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## DO INVESTORS CARE ABOUT DIRECTOR TENURE? INSIGHTS FROM EXECUTIVE COGNITION AND SOCIAL CAPITAL THEORIES

### ABSTRACT

Governance scholars debate the value of directors as an effective governance mechanism. We suggest that this value varies with director tenure. We study both how shareholder assessments of the value of individual directors actually makes a difference to governance effectiveness. Using data from abnormal stock price reactions to the sudden deaths of 274 outside directors, and integrating executive cognition and social perspectives applied to the dual roles of director monitoring and advising, our results confirm a curvilinear relationship between the assessed value of directors and tenure. WE find that directors are more highly valued by investors over a tenure period between 7-18 years, moderated by director involvement in key committees. Further, in examining the S&P 1,500, we find that a one standard deviation increase in the percentage of outside directors in this prime tenure period strengthens the CEO pay-performance linkage by 2.5%, suggesting that directors in this tenure period are more effective at aligning CEO and shareholder interests. Our results demonstrate that individual director tenure makes a difference in governance effectiveness, and shareholders accurately assess this difference. Additionally, our findings provide important boundary conditions for when theories of executive cognition and social capital may be more/less applicable regarding director tenure.

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## INTRODUCTION

*“Seasoned directors offer valuable institutional memory, and can serve as a counterweight to longtime executives. At the same time ... after years on the same board, directors may lose their objectivity...There’s a risk that extended tenure could lead a non-management director to begin thinking like an insider.”*

*“Big Investors Question Corporate Board Tenures”  
The Wall Street Journal, March 23, 2016*

Is there a relationship between director tenure and the ability of directors to do their jobs? A recent series of *Wall Street Journal* articles demonstrated that shareholders pay attention to individual directors, their tenure, and the quality of their decisions (Francis & Lublin, 2016a, 2016b). In fact, the institutional investment group State Street Advisors, with more than \$2 trillion under management, voted against 339 directors in 2015 and 355 the year before due to tenure concerns (Francis & Lublin, 2016b), demonstrating the concern that investors have over individual directors’ tenure.

Interest in director tenure and turnover has increased dramatically in recent years as companies have begun to put in place term limits and/or mandatory retirement ages for members of the board of directors (Hoang, Tygesson & Ibok, 2016). Additionally, ratings agencies such as Institutional Shareholder Services (ISS) include assessments of board tenure as one of their criteria for evaluating board effectiveness, with longer tenure potentially leading to lower scores (Haas, 2015; ISS, 2015). With 10-year board veterans holding 36 percent of board seats in the S&P 500, an increase from 33 percent in 2005, investors are nervous that longtime directors will not adequately challenge top executives (Francis & Lublin, 2016a). However, despite such interest, it is unclear *how* and *why* shareholders assess an individual director’s tenure and what, if anything, director tenure means for a firm’s governance. We suggest that individual director tenure is one characteristic of directors that can influence governance effectiveness. Director tenure is most often used as a group level control variable and proxy for director experience in board demographic studies (Withers et al., 2012), rather than a standalone construct that can inform an understanding about director effectiveness. Yet, boards are groups of individuals who are important to provide effective governance for increasing firm and shareholder value (Finkelstein & Mooney, 2003). Individual directors also process information differently, which can affect their

monitoring and advising behaviors (Boivie et al., 2016). If a director's tenure makes a difference to his/her effectiveness in the role, then this becomes a variable that warrants further attention.

Addressing the impact of individual director tenure requires an integration of theories to bring out the nuances of tenure that are unique to the complex roles of the director. From a theoretical standpoint, the two perspectives that speak to the question of tenure and effectiveness, executive cognition (Hambrick et al., 1993) and social capital theories (Adler & Kwon, 2002; Kor & Sundaramurthy, 2009), have competing tensions when it comes to the effects of tenure. Concerns over long-tenured directors who may align with top managers (Hillman & Dalziel, 2003), or become stale and committed to the status quo (Hambrick et al., 1993; Hillman et al., 2011), are counterbalanced by the need for institutional memory and expertise, and the social capital that comes with seasoned directors (Kor & Sundaramurthy, 2009; Westphal & Fredrickson, 2001). When these tensions are mapped against the dual roles of monitoring and advising that board members are asked to perform, which themselves can have competing tensions, it is clear that individual director tenure is a complex construct that deserves more attention.

These tensions are reflected in the lack of clarity as to how individual directors are valued over the course of their tenure on the board and whether director tenure actually makes a practical difference to governance effectiveness. Anecdotal evidence, as we noted above with institutional investors, suggests that director tenure is important to shareholders, with concern at both the higher and lower ends of tenure. There are indications that when long-tenured directors pass away in firms with a high percentage of long-tenured nonexecutive directors, investors react positively to the news. For example, Martin Marietta Materials has been highlighted as a company with long-tenured directors – and one that has come under fire from institutional investors (Lublin, 2014). When one of its directors, who had served over 20 years on the board, passed away, the stock price rose 1.23 percent while the market went down 1.20 percent. Similarly, when a 21-year outside board member of the Navistar board passed away in 2015, the stock price rose 8.33 percent the next day, while the market only went up 1.5 percent. Alternatively, investors have also been critical of directors who are “junior” and have only a few years of tenure. For example, there is evidence to suggest that younger tenured members lack knowledge about a business or industry to

be effective in selecting acquisition targets (Huang, 2013). This suggests that investors *do* place a value on individual director tenure, but the parameters of this phenomenon are unclear.

While some companies have attempted to address tenure concerns with term limits and/or mandatory retirement ages for directors, these are often controversial and/or sub-optimal solutions to determining the ideal period for directors to serve shareholders (Directors & Boards, 2008; NACD Public Company Governance Survey, 2014). With the prediction that the number of long-serving directors is likely to grow as more companies limit their CEOs to one outside directorship (Hymowitz & Green, 2013), this issue may become more acute as companies are increasingly hesitant to invoke term limits that may be counterproductive to retaining experienced directors (Murphy, 2013). Therefore, in this paper we address the following three fundamental questions: (1) How do shareholders value individual directors over the course of their tenure? (2) Does director tenure affect governance effectiveness in aligning shareholder and managerial interests? (3) How does director involvement on key committees affect these issues?

We address these questions by first examining investor reactions to unexpected director deaths conditioned on director tenure at the time of the death. We use the sudden deaths of directors and event study analysis as a natural experiment to analyze individual directors' contribution to firm value (Nguyen-Dang & Nielson, 2010). This context has been used extensively in the literature to assess shareholder sentiment about the value placed on an individual director and/or CEO, free from any ambiguity surrounding the reason for the departure (Combs & Skill, 2003; Worrell et al., 1986). We propose, and find empirically, a period of director tenure where shareholders assess directors to be in their prime; to have enough cognitive and relational development to provide value to the organization, and yet are not "stale-in-the-saddle" (Hillman et al., 2011; Miller, 1991) and/or socially indebted to management (Walsh & Seward, 1990).

Additionally, if directors are not only *assessed* to have more value by shareholders at different points in their tenure, but actually *provide* greater value, we would expect to see, and confirm empirically, a linkage between the concentration of directors on the board in the prime of tenure and the effectiveness

of the board's governance of the firm. A substantial literature points to a tighter tie between firm performance and CEO compensation as being in the interests of shareholders (Boyd, 1994; Hill & Phan, 1991; Sauerwald et al., 2014; Zhu, 2014). CEO compensation is a direct outcome of the directors' CEO evaluation, which is assessed annually, and is used as a tool for boards to motivate or punish CEOs (Canyon & Peck, 1998; Graffin et al., 2013; Jensen & Murphy, 1990). As such, the alignment of firm performance and CEO compensation is a key indicator of effective board performance.

Accordingly, we seek to answer how directors are valued at different points in their tenure, and whether a board with a higher concentration of directors considered in their prime results in a tighter alignment of firm performance and CEO compensation. We also examine how these questions are affected by director involvement through key committees of the board, and find that both relationships are moderated by director involvement. We begin by creating a framework of the value of directors over the course of their tenure in their monitoring and advising roles. This framework allows us to contribute to the governance literature by reconciling competing theoretical perspectives within executive cognition and social capital, through the identification of a curvilinear relationship between director tenure and perceived value. We then test this relationship and identify a prime tenure period for directors, where further analysis confirms that directors in a tenure period of 7 to 18 years are most likely to align firm performance and CEO compensation. Our findings also provide a practical understanding of how shareholders view director tenure with implications for governance initiatives like term limits.

## **THEORY AND HYPOTHESES**

### **The Varying Value of Directors as Assessed by Shareholders**

Few studies have examined director tenure at the individual level (e.g. Johnson et al., 2012) or the dispersion of tenure within a board. Yet, individual directors have been important to many governance decisions, including challenging and initiating the dismissal of a CEO (Sonnenfeld, 1988), recruiting new CEOs (Khurana, 2002), and changing a firm's stock exchange listing (Rao et al., 2000). There is also evidence to suggest that shareholders perceive value in individual directors and link them to the firm's state of governance over time. Studies have examined the reactions of shareholders to director deaths in

the contexts of: 1) founder-CEOs versus professional CEOs (Johnson et al., 1985), 2) CEOs versus Chairmen (Worrell et al., 1986), 3) inside blockholders (Slovin & Sushka, 1993), 4) CEOs who are “raided” by competing firms (Hayes & Schaefer, 1999) and 5) outside/independent directors (Nguyen-Dang and Nielsen, 2010). More recently, shareholder reactions have provided insight into the relationship between board quality and executive replacement decisions (Borokhovich et al., 2006), the impact of entrenched CEOs (Salas, 2010), the negative value of the “busyness” of the director (Falato et al., 2014) and the value of powerful directors (Fogel et al., 2014).

Directors bring value to their role through their knowledge, expertise and experience, as well as through their connections and relationships. All of these factors are brought to bear on their dual advising and monitoring roles in the boardroom. A director’s knowledge, expertise and experience falls under the theoretical perspective of executive cognition (Hambrick et al., 1993), while a director’s connections and relationships are part of his/her social capital (Hillman & Dalziel, 2003). Executive cognition theory examines an executive’s social-psychological orientation, including the beliefs, knowledge, assumptions and values that drive decision-making processes (Hambrick et al., 1993). Executive cognition is generally imputed from the observable characteristics of top executives, including board members (Finkelstein et al., 2009). It is an important component of board performance in the perceptions, selections and attributions of board decision-making (Forbes & Milliken, 1999). Directors’ cognitive frameworks have been used to understand the directors’ abilities to make effective decisions, including how they are involved in strategic decision making (Carpenter & Westphal, 2001), how they engage in social networking (Seidel & Westphal, 2004), how quickly they make decisions (Marcel et al., 2011), and how they respond to social influences (Park et al., 2011; Westphal, 1999). Additionally, and important to our context, director cognitions may change over the course of tenure through socialization and self-selection (Hambrick et al, 1993).

Social capital theory addresses an individual’s ability to access information and resources through relationships (Burt, 1992). The social capital that members bring to a group influences the collective actions and effectiveness of the group (Oh et al., 2006). It is both external and internal. External social

capital reflects a member's connectivity to other individuals and groups external to the organization, which provides motivation and opportunity for information exchange. Internal social capital reflects a member's access and relationship to others within a firm. At the director level, social capital has been reflected in directors through their personal relationships within firms (internal social capital), their ties to other firms including through other board memberships (external social capital), and their social standing (both internal and external), including status, prestige, stigma and reputation (Johnson et al., 2012; Kor & Sundaramurthy, 2009). Internal social capital is built during a director's tenure through their increasing knowledge of each other's skills and personalities (Fischer & Pollock, 2004) The increased familiarity with top executives fosters trust (McDonald et al., 2008) that is important to strategic decision making, including board decisions about the CEO (Zhu, 2014). From both cognitive and social capital perspectives, the value of individual directors is grounded in the experiences that they bring to the decision-making processes. These are embedded in the two primary roles of directors, those of advising (including resource provisioning) and monitoring. Mapping executive cognition and social capital perspectives on the advising and monitoring roles of the director over time, we are able to point to the complexity of director tenure and the varying value of the individual director over his or her tenure. We summarize these issues in Table 1 and provide a detailed explanation below.

-----Insert Table 1 about here-----

### **Advising**

Several mechanisms within executive cognition and social capital perspectives explain how a director's effectiveness as an advisor increases over the course of their tenure. From an executive cognition perspective, because directors spend a limited amount of their time serving a particular company, and are often from outside the industry, it takes time for them to learn about the company, its industry, and its competitive dynamics. Like new outside CEOs, directors begin with a "knowledge deficit" but begin to learn about their organization over time (Hambrick & Fukutomi, 1991). They increase their knowledge of the firm's needs and they begin to understand how their expertise can maximize their contribution to the board (Sundaramurthy et al., 2014). As they develop firm-specific

knowledge, they are able to see where the firm's core competencies lie, which then enables them to provide more salient strategic advice (Campbell et al., 2012). Additionally, it takes time for a new director to become familiar with the norms of a particular boardroom. Many boards have strong norms and an initial acclimatization period for new directors (Demb & Neubauer, 1992), which can cause new directors to be reluctant to express their opinions. Directors begin to identify strongly with their organizations over time, which can be beneficial for resource provisioning and providing counsel (Hillman et al., 2008). Finally, there is evidence that directors build firm-specific expertise over the course of their tenure that is valuable to shareholders (Hillman et al., 2011).

The increase in the value of a director's advice and resource provisioning over time through executive cognition development is offset by other cognitive factors that may detract from a director's value as tenure increases beyond a certain point. Chief amongst these is the idea that directors experience cognitive rigidities and an increased commitment to established procedures over time (Hambrick et al., 1993; Katz, 1982), causing directors to become "stale-in-the-saddle" and ineffective (Miller, 1991). Executive cognition theory suggests that executives become "psychologically hamstrung" by a commitment to the status quo (Hambrick et al., 1993:402), making it difficult for them to consider alternative views. This argument has been tested regarding CEOs and their propensity to become overconfident and/or complacent, thereby compromising strategic fit and firm performance (Chen et al., 2014; Miller, 1990, 1991).

Directors' strategic preferences may also be increasingly influenced by their prior experiences with corporate strategy in their home firm (Westphal & Fredrickson, 2001), leading them to be less open to new strategic initiatives over time. Experienced directors in a firm may be motivated by their own preferences and concern for personal reputation, making them more protective of past successes and risk averse towards new initiatives to the detriment of diversified shareholders (Shen & Cannella, 2002). In sum, the same cognitive challenges that long-term CEOs face in envisioning anything beyond the status quo may be evident in directors as well, but perhaps over a different period, as we explain below.

From a social capital perspective, early in the director's tenure, the firm benefits from the external network of the director. This network can bring resources and connections to the firm that might otherwise be inaccessible (Carpenter & Westphal, 2001). However, initially, without the knowledge of the firm's needs, the potential of these external connections may not be optimized. As the director begins to understand the firm's needs over time, he or she is increasingly able to identify sources of potential growth for the firm and facilitate these connections within his or her social network to enhance advice and counsel on strategic issues (Westphal, 1999). As the director becomes familiar with other board members, trust increases between board members facilitating candid discussions on critical strategic issues and allowing different perspectives to emerge in the boardroom without suspicion of underlying ulterior motives (Kor & Sundaramurthy, 2009).

While initially the value of the director's network increases over time, if the connections are not constantly renewed the freshness and variety of network the director brings to the firm may decline in value over time. The result is restricted information flow (Oh et al., 2006), less communication and openness to outside information (Katz, 1982), and resistance to changes in strategic direction (Golden & Zajac, 2001). All of these social influences can impinge effective advising (Hambrick & Fukutomi, 1991; Miller 1991). While some relationships may continue to be fruitful for the firm, others may dissipate without fresh replacements.

### **Monitoring**

Since the separation of ownership and control (Berle & Means, 1932), board members have been responsible for monitoring top management on behalf of shareholders (Jensen & Meckling, 1976). Monitoring, evaluating, and rewarding the CEO are tasks that vigilant boards perform to ensure that the CEO is acting in the best interests of shareholders (Kroll et al., 2008). There are mechanisms within the executive cognition and social capital perspectives that explain how the effectiveness of a director increases over time in the monitoring role.

From the executive cognition perspective, directors need time to understand the linkages between the CEO's individual actions and firm performance, and to be able to make effective judgments about the

CEO's performance. Early in their tenure, directors may experience evaluative uncertainty (Graffin & Ward, 2010) over the most appropriate benchmarks of performance to use in evaluating management due to the absence of firm-specific knowledge, which may initially limit their ability to be effective monitors until such knowledge is acquired. Given that the "CEO effect" on firm performance has increased substantially over the last 60 years (Hambrick & Quigley, 2014; Quigley & Hambrick, 2015), directors need to understand the level of CEO discretion for the individual firm, the relationship between CEO decisions and actions, and the resulting firm performance, together with the lag between actions and performance. A new director's learning curve would include acquiring the knowledge to choose the correct metrics, as well as becoming familiar with the CEO and top management team members to assess the degree of managerial discretion afforded them (Finkelstein & Boyd, 1998). Even if a director has prior experience as a director in other firms, this understanding takes time to develop in the firm. As new directors grow in their understanding of these relationships over time, they are likely to improve in their ability to effectively monitor the CEO, assess the viability of management proposals, and increase the alignment between CEO and shareholder interests.

While the above factors indicate that a director increases his or her monitoring ability over time, there are also potential concerns from an executive cognition perspective that a director may falter in monitoring management at later points in his/her tenure. For example, increased familiarity with, and trust in, management can lead to less critical acceptance of explanations provided by management for poor performance (Vafeas, 2003). A director may be unable or unwilling to exercise discipline on management when necessary and agency costs can increase (Jensen & Meckling, 1976; Ward et al., 2009b). Over time, some directors can become risk averse, aligning with management and developing a reluctance to change (Golden & Zajac, 2001). Just as CEOs have been shown to increase commitment to the status quo as their tenure increases, this is also likely to be true for a director who then becomes more committed to the status quo (Hillman et al., 2011). This director may then be less likely to challenge management about sticking with previous strategies even if they are suboptimal (Hambrick et al., 1993).

From a social capital perspective, external social capital in the form of connections to other boards give the director access to knowledge about best practices at other firms and comparable metrics with which to monitor management performance – and these external information resources are likely to be relevant and high quality (Kor & Sundaramurthy, 2009). Internally, as the board member becomes more knowledgeable about the executives’ personalities and abilities, he or she can more easily interpret and filter out inherent biases in the information provided by management. Internal board capital can facilitate shared networking experience that provides better and more cost-effective monitoring under normative pressures (Sauerwald et al., 2014).

However, social capital theory also suggests that as internal capital increases, a board member may become increasingly under the social influence of management as friendship and loyalty develop between the director and the CEO (Wade et al., 1990; Walsh & Seward, 1990). Consequently, longer tenured directors may be less likely to reach outside the organization for information and ideas (Aguilar, 1967; Miller, 1991), and avoid debating one another, potentially leading to groupthink (Forbes & Milliken, 1999). These issues point to the solidarity costs of social capital (Kor & Sundaramurthy, 2009) that can reduce the diligence of a director’s monitoring. Finally, the generation of external board social capital through multiple board memberships can take its toll on directors’ time and attention (Carpenter & Westphal, 2001). As a result, board members can face limitations in their information processing capabilities that affect their ability to monitor effectively (Hillman et al., 2008).

Given these alternative views found in the literature, we suggest that for both advising and monitoring there exists a non-linear relationship between director tenure and director value.<sup>1</sup> Indeed, at the board level, Golden and Zajac (2001) found a curvilinear relationship between average director tenure and the level of strategic change undertaken by the company. Similarly, Musteen et al. (2010) found a

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<sup>1</sup> We have presented alternative theoretical arguments for the relationship between director tenure and value, separating out the roles of advising and monitoring. However, it is not clear that advising and monitoring *tasks* are distinct and separate, or that individual directors fulfill one or the other role separately (Kim et al., 2014). For example, Hillman & Dalziel (2003) note that a director’s firm-specific knowledge increases both advising and monitoring performance. Therefore, we suggest that both roles coexist to form the curvilinear relationship between a director’s tenure and value to the firm.

curvilinear relationship between average director tenure and corporate reputation. Integrating executive cognition and social capital theories, we hypothesize that there is a curvilinear relationship between director tenure and the assessed value of that director by shareholders.

We contend that shareholders will value a director increasingly over time. However, at some point, shareholders view the director as stale and under the social influence of management in his/her advising and monitoring roles and the value of the director begins to decrease with director tenure. In order to measure and analyze this, we evaluate how shareholders react to an unexpected or unanticipated departure from the board, given the director's tenure at the time of departure. We use a sample of sudden and unexpected deaths of directors because other departures, such as resignations, not running for re-election, or even death after an illness are anticipated by shareholders and built into the share price of the firm before the departure. Thus, we hypothesize:

*Hypothesis 1: Investor reactions to director sudden deaths will have a curvilinear (inverted U-shaped) relationship with director tenure.*

### **Director Tenure and Effectiveness**

*"If [directors] uncouple pay and performance, they are not a good board.... Unquestionably, [the key governance issue for 2013] is incentive compensation.... Quite honestly, it is the best indicator there is of litigation risk, liability risk and investment risk when incentive pay is uncoupled from shareholder value. And if you solve that problem, you are a long way toward making sure that you have got sustainable growth."*  
- Nell Minow, upon receiving the 2012 Corporate Governance Lifetime Achievement Award from Corporate Secretary Magazine, February 5, 2013

If a curvilinear, inverted U-shaped relationship exists between director tenure and the perceived value of directors by shareholders, then this indicates that there is a period when directors are considered most valuable to shareholders. We refer to this as the prime tenure period.<sup>2</sup> While shareholders may value directors more in this period, we now turn to whether or not these shareholder perceptions of director value have any meaningful outcome when it comes to board effectiveness. To do this we

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<sup>2</sup> We refer to the prime tenure period conceptually as the period when shareholders perceive directors to be at the peak of their value to shareholders. We derive the boundaries and length of this period empirically later in the paper (see pp. 22-26).

examine board compositional effects of directors in their prime tenure period. We consequently move away from an individual level of analysis that focuses on shareholder reactions to the sudden deaths of directors, to focus instead on the group level of analysis, looking at how a board comprised of a concentration of directors in the prime tenure period affects the board's effectiveness. This tests our notion of a prime tenure period in a broader sample than just the deaths of individual directors. Additionally, it allows us to test whether or not shareholder perceptions of an individual director's value translate into effective governance at the board level.

Since the separation of ownership and control in the modern corporation (Berle and Means, 1932), the board's primary responsibility has been to protect shareholder interests, which means to promote the maximum value of the firm for the shareholders. The board does this through its two primary roles of advising and monitoring which both adds and protects value to the firm through the alignment of managerial and shareholder interests (Hill & Phan, 1991). This alignment of interests is done through several mechanisms including being effective in hiring and firing the CEO when appropriate, ensuring adequate financial controls are in place and accurately reporting financial results.

However, as the Minow quote above plainly states, from a shareholder's perspective, the alignment of CEO pay to performance is a direct and powerful mechanism that boards have to protect shareholder interests.<sup>3</sup> A failure to secure this alignment constitutes failure on the part of the board (Bebchuk & Fried, 2010). Accordingly, the degree of alignment of CEO pay to firm performance is a widely used measure of board effectiveness (e.g. Boyd, 1994; Hill & Phan, 1991; Sauerwald et al., 2014; Zhu, 2014). The issues surrounding executive compensation have to be addressed by every board and revisited every year to ensure that the appropriate incentives remain in place (Lorsch & MacIver, 1989). It is one way boards exert their influence as monitors of the organization (Rutherford et al., 2007), because incentive pay tied to firm performance, whether cash or stock based, is designed to motivate

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<sup>3</sup> We note that while there are other potential measures of board effectiveness, such as CEO turnover or changing audit firms, these are infrequent occurrences, relative to CEO compensation, which is revisited annually. Additionally, the coupling of CEO compensation is a continuous measure that can be accurately assessed from publicly available information. We thank the anonymous reviewer who pointed this out.

managers to engage in activities that are beneficial for the firm (Jensen & Murphy, 1990). Additionally, under their advising role, directors must bring their expertise to formulate incentive packages that align the preferences of risk-averse executives with “risk neutral” shareholders (Devers et al., 2007: 1028). Contingency pay is also a way for boards to show shareholders that a CEO possesses valuable human capital that affects firm performance (Combs & Skill, 2003). While the existing literature on governance and pay points to the efficacy of CEO contingency pay in aligning shareholder and managerial interests (Canyon & Peck, 1998), director tenure is often viewed as an incidental factor impacting compensation rather than a governance element with behavioral ramifications (Devers et al., 2007).

We suggest, however, that shareholders’ perceptions of the varying value of directors over the course of their tenure indicates that director tenure may play a significant role in the efficacy of using CEO contingency pay to align managerial and shareholder interests. From an executive cognition perspective, during their tenure on the board, directors build familiarity with each other that allows them to foster interpersonal trust and enables them to function effectively as a group (Fischer & Pollock, 2004). It takes time for a director to develop a common, “internally shared perspective” (Hambrick et al., 1993: 404) to understand the appropriate firm-specific performance metrics, as well as the linkage between CEO actions and firm performance. Similarly, social capital theory suggests that board members who build external directorships and internal networks over time are better able to gather more information regarding CEOs and their characteristics, including compensation (Khurana 2002; Kor & Sundaramurthy, 2009). The resources available to directors through their social networks can enhance information flow that can inform executive compensation decisions (Belliveau et al., 1996).

Despite understanding these nuances, directors that have become too personally attached and loyal to the CEO over time may succumb to the CEO’s preference for more certainty in his/her own compensation and a higher level of absolute pay, to the detriment of shareholders. This is supported by executive cognition theory that suggests that long-tenured executives might have difficulty considering alternative perspectives (Hambrick et al., 1993), including creative ways to monitor and incentivize CEOs for long-term performance. Additionally, social capital theory that suggests that social influence may

allow a CEO to manage a board in a manner that increases his or her compensation (Main et al., 1995). However, as described above, there is a period where directors have enough firm-specific knowledge and experience to be useful to the board, but are not yet beholden to the CEO. Therefore, there should be a stronger linkage between CEO pay and performance when there are a relatively higher proportion of directors in the prime of tenure – i.e. those considered by shareholders to be near an optimum balance between experience and independence. We therefore hypothesize that:

*Hypothesis 2: The higher the proportion of directors on the board in the prime tenure period, the greater the sensitivity of CEO compensation to firm performance.*

### **The Varying Value of Directors by their Involvement on the Board**

While both executive cognition and social capital theories suggest that the value of directors varies over the course of their tenure, they also suggest that certain directors, by virtue of their assigned duties and level of involvement on the board, exert more influence than others do in offering strategic advice and/or monitoring for managerial opportunism thus ensuring board effectiveness. From a shareholder perspective these directors may have more comparative value. For example, directors who serve on two or more of the key committees – audit, compensation or nominating – are seen to contribute to the monitoring intensity of the board (Adams & Ferreira, 2007). Additionally, concurrent service on multiple committees can broaden a director's understanding of the organization, enabling them to make better-informed decisions and provide better firm-specific advice (Faleye et al., 2011).

From an executive cognition standpoint, directors on multiple committees can bring alternative views that can influence other directors' commitment to a course of action and status quo (Staw, 1976) and raise awareness across functions that can influence strategic action (Golden & Zajac, 2001). Regarding social capital, involved directors have status and prestige that are part of their social standing in the hierarchy of the firm, as well as outside of the firm (Johnson et al., 2012). Directors' social capital is a conduit for the flow of resources, information and advice that can influence the decision-making process. Therefore, those directors who are actively serving on key committees are assumed to have the awareness, knowledge, and skills to protect shareholders from managerial self-interest (Kesner, 1988),

while also providing key strategic advice (Daily, 1996). Directors who serve on these committees are also able to exert influence on firm activities that are of key importance to shareholders (Boivie et al., 2012) as well as identify with the firm in a way that promotes shareholders' interests (Boivie et al., 2011). These directors are often more prestigious directors who guard their status by involving themselves in board activities (Acharya & Pollock, 2013).

In addition to involvement increasing the value of directors, it also affects the timeframe during which involved directors will be especially valued. Part of the reason that it takes time for a director to be perceived as reaching optimum value on the board is that as a non-executive director, the firm occupies a limited amount of his or her time and attention. Therefore, it takes a relatively long time for a director to become intimately familiar with the firm and to be able to apply his or her human and social capital to monitoring and advising roles. With S&P 500 boards meeting on average 8.1 times per year (Spencer Stuart 2015), even with an allowance for their ongoing monitoring of news about the firm and preparation time for board meetings, the average director is likely spending less than 5 percent of his or her overall time on the company. However, directors that are more involved through membership on key committees will meet more frequently and gain familiarity with the firm faster. With audit committees meeting on average 8.8 times per year, compensation committees 6.1 times per year, and nominating committees 4.6 times per year (Spencer Stuart, 2015), a director involved in two or more committees represents a substantial increase in the time spent on company matters and so we would expect the learning curve to be faster. However, because of the greater involvement of the director, and accordingly, the more frequent interactions and deeper relationships built through this involvement, such directors may succumb to the negative effects of long tenure faster than non-involved directors may (i.e. they may become entrenched sooner). As a result, we should see a shift in the curve to the left, with the prime tenure period finishing earlier for more involved directors. We propose:

*Hypothesis 3a: Involved directors strengthen the predicted inverted U-shaped relationship between director tenure and investor reactions to director deaths.*

In addition to altering the shareholder perspective, governance effectiveness may also be impacted when directors serve on key committees such as the audit, compensation or nominating committees. These directors may not experience the uncertainty in evaluating the CEO that less involved directors might experience. The composition of these committees differs from other committees, with directors who have the skills and share common characteristics that create shared perceptions (Hambrick et al, 1993) to deal with the complicated tasks that are important from the perspective of both firms and regulatory agencies (Kesner, 1988). As members of the hierarchy of the board, they have made psychological and tangible investments in information sources to hone their expertise in specific areas (Hambrick et al., 1993; Wanous, 1980). Additionally, from a social capital perspective, directors on key committees speak a common language developed through (often shared) internal and external social capital that allows them to exploit their knowledge more efficiently (Nahapiet & Ghoshal, 1998).

For example, directors on the audit committee, overseeing financial reporting and internal control systems, are assumed to have the accounting expertise and knowledge to monitor effectively, and shareholders react positively to directors with such expertise (DeFond et al., 2005). Members of the nominating committee evaluate candidates for board positions, review the performance of directors and assess the governance structure of the firm (Faleye et al, 2011). This committee also often serves as the governance committee and its directors may therefore be more sensitive to prevailing pressures from external monitors (Brandes et al., 2008). Members of the compensation committee are integral to the design of reward structures for management, with skills that are conducive to the ability to link compensation to firm performance, and the independence to objectively assess the performance of the CEO (Canyon & Peck, 1998). In sum, the directors who serve on these key committees represent the quality of board monitoring and advising through their involvement and intensity in their duties (Faleye et al., 2011), which only helps to hone their shared knowledge and further develop their internal and external social capital (Kor & Sundaramurthy, 2009). Firms are then able to exploit their expertise for strategic purposes, including enhancing corporate legitimacy with shareholders (Harrison, 1987) that include issues of executive compensation. Their involvement not only makes them highly valued in the

eyes of shareholders (Adams & Ferreira, 2007), but also puts them in a position to act in accordance with shareholder interests, moderating our previous hypothesized relationship, as follows:

*H3b: Involved directors strengthen the positive relationship between the proportion of directors in the prime tenure period and the sensitivity of CEO compensation to firm performance.*

## **METHODS**

### **Sample and data collection**

In order to test how shareholders assess the value of directors (H1 and H3a), we focused on investor reactions to sudden, unexpected deaths of directors. Our sample consists of unexpected director deaths for U.S. publicly held companies for the years 2000-2012. Details of director deaths were obtained from SEC proxy statements, annual reports, and press releases from LexisNexis. “Sudden” deaths were those that were unexpected, including those from heart attacks, accidents, brief hospitalizations, and brief illnesses. We did not include director deaths related to long illnesses (e.g. cancer) that would not be considered unexpected. For each announcement of a director death, we searched for all publicly traded firms that the director served on and included in our sample all firms for which the director was an outsider. For the majority of the sample, the director only served on the board of one publicly traded firm. Our initial sample over this time period consisted of 363 unexpected outside director deaths.

The event study methodology is designed to measure the effect of an unexpected event on stock prices (McWilliams & Siegel, 1997). This methodology can be compromised by exogenous confounding events that potentially contaminate investor reaction to the event of interest (Combs & Skill, 2003). These include earnings announcements, dividend announcements, mergers/acquisitions, share repurchases, plant closures and litigation against the firm. In our sample, confounding events were found in 31 firms for the trading dates five days before to two days after the event date and these firms were eliminated from our sample. Financial data were gathered from COMPUSTAT and CRSP, and firms not listed on these, as well as those that failed to file SEC proxy statements, were also eliminated, reducing our sample by a further 37 firms. Additionally, for another 21 firms we were not able to capture cumulative abnormal returns, leading to a final sample of 274 director deaths in 262 firms over the 13-year period. As a

robustness check for our sample, we compared the means of a number of key variables using paired t-tests to determine if this missing data introduced bias in our final sample (Graffin et al., 2013). We found that there were no significant differences. Therefore, we felt comfortable using our sample to test for the value shareholders place on directors, i.e. the prime tenure period for directors, under different contingencies.

After determining the value of directors according to investor reactions to the sudden death of a director, we further tested the value, conditional on tenure, which individual directors actually provide to shareholders. In order to do this, we shifted focus away from unexpected deaths of directors to a broader sample of firms, allowing us to generalize our results. We used a sample of all firms in the S&P 1500 between 2000 and 2012 (consistent with the sample period of outside director deaths) to test our executive compensation hypotheses (H2 and H3b). Information on the directors of these firms was captured with *Riskmetrics* data and compensation data was obtained from Execucomp. The final sample consisted of 11,807 firm year observations over the 13-year period.

### **Dependent Variables**

***Cumulative abnormal returns.*** We estimated the stock market reaction to the death of directors using event study methodology (Graffin et al., 2013; McWilliams & Siegel, 1997), estimating the cumulative abnormal returns (CARs) around the first announcement of the death of a director in the PR Newswire and LexisNexis. Specifically, for each director  $j$  that died on day  $t$ , we obtained a measure of systematic risk by running the following regression for trading days from  $T = t-290$  to  $t-90$  (201 days):

$R_{jt} = \alpha + \beta R_{mt} + \varepsilon_t$  where  $R_{jt}$  represents the return for firm  $j$  on day  $t$ ,  $\alpha$  is a constant,  $R_{mt}$  is the return for the value weighted CRSP market index on day  $t$ , and  $\varepsilon_t$  represents an error term following the regular OLS requirements. Once a measure of systematic risk,  $\beta$ , was estimated, we obtained the abnormal return by subtracting the expected return for firm  $j$  on day  $t$  from the actual return, as in the following equation:  $A_{jt} = R_{jt} - \beta R_{mt}$ . We then cumulated the abnormal returns on the day of the exit and for one and two days following the event, in accordance with prior CARs research (Combs & Skill,

2003; Graffin et al., 2013). We used the CAR as the dependent variable in our regressions, reflecting investors' sentiment of the departure of a director.<sup>4</sup>

***Executive compensation.*** To measure the effective alignment of CEO pay with shareholder interests we focused on pay for performance sensitivity, measured in two ways. First, we examined the pay-to-performance sensitivity (Crawford et al., 1995), looking at the dollar change in executive pay for each one percent change in shareholder wealth, estimating the coefficient on performance in regressions of compensation against performance and other control variables. Second, we examined the ratio of cash compensation (salary + bonus) to total compensation and the ratio of equity-based compensation to total compensation (Coles et al., 2014).<sup>5</sup> A shift in the mix of compensation to more equity and less cash based compensation would indicate an increased sensitivity of pay to performance.

### **Independent Variables**

***Outside director deaths.*** For *sudden deaths*, each announcement was examined to determine cause of death. Only deaths that could be classified as sudden or unexpected, as discussed above, were included in the sample.

***Director tenure.*** This was calculated as the number of years that the director served on the board.

***Percentage of directors in the prime tenure period.*** In order to formulate our compensation hypotheses, we used the prime period of director tenure that we found in the director deaths sample. As discussed later in detail, we found that independent directors are most valuable in a prime tenure period between 7 and 18 years. For the compensation hypotheses, we used the director data available in *Riskmetrics* to identify those directors who were in this prime period for their firm each year. We then calculated a firm-year measure of directors in the prime tenure period by calculating the ratio of outside

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<sup>4</sup> For robustness tests, we estimated CARs over a (0, 1) window as well as a (0,2) window and we obtained similar results. Additionally, we obtained identical results using market-adjusted returns instead of market model adjusted abnormal returns (results available upon request).

<sup>5</sup> While option value is linked to performance, it can also encourage excessive risk taking (Coles et al., 2014). Therefore, too much CEO option compensation may not be in the interest of shareholders. For this reason, we omitted option compensation in this measure. Equity based compensation is therefore defined as the value of restricted stock grants in a given year.

directors in their prime to board size, with a range between 0 and 1 (0= no outside directors for a firm in the prime period, 1= all of the directors in the firm were in the prime tenure period).<sup>6</sup>

***Director relationship to the CEO.*** We identified those directors hired during the tenure of the current CEO and created a dummy variable equal to 1 if the director arrived on or after the year the CEO was appointed.

***Involved directors.*** Following Faleye et al. (2011), we define an involved director as one who is a member of at least two of the three key committees (audit, nominating and compensation). We constructed a dummy variable equal to 1 if the director served in this capacity.

### **Control variables**

***Organizational control variables for prime tenure period analysis.*** We included 16 separate variables to control for organizational factors that might affect the assessment of shareholders regarding director value. We controlled for firm performance with *return on equity* (ROE), calculated as net income before extraordinary items divided by market value of common equity<sup>7</sup>, because the market is likely to react more positively to deaths of poorly performing firms as this may generate an opportunity for change in governance (Salas, 2010). Additionally, we measured firm performance with the *market-to-book ratio*, measured as the ratio of the market value of the firm to book value of equity. These two performance variables are often used as proxies for growth opportunities (Fama & French, 1998). We also controlled for *institutional ownership* (measured as the percentage of shares owned by institutions)<sup>8</sup> since higher institutional ownership should be associated with better directors as institutions may have a greater capacity to provide external oversight and know the capabilities of individual directors (Ward et al., 2009a), *insider ownership* (measured as the percentage of shares owned by the directors) because insider ownership can proxy for CEO entrenchment (Cui & Mak, 2002), *firm size* (measured as log of the firm's assets), and *dividend yield*.

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<sup>6</sup> As another robustness check for our measure, we also calculated the prime tenure variable as the number of directors in their prime divided by the number of outside directors in the board and obtained similar results.

<sup>7</sup> As an alternative to ROE, we measured performance with ROA in untabulated tests and obtained similar results.

<sup>8</sup> Data were collected from DEF 14A, which reports institutional holdings for those firms owning 5% or more.

We also controlled for measures of board quality because the market should react more negatively to deaths of directors in better governed firms (Salas, 2010), including *board size* and *board independence*, measured as a percentage of outsiders on the board, which can indicate the vigilance level of boards in their monitoring and advising roles (Finkelstein et al., 2009). We controlled for *director age*, because older directors might be more powerful (Salas, 2010), and are more likely to die. We included other director demographic controls to identify whether the director who died was also the *Chairman* of the board, a *committee chair*<sup>9</sup>, a *financially qualified* director, *CEO in another firm*, or held *multiple directorships*, as these might be indicators of powerful directors (Finkelstein et al., 2009). We also controlled for whether or not the board is *classified* (i.e. “staggered”) or not, as directors on classified boards have been seen to be controversial in the eyes shareholders (Faleye, 2007). Finally we control for the possibility that the tenure of the departing director is greater than the average tenure of the remaining directors (*Avg. tenure other directors*).<sup>10</sup>

***Organizational control variables for compensation analysis.*** For our compensation analysis, organizational control variables included *firm size*, measured as the natural logarithm of assets, since firm size has been linked to performance (Smith et al., 1989). We also controlled for firm performance with *return on equity* (ROE), as well as *stock returns* (Fama & French, 1998), as ultimately, stock returns directly reflect the interests of shareholders. Because past performance is likely to affect compensation, we also controlled for lagged performance in all our models. Another factor that should affect executive compensation is firm risk. Executives are likely more risk averse and demand higher compensation when firm risk is high. Therefore, we controlled for firm risk using the *standard deviation of returns*, *diversification* (measured as the number of operating segments), *R&D expenditures*, *capital expenditures*, *sales growth*, *leverage*, the *dividend yield* and the relative liquidity of the firm (*cash and short term securities divided by assets*). Finally, we controlled for *advertising expenditures*, which have been

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<sup>9</sup> Our results are unaffected by controlling for dummies for each committee chair separately. For brevity, we only present results with the one committee chair dummy variable.

<sup>10</sup> We thank an anonymous reviewer for this suggestion.

associated with CEO incentives and innovation (Agarwal & Nasser, 2011). As we did for our first set of hypotheses, we controlled for measures of board quality, including *board size* and *board independence*. Because powerful CEOs may be more able to extract higher compensation than weaker CEOs (Finkelstein & Hambrick, 1989), we also we controlled for measures of CEO power, such as *CEO tenure* and *CEO-Chair duality*.

We also controlled for the *director's relationship with the CEO*, by categorizing those who joined the board during the tenure of the current CEO (during tenure of CEO=1). This is because CEOs often endorse and promote friends and acquaintances with similar backgrounds to their boards (Zhu & Westphal, 2014). Even with the presence of an independent nominating committee, the CEO still exerts influence over director selection. For example, the CEO often performs reference checks regarding new directors (Demb & Neubauer, 1992). A CEO's interest in influencing the selection of a new director is motivated by their desire to reduce uncertainty (Westphal & Zajac, 1995), and to make sure the new director is socially acceptable (Zhu & Westphal, 2014).

## **Analysis**

*Event Study.* To examine investor reactions to director deaths we employed an event study methodology to determine if there was a significant change in the price of the firm's stock immediately after the announcement of a sudden director death. We controlled for possible sources of bias through our sample construction, as noted above. In our analysis we focused on one, two and three-day event windows (Wade et al., 2006), so as to avoid other, unrelated events that may be confounded with our event of interest (McWilliams & Seigel, 1997).

To test H1, we first followed Nguyen-Dang and Nielsen (2010), and calculated cumulative abnormal daily returns (CARs) for multiple windows around the announcement of the departure of a director, using the (0, 2) window as our primary analysis window. Specifically, if the director was valued, i.e. in the prime tenure period, we would expect the market to react negatively to the death. For those directors that were not in their prime we would expect a less negative or even a positive reaction to their departure. To test for the curvilinear relationship between director tenure and the stock price reaction to a

director's death, we regressed the CARs against director tenure and the square of director tenure, expecting to find a negative coefficient on director tenure and a positive coefficient on the square of director tenure. Using standard OLS techniques to estimate these regressions, we included industry and year fixed effects to control for potential clustering of observations. We used heteroskedasticity-consistent standard errors to estimate t-statistics on our coefficients.

***Alternative Regression Structure for CARs Analysis.*** As a robustness check for H1, given that we were looking at responses to individual director deaths that would show some positive and some negative reactions, we structured the dataset as a panel dataset and estimated the separate dynamic coefficients for the effects of each time period. We did this first without taking into account tenure to understand the effects of the director's death on the abnormal returns in the post-death periods relative to the period – and then we added tenure as an interaction term. This allowed us to be explicit in identifying the control period and the “treatment” periods. This gave us five observations for each director over different time event windows, for an N of 1370 observations. Our formula, for the *i*th director at day *t*, and the abnormal return (AR), before adding tenure then was:

$$AR_{it} = B_0 + B_1(\text{Dummy for } t=-2) + B_2(\text{Dummy for } t=0) + B_3(\text{Dummy for } t=1) + B_4(\text{Dummy for } t=2) + \dots$$

Adding in the effects of treatment (tenure) in the post-death periods relative to the pre-death periods, and separating out the effect on the day of the death, and the following two days, we used the following formula:

$$AR_{it} = B_0 + B_1(\text{Dummy for } t=0, 1, 2) + B_3(\text{Dummy for } t=0 \text{ or } t=1) * \text{Director tenure} + B_4(\text{Dummy for } t=0 \text{ or } t=1) * \text{Director tenure}^2 + \dots$$

We also re-specified our models to directly account for the timing effects and the panel structure of our data. To test for H3a, the effects of directors who are more involved through key committee memberships we separated our sample into those directors that served on two or more key committees

and those who did not (Faleye et al., 2011). This type of subgroup testing is common to test the moderation of curvilinear relationships by splitting the sample into subsamples (e.g. Golden & Zajac, 2001). We estimated the CAR regression using the observations with directors who serve on two or more key committees (i.e. “involved” directors).

To test for hypotheses 2 and 3b, we used our broader sample of S&P 1500 firms, and regressed our three compensation dependent variables (change in total compensation, cash based compensation and stock based compensation) against the percentage of directors in the prime tenure period during the year. In all of the compensation analyses, we included firm and year fixed effects. In addition, we adjusted standard errors for possible firm-level clustering.

## RESULTS

Descriptive statistics for the director deaths dataset are summarized in Table 2. On average, our sample of outside directors served for 9.7 years and 5.1 percent of directors were Chairmen. On average, firms had 8.7 members on the board, and 75 percent of these boards were comprised of a majority of independent directors (most likely reflecting changes in regulations over the sample period). In sum 112 of our 274 directors (40 percent) had tenure between 7 and 18 years, i.e. were in the prime tenure period.

-----Insert Table 2 about here-----

Descriptive statistics for the compensation sample are summarized in Table 2. In this sample, 42.5 percent of outside directors were in the prime period of director tenure. On average, 39 percent of CEO pay was in cash and 17 percent was equity based (excluding options, as noted above). ROE averaged 8.9 percent and lagged ROE averaged approximately 9.8 percent. The average firm had annual stock returns of 7.5 percent and lagged annual stock returns of 9.6 percent. About 72.3 percent of directors in this sample were outside directors and average board size was 9.1 directors.

Also in Table 2, we present detailed summary statistics for abnormal reactions to sudden director deaths. In Panel B, we show that average CARs for deaths were negative, which is consistent with

Nguyen-Dang and Nielsen (2010). For the (0, 1) window, CARs averaged -.22 percent whereas they averaged -.31 percent for the (0, 2) window. Average CARs are therefore similar for the (0, 1) and the (0, 2) windows, which provides confidence in the use of either window for the multivariate analysis. In Panel C, we present daily average abnormal returns around sudden director deaths. Significant negative abnormal returns on the day of the director death (day 0), lends confidence to our elimination of observations around director deaths with potentially confounding events. As a further robustness check, we performed a Wilcoxon signed rank test to assess whether we had more negative reactions to deaths of directors than positive reactions. For CAR (0, 2) we had 153 negative and 121 positive responses to director deaths, with statistically significantly more negative CARs than positive in our sample ( $z = -2.136$ ,  $p = .03$ ). Similar results were obtained for the (0, 1) window.

Tables 3 and 4 provide correlation tables for the event study and compensation samples, respectively. In Table 5, we present results of our multivariate analysis of Hypothesis 1, which predicted a curvilinear relationship between the reaction to director deaths and director tenure. Model 1 represents the baseline model and includes only control variables. To confirm the curvilinear relationship we estimated a regression with CAR as the dependent variable and director tenure and the squared value of director tenure as independent variables. Consistent with our hypothesis 1, as noted in model 2, we found that the stock price reaction to director departures is negatively related to director tenure and positively related to director squared. Both coefficients are significant at the  $p < .01$  level. Therefore, Hypothesis 1 is supported. Our alternative event study test, which structured a panel dataset and then estimated the separate dynamic coefficients for the effects of each time period also confirmed this. There is a non-linear relationship between the abnormal reaction to director deaths and director tenure. Our results are robust over a number of different event windows. Depending on the event window used, the implied director tenure inflection point from the panel set regressions ranges between 16.36 and 18 years. The coefficient on director tenure ranges from -0.08 to -0.14 whereas the coefficient on the square of director tenure ranges from 0.0025 to 0.004. All coefficients are significant at the 5 percent level or lower.

In order to isolate the prime tenure period where investor reactions indicate that shareholders perceive the greatest value of a director, we determined the minimum number of years by taking the first year in which the CAR was negative and significantly different from zero (table available upon request). This gave us a potential starting point of the prime tenure period at 7 years. We confirmed that the seventh year is the start of the prime tenure period by using the margins command in STATA to compute the marginal effect (that is, the slope) at each tenure year and checking at what years the decline is statistically significant – i.e. at which point it is significantly negative. We determined the maximum number of years by using the inflection point in our multivariate analysis. This is the point in director tenure at which CARs are at a minimum. The inflection point is found by finding the derivative, with respect to director tenure, of the function defined by Model 2 (Table 5) and solving for the tenure that makes this equal to zero. In model 2, CARs are minimized at an inflection point of director tenure at approximately 18 years. Combining this with evidence that the initial stock market reaction to the death of a director is not significantly negative until director tenure is equal to 7 years, we conclude that the prime tenure period of director tenure is between 7 and 18 years. The average of CARs for all directors in this range of director tenure is -1.7 percent compared to .6 percent when director tenure is outside this range, significant at the  $p < .05$  level. As further interpretation, one can see from Table 5, model 2, that when a director dies after year 6 (moving into the prime tenure period), the investor reaction is .22 percent more negative.<sup>11</sup>

Hypothesis 3a examines the effect of directors who are more involved in advising and monitoring through their membership on key committees. Consistent with our prediction, and as noted in Models 3 and 4 of Table 5, we find a curvilinear relationship between the stock price reaction to director deaths and director tenure only significant in the sample of involved directors, supporting hypothesis 3a. In particular, we find that the inflection point in terms of director tenure is 15 years, which is lower than the

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<sup>11</sup> This equals the difference between predicted values when director tenure equals 6 and when director tenure equals 7. Ignoring variables that do not change, the predicted value when tenure equals 6 is:  $-0.349 \times 6 + 0.00951 \times (6^2) = -1.75$  and the predicted value when tenure equals 7 is:  $-0.349 \times 7 + 0.00951 \times (7^2) = -1.97$ . Therefore, firm value falls by 0.22 percent when director tenure rises from 6 years to 7 years.

18 years we found for the overall sample. This is consistent with our argument that involved directors become entrenched more quickly than non-involved directors, shifting the curvilinear relationship between director tenure and perceived value by shareholders to the left.

-----Insert Tables 3,4 and 5 about here-----

The results for Hypotheses 2 and 3b are presented in Table 6. Hypothesis 2 suggests that the higher proportion of directors in the prime tenure period, the greater the sensitivity of CEO compensation to firm performance. Accordingly, we would not expect that the overall level of compensation would change, but rather, that more directors in the prime tenure period would be associated with less cash based compensation and more equity based compensation. This hypothesis was confirmed, as noted in Models 5-6. As expected, there was an insignificant coefficient for change in total compensation, indicating that total compensation does not increase with more directors in the prime tenure period. However, as predicted, we found a negative and significant coefficient ( $\beta = -0.06, p \leq .001$ ) on our prime director tenure variable in the cash based compensation regression, and a positive and significant coefficient on the prime tenure variable when we regressed equity-based compensation against prime tenure ( $\beta = .09, p \leq .001$ ). This indicates that one standard deviation increase in the percentage of outside directors in the prime tenure range is associated with 1.5 percent less cash and 2.25 percent more equity.<sup>12</sup>

Our results thus confirm that directors in the prime tenure range of 7-18 years are more likely to align the interests of CEOs and shareholders than directors outside of this range will. Hypothesis H3b addresses the notion that those directors in the prime range of tenure who are involved in key committees would be more valuable in aligning CEO pay to performance. Our results in models 7-8 confirm this. Only the percentage of involved directors in this tenure range are associated with compensation that is more aligned with investors; i.e. higher equity based pay and lower cash based pay without increasing overall compensation. Thus, our results support Hypotheses 2 and 3b.

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<sup>12</sup> The standard deviation of the percent of outside directors in the prime tenure period is 0.25. So 1.5 percent is equal to the beta coefficient of 0.06 times 0.25. Similarly, 2.25 percent is equal to 0.09 times 0.25.

-----Insert Table 6 about here-----

### **Robustness Checks**

As an alternative measure of shareholder-aligned compensation contracts, we examined whether a higher proportion of outside directors in the prime tenure period is associated with higher pay-performance sensitivity. Results of these alternative tests of Hypotheses 2 and 3b are reported in models 4 and 7 of Table 6. The coefficient on the prime tenure range variable is insignificant, suggesting that a higher proportion of directors in the prime tenure range are *not* associated with any average decline or increase in compensation on a given year. This is appropriate because it is not in the interest of shareholders that directors increase a CEO's compensation package on a given year *unless* the CEO performed well in a given year. CEO compensation should only change if directors learn something (either good or bad) about the CEO from their performance (as evidenced in stock returns). Thus, the key variable of interest for our analysis is the *interaction* between our prime tenure range variable and lagged returns. The coefficient on this variable is 0.10 ( $p < .05$ ), suggesting that when firms have more outside directors in the prime tenure range, pay performance sensitivity is higher. Given that the standard deviation of our variable is 0.25, we find that a one standard deviation increase in the proportion of outsiders in the prime tenure range is associated with 2.5 percent higher pay performance sensitivity, confirming our hypothesis that directors with tenure between 7-18 years are associated with higher pay performance sensitivity.

An alternative method of validating the relationship between director tenure and CEO pay-performance sensitivity is to compute deviations from the middle of the prime period. Table 7 repeats the analysis of Table 6 using the average deviation of director tenure from the mid-point of the prime period (director tenure of 13 years). Results show that the higher the deviation of tenure on the board from the mid-point of the prime period, the lower the sensitivity of pay to performance. In other words, boards with directors clustered closer to this mid-point increase the pay-performance sensitivity.

-----Insert Table 7 about here-----

### **Post Hoc Analysis**

As further exploration of our phenomenon, we examined the loss of firm value because of investor reactions to directors who die in the prime tenure period. Under both CAR (0,1) and CAR (0,2) scenarios for our sample of director deaths, the average loss of firm value is over 1.3 percent (1.38 percent for CAR01, and 1.82 percent for CAR02), when the director who died had tenure between 7 and 18 years. Additionally, the average reaction for directors who die outside of the prime tenure period is significantly different, with the average loss of firm value at .42 and .65 percent for CAR (0,1) and CAR (0,2), respectively. Twenty-eight of the firms in our sample who had directors die in the prime tenure period experienced more than a 5 percent drop in firm value in the two days following the announcement of their deaths--pointing to the tremendous value and importance of these directors in the eyes of shareholders.

## **DISCUSSION**

We introduced this research with a quote that depicts the struggle that companies have with how to refresh their boards while maintaining the expertise that is developed over time. This struggle illustrates that director tenure is an issue that shareholders care about. Therefore, we sought to understand how shareholders value directors over the course of their tenure, and whether any differences in perceived director value are justified. To this end, we asked whether director tenure actually affects governance effectiveness in executive compensation decisions.

Integrating theoretical perspectives of social capital and executive cognition theories applied to the dual roles of the director in monitoring and advising led us to expect a curvilinear relationship between the value shareholders place on a director and director tenure. These same perspectives also led us to expect that director tenure would make a difference in the sensitivity of CEO pay to firm performance. Our findings provide evidence for both of these expectations. Our results confirm that a dilemma exists for boards – while directors’ firm specific and industry knowledge increases over time, their independence and ability to provide fresh advice and monitoring may be ‘neutralized’ as they assimilate and become socially influenced by management. This dilemma, while not resolved, is made

more understandable by looking at the relationship as curvilinear, leading to the concept of a period of tenure when directors are in their prime.

The reality of a peak of effectiveness as an individual director provides a means of reconciling these different theoretical perspectives. Our findings therefore suggest important boundary conditions for when each theory is more or less applicable across director functions. While current literature treats advising and monitoring functions as competing roles for directors, our findings suggest that the effectiveness of each function varies in similar fashion, according to the ideal time period of director tenure. By expanding our framework of director tenure to both roles, and moving beyond agency theory arguments, we are able to provide a nuanced understanding of earlier research on director tenure, demonstrating a curvilinear, inverted U-shaped function. The limited amount of prior research that has addressed individual director tenure has largely posited a linear function; for example, research by Hillman et al. (2011) found that increasing director tenure is positively associated with shareholder discontent with director monitoring. Some of these earlier results may be further strengthened by examining director tenure as a curvilinear rather than a linear function.

Our study also provides contributions to the literature surrounding the value of individual directors and the impact of director tenure on governance effectiveness. First, we extend the literature on executive cognition to the role of the director. With the exception of a few studies (Hambrick et al., 1993; Hillman et al., 2011), much of the executive cognition literature has been focused at the CEO level, and particularly the “seasons of a CEO’s tenure” (Hambrick & Fukutomi, 1991) and the declining effectiveness of the CEO who becomes “stale in the saddle” over time (Miller, 1991). In extending this notion of executive cognition to the director, who is part-time in the organization, and by examining the unique structure of the director’s role with its advising and monitoring components, we demonstrate that the “seasons” of tenure are markedly different for directors than CEOs. In essence, it takes longer for directors to reach peak effectiveness than CEOs, and the duration of that effective peak is longer for directors before they become “stale in the saddle”. However, this is moderated by the involvement of a director. When a director is highly involved through membership on two or more key committees of the

board, the time spent on firm activities increases. However, these same directors become less effective as monitors and “stale in the saddle” as advisors sooner than those that are less involved. This increased involvement essentially shifts the curve of the relationship between tenure and perceived value to the left.

Second, our theorizing and empirical evidence for a curvilinear relationship between the assessed value of a director by shareholders and director tenure conjured up the notion of a period where a director is in his/her prime tenure period. In defining the range, it is important to retain the idea that what we hypothesized, and found, was a curvilinear relationship between shareholder assessment of director value and director tenure. This relationship is a *continuous function* and therefore does *not* imply that there is a binary notion of value such that those directors in this prime tenure period are assessed as valued by shareholders and those directors who are outside that period are assessed as having no value. Neither does it imply that all directors within the prime range of director tenure are equally valued. The nature of a curvilinear function being curtailed at two points around the peak also precludes this interpretation as it remains curvilinear, and thus points along the curve are at different values.

Rather, we have defined two endpoints to our prime tenure period that seem to have some merit – the beginning point at which the investor reaction is significantly negative to a director’s unexpected death and the ending point at the inflection point in our model. There can certainly be other interpretations of where the boundaries of the prime tenure period should reside, for example the longest period of continuous significant negative reactions to director exit, or it could merely remain unbounded as a curvilinear function. Our point in defining a prime range of tenure is not that this is a precise period when directors are valued, such that directors are only valued between 7 and 18 years of tenure, but that this represents a timeframe that includes the peak of the assessed value of directors by shareholders. Consequently, we would expect that our results should be fairly robust to where the boundaries of the prime period are defined, as long as it encompasses this peak and gives a meaningful distribution of directors across all tenures. Indeed, our robustness check for the relationship between the concentration of directors around the peak and CEO pay-performance sensitivity (Table 7), demonstrates a curvilinear relationship around a peak of 13 years (the midpoint of our prime range) without placing a boundary to

create a prime tenure period. Accordingly, we suggest that a relationship exists such that a concentration of directors near the peak of their assessed value by shareholders is actually more effective at aligning shareholder and managerial interests. In sum, shareholder assessments of director value over the course of their tenure match the director's actual effectiveness in representing shareholder interests.

Our findings regarding the prime tenure period for directors are particularly interesting when compared to the literature on the tenure of top executives. CEOs are generally expected to be at the peak of their effectiveness much earlier and for a much shorter duration, from about three to ten years (Hambrick & Fukutomi, 1991). Why would there be such a stark contrast in the timeframe of effectiveness for directors and for CEOs, especially as many directors are themselves simultaneously, or previously, CEOs? The answer lies in the contrasting nature of the roles and the time devoted to the organization. The CEO has his or her entire focus on the company full-time, and has much greater direct influence on the organization through numerous decisions on resource allocation and strategic direction (Hambrick & Quigley, 2014). Yet even so, it takes some time, perhaps two years or more before the CEO's value to the organization is realized. Directors, by contrast, spend only a small fraction of their time on the company, and their influence on the company is more indirect and comes through the advising and monitoring functions. Consequently, as we have outlined in our theory building, the value of director's firm-specific human capital grows much more slowly than would be the case for a full-time executive. Similarly, the literature on executive cognition posits that CEO's may become "stale-in-the-saddle" within a decade (Miller, 1991) as they become committed to a particular paradigm (Hambrick & Fukutomi, 1991), seek less advice (McDonald & Westphal, 2003), tap fewer external sources of information (Aguilar, 1967) and do less information gathering (Tushman et al., 1985). In contrast, directors have a larger focus on the environment through other executive roles or board memberships; therefore, they are exposed to other ideas that can bring fresh insights into the focal company for a longer time. While becoming socially aligned with the CEO remains a danger for long-tenured directors, with declining CEO tenures over the last several decades implying regular turnover at the CEO position, these social ties may be refreshed by CEO turnover rather than director turnover. Accordingly, while our prime

tenure may seem a very long term of service for a director, directors can still provide valuable, fresh input through CEO turnover, and the refreshment of the advising function through outside roles and responsibilities.

### **Practical Implications**

The practical implications of our findings are seen in relation to calls for term limits for directors and the pressure on companies to constantly refresh their boards. Our theory and findings show that investors should, and are, primarily concerned about tenure rather than age. The interest of shareholders in tenure over age, which from our theory makes the most sense, is an interesting contrast to the way U.S. companies actually deal with refreshing their boards. According to the Spencer Stuart Board Index (2015), while only 3 percent of boards in the S&P 500 have term limits (which range between 10 and 20 years), 73 percent of boards have mandatory retirement ages, the most common ages of which are 72 and 75. While there is a significant correlation between age and tenure in our empirical analysis, we control for age, and do not find it to be a significant driver of investor reactions. In sum, the potential negative effects of long tenure are driven by tenure and not age per se, and this may explain why investors are more concerned with term limits than mandatory retirement ages, despite the opposite approach taken by companies. While companies may find it easier and more palatable to refresh the board through age rather than tenure, we contend, and our results demonstrate, that term limits set at an appropriate term and are likely to be more beneficial from the perspective of optimizing governance effectiveness. For example, if someone retired as a CEO at age 65 and joined a board, but the board had a mandatory retirement at age 72, then our research indicates that the director would be forced to leave the board just as they are reaching the prime tenure period, thus losing a lot of the potential effectiveness of that director.

There is a dramatic contrast between the uses of age versus term limits as a means to refresh boards in the U.S. versus other countries. As noted above, in 2015, only 13 out of the U.S. S&P 500 firms (3 percent) had term limits and none of these imposed term limits of less than 10 years (SpencerStuart, 2015). Similarly, there are no regulations from the U.S. government or the stock

exchanges to impose term limits. In contrast, a number of countries have adopted tenure guidelines for directors. For instance, Singapore and Hong Kong have mechanisms in place that make it difficult for companies to have directors serve more than nine years (Katz & McIntosh, 2014). The European Commission recommends that directors serve a maximum of 12 years, whereas the United Kingdom's Corporate Governance Code calls for companies to explain annually its reasons for determining the independence of directors for each director who has served for more than nine years (Katz & McIntosh, 2014). As a result, average director tenure in the UK is less than five years (Katz & McIntosh, 2014) whereas in the US, average director tenure for S&P 500 companies is 8.5 years (SpencerStuart, 2015). With the average CEO tenure in S&P500 companies standing at 7.2 years, a typical board member serves under more than one CEO. All this implies that, at least from our findings, the concept of term limits in itself is not a bad thing, and indeed may be good for effective governance, but the length of the term limit should be beyond those currently imposed in some instances. By imposing term limits of nine or 12 years, many countries may actually be reducing overall governance effectiveness by cutting off directors in the prime of their ability to add value to shareholders.

### **Future Research**

While the exact beginning and end points of the prime range of director tenure are open to refinement, the concept that a concentration of directors in a particular range of tenure can have a measureable impact on governance mechanisms is a new area for investigation -- particularly regarding the value of individual directors and the complementary nature of their roles over time. Future research might refine and test the range with other measures of director capital, including complementary industry expertise or numbers of director interlocks (Carpenter & Westphal, 2001). Similarly, research on the demographic faultlines of board composition and structure (Li & Hambrick, 2005) might go beyond functional demographics to include prime tenure periods as a metric that may impact board decision-making. In this respect, studies may get closer to understanding the link between individual director tenure and a particular director's decisions.

At the individual level, there may be opportunity to develop the “seasons of tenure” concept for directors, given the corresponding forces that influence director effectiveness at different points in their tenure. There is also opportunity to look at the ways that firms react to the departure of valuable directors. For example, signaling theory suggests that firms may react to such departures with signals of intent to replace or substitute such valued directors with other indicators of “good” governance (Certo, 2003; Connelly et al., 2011). Future research might examine this phenomenon in the context of directors in their prime, and their value over and above other governance mechanisms. Finally, in focusing on the individual director, we acknowledge that there may be some group-level, board effects on the individual director that are not accounted for in our model. Group socio-cognitive decision-making includes elements of cohesiveness, conflict and team effects (Forbes & Milliken, 1999) that, while outside of the scope of our study, may have implications for the effects of individual director tenure on governance effectiveness. Future research might investigate these multilevel effects to unearth some of the nuances of the “team” that is the board of directors.

## **CONCLUSION**

This study contributes to the debate surrounding executive cognition and social capital theories as to whether increasing director tenure adds value to shareholders through increased firm-specific skills, experience and resource provisioning, or leads to a loss of value through staleness and/or social indebtedness to management. We posit the relationship between director tenure and shareholder value as a curvilinear relationship and find empirical support of this perspective. Further, we find that this relationship is not only of perceptual value in the minds of shareholders, but in fact provides real value to shareholders by leading to a tighter alignment between managerial and shareholder interests when there is a concentration of directors in their prime, by increasing the sensitivity of CEO compensation to firm performance.

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**Table 1**  
**The Value of Directors over the Course of Tenure in their Monitoring and Advising Roles**

	<b>Executive Cognition Theory</b> (Hambrick et al., 1993) Cognitive Aspects of Directors	<b>Board Social Capital Theory</b> (Kor & Sundaramurthy, 2009) Relational Aspects of Directors
Advising	<p>Early Tenure (positive)</p> <ul style="list-style-type: none"> <li>• Increasing knowledge of firm needs</li> <li>• Development of more firm-specific expertise</li> </ul> <p>Later Tenure (negative)</p> <ul style="list-style-type: none"> <li>• Development of cognitive rigidity and stale in the saddle</li> <li>• Lack of creativity and fresh ideas</li> </ul>	<p>Early Tenure (positive)</p> <ul style="list-style-type: none"> <li>• Increasing resources to the firm</li> <li>• Development of trust with other board members to share information</li> </ul> <p>Later Tenure (negative)</p> <ul style="list-style-type: none"> <li>• Lack of new relationships</li> <li>• Restricted information flow</li> <li>• Less communication and openness to outside information</li> </ul>
Monitoring	<p>Early Tenure (positive)</p> <ul style="list-style-type: none"> <li>• Increasing knowledge of appropriate metrics</li> <li>• Increasing knowledge of firm-specific processes and procedures</li> </ul> <p>Later Tenure (negative)</p> <ul style="list-style-type: none"> <li>• More accepting of explanations for variance in firm performance</li> <li>• Increasing commitment to the status quo</li> </ul>	<p>Early Tenure (positive)</p> <ul style="list-style-type: none"> <li>• Increasing knowledge of best practices</li> <li>• Increasing power and status on the board and across other boards</li> <li>• Development of trust with other board members that allows for challenging discussion</li> </ul> <p>Later Tenure (negative)</p> <ul style="list-style-type: none"> <li>• Loss of objectivity after becoming too close to management</li> <li>• Unwilling to risk relationships by challenging management</li> </ul>

**Table 2. Descriptive Statistics**

A. *Descriptive statistics*

Sudden deaths sample (N = 274)			S&P 1,500 compensation sample (N = 11,807 except for $\Delta$ CEO Pay, for which N = 10,043)		
Variable	mean	sd	Variable	mean	sd
CAR (0,1)	-0.002	0.05	Cash Comp	0.39	0.27
CAR (0,2)	-0.003	0.05	Equity Comp	0.17	0.22
Director tenure	9.69	8.33	$\Delta$ CEO Pay	0.25	0.83
% Outside Directors	0.75	0.12	% Outsiders in prime tenure period	0.42	0.25
Classified	0.55	0.50	$\Delta$ % Outsiders in prime tenure period	0.01	0.16
Dividend yield	0.02	0.05	% Involved directors in prime	0.45	0.31
Financially qualified	0.18	0.39	% Non-involved directors in prime	0.36	0.26
Age	67.3	8.91	$\Delta$ % Involved directors in prime	0.02	0.22
Chairman	0.05	0.22	$\Delta$ % Non-involved directors in prime	-0.01	0.20
Log(assets)	6.38	2.02	% Outside directors	0.72	0.15
Return on equity	-0.01	0.38	Board size	9.13	2.29
Market to book	1.62	1.04	Return on equity	0.09	0.27
Board size	8.67	2.73	Lagged return on equity	0.10	0.25
Institutional ownership	0.23	0.21	Annual stock return	0.08	0.52
Insider ownership	0.01	0.05	Standard deviation of returns	0.03	0.01
Involved directors	0.55	0.50	Lagged stock return	0.10	0.55
CEO in other firm	0.21	0.41	Log (assets)	7.62	1.55
Directors hired by CEO	0.46	0.50	R&D	0.06	0.31
Number of directorships	1.30	1.52	Sales growth	0.10	0.21
			Leverage	0.13	0.13
			Cash	0.15	0.17
			Advertisement	0.01	0.04
			Dividend yield	0.01	0.02
			Capital expenditures	0.05	0.05
			CEO/Chair	0.71	0.43
			CEO tenure	7.07	7.31
			Diversification	2.13	1.26

B. *Cumulative abnormal returns around deaths of outside directors*

Days	N	Mean AR	Positive: Negative	Generalized Sign Z
(0,+1)	274	-0.22%	117:157+	-1.366+
(0,+2)	274	-0.31%	119:155+	-1.753*

C. *Average abnormal returns around deaths of outside directors*

Day	N	Mean AR	Positive: Negative	Generalized Sign Z
-3	274	0.04%	135:139	0.415
-2	274	-0.16%	123:151	-1.036
-1	274	-0.07%	125:149	-0.795
0	274	-0.32%	120:154+	-1.399+
1	274	0.10%	138:136	0.777
2	274	-0.09%	129:145	-0.311
3	274	0.44%	141:133	1.14

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

**Table 3: Correlation Table for Event Study Sample**

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	
(1) CAR (0,1)	1.00																					
(2) CAR (0,2)	.80***	1.00																				
(3) Director tenure	-.04	-.05	1.00																			
(4) Director hired by CEO	-.05	-.04	-.40***	1.00																		
(5) Involved director	.05	.03	-.14*	-.12+	1.00																	
(6) Return on Equity	-.07	-.10	.15*	.10+	-.06	1.00																
(7) Market to book	-.03	.06	-.13*	.07	.06	-.20***	1.00															
(8) Institutional ownership	-.11+	-.14*	-.12*	-.09	.07	-.14*	.03	1.00														
(9) Insider ownership	.02	-.02	.16**	-.02	-.15*	.05	.03	.02	1.00													
(10) Log (Assets)	.08	.03	.18**	-.09	-.18**	.39***	-.25***	.06	-.13*	1.00												
(11) Dividend yield	.20***	.19**	.01	.02	.06	.08	-.17**	-.09	-.05	.17**	1.00											
(12) Board size	.06	.08	.27***	-.08	-.37***	.15*	-.09	-.01	-.05	.61***	.08	1.00										
(13) % Outside Directors	.01	.04	.03	-.10+	-.08	.08	-.03	-.00	.03	.20**	-.02	.08	1.00									
(14) Age	-.16**	-.11+	.42***	-.13*	.03	.06	-.06	.08	.08	-.02	.16**	-.07	1.00									
(15) Chairman	.05	.04	.14*	-.18**	-.06	.03	-.01	.07	.19**	-.04	-.05	-.01	.06	.09	1.00							
(16) Financially qualified	.02	.01	-.21***	.09	.09	-.08	-.07	.05	-.07	-.04	.01	-.10	-.11+	.01	-.02	1.00						
(17) CEO in other frm	.04	-.01	-.02	.05	.01	-.00	.03	-.13*	.07	-.01	.04	-.01	.06	-.12+	-.04	-.11+	1.00					
(18) Number of directorships	-.01	.03	-.06	.06	.17**	.02	.13*	.00	-.01	.08	.01	-.03	.02	-.04	-.02	.04	.22***	1.00				
(19) Classified	-.05	-.03	.01	.07	-.06	.06	-.02	-.02	.02	.10+	.05	.07	.04	-.02	-.02	-.01	.01	.00	1.00			
(20) Committee chair	.11+	.04	.04	-.13*	.43***	.04	-.08	.01	-.13*	.05	.10+	-.11+	-.00	-.03	-.08	.24***	.04	.08	-.07	1.00		
(21) Avg. tenure other directors	.07	.07	-.55***	.55***	-.05	-.02	.07	-.07	-.11+	-.16**	.02	-.16**	-.11+	-.24***	-.12*	.07	-.03	.00	.06	-.11+	1.00	

N = 274, \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

**Table 4: Correlations for Compensation Sample**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	1.00											
(2)	-.42***	1.00										
(3)	-.28***	.14***	1.00									
(4)	-.05***	.09***	-.03**	1.00								
(5)	-.04***	.02*	-.01	.30***	1.00							
(6)	-.07***	.11***	-.03***	.80***	.21***	1.00						
(7)	-.04***	-.01	.00	-.08***	-.04***	.06***	1.00					
(8)	-.03**	.03**	-.01	.20***	.61***	.34***	.01	1.00				
(9)	-.01	.02*	.00	-.03***	-.10***	.03***	.31***	.07***	1.00			
(10)	-.26***	.24***	-.03**	.06***	.01	.15***	.22***	.04***	.08***	1.00		
(11)	-.11***	.11***	-.01	-.00	-.03***	.02*	.30***	-.00	.06***	.10***	1.00	
(12)	-.04***	.01	.02*	.01	.00	.00	-.00	.00	.02**	.02**	.09***	1.00
(13)	-.04***	.02*	-.03**	.01+	.01	.01	.02+	.01	.02*	.01	.07***	.41***
(14)	.04***	-.02**	.07***	-.02*	-.01	-.02**	-.02*	-.01	.00	.00	-.04***	.09***
(15)	.02*	-.09***	-.01	-.02*	.02+	-.00	-.02*	-.00	-.04***	-.11***	-.24***	-.33***
(16)	-.05***	.01	.09***	-.01	-.00	-.01	.00	.00	.03***	-.01	-.06***	.12***
(17)	-.35***	.16***	.04***	.01	-.01	.03**	.10***	-.00	.03***	.14***	.46***	.26***
(18)	-.06***	-.02**	-.00	.02*	-.01	.02*	.01	-.01	-.01	.01	-.06***	-.09***
(19)	.03**	-.08***	.04***	-.08***	-.00	-.08***	.03***	-.00	.01	-.12***	-.16***	.01
(20)	-.00	.11***	-.01	.05***	.01	.04***	.02*	.01	-.00	.04***	.13***	-.15***
(21)	-.05***	-.08***	.03**	-.02*	.00	-.00	-.02*	-.01	-.02**	-.04***	-.31***	-.05***
(22)	-.07***	.02*	.00	-.05***	.00	-.04***	.03***	.00	.01	.02+	.15***	.07***
(23)	.02*	.12***	-.04***	.06***	-.01	.05***	.02+	-.01	.00	.09***	.23***	-.01
(24)	-.00	.00	-.00	-.02*	.00	-.02**	-.06***	-.00	-.00	-.05***	-.09***	.06***
(25)	-.09***	.06***	-.03**	.09***	.04***	.12***	-.05***	.06***	-.15***	.02*	-.01	-.05***
(26)	.16***	-.09***	-.02*	.11***	-.01+	.08***	-.01	-.00	-.01	-.14***	-.12***	.00
(27)	-.05***	.06***	-.01	.00	-.01	.00	.07***	.00	.01	.12***	.28***	.03**

N = 11,807 for all variables except for  $\Delta$  CEO Pay, for which N = 10,043. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

**Table 4 (continued from previous page)**

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
(13)	1.00													
(14)	-.10***	1.00												
(15)	-.23***	-.12***	1.00											
(16)	.08***	-.14***	-.07***	1.00										
(17)	.21***	.07***	-.38***	.04***	1.00									
(18)	-.05***	-.03***	.11***	.03***	.04***	1.00								
(19)	.03**	-.07***	.15***	.10***	-.03**	.05***	1.00							
(20)	-.11***	-.08***	.06***	-.09***	-.09***	-.07***	-.05***	1.00						
(21)	-.07***	.04***	.22***	.08***	-.08***	.26***	.13***	-.40***	1.00					
(22)	.08***	-.01	-.07***	-.02*	.28***	.09***	-.03**	-.07***	.04***	1.00				
(23)	.02+	-.13***	-.02*	-.09***	.04***	-.06***	-.12***	.25***	-.22***	.02*	1.00			
(24)	.08***	-.05***	.04***	.06***	.01	-.04***	.13***	.03***	-.13***	-.00	-.10***	1.00		
(25)	-.03**	-.02**	.29***	-.07***	-.07***	.02+	-.04***	.08***	.00	-.01	.05***	.00	1.00	
(26)	.02+	-.01	.02+	.01	-.08***	-.01	.05***	-.05***	.09***	-.07***	-.05***	.01	.00	1.0
(27)	.01	-.01	-.14***	-.03***	.24***	-.03***	-.12***	.09***	-.21***	.03***	.12***	-.1**	.00	-.05*

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

<b>Id</b>	<b>Variable name</b>	<b>Id</b>	<b>Variable name</b>	<b>Id</b>	<b>Variable name</b>
(1)	Cash Comp	(10)	% Outside directors	(19)	Sales growth
(2)	Equity Comp	(11)	Board size	(20)	Leverage
(3)	Δ CEO Pay	(12)	Return on equity	(21)	Cash
(4)	% Outsiders in prime tenure period	(13)	Lagged return on equity	(22)	Advertisement
(5)	Δ % Outsiders in prime tenure period	(14)	Stock return	(23)	Dividend yield
(6)	% Involved directors in prime	(15)	Standard deviation of returns	(24)	Capital expenditures
(7)	% Non-involved directors in prime	(16)	Lagged stock return	(25)	CEO/Chair
(8)	Δ % Involved directors in prime	(17)	Log (assets)	(26)	CEO tenure
(9)	Δ % Non-involved directors in prime	(18)	R&D	(27)	Diversification

**Table 5: Multivariate Analysis of the Stock Price Reaction to Sudden Outside Director Deaths and Director Tenure**

Variables	(1) Base	(2) With Tenure	(3) With Tenure and Tenure <sup>2</sup>	(4) Involved Directors	(5) Less Involved Directors
Director tenure		-0.00846	-0.349*	-0.574*	-0.0840
Director tenure <sup>2</sup>			0.00951**	0.0190*	0.00475
Director hired by CEO	-1.142	-1.162	-1.233	-1.855+	0.325
Involved director	0.467	0.443	0.401		
Return on equity	-1.837	-1.820	-1.781	-3.575	1.785
Market to book	0.639	0.634	0.588	1.046	-0.470
Institutional ownership	-4.110*	-4.150*	-4.448*	-3.511	-3.956+
Insider ownership	-0.374	-0.263	-0.358	-1.004	-8.995
Log(assets)	-0.00750	-0.00821	0.0304	-0.124	0.450
Dividend yield	20.35	20.34	18.97	23.62	2.553
Board size	0.217	0.219	0.156	0.0495	0.0284
% Outside Directors	2.147	2.121	2.510	7.245	-2.168
Age	-0.0373	-0.0349	-0.0199	-0.0630	-0.0636
Chairman	1.732	1.743	1.200	0.326	2.631+
Financially qualified	0.0562	0.0256	-0.335	-1.341	0.375
CEO in other firm	-0.852	-0.855	-0.643	-0.838	-1.465
Number of directorships	0.0694	0.0686	0.0544	0.175	-0.314
Classified	-0.400	-0.391	-0.495	-0.801	-0.137
Committee chair	0.684	0.700	0.820	0.322	1.164
Avg. tenure other directors	1.281	1.230	0.543	1.383	0.985
Constant	-2.333	-2.358	-2.296	0.995	7.086
Observations	274	274	274	150	124
R <sup>2</sup>	0.193	0.193	0.217	0.342	0.360
F-test	1.746	1.860	1.842	23.85	2.030
Prob>F	0.00575	0.0105	0.0023	<0.001	0.0037
Inflection			18.36	15.11	8.851

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.1

**Table 6. Multivariate Analysis of Executive Compensation and Outside Directors In Prime Tenure Period**

Variables	Base Model			Hypothesis H2			Hypothesis H3b		
	(1) Δ CEO Pay	(2) Cash Comp	(3) Equity Comp	(4) Δ CEO Pay	(5) Cash Comp	(6) Equity Comp	(7) Δ CEO Pay	(8) Cash Comp	(9) Equity Comp
% Outsiders in prime tenure period				0.02	-0.06***	0.09***			
% Outsiders in prime x return <sub>t-1</sub>				0.11**					
Δ % Outsiders in prime				0.02					
% Involved directors in prime							0.02	-0.04***	0.06***
% Non-involved directors in prime							-0.08***	0.02	-0.04**
% Involved directors in prime x return <sub>t-1</sub>							0.07+		
% Less-involved directors in prime x return <sub>t-1</sub>							-0.00		
Δ % Involved directors in prime							-0.01		
Δ % Less-involved directors in prime							0.06**		
Log (assets)	0.00	-0.12***	0.05***	0.00	-0.12***	0.04***	0.00	-0.12***	0.04***
Return on equity		0.02*	-0.02		0.02+	-0.02		0.02+	-0.02
Return on equity <sub>t-1</sub>		0.00	0.01		0.00	0.01		0.00	0.01
Stock return		0.05***	-0.02***		0.05***	-0.02***		0.05***	-0.02***
Return <sub>t-1</sub>	0.10***	-0.00	0.00	0.06*	-0.00	0.00	0.07**	-0.00	0.00
Standard deviation of returns	-3.36***	-1.44***	-0.78**	-3.34***	-1.43***	-0.79**	-3.35***	-1.43***	-0.80**
R&D	-0.03**	0.00	-0.01	-0.03**	0.00	-0.01	-0.03**	0.00	-0.01
Diversification	-0.00	0.01	0.01	0.00	0.01	0.01+	0.00	0.01	0.01+
Capital expenditures	-0.03	-0.03	0.01	-0.02	-0.05	0.04	-0.03	-0.04	0.03
Dividend yield	-0.21	-0.40**	0.72***	-0.21	-0.38**	0.70***	-0.24	-0.39**	0.70***
Leverage	-0.01	-0.15***	0.15***	-0.01	-0.14**	0.13**	-0.01	-0.14**	0.13**
Sales growth	-0.07**	0.11***	-0.14***	-0.07**	0.10***	-0.12***	-0.06**	0.10***	-0.12***
Cash	-0.07*	-0.06+	-0.01	-0.07*	-0.07+	-0.00	-0.07*	-0.07+	-0.01
Advertisement	-0.09	-0.30	0.22	-0.08	-0.30	0.22	-0.08	-0.30	0.21
Board size	0.00	-0.00	0.00	0.00	-0.00	0.00	0.00	-0.00	0.00
% Outside directors	0.16***	-0.39***	0.39***	0.16***	-0.38***	0.38***	0.18***	-0.38***	0.38***
CEO/Chair	0.02+	-0.06***	0.03***	0.02	-0.06***	0.02***	0.02+	-0.06***	0.02***
CEO tenure	0.00***	0.00***	-0.00**	0.00***	0.00***	-0.00***	0.00***	0.00***	-0.00***
Constant	-0.09*	1.63***	-0.50***	-0.09**	1.64***	-0.51***	-0.10**	1.63***	-0.49***
Observations	9,793	11,489	11,489	9,793	11,489	11,489	9,793	11,489	11,489
R <sup>2</sup>	0.024	0.122	0.093	0.025	0.125	0.102	0.025	0.124	0.101
F test	80.73	41.73	29.88	451.2	39.97	29.81	177.3	37.73	29.13
Prob>F	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10

**Table 7: Robustness Test of Curvilinear Relationship between Director Tenure and Pay-performance Sensitivity**

Variables	Deviations from director tenure = 13		
	(1) Δ CEO Pay	(2) Cash Comp	(3) Equity Comp
Mean abs(tenure deviation) x Return <sub>t-1</sub>	-.02***		
Mean abs(tenure deviation)	.00	.01***	-.01***
Log (assets)	.00	-.11***	.04***
Return on equity		.02*	-.02
Return on equity <sub>t-1</sub>		.00	.01
Stock return		.04***	-.02***
Return <sub>t-1</sub>	.25***	.00	.00
Standard deviation of returns	-3.34***	-1.38***	-.86***
R&D	-.03**	.00	-.01
Diversification	.00	.00	.01
Capital expenditures	-.02	-.04	.00
Dividend yield	-.21	-.38*	.70***
Leverage	.00	-.15***	.13**
Sales growth	-.06**	.10***	-.09***
Cash	-.07*	-.07*	.01
Advertisement	-.08	-.30	.23
Board size	.00	.00	.00
% Outside directors	.16***	-.39***	.39***
CEO/Chair	.02+	-.06***	.02***
CEO tenure	.00***	.00***	.00***
Constant	-.08*	1.58***	-.40***
Observations	10,036	11,798	11,798
R <sup>2</sup>	.05	.12	.10
F test	78.11	53.59	33.43
Prob>F	<0.01	<0.01	<0.01

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.10