741)	0.343*** (69.915)	0.346*** (76.145)	0.345*** (70.336)	0.347*** (76.374)	0.346*** (76.053)	0.347*** (76.395)
MEMB_INT_EXP		0.039*** (8.436)	0.040*** (8.764)	0.024*** (5.554)	0.034*** (7.364)	0.02*** (4.704)	0.024*** (5.531)	0.021*** (4.783)
MEMB_AGE ⁽⁺⁾		0.001*** (4.235)	0.001*** (3.745)	0.001*** (5.42)	0.001*** (4.135)	0.001*** (5.751)	0.001*** (5.423)	0.001*** (5.766)
FIRM_SIZE	0.468*** (124.067)	0.425*** (119.526)	0.422*** (118.656)	0.411*** (112.24)	0.42*** (117.777)	0.41*** (111.635)	0.411*** (112.233)	0.409*** (111.471)
DOI	0.004*** (28.653)	0.004*** (26.839)	0.004*** (26.48)	0.002*** (11.54)	0.004*** (26.484)	0.002*** (11.305)	0.002*** (10.777)	0.002*** (11.24)
LEVERAGE ⁽⁺⁾	0.000*** (2.58)	0.000 (0.636)	0.000 (0.7)	0.001*** (13.226)	-0.000 (-0.02)	0.001*** (12.972)	0.001*** (13.268)	0.001*** (13.069)
VOLATILITY ⁽⁺⁾	0.001*** (6.491)	0.001*** (5.125)	0.001*** (4.886)	0.002*** (17.746)	0.001*** (4.604)	0.002*** (17.286)	0.002*** (17.729)	0.002*** (17.242)
PROB_DEFAULT ⁽⁺⁾	0.020** (13.592)	0.019*** (14.776)	0.019*** (14.745)	0.008*** (6.719)	0.02*** (15.088)	0.009*** (6.899)	0.008*** (6.708)	0.009*** (6.948)
ROA ⁽⁺⁾	0.009*** (9.847)	0.009*** (11.288)	0.009*** (10.992)	0.004*** (5.316)	0.009*** (11.43)	0.004*** (5.496)	0.004*** (5.316)	0.004*** (5.457)
ROE ⁽⁺⁾	-0.002*** (-6.032)	-0.001*** (-4.969)	-0.001*** (-4.88)	0.000 (1.377)	-0.001*** (-4.863)	0.000 (1.346)	0.000 (1.396)	0.000 (1.396)
STOCK_RETURNS ⁽⁺⁾	-0.000 (-0.232)	-0.000 (-0.348)	-0.000 (-0.399)	-0.000*** (-4.832)	-0.000 (-4.456)	-0.000 (-4.883)	0*** (-4.838)	0*** (-4.89)
TOBIN'S_Q ⁽⁺⁾	-0.028*** (-6.486)	-0.031*** (-8.511)	-0.033*** (-8.95)	-0.039*** (-9.946)	-0.031*** (-8.369)	-0.038*** (-9.73)	-0.039*** (-9.952)	-0.037*** (-9.637)
Intercept	1.534*** (105.134)	1.229*** (60.925)	1.277*** (62.015)	1.15*** (53.574)	1.273*** (62.149)	1.15*** (54.071)	1.15*** (53.573)	1.151*** (54.092)
F-Value		2,654	3,008	2,817	1,062	2,819	1,063	1,040
R-Squared		0.523	0.642	0.644	0.696	0.644	0.697	0.696
Adj R-Squared		0.523	0.642	0.644	0.696	0.644	0.696	0.696
Year Fixed Effects		No	No	No	Yes	No	Yes	Yes
Sub Industry Fixed Effects		No	No	No	Yes	No	Yes	Yes
Number of Firms		356	356	356	356	356	356	356
Number of Executives		4,379	4,379	4,379	4,379	4,379	4,379	4,379
Number of Observations		21,815	21,815	21,815	21,815	21,815	21,815	21,815

(+) - variable winsorized within (1,99) interval;

Table 6.6 examines in models one through six the impact that members networks have on elite credentials compensation. Models seven to twelve examine the impact that international experience has on elite credentials and compensation. Models 1, 3 and 5 exclude member network size from OLS regression equation keeping all other individual, team, fixed industry effects and moderating variables. Models 2, 4 and 6 includes member network size. When members network size is included in the OLS

equations the economic magnitude of both elite education and elite work experience is reduce by approximately 50%. This may indicate the value of the social capital these elite networks are worth.

Models 9 and 10 shows that the moderating effect of international work experience on the interaction terms between aggregated elite credentials and compensation. The international work experience moderating effect on both elite education and compensation and elite work experience credentials and compensation was statistically significant and negative effects. A three-way interactive effect between international work experience, degree of internationalization and elite credentials on compensation showed only a statistically significant effect for the elite education credential. The economic magnitude of this three-way effect was significant. A 10% change in the interactive effect increases compensation by 20.5%, on average, all else being constant.

Table 6.6 below presents the Top Management Team (TMT) member Total Pay and elite credentials. This table presents estimates of ordinary least squares (OLS) and firm and TMT fixed effects panel regressions of the logarithm of TMT member Total Pay on Elite Education and Elite Work Experience and other TMT member and firm-level control variables. Models one to six examines the impact that Members Networks have on Elite Credentials Total Pay. Models seven to twelve examines the impact that International Experience has on Elite Credentials Total Pay. The sample consists of ExecuComp firms for which TMT members profile data are available from BoardEx in the 2000–2019 period. Robust t-statistics reported in brackets. *, **, and *** indicates significance at the 10%, 5% and 1% levels

TABLE 6.6 NETWORK AND INTERNATIONAL WORK EXPERIENCE

Variable	Fixed Effects	Fixed Effects	Fixed Effects	Fixed Effects	Fixed Effects	Fixed Effects
	(1)	(2)	(3)	(4)	(5)	(6)
MEMB_ELITE_EDU	0.040*** (13.925)	0.017*** (5.655)			0.034*** (11.863)	0.015*** (5.008)
MEMB_ELITE_WORK			0.040*** (13.623)	0.022*** (7.191)	0.034*** (11.508)	0.02*** (6.693)
[MEMB_ELITE_EDU]_X_[DOI]						
[MEMB_ELITE_WORK]_X_[DOI]						
[MEMB_ELITE_EDU]_X_[MEMB_INT_EXP]						
[MEMB_ELITE_WORK]_X_[MEMB_INT_EXP]						
[MEMB_ELITE_EDU]_X_[MEMB_INT_EXP] X [DOI]						
[MEMB_ELITE_WORK]_X_[MEMB_INT_EXP] X [DOI]						
MEMB_NETWORK_SIZE		0.093*** (24.135)		0.093*** (24.723)		0.087*** (22.205)
CEO_FLAG	0.364*** (80.221)	0.346*** (76.145)	0.367*** (80.95)	0.347*** (76.374)	0.364*** (80.468)	0.347*** (76.414)
MEMB_INT_EXP	0.029*** (6.668)	0.024*** (5.554)	0.022*** (5.058)	0.02*** (4.704)	0.024*** (5.479)	0.021*** (4.908)
MEMB_AGE ⁽⁺⁾	0.000 (1.2)	0.001*** (5.42)	0*** (1.794)	0.001*** (5.751)	0*** (1.647)	0.001*** (5.433)
FIRM_SIZE	0.437*** (123.49)	0.411*** (112.24)	0.437*** (123.151)	0.41*** (111.635)	0.431*** (120.358)	0.409*** (111.197)
DOI	0.002*** (12.223)	0.002*** (11.54)	0.002*** (11.807)	0.002*** (11.305)	0.002*** (11.823)	0.002*** (11.342)
LEVERAGE ⁽⁺⁾	0.001*** (14.78)	0.001*** (13.226)	0.001*** (14.428)	0.001*** (12.972)	0.001*** (14.123)	0.001*** (12.927)
VOLATILITY ⁽⁺⁾	0.003*** (19.775)	0.002*** (17.746)	0.003*** (19.075)	0.002*** (17.286)	0.003*** (18.741)	0.002*** (17.248)
PROB_DEFAULT ⁽⁺⁾	0.009*** (7.097)	0.008*** (6.719)	0.009*** (7.407)	0.009*** (6.899)	0.009*** (7.445)	0.009*** (6.946)
ROA ⁽⁺⁾	0.004*** (4.946)	0.004*** (5.316)	0.004*** (5.287)	0.004*** (5.496)	0.004*** (5.201)	0.004*** (5.445)
ROE ⁽⁺⁾	0.000 (0.526)	0.000 (1.377)	0.000 (0.43)	0.000 (1.346)	0.000 (0.562)	0*** (1.348)
STOCK_RETURNS ⁽⁺⁾	0*** (-4.761)	-0.000*** (-4.832)	0*** (-4.869)	-0.000 (-4.883)	0*** (-4.801)	0*** (-4.852)
TOBIN'S_Q ⁽⁺⁾	-0.041*** (-10.381)	-0.039*** (-9.946)	-0.039*** (-9.882)	-0.038*** (-9.73)	-0.04*** (-10.273)	-0.038*** (-9.907)
Intercept	1.341*** (66.327)	1.15*** (53.574)	1.336*** (66.167)	1.15*** (54.071)	1.359*** (67.21)	1.172*** (54.025)
F-Value	1,044	1062	1044	1063	1064	1043
R-Squared	0.688	0.696	0.688	0.697	0.688	0.697
Adj R-Squared	0.687	0.696	0.687	0.696	0.687	0.696
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Sub Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firms	356	356	356	356	356	356
Number of Executives	4,379	4,379	4,379	4,379	4,379	4,379
Number of Observations	21,815	21,815	21,815	21,815	21,815	21,815

(+) - variable winsorized within (1,99) interval;

**TABLE 6.6 NETWORK AND INTERNATIONAL WORK EXPERIENCE
(CONTINUED)**

Variable	Fixed Effects (7)	Fixed Effects (8)	Fixed Effects (9)	Fixed Effects (10)	Fixed Effects (11)	Fixed Effects (12)
MEMB_ELITE_EDU	0.019*** (5.371)		0.023*** (6.81)		0.027*** (6.86)	
MEMB_ELITE_WORK		0.026*** (7.366)		0.027*** (8.454)		0.027*** (7.572)
[MEMB_ELITE_EDU]_X_[DOI]	-0.017 (-1.099)				-0.032* (-1.683)	
[MEMB_ELITE_WORK]_X_[DOI]		-0.032** (-2.343)				0.006 (0.401)
[MEMB_ELITE_EDU]_X_[MEMB_INT_EXP]			-0.024*** (-3.842)		-0.037*** (-4.705)	
[MEMB_ELITE_WORK]_X_[MEMB_INT_EXP]				-0.031*** (-4.781)		-0.021** (-1.974)
[MEMB_ELITE_EDU]_X_[MEMB_INT_EXP] X [DOI]					0.082*** (2.941)	
[MEMB_ELITE_WORK]_X_[MEMB_INT_EXP] X [DOI]						-0.040 (-1.421)
MEMB_NETWORK_SIZE	0.092*** (24.078)	0.092*** (24.606)	0.092*** (24.003)	0.092*** (24.492)	0.092*** (23.969)	0.092*** (24.5)
CEO_FLAG	0.346*** (76.053)	0.347*** (76.395)	0.346*** (76.143)	0.347*** (76.432)	0.346*** (76.085)	0.347*** (76.404)
MEMB_INT_EXP	0.024*** (5.531)	0.021*** (4.783)	0.033*** (6.729)	0.027*** (6.004)	0.033*** (6.693)	0.027*** (5.946)
MEMB_AGE ⁽⁺⁾	0.001*** (5.423)	0.001*** (5.766)	0.001*** (5.439)	0.002*** (5.871)	0.001*** (5.475)	0.002*** (5.894)
FIRM_SIZE	0.411*** (112.233)	0.409*** (111.471)	0.411*** (112.151)	0.41*** (111.711)	0.411*** (112.176)	0.41*** (111.537)
DOI	0.002*** (10.777)	0.002*** (11.24)	0.002*** (11.571)	0.002*** (11.953)	0.002*** (10.184)	0.002*** (10.976)
LEVERAGE ⁽⁺⁾	0.001*** (13.268)	0.001*** (13.069)	0.001*** (13.187)	0.001*** (13.013)	0.001*** (13.242)	0.001*** (12.991)
VOLATILITY ⁽⁺⁾	0.002*** (17.729)	0.002*** (17.242)	0.002*** (17.787)	0.002*** (17.203)	0.002*** (17.771)	0.002*** (17.193)
PROB_DEFAULT ⁽⁺⁾	0.008*** (6.708)	0.009*** (6.948)	0.008*** (6.67)	0.009*** (7.021)	0.008*** (6.673)	0.009*** (6.992)
ROA ⁽⁺⁾	0.004*** (5.316)	0.004*** (5.457)	0.004*** (5.331)	0.004*** (5.43)	0.004*** (5.347)	0.004*** (5.413)
ROE ⁽⁺⁾	0.000 (1.396)	0.000 (1.396)	0.000 (1.409)	0*** (1.424)	0*** (1.409)	0*** (1.429)
STOCK_RETURNS ⁽⁺⁾	0*** (-4.838)	0*** (-4.89)	0*** (-4.853)	0*** (-4.832)	0*** (-4.871)	0*** (-4.842)
TOBIN'S_Q ⁽⁺⁾	-0.039*** (-9.952)	-0.037*** (-9.637)	-0.039*** (-10.009)	-0.038*** (-9.737)	-0.039*** (-10.022)	-0.038*** (-9.694)
Intercept	1.15*** (53.573)	1.151*** (54.092)	1.029*** (44.628)	1.029*** (44.887)	1.029*** (44.598)	1.029*** (44.883)
F-Value	1040	1041	1041	1043	999	1001
R-Squared	0.696	0.697	0.696	0.697	0.697	0.697
Adj R-Squared	0.696	0.696	0.696	0.696	0.696	0.696
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Sub Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Firms	356	356	356	356	356	356
Number of Executives	4,379	4,379	4,379	4,379	4,379	4,379
Number of Observations	21,815	21,815	21,815	21,815	21,815	21,815

(+) - variable winsorized within (1,99) interval;

Prisoner's Dilemma:

Hypothesis 5a: *There will be a positive relationship between a TMT member's elite educational credentials and a rent premium received for overperformance.*

Hypothesis 5b: *There will be a positive relationship between the TMT member's elite work experience credentials and a rent premium received for overperformance.*

Table 6.7 summarizes the interaction effects of elite credentials and rent premium received for performance. Models 1, 2, 3 and 4 shows the TMT members rent premium received on TMT members elite education credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). Overperformance occurs when a TMT is in the top 50% (Q1 or Q2) of performance in a firm year versus their peers. The coefficients of the interaction terms between aggregated elite educational credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have a statistically significant and positive effects in Q1 and Q2, supporting Hypothesis 5a. This confirms that as elite education credentials increase, a TMT member rent premium increases with overperformance. The magnitude of elite education credentials is also significant. A one unit change in the credential increases the rent premium received for overperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE between 21% and 36% on average, all else being constant, which shows the large positive economic magnitude of the credential. Model R-Squared ranges from .045 to .048.

Models 5, 6, 7 and 8 shows the TMT members rent premium received on TMT members elite work experience credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The coefficients of the interaction terms between aggregated elite educational credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have a statistically significant and positive effects in Q1 and Q2, supporting Hypothesis 5b. Thereby suggesting that as elite education credentials increase, a TMT member rent premium increases with overperformance. The magnitude of elite education credentials is also significant. A one unit change in the credential increases the rent premium received for overperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE between 24% and 37% on average, all else being constant, which shows the large

positive economic magnitude of the credential. Model R-Squared ranges from .055 to .056.

Hypothesis 6a: *There will be a positive relationship between a TMT member's elite educational credentials and a rent premium received for underperformance.*

Hypothesis 6b: *There will be a positive relationship between the TMT member's elite work experience credentials and a rent premium received for underperformance.*

Table 6.7 summarizes the interaction effects of elite credentials and rent premium received for performance. Models 1, 2, 3 and 4 shows the TMT members rent premium received on TMT members elite education credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). Underperformance occurs when a TMT is in the bottom 50% (Q3 or Q4) of performance in a firm year versus their peers. The coefficients of the interaction terms between aggregated elite educational credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have a statistically significant and positive effects in Q3 and Q4, supporting Hypothesis 6a. This confirms that as elite education credentials increase, the individual TMT member rent premium increases during underperformance. The magnitude of elite education credentials is also significant. A one unit change in the credential increases the rent premium received for underperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE between 19% and 28% on average, all else being constant, which shows the large positive economic magnitude of the credential. Model R-Squared ranges from .045 to .048.

Models 5, 6, 7 and 8 shows the TMT members rent premium received on TMT members elite work experience credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The coefficients of the interaction terms between aggregated elite educational credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have statistically significant and positive effects in Q3 and Q4, supporting Hypothesis 6b. This confirms that as elite education credentials increase, a TMT member rent premium increases during overperformance. The magnitude of elite education credentials is also significant. A one unit change in the credential increases the rent premium received for underperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE

between 25% and 34% on average, all else being constant, which shows the large positive economic magnitude of the credential. Model R-Squared ranges from .055 to .056. The chart below shows the average rent premiums received in absolute dollar terms (\$000's) and percentage terms for an increase of one unit in a TMT member's elite credentials.

**MEMBERS ELITE CREDENTIALS – RENT PREMIUM RECEIVED
FOR PERFORMANCE**

Variable	JENSEN'S_	EXCESS	EXCESS	JENSEN'S_	EXCESS	EXCESS	EXCESS
	ALPHA	TOTAL	RETURN	ALPHA	TOTAL	RETURN	RETURN
	STOCK	STOCK	ON	STOCK	STOCK	ON	ON
	RETURN	RETURN	EQUITY	RETURN	RETURN	EQUITY	EQUITY
	(1)	(2)	(3)	(5)	(6)	(7)	(8)
MEMB_ELITE_EDU (Q1)	387	354	603	551	23%	21%	36%
MEMB_ELITE_EDU (Q2)	495	546	485	480	29%	32%	29%
MEMB_ELITE_EDU (Q3)	470	445	354	445	28%	26%	21%
MEMB_ELITE_EDU (Q4)	455	455	322	345	27%	27%	19%
MEMB_ELITE_WORK (Q1)	426	397	624	608	25%	24%	37%
MEMB_ELITE_WORK (Q2)	520	624	576	597	31%	37%	34%
MEMB_ELITE_WORK (Q3)	576	490	440	435	34%	29%	26%
MEMB_ELITE_WORK (Q4)	520	530	416	431	31%	32%	25%

Table 6.7 below presents the Top Management Team (TMT) member rent premium and elite credentials. This table presents estimates of ordinary least squares (OLS) of the logarithm of TMT member rent premium on member elite education and member elite work experience during Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The sample consists of ExecuComp firms for which TMT members profile data are available from BoardEx in the 2000–2019 period. Robust t-statistics reported in brackets. *, **, and *** indicates significance at the 10%, 5% and 1% levels.

TABLE 6.7 HYPOTHESES 5A, 5B, 6A & 6B

Variable	EXCESS TOTAL		EXCESS		EXCESS TOTAL		EXCESS	
	JENSEN'S _ALPHA	STOCK RETURN	RETURN ON EQUITY	RETURN ON EQUITY	JENSEN'S _ALPHA	STOCK RETURN	RETURN ON EQUITY	RETURN ON EQUITY
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MEMB_ELITE_EDU (Q1)	0.09*** (15.529)	0.083*** (14.145)	0.133*** (25.3)	0.123*** (22.107)				
MEMB_ELITE_EDU (Q2)	0.112*** (19.234)	0.122*** (21.233)	0.110*** (18.483)	0.109*** (17.756)				
MEMB_ELITE_EDU (Q3)	0.107*** (18.609)	0.102*** (17.878)	0.083*** (13.323)	0.102*** (16.424)				
MEMB_ELITE_EDU (Q4)	0.104*** (17.669)	0.104*** (17.715)	0.076*** (12.796)	0.081*** (14.805)				
MEMB_ELITE_WORK (Q1)					0.098*** (16.385)	0.092*** (15.384)	0.137*** (23.168)	0.134*** (21.729)
MEMB_ELITE_WORK (Q2)					0.117*** (19.663)	0.137*** (23.207)	0.128*** (20.616)	0.132*** (21.16)
MEMB_ELITE_WORK (Q3)					0.128*** (20.831)	0.111*** (18.61)	0.101*** (16.452)	0.100*** (16.225)
MEMB_ELITE_WORK (Q4)					0.117*** (20.228)	0.119*** (19.837)	0.096*** (17.051)	0.099*** (18.384)
Intercept	-0.006** (-2.507)	-0.006** (-2.5)	-0.006** (-2.546)	-0.006** (-2.541)	-0.005** (-2.145)	-0.005** (-2.124)	-0.005** (-2.171)	-0.005** (-2.198)
F-Value	260	265	277	267	319	324	326	325
R-Squared	0.046	0.046	0.048	0.047	0.055	0.056	0.056	0.056
Adj R-Squared	0.045	0.046	0.048	0.046	0.055	0.056	0.056	0.056
Number of Firms	356	356	356	356	356	356	356	356
Number of Executives	4,379	4,379	4,379	4,379	4,379	4,379	4,379	4,379
Number of Observations	21,815	21,815	21,815	21,815	21,815	21,815	21,815	21,815

External Tournament Theory:

Hypothesis 7a: A TMT grouping effect of elite education credentials for both underperformance and overperformance will result in extraction of a larger rent premium.

Hypothesis 7b: A TMT grouping effect of elite work experience credentials for both underperformance and overperformance will result in extraction of a larger rent premium.

Table 6.8 summarizes the interaction effects of elite credentials and rent premium received for performance. Models 1, 2, 3 and 4 shows the TMT members rent premium received on TMT aggregate elite education credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The coefficients of the interaction terms between aggregated elite educational credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have a statistically significant and positive effects in Q1, Q2, Q3 and Q4. This confirms that as aggregate elite education credentials increase, a TMT member rent premium increases during both underperformance and overperformance. The magnitude of aggregate elite education credentials is also significant. A one unit change in the credential increases the rent premium received for both underperformance and overperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE between 77% and 104% on average, all else being constant, which shows the large positive economic magnitude of the credential. For every quartile of performance for the Jensen's Alpha, excess total stock return, ROE and excess ROE the aggregate elite education credential was larger than the TMT member elite education credential on average, all else being constant, which supports Hypothesis 7a. Model R-Squared ranges from .116 to .117.

Models 5, 6, 7 and 8 show the TMT members rent premium received on TMT aggregate elite work experience credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The coefficients of the interaction terms between aggregated elite work experience credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have a statistically significant and positive effects in Q1, Q2, Q3 and Q4. This confirms that as aggregate elite work experience credentials increase, a TMT member rent premium increases with both underperformance and overperformance. The magnitude of aggregate elite work

experience credentials is also significant. A one unit change in the credential increases the rent premium received during underperformance and overperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE between 74% and 114% on average, all else being constant, which shows the large positive economic magnitude of the credential. For every quartile of performance for the Jensen's Alpha, excess total stock return, ROE and excess ROE the aggregate elite work experience credential was larger than the TMT member elite work experience credential on average, all else being constant, which supports Hypothesis 7b. Model R-Squared ranges from .133 to .135.

The chart below shows the average rent premiums received in absolute dollar terms (\$000's) and percentage terms for an increase of one unit in the TMT average elite credentials. A means comparison test was performed between the rent extraction for a one unit increase in TMT member's elite credential versus a one unit increase in TMT average elite credentials for each quartile of performance. All 32 tests showed the mean extraction for TMT member's elite credentials was substantially higher and significant supporting the grouping effect of credentials.

**TMT AVERAGE ELITE CREDENTIALS – RENT PREMIUM
RECEIVED FOR PERFORMANCE**

Variable	EXCESS TOTAL STOCK RETURN		EXCESS RETURN ON EQUITY		EXCESS TOTAL STOCK RETURN		EXCESS RETURN ON EQUITY	
	JENSEN'S_ ALPHA	RETURN	ON EQUITY	JENSEN'S_ ALPHA	RETURN	ON EQUITY	ON EQUITY	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MEMB_ELITE_EDU (Q1)	1,337	1,241	1,752	1,598	79%	74%	104%	95%
MEMB_ELITE_EDU (Q2)	1,598	1,713	1,567	1,705	95%	102%	93%	101%
MEMB_ELITE_EDU (Q3)	1,545	1,530	1,323	1,501	92%	91%	79%	89%
MEMB_ELITE_EDU (Q4)	1,613	1,598	1,288	1,330	96%	95%	77%	79%
MEMB_ELITE_WORK (Q1)	1,358	1,248	1,889	1,922	81%	74%	112%	114%
MEMB_ELITE_WORK (Q2)	1,598	1,914	1,873	1,776	95%	114%	111%	106%
MEMB_ELITE_WORK (Q3)	1,816	1,575	1,436	1,501	108%	94%	85%	89%
MEMB_ELITE_WORK (Q4)	1,620	1,658	1,248	1,309	96%	99%	74%	78%

Table 6.8 below presents the Top Management Team (TMT) member rent premium and aggregate elite credentials. This table presents estimates of ordinary least squares (OLS) of the logarithm of TMT members rent premium on TMT aggregate elite education and aggregate elite work experience during Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25). The sample consists of ExecuComp firms for which TMT members profile data are available from BoardEx in the 2000–2019 period. Robust t-statistics reported in brackets. *, **, and *** indicates significance at the 10%, 5% and 1% levels.

TABLE 6.8 HYPOTHESES 7A & 7B

Variable	EXCESS TOTAL RETURN				EXCESS TOTAL RETURN			
	JENSEN'S _ALPHA	STOCK RETURN	RETURN ON EQUITY	EXCESS RETURN ON EQUITY	JENSEN'S _ALPHA	STOCK RETURN	RETURN ON EQUITY	EXCESS RETURN ON EQUITY
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TEAM_ELITE_EDU (Q1)	0.254*** (30.69)	0.24*** (28.409)	0.31*** (42.021)	0.29*** (37.521)				
TEAM_ELITE_EDU (Q2)	0.29*** (34.245)	0.305*** (36.905)	0.286*** (33.191)	0.304*** (33.1)				
TEAM_ELITE_EDU (Q3)	0.283*** (34.308)	0.281*** (33.989)	0.252*** (27.416)	0.277*** (30.833)				
TEAM_ELITE_EDU (Q4)	0.292*** (34.101)	0.29*** (33.878)	0.247*** (28.287)	0.253*** (31.708)				
TEAM_ELITE_WORK (Q1)					0.257*** (30.989)	0.241*** (29.04)	0.327*** (39.887)	0.331*** (37.789)
TEAM_ELITE_WORK (Q2)					0.29*** (34.475)	0.33*** (39.618)	0.325*** (37.071)	0.313*** (36.11)
TEAM_ELITE_WORK (Q3)					0.318*** (36.257)	0.287*** (34.029)	0.268*** (30.265)	0.277*** (31.212)
TEAM_ELITE_WORK (Q4)					0.293*** (35.795)	0.298*** (34.774)	0.241*** (30.475)	0.25*** (33.02)
Intercept	-0.071*** (-25.476)	-0.071*** (-25.432)	-0.07*** (-25.167)	-0.071*** (-25.479)	-0.061*** (-23.798)	-0.061*** (-23.763)	-0.061*** (-23.746)	-0.061*** (-23.871)
F-Value	715	722	725	718	837	848	856	848
R-Squared	0.116	0.117	0.117	0.116	0.133	0.135	0.136	0.135
Adj R-Squared	0.116	0.117	0.117	0.116	0.133	0.134	0.136	0.135
Number of Firms	356	356	356	356	356	356	356	356
Number of Executives	4,379	4,379	4,379	4,379	4,379	4,379	4,379	4,379
Number of Observations	21,815	21,815	21,815	21,815	21,815	21,815	21,815	21,815

Degree of Internationalization impact on both Prisoner's Dilemma and External Tournament Theory

Hypothesis 8a: This positive relationship between a TMT member's elite educational credentials and a rent premium received for both underperformance and overperformance is moderated by the degree of internationalization.

Hypothesis 8b: This positive relationship between a TMT member's elite work experience credentials and a rent premium received for both underperformance and overperformance is moderated by the degree of internationalization.

Table 6.9 summarizes the moderating effect of DOI on the interaction effects of elite credentials and rent premium received for performance. Models 1, 2, 3 and 4 shows the TMT members rent premium received on TMT members elite education credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The coefficients of the interaction terms between the moderating effect of DOI on TMT members elite educational credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have a statistically significant and positive effects in Q1, Q2, Q3 and Q4, supporting Hypothesis 8a. Thereby suggesting that as the moderating effect of DOI on elite education credentials increase, a TMT member rent premium increases during underperformance and overperformance. The magnitude of the moderating effect of DOI on elite education credentials is also significant. A 10% change in the interactive effect of DOI and TMT members elite educational credential increases the rent premium received for underperformance and overperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE between 6.4% and 25.2% on average, all else being constant, which shows the large positive economic magnitude of the credential. Model R-Squared ranges from .061 to .064. The R-Squared with DOI as a moderating variable increased the R-Squared by 1.6% in absolute terms or 35% in relative terms.

Models 5, 6, 7 and 8 shows the TMT member rent premium received on TMT member elite work experience credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The coefficients of the interaction terms between the moderating effect of DOI on TMT members elite work experience credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have a statistically significant and positive effects in Q1, Q2, Q3 and Q4, supporting Hypothesis 8b. This confirms that as the moderating effect of DOI on TMT

members elite work experience credentials increase, a TMT member rent premium increases during underperformance and overperformance. The magnitude of the moderating effect of DOI on elite work experience credentials is also significant. A 10% change in the interactive effect of DOI and TMT members elite work experience credential increases the rent premium received during underperformance and overperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE between 5.4% and 30.3% on average, all else being constant, which shows the large positive economic magnitude of the credential. Model R-Squared ranges from .069 to .071. The R-Squared with DOI as a moderating variable increased the R-Squared by 1.5% in absolute terms or 27% in relative terms.

Table 6.9 below presents the moderating effect of DOI on Top Management Team (TMT) member Excess Pay and elite credentials. This table presents estimates of ordinary least squares (OLS) of the logarithm of TMT member Excess Pay on Member Elite Education and Member Elite Work Experience during Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25). The sample consists of ExecuComp firms for which TMT members profile data are available from BoardEx in the 2000–2019 period. Robust t-statistics reported in brackets. *, **, and *** indicates significance at the 10%, 5% and 1% levels.

TABLE 6.9 HYPOTHESES 8A & 8B

Variable	EXCESS TOTAL		EXCESS		EXCESS TOTAL		EXCESS	
	JENSEN'S_A LPHA	STOCK RETURN	RETURN ON EQUITY	RETURN ON EQUITY	JENSEN'S_A LPHA	STOCK RETURN	RETURN ON EQUITY	RETURN ON EQUITY
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MEMB_ELITE_EDU (Q1)	0.05*** (7.024)	0.057*** (8.012)	0.091*** (13.536)	0.081*** (11.655)				
MEMB_ELITE_EDU (Q2)	0.073*** (10.182)	0.069*** (9.665)	0.06*** (8.23)	0.058*** (7.943)				
MEMB_ELITE_EDU (Q3)	0.068*** (9.733)	0.06*** (8.629)	0.042*** (5.627)	0.062*** (8.307)				
MEMB_ELITE_EDU (Q4)	0.059*** (8.163)	0.065*** (8.938)	0.052*** (7.348)	0.048*** (7.038)				
MEMB_ELITE_EDU (Q1) X DOI	0.294*** (9.306)	0.223*** (6.549)	0.27*** (9.891)	0.292*** (10.063)				
MEMB_ELITE_EDU (Q2) X DOI	0.301*** (9.423)	0.383*** (12.157)	0.397*** (11.793)	0.482*** (12.832)				
MEMB_ELITE_EDU (Q3) X DOI	0.315*** (9.852)	0.318*** (10.137)	0.385*** (10.368)	0.33*** (9.321)				
MEMB_ELITE_EDU (Q4) X DOI	0.334*** (10.226)	0.294*** (9.302)	0.188*** (5.666)	0.225*** (7.714)				
MEMB_ELITE_WORK (Q1)					0.061*** (8.392)	0.066*** (9.31)	0.088*** (11.374)	0.088*** (11.144)
MEMB_ELITE_WORK (Q2)					0.077*** (10.677)	0.087*** (11.714)	0.083*** (10.831)	0.086*** (11.428)
MEMB_ELITE_WORK (Q3)					0.089*** (11.908)	0.075*** (10.23)	0.071*** (9.754)	0.067*** (9.337)
MEMB_ELITE_WORK (Q4)					0.08*** (11.116)	0.081*** (10.999)	0.068*** (10.333)	0.068*** (10.164)
MEMB_ELITE_WORK (Q1) X DOI					0.271*** (8.62)	0.239*** (6.842)	0.262*** (9.529)	0.27*** (9.456)
MEMB_ELITE_WORK (Q2) X DOI					0.311*** (9.613)	0.326*** (10.922)	0.33*** (9.94)	0.401*** (10.965)
MEMB_ELITE_WORK (Q3) X DOI					0.295*** (9.427)	0.263*** (8.53)	0.276*** (7.774)	0.301*** (8.642)
MEMB_ELITE_WORK (Q4) X DOI					0.258*** (8.756)	0.268*** (8.989)	0.243*** (7.731)	0.215*** (7.701)
Intercept	-0.006*** (-2.468)	-0.006*** (-2.487)	-0.006*** (-2.492)	-0.006*** (-2.527)	-0.005*** (-2.182)	-0.005*** (-2.159)	-0.005*** (-2.187)	-0.005*** (-2.223)
F-Value	180	182	188	187	204	204	204	208
R-Squared	0.062	0.063	0.064	0.064	0.069	0.070	0.070	0.071
Adj R-Squared	0.061	0.062	0.064	0.064	0.069	0.069	0.069	0.071
Number of Firms	356	356	356	356	356	356	356	356
Number of Executives	4,379	4,379	4,379	4,379	4,379	4,379	4,379	4,379
Number of Observations	21,815	21,815	21,815	21,815	21,815	21,815	21,815	21,815

Hypothesis 8c: TMT grouping effect of elite education credentials for both underperformance and overperformance will be able to extract a larger rent premium is moderated by the degree of internationalization.

Hypothesis 8d: TMT grouping effect of elite work experience credentials for both underperformance and overperformance will be able to extract a larger rent premium is moderated by the degree of internationalization.

Table 6.10 summarizes the moderating effect of DOI on the interaction effects of aggregate elite credentials and rent premium received for performance. Models 1, 2,

3 and 4 shows the TMT members rent premium received on TMT aggregate elite education credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The coefficients of the interaction terms between the moderating effect of DOI on TMT aggregated elite educational credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have a statistically significant and positive effects in Q1, Q2, Q3 and Q4, supporting Hypothesis 8c. This confirms that as the moderating effect of DOI on TMT aggregate elite education credentials increase, a TMT member rent premium increases with both underperformance and overperformance. The magnitude of the moderating effect of DOI on TMT aggregate elite education credentials is also significant. A 10% change in the interactive effect of DOI and TMT aggregate elite educational credential increases the rent premium received during underperformance and overperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE between 21.1% and 56.3% on average, all else being constant, which shows the large positive economic magnitude of the credential. Model R-Squared ranges from .137 to .139. The R-Squared with DOI as a moderating variable increased the R-Squared by 2.1% in absolute terms or 18% in relative terms.

Models 5, 6, 7 and 8 shows the TMT members rent premium received on TMT aggregate elite work experience credentials for different levels of performance Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The coefficients of the interaction terms between the moderating effect of DOI on TMT aggregated elite work experience credentials and Jensen's Alpha, excess total stock return, ROE and excess ROE all have a statistically significant and positive effects in Q1, Q2, Q3 and Q4, supporting Hypothesis 8d. This confirms that as the moderating effect of DOI on TMT aggregate elite work experience credentials increase, a TMT member rent premium increases with both underperformance and overperformance. The magnitude of the moderating effect of DOI on TMT aggregate elite work experience credentials is also significant. A 10% change in the interactive effect of DOI and TMT aggregate elite educational credential increases the rent premium received during underperformance and overperformance of Jensen's Alpha, excess total stock return, ROE and excess ROE between 22.4% and 39.4% on average, all else being constant, which shows the large positive economic magnitude of the credential. Model R-Squared ranges from .150 to .151. The R-Squared with DOI as a moderating variable increased the R-Squared by 1.7% in absolute terms or 13% in relative terms.

Table 6.10 below presents the moderating effect of DOI on Top Management Team (TMT) member Excess Pay and aggregate elite credentials. This table presents estimates of ordinary least squares (OLS) of the logarithm of TMT member Excess Pay on Team Elite Education and Team Elite Work Experience during Q1 (Top 25%), Q2 (25%-50%), Q3 (50%-75%) and Q4 (Bottom 25%). The sample consists of ExecuComp firms for which TMT members profile data are available from BoardEx in the 2000–2019 period. Robust t-statistics reported in brackets. *, **, and *** indicates significance at the 10%, 5% and 1% levels

TABLE 6.10 HYPOTHESES 8C & 8D

Variable	EXCESS TOTAL RETURN				EXCESS TOTAL RETURN			
	JENSEN'S_A LPHA	STOCK RETURN	RETURN ON EQUITY	EXCESS RETURN ON EQUITY	JENSEN'S_A LPHA	STOCK RETURN	RETURN ON EQUITY	EXCESS RETURN ON EQUITY
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TEAM_ELITE_EDU (Q1)	0.176*** (16.915)	0.19*** (18.289)	0.235*** (24.766)	0.213*** (21.746)				
TEAM_ELITE_EDU (Q2)	0.211*** (19.985)	0.202*** (19.037)	0.18*** (16.694)	0.201*** (17.881)				
TEAM_ELITE_EDU (Q3)	0.204*** (19.886)	0.193*** (18.577)	0.163*** (14.576)	0.192*** (17.432)				
TEAM_ELITE_EDU (Q4)	0.203*** (18.624)	0.213*** (19.751)	0.199*** (18.275)	0.184*** (17.965)				
TEAM_ELITE_EDU (Q1) X DOI	0.47*** (11.273)	0.325*** (7.305)	0.403*** (11.442)	0.44*** (11.727)				
TEAM_ELITE_EDU (Q2) X DOI	0.495*** (11.341)	0.632*** (14.731)	0.708*** (15.268)	0.751*** (14.589)				
TEAM_ELITE_EDU (Q3) X DOI	0.517*** (11.96)	0.565*** (13.042)	0.645*** (12.789)	0.576*** (11.926)				
TEAM_ELITE_EDU (Q4) X DOI	0.544*** (11.972)	0.461*** (10.696)	0.303*** (6.388)	0.397*** (9.696)				
TEAM_ELITE_WORK (Q1)					0.186*** (18.12)	0.19*** (18.941)	0.246*** (22.614)	0.257*** (22.382)
TEAM_ELITE_WORK (Q2)					0.215*** (20.691)	0.244*** (22.361)	0.243*** (21.496)	0.229*** (21.454)
TEAM_ELITE_WORK (Q3)					0.251*** (22.991)	0.215*** (20.631)	0.209*** (19.139)	0.208*** (19.429)
TEAM_ELITE_WORK (Q4)					0.225*** (21.53)	0.232*** (21.595)	0.188*** (20.233)	0.189*** (19.978)
TEAM_ELITE_WORK (Q1) X DOI					0.447*** (10.855)	0.378*** (8.365)	0.383*** (10.761)	0.351*** (9.301)
TEAM_ELITE_WORK (Q2) X DOI					0.497*** (11.551)	0.464*** (11.726)	0.49*** (10.997)	0.595*** (12.543)
TEAM_ELITE_WORK (Q3) X DOI					0.398*** (9.749)	0.448*** (10.972)	0.396*** (8.464)	0.495*** (10.749)
TEAM_ELITE_WORK (Q4) X DOI					0.387*** (9.939)	0.374*** (9.484)	0.398*** (9.638)	0.361*** (9.828)
Intercept	-0.065*** (-23.603)	-0.065*** (-23.674)	-0.064*** (-23.336)	-0.065*** (-23.577)	-0.057*** (-22.503)	-0.057*** (-22.436)	-0.057*** (-22.413)	-0.057*** (-22.467)
F-Value	434	439	442	441	482	484	486	490
R-Squared	0.137	0.139	0.140	0.139	0.150	0.151	0.151	0.152
Adj R-Squared	0.137	0.139	0.139	0.139	0.150	0.151	0.151	0.152
Number of Firms	356	356	356	356	356	356	356	356
Number of Executives	4,379	4,379	4,379	4,379	4,379	4,379	4,379	4,379
Number of Observations	21,815	21,815	21,815	21,815	21,815	21,815	21,815	21,815

Discussion

Contribution to management literature:

This dissertation has closely examined how additional value created is distributed by the firm between its shareholders and the top management team. First, the two studies which comprise the dissertation empirical work together extend the current knowledge of executive compensation and performance beyond a primary focus on that of the CEO. Drawing on the upper echelon, the resource-based view and absorptive capacity theories to extend the lenses to consider the relationship between TMT credentials and performance. The empirical work presented in chapters three has confirmed that in complex environments the TMT credentials are positively related to value creation and executives as theorized are compensated for their credentials.

Chapter four found that the hypothesized relationships between a rent premium extraction and performance outcomes was supported empirically. Specifically, this dissertation demonstrated a rent premium can be extracted by highly credentialed TMT during both overperformance and underperformance. The novel lens of the prisoner's dilemma demonstrated the extended power that the TMT collectively have and their ability to receive additional premium beyond what an individual TMT member can extract in insolation.

The dynamic setting of the financial services industry is characterized by high knowledge intensity, a professionalized workforce, and low capital intensity, which did provide a fertile environment to examine the impact of credentials on TMT compensation and firm performance. By drawing upon the global strategic posture of the firm, this thesis contributed to the growing stream of research extending upper echelon theory to the international context at the TMT level of analysis.

Limitations and Future Research

While this study has provided empirical evidence of the complex relationships which exist between the credentials of the top management team and the firm's creation and distribution of value, there are two limitations of note and some additional areas of future research.

First, the study has closely examined the relationship between top management team credentials and value creation in light of overperformance and underperformance. However as discussed in the literature review, the measure of firm performance has

been shown to be challenging. In the current empirical work, performance was measured using the standard accounting and market-based measures. Trends in these measurements have been changing over the last two decades, for example an increasing part of compensation is now contingency based and we could examine whether elite TMTs receive a higher rent premium for overperformance in the most recent years. We could also explore adjusting accounting performance metrics before TMT extracts their rent premiums to examine elite credentials on a more neutral basis. In practice, other elements of firm performance outcomes may also be of additional interest. For example, the extent to which the innovation is an outcome of performance. Researchers have called for further specification of measures of firm performance. For example, Van Clieaf (2014) has identified that less than 15% of long-term plans include consideration of operating metrics which drive future value creation. These might include: innovation, new products, customer loyalty, environment, employee engagement which drive future value creation (Van Clieaf 2014). A more nuanced understanding of performance in this model could further inform the findings in future research, thereby improving the usefulness of the empirical measure of performance.

Second, the degree of internationalization as measured in the study could be strengthened through further refinement of the measure of internationalization. In the current study, the measure considers foreign sales as a proportion of total sales. To more effectively consider the extent to which a firm operates internationally, a measure which also considers the extent to which the firm has influence in a foreign market, such as through market concentration could be further informative of the role of internationalization in explaining the theorized model. Considering market concentration would extend beyond foreign sales to consider how monopolistic the firm is as a producer on a global scale which extracts benefits as a global or multi-national entity. The Herfindahl–Hirschman Index, known as the HHI, for example, is an accepted measure of market concentration which could be used as a measure of the degree of internationalization or integrated into an index measure of internationalization, in future studies.

The interactions between elite education and elite work experience may provide some interesting insights. Examining if the TMT member received his or her elite education before or after their elite work experience may impact the value of skills acquired and translate into different performance outcomes. Also looking at upstream

or downstream switches from working for elite companies could signal the quality of the TMT members ability.

A significant finding was that elite credentials and compensation was interrelated to the size of the TMT members network. The network size had a significant positive contribution to the elite executive compensation yet the impact on performance was significantly negative. Building on the prisoner's dilemma argument, an interesting stream of research would be to examine whether more interlocked firms and their inner corporate elite circle use poisons pills not only to protect their collective interests (Davis, 1991) but also as a result allow the elite TMT members to extract additional rent premiums from shareholders.

The study could also be extended to examine the results of pre and post global financial crises (GFC). As the financial services companies were some of the worst culprits in the GFC it would be interesting to compare and contrast the different results between the two eras for performance, compensation and division of value creation. Finally, the analysis could be extended to other knowledge-based industries to see if similar results are obtained.

Implications for management practice

The finding of this study provides key insights into the complexity of the relationship between firm performance, value creation and the rewards of the firm's TMT. This study is relevant to management practice for several reasons. There are two which I highlight here. First, understanding the impact of TMT credentials on how value creation is distributed may provide the board of directors an additional instrument to evaluate executive candidates and design incentive plans more aligned with value creation. The TMT aggregate elite educational credentials have shown to have a positive impact on firm performance including ROA, ROE and Tobin's Q but not on stock performance. The aggregate elite work experience negatively impacted firm performance except when the degree of internationalization increased, these skills added to the profitability of the firm. This aggregate human capital is extremely valuable as a firm increases its global strategic posture and the complexity increases. It is possible that domestic firms are over compensating highly qualified executives that extract more rent than they benefit their companies. Recruiters, boards and shareholders

could benefit in better matching human capital skills and experience with the roles that are suitably matched for the level of complexity.

Second, the long term and short incentive plans set by the remuneration committees over the last 20 years have been inconsistent at best and have allowed the TMT to potentially manipulate the performance metrics in their favor, indicative of the agency problem well recognized in the literature. Both elite credentials enable TMT members to extract a large rent premium for both over performance and underperformance through a prisoner's dilemma payoff matrix. The board could better align their TMT and especially superstars with a total share return metric that is longer than three years and compared against a peer group that is selected by an external independent third-party company. Better alignment of both talent and incentives may solve the conundrum of credentials and stock returns.

Chapter Conclusion

Top management teams lead the firm's value creation and value capture is a highly topical area of focus in scholarly literature and to firms, their board of directors and management today, the complexity of which is recognized to also present significant challenges in aligning the compensation and reward of executives with the priorities of the firm and its principals. Understanding how value created is distributed is central to our understanding of alignment between TMT, board of directors and shareholders. In this final chapter of the dissertation, I have reported the results of hypothesis testing and interpreted the findings which confirm that most of the theorized relationships are supported by empirical evidence and in doing so, deepened our understanding of how created value is apportioned by the firm between its shareholders and its top management team. The findings have extended our understanding of upper echelon theory.

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APPENDIX I – ELITE UNDERGRADUATE SCHOOLS

COUNT	NAME OF ELITE UNDERGRADUATE INSTITUTION ⁺	POINTS
1	AMHERST COLLEGE	29
2	BROWN UNIVERSITY	160
3	CARLETON COLLEGE	38
4	COLUMBIA UNIVERSITY	119
5	CORNELL UNIVERSITY	228
6	DARTMOUTH COLLEGE	169
7	DUKE UNIVERSITY*	191
8	HARVARD UNIVERSITY	350
9	HAVERFORD COLLEGE	22
10	JOHNS HOPKINS UNIVERSITY	49
11	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	79
12	NEW YORK UNIVERSITY	200
13	NORTHWESTERN UNIVERSITY	106
14	OBERLIN COLLEGE	5
15	OXFORD UNIVERSITY*	78
16	POMONA COLLEGE	4
17	PRINCETON UNIVERSITY	246
18	STANFORD UNIVERSITY	202
19	SWARTHMORE COLLEGE	4
20	UNITED STATES MILITARY ACADEMY	48
21	UNITED STATES NAVAL ACADEMY	41
22	UNIVERSITY OF CALIFORNIA, BERKELEY	93
23	UNIVERSITY OF CALIFORNIA, LOS ANGELES	98
24	UNIVERSITY OF CAMBRIDGE*	84
25	UNIVERSITY OF CHICAGO	13
26	UNIVERSITY OF MICHIGAN	203
27	UNIVERSITY OF PENNSYLVANIA	366
28	WELLESLEY COLLEGE	13
29	WESLEYAN UNIVERSITY	48
30	WILLIAMS COLLEGE	68
31	YALE UNIVERSITY	168
TOTAL POINTS		3,522
POSSIBLE POINTS		21,815
% OF ELITE UNDERGRADUATE INSTITUTION		16.1%

*These schools over the last two decades have consistently ranked near the top in global rankings for overall university rankings, business and law rankings (Sources: U.S. News & World Report; The QS World University Rankings; The Times Higher Education World Reputation Rankings)

+Grinnell College was on Finkelstien's original list of elite schools - no executive from this study had attended this College

APPENDIX II – ELITE GRADUATE SCHOOLS

COUNT	NAME OF ELITE GRADUATE INSTITUTION	POINTS
1	BROWN UNIVERSITY	24
2	COLUMBIA UNIVERSITY	379
3	CORNELL UNIVERSITY	92
4	DARTMOUTH COLLEGE	126
5	DUKE UNIVERSITY*	52
6	HARVARD UNIVERSITY	1068
7	INSEAD*	14
8	JOHNS HOPKINS UNIVERSITY	37
9	LONDON BUSINESS SCHOOL*	16
10	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	63
11	NEW YORK UNIVERSITY	528
12	NORTHWESTERN UNIVERSITY	413
13	OXFORD UNIVERSITY*	80
14	PRINCETON UNIVERSITY	19
15	STANFORD UNIVERSITY	302
16	UNIVERSITY OF CALIFORNIA, BERKELEY	79
17	UNIVERSITY OF CALIFORNIA, LOS ANGELES	134
18	UNIVERSITY OF CAMBRIDGE*	58
19	UNIVERSITY OF CHICAGO	397
20	UNIVERSITY OF MICHIGAN	154
21	UNIVERSITY OF PENNSYLVANIA	354
22	YALE UNIVERSITY	91
TOTAL POINTS		4,480
POSSIBLE POINTS		21,815
% OF ELITE GRADUATE INSTITUTION		20.5%

*These schools over the last two decades have consistently ranked near the top in global rankings for overall university rankings, business and law rankings (Sources: U.S. News & World Report; The QS World University Rankings; The Times Higher Education World Reputation Rankings; Financial Times Global MBA ranking)

APPENDIX III - S&P GLOBAL 100 INDEX AND S&P 100 INDEX COMPANIES

1	3M Co	8	67	Charter Communications Inc	0
2	ABB Ltd	0	68	Chevron Corp	0
3	Abbott Laboratories	0	69	Cie de Saint-Gobain	0
4	AbbVie Inc	0	70	Cigna Corp	23
5	Accenture PLC	6	71	Cisco Systems Inc	10
6	Aegon NV	0	72	Citigroup Inc	326
7	AES Corp/The	0	73	Coca-Cola Co/The	8
8	Ageas SA/NV	4	74	Colgate-Palmolive Co	3
9	AIG Life Holdings Inc	0	75	Comcast Corp	0
10	Alcatel Lucent SAS	3	76	Computer Sciences Corp	5
11	Alcoa Corp	0	77	ConocoPhillips	0
12	Allegheny Technologies Inc	0	78	Costco Wholesale Corp	0
13	Allergan PLC	2	79	Covidien Ltd	0
14	Allianz SE	4	80	Credit Suisse First Boston	37
15	ALLSTATE CORP	16	81	CVS Health Corp	6
16	Alphabet Inc	0	82	Daimler AG	0
17	Altria Group Inc	0	83	Danaher Corp	0
18	Amazon.com Inc	0	84	Dell Inc	5
19	American Electric Power Co Inc	0	85	Delta Air Lines Inc/Old	4
20	American Express Co	20	86	Deutsche Bank	101
21	American International Group Inc	148	87	Deutsche Telekom AG	0
22	American Tower Corp	0	88	Devon Energy Corp	0
23	Amgen Inc	0	89	Diageo PLC	0
24	Anadarko Petroleum Corp	0	90	Dow Chemical Co/The	0
25	Anglo American PLC	0	91	Duke Energy Corp	0
26	Anheuser-Busch Cos Inc	0	92	DuPont de Nemours Inc	0
27	Aon PLC	8	93	E.ON SE	0
28	Apache Corp	0	94	Eastman Kodak Co	5
29	Apple Inc	2	95	eBay Inc	7
30	Assicurazioni Generali SpA	0	96	EI du Pont de Nemours and Co	0
31	AstraZeneca PLC	3	97	El Paso CGP Co LLC	0
32	AT&T Corp	3	98	El Paso LLC	0
33	AT&T Inc	1	99	Eli Lilly and Co	0
34	Aviva PLC	0	100	EMC Corp	0
35	Avon Products Inc	2	101	Emerson Electric Co	16
36	AXA SA	9	102	Engie SA	0
37	Baker Hughes Holdings LLC	0	103	Enron Corp	3
38	Banco Bilbao Vizcaya Argentaria SA	0	104	Entergy Corp	0
39	Banco Santander SA	0	105	Exelon Corp	0
40	Bank of America Corp	274	106	Exxon Mobil Corp	0
41	Bank of New York Mellon Corp/The	22	107	Facebook Inc	0
42	Bank One Corp	114	108	FedEx Corp	0
43	Barclays PLC	13	109	Ford Motor Co	26
44	BASF SE	0	110	Freeport-McMoRan Inc	0
45	Baxter International Inc	0	111	FUJIFILM Holdings Corp	0
46	Bayer AG	0	112	General Dynamics Corp	0
47	Berkshire Hathaway Inc	26	113	General Electric Co	129
48	BHP Group Ltd	0	114	General Motors Co	0
49	Biogen Inc	0	115	Gilead Sciences Inc	0
50	Black & Decker Corp/The	0	116	Gillette Co/The	7
51	BlackRock Inc	4	117	GlaxoSmithKline PLC	10
52	BNP Paribas SA	2	118	Global Crossing Ltd/Old	0
53	Boeing Co/The	7	119	Goldman Sachs Group Inc/The	106
54	Booking Holdings Inc	4	120	Halliburton Co	0
55	Booking Holdings Inc	0	121	Hartford Financial Services Group Inc/Th	28
56	BP PLC	0	122	HCA Inc/Old	0
57	Bridgestone Corp	0	123	Hillshire Brands Co/The	0
58	Bristol-Myers Squibb Co	0	124	Hitachi Ltd	0
59	Burlington Northern Santa Fe LLC	0	125	Home Depot Inc/The	0
60	Caesars Entertainment Corp/Old	0	126	Honda Motor Co Ltd	0
61	Campbell Soup Co	3	127	Honeywell International Inc	6
62	Canon Inc	0	128	HP Inc	2
63	Capital One Financial Corp	54	129	HSBC FINANCE CORP	37
64	Carrefour SA	0	130	iHeartCommunications Inc	0
65	Caterpillar Inc	0	131	ING Groep NV	45
66	Celgene Corp	0	132	Intel Corp	0

APPENDIX IV – ELITE ACCOUNTING, CONSULTING AND INVESTMENT BANKS

ELITE BIG FIVE ACCOUNTING FIRMS

1	Arthur Andersen	33
2	Deloitte & Touche	57
3	Ernst & Young	372
4	KPMG	78
5	PricewaterhouseCoopers	109
TOTAL POINTS		649
POSSIBLE POINTS		21,815
% OF ELITE ACCOUNTING EXECUTIVES		3.0%

ELITE CONSULTING FIRMS

1	Bain & Co	27
2	Boston Consulting Group	8
3	McKinsey & Co	150
TOTAL POINTS		185
POSSIBLE POINTS		21,815
% OF ELITE CONSULTING EXECUTIVES		0.8%

ELITE INVESTMENT BANKS

1	Barclays Bank PLC	33
2	Bear Stearns Companies Inc	57
3	Citigroup Inc	372
4	Credit Suisse First Boston	78
5	Deutsche Bank	109
6	Goldman Sachs Group Inc/The	228
7	JPMorgan Chase & Co	429
8	Lehman Brothers Holdings Inc	186
9	Merrill Lynch & Co Inc	224
10	Morgan Stanley	320
11	Salomon Inc	103
12	UBS Warburg	36
TOTAL POINTS		2,175
POSSIBLE POINTS		21,815
% OF BULGE BRACKET EXECUTIVES		10.0%

APPENDIX V – ELITE LAW FIRMS

1	Arnold & Porter Kaye Scholer LLP	18
2	Boies Schiller Flexner LLP	0
3	Cleary Gottlieb Steen & Hamilton LLP	27
4	Clifford Chance US LLP	1
5	Cooley LLP	0
6	Covington & Burling LLP	6
7	Cravath, Swaine & Moore LLP	18
8	Davis Polk & Wardwell LLP	40
9	Debevoise & Plimpton LLP	5
10	Gibson, Dunn & Crutcher LLP	7
11	Hogan Lovells US LLP	1
12	Jones Day	33
13	Kirkland & Ellis	7
14	Latham & Watkins LLP	7
15	Milbank LLP	4
16	Morrison & Foerster LLP	16
17	O'Melveny & Myers LLP	13
18	Paul Hastings LLP	0
19	Paul, Weiss, Rifkind, Wharton & Garrison LLP	0
20	Quinn Emanuel Urquhart & Sullivan, LLP	0
21	Ropes & Gray LLP	6
22	Shearman & Sterling	5
23	Sidley Austin LLP	8
24	Simpson Thacher & Bartlett LLP	40
25	Skadden Arps Slate Meagher & Flom LLP	20
26	Sullivan & Cromwell LLP	1
27	Wachtell, Lipton, Rosen & Katz	16
28	Weil, Gotshal & Manges LLP	4
29	White & Case LLP	0
30	Williams & Connolly LLP	0
31	WilmerHale	15
TOTAL POINTS		318
POSSIBLE POINTS		21,815
% OF ELITE LAW FIRM EXECUTIVES		1.5%