CEO POLITICAL DONATIONS AND CORPORATE GOVERNANCE

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ABSTRACT

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Doctoral Advisory Committee Chair: Dr. David M. Reeb

This dissertation studies the association between CEO ability and various aspects of corporate governance, specifically firm performance, executive compensation contracts and firm opacity. In the first essay of this dissertation (Chapter 2), I examine the effect of CEO ability on firm performance. My analysis uses a unique instrument of CEO ability that is based on a CEO's commitment decisions in US presidential elections. Intuitively, CEO ability is measured based on how well they forecast US presidential elections, one year prior to the race, relative to the candidates expected chances of winning. I find that this instrument of CEO ability is positively related to firm performance. Interestingly, I find that high ability CEOs have a greater impact on Tobin's q in small firms than in large firms. Yet, high ability CEOs have the greatest dollar impact on shareholder value in large firms. In addition, CEO ability appears to be quite important to outside shareholders in high growth firms. Lastly, I find that CEO ability is positively associated to merger announcement returns, which implies that higher ability

CEOs engage in value-creating merger activities. The results are robust to industry and time controls, as well as various tests that consider an alternative explanation focusing on political influence.

The second essay (Chapter 3) explores the effect of CEO ability on the structure and level of compensation contracts. I find that CEO ability is positively associated with total compensation level. CEOs in the highest quartile of the ability proxy earn almost $2.2 million more than CEOs in the lowest quartile of CEO ability. Further analysis indicates that CEO compensation structure differs markedly between the highest and lowest ability CEOs. Specifically, I find that the high ability CEOs receive 2.1% more stock based incentives than low ability CEOs. Thus, the low ability CEOs receive more of their pay in the form of cash compensation than do high ability CEOs. Further tests indicate that high ability CEOs have significantly greater variance in their pay than low ability CEOs, specifically due to the higher variance in stock based incentives. Overall, I provide evidence that CEO pay is associated with CEO ability and that CEO ability appears a key issue in designing CEO compensation contracts.

In the third essay (Chapter 4), I examine whether CEO ability is related to corporate opacity. I argue that high-ability CEOs may seek to create greater transparency to convey their ability to the market. Simultaneously, low-ability CEOs may be signal-jamming the market's inferences about their talent by limiting the available information. An alternative aspect is that the results are driven by low-ability CEOs who seek to work in opaque firms. My analysis indicates that firms with high-ability CEOs are significantly less opaque than firms with low-ability CEOs. These findings are also robust to using a

propensity score matched sample. Finally, I show that the deteriorating impact of corporate opacity on firm performance decreases when the decision belongs to a high-ability CEO, suggesting that opacity is not necessarily value-destructing decision for corporations. Overall, my analysis suggests that CEO ability is an important factor for corporate opacity.

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I am especially indebted to Dr. David M. Reeb, for his invaluable guidance and support throughout this work, which shaped the direction of my research and my academic life. I am thankful to him for sharing his experience with me at every step of my PhD study, and I owe him more than this PhD degree.

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DEDICATION

To my parents, Ali D. Kaş and Süheyla H. Kaş, for raising me to who I am and giving me their love, encouragement and support throughout my life.

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To my grandmother, who dedicated her life to her grandchildren. I am thankful to her for putting up with the years we had to spend apart due to my PhD education.

To my grandfather. I hope he is proud of what I have become.

To the life I couldn't have lived because of this degree, and to the life I have lived thanks to this degree.

Finally, to my beloved husband, Mehmet Uygur, for chasing my dream and following me to the other side of the world. I couldn’t have done this without your love and support. I love you always.

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CHAPTER 1

INTRODUCTION

Researchers, pundits and the media have long been intrigued by the possible connection between politics and corporations. The presidential election campaign contributions may be considered as an easily traceable component of such connection. Political Action Committee (PAC) contributions, the contributions coming directly from the company to a presidential candidate, take a greater part in literature partly due to the fact that such contributions have greater dollar amounts or the link that they display between the corporation and the presidential candidate (e.g. Aggarwal et al., 2008; Kroszner and Stratmann, 1998; Fisher, 1994). Interestingly, there is a significant amount of personal contributions to the presidential candidates from the Chief Executive Officers (CEO) of public companies. The examination of the CEO contributions, regarding the decision of contributing to which specific candidate, might reveal some characteristics of those CEOs. It may be argued that CEOs are using their decision-making abilities while making a contribution to a particular candidate, and therefore conveying valuable information. If such donations are examined, it may lead us to create an instrument for CEO ability, which will improve the assessment of the CEOs' impact on their companies.

Existing empirical studies in financial economics still have room for improvement in identifying the effect of CEO ability on their companies. This is mainly due to the fact that creating an instrument to quantify the CEO ability is very challenging. Researchers

have tried using various observable characteristics of CEOs as a proxy for their ability; such as MBA degree of the CEO (Bertrand and Schoar, 2003), tenure (Murphy, 1986; Rose and Shepard, 1997), reputation and age (Milbourn, 2003). However, none of these proxies can be classified as actual actions of CEOs so they may fail to capture the set of abilities a CEO needs to manage a firm. On the other hand, firm performance, which is more likely to be an outcome of ability, has been widely used as a proxy for ability itself. While Rajgopal et al. (2006) utilizes firm performance to evaluate CEO ability, Bertrand and Schoar (2003), as one of the most powerful approaches so far, track the CEOs switching firms and measure performances of those firms to evaluate CEOs' ability. Besides an endogeneity problem, using performance as an ability proxy prevents the assessment of the impact of ability on firm performance. Therefore, literature still lacks an adequate way of measuring CEO ability in order to capture its possible effect on corporations.

In this dissertation, I introduce a new instrument for CEO ability assessment. As a proxy for ability, I examine CEO's decision making ability in a different context, namely presidential campaign contributions. Before any decision, a CEO should foresee the possible outcomes, evaluate the results for the company and make decisions based on the assessment of his/her own forecasts. Therefore, I believe that such set of abilities is essential for a CEO while managing a firm. I evaluate decision making ability by examining the CEO's personal contributions to presidential election campaigns and build a "commitment index" based on the accuracy of the CEO's decision towards making commitment to a particular candidate. Based on this CEO ability instrument, a CEO who

makes a correct decision and contributes to a candidate whose actual performance fulfills or exceeds the expected level, receives a higher index score; on the other hand a CEO who makes a wrong decision and contributes to a candidate whose performance stays below the expected level receives a lower index score. The fact that the Commitment Index considers the candidate's primary election performance, public's expectations on the candidate's performance as well as the overall evaluation of all such information by the CEO makes the index more comprehensive.

My proxy is different from the others in literature primarily because it is truly exogenous. The fact that there is a legal limit of $2,400[1] for personal contributions for a presidential candidate suggests that CEOs, with a mean compensation of $6.3 million in my sample, are unlikely to be constrained by income as making this commitment. Besides, measuring ability by an evaluation of a real action, not an observable characteristic like age or tenure, of a CEO that requires foreseeing future outcomes, evaluating results and decision making provides plausibility to this proxy. Thinking about how difficult it is to measure CEO ability, this proxy reveals itself to be an important step towards a more accurate ability measure.

Using this instrument as the CEO ability proxy, I explore three issues in this dissertation, regarding the impact of CEO ability on corporate governance. First, I examine how CEO ability affects firm performance. Second, I explore if CEO ability has an impact on CEO pay contracts. Lastly, I evaluate the association between CEO ability and corporate opacity.

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[1] For the Presidential Election in 2008, the individual campaign contribution limit set by the Federal Election Commission was $2,400 per candidate.

In Chapter 2 of this dissertation, I examine the effect of CEO ability on firm performance. I recognize that there have been many attempts to explain the factors affecting firm performance, yet these attempts were mostly limited to the firm and industry specific factors. So far, the association between CEO ability and firm performance has been very inferential. Jensen and Murphy (1990) argue that restrictions on pay-performance sensitivities limit the talented CEOs' compensation, and therefore their performance. Hubbard and Palia (1995) suggest that deregulation leads to an increase in pay-performance sensitivities for talented CEOs as well as a more competitive environment for better performance. Aside from the evaluations via pay-performance sensitivities, the ability matching model assessments (Rosen, 1982; Rose and Shepard, 1997) have pointed out that more talented CEOs should be assigned to firms that better match their ability level in order to guarantee better performance and efficiency. However, there is no clear evidence yet that CEO ability has a direct impact on firm performance.

I empirically test the relation between CEO ability and firm performance, by using the proxy mentioned above. The univariate results indicate that CEO ability is associated with higher levels of firm performance. This result suggests that more skilled CEOs provide better performance to their firms. An ability matching model evaluation reveals that high ability CEOs have a greater impact on Tobin's q in smaller firms, but provide larger incremental dollar effect on firm value in larger firms. This finding suggests that CEO pay-performance evaluations should not be limited to Tobin's q, but should also consider the dollar impact on shareholder value. In addition, in high-growth

firms, high ability CEOs provide even better firm performance, which implies that CEO ability matters more in firms requiring substantive managerial choices.

I further evaluate the impact of CEO ability on firm performance in a multivariate framework. The results confirm the findings above and suggest that CEO ability matters to shareholders since it is associated with higher levels of firm performance. Various alternative specifications, such as industry and year effects, political connection attempts and sample selection biases are also considered, and the findings were robust.

Finally, I analyze the effect of CEO ability on the mergers and acquisitions activities of their companies. Literature provides evidence that mergers may result in value destruction, due to various managerial acts, such as hubris (Roll, 1986), managerial entrenchment (Morck et al., 1988; Jensen, 1986) or wrong decision making of the bidders (Morck et al., 1990). I examine the effect of CEO ability on the firm value around merger announcements by analyzing the market reaction to such announcements. The univariate results suggest that the acquirer firms with high-ability CEOs outperform those with low-ability CEOs, based on the cumulative abnormal returns around the announcements. This finding is supported by the multivariate results, after controlling for the merger characteristics commonly used in the literature, such as cash or stock acquisitions, accounting method utilized, the type of target and the friendliness of the merger activity.

In Chapter 3, I explore the association between CEO ability and CEO pay contracts, and try to offer an explanation to the wide-spread argument that CEOs are highly paid. The literature so far provides two major strands of explanations, regarding

this argument. One side of the literature evaluates the "managerial entrenchment" argument, which suggests that CEOs have power over the board members and therefore high levels of pay is associated with managerial entrenchment (Bebchuk and Fried, 2004; Bebchuk et al., 2002). They argue that executive compensation contracts are set by the rent-extracting executives with the power to influence their own pay, rather than the board of directors which is supposed to do so in a way to assure the shareholder value maximization. The alternative explanation for high CEO compensation suggests that compensation contracts are in fact related to CEO ability. This "ability" argument explicitly suggests that the highly paid CEOs are the more talented ones. While Rosen (1982) argues that compensation for top level management is determined based on their talent, Rose and Shepard (1997) suggest that compensation packages are designed to attract and retain appropriate managerial talent and they provide evidence that high-ability CEOs are rewarded more.

I test the association between the CEO ability proxy and the executive compensation. Specifically, I evaluate the compensation contracts at three levels: Cash compensation, stock based incentives and total direct compensation. In addition to the compensation levels, the ability hypothesis implies that there may be some differences in the structure of the compensation contracts of the CEOs. High-ability CEOs may be more willing to have their compensation contracts tied to performance, which in turn may be used by the firms to attract talented CEOs. In order to evaluate this possibility and further test the ability hypothesis, I examine the compensation contract structures.

I find that CEO ability is associated with higher compensation levels, specifically with higher cash compensation and higher stock based incentives. This result suggests that the compensation for CEOs is determined based on their talent. Moreover, there are significant differences in the CEO compensation structure between the high- and low-ability CEOs. Specifically, high-ability CEOs receive more of their compensation in stock-based incentives and less in the form of cash based compensation. Taken together with the argument that high-ability CEOs provide better firm performance, these results imply that the firms are aware of those CEOs' talent to improve firm performance and they use their compensation contracts to attract talented CEOs. Having more stock based components in their compensation contracts will give those CEOs the opportunity to gain from their firm's performance and increase their motivation to improve performance even further. This may ultimately turn into something even more beneficial for the company and the CEO. Further analysis provides evidence that CEO ability is associated with greater variance in total compensation, specifically due to the higher variance in stock based incentives. This suggests that high-ability CEOs are in fact more willing to accept pay for performance, which in turn increases the variance in their pay contracts.

In Chapter 4, I examine the association between CEO ability and corporate opacity. Although public firms are required to provide extensive disclosure, there still exists a substantial variation in the additional information provided to capital markets, about the informativeness of the disclosures and the details provided (Lang and Lundholm, 1996).

Literature extensively evaluates the reasons of such variations in voluntary disclosure. Healy and Palepu (2001), for example, consider the reduction of information asymmetries and mitigation of agency costs as the main consequences of having a less opaque firm. Information asymmetry problems may lead capital markets to possibly undervalue good firms (Akerlof, 1970). A high level of disclosed information allows precise valuations and induces investors to hold the company's stock. Such an increase in liquidity also increases the demand; therefore, raises the stock price, which in turn decreases the cost of capital (Diamond and Verrecchia, 1991; Healy and Palepu, 2001; Easley and O'Hara, 2004). Prior literature also associates corporate opacity with the agency problem between the controlling and outside shareholders. Faccio et al. (2001), for instance, suggest that high opacity levels make it difficult for outside shareholders to recognize expropriation. Leuz et al. (2003) argue that controlling shareholders may increase firm opacity to make their private benefit of control possible. In addition, Anderson et al. (2009) reports that corporate opacity can lead to severe conflicts of interests between founding family members and minority shareholders.

I argue that the ability level of the Chief Executive Officer (CEO) might also be an important factor for corporate opacity. The asymmetric information between the CEO and the outside shareholders may also include the ability level of the CEO. In other words, investors in the market may be unable to fully observe the CEO's ability level, while the CEO is aware of his abilities. Then, the CEO would also be aware that his abilities will be assessed by the market based on the firm characteristics, such as firm performance, success of his investment and/or R&D decisions (Holmstrom, 1999).

In Chapter 2, I provide evidence that those CEOs who can make more accurate forecasts, and therefore, better decision for their firms (i.e. high-ability CEOs), provide better firm performance for their shareholders. A high-ability CEO may also choose to disclose more information, therefore create lower corporate opacity, in order to signal the market about his superior skills, whereas a low-ability CEO may not choose to do such signaling. It would be costly for a less-skilled CEO to provide more information available to the market, since the public will be able to better evaluate his decisions, and this may reveal his true ability level. Low-ability CEOs may signal-jam the market's inferences about their ability levels by not providing full information and misleading the market, so that they hide behind the shield of high corporate opacity (Narayanan, 1985; Fudenberg and Tirole, 1986; Stein, 1989; Holmstrom, 1999). This argument is similar to Holmstrom's (1999) suggestion that an undervalued manager would be willing to take more risky projects in order to prove himself, implying that risk-taking in itself would be a signal of talent, whereas others will jam the signals by not taking the investments. Therefore, I argue that high-ability CEOs promote corporate transparency. If so, I expect to observe a negative relation between the CEO ability and the corporate opacity.

An alternative explanation for any association between CEO ability and corporate opacity may also be about the CEOs' preferences of the companies they want to work for. A low-ability CEO may seek to work in a high-opaque firm, in order to make it difficult for outsiders to evaluate his performance. The above two arguments are both plausible, and it is very difficult to distinguish between them. However, they both imply the same directional relation between CEO ability and corporate opacity and suggest that CEO

ability is associated with the financial transparency. Thus, I hypothesize that there is a negative association between CEO ability and corporate opacity.

Finally, I examine the value impact of opacity with the presence of high- or low-ability CEOs. In other words, I evaluate the impact of CEO ability on the relation between opacity and firm performance. In addition to the benefits of corporate transparency, the literature provides evidence on the negative relation between corporate opacity and firm performance. If high-ability CEOs have more accurate forecasts and make superior decisions for their shareholders, as suggested in Chapter 2, the increased opacity may not necessarily be a value decreasing action. Accordingly, I expect the effect of opacity on firm performance to be positive when that decision comes from a high-ability CEO.

I also consider a possible endogeneity problem, which may be driving my results, due to the complexity of the firms. Rosen (1982) and Rose and Shepard (1997) argue that high-ability CEOs are matched with more complex firms. Bushman et al., (2004) also suggests that organizational complexity may impact the corporate transparency decisions. Therefore, any finding that supports my arguments may be driven by firm complexity, rather than CEO ability. As an attempt to overcome this concern, I create a propensity score matched sample, in which I have firms with high- and low-ability CEOs matched on their predicted propensities to be a complex firm. I expect the firms with high-ability CEOs to have lower opacity levels than those with low-ability CEOs.

I use the CEO ability proxy introduced in Chapter 2, which uses the CEOs' personal contributions to presidential elections and captures the decision making abilities

of those CEOs. Therefore, my sample consists of firms with contributing CEOs from 1996 to 2008. I develop an opacity index to evaluate the relative opaqueness of the firms in my sample (Anderson et al., 2009). I find that CEO ability is negatively and significantly associated to opacity. My result is consistent with the notion that low-ability CEOs try to signal-jam the inferences of the market about their talent by creating high-opaque firms, as well as the idea that low-ability CEOs seek to work for high-opaque firms. It is very difficult, if not possible, to separate out their effects. This finding is supported by the complexity-matched sample results. Lastly, the analysis on the value impact of the opacity decisions reveals that if the decision to remain opaque is coming from a high-ability CEO, it is not a value decreasing action. The results suggest that a high-ability CEO may still be able to provide better firm performance, even when the firm increases the opacity level.

The remainder of this dissertation is organized as follows. Chapter 2 focuses on how to develop the ability proxy and the analysis of the effect of CEO ability on firm performance. Chapter 3 evaluates the link between CEO ability and compensation contracts. Chapter 4 examines the association between CEO ability and corporate opacity. Chapter 5 concludes the dissertation.

CHAPTER 2

DO HIGH-ABILITY CEOS MATTER TO SHAREHOLDERS? EVIDENCE USING A UNIQUE INSTRUMENT FOR CEO ABILITY

2.1 Introduction

The connection between politics and corporations has always been very attractive to researchers, media and the public. One of the easily traceable components of such connection is the contributions to presidential election campaigns. Therefore, presidential donations have been referred many times in the corporate finance and political science literature (for example, Aggarwal et al., 2009; Kroszner and Stratmann, 1998; Fisher, 1994); especially the contributions coming directly from the company to a presidential candidate, i.e. Political Action Committee (PAC) contributions. This might be due to the fact that such contributions have greater dollar amounts, or the direct link that it displays between the corporation and the presidential candidate, or the interest of the shareholders on such decisions. Interestingly, there is a significant amount of personal contributions to the presidential candidates from the Chief Executive Officers (CEO) of public companies. This is a topic which is not elaborated thoroughly yet in the literature, and it provides very interesting insights about the contributing CEOs.

CEOs' personal contributions might present different implications. First of all, as Faccio (2006) suggests, CEOs' personal contributions to presidential candidates may have no impact on the company's performance. Therefore, it might imply that those

CEOs are spending time and energy on activities other than those which will benefit their companies. This argument may be extended to the implications presented by Yermack (2006), regarding the CEOs' personal use of company aircrafts or their golfing habits. Under such evaluation of personal contributions, one would expect to have zero association between a contributing CEO and firm performance, if not a negative association. I present evidence that the firms with a contributing CEO are performing better than those with a CEO who did not contribute at all.

This finding takes the argument one step forward and raises another question. It is also plausible to argue that the contributing CEOs are in fact presenting some other information through those contributions. Going beyond the decision of making a contribution and examining the decision of contributing to which specific candidate might reveal some characteristics of those CEOs. It can be argued that CEOs are using their decision-making abilities while making a contribution to a particular candidate, and therefore conveying valuable information. If such donations are examined, it may lead us to create an instrument for CEO ability, which will advance the assessment of the impact of CEOs on their companies. Especially for the shareholders, CEO's ability to manage the firm has always been one of the main concerns, since firm performance may be considered as a result of CEO's ability. Yet, existing empirical studies in financial economics still have room for improvement in identifying the effect of CEO ability on firm performance.

Although there have been many attempts to explain the factors affecting firm performance, these attempts were mostly limited to the firm and industry specific factors.

So far, the association between CEO ability and firm performance has been very inferential. Jensen and Murphy (1990) argue that restrictions on pay-performance sensitivities limit the talented CEOs' compensation, and therefore their performance. Hubbard and Palia (1995) suggest that deregulation leads to an increase in pay-performance sensitivities for talented CEOs as well as a more competitive environment for better performance. Aside from the evaluations via pay-performance sensitivities, the ability matching model assessments (Rosen, 1982; Rose and Shepard, 1997) have pointed out that more talented CEOs should be assigned to firms that better match their ability level in order to guarantee better performance and efficiency. However, there is no clear evidence yet that CEO ability has a direct impact on firm performance.

Creating an instrument to quantify the CEO ability is very challenging and the literature is still far from offering an adequate measure of ability. Researchers have tried using various observable characteristics of CEOs as a proxy for their ability; such as MBA degree of the CEO (Bertrand and Schoar, 2003), tenure (Murphy, 1986; Rose and Shepard, 1997), reputation and age (Milbourn, 2003)[2]. However, none of these proxies can be classified as actual actions of CEOs so they may fail to capture the set of abilities a CEO needs to manage a firm. On the other hand, firm performance, which is more likely to be an outcome of ability, has been widely used as a proxy for ability itself. While Rajgopal et al. (2006) utilizes firm performance to evaluate CEO ability, Bertrand and Schoar (2003), as one of the most powerful approaches so far, track the CEOs

[2] In addition, Kaplan et al. (2008) uses a wide range of characteristics gathered via personal interviews with CEOs, and Frydman and Saks (2010) provides a good review for the CEO characteristics that served for this purpose in areas other than corporate finance.

switching firms and measure performances of those firms to evaluate CEOs' ability. Besides an endogeneity problem, using performance as an ability proxy prevents the assessment of the impact of ability on firm performance. Therefore, literature fails to offer a satisfactory way of measuring CEO ability and its possible effect on firm performance.

This paper introduces a new instrument for CEO ability assessment. As a proxy for ability, I examine CEO's decision making ability on a different context, namely presidential campaign contributions. Before any decision, a CEO should foresee the possible outcomes, evaluate the results for the company and make decisions based on the assessment of his/her own forecasts. Therefore, I believe that such set of abilities is essential for a CEO while managing a firm. I evaluate decision making ability by examining the CEO's personal contributions to presidential election campaigns and build a "commitment index" based on how accurate the CEO's decision towards making commitment to a particular candidate was. The "Adjusted Commitment Index" is defined as actual presidential performance minus the expected presidential performance.

The assessment of CEOs' campaign contributions provides a profound comprehension of their commitment to presidential candidates. Brown et al. (1980a) argue that presidential contributors are members of an elite group who are also highly involved in other political activities, such as campaigning, playing a moderator role between citizens and government, voting and attempting to persuade others. The discussion in the above mentioned study about the motives of these contributors to justify their commitment to presidential candidates suggests that contributors try to change the

outcome of the election, help the candidate win the race, and provide stronger grounds for their personal networks. Therefore, I believe that a CEO's contribution itself is only a small part of all other activities CEOs do to strengthen their commitment, thus it requires an extensive use of decision making ability. My ability proxy tries to capture this decision making ability utilized by CEOs for making presidential contributions.

Based on this CEO ability instrument, the Adjusted Commitment Index (see further text for details), a CEO who makes a correct decision and contributes to a candidate whose actual performance fulfills or exceeds the expected level, gets a higher index score; on the other hand a CEO who makes a wrong decision and contributes to a candidate whose performance stays below the expected level has a lower index score. The fact that the Commitment Index considers the candidate's primary election performance, public's expectations on the candidate's performance as well as the overall evaluation of all such information by the CEO makes the index more comprehensive on the decision making ability of CEOs.

My proxy is different from the others in literature primarily because it is truly exogenous. The fact that there is a legal limit of $2,400[3] for personal contributions for a presidential candidate suggests that CEOs, with a mean compensation of $6.3 million in my sample, are unlikely to be constrained by income as making this commitment. Besides, measuring ability by an evaluation of a real action, not an observable characteristic like age or tenure, of a CEO that requires foreseeing future outcomes, evaluating results and decision making provides plausibility to this proxy. Thinking about

[3] For the Presidential Election in 2008, the individual campaign contribution limit set by the Federal Election Commission was $2,400 per candidate.

how difficult it is to measure CEO ability, this proxy reveals itself to be an important step towards a more accurate ability measure.

The univariate results indicate that CEO ability is associated with higher levels of firm performance. This result suggests that more skilled CEOs provide better performance to their firms. An ability matching model evaluation reveals that high ability CEOs have a greater impact on Tobin's q in smaller firms, but provide larger incremental dollar effect on firm value in larger firms. This finding suggests that CEO pay-performance evaluations should not be limited to Tobin's q, but should also consider the dollar impact on shareholder value. In addition, in high-growth firms, high ability CEOs provide even better firm performance, which implies that CEO ability matters more in firms requiring substantive managerial choices.

I further evaluate the impact of CEO ability on firm performance on a multivariate framework. The results confirm the findings above and suggest that CEO ability matters to shareholders since it is associated with higher levels of firm performance. Various alternative specifications, such as industry and year effects, political connection attempts and sample selection biases are also considered, and the findings were robust.

Finally, I analyze the effect of CEO ability on the mergers and acquisitions activities of their companies. Literature provides evidence that mergers may result in value destruction, due to various managerial acts, such as hubris (Roll, 1986), managerial entrenchment (Morck et al., 1988; Jensen, 1986) or wrong decision making of the bidders (Morck et al., 1990). I examine the effect of CEO ability on the firm value around

merger announcements by analyzing the market reaction to such announcements. The univariate results suggest that the acquirer firms with high-ability CEOs outperform those with low-ability CEOs, regarding the cumulative abnormal returns around the announcements. This finding is supported by the multivariate results, after controlling for the merger characteristics commonly used in the literature, such as cash or stock acquisitions, accounting method utilized, having a public or a private target and attitude of the merger activity[4].

My research contributes to the literature in the following important ways. First, it introduces a new proxy for CEO ability which is constructed to evaluate a CEO's decision making ability. Second, it extends the literature on evaluating and providing direct evidence of the impact of CEO ability on firm performance. Lastly, my work becomes one of the first attempts to analyze the connection between CEO ability and market's reaction to merger announcements.

The remainder of the chapter is organized as follows: Section 2.2 describes the data, primary variables, control variables and also provides descriptive statistics. Section 2.3 displays the analysis of the association between CEO's decision to make contribution and firm performance. Section 2.4 explains the Commitment Index. Additional descriptive and univariate statistics, along with the ability matching model evaluations are presented in Section 2.5. Empirical tests and results on the firm performance and merger CARs are explained in Section 2.6 and Section 2.7, respectively. Section 2.8 considers alternative specifications for robustness, and Section 2.9 concludes the chapter.

[4] For an extended literature survey regarding the merger characteristics potentially affecting the acquirer firms' returns, please refer to Louis (2005), page 82.

2.2 Data

I construct my sample basically by two major steps. First, I identify the CEOs of public companies who made individual contributions to presidential candidates in 2008 and 2000 presidential elections. Afterward, I collect the financial information of the companies of those contributing CEOs.

The data for individual contributions to presidential candidates comes from the Federal Election Committee's (FEC) website, where they provide public disclosure of campaign finance information[5]. I start the sample construction by getting the individual contribution data for the 2008 and 2000 presidential elections. FEC provides campaign finance information such as the full name, employer and occupation of the contributor, to whom he/she contributed to, contribution amount and date. I also get a list of all CEOs listed in the Standard and Poor's COMPUSTAT database over the period of 2005 – 2007 and 1997-1999[6]. Then I start matching the names of the CEOs with contributor names. For a CEO to be included in my sample, the contributor first and last name should match with the CEO, the company name provided as the employer information in the contribution data should also match with the CEO's company name. Furthermore, I searched for "CEO", "President", "Executive" or various versions of these terms within the information provided as contributor occupation in the contribution data. By using the contribution receipt date information, I specify those CEOs made contributions before the Iowa Primary in 2008 and 2000 presidential election, as explained in previous section.

[5] FEC provides disclosure for individual contributions larger than $200.

[6] The reason why I get the data till 2007 for 2008 presidential election and till 1999 for 2000 presidential election is that the Iowa Primary was on January 3rd, 2008 and January 24th, 2000, respectively, and I am interested only in the CEO donations made before these dates.

This creates the list of CEOs made individual contributions to presidential candidates in 2008 presidential election[7] and that in 2000 presidential election[8] before the Iowa Primary, along with the CEOs' contribution information. The list consists of 429 unique CEOs for 2008 presidential election and 428 CEOs for 2000 presidential election.

I obtain the company and industry data from COMPUSTAT database and CRSP database, executive characteristic data from ExecuComp database. I have 1,102 CEO-years observations for the period of 2005 – 2007 and 1,117 CEO-years observations for the period of 1997 – 1999, after keeping only the contributions made before the Iowa Primary. Among these observations, I eliminated the CEOs who made contributions to multiple parties or candidates, since those CEOs are simply protecting themselves from a wrong decision or at least trying to guarantee that one of their contributions go to the winner candidate. I do not consider such contributions as a prediction; therefore I do not include those to my sample. I had 84 CEOs making contributions to multiple candidates or parties in 2008 presidential election, and this number was again 84 in 2000 presidential election. After excluding such CEOs, I have 893 and 892 observations for the elections in 2008 and 2000 respectively. Overall, my final sample consists of 658 unique CEOs and 1,785 observations. Panel A in Table 1 displays the number of observations by each step in the data collection process.

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[7] The list for 2008 presidential election includes the following major candidates: Democratic candidates: Joe Biden, Hillary Clinton, Christopher Dodd, John Edwards, Barack Obama, and Bill Richardson; Republican candidates: Sam Brownback, Jim Gilmore , Rudy Giuliani, Mike Huckabee, Duncan Hunter, John McCain, Mitt Romney, and Fred Thomson.

[8] The list for 2000 presidential election includes the following major candidates: Democratic candidates: Bill Bradley and Al Gore; Republican candidates: Lamar Alexander, Gary Bauer, George W. Bush, Elizabeth Dole, Steve Forbes, Orrin Hatch, John Kasich, Alan Keyes, John McCain, and Dan Quayle.

Table 1
Sample Information

Panel A: Data collection process and number of observations
This table presents the data collection steps. The number of unique CEOs and the number of observations at each step are displayed.

	Number of CEOs		**Number of observations**	
	Election 2008	**Election 2000**	**Election 2008**	**Election 2000**
CEOs made contribution before Iowa Primary	429 CEOs	428 CEOs	1,102 obs	1,117 obs
CEOs made contribution to multiple candidates or parties	84 CEOs	84 CEOs	209 obs	225 obs
CEOs contributed to only a single candidate	345 CEOs	346 CEOs	893 obs	892 obs
Full Sample	***658 CEOs***		***1,785 observations***	

Panel B: Descriptive statistics for the entire sample
This table reports the descriptive statistics for the entire sample. The financial statement values are represented in million dollars.

Variables	**Mean**	**Median**	**Std. Dev.**	**10th Percentile**	**90th Percentile**
Log (Total Assets)	7.96	7.82	1.78	5.85	10.26
R&D Expense / Total Assets (%)	4.49	1.84	9.46	0	11.64
Capital Expense / Total Assets (%)	5.78	4.22	6.02	0.19	12.82
Sales Growth / Total Assets (%)	0.24	0.002	7.79	-0.002	0.04
Debt Ratio	20.19	17.58	17.19	0	43.63
Risk (%)	24.08	5.53	432.31	2.17	13.90
CEO Age	55.99	56	7.67	47	65
CEO Tenure	8.56	6.50	7.68	1.58	18.92
Tobin's Q	2.04	1.53	1.75	1.04	3.39
Return on Assets	0.04	0.05	0.16	-0.01	0.12

Panel B in Table 1 displays the descriptive statistics for the variables of my entire sample, such as mean, median, standard deviation. My sample consists of 1,785 observations, with a mean natural logarithm of total assets size of $7.96 million and a little less than 1% growth rate, scaled by firm size. These firms have R&D expenses of 4.5% of their firm size and capital expenses of close to 6% of their firm size, on average. In terms of leverage, the firms in my sample finance 20% of their assets by long-term debt. These firms have an average of 24% standard deviation in their stock returns.

My further analysis is on merger activities and abnormal returns around the merger announcement dates. I collect the merger data from CapiatlIQ database. The merger characteristics gathered include if the merger is a cash- or stock-acquisitions, if the accounting method utilized is the pooling of interest, if the target was a public or private firm and if the attitude of the merger activity was friendly, along with the merger size, merger announcement date and the acquirer firm's name. The cumulative abnormal returns (CARs) are calculated over the 3-day period, centered on the merger announcement date [-1,1]. CRSP value-weighted return is the proxy for the market return, and CRSP return data is used for each individual stock.

2.2.1 Variable Measures

In this study, my main purpose is to investigate the impact of CEO ability on the firm performance, therefore performance measures are used as the dependent variable in the empirical model. Tobin's q is the performance proxy used as the dependent variable. Tobin's q is calculated as the ratio of the market value of the firm to its replacement

value. Natural log of Tobin's q is used, following the literature (Chung and Jo, 1996; Gompers et al., 2008). Relevant data values are gathered from COMPUSTAT database.

As further analysis, I consider the possibility that different industries may affect the firm performance levels as well as the degree of CEO ability required. I calculate the "Industry Adjusted q" values for each firm, by computing the excess firm performance over the industry averages. Industry average performance values depend on the 2-digit SIC codes. Evaluation of the industry adjusted performance values deepens the understanding of the impact of CEO ability on the firm performance and it is used as dependent variable in the model to serve this purpose, as an attempt to check robustness of the findings.

Among the independent variables, the variable of interest is the Commitment Index in both models. Since I explore the impact of CEO ability on the firm performance, I use my ability proxy as the main explanatory variable.

The control variables included in the models basically represent firm characteristics; specifically I control for firm size, R&D expense, growth rate, capital expenditure, debt ratio, risk and prior period performance. For descriptive results only, I include CEO and board characteristics, such as CEO age, tenure, educational background, CEO directorship and duality information and percentage of independent directors on board.

Firm size is measured by total assets, and included to multivariate framework as natural logarithm of total assets. R&D and capital expenditure values are gathered directly from firm's financial statement values, and adjusted for firm size while using in

the regression models. Growth rate is the percentage change in the sales values of the firms compared to prior year's figures, and similarly it is adjusted for the firm size while using in the regression models. The debt ratio, i.e. firm leverage is measured by dividing long-term debt by total assets. I calculate the firm risk by taking the standard deviation of monthly stock returns for the prior 36months.

While measuring prior period performance, I calculated return on assets (ROA) by scaling net income by the total assets values that belong to the prior year. Finally, I include dummy variables for each 2-digit Standard Industry Classification (SIC) code and for each year in the sample. The data for these variables are collected from COMPUSTAT database, except for the firm risk which uses data from CRSP database.

Along with the CEO age, tenure values are measured for the CEOs in my sample. Age is the CEO's age for the relevant year. Tenure is the number of years a CEO holds the title. Such data are gathered from ExecuCOMP database. Finally, in an additional attempt to compare my ability proxy to those used in prior literature, I collect data for the educational background and number of outside directorships for CEOs.

2.3 CEOs' Personal Contributions: Is It A Misspending Of Time?

The analysis of the association between CEO's decision to make contribution and firm performance may answer the question of whether CEOs are dissipating their precious time which otherwise could have been used for the sake of the company. If such contributions have no impact on the firm, there will be no association between donations and firm performance. This association may even be negative if it is argued that CEOs

are in fact spending time and energy on activities which are not included in their job description.

In order to test this hypothesis, I start with a univariate analysis in which I compare firms with contributing CEOs with those have a CEO who did not make a contribution. To serve this purpose, I use a matched sample which uses a matching process based on the 2-digit SIC codes and firm size. For each firm I have in my original sample, I include two firms with a non-contributing CEO, from the same industry and with a similar size.

I start the analysis with univariate tests, in which I separate the matched sample into two groups based on the CEO's decision of contributing. Panel A in Table 2 displays the results of the mean difference tests for firm characteristics, most importantly performance measures, and CEO characteristics. Tobin's Q and ROA are the performance measures included in the analysis. The most important result is that the firms with donated CEOs are significantly performing better than firms with non-donated CEOs. This result is consistent with the market-value based and book value based measures. This finding suggests that the CEO's decision of making a contribution is not harming the firm's performance.

To provide further evidence, I present the multivariate analysis results in Panel B in Table 2. Performance measures are used as the dependent variable. Along with the variables that have been used widely in the literature to explain firm performance, I also include a dummy variable (*DONATED*) to the regression model to indicate if the firm's CEO made a contribution or not. The DONATED dummy is positive and significant for

Table 2
Univariate and Multivariate Results using firms with Donated and Non-Donated CEOs

Panel A: Mean differences between firms with Donated CEOs and Non-Donated CEOs
Mean differences of firm and CEO characteristics of firms with Donated CEOs and firms with Non-Donated CEOs are provided, along with the t-statistics for the difference in mean test.

	Mean Value			
Variables	**Firms with Donated CEOs**	**Firms with Non-Donated CEOs**	**Donated vs. Non-Donated**	**t value**
Log (Total Assets)	8.09	8.03	0.05	1.18
R&D Expense / Total Assets (%)	4.60	4.08	0.52	1.66*
Capital Expense / Total Assets (%)	5.75	5.94	-0.19	-1.09
Sales Growth / Total Assets (%)	0.20	0.23	-0.03	-0.12
Debt Ratio	20.48	23.62	-3.14	-5.98***
CEO Age	56.08	54.39	1.68	7.07***
CEO Tenure	8.65	7.08	1.56	6.21***
Tobin's Q	2.04	1.84	0.19	3.22***
Return on Assets	0.06	0.03	0.03	2.01***
Number of Observations	2,219	4,438		

,,*** Significant at a 10% level, 5% level and 1% level, respectively.*

Table 2 (continued)
Univariate and Multivariate Results using firms with Donated and Non-Donated CEOs

Panel B: Regression Results for firms with Donated CEOs and Non-Donated CEOs

$$Performance = \alpha_0 + \alpha_1(Donated) + \alpha_2(Log\_TA) + \alpha_3(R\&D) + \alpha_4(Growth) + \alpha_5(CAPX) + \alpha_6(Debt\ Ratio) + \alpha_7(Performance_{t-1}) + \sum \alpha_i(Industry\ Dummy) + \sum \alpha_j(Year\ Dummy) + \varepsilon$$

	Dependent Variable			
	Tobin's Q		***Return on Assets***	
Variables	**(1)**	**(2)**	**(3)**	**(4)**
Intercept	0.348 ***	0.393 ***	-3.368 ***	-2.742 ***
	(6.10)	(6.09)	(-30.48)	(-22.18)
Donated	0.106 ***	0.009 ***	0.184 ***	0.147 ***
	(9.44)	(8.27)	(8.45)	(7.06)
Log (Total Assets)		-0.007 **		-0.054 ***
		(-1.91)		(-7.49)
R&D Expense		1.388 ***		0.114
		(12.78)		(0.55)
Capital Expense		0.773 ***		1.108 ***
		(7.68)		(5.76)
Sales Growth		0.353 ***		0.539 ***
		(7.06)		(5.64)
Debt Ratio		-0.358 ***		-1.024 ***
		(-11.93)		(-17.81)
Performance (t-1)		0.395 ***		1.139 ***
		(9.54)		(14.37)
Dummies for industries and years	yes	yes	yes	yes
Adj. R2	0.2172	0.2750	0.2469	0.3185
Sample Size	6,657	6,657	6,657	6,657

,,*** Significant at a 10% level, 5% level and 1% level, respectively. The t-statistics are given in parenthesis below each estimate.*

both measures of firm performance. This result provides additional support on the above finding, and implies that donating CEOs are not necessarily misspending their time.

This finding promotes the argument that the contributing CEOs may in fact provide other information through those contributions. If the CEOs contributions are examined in more detail, such contributions may be evaluated as signals of their decision making ability. The decision of donating to which particular candidate requires CEOs to use their judgment, forecasting and decision making abilities. Furthermore, they present a strong commitment to that candidate by putting their names next to the candidates'. Therefore, I suggest that such decision requires a more detailed examination. Following this argument, I examine the contributions and create an instrument to proxy CEO ability, believing that it may advance the assessment of the impact of CEOs on their companies. The instrument is called "Commitment Index", and explained in the following section.

2.4 Adjusted Presidential Commitment Index

2.4.1 The Idea Behind the Commitment Index

The Commitment Index, which is used as an instrument for CEOs' decision making ability, is constructed based on the argument that CEOs use their decision making ability while making a presidential contribution, since I believe that such an action is far beyond being a simple decision. It requires an extensive degree of evaluation, foresight and decision making abilities. In order to support this idea, I present the argument that

CEOs' contributions are not the only commitment activities they engage in and the discussion on the reasons why they decide to make such a commitment.

Political science literature suggests that presidential campaign contributors offer unique opportunities to evaluate the reasons for such participation, primarily due to the fact that this diverse group of people, along with their high socioeconomic status and resource rich capabilities, is intensively involved in political activities (Brown et al., 1980a; Brown et al., 1980b; Hedges, 1984). Brown et al. (1980a) specifically indicates that business leaders, who are included as the CEOs of public firms into my study, are members of this elite group.

I argue that CEOs' activities are not limited only to campaign contributions, similar to the rest of this elite group. Brown et al. (1980a) evaluate the different ways of political participation of presidential campaign contributors and suggest that contributions are only one of the many others. They propose that the activities consist of campaigning, contributing, playing a mediator role between citizens and government, voting and attempting to persuade others. If CEOs are also playing these roles during presidential elections, it can be argued that they make commitment to particular presidential candidates via various combinations of these channels. The simple correlations between the different ways of participation presented in the Brown et al. (1980a)'s study reveal that it is very likely for a campaign contributor to also do campaigning, act as an intermediary person between citizens and the government, as well as other activities[9]. As Brown et al. (1980a) argue, they cannot be simply check-writers.

[9] For a detailed examination of the correlation values, please refer to Brown et al. (1980a).

This supports the idea that a CEO usually carries his/her commitment to a particular candidate even further by also getting involved in many other political activities. Therefore, I argue that making a contribution is not a minor decision for CEOs and the assessment of making a contribution requires an extensive use of decision making ability.

Political science studies keep assisting me to understand the underlying reasons, when it comes to "why" these CEOs make contributions to presidential elections, involve in other activities and show commitment to these candidates. Brown et al. (1980a; 1980b) and Hedges (1984) examine the motives of the political participation of this elite group by using the incentive model suggested by Clark and Wilson (1961). The model classifies the possible motives under three broad categories: purposive, solidary and material[10]. Brown et al. (1980a) and Hedges (1984) classify motives like "affecting the outcome of the election", "fulfilling a sense of community obligation" as the purposive motives, "friendships and social contracts", "feeling of being close to important people" as solidary, and "participating for business and employment reasons", "expecting a reward in return from the candidate and/or professional peers" as material motives. They provide evidence that the presidential contributors justify their actions especially with the purposive motive, by which they believe they might affect the election outcome. This is an important indication of why CEOs are showing commitment to a particular candidate. It supports the idea that these CEOs believe that the candidate they support is very strong in the presidential election and their commitment would help the candidate to step even further in the presidential race. Brown et al. (1980a) present results from a predictive

[10] Clark and Wilson (1961) provide the comprehensive explanation for the incentive model.

model by which they try to explain the different modes of participation by using various motives as the explanatory factors. When the decision of making a contribution is evaluated, the purposive motive factor is very successful and statistically significant. The results are similar when the decision of overall participation is evaluated. In his survey results, Hedges (1984) reports that over half of the participants suggested that they made a contribution believing that it might affect the election outcome. These findings provide further support for my suggestion that CEOs make commitment to the candidate that they believe will win the presidential election, at least partly by their campaign contributions. Therefore, I argue that CEOs are using their decision making abilities to evaluate all the candidates and to choose the one they will show their commitment to.

The evaluation of the other two motives, solidary and material, is also very important to shed light to the underlying reasons of CEOs' commitment to a particular candidate. Although not as important as the purposive motive, Brown et al. (1980a) argue that the solidary motive, by which the contributors are aiming to achieve social connections, is also a factor affecting the decision of making a presidential contribution. This supports the idea that when CEOs make a contribution, they are also trying to build a social network for themselves by being close to important people as well as showing their commitment to a particular candidate. This supports that idea that CEOs are making a broad evaluation while committing to a candidate; therefore it may be argued that such a decision requires extensive use of decision making ability.

One of the most interesting findings in the above mentioned studies is that the material motive, in which the contributor is expecting some benefits either from the

candidate, a larger political environment or from an employer or professional peer, is not important for the elite group that makes presidential contributions. This motive may also be considered as seeking political connections and looking for personal or business-wise benefits. Hedges (1984) reports that almost 70% of the presidential contributors suggested that material motives, i.e. seeking political connections, are not important while making the decision to contribute. He also argues that the traditional "political goodies" will not attract the members of this elite group as much as the opportunity of affecting the election outcome and creating personal networks. This is essential while analyzing the reasons of a CEO's decision to make a contribution. It supports the idea that such a contribution is the result of a personal decision, but not a business decision. The CEO does not try to benefit the company by a possible political connection with that candidate, but the purpose of the CEO is to show commitment to the candidate, to support his/her race in the presidential election, and at the same time to create personal networks for himself/herself.

Overall, I argue that the evaluation of campaign contributions of CEOs provides a deeper understanding of their commitment to presidential candidates. It is not simply a decision of donating $2,400 to a candidate; contributions are only a small part of all other activities CEOs do to promote their commitment, provide support to a candidate during the presidential race and create their personal networks. Therefore, the decision of making a contribution requires an extensive evaluation of the candidates and their campaigns, the likelihood of a candidate's winning the election, as well as the assessment of the overall competition between all candidates. All these actions require CEOs to use

their evaluation, forecasting and decision making abilities. This is the key idea behind the instrument I use as the proxy for CEO ability.

The way that this instrument is constructed is based on the idea that CEO contributions may provide valuable information about the CEO's preference of the candidates. The choice of the candidate may reveal some insights of the CEO's ability in decision making. This may include the ability to pick the correct candidate to devote his/her commitment. In order to make such a decision, a CEO should evaluate the candidate's current status in the presidential race, foresee the candidate's future performance, and present an extra effort to analyze all information about the candidate available during the election. Ultimately, a CEO would try to pick the candidate who is more likely to perform better, since the commitment would be beyond the campaign contribution. A CEO will dedicate his/her efforts in order to help the candidate win the election and at the same time create social networks for himself/herself. Such wishes are more likely to be realized if a CEO puts his/her name next to a candidate that will be one of the best in the presidential election. While evaluating a CEO's commitment to a presidential candidate, I create an instrument that attempts to capture the CEO's assessment, foreseeing and decision-making ability. I call this instrument as "Adjusted Presidential Commitment Index". If certain abilities are crucial for a CEO in managing a firm, I expect this instrument to capture such a hard-to-measure content.

2.4.2 Details About the Data Selection for the Commitment Index

While examining a CEO's commitment to a presidential candidate and evaluating the success of such a decision, there is one important issue that should be taken into

account. Political campaign contributions are typically associated to attempts of seeking political connection. Although the previous section helps me evaluate such a motive for CEOs' contributions as alternative explanations for my findings, it requires further explanation.

Recent literature on political connections examines relatively more substantial evidence, such as connections with kings, presidents, parliament members (Faccio et al., 2006; Fisman, 2001) or prior politicians as board members (Agrawal and Knoeber, 2001), than personal campaign contributions. In addition, using personal contributions instead of Political Action Committee (PAC) contributions support the idea that the Commitment Index evaluates CEOs' personal decisions rather than the firm's effort to get connected to politicians. Faccio (2006) specifically indicates that one-time, small contributions will not be strong enough to build political connections. The legal limits on personal contributions make it even less likely to initiate such connections, especially when those limits are compared to the PAC contribution limits[11]. Moreover, the fact that I use contributions to presidential elections, rather than any local elections like those for governors or mayors, allows me to believe that the Commitment Index evaluates the accuracy and success of CEOs' decisions but not the CEOs' attempts to promote their firms' political connections. If there is any election contribution that helps the CEO to build such political connections, a local election will be more likely to serve that purpose. Claessens et al. (2008) support this idea by providing evidence that contributions to local elections ensure better firm performance through preferential financial access. Overall,

[11] While individual campaign contribution limit is $2,400, the limits for PACs range from $2,400 to $30,400.

using CEOs' personal contributions to presidential campaigns to create the Commitment Index makes me more confident that I am indeed evaluating the accuracy of CEOs candidate choices, not the effect of possible political connection.

The following additional steps are included as further efforts to ensure that the Commitment Index evaluates the CEOs' choices and decision making ability. First of all, I use the data from presidential elections in 2008 and 2000[12]. The main reason is the fact that there are no incumbent presidential candidates in any of these two elections, which has a potential to alter the degree of competition in a presidential race and affect the importance of prediction while making a decision to contribution. Secondly, the Commitment Index considers only the CEO contribution data till the first primary election, which is the Iowa Primary, in both elections. Considering the Iowa Primary as an early indication of presidential election results, I believe that any contribution made before the Iowa Primary results is solely based on the CEO's own analysis of the candidates, degree of competition in the election and his/her decision making ability since there are no actual results available yet. However any contribution made after some election results are provided is less likely to be based on prediction and analysis but more likely to be based on the revealed results[13]. In addition, my proxy evaluates the CEOs who contributed only to a single candidate and excludes the CEOs contributed to multiple candidates and/or parties. Such a contribution is presumably an effort to hedge from an

[12] See the Data Section Data for further explanation of collection from Federal Election Commission.

[13] Moreover, as the presidential race moves forward to the next primaries, the results become obvious or some candidates drop out of the race by endorsing others. Therefore, the longer one waits to make a contribution, the less prediction and analysis he/she needs.

unsuccessful decision but not a prediction. Overall, the Commitment Index presents an extra effort to capture the forecasting and decision making content of CEO contributions.

2.4.3 Creating the Commitment Index

In order to measure the accuracy and success of a CEO's decision on choosing a candidate in presidential primaries, I create the "Adjusted Presidential Commitment Index" by comparing the expected performance and the actual performance of the presidential candidates[14]. In other words, I evaluate the candidates' performances and adjust that by the expected performance levels. The specification for the index is as follows:

$$\begin{matrix} ADJUSTED\ PRESIDENTIAL \\ COMMITMENT\ INDEX \end{matrix} = \begin{pmatrix} Actual \\ Candidate \\ Performance \end{pmatrix} - \begin{pmatrix} Expected \\ Candidate \\ Performance \end{pmatrix}$$

Expected candidate performance provides the information of the relative positions of the candidates in the presidential race, such as who is leading the race and who is a possible front-runner. In other words, expected performance reveals the possible ranking of the candidates before initial results are out in the primary elections. I believe that a CEO considers the current situation in the presidential race while making a contribution and commitment to any presidential candidate; therefore I include "expected performance" as one of the factors affecting my ability proxy. I gather the expected performance probabilities from the "Iowa Political Markets", one of best known markets

[14] For the sake of calculations, Commitment Index scores are adjusted to have a range of (0,1).

in the Iowa Electronic Markets (IEM), which is a real-money futures market in which the contract prices are designed to predict the election outcomes, and intended to be used as a research and education tool[15]. IEM provides daily price history of the contracts in political markets, by which I collected the expected probabilities of each candidate and party winning the presidential election in 2008 and 2000[16]. Considering that the decision to contribute to a presidential candidate may be affected by the party affiliation of that candidate as well as the CEO's own political view, I tried to integrate the probability of party success into the Commitment Index. Therefore, I measured the expected candidate performance as a product of the probability of candidate success and that of party success.

$$\begin{pmatrix} Expected \\ Candidate \\ Performance \end{pmatrix} = Prob\begin{pmatrix} Candidate \\ Success \end{pmatrix} \times Prob\begin{pmatrix} Party \\ Success \end{pmatrix}$$

The second component of the Commitment Index is the actual performance of the presidential candidates. I measure the candidate performance by using the total number of delegate votes each candidate received in the Iowa and New Hampshire primaries[17]. I evaluate the actual performance by calculating the percentage of total delegates in two primaries. Consequently, I compute the actual candidate performance as follows:

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[15] IEM is one of the respected, longest-running online prediction markets which provided valuable data for literature in finance, economics, strategy, and information systems. It has also been referred in business magazines, such as Business Week and Forbes.

[16] The probability values belong the day before the Iowa Primary for both elections.

[17] The reason why I also included New Hampshire Primary results is that some of the major candidates did not campaign in Iowa Primary, especially in 2000. The fact that there are only couple of days between these two primaries still allow me to present their results as the first results that came out about the actual performance of candidates.

$$\begin{pmatrix} Actual \\ Candidate \\ Performance \end{pmatrix} = \frac{Candidate\ Delegate\ Count\ in\ IO\ \&\ NH\ Primaries}{Total\ Delegate\ Count\ in\ IO\ \&\ NH\ Primaries}$$

Creating an index that compares the actual candidate performance with the expected performance provides many advantages in terms of capturing the CEOs' decision making, analyzing and forecasting ability. First of all, the actual performance acts as a benchmark for the expectations and it allows me to realize if a candidate fulfilled, exceeded or stayed below the expected performance level. At the end, contributing to a candidate that was very likely to perform well does not require much ability. The ability is hidden in a contribution made to a candidate who exceeded the expectations on him/her. For example, in the presidential election in 2008, Hillary Clinton was expected to perform well; therefore a CEO contribution to Hillary Clinton would not necessarily be as a result of that CEO's prediction ability. However, the key point was to predict if she would perform better than her expected level; i.e. to forecast if she would do better than Barack Obama. The power of my ability proxy comes from the way it is built to capture such forecasting ability hidden in the presidential campaign contributions.

2.4.4 Alternative Ability Proxies

Panel A in Table 3 presents the correlation values of my ability proxy with those used in the literature. Specifically, I evaluate the educational background, number of outside directorships, CEO tenure and age. The variable called "ELITE UNIV" is a dummy variable that is equal to one if the CEO has an educational degree from one of the

Table 3
Alternative Ability Proxies

"ELITE UNIV" is a dummy variable that is equal to one if the CEO has an educational degree from one of the elite universities. "DIRECTORSHIP" is the number of outside directorships a CEO holds outside the company. "CEO TENURE" is the number of years as the CEO in the firm for each executive. "CEO RISE" is the age at which a CEO got the title, adjusted for the firm size.

Panel A: Correlation values of the Commitment Index with alternative ability proxies, using data only from the 2008 Presidential Election period.

The following table presents the correlation values (t-stats) between Ability Index and the alternative ability proxies used in the prior literature. The correlation values are Spearman correlation values.

	ABILITY INDEX	**ELITE UNIV**	**DIRECTOR SHIP**	**CEO TENURE**	**CEO RISE**
ABILITY INDEX	1	0.07 (0.21)	0.08 (0.11)	0.04 (0.49)	0.07 (0.27)
ELITE UNIV		1	0.06 (0.25)	0.08 (0.18)	0.11 (0.07)
DIRECTORSHIP			1	0.01 (0.87)	-0.15 (0.01)
CEO TENURE				1	0.19 (<0.01)
CEO RISE					1

Panel B: Regression Results of Ability Index on Alternative Ability Proxies

$$Ability\ Index = \alpha_0 + \alpha_1(Elite\ Univ.) + \alpha_2(Directorship) + \alpha_3(CEO\ Tenure) + \alpha_4(CEO\ Rise) + \sum \alpha_i(Industry\ Dummies) + \sum \alpha_j(Year\ Dummies) + \varepsilon$$

	Dependent Variable			
	Ability Index			
Variables	(1)		(2)	
Intercept	0.025		0.031	
	(1.44)		(1.49)	
Elite Univ.	0.019	**	0.019	**
	(2.24)		(2.21)	
Directorship	0.037	***	0.019	
	(2.49		(1.29)	
CEO Tenure	0.0008		0.001	*
	(1.21)		(1.60)	
CEO Rise	-0.007		-0.006	
	(-2.23		(-2.08)	
Dummies for industries and years			yes	
Adj. R2	0.0211		0.1466	
Sample Size	719		719	

,,*** Significant at a 10% level, 5% level and 1% level, respectively.*
The t-statistics are given in parenthesis below each estimate.

elite universities[18]. "DIRECTORSHIP" is the number of outside directorships a CEO holds outside the company, and it is included to my analysis following Padmanabhan and Ghosh (2009)'s argument that the number of outside directorships is one of the measures of the CEO's reputation which is important in the evaluation of that CEO's ability. In addition, Murphy (1986) and Gibbons and Murphy (1992) argue that CEO ability is revealed overtime and as a CEO spends more time on the job, the market learns more about his/her ability. "CEO TENURE" is simply the number of years as the CEO in the firm for each executive. I also include a new variable called "CEO RISE" which is the age at which a CEO got the title. I believe this variable is also important for the evaluation of the ability of a CEO, since it may be argued that high-ability executives are more likely to reach to the CEO position earlier than those with lower ability. This variable is also adjusted for the firm size. Panel B in Table 3 presents the multivariate results of the model which has my Ability Index as the dependent variable and other ability proxies as the independent variables.

2.5 An Initial Look at CEO Ability

2.5.1 Univariate Statistics

Table 4 presents a comparison of the mean values of firms with high-ability CEOs and firms with low-ability CEOs. The distinction in the ability levels are set by ranking the CEOs based on their ability index scores and comparing the top and bottom halves of

[18] Based on Business Week's Top 50 Business Schools ranking.

Table 4
Mean differences between firms with High-Ability CEOs and Low-Ability CEOs

"High Ability" and "Low Ability" CEOs are based on ability score ranking and getting top and bottom halves of the entire sample. Mean differences of firm and CEO characteristics of firms with High-Ability CEOs and firms with Low-Ability CEOs are also provided, along with the t-statistics for the difference in mean test.

	Mean Value			
Variables	**Firms with High-Ability CEOs**	**Firms with Low-Ability CEOs**	**High- vs. Low-Ability CEOs**	**t value**
Log (Total Assets)	7.93	7.99	-0.05	-0.70
R&D Expense / Total Assets (%)	4.71	4.27	0.44	0.68
Capital Expense / Total Assets (%)	5.68	6.46	-1.31	-4.45 ***
Sales Growth / Total Assets (%)	0.09	0.38	-0.29	-0.79
Debt Ratio	20.34	20.05	0.28	0.35
Risk (%)	41.03	7.00	34.03	1.63 *
CEO Age	56.03	55.95	0.08	0.23
CEO Tenure	8.83	8.29	0.54	1.45
Tobin's Q	2.12	1.94	0.16	2.01 **
Number of Observations	892	892		

,,*** Significant at a 10% level, 5% level and 1% level, respectively.*

the sample. The final column in the table gives the t-statistics for the mean difference tests.

Table 4 provides valuable information about the comparison of CEOs in terms of ability. Firms managed by a greater ability CEO, i.e. a CEO with higher ability proxy score, do not present any significant size differences. Although they have significantly lower levels of capital expenses, firms with talented CEOs present higher risk. The most important difference is in firm performance. Firms with high ability CEOs perform significantly better than those firms with lower ability CEOs, at a 1% significance level. Besides, more skilled CEOs are older than less skilled CEOs and they have longer tenure in their firms, although the differences are not significant.

I further evaluate the differences in performance between firms with high- and low-ability CEOs via additional univariate tests in which I examine my sample across single-digit Standard Industry Classification (SIC) codes. Panel A in Table 5 presents the number of observations in each industry as well as the entire sample. Panel B in Table 5 displays the mean Tobin's q values for each industry, along with the results for univariate tests for differences in mean performances of firms with high-ability CEOs and firms with low-ability CEOs among each industry.

First of all, Panel A presents evidence those CEOs that are classified as "more talented" in my sample manage firms in all major industry groups. In addition, the dispersion of such CEOs among the industry groups suggests that they are not grouped within a single industry. Secondly, the mean difference analysis reveals that greater ability CEOs perform better than their lower ability counterparts in almost all industry

Table 5
Descriptive Statistics by Single Digit SIC Codes

Panel A: Number of observations

The table presents the number of observations for firms with high- and low-ability CEOs, as well as the entire sample, among each industry group. The classification of firms with high- and low-ability CEOs is done by ranking the full sample based on the ability index value and comparing the bottom half with the top half.

SIC Division Code	Industry Division Title	Number of Observations		
		All Firms	Firms with High-Ability CEOs	Firms with Low-Ability CEOs
A	Agriculture, Forestry, Fishing	9	3	6
B	Mining	66	27	39
C	Construction	23	20	3
D	Manufacturing	654	331	323
E	Transportation, Utilities	229	112	117
F	Wholesale Trade	55	21	34
G	Retail Trade	159	71	88
H	Finance, Insurance, Real Estate	342	155	187
I	Services	203	127	74
J	Public Administration	6	6	0

Panel B: Mean Differences in Firm Performance

The table presents mean Tobin's q values of firms with High- and Low-ability CEOs, as well as the entire sample, among each industry group. The classification of firms with high- and low-ability CEOs is again done by ranking the full sample based on the ability index value and comparing the bottom half with the top half. The table also reports the mean differences tests between High- and Low-ability CEOs' performance levels, among each industry.

SIC Division Code	Industry Division Title	Mean Value for Tobin's q				
		All Firms	Firms with High-Ability CEOs	Firms with Low-Ability CEOs	High- vs. Low-Ability CEOs	t value
A	Agriculture, For., Fish.	3.17	3.47	3.01	0.45	0.34
B	Mining	1.68	1.90	1.53	0.36	2.47 ***
C	Construction	1.29	1.31	1.18	0.12	0.60
D	Manufacturing	2.36	2.47	2.25	0.22	1.45
E	Transportation, Util.	1.52	1.48	1.57	-0.09	-0.85
F	Wholesale Trade	1.69	1.60	1.75	-0.14	-0.66
G	Retail Trade	2.18	2.41	1.99	0.41	2.14 **
H	Finance, Ins., Real Est.	1.38	1.50	1.27	0.23	2.26 **
I	Services	2.78	2.60	3.09	-0.49	-1.20
J	Public Admin.	1.80	1.80	-		

,,*** Significant at a 10% level, 5% level and 1% level, respectively.*

groups, and significantly in most of the times. In order to further evaluate the association between CEO ability and firm performance, I use a multivariate framework and control for firm size, other firm- and industry specific characteristics, and time dummy variables. The results are presented in Section 2.6.

2.5.2 The Ability-Matching Model

In this section, I provide an ability-matching model which improves the evaluation of the association between CEO ability and firm performance. My main purpose is to provide further evidence on how high-ability CEOs make a difference in firm performance when there are various factors affecting or constraining their ability. Specifically, I examine the relation between ability and performance in firms with different firm sizes and growth rate levels.

Prior ability-matching literature mainly focuses on the CEO ability in the context of compensation contracts. Rosen (1982) and Rose and Shepard (1997) suggest that CEOs with superior talent are rewarded more since they are assigned to firms that are hard to manage, which have larger size and higher degrees of diversification, therefore they are rewarded more. By the use of a similar ability-matching model, I investigate the differences in firm performance and incremental effects on firm value.

For the matching process, I first rank the firms based on the firm characteristic I am interested in (say, firm size), and I call the top and bottom half as small firms and large firms, respectively. Within each size group, I rank the firms by their CEO's Commitment Index score. This method provides me with four groups, namely (1) high-ability CEOs in large firms, (2) high-ability CEOs in small firms, (3) low-ability CEOs in

large firms and (4) low-ability CEOs in large firms. After this classification, I measure the firm performances for each group, by Tobin's q. The incremental effect on firm value is calculated as follows: First I compute the incremental Tobin's q value for each group of firms, based on the firm characteristic I examine. Following the example above, I calculate the average Tobin's q value for large and small firms, and get the difference of each group's Tobin's q value with that of the relevant firm-size category. Then, I multiply that incremental Tobin's q value by that group's median total asset size value. This gives me the average incremental dollar effect of a CEO on firm value.

Panel A in Table 6 presents the ability matching model results based on total asset size. The t-statistics evaluating the difference between the performance values are also included next to each pair of Tobin's q value evaluated. Talented CEOs present better performance within smaller ($q=2.35 > q=2.26$) and larger firms ($q=1.89 > q=1.65$), and the differences are mostly statistically significant. However, the highest performance level belongs to the high-ability CEOs managing smaller firms ($q=2.35$) and the lowest level belongs to the low-ability CEOs in larger firms ($q=1.65$). These results suggest that high-ability CEOs have the greatest impact on Tobin's q in smaller firms. On the other hand, incremental effect on firm value displays a different pattern. CEOs with high ability have the greatest value effects in larger firms ($1.04 billion), while the greatest detrimental effects on firm value occur when a low-ability CEO manages a large firm. This finding suggests that CEO pay-performance analysis should not only consider Tobin's q, but also include the evaluation of the dollar impact on shareholder value.

Table 6
Ability-Matching Model Results

First, the firms are ranked based on the evaluated firm characteristic and categorized as "High" and "Low" group. Afterward, the firms are ranked within each firm characteristic group based on the Ability Index Score of their CEOs. This process generates "High Ability" and "Low Ability" CEOs within "High" and "Low" firm characteristic group, and creates the ability matching model tables.

Panel A: Based on Total Assets

First table provides mean values of Tobin's Q for the relevant groups, and t statistics of the differences between each group. Second table presents the incremental dollar effect on the firm value. The values are in million dollars and calculated as following: [Tobin's Q – Mean Tobin's Q for Low/High Sized Firms] x Median TA.

Mean value of Tobin's Q

		Total Assets		
		Low	High	t-stat
CEO Ability	High	2.35	1.89	3.80***
	Low	2.26	1.65	5.33***
	t-stat	0.66	2.47**	

Incremental Dollar Effect on Firm Value

		Total Assets	
		Low	High
CEO Ability	High	$37.80	$1,038.35
	Low	-$38.19	-$1,148.16

Panel B: Based on Sales Growth

First table provides mean values of Tobin's Q for the relevant groups, and t statistics of the differences between each group. Second table presents the incremental dollar effect on the firm value. The values are in million dollars and calculated as following: [Tobin's Q – Mean Tobin's Q for Low/High Growth Firms] x Median TA.

Mean value of Tobin's Q

		Sales Growth		
		Low	High	t-stat
CEO Ability	High	1.75	2.49	-6.15***
	Low	1.56	2.36	-7.13***
	t-stat	3.06***	0.86	

Incremental Dollar Effect on Firm Value

		Sales Growth	
		Low	High
CEO Ability	High	$779.40	$72.17
	Low	-$713.04	-$71.47

****** Significant at a 10% level, 5% level and 1% level, respectively. The t-statistics are given in parenthesis below each estimate.*

Panel B in Table 6 evaluates the effect of CEO ability on performance in firms with different levels of growth rate. The argument here is that the role of a CEO is so essential when the firm is growing and getting more competitive, and the decisions of a CEO would be more important for the company's performance. Therefore, I expect to see a more pronounced impact of CEO ability in high-growth firms.

The results in Panel B in Table 6 support my expectations. When a CEOs is endowed with better decision making skills, the firm performance is higher both in high-growth firms ($q=2.49 > q=2.36$) and low-growth firms ($q=1.75 > q=1.56$). In addition, the match of high-ability CEO with a high-growth firm has the highest performance level ($q=2.49$).

Overall, these results support the fact that certain decisions require talented CEOs and various characteristics of the firms may alter the effect of a CEO on the firm performance. If such decisions come from a high-ability CEO, they are more likely to be the correct decisions for the firm and the effects are observable on the firm value and performance. On the other hand, if a less talented CEO makes such decisions, it is not necessarily a good call and instead of helping, it may cause more harm to the company.

2.6 Evidence on the Impact of CEO Ability on Firm Performance

My first set of regressions examines the impact of CEO ability on the firm performance. In order to measure CEO ability, I use the Commitment Index which is based on the accuracy of the CEOs' decision while picking the candidate to make commitment during presidential elections. If such a decision requires ability to evaluate the available information, foresee the future outcome and present efforts supporting their

commitment, I expect firms managed by greater ability CEOs, i.e. CEOs with higher Commitment Index scores, to perform better than those with lower-ability CEOs. In order to test my proposition, I use the following specification:

$$Tobin's\ q = \alpha_0 + \alpha_1(Ability) + \alpha_2(Log\_TA) + \alpha_3(R\&D) + \alpha_4(Growth) + \alpha_5(CAPX) + \alpha_6(Debt\ Ratio) + \alpha_7(Risk) + \alpha_8(Performance_{t-1}) + \sum \alpha_i(Year\ Dummy) + \varepsilon$$

where

Tobin's Q = ratio of the market value of the firm to its replacement value;

Ability = Commitment Index;

Log_TA = natural log of total assets;

R&D = research and development expense, as a ratio to total assets;

GROWTH = growth rate for sales, as a ratio to total assets;

CAPX = capital expenditure, as a ratio to total assets;

Debt Ratio = long-term debt, as a ratio to total assets;

Risk = standard deviation of monthly stock returns for the prior 36 months;

$Performance_{t-1}$ =return on assets, prior year.

Column 1 of Table 7 presents the regression results which have only the Commitment Index as the explanatory variable. Consistent with my expectations, the coefficient estimate of the Commitment Index is positive and significant at a 1% level. This result implies that CEO ability is positively related to firm performance, i.e. firms managed by a CEO with superior talent perform better than firms with a lower-ability

Table 7
Multivariate Results – Effect of Ability on Firm Performance

This table reports the regression results. Model (1) includes only the Ability Index, whereas Model (2) includes the Commitment Index and the orthogonalized control variables. Model (3) reports the results of Heckman 2-step procedure for sample selection bias. Model (4) and Model (5) uses firms with donated and non-donated CEO, by adjusting the ability index value along with orthogonalized control variables.

$$Tobin's\ q = \alpha_0 + \alpha_1(Ability) + \alpha_2(Log\ TA) + \alpha_3(R\&D) + \alpha_4(Growth) + \alpha_5(CAPX) + \alpha_6(Debt\ Ratio) + \alpha_7(Risk) + \alpha_8(Performance_{t-1}) + \sum \alpha_i(Year\ Dummy) + \varepsilon$$

	Dependent Variable = Tobin's Q				
Variables	(1)	(2)	(3)	(4)	(5)
Intercept	0.414 ***	0.449 ***	0.699 ***	0.377 ***	0.386 ***
	(12.08)	(16.07)	(7.43)	(23.56)	(25.55)
Ability Index	0.123 ***	0.114 ***	0.120 ***		
	(3.07)	(3.53)	(18.17)		
Ability Index-Adjusted				0.079 ***	0.078 ***
				(8.45)	(8.93)
Log (Total Assets)		-0.019 ***	-0.072		-0.021 ***
		(-3.21)	(-0.28)		(-3.09)
R&D Expense		2.105 ***	2.862 ***		2.111 ***
		(10.45)	(14.58)		(9.37)
Capital Expense		0.319 *	0.824 ***		0.356 *
		(1.81)	(4.429)		(1.84)
Sales Growth		-0.534 ***	-0.443 ***		-0.542 ***
		(-3.25)	(-6.23)		(-2.95)
Debt Ratio		-0.431 ***	-0.573 ***		-0.431 ***
		(-7.43)	(-6.70)		(-6.64)
Risk (%)		-0.002	-0.000		
		(-0.80)	(0.00)		
Performance (t-1)		0.258 ***	0.732 ***		0.257 ***
		(21.44)	(19.07)		(19.12)
Mill's Lambda			0.218 ***		
			(3.23)		
Dummies for Years	yes	yes	yes	yes	yes
Adj. R2	0.0075	0.3549	0.2230	0.0140	0.1225
Sample Size	1,785	1,785	6,657	6,657	6,657

, **, * Significant at a 10% level, 5% level and 1% level, respectively. The t-statistics are given in parenthesis below each estimate.*

CEO. Next, I include the control variables to the model in Column 2 of Table 7. The control variables are orthogonalized to the Commitment Index, in order to avoid any possible association between those variables and the ability proxy. The Commitment Index is still positively related to Tobin's q, at a 1% significance level. This evidence can be interpreted to point out that my Commitment Index captures essential abilities required for a CEO during decision making and managing their firms.

Column 3 of Table 7 uses Heckman (1979)'s 2-step procedure for sample selection bias. Since my sample consists of only the firms with donating CEOs, this may lead to sample selection problem and provide misleading results. For this correction, we use the matched sample explained in previous sections, which includes firms with and without donating CEOs. After the process, I still have the ability proxy's coefficient significant and positive, which suggests after correcting for a possible sample selection process, the results are robust.

As the final set of regressions, I utilize a slightly adjusted version of the ability proxy. In order to evaluate the donated and non-donated CEOs together, I assign the value of zero for ability index scores of non-donated CEOs, and add 1 to the ability scores of the donated CEOs[19]. This allows me to examine all CEOs at once, and make sure that the ability proxy is producing consistent results when used within a sample of a wider range. The results are indeed consistent with the prior findings, and the ability proxy is still positively and significantly associated to firm performance. The results are presented in Column 4 and Column 5in Table 7.

[19] The value 1 is an arbitrary choice. Different values have been tried but the results are the same.

Overall, the regression results suggest that the firms managed by the CEOs with higher Commitment Index scores, i.e. those who make commitment to better performing candidate, present higher levels of performance. This result does not change when the control variables are included to the regression model. If the Commitment Index is successful to capture the abilities required to manage a firm, I provide evidence that talented CEOs provide better firm performance, when compared to their less-skilled peers. This finding is supported with correction of a possible sample selection problem, and by including the CEOs who did not contribute at all to the evaluations.

2.7 Merger Announcement Returns and CEO Ability

The evaluation of CEO ability continues by examining its impact on the firms' merger and acquisition performances. To serve this purpose, I calculate the cumulative abnormal returns (CARs) of the acquirers over the 3-day period, centered on the merger announcement date [-1,1]. The proxy used for the market return is the CRSP value-weighted return. In order to be included to the analysis, a firm should have announced a merger activity during my sample period[20] as the acquirer firm and should have a contributing CEO. This consists of 1,113 merger activities. The sample includes some firms that have more than one merger announcements per year.

I suggest that CEO ability may be an important factor for the decision making process during the merger activities, especially regarding the implied explanations of

[20] My sample period covers 1997-1999 and 2005-2007, which are the 2 presidential election donation periods. However, for the sake of collecting a more comprehensive sample for merger activities, these period ranges were extended by 1 year. So the sample period used for the merger activity analysis is 1996-2000 and 2004-2008.

poor merger performance of the acquiring firms, such as hubris, entrenchment and bad judgment. If a firm has a more-skilled CEO, I expect such merger activity decisions to be less likely to harm the shareholder value and to be possibly increasing the firm's value. In order to test this suggestion, I split my sample into two subgroups, based on their CEOs' Ability Index scores. If the level of CEO ability is important for the shareholders, I expect to have better CAR values from the firms with high-ability CEOs, compared to those with low-ability CEOs.

Table 8 displays the univariate results of the CAR value analysis. Panel A represents the results from the full sample. As suggested in the literature, low-ability CEOs' provide negative CARs. On the other hand, high-ability CEOs not only perform significantly better than those with low-ability CEOs in terms of the merger announcement CARs, but also provide positive CARs. These results support the idea that CEO ability is indeed an important factor for the shareholders, and it may overcome the potential value destruction of a merger activity. Panel B in Table 8 replicates the analysis by using a sample that consists of only the largest merger activities of each firm per year. High-ability CEOs still have significantly higher and positive CARs compared to those for low-ability CEOs. This suggests that the findings are driven by the firm and merger size.

I further examine the impact of CEO ability on firm values around merger announcements by having a multivariate regression analysis. I use CARs as the dependent variable in regression model. CEO ability is the variable of interest among the explanatory variables, and I also include merger characteristics, which are suggested in

Table 8
Descriptive Results – Effect of Ability on M&A Announcement CARs

The table reports the mean differences of key variables of a merger agreement between Buyer firms with High-Ability CEOs and Low-Ability CEOs.

Panel A: Individual M&A Activities

	Mean Values			
Variables	**Firms with High-Ability CEOs**	**Firms with Low-Ability CEOs**	**High- vs. Low-Ability CEOs**	**t value**
CARs [-1,1]	0.0056	-0.0002	0.0058	2.58 ***
Cash vs. Stock	0.58	0.43	0.15	6.04 ***
Public vs. Private Target	0.03	0.07	-0.04	-3.60 ***
Pooling Method	0.01	0.07	-0.06	-5.52 ***
Friendly	0.992	0.993	-0.001	-0.30
Number of Observations	762	762		

,,*** Significant at 10% level, 5% level and 1% level, respectively.*

Panel B: Largest M&A Activities Per Year

	Mean Values			
Variables	**Firms with High-Ability CEOs**	**Firms with Low-Ability CEOs**	**High- vs. Low-Ability CEOs**	**t value**
CARs [-1,1]	0.0061	-0.0018	0.0080	2.39 ***
Cash vs. Stock	0.58	0.46	0.11	3.37 ***
Public vs. Private Target	0.02	0.09	-0.07	-3.51 ***
Pooling Method	0.02	0.07	-0.05	-3.39 ***
Friendly	0.985	0.987	-0.002	-0.30
Number of Observations	402	402		

,,*** Significant at 10% level, 5% level and 1% level, respectively.*

the literature to have effect on firm value analysis, as control variables. If the merger decision requires CEO ability, I expect firms with greater ability CEOs to have better returns than those with lower ability CEOs. In other words, I expect to have higher CARs from the firms managed by CEOs with higher Ability Index scores. To test this proposition, I use the following specification:

$$CARs = \alpha_0 + \alpha_1(Ability) + \alpha_2(Tobin's\ q) + \alpha_3(Log\_TA) + \alpha_4(Debt\ Ratio) + \alpha_5(Cash\ vs. Stock) + \alpha_6(Public\ vs. Private) + \alpha_7(Pooling\ Method) + \alpha_8(Friendly) + \sum \alpha_i(Industry\ Dummy) + \sum \alpha_j(Year\ Dummy) + \varepsilon$$

where

C*ARs* = cumulative abnormal returns around merger announcements [-1,1];

Ability = Commitment Index;

Tobin's Q = performance of the company;

Log_TA = natural log of total assets;

Debt Ratio = long-term debt, as a ratio to total assets;

Cash vs. Stock = 1, if cash merger and =0 if stock merger;

Public vs. Private = 1 if the target is public and = 0 is it is private;

Pooling Method = 1 if Accounting Method is "Pooling of Interests';

Friendly = 1 if Deal attitude is "Friendly".

Table 9 displays the regression results for the analysis of the impact of CEO ability on merger announcement CARs. The results show that CEO ability is positively

Table 9
Multivariate Results – Effect of Ability on M&A Announcement CARs

$$CARs = \alpha_0 + \alpha_1(Ability) + \alpha_2(Tobin's\ q) + \alpha_3(Log\_TA) + \alpha_4(Debt\ Ratio) + \alpha_5(Cash\ vs. Stock) + \alpha_6(Public\ vs. Private) + \alpha_7(Pooling\ Method) + \alpha_8(Friendly) + \sum \alpha_i(Industry\ Dummy) + \sum \alpha_j(Year\ Dummy) + \varepsilon$$

	Dependent Variable = Cumulative Abnormal Returns			
	Individual CARs		*Largest M&A CARs*	
Variables	(1)	(2)	(3)	(4)
Intercept	-0.003	0.014	0.001	0.023
	(-0.86)	(0.48)	(0.19)	(0.66)
Ability	0.011 ***	0.014 ***	0.007	0.009
	(2.44)	(2.70)	(1.10)	(1.24)
Tobin's Q		0.001 ***		0.002 *
		(2.77)		(1.79)
Log (Total Assets)		-0.003 ***		-0.003 **
		(-2.94)		(-2.14)
Debt Ratio		0.026 **		0.023
		(2.19)		(1.36)
Cash vs. Stock		0.006 **		0.006
		(2.22)		(1.37)
Public vs. Private		-0.004		0.001
		(-0.73)		(0.15)
Pooling Method		-0.011 *		-0.025 ***
		(-1.82)		(-2.75)
Friendly		0.024 *		0.023
		(1.81)		(1.55)
Dummies for industries and years	yes	yes	yes	yes
Adj. R2	0.0141	0.0504	0.0199	0.0731
Sample Size	1,113	1,113	805	805

,,*** Significant at a 10% level, 5% level and 1% level, respectively. The t-statistics are given in parenthesis below each estimate.*

and significantly associated to merger announcement CARs. This suggests that when a firm is managed by a high-ability CEO, it may get into more value-creating merger activities. The merger characteristics included as control variables display expected results as well. Merger activities tend to result in better CARs if it is a cash merger, the target is a private firm, pooling method is used or the attitude is friendly. The results follow the previous findings in the literature. First two columns use the full sample, whereas the last two columns use only the largest merger activities of each company per year. The results are very similar to those with the full sample. Although the significance level decreases, the Ability Index is still positively associated to the merger announcement CARs. These finding support the idea that CEO ability is an important factor for shareholders, including the firm performance during merger activities.

2.8 Alternative Specifications

The fact that my Commitment Index employs presidential contributions makes it necessary to provide further evaluation on the political connection effect that may be captured by the index. Although discussion of the advantages of using personal contributions rather than PAC contributions is included in previous sections, I include PACs into my analysis as an alternative specification. While evaluating CEO ability by an index constructed by personal contributions, I also control for the firm PAC contributions. My analysis includes all the PACs of the public firms during the presidential election in 2000 and 2008.

In order to control the firm PAC contributions, I include a dummy variable to my regression model. The dummy variables are as follows: “HAS_PAC” indicates if a firm

has a PAC during the election periods, "PAC_CONTRB" specifies if those PACs made a contribution, "PAC_ONLY_DEM" and "PAC_ONLY_REP" indicate whether the firm PAC contributed only to a Democratic candidate or Republican candidate, respectively. The regression results are presented in Table 10-Panel A. As discussed before, if there is any political connection purpose under these presidential contributions, it is more likely to be by PAC contributions. I find that my results are robust to various types of firm PAC contribution controls. The Commitment Index is positively and significantly associated to firm performance, at a 1% level, even after including the additional control variables. These results provide additional support for my primary finding, which suggests that firms managed by CEOs with higher degree of ability present higher levels of performance.

Panel B of Table 10 evaluates a possible impact of political connections by a different method. I argue that if the purpose of such contributions was indeed seeking political connections, then over the years those firms should have performance increases. In other words, when we compare the firm performances before and after the election periods, one would expect to find a difference, possibly increase. In order to test this proposition, I compare average firm performance values of the firms before and after the 2000 and 2008 elections, by using a 1 year and 2 year window. The results show that there is no significant difference between two periods, which can be considered as an additional support to deny the impact of political connections to my ability measure.

As some possible alternative specifications for the multivariate tests, I include various different performance measures to my regression model. Specifically, I use raw

Table 10
Additional Controls for Political Connections Effect

Panel A: Alternative Specifications with Political Action Committee Contributions

The regression results for the analysis of any political connection effect possibly captured by the Commitment Index are presented here. In order to control for the firm Political Action Committee contribution, which may be the proxy for an effort to get connected, the following dummy variables are included to my model: "HAS_PAC" indicates if a firm has a PAC during the election periods, "PAC_CONTRB" specifies if those PACs made a contribution, "PAC_ONLY_DEM" and "PAC_ONLY_REP" indicate whether the firm PAC contributed only to a Democratic candidate or Republican candidate, respectively.

$$Tobin's\ q = \alpha_0 + \alpha_1(Ability) + \alpha_2(PAC\ Dummy) + \alpha_3(Log\ TA) + \alpha_4(R\&D) + \alpha_5(Growth) + \alpha_6(CAPX) + \alpha_7(Debt\ Ratio) + \alpha_8(Risk) + \alpha_9(Performance_{t-1}) + \sum \alpha_i(Year\ Dummy) + \varepsilon$$

	Dependent Variable = TOBIN'S Q							
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.432 ***	0.455 ***	0.425 ***	0.461 ***	0.418 ***	0.447 ***	0.412 ***	0.445 ***
	(12.73)	(14.60)	(12.30)	(14.91)	(11.37)	(13.53)	(11.25)	(13.53)
Ability	0.120 ***	0.105 ***	0.113 ***	0.105 ***	0.147 ***	0.124 ***	0.148 ***	0.124 ***
	(3.00)	(2.97)	(2.82)	(2.95)	(3.49)	(3.29)	(3.49)	(3.30)
HAS_PAC	-0.071 ***	0.025						
	(-2.55)	(0.97)						
PAC_CONTRB			-0.097 **	0.0001				
			(-2.24)	(0.00)				
PAC_ONLY_DEM					-0.265 **	-0.069		
					(-2.32)	(-0.67)		
PAC_ONLY_REP							-0.103 *	-0.020
							(-1.70)	(-0.37)
Log (TA)		-0.070 ***		-0.068 ***		-0.070 ***		-0.070 ***
		(-10.5)		(-10.5)		(-9.61)		(-9.74)
R&D Expense		2.772 ***		2.785 ***		2.128 ***		2.133 ***
		(11.17)		(11.24)		(8.12)		(8.13)
Capital Expense		0.863 ***		0.870 ***		1.002 ***		1.006 ***
		(4.50)		(4.53)		(5.01)		(5.02)

Table 10 (continued)
Additional Controls for Political Connections Effect

	Dependent Variable = TOBIN'S Q							
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sales Growth		-0.470 ***		-0.474 ***		-0.265		-0.266
		(-2.60)		(-2.62)		(-1.45)		(-1.46)
Debt Ratio		-0.486 ***		-0.486 ***		-0.556 ***		-0.552 ***
		(-7.53)		(-7.52)		(-7.92)		(-7.88)
Risk (%)		-0.001		-0.000		-0.000		-0.000
		(-0.28)		(-0.32)		(-0.35)		(-0.34)
Perf. (t-1)		0.687 ***		0.687 ***		0.507 ***		0.510 ***
		(8.41)		(8.41)		(6.05)		(6.09)
Dummies for years	yes	yes	yes	yes	yes	yes	yes	yes
Adj. R^2	0.0105	0.2193	0.0096	0.2189	0.0127	0.2137	0.0111	0.2135
Sample Size	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785

Panel B: Before & After the Election

	Mean Value of Tobin's q			
Variables	**After the Election**	**Before the Election**	**After vs. Before**	**t value**
-2,+2 Years Average Tobin's Q				
2008 and 2000 Election	2.06	2.03	0.03	0.44
2008 Election	1.82	1.93	-0.10	-1.18
2000 Election	2.18	2.13	0.05	0.38
-1,+1 Years Average Tobin's Q				
2008 and 2000 Election	2.05	2.04	0.01	0.07
2008 Election	1.82	1.93	-0.11	-1.08
2000 Election	2.26	2.15	0.11	0.55

** ** *** Significant at a 10% level, 5% level and 1% level, respectively. The t-statistics are given in parenthesis below each estimate.*

Tobin's Q, Industry Adjusted Tobin's Q by 2-digit SIC codes, and Return on Assets values as the dependent variable. T he results are displayed Table 11 – Panel A. The results are consistent, and Ability Index is positively associated to firm performance. These results support the prior findings and suggest that, regardless of the industry the firm operates in or the performance measure utilized, CEO ability is an important factor on firm performance. Panel B of the same table displays the results of the evaluation of utilized ability measure. In order to avoid any political party influence on the results, I run the same regression model, with subsamples of firms with CEOs contributing only to Democratic candidates, and those to Republican candidates. Columns 1 through 4 present the results. The next two columns make use of slightly adjusted versions of the Commitment Index. As explained in detail in the Commitment Index section above, my index examines the CEOs contributed only to a single candidate, in order to capture some degree of decision making ability and evaluate an actual choice that a CEO makes. However, this requires excluding those CEOs who contributed to more than one candidate and/or party from my analysis. Therefore, I modified the Commitment Index to some extend so that it also assigns scores to CEOs who contributed more than one candidate. We have to be aware that a CEO who donates to multiple candidates is not only making more than one commitment decision, but also has an underlying purpose of trying to guarantee himself/herself in case of a wrong choice. Keeping this in mind, I adjust the Commitment Index of CEOs who donated to multiple candidates by assigning the average of the index points of CEOs contributed to the relevant candidates. The

Table 11
Alternative Specifications for Regressions

Panel A: Alternative Performance Measures
This table reports the regression results for the alternative specification on the performance measure. Model (1) and (2) uses raw Tobin's Q, whereas Model (3) and (4) uses industry adjusted Tobin's Q value by using 2-digit SIC codes. The last two columns use Return on Assets as an alternative performance measure.

$$Performance = \alpha_0 + \alpha_1(Ability) + \alpha_2(Log\ TA) + \alpha_3(R\&D) + \alpha_4(Growth) + \alpha_5(CAPX) + \alpha_6(Debt\ Ratio) + \alpha_7(Risk) + \alpha_8(Performance_{t-1}) + \sum \alpha_i(Year\ Dummy) + \varepsilon$$

	Dependent Variable = Firm Performance					
	Tobin's Q - Raw		Industry Adjusted Q		Return on Assets	
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	1.955***	2.886***	-0.019 *	-0.110***	-3.218 ***	-1.873***
	(28.87)	(12.00)	(-1.80)	(-2.65)	(-52.6)	(-15.37)
Ability Index	0.209	0.261**	0.03	0.037*	0.202 ***	0.189***
	(1.52)	(2.07)	(1.54)	(1.70)	(2.82)	(2.95)
Log (Total Assets)		-0.169***		0.004		-0.170***
		(-7.53)		(1.21)		(-14.95)
R&D Expense		9.243***		0.850***		0.534
		(10.57)		(5.62)		(1.21)
Capital Expense		1.564**		0.301***		2.744***
		(2.31)		(2.58)		(8.01)
Sales Growth		-0.523		-0.103		0.258
		(-0.82)		(-0.94)		(0.80)
Debt Ratio		-1.491***		-0.042		-0.565***
		(-6.53)		(-1.07)		(-4.89)
Risk (%)		-0.004		-0.002		-0.002
		(-0.45)		(-1.54)		(-0.46)
Performance (t-1)		1.599***		0.260***		1.285***
		(5.55)		(5.23)		(8.81)
Dummies for Years	yes	yes	yes	yes	yes	yes
Adj. R2	0.0007	0.1740	0.0008	0.0295	0.0032	0.2086
Sample Size	1,785	1,785	1,785	1,785	1,785	1,785

*,**,*** Significant at a 10% level, 5% level and 1% level, respectively. The t-statistics are given in parenthesis below each estimate.

Table 11 (continued)
Alternative Specifications for Regressions

Panel B: Same regression with Subsamples:
This table reports the regression results for the alternative specifications of sample selection. Model (1) and (2) uses CEOs contributed only to Democratic candidates, whereas Model (3) and (4) uses those contributed only to Republican candidates. Model (5) and (6) uses an adjusted version of the Ability Index, which includes CEOs who donated to multiple candidates to the sample and assigns an average index score to those CEOs.

$$Tobin's\ q = \alpha_0 + \alpha_1(Ability) + \alpha_2(Log\ TA) + \alpha_3(R\&D) + \alpha_4(Growth) + \alpha_5(CAPX) + \alpha_6(Debt\ Ratio) + \alpha_7(Risk) + \alpha_8(Performance_{t-1}) + \sum \alpha_i(Year\ Dummy) + \varepsilon$$

	Dependent Variable = Tobin's q					
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.285***	0.517 ***	0.404 ***	0.188 ***	0.400 ***	0.435***
	(4.21)	(9.40)	(8.80)	(3.25)	(12.76)	(16.25)
Ability Index	0.435***	0.116	0.152 ***	1.142 ***		
	(3.63)	(1.23)	(2.54)	(5.66)		
Ability Index-Adjusted					0.101 ***	0.094***
					(2.59)	(2.85)
Log (Total Assets)		-0.033 ***		-0.019 **		-0.021***
		(-3.59)		(-2.33)		(-3.28)
R&D Expense		1.887 ***		2.185 ***		2.151***
		(6.59)		(8.21)		(10.08)
Capital Expense		1.939 ***		-0.041		0.250
		(5.20)		(-0.21)		(1.34)
Sales Growth		2.485 **		-0.520 ***		-0.556***
		(2.19)		(-2.72)		(-3.18)
Debt Ratio		-0.070		-0.599 ***		-0.436***
		(-0.81)		(-8.00)		(-7.17)
Risk (%)		0.000		0.907 ***		-0.002
		(0.02)		(4.83)		(-0.85)
Performance (t-1)		0.219 ***		0.258 ***		0.260***
		(11.02)		(17.39)		(20.65)
Dummies for Years	yes	yes	yes	yes	yes	yes
Adj. R2	0.0229	0.4215	0.0057	0.3710	0.0097	0.2907
Sample Size	551	551	1,274	1,274	2,219	2,219

*,**,*** Significant at a 10% level, 5% level and 1% level, respectively. The t-statistics are given in parenthesis below each estimate.

ability proxy is still positive and significant at a 1% level, suggesting that CEOs with higher skills provide better levels of firm performance.

As a final step in my analysis, I evaluate the CEOs who contributed to nominated candidates and those who contributed to non-nominated candidates separately. This is not only an additional robustness check on the sample selection, but also an effort to examine any political connection impact possibly captured by the Commitment Index as an alternative explanation for my findings. Although such an explanation was discussed in prior sections, I approach to this issue with an additional analysis. I argue that if CEOs are using these presidential contributions as a tool to gain political connections, i.e. if my Commitment Index captures not only the abilities required to choose the best candidate, but also CEOs' efforts to get politically connected, then the association, if any, between my index and firm performance is more likely to appear on the contributions directed to nominated candidates. At last, the reason why those CEOs look for political connections is to benefit their companies. Any contribution to a non-nominated candidate is less likely to be initiated by a CEO who seeks political connection.

In order to evaluate this argument, I divide my sample into two, based on the nomination of the candidates receiving contribution. I use the initial regression model, which uses Tobin's Q as the dependent variable. As reported in Column 1 and Column 1 in Panel A of Table 12, Commitment Index is associated with higher levels of firm performance, even if only non-nominated candidates are evaluated. After including the control variables, the coefficient of the ability proxy stays positive and significant, at a 1% level. Since this evaluation includes only non-nominated candidates, who are less

likely to receive a contribution for political connection purposes, these results provide additional support on my argument that the Commitment Index captures abilities required for better decision making and highly-skilled CEOs provide better firm performance.

The evaluation of nominated candidates provides even further evidence on my findings. I create the Commitment Index once again only for the nominated candidates, however this time measuring the "Actual Performance" levels of the candidates by the "Electoral Votes" they collected in the General Election, instead of the Delegate Counts in the first two primaries. This approach allows me to evaluate the nominated candidates' General Election performances, and again adjust by the expected performance levels while creating the Commitment Index. Such version of the index aims to capture the abilities required to foresee the long-run results and make a contribution, and even further commitment, to a candidate accordingly. Column 3 and Column 4 in Panel A present the regression results in which this adjusted version of the Commitment Index is utilized and only nominated candidate are evaluated. There is still a positive association between the Commitment Index and firm performance, which suggests the skills measured by the Commitment Index are required for a CEO to provide better performance.

Next, I display an interesting finding about the consistency between the CEO's personal contributions and firm PAC contributions. I examine if the CEOs contributed to same candidate and/or party as their firm PAC did. To serve this purpose, I create two indicator variables. These variables specify if the CEO and the firm PAC contributed only to the exact same candidate, "*SAME CANDIDATE*", and to the same party, "*SAMEPARTY*". I find that 54% (30 CEOs out of 56) of the CEOs in my sample

Table 12
Alternative Controls for Political Connections

Panel A: Regressions with Nominated and Non-Nominated Subsamples

This table reports the regression results for the alternative controls for possible political connection impact. Model (1) and (2) uses CEOs contributed only to non-nominated candidates, whereas Model (3) and (4) uses those contributed only to nominated candidates. The last two columns use an adjusted version of the Ability Index, which uses Electoral Votes of the nominated candidates as a measure of actual performance.

$$Tobin's\ q = \alpha_0 + \alpha_1(Ability) + \alpha_2(Log\ TA) + \alpha_3(R\&D) + \alpha_4(Growth) + \alpha_5(CAPX) + \alpha_6(Debt\ Ratio) + \alpha_7(Risk) + \alpha_8(Performance_{t-1}) + \sum \alpha_i(Year\ Dummy) + \varepsilon$$

	Dependent Variable = Tobin's Q			
	Firms with CEOs donated only to Non-Nominated Candidates		*Firms with CEOs donated only to Nominated Candidates*	
Variables	(1)	(2)	(3)	(4)
Intercept	0.430 ***	0.442 ***	0.212 **	0.335 ***
	(10.65)	(13.48)	(2.15)	(4.28)
Ability Index	0.110 **	0.146 ***		
	(1.97)	(3.27)		
Ability Index – Adjusted			0.703 ***	0.473 ***
			(3.14)	(2.68)
Log (Total Assets)		-0.023 ***		-0.004
		(-2.86)		(-0.44)
R&D Expense		1.732 ***		2.750 ***
		(7.13)		(7.32)
Capital Expense		0.626 ***		0.074
		(2.52)		(0.30)
Sales Growth		-0.336 **		131.63 ***
		(-1.91)		(6.93)
Debt Ratio		-0.326 ***		-0.416 ***
		(-4.22)		(-4.72)
Risk (%)		-0.001		0.015 ***
		(-0.57)		(5.01)
Performance (t-1)		0.255 ***		0.242 ***
		(15.93)		(13.31)
Dummies for Years	yes	yes	yes	yes
Adj. R2	0.0060	0.3667	0.0101	0.4059
Sample Size	948	948	800	800

*,**,*** Significant at a 10% level, 5% level and 1% level, respectively. The t-statistics are given in parenthesis below each estimate.

Table 12 (continued)
Alternative Controls for Political Connections

Panel B: Additional Information on Political Action Committee Contributions

	Ability	Same Candidate	Same Party	Same Party but not Candidate
Ability	1	-0.31 (0.01)	-0.19 (0.15)	0.18 (0.17)
Same Candidate		1	0.80 (0.00)	-0.30 (0.02)
Same Party			1	0.32 (0.01)
Same Party but not Candidate				1

Spearman Coefficients (p-values)

contributed to a different candidate and again 54% (30 CEOs out of 56) of them contributed to a candidate in a different party than their firm PAC. Then, I evaluated the correlation between these variables with the CEO ability proxy. Interestingly, I find that there is a negative correlation between the Commitment Index and the additional dummy variables. The results are presented in Panel B of Table 12. The Spearman correlation value for Commitment Index and SAME CANDIDATE is -31%, and that for SAME PARTY is -19%. This suggests that, if the Commitment Index is an adequate proxy for CEO ability, then the CEOs with higher ability are those who are skilled enough to pick a better performing candidate and make their personal contributions accordingly, even though such an action requires going against the decision of their firm PACs. It may be argued that, those high-ability CEOs were able to recognize the incorrect decision their firm PACs did, and contributed to the candidates who they believe will perform better.

Overall, the evaluation of different specifications for the models, ability proxy and sample selection presents evidence that my findings are robust to alternative standpoints.

2.9 Conclusion

CEO ability has always been a compelling concept; however the existing literature still has shortcomings to offer an adequate measure. Various observable CEO characteristics, such age, tenure, educational degrees, have been used as a proxy for CEO ability, yet we still do not have an evidence of a direct relationship between CEO ability and performance. In addition, the tendency to use performance as a proxy of ability

makes this issue more of a problem, and prevents researchers to pass beyond the endogeneity problem in the assessments of the CEO ability and performance association.

I introduce a new instrument for CEO ability which evaluates the precision of CEOs decisions on commitment to presidential candidates, by examining their presidential campaign contributions. I presume such contributions are only a small part of all other activities CEOs engage to promote their commitment, support the candidates during the election and create their personal networks. The decision of making a contribution, and also commitment, demands a comprehensive assessment of the candidates, their chances of winning the election, foresee the candidate's future performance and put extra effort to analyze all available information about the candidate during the election. Therefore, I suppose that the choice of the candidate may provide valuable information about the CEOs' ability in decision making, which is essential for a CEO to manage a firm. The Commitment Index evaluates a CEO as "higher-ability CEO" is he/she makes a successful decision and contributes to a candidate whose performance meets or even exceeds the expectations.

This proxy reveals its most important difference from the others in the literature by its exogeneity. It doesn't have any association with firm characteristics or the level of CEO compensation. Besides, the legal personal contribution limits to presidential campaigns pushes any possible concern to the minimum. In addition, the fact that it is based on actual decisions a CEO gives make the proxy even more plausible. Therefore, I believe my ability index is a significant step towards a more accurate ability measure.

Using the Commitment Index, I first evaluate the impact of CEO ability on firm performance. I provide direct evidence that firms managed by higher-ability CEOs perform better than those managed by lower-ability CEOs. The ability-matching model results suggest that high-ability CEOs have the highest impact on Tobin's q in smaller firms; on the other hand they provide the greatest value effects in larger firms. I believe this result may have implications on CEO pay-performance evaluations, since the findings suggest that not only Tobin's q but also the dollar effect on shareholder value should be taken into consideration. The multivariate framework results imply not only that there is a positive and significant association with CEO ability and firm performance, but also that the positive effect of CEO ability on firm performance is pronounced more in high-growth firms. The argument that highly-skilled CEOs provide better firm performance is further supported by the industry controls and various tests that attempt to consider political connection impact, which is possibly captured by my ability proxy, as an alternative explanation.

I further evaluate the effect of CEO ability on firm value around merger announcements. By evaluating CARs of acquiring firms, I provide evidence that CEO ability is indeed an important factor for shareholders' wealth, by univariate and multivariate analysis. The findings suggest that firms managed by greater ability CEOs get a positive reaction from the market for their merger announcements, whereas those with lower ability CEOs have negative reactions. This may imply that when a firm is managed by a high-ability CEO, it may get into more value-creating merger activities due to better decision making. Therefore, merger activities are not necessarily value

destroying given that the talented CEO manages to overcome possible incitements like hubris or entrenchment. In general, my results suggest that CEO ability is indeed an essential component of firm performance and therefore is very crucial for the shareholders.

CHAPTER 3

CEO ABILITY AND COMPENSATION PLANS: HOW ARE HIGH-ABILITY CEOS PAID?

3.1 Introduction

Among the executive compensation papers, Chief Executive Officer (CEO) pay contracts have generated the most interest, partly due to CEOs being under too much attention of third parties (Jensen and Murphy, 1990) and partly because of the researchers' desire to understand why they are paid excessively. So far, the literature offers two major strands of explanations for excessive CEO compensation. One side of the literature evaluates the "managerial entrenchment" argument. Bebchuk and Fried (2004) and Bebchuk et al. (2002) evaluate the CEO's power over board members and suggest that such high level of pay is associated with managerial entrenchment. They argue that executive compensation contracts are set by the rent-extracting executives with the power to influence their own pay, rather than the board of directors which is supposed to do so in a way to assure the shareholder value maximization. Other researchers also recognized that managerial rent-seeking influences the compensation contracts and instead of being an instrument to mitigate the agency problem, it becomes a part of the agency problem (Bebchuk and Fried, 2003; Bertrand and Mullainathan, 2001; Blanchard et al., 1994; Yermack, 1997).

The leading alternative explanation for high CEO compensation levels offered in the literature suggests that compensation contracts are actually related to CEO ability; therefore the highly paid CEOs are the more talented ones. This "ability hypothesis" is supported by the ability matching models used to evaluate the link between the compensation and ability (Baker et al., 1988; Rose and Shepard, 1997; Rosen, 1982). While Rosen (1982) argues that compensation for top level management is determined based on their talent, Rose and Shepard (1997) suggest that compensation packages are designed to attract and retain appropriate managerial talent and they provide evidence that high-ability CEOs are rewarded more. Jensen and Murphy (1990) also support the idea that more talented CEOs should be rewarded more and argue that public and private political forces to limit that should be eliminated. Hubbard and Palia (1995) posit the ability explanation only after evaluating the results of a compensation-performance relationship. Moreover, Frydman and Saks (2010) utilizes the CEO ability to justify the CEO replacement with a high-ability outsider and provides that as an explanation of high CEO compensation.

The purpose of this paper is to examine the association between CEO ability and compensation contracts, and to explore the two competing arguments, namely the entrenchment hypothesis and the ability hypothesis. I use the CEO ability proxy introduced by Uygur (2010), which exploits the CEOs' personal contributions to presidential elections and evaluates the decision making abilities of those CEOs. I expect to find a positive association between the CEO ability proxy and the compensation levels. This will support the ability hypothesis and consequently suggest that companies take the

ability of CEO into consideration while determining the levels of CEO compensation contracts. They utilize the compensation packages to attract more talented CEOs; therefore CEOs with higher skills are paid more. Specifically, I evaluate the compensation contracts at three levels: Cash compensation, stock based incentives and total direct compensation.

In addition to the compensation levels, the ability hypothesis implies that there may be some differences in the structure of the compensation contracts of the CEOs. Uygur (2010) provides evidence that high-ability CEOs provide better firm performance for their shareholders. Therefore, high-ability CEOs may be more willing to have their compensation contracts tied to firm performance, which in turn may be used by the firms to attract talented CEOs. In order to evaluate this possibility and further test the ability hypothesis, I examine the compensation contract structures. I expect to find the ability proxy to be positively related to the percentage of incentive based compensation, which would suggest that high-ability CEOs receive more of their compensation in the form of incentives and have their wealth more strongly tied to their firms' performance. Lastly, I examine the variation in the CEOs' pay contracts. If high-ability CEOs are more likely to have firms with better performance, then they would be more willing to accept pay for performance. As a result, I expect to have greater variation in their compensation contracts.

I find that CEO ability is associated with higher compensation levels, specifically with higher cash compensation and higher stock based incentives. This result suggests that ability hypothesis dominate the entrenchment hypothesis, implying that the

compensation for CEOs is determined based on their talent. Moreover, there are significant differences in the CEO compensation structure between the high- and low-ability CEOs. Specifically, high-ability CEOs receive more of their compensation in stock-based incentives and less in the form of cash based compensation. Taken together with the argument that high-ability CEOs provide better firm performance, these results imply that the firms are aware of those CEOs' talent to improve firm performance and they use their compensation contracts to attract talented CEOs. Having more stock based components in their compensation contracts will give those CEOs the privilege to gain from their firm's performance and increase their motivation to improve performance even further. This may ultimately turn into something even more beneficial for the company and the CEO. Further analysis provides evidence that CEO ability is associated with greater variance in total compensation, specifically due to the higher variance in stock based incentives. This suggests that high-ability CEOs are in fact more willing to accept pay for performance, which in turn increases the variance in their pay contracts.

My work contributes to the literature by attempting to provide an answer to the on-going ability-entrenchment argument regarding the CEO compensation contracts. I provide evidence supporting the ability hypothesis, which implies that CEO ability in fact affects the compensation level and structure in the notion that more talented CEOs receive higher levels of compensation and they have more stock based incentives in their compensation contracts.

The remainder of the chapter is organized as follows: Section 3.2 describes the data, CEO pay variables, other control variables, and provides descriptive statistics.

Univariate and multivariate tests along with the results are explained in Section 3.3 and Section 3.4, respectively. Additional analysis on the variance in CEO compensation contracts is presented in Section 3.5, and Section 3.6 concludes the chapter.

3.2 Data and Variables

In my study, I use the CEO ability proxy introduced by Uygur (2010), which examines the decision making abilities of CEOs, based on the accuracy of their personal contributions to presidential elections in 2000 and 2008. In my sample, I examine the companies of contributing CEOs, during the period which the donations were made, i.e. 1997-1999 and 2005-2007, respectively[21]. I further widen the range of those periods by one year, in order to make sure there is enough observations. Therefore, my sample covers years of 1996-2000 and 2004-2008, including 3,012 firm-year observations.

3.2.1 Compensation Contract Variables

In this study, the main purpose is to investigate the impact of CEO ability on the compensation contracts, therefore executive compensation measures are used as the dependent variable in my main empirical model. I employ several different compensation components. Salary, bonus, stock grants and option grants are the major components of use, while I also evaluate the total direct compensation, which is the sum of salary, bonus, stock and option grants, long-term incentive plans payouts and other compensation items. The regression models include variables called cash compensation,

[21] Refer to Uygur (2010) for detailed explanation on how to develop the ability instrument and sample selection process.

which is calculated as the sum of salary and bonus components, and stock based incentives, which is equal to the sum of option awards, stock awards and long-term incentive plans payouts. Cash incentives variable will provide information about the current compensation of the CEOs, while stock based incentives variable is included to the model to analyze the performance related compensation components. In order to evaluate the differences in the structure of compensation contracts, I examine each variable mentioned above, as the percentage of total compensation. This includes the percentage of individual components, such as salary, bonus, stocks and option, as well as the percentage of cash based compensation and that of stock based incentives.

The reason why I am using the award values of options and stocks is that I am only interested in how the company evaluates the ability of the CEOs and rewards them by awarding them such compensation components. The CEO's decision of whether or when to exercise the options or sell the stocks is beyond the purposes of this study, although that may be an additional aspect for the assessment of CEO ability. Accordingly, I am interested in the award values of the stocks and options, not the values at the time of exercise.

3.2.2 Control Variables

The factors that the literature suggests to affect CEO pay level and structure are controlled in this study. Firm size is calculated by the natural log of book value of total assets. Research and Development (R&D) Intensity is measured as the R&D expenses over the book value of total assets. Capital expenditure is the ratio of capital expenses to total assets. Sales growth over total assets is used to measure growth opportunities. Debt

Ratio is measured by long-term debt, scaled by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the Risk variable. Prior performance is the Tobin's q from the previous year, calculated as the ratio of the market value of the firm to its book value from the prior year. Firm age is calculated by the number of year since the firm's data is provided in Compustat database. Lastly, I include dummy variables for each 2-digit SIC code and for each year in my sample. Relevant data values are gathered from COMPUSTAT database.

3.2.3 Descriptive Statistics

Table 13 presents the descriptive statistics of my sample. Panel A provides the mean, median, standard deviation along with the minimum and maximum values of the compensation contract variables. Individual components of the CEO pay are also included in the table, as well as the cash based compensation and stock based incentive figures. Panel B displays the summary statistics of firm characteristics of the companies in my sample, and Panel C shows the correlation matrix of the compensation variables and the CEO ability proxy.

For the CEOs in my sample, as displayed in Panel A, the average total direct compensation is $6,642,360 while there is a substantial amount of variation in the sample. A closer look at the components of compensation packages shows that the average salary is $702,980 and the average bonus value is $799,550. In my sample, a CEO receives around $1 million worth of stock awards and $3 million of option awards, on average. The table also provides descriptive statistics for the two compensation

Table 13
Descriptive Statistics for Variable Measures

The table displays the descriptive statistics for compensation level and structure variables, and firm characteristics. Panel A and Panel B present the mean, median, standard deviation, minimum and maximum values of the key variable of CEO pay contracts and firm characteristics , respectively. Panel C shows the correlation matrix of CEO pay variables with the CEO ability proxy, along with p-values within the parentheses. CEO Ability proxy is the instruments introduced by Uygur (2010). Salary, bonus, stock grants and option grants are the variables to measure the level of CEO pay. Total direct compensation is the sum of salary, bonus, stock and option grants, long-term incentive plans payouts and other compensation items. Cash compensation is calculated as the sum of salary and bonus components, and stock based incentives is equal to the sum of option awards, stock awards and long-term incentive plans payouts. Compensation structure variables are represented as percentage of total compensation. Firm size is the natural log of book value of total assets. R&D Intensity, Capital Expenditure, Sales Growth, and Debt Ratio variables are relevant values, scaled by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the Risk variable. Prior performance is the Tobin's q from the previous year, calculated as the ratio of the market value of the firm to its book value from the prior year. Firm age is calculated by the number of year since the firm's data is provided in Compustat database. The compensation level variables are expressed in thousands of dollars. Firm characteristics are represented in millions of dollars.

Panel A: Descriptive Statistics for Compensation Variables

Variables	Mean	Median	Std. Dev.	Minimum	Maximum
Salary	702.98	675.00	368.47	0.00	5,806.65
Bonus	799.55	300.00	2,106.67	0.00	58,755.59
Stocks	1,093.39	0.00	12,122.20	0.00	650,812.10
Options	2,994.72	693.68	14,485.38	0.00	600,347.40
Long-term Incentives	1,153.49	156.38	4,119.65	0.00	130,880.20
Total Compensation	6,642.36	3,183.95	19,963.16	0.00	655,448.00
Cash Based Comp.	1,502.53	1,000.00	2,222.49	0.00	59,580.59
Stock Based Incentives	5,143.25	1,826.56	19,481.02	0.00	650,848.00
Salary %	27.96	21.68	22.62	0.00	100.00
Bonus %	16.03	11.60	17.70	0.00	100.00
Stocks %	12.24	0.00	19.52	0.00	100.00
Options %	30.43	25.53	28.21	0.00	100.00
Long-term Incentives %	15.25	5.12	20.68	0.00	100.00
Cash Based Comp %	43.99	38.65	28.46	0.00	100.00
Stock Based Incentives %	56.05	61.36	28.43	0.00	100.00

Panel B: Descriptive Statistics for the Control Variables

Variables	Mean	Median	Std. Dev.	Minimum	Maximum
Total assets	17,467.34	2,619.53	82,897.45	1.06	2175052
R&D Intensity (%)	4.38	1.84	9.43	0	45.02
Capital expenditure (%)	5.78	4.25	5.92	0	50.51
Growth (%)	0.23	0.002	6.48	-24.05	321.97
Debt ratio (%)	20.50	18.05	17.22	0	80.63
Risk (%)	22.19	5.35	406.38	0.17	76.40
Firm age	26.34	22.00	16.19	2.00	59.00
Tobin's q	1.98	1.47	1.69	0.41	16.13

Table 13 (continued)
Descriptive Statistics for Variable Measures

Panel C: Correlation Matrix for Compensation Variables and CEO Ability Proxy

Variables	Ability	Salary	Bonus	Stocks	Options	LT Incen.	Total Comp.	Salary %	Bonus %	Stocks %	Options %	LT Incen. %
Ability	1.00											
Salary	0.049	1.00										
	(<.001)											
Bonus	0.023	0.236	1.00									
	(0.20)	(<.001)										
Stocks	0.030	0.067	0.061	1.00								
	(0.09)	(<.001)	(<.001)									
Options	0.042	0.056	0.112	0.014	1.00							
	(0.01)	(<.001)	(<.001)	(0.45)								
LT Incen.	0.045	0.215	0.159	0.024	0.019	1.00						
	(0.01)	(<.001)	(<.001)	(0.19)	(0.31)							
Total Comp.	0.060	0.165	0.259	0.626	0.748	0.249	1.00					
	(<.001)	(<.001)	(<.001)	(<.001)	(<.001)	(<.001)						
Salary %	-0.034	-0.239	-0.239	-0.075	-0.190	-0.219	-0.256	1.00				
	(0.05)	(<.001)	(<.001)	(<.001)	(<.001)	(<.001)	(<.001)					
Bonus %	-0.060	-0.043	0.390	-0.038	-0.094	-0.138	-0.075	-0.019	1.00			
	(<.001)	(0.01)	(<.001)	(0.04)	(<.001)	(<.001)	(<.001)	(0.30)				
Stocks %	0.099	0.180	-0.007	0.190	-0.058	0.019	0.072	-0.210	-0.211	1.00		
	(<.001)	(<.001)	(0.71)	(<.001)	(<.001)	(0.30)	(<.001)	(<.001)	(<.001)			
Options %	-0.020	0.027	-0.003	-0.039	0.305	-0.118	0.172	-0.451	-0.269	-0.269	1.00	
	(0.27)	(0.14)	(0.88)	(0.03)	(<.001)	(<.001)	(<.001)	(<.001)	(<.001)	(<.001)		
LT Incen. %	0.038	0.114	-0.084	-0.009	-0.083	0.502	0.028	-0.221	-0.322	0.001	-0.357	1.00
	(0.04)	(<.001)	(<.001)	(0.64)	(<.001)	(<.001)	(0.13)	(<.001)	(<.001)	(0.97)	(<.001)	

variables will be used in the regression model, namely salary plus bonus (cash compensation) and options, stocks and long-term incentives (stock based incentives).

Results in Panel B in Table 13 show that the average firm size, measured by the book value of total assets, is around 17 billion dollars with a considerable variation in the sample. Firm performance, measured by Tobin's q, ranges between 0.41 and 30.55 and the mean and median values are 1.98 and 1.47, respectively. Firms in my sample have an average R&D intensity of 4.38% and debt-ratio of 20.50%. The average firm age is close to 26. The correlation matrix is displayed in Panel C of Table 13. Supporting my earlier arguments, the ability proxy is positively and significantly associated with almost all components of compensation contracts. In terms of the structure, CEO ability is negatively related to percentage of cash based compensation components, salary and bonus, and positively related to the percentage of stock based incentives.

3.3 Univariate Results

Mean difference test results between the firms with high-ability CEOs and those with low-ability CEOs for the key compensation contract variables are presented in Table 14. The compensation level results included in Panel A support my argument about the level of compensation contracts of high-ability CEOs. Regarding the level of CEO pay, I find that high-ability CEOs have, on average, significantly higher levels of salary ($735,300 > $670,700) and bonus ($884.300 > $714,800), as well as stocks ($1,613,800 > $577,500) and options ($3,302,900 > $2,688,000) included in their compensation contracts. Overall, the more skilled CEOs receive significantly higher levels of total compensation. While high-ability CEOs have total compensation level close to $8 million

Table 14
Univariate Analysis

The table displays the results of the mean difference tests between firms with high- and low-ability CEOs. CEOs with ability index score above the median are considered as high-ability, and those below the median are called as low-ability CEOs. Panel A presents the results for compensation level variables, whereas Panel B shows the compensation structure variables. Salary, bonus, stock grants and option grants are the variables to measure the level of CEO pay. Total direct compensation is the sum of salary, bonus, stock and option grants, long-term incentive plans payouts and other compensation items. Cash compensation is calculated as the sum of salary and bonus components, and stock based incentives is equal to the sum of option awards, stock awards and long-term incentive plans payouts. Compensation structure variables are represented as percentage of total compensation. *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

Panel A: Mean differences of compensation level variables

	Mean Value			
Variables	**Firms with High-Ability CEOs**	**Firms with Low-Ability CEOs**	**Difference**	**t value**
Salary	735.3	670.7	64.6	4.83 ***
Bonus	884.3	714.8	169.5	2.21 **
Stocks	1,613.8	577.5	1,036.3	2.33 ***
Options	3,302.9	2,688.0	614.9	1.16
Total Compensation	7,755.6	5,529.1	2,226.5	3.06 ***
Cash Based Comp.	1,619.6	1,385.5	234.1	2.89 ***
Stock Based Incentives	6,140.1	4,146.4	1,993.7	2.81 ***

Panel B: Mean differences of compensation structure variables

	Mean Value			
Variables	**Firms with High-Ability CEOs**	**Firms with Low-Ability CEOs**	**Difference**	**t value**
Salary %	26.67	29.24	-2.57	-3.12 ***
Bonus %	14.76	17.31	-2.55	-3.97 ***
Stocks %	15.25	9.27	5.98	8.46 ***
Options %	29.26	31.60	-2.35	-2.27 **
Cash Based Comp %	41.43	46.55	-5.12	-4.96 ***
Stock Based Incentives %	58.61	53.48	5.13	4.96 ***

on average, their low-ability peers receive $5.5 million. This difference is carried on to the cash based compensation and stock based incentives. These results support the ability hypothesis, and provide evidence towards the argument that CEO ability is taken into account while determining the CEO pay levels.

Panel B in Table 14 presents the results for the mean difference tests of the compensation structure variables. The average salary percentage of high-ability CEOs in my sample is about 26%, whereas that of low-ability CEOs is 29%. Similar difference is present in the bonus component. While more skilled CEOs have only 14% of their compensation as bonus, their less skilled peers have 17% of bonus percentage. Taken as a whole, high-ability CEOs receive less of their compensation as cash based compensation, compared to low-ability CEOs in my sample. This finding is supported by the results of stock based incentives percentage. CEOs with higher ability score values have about 59% of their total compensation as stock based incentives, whereas CEOs with lower ability scores have around 53% of stock based incentive percentage. This difference is particularly driven by the greater percentage of stocks that are included in high-ability CEOs' compensation packages. These findings support the ability hypothesis, implying that firms actually design CEO pay contracts to attract high ability CEOs, by offering more stock based incentives.

3.4 Multivariate Analysis

The two hypotheses presented above examine the association between CEO ability and compensation contracts' level and structure. Obtaining a positive association would favor the ability hypothesis, but a negative association would provide support for

the entrenchment hypothesis. In order to test these hypotheses, I estimate the following model:

$$CEO\ Pay = \alpha_0 + \alpha_1(Ability) + \alpha_2(Firm\ Size) + \alpha_3(R\&D) + \alpha_4(Growth) + \alpha_5(CAPX) + \alpha_6(Debt\ Ratio) + \alpha_7(Risk) + \alpha_8(Firm\ Age) + \alpha_9(Performance_{t-1}) + \sum \alpha_i(Industry\ Dummy) + \sum \alpha_j(Year\ Dummy) + \varepsilon$$

CEO Pay is the proxy for the relevant CEO compensation contract variable. For the first set of regressions, it is the proxy for CEO pay level, and for the second set of regressions, it is the CEO pay structure variable. CEO pay level variables include cash based compensation (salary plus bonuses), stock based incentives (stock, options and long-term incentives), and total compensation. CEO pay structure variables are the percentage of cash based compensation and the percentage of stock based incentives. *Ability* is the value of the ability index score described in the variables section. The control variables include *Firm Size*, measured by the natural log of total assets, *R&D Intensity* as R&D expense over total assets. *CAPX, Growth* and *Debt Ratio* as the capital expenditure, sales growth and long-term debt, respectively, scaled by total assets. *Risk* is the stock return volatility, *Firm Age* is the number of years since the firm's initiation, and $Performance_{(t-1)}$ is the prior firm performance, measured by Tobin's q. The model also includes *Industry Dummies* to control for each 2-digit SIC code, and *Year Dummies* to control for each year in my sample.

Table 15
Regression results – Analysis of the Effect of CEO Ability on Compensation Level

The table presents the regression results for the compensation level variables. Total direct compensation is the sum of salary, bonus, stock and option grants, long-term incentive plans payouts and other compensation items. Cash compensation is calculated as the sum of salary and bonus components, and stock based incentives is equal to the sum of option awards, stock awards and long-term incentive plans payouts. CEO Ability proxy is the instruments introduced by Uygur (2010). Firm size is the natural log of book value of total assets. R&D Intensity, Capital Expenditure, Sales Growth, and Debt Ratio variables are relevant values, scaled by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the Risk variable. Prior performance is the Tobin's q from the previous year, calculated as the ratio of the market value of the firm to its book value from the prior year. Firm age is calculated by the number of year since the firm's data is provided in Compustat database. Industry dummy variables equal one for each 2-digit SIC code and year dummy variable equal one for each year in my sample. *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

	Dependent Variable		
Variables	Total Compensation (1)	Cash Based Compensation (2)	Stock Based Incentives (3)
Ability	3,972.0 ***	94.15	3,873.6 ***
	(3.13)	(0.73)	(3.11)
Firm Size	3,247.7 ***	476.9 ***	2,773.4 ***
	(11.50)	(16.50)	(9.98)
R&D Intensity	7,395.2	1,451.1 **	5,955.8
	(1.00)	(1.91)	(0.82)
Capital Expenditure	-11,339.7	-1,338.4	-9,993
	(-1.31)	(-1.51)	(-1.18)
Growth	1,119.7	149.3	962.4
	(0.16)	(0.21)	(0.14)
Debt Ratio	-2,099.3	-476.1 *	-1.653.7
	(-0.82)	(-1.82)	(-0.66)
Risk	-3.10 ***	-0.325 ***	-2.784 ***
	(-3.33)	(-3.41)	(-3.03)
Firm Age	-25.91	4.916 *	-31.31
	(-0.90)	(1.67)	(-1.10)
$Performance_{(t-1)}$	1,300.6 ***	-6.420	1,308.5 ***
	(5.54)	(-0.27)	(5.66)
Intercept, Industry and Year Dummies	yes	yes	yes
Adj. R^2	0.0798	0.2223	0.0638
Sample Size	3,012	3,012	3,012

Table 15 presents the results of the above model with the CEO pay level variables as the dependent variable. Column 1, Column 2 and Column 3 display the results for total compensation, cash based compensation, and stock based incentives, respectively. CEO ability is significantly and positively associated to total compensation level. Regarding the cash based compensation, that association is still positive but not as significant. However, the relation between stock based incentives and CEO ability is significant and positive. In general, the results support the ability hypothesis and suggest that high-ability CEOs are paid more.

From an economic perspective, high ability CEOs receive, on average, $2.2 million more as total compensation compared to low-ability CEOs in my sample, which makes about 33% difference[22], evaluated at the 25th and 75th percentile of ability index score. It is clear from that results that such difference in total compensation is caused by the greater amount of stock based compensation included in more skilled CEOs' pay contracts. Those CEOs with higher ability score receive about $2.1 million more as stock based incentives, which makes them have about 41% more stock based incentives relative to CEOs with lower ability scores[23]. Overall, these findings not only support the

[22] The values are calculated as following:

$$\Delta_{\substack{Total\\Comp}} = \frac{\begin{pmatrix} CEO\ at \\ 75th \\ percentile \end{pmatrix} - \begin{pmatrix} CEO\ at \\ 25th \\ percentile \end{pmatrix}}{Average\ Total\ Compensation} = \frac{\begin{pmatrix} 3{,}972.0 \\ \times\ 0.6881 \end{pmatrix} - \begin{pmatrix} 3{,}972.0 \\ \times\ 0.1360 \end{pmatrix}}{6{,}642.36} = \frac{\$2{,}192.941}{6{,}642.36} = 33\%$$

where 0.1360 and 0.6881 are the ability index scores for the CEOs at 25th and 75th percentile, respectively, and $6,642.36 is the average total compensation for the sample. 3,972.0 is the coefficient estimate of Ability in Table 15 Column 1.

[23]The values are calculated as following:

argument that CEO pay contracts are associated to CEO ability, but also favor the idea that firms design their contracts, possibly by offering more stock based incentives, to attract more skilled CEOs.

The results of my model with the CEO pay structure variables are shown in Table 16. Column 1 displays the results for the percentage of stock based incentives, and Columns 2 through 5 presents the results for the individual components of CEO pay contracts, that are the percentage of salary, bonus, stocks and options, respectively. The association between CEO ability and stock based incentives is positive and significant, suggesting that high-ability CEOs receive more of their compensation in the form of stock based incentives, rather than cash based compensation. Evaluating at the 25th and 75th percentile of ability index score, high-ability CEOs receive 2.1% more stock based compensation than low-ability CEOs[24]. A more detailed evaluation of individual components reveals the actual factor driving this result. CEOs with greater ability index scores have significantly lower bonus percentage and at the same time higher stocks percentage in their compensation contracts. This result may imply that high-ability CEOs prefer getting paid for performance and they receive that in the form of stocks, rather than

$$\Delta_{\substack{Stock\\Based}} = \frac{\begin{pmatrix} CEO\ at \\ 75th \\ percentile \end{pmatrix} - \begin{pmatrix} CEO\ at \\ 25th \\ percentile \end{pmatrix}}{\begin{matrix} Average\ Stock \\ Based\ Incentives \end{matrix}} = \frac{\begin{pmatrix} 3{,}873.6 \\ \times\ 0.6881 \end{pmatrix} - \begin{pmatrix} 3{,}873.6 \\ \times\ 0.1360 \end{pmatrix}}{5{,}143.25} = \frac{\$2{,}138.614}{5{,}143.25} = 41\%$$

where 0.1360 and 0.6881 are the ability index scores for the CEOs at 25th and 75th percentile, respectively, and $5,143.25 is the average stock based incentives for the sample. 3,873.6 is the coefficient estimate of Ability in Table 15 Column 3.

[24] The values are calculated as following:

$$\Delta_{\substack{Stock\\Based\%}} = \begin{pmatrix} CEO\ at \\ 75th \\ percentile \end{pmatrix} - \begin{pmatrix} CEO\ at \\ 25th \\ percentile \end{pmatrix} = \begin{pmatrix} 0.038 \\ \times\ 0.6881 \end{pmatrix} - \begin{pmatrix} 0.038 \\ \times\ 0.1360 \end{pmatrix} = 0.0209 = 2.1\%$$

where 0.1360 and 0.6881 are the ability index scores for the CEOs at 25th and 75th percentile, respectively, and 0.038 is the coefficient estimate of Ability in Table 16 Column 1.

Table 16
Regression results – Analysis of the Effect of CEO Ability on Compensation Structure

The table presents the regression results for the compensation structure variables. Stock based incentives are equal to the sum of option awards, stock awards and long-term incentive plans payouts, and the dependent variable used in the below model is the represented as the percentage of total compensation. The model also uses salary, bonus, stock grants and option grants, as the percentage of total compensation. CEO Ability proxy is the instruments introduced by Uygur (2010). Firm size is the natural log of book value of total assets. R&D Intensity, Capital Expenditure, Sales Growth, and Debt Ratio variables are relevant values, scaled by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the Risk variable. Prior performance is the Tobin's q from the previous year, calculated as the ratio of the market value of the firm to its book value from the prior year. Firm age is calculated by the number of year since the firm's data is provided in Compustat database. Industry dummy variables equal one for each 2-digit SIC code and year dummy variable equal one for each year in my sample. *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

	Dependent Variable				
	Stock Based Incentives %	Salary %	Bonus %	Stocks %	Options %
Variables	(1)	(2)	(3)	(4)	(5)
Ability	0.038 **	-0.018	-0.019 **	0.051 ***	-0.007
	(2.31)	(-1.44)	(-1.09)	(4.61)	(-0.46)
Firm Size	0.060 ***	-0.061 ***	0.001	0.014 ***	0.044 ***
	(16.66)	(-21.42)	(0.51)	(5.59)	(12.13)
R&D Intensity	0.152	-0.070	-0.080	-0.163 ***	0.500 ***
	(1.59)	(-0.93)	(-1.33)	(-2.47)	(5.18)
Capital Expenditure	0.135	-0.059	-0.076	-0.142 *	0.203 *
	(1.22)	(-0.67)	(-1.08)	(-1.85)	(1.80)
Growth	-0.169 **	0.127 *	0.040	0.068	-0.288 ***
	(-1.93)	(1.84)	(0.74)	(1.14)	(-3.25)
Debt Ratio	0.039	-0.017	-0.025	0.039 *	0.012
	(1.20)	(-0.66)	(-1.22)	(1.75)	(0.39)
Risk	-0.001	0.0001 ***	-0.0001 **	-0.0001	-0.0004 ***
	(-0.59)	(2.38)	(-2.04)	(-1.36)	(-3.43)
Firm Age	-0.003	0.001	0.001	0.0002	-0.001 ***
	(-0.86)	(0.54)	(0.47)	(1.14)	(-4.97)
$Performance_{(t-1)}$	0.018 ***	-0.013 ***	-0.004 ***	-0.003 **	0.022 ***
	(6.18)	(-5.84)	(-2.39)	(-1.91)	(7.19)
Intercept, Industry and Year Dummies	yes	yes	yes	yes	yes
Adj. R^2	0. 2449	0.2577	0.2187	0.2319	0.2114
Sample Size	3,012	3,012	3,012	3,012	3,012

bonuses, which in turn ties the CEOs wealth to the company's value. Taken together with the argument that more skilled CEOs will perform better, this finding suggests that those CEOs are making a rational decision by increasing the percentage of stocks included in their pay contacts.

3.5 Variance in CEO Pay

In this section, I examine the variation in the CEOs' pay contracts. I argue that if high-ability CEOs are more likely to have firms with better performance, then those CEOs would be more willing to accept pay for performance. This will consequently increase variation in their compensation contracts. I use coefficient variation to evaluate the CEO pay contracts, at the total compensation level as well as the cash based compensation and stock based incentives level.

The results are presented in Table 17. I evaluate the CEO pay contracts for the periods that correspond to the presidential election in 2000 and 2008. In both periods, CEOs with higher ability index scores have greater variation in their total compensation levels. When I evaluate the components of pay contracts, I find that the variation in cash based compensation decreases, whereas the variation in stock based incentives increases, for high-ability CEOs. In other words, CEO ability is associated with greater variance in total compensation, specifically due to the higher variance in stock based incentives. This result supports the previous findings and suggests that that high-ability CEOs are in fact more willing to accept pay for performance, which in turn increases the variance in their pay contracts.

Table 17
Comparison of Coefficient of Variation in Total Compensation

The table presents the result of the variation in CEO pay levels. The results for the mean difference tests between firms with high- and low-ability CEOs are displayed. CEOs with ability index score above the median are considered as high-ability, and those below the median are called as low-ability CEOs. Coefficient of variation value is equal to the mean of coefficient of variation of the compensation variables for each CEO in the sample for the relevant time period. Total direct compensation is the sum of salary, bonus, stock and option grants, long-term incentive plans payouts and other compensation items. Cash compensation is calculated as the sum of salary and bonus components, and stock based incentives is equal to the sum of option awards, stock awards and long-term incentive plans payouts. The t-statistics for the difference in mean test is also provided. *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

		COEF. OF VARIATION $(\sigma/\mu)x\ 100$			
		High-Ability CEOs	**Low-Ability CEOs**	**Difference**	**t-stat**
1996-2000	**Total Compensation**	55.13	48.40	6.73	3.61 ***
	Cash Based Compensation	26.93	29.70	-2.76	-2.14 **
	Stock Based Incentives	82.37	76.56	5.81	2.34 ***
2004-2008	**Total Compensation**	43.49	38.83	4.66	3.19 ***
	Cash Based Compensation	36.77	38.99	-2.21	-1.80 *
	Stock Based Incentives	54.81	49.75	5.06	2.83 ***

3.6 Conclusion

Regarding the reason why CEOs are paid excessively, literature offers two major strands of explanations. The "managerial entrenchment" argument suggests that CEO pay contracts are set by the rent-extracting executives with the power to influence their own pay, and due to such behavior compensation contracts become a part of the agency problem, instead of being an instrument to mitigate the agency problem (Bebchuk and Fried, 2004; Bebchuk et al., 2002; Bebchuk and Fried, 2003; Bertrand and Mullainathan, 2001; Blanchard et al., 1994; Yermack, 1997). The leading alternative explanation, the "ability" argument, suggests that compensation contracts are in fact associated to CEO ability. It is suggested that the compensation for top level management is determined based on their talent and the compensation packages are designed to attract and retain appropriate managerial talent (Rose and Shepard, 1997; Rosen, 1982).

In this study, I examine the association between CEO ability and compensation contracts, and to explore the above arguments. As the CEO ability proxy, I use the instrument introduced by Uygur(2010), which examines the accuracy of CEOs' personal contributions to presidential elections and evaluates the decision making abilities of those CEOs. I expect to find a positive association between the CEO ability proxy and the compensation levels. I further suppose that there are significant differences in the structure of CEO pay contracts, in the notion that high-ability CEOs receive more pay for performance. Therefore, I expect to find support for the ability hypothesis which suggests that more talented CEOs are paid more and the companies utilize the compensation packages to attract more talented CEOs. Specifically, I evaluate the level and the structure of CEO compensation contracts at three categories, which are cash

compensation, stock based incentives and total direct compensation. Finally, I examine the variation in the CEOs' pay contracts. If high-ability CEOs are more likely to have firms with better performance, I expect those CEOs to be more willing to accept pay for performance. As a result, I expect to have greater variation in their compensation contracts.

My results mainly support the ability hypothesis. I find that CEO ability is associated with higher compensation levels, specifically with higher cash compensation and higher stock based incentives. This result suggests that the CEO pay is determined based on their talent. Moreover, the structure of compensation contracts differs significantly between the high- and low-ability CEOs. Particularly, high-ability CEOs receive more of their compensation in stock-based incentives and less in the form of cash based compensation. Taken together with the findings of Uygur (2010), which implies that high-ability CEOs provide better firm performance, my results imply that the companies are aware of those CEOs' skills to improve performance and those firms design their compensation contracts to attract more talented CEOs. Further analysis on the variation in CEO pay levels supports the idea that high-ability CEOs are more willing to accept pay for performance and provides evidence that CEO ability is associated with greater variance in total compensation. This difference is specifically due to the higher variance in stock based incentives. Overall, this paper suggests that CEO ability is in fact an important factor for CEO pay contracts.

CHAPTER 4

CEO ABILITY AND CORPORATE OPACITY

4.1 Introduction

Publicly traded firms are mandated to provide extensive disclosure by the regulators, yet considerable variation in the additional information provided to the capital markets still exists. Firms have substantial discretion over the mandatory disclosures, about the informativeness of the disclosures and the details provided (Lang and Lundholm, 1996). There has been a remarkable body of research evaluating the reasons of such variations in voluntary disclosure. Healy and Palepu (2001), for example, consider the reduction of information asymmetries and mitigation of agency costs as the main consequences of having a less opaque firm. Information asymmetry problems may lead capital markets to possibly undervalue good firms (Akerlof, 1970). A high level of disclosed information allows precise valuations and induces investors to hold the company's stock. Such an increase in liquidity also increases the demand; therefore, raises the stock price, which in turn decreases the cost of capital (Diamond and Verrecchia, 1991; Healy and Palepu, 2001; Easley and O'Hara, 2004). In addition, Verrecchia (1983; 2001) suggests that investors interpret withheld information as unfavorable and consequently discounts the firm's value. Prior literature also associates corporate opacity with the agency problem between the controlling and outside shareholders. Faccio et al. (2001), for instance, suggest that high opacity levels make it

difficult for outside shareholders to recognize expropriation. Leuz et al. (2003) argue that controlling shareholders may increase firm opacity to make their private benefit of control possible. In addition, Anderson et al. (2009) reports that corporate opacity can lead to severe conflicts of interests between founding family members and minority shareholders.

In this paper, I argue that the ability level of the Chief Executive Officer (CEO) might also be an important factor for corporate opacity. The asymmetric information between the CEO and the outside shareholders may also include the ability level of the CEO. In other words, investors in the market may be unable to fully observe the CEO's ability level, while the CEO is aware of his abilities. Then, the CEO would also be aware that his abilities will be assessed by the market based on the firm characteristics, such as firm performance, success of his investment and/or R&D decisions (Holmstrom, 1999).

Uygur (2010) provides evidence that those CEOs who can make more accurate forecasts, and therefore, better decision for their firms (i.e. high-ability CEOs), provide better firm performance for their shareholders. A high-ability CEO may also choose to disclose more information, therefore create lower corporate opacity, in order to signal the market about his superior skills, whereas a low-ability CEO may not choose to do such signaling. It would be costly for a less-skilled CEO to provide more information available to the market, since the public will be able to better evaluate his decisions, and this may reveal his true ability level. Low-ability CEOs may signal-jam the market's inferences about their ability levels by not providing full information and misleading the market, so that they hide behind the shield of high corporate opacity (Narayanan, 1985; Fudenberg

and Tirole, 1986; Stein, 1989; Holmstrom, 1999)[25]. This argument is similar to Holmstrom's (1999) suggestion that an undervalued manager would be willing to take more risky projects in order to prove himself, implying that risk-taking in itself would be a signal of talent, whereas others will jam the signals by not taking the investments. Therefore, I argue that high-ability CEOs promote corporate transparency. If so, I expect to observe a negative relation between the CEO ability and the corporate opacity.

An alternative explanation for any association between CEO ability and corporate opacity may also be about the CEOs' preferences of the companies they want to work for. A low-ability CEO may seek to work in a high-opaque firm, in order to make it difficult for outsiders to evaluate his performance. The above two arguments are both plausible, and it is very difficult to distinguish between them. However, they both imply the same directional relation between CEO ability and corporate opacity and suggest that CEO ability is associated with the financial transparency. Thus, I hypothesize that there is a negative association between CEO ability and corporate opacity.

Finally, I examine the value impact of opacity with the presence of high- or low-ability CEOs. In other words, I evaluate the impact of CEO ability on the relation between opacity and firm performance. In addition to the benefits of corporate transparency, the literature provides evidence on the negative relation between corporate opacity and firm performance. Moreover, Uygur (2010) suggests that there is a positive association between CEO ability and firm performance, due to those CEOs' better

[25] Although these papers evaluate different questions, they all develop a "signal-jamming" model, whereby one player intends to mislead the other player, by distorting, manipulating or simply not providing full information.

decision making abilities. If high-ability CEOs have more accurate forecasts and make superior decisions for their shareholders, the increased opacity may not necessarily be a value decreasing action. Accordingly, I expect the effect of opacity on firm performance to be positive when that decision comes from a high-ability CEO.

I also consider a possible endogeneity problem, which may be driving my results, due to the complexity of the firms. Rosen (1982) and Rose and Shepard (1997) argue that high-ability CEOs are matched with more complex firms. Bushman et al., (2004) also suggests that organizational complexity may impact the corporate transparency decisions. Therefore, any finding that supports my arguments may be driven by firm complexity, rather than CEO ability. As an attempt to overcome this concern, I create a propensity score matched sample, in which I have firms with high- and low-ability CEOs matched on their predicted propensities to be a complex firm. I expect the firms with high-ability CEOs to have lower opacity levels than those with low-ability CEOs.

I use the CEO ability proxy created by Uygur (2010), which uses the CEOs' personal contributions to presidential elections and captures the decision making abilities of those CEOs. Therefore, my sample consists of firms with contributing CEOs from 1996 to 2008. I develop an opacity index to evaluate the relative opaqueness of the firms in my sample (Anderson et al., 2009). I find that CEO ability is negatively and significantly associated to opacity. My result is consistent with the notion that low-ability CEOs try to signal-jam the inferences of the market about their talent by creating high-opaque firms, as well as the idea that low-ability CEOs seek to work for high-opaque firms. It is very difficult, if not possible, to separate out their effects. This finding is

supported by the complexity-matched sample results. Lastly, the analysis on the value impact of the opacity decisions reveals that if the decision to remain opaque is coming from a high-ability CEO, it is not a value decreasing action. The results suggest that a high-ability CEO may still be able to provide better firm performance, even when the firm increases the opacity level.

The remainder of the chapter is organized as follows: Section 4.2 describes the data, variables of interest, and control variables. Section 4.3 provides univariate analysis results. Empirical tests and results of multivariate analysis are explained in Section 4.4. Section 4.5 presents the results of the complexity-matched sample evaluation as a robustness check, and Section 4.6 concludes the chapter.

4.2 Sample and Data

Uygur (2010) introduces a unique CEO ability proxy by identifying the CEOs of public firms with personal contributions to presidential elections in 2000 and 2008, and evaluating those CEOs forecasting and decision making abilities. In my sample, I examine the companies of those contributing CEOs, during the period in which they continue to manage their firms. I obtain the company and industry data from COMPUSTAT database, and the corporate opacity data from CRSP and IBES databases. The final sample consists of firms with contributing CEOs from 1996 to 2008, including 3,558 firm-year observations.

4.2.1 Donating CEOs and CEO Ability

The ability proxy used in this study is the instrument introduced by Uygur (2010)[26]. It measures the accuracy of the CEO's decision making abilities, and assigns a relative ability index score to each contributing CEO. In my study, I consider the CEOs with above median ability index score as "high-ability" and those below median as "low-ability".

4.2.2 Corporate Opacity

I develop an opacity index to evaluate the relative opacity of each firm in my sample. The index uses four different corporate opacity proxies, namely trading volume, bid-ask spread, analysts following, and analysts forecast dispersion. In a similar manner to Anderson et al. (2009), the index is constructed in such a way that the degree of corporate opacity increases as the index score increases.

Trading volume (*Dollar Volume)* is included to the opacity index as a proxy for information uncertainty (Leuz and Verrecchia, 2000).It is calculated as the natural log of the average daily dollar volume of each firm during the fiscal year. Second entry in the opacity index is the bid-ask spread (*Spread)*, which is used in the literature to proxy for information asymmetry (Diamond and Verrecchia, 1991). The bid-ask spread variable is calculated by taking the difference of the fiscal year-end ask and bid prices, and dividing by the average of the bid and ask price. The data for *Dollar Volume* and *Spread* is collected from CRSP database. Last two variables included to the opacity index are number of analysts following (*Analysts)* and the analysts forecast dispersion (*Forecast*

[26] Refer to Uygur (2010) for detailed explanation on how to develop the ability instrument.

Dispersion). Lang and Lundholm (1996) suggest that those variables may be used to measure the market scrutiny and information availability. I use the natural logarithm on number of analysts following. The analysts forecast dispersion is calculated as squared difference between the maximum and the minimum forecast value, scaled by the average forecast value. *Analysts* and *Forecast Dispersion* data is gathered from IBES Database.

4.2.3 Firm Performance

I use Tobin's q as the measure of firm performance. Tobin's q is calculated as the ratio of the market value of the firm to its book value. Natural log of Tobin's Q is used in the multivariate analysis, following the literature (Chung and Jo, 1996; Gompers et al., 2008). Relevant data values are gathered from COMPUSTAT database.

4.2.4 Control Variables

I control for the factors included in the literature that potentially affect corporate opacity and firm value. *Firm size* is measured by the natural log of book value of total assets. *Research and Development (R&D) Intensity* is calculated as the R&D expenses, scaled by total assets. *Capital expenditure* is the ratio of capital expenses to total assets. Sales growth over total assets is used to control for growth opportunities, and included as the G*rowth* variable. *Debt Ratio* is measured by scaling long-term debt by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the *Risk* variable. *Prior performance* is the return on assets from the previous year, calculated as the ratio of net income over the book value of total assets from the prior year. *Firm age* is calculated by the number of year since the firm's data is provided in Compustat

database. Lastly, I include dummy variables for each 2-digit SIC code and for each year in my sample.

4.3 Univariate Analysis

4.3.1 Summary Statistics

Table 18 presents the summary statistics of my sample. Panel A provides the mean, median, standard deviation along with the minimum and maximum values of my variables. Individual components of the Opacity Index are also included in the table, as well as the Opacity Index. Panel B displays the correlation matrix of the variables of interest for the full sample.

My sample includes the firms with CEOs who made personal contributions to 2000 and 2008 presidential elections and consists of 3,558 firm-year observations, ranging from 1996 to 2008. There is a substantial variation in firm size, with average firm size of $17.2 billion. Firm performance, measured by Tobin's q, ranges from 0.30 to 16.13 and the mean and median values are 1.95 and 1.46, respectively. My sample has an average R&D intensity of 2.01%, and debt ratio of 20.22%. Firm age, with mean value of 26.37, has a minimum value of 1 year and a maximum value of 59 years.

Panel B in Table 18 displays the correlation matrix for the key variables of corporate opacity. Supporting my earlier arguments, CEO ability proxy appears to be negatively related to opacity index. Specifically, an increase in CEO ability is associated with an increase in dollar volume and number of analysts following, and a decrease in

Table 18
Descriptive Statistics

The table displays the descriptive statistics for corporate opacity and firm characteristics. Panel A presents the mean, median, standard deviation, minimum and maximum values of the key variables. Panel B shows the correlation matrix of key opacity and performance variables with CEO ability proxy, along with p-values within the parentheses. The opacity index uses four different corporate opacity proxies, namely trading volume, bid-ask spread, analysts following, and analysts forecast dispersion, and it is constructed in a way that the degree of corporate opacity increases as the index score increases. Trading volume is calculated as the natural log of the average daily dollar volume of each firm during the fiscal year. The bid-ask spread variable is calculated by taking the difference of the fiscal year-end ask and bid prices, and dividing by the average of the bid and ask price. Analysts variable is measured by the number of analysts following. The analysts forecast dispersion is calculated as squared difference between the maximum and the minimum forecast value, scaled by the average forecast value. Firm size is the book value of total assets, represented in millions of dollars. Research and Development (R&D) Intensity is calculated as the R&D expenses, scaled by total assets. Capital expenditure is the ratio of capital expenses to total assets. Sales growth over total assets is used to control for growth opportunities, and included as the Growth variable. Debt Ratio is measured by scaling long-term debt by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the Risk variable. Firm age is calculated by the number of year since the firm's data is provided in Compustat database. Firm performance is measured by Tobin's q, and it is calculated as the ratio of the market value of the firm to its book value. Prior performance is the return on assets from the previous year, calculated as the ratio of net income over the book value of total assets from the prior year.

Panel A: Descriptive statistics for the entire sample.

Variables	**Mean**	**Median**	**Std. Dev.**	**Min**	**Max**
Total assets	17,235	2,552	80,577	5	2,175,052
R&D Intensity (%)	2.01	0.00	6.02	0	41.77
Capital expenditure (%)	5.56	4.04	5.78	0	50.51
Growth (%)	0.07	0.002	1.79	-7.76	70.37
Debt ratio (%)	20.22	17.90	16.86	0	75.27
Risk (%)	22.15	5.59	390.93	0.17	76.40
Firm age	26.37	21.00	16.19	1.00	59.00
Tobin's q	1.95	1.46	1.60	0.30	16.13
Return on Assets *(t-1)*	0.036	0.043	0.140	-3.245	0.933
Opacity Index	0.5498	0.5500	0.1663	0.1500	0.9750
Ln(Dollar Volume)	16.42	16.44	1.77	8.93	21.92
Spread (%)	0.98	0.36	1.87	-1.72	40.00
Analysts	8.15	7.00	6.87	0	42.00
Forecast Dispersion (%)	779.26	8.31	15,998.24	0	66,533.60

Table 18 (continued)
Descriptive Statistics

Panel B: Correlation Matrix of key variables

	Ability Dummy	Ln(Dollar Volume)	Spread	Analysts	Forecast Dispersion	Opacity Index	Tobin's Q
Ability Dummy	1.00						
Ln(Dollar Volume)	0.069 (<.001)	1.00					
Spread	-0.138 (<.001)	-0.333 (<.001)	1.00				
Analysts	0.061 (<.001)	0.628 (<.001)	-0.149 (<.001)	1.00			
Forecast Dispersion	-0.010 (0.57)	0.006 (0.73)	0.039 (0.02)	-0.015 (0.37)	1.00		
Opacity Index	-0.144 (<.001)	-0.785 (<.001)	0.460 (<.001)	-0.641 (<.001)	0.043 (0.01)	1.00	
Tobin's Q	0.049 (0.003)	0.218 (<.001)	-0.085 (<.001)	0.181 (<.001)	-0.022 (0.20)	-0.228 (<.001)	1.00

bid-ask spread and analysts forecast dispersion. Moreover, ability seems to be positively associated with firm performance, measured by Tobin's q.

Mean difference test results between the firms with high-ability CEOs and those with low-ability CEOs for the key variables are presented in Table 19. Relative to the firms with low-ability CEOs, those with high-ability CEOs are significantly smaller (7.86 < 8.06), more risky (37.02% > 7.32%) and younger (25.07 < 27.67). They have lower capital expense ratios (5.10% < 6.05%), yet higher R&D intensity (2.17% > 1.86%). And overall, high-ability CEOs are better performers (2.03 > 1.87). Regarding the differences in corporate opacity measure, the results are supporting my initial hypothesis. High-ability CEOs have firms with significantly higher dollar volume (16.55 > 16.30), lower bid-ask spread (0.73% < 1.24%) and greater number of analysts following (8.57> 7.73). Taken as a whole, the results of those differences are visible on the opacity index values. High-ability CEOs' firms are significantly less opaque compared to their low-ability peers (0.5260 < 0.5738). This results leads to, on average, 9.08% difference in corporate opacity between the firms with high- and low-ability CEOs[27].

4.3.2 A Deeper Look at Corporate Opacity: 2 by 2 Tables

I continue my univariate analysis with an additional step to evaluate the effect of corporate opacity on firm performance for high- and low-ability CEOs. I divide my sample into four different subsamples, by the firm's opacity level and the CEO's ability

[27] The value is calculated as following:

$$\frac{(0.5738 - 0.5260)}{0.5260} = 0.0908 = 9.08\%$$

Table 19
Descriptive Statistics: Mean Difference Tests between firms with high- vs. low-ability CEOs

The table displays the results of the mean difference tests between firms with high- and low-ability CEOs. CEOs with ability index score above the median are considered as high-ability, and those below the median are called as low-ability CEOs. The opacity index uses four different corporate opacity proxies, namely trading volume, bid-ask spread, analysts following, and analysts forecast dispersion, and it is constructed in a way that the degree of corporate opacity increases as the index score increases. Trading volume is calculated as the natural log of the average daily dollar volume of each firm during the fiscal year. The bid-ask spread variable is calculated by taking the difference of the fiscal year-end ask and bid prices, and dividing by the average of the bid and ask price. Analysts variable is measured by the number of analysts following. The analysts forecast dispersion is calculated as squared difference between the maximum and the minimum forecast value, scaled by the average forecast value. Firm size is the natural logarithm of the book value of total assets. Research and Development (R&D) Intensity is calculated as the R&D expenses, scaled by total assets. Capital expenditure is the ratio of capital expenses to total assets. Sales growth over total assets is used to control for growth opportunities, and included as the Growth variable. Debt Ratio is measured by scaling long-term debt by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the Risk variable. Firm age is calculated by the number of year since the firm's data is provided in Compustat database. Firm performance is measured by Tobin's q, and it is calculated as the ratio of the market value of the firm to its book value. *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

	Mean Value			
Variables	**Firms with High-Ability CEOs**	**Firms with Low-Ability CEOs**	**Difference**	**t value**
Ln(Total assets)	7.86	8.06	-0.19	-3.37 ***
R&D Intensity (%)	2.17	1.86	0.31	1.57
Capital expenditure (%)	5.10	6.05	-0.95	-4.80 ***
Growth (%)	0.13	0.02	0.11	1.71 *
Debt ratio (%)	20.10	20.35	-0.25	-0.45
Risk (%)	37.02	7.32	29.70	2.25 **
Firm age	25.07	27.67	-2.59	-4.80 ***
Tobin's Q	2.03	1.87	0.16	2.95 ***
Opacity Index	0.5260	0.5738	-0.0479	-8.67 ***
Ln(Dollar Volume)	16.55	16.30	0.25	4.12 ***
Spread (%)	0.73	1.24	-0.51	-8.32 ***
Analysts	8.57	7.73	0.84	3.65 ***
Forecast Dispersion (%)	34.20	36.23	-2.03	-0.76
Number of Observations	1,779	1,779		

level. I first rank the sample by the opacity index to determine the more- and less-opaque firms. Then, within each subsample, I rank the firms based on their CEO's ability index score. Top and bottom terciles for CEO ability are compared. As a result, I have four groups, such as more-opaque firms managed by low-ability CEOs, more-opaque firms managed by high-ability CEOs, and so on. I examine the performance values of these four groups of firms. The results are presented in Table 20.

Panel A in Table 20 shows the performance values, measured by Tobin's q. The column-wise analysis of the table serves my interest better, since it displays the impact of opacity on firm performance for the firms with high- and low-ability CEOs. Firm performance significantly decreases with the increased opacity, for both low- and high-ability CEOs. However, the comparison of the change in performance for low- and high-ability CEOs may provide more interesting inferences, which leads us to Panel B of the same table. My second hypothesis suggests that the value-deteriorating impact of corporate opacity may be decreased, if such decision is coming from a high-ability CEO. This argument implies that the decrease in Tobin's q due to high opacity for low-ability CEOs would be greater than that for high-ability CEOs. Panel B presents the one-tailed t-test results for the change in firm performance due to opacity. Supporting the above argument, I find that when opacity increases, firm performance decreases significantly more for low-ability CEOs than their high-ability peers.

Recognizing the fact that firm size, R&D intensity, riskiness and other firm characteristics may affect the CEOs' corporate opacity decisions and the firms' performance level, I continue my evaluation with multivariate analysis.

Table 20
2-by-2 Tables: Firm Performance with Different CEO Ability and Opacity Levels

Additional descriptive results are presented in this table. The sample is divided into four different subsamples, by the firm's opacity level and the CEO's ability level. First, the sample is ranked by the opacity index to determine the more- and less-opaque firms. Then, within each subsample, firms are ranked based on their CEO's ability index score. Top and bottom terciles for CEO ability are compared. As a result, there are four groups, such as more-opaque firms managed by low-ability CEOs, more-opaque firms managed by high-ability CEOs, and so on. Panel A displays the performance values of these four groups of firms. Panel B presents the one-tailed t-test results for the comparison of the change in firm performance due to opacity levels. The ability proxy uses the instrument introduced by Uygur (2010). Opacity is measured by the Opacity Index developed in the paper. Firms above median are considered as more-opaque and those below median as less-opaque. The opacity index uses four different corporate opacity proxies, namely trading volume, bid-ask spread, analysts following, and analysts forecast dispersion, and it is constructed in a way that the degree of corporate opacity increases as the index score increases. Firm performance is measured by Tobin's q, and it is calculated as the ratio of the market value of the firm to its book value. *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

Panel A: Firm Performance with Different CEO Ability and Opacity Levels

Tobin's Q	**Low Ability CEOs**	**High Ability CEOs**	**t-stat**
Less Opaque	2.44	2.28	1.53
More Opaque	1.68	1.69	-0.03
t-stat	7.50***	7.82***	

Panel B: One-tailed t-test results for the change in Firm Performance due to Opacity

Change in Tobin's Q	**Low Ability CEOs**	**High Ability CEOs**	**t-stat**
$\begin{pmatrix} Q\ in\ Less \\ Opaque \\ Firms \end{pmatrix} - \begin{pmatrix} Q\ in\ More \\ Opaque \\ Firms \end{pmatrix}$	-0.83	-0.59	-1.98**

4.4 Multivariate Analysis

4.4.1 Corporate Opacity, CEO Ability and Competition

The hypotheses presented above examine the association between CEO ability and corporate opacity. I estimate the following model to test these hypotheses:

$$\begin{aligned} Firm\ Opacity &= \alpha_0 + \alpha_1(Ability) + \alpha_2(Firm\ Size) + \alpha_3(R\&D) + \alpha_4(Growth) \\ &+ \alpha_5(CAPX) + \alpha_6(Debt\ Ratio) + \alpha_7(Risk) + \alpha_8(Firm\ Age) \\ &+ \alpha_9(Performance_{t-1}) + \sum \alpha_i(Industry\ Dummy) \\ &+ \sum \alpha_j(Year\ Dummy) + \varepsilon \end{aligned}$$

Firm Opacity is the opacity index, developed using trading volume, bid-ask spread, analysts following and analysts forecast dispersion as opacity measures. *Ability* is an indicator variable equals one when the ability index score of a CEO is above median value. The first control variable is the natural log of total assets, as firm size. Others include R&D expense, capital expenditure, sales growth, long-term debt (all adjusted by total assets), stock return volatility, firm age and prior performance. Industry dummies control for each 2-digit SIC code, and year dummies control for each year in my sample.

Table 21 presents the results of the first model. Column 1 evaluates the effect of CEO ability on corporate opacity. Column 2 through Column 5 examines the CEO ability's impact on the individual components of the opacity index, using volume, spread, number of analysts and analyst forecast dispersion as the dependent variables, respectively. Consistent with my initial set of hypotheses, which suggests there exists a

Table 21
Regression Results – Impact of Ability on Opacity

The opacity index uses four different corporate opacity proxies, namely trading volume, bid-ask spread, analysts following, and analysts forecast dispersion, and it is constructed in a way that the degree of corporate opacity increases as the index score increases. The ability proxy uses the instrument introduced by Uygur (2010) and considers the CEOs with above median ability index score as "high-ability" and those below median as "low-ability". Firm size is the natural logarithm of the book value of total assets. Research and Development (R&D) Intensity is calculated as the R&D expenses, scaled by total assets. Capital expenditure is the ratio of capital expenses to total assets. Sales growth over total assets is used to control for growth opportunities, and included as the Growth variable. Debt Ratio is measured by scaling long-term debt by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the Risk variable. Firm age is calculated by the number of year since the firm's data is provided in Compustat database. Prior performance is the return on assets from the previous year, calculated as the ratio of net income over the book value of total assets from the prior year. Industry dummy variables equal one for each 2-digit SIC code and year dummy variable equal one for each year in my sample. *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

	Dependent Variable				
	Opacity Index	*Volume*	*Spread*	*Analysts*	*Dispersion*
Variables	(1)	(2)	(3)	(4)	(5)
Ability	-0.008 **	0.067 **	-0.053	0.519 ***	-1011.1 *
	(-2.19)	(2.09)	(-0.86)	(2.71)	(-1.81)
Ln(Total Assets)	-0.067 ***	0.981 ***	-0.235 ***	2.571 ***	509.4 ***
	(-48.50)	(84.77)	(-10.61)	(37.37)	(2.45)
R&D Intensity	-0.199 ***	3.288 ***	1.194 **	17.725 ***	1783.9
	(-5.28)	(10.40)	(1.98)	(9.43)	(0.33)
Capital Expenditure	-0.263 ***	3.415 ***	-0.584	14.810 ***	-6052.3
	(-6.21)	(9.63)	(-0.86)	(7.03)	(-1.00)
Growth	0.291 ***	-1.616 **	-1.982	-18.854 ***	1551.9
	(2.68)	(-1.78)	(-1.14)	(-3.49)	(0.10)
Debt Ratio	0.136 ***	-1.141 ***	0.922 ***	-3.317 ***	1127.1
	(10.67)	(-10.65)	(4.50)	(-5.20)	(0.59)
Risk	0.002 ***	-0.0002 ***	-0.0003	-0.0006	12.99 ***
	(3.60)	(-4.77)	(-0.38)	(-0.24)	(-10.96)
Firm Age	0.002 ***	-0.016 ***	0.013 ***	-0.044 ***	-64.42 ***
	(7.77)	(-13.97)	(5.81)	(-6.41)	(-3.13)
$Performance_{(t-1)}$	-0.046 ***	0.447 ***	-0.143 ***	1.226 ***	112.14
	(-20.05)	(23.25)	(-3.89)	(-10.73)	(0.33)
Intercept, Industry and Year Dummies	yes	yes	yes	yes	yes
Adj. R2	0.6299	0.7729	0.2523	0.4642	0.2911
Sample Size	3,558	3,558	3,558	3,558	3,558

negative association between CEO ability and corporate opacity, I find that the coefficient estimate of CEO ability variable is negative and significant. This result implies that high-ability CEOs manage less opaque firms, which may be due to two competing notions. It may be the case that while high-ability CEOs are creating lower opacity levels to signal their abilities to the market, low-ability CEOs signal-jam the market's inferences about their talent by limiting the available information. It may also be argued that such negative association exists because low-ability CEOs prefer managing more opaque firms. While I cannot yet distinguish between these two notions, I find that there is a strong negative association between CEO ability and corporate opacity. The individual components of the opacity index also provide supporting results. I find that CEO ability is significantly and positively associated to volume and number of analysts, and negatively associated to the analyst forecast dispersion.

4.4.2 Firm Performance, Corporate Opacity and CEO Ability

The results so far show that there are significant differences between the corporate opacity decisions of high- and low-ability CEOs. It is also important to analyze the value impacts of such differences in opacity levels. As stated in my final hypothesis, if those high-ability CEOs with more accurate forecasts make superior decisions for their shareholders, their decision to increase opacity may not necessarily be value decreasing. To examine this proposition, I estimate the following regression model:

$$Performance$$

$$= \alpha_0 + \alpha_1(Ability) + \alpha_2(Firm\ Opacity)$$
$$+ \alpha_3(Ability)(Firm\ Opacity) + \alpha_4(Firm\ Size) + \alpha_5(R\&D)$$
$$+ \alpha_6(Growth) + \alpha_7(CAPX) + \alpha_8(Debt\ Ratio) + \alpha_9(Risk)$$
$$+ \alpha_{10}(Firm\ Age) + \alpha_{11}(Performance_{t-1})$$
$$+ \sum \alpha_i(Industry\ Dummy) + \sum \alpha_j(Year\ Dummy) + \varepsilon$$

where *Performance* is measured by the natural log of Tobin's q and other variables are as described above.

Table 22 displays the regression results. Column 1 presents the results of the stand-alone impact of CEO ability and opacity on firm performance, while Column 2 shows the results with the interaction variable of CEO ability and opacity. Columns 3 and 4 replicate the analysis by using an Opacity Dummy, instead of the opacity index that has been used so far. Column 5 and 6 evaluate the association between corporate opacity and firm performance, for only high-ability CEOs and low-ability CEOs, respectively. The results are consistent with the negative association between firm performance and opacity, i.e. as firm opacity increases, performance decreases. Interestingly, the joint effect of CEO ability and firm opacity on firm performance is significant and positive. This provides support for the hypothesis that if high-ability CEO increases opacity, it is not as deteriorating for firm performance as it would with a low-ability CEO.

The results in Columns 3 and 4, which are simply included to evaluate the joint effect of ability and opacity more easily due to the use of indicator variables, allows me to improve the analysis. From an economic perspective, when CEO ability is low,

Table 22
Regression Results – Impact of Ability and Opacity on Firm Performance

Firm performance is measured by the natural log of Tobin's q, which is calculated as the ratio of the market value of the firm to its book value. The ability proxy uses the instrument introduced by Uygur (2010) and considers the CEOs with above median ability index score as "high-ability" and those below median as "low-ability". The opacity index uses four different corporate opacity proxies, namely trading volume, bid-ask spread, analysts following, and analysts forecast dispersion, and it is constructed in a way that the degree of corporate opacity increases as the index score increases. Opacity Dummy is an indicator variable that equals one if the Opacity Index is above median value. Firm size is the natural logarithm of the book value of total assets. Research and Development (R&D) Intensity is calculated as the R&D expenses, scaled by total assets. Capital expenditure is the ratio of capital expenses to total assets. Sales growth over total assets is used to control for growth opportunities, and included as the Growth variable. Debt Ratio is measured by scaling long-term debt by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the Risk variable. Firm age is calculated by the number of year since the firm's data is provided in Compustat database. Prior performance is the return on assets from the previous year, calculated as the ratio of net income over the book value of total assets from the prior year. Industry dummy variables equal one for each 2-digit SIC code and year dummy variable equal one for each year in my sample. *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

	Dependent Variable = Performance					
	Full Sample				High-Ability CEOs	Low-Ability CEOs
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Ability	0.040 ***	-0.043	0.063 ***	0.039 **		
	(3.16)	(-1.06)	(4.63)	(2.14)		
Firm Opacity	-1.651 ***	-1.733 ***			-1.589 ***	-1.650 ***
	(-29.27)	(-25.48)			(-19.75)	(-20.29)
(Ability)x(Firm Opacity)		0.154 **				
		(2.15)				
Opacity Dummy			-0.301 ***	-0.327 ***		
			(-18.48)	(-15.71)		
(Ability)x(Opacity Dummy)				0.049 **		
				(1.99)		
Ln(Total Assets)	-0.090 ***	-0.091 ***	-0.030 ***	-0.030 ***	-0.101 ***	-0.083
	(-15.25)	(-15.31)	(-5.45)	(-5.51)	(-11.95)	(-9.74)
R&D Intensity	1.148 ***	1.123 ***	1.245 ***	1.225 ***	1.102 ***	1.112 ***
	(9.10)	(8.86)	(9.26)	(9.09)	(6.95)	(4.32)

Table 22 (continued)
Regression Results – Impact of Ability and Opacity on Firm Performance

	Dependent Variable = Performance					
	Full Sample				High-Ability CEOs	Low-Ability CEOs
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Capital Expenditure	0.344 ***	0.352 ***	0.470 ***	0.477 ***	0.869 ***	-0.114
	(2.43)	(2.48)	(3.11)	(3.16)	(4.15)	(-0.56)
Growth	0.270	0.267	-0.006	-0.002	0.376	-4.945 *
	(0.75)	(0.74)	(-0.02)	(-0.01)	(0.99)	(-1.78)
Debt Ratio	-0.186 ***	-0.185 ***	-0.302 ***	-0.303 ***	-0.069	-0.279 ***
	(-4.31)	(-4.27)	(-6.60)	(-6.63)	(-1.12)	(-4.31)
Risk	0.001	0.001	0.001	-0.001	0.0001	0.006 ***
	(0.33)	(0.30)	(0.16)	(-0.22)	(0.47)	(4.13)
Firm Age	-0.002 ***	-0.002 ***	-0.003 ***	-0.003 ***	-0.001 *	-0.003 ***
	(-4.95)	(-4.93)	(-6.53)	(-6.52)	(-1.77)	(-4.89)
$Performance_{(t-1)}$	0.130 ***	0.131 ***	0.174 ***	0.175 ***	0.136	0.120 ***
	(16.20)	(16.26)	(20.97)	(21.03)	(11.54)	(10.72)
Intercept, Industry and Year Dummies	yes	yes	yes	yes	yes	yes
Adj. R2	0.5656	0.5660	0.5069	0.5074	0.5671	0.5902
Sample Size	3,558	3,558	3,558	3,558	1,779	1,779

performance decreases by 16.77%, on average, due to high opacity. However, when CEO ability is high, the drop in performance is only 14.25%[28]. The deteriorating impact of corporate opacity on firm performance decreases when CEO ability increases. This may imply that high-ability CEOs use opacity in a better way than low-ability CEOs, and therefore their firms' market values do not drop as much. Overall, the results are consistent with my final hypothesis and my analysis suggests that CEO ability may be considered as a factor that helps decrease the value-decreasing impact of corporate opacity. The last two columns provide a similar analysis by evaluating the relation between opacity and firm performance for the subsamples of CEOs. Although there is significant and negative association for both high-and low-ability CEOs, the impact of opacity on firm value, which is measured simply by the absolute value of the coefficient estimate of opacity, is greater for the low-ability CEOs than that of high-ability CEOs ($|-1.650| > |-1.586|$).

4.5 CEO Ability, Corporate Opacity, and Firm Complexity

When firms are choosing their CEOs, their complexity levels may be an important aspect, and this in turn may affect the results of my analysis regarding the association between CEO ability and corporate opacity. Rosen (1982) and Rose and Shepard (1997) suggest that high-ability CEOs are typically matched with more complex firms. Bushman

[28] The values are calculated as following:

$$\frac{\left[\frac{\delta Tobin's\ q}{\delta Opacity}\right]}{Average\ Tobin's\ q} = \frac{\left[\begin{matrix}(-0.327) + \\ (0.049) \times (Ability)\end{matrix}\right]}{1.95} = \begin{cases} \frac{-0.327}{1.95} = -16.77\%, & if\ Ability = 0 \\ \frac{-0.278}{1.95} = -14.25\%, & if\ Ability = 1 \end{cases}$$

et al., (2004) also suggests that organizational complexity may impact the corporate transparency decisions. Therefore, my results may be driven by the firm complexity, rather than CEO ability. I recognize that my findings may suffer from this endogeneity problem and, in this section, I consider an alternative specification.

Attempting to overcome this possibility, I create a propensity score matched sample, in which I have firms with high- and low-ability CEOs matched on their propensity scores, the predicted propensities to be a complex firm (Villalonga, 2004). I follow Coles et al. (2008) and use firm size, leverage, and number of segments as determinants of firm complexity, and include R&D intensity, sales growth and industry as additional determinants. In my matched sample, I have firms with high-ability CEOs matched with those with low-ability CEOs at 10% propensity score. I have 1,740 firm-year observations in my matched sample, 875 of which belong to firms with high-ability CEOs and the other 875 observations belong to their matches with low-ability CEOs.

Table 23 presents the descriptive results for the matched sample. The one-tailed dependent t-test results for the differences of key variables between firms with high-ability CEOs and their matched firms with low-ability CEOs are displayed. To analyze if the prior results hold for my matched sample, I test if high-ability CEOs manage less opaque firms than their matched low-ability peers. All components of the opacity index are providing similar result, which is high ability CEOs have more trading volume, lower spread, higher number of analysts following and lower forecast dispersion, relative to low-ability CEOs. In addition, opacity index value is significantly lower for high-ability CEOs.

Table 23
Matched Sample Results: Descriptive Statistics

The table presents the descriptive matched sample results. The matched sample is created based on the propensity score with the following determinants: R&D intensity, firm size, leverage, sales growth, number of segments, and industry as the determinants. The matched sample consists of firms with high-ability CEOs matched with those with low-ability CEOs at 10% propensity score. The table shows the one-tailed dependent t-test results for the differences of key variables between firms with high-ability CEOs and their matched firms with low-ability CEOs. The opacity index uses four different corporate opacity proxies, namely trading volume, bid-ask spread, analysts following, and analysts forecast dispersion, and it is constructed in a way that the degree of corporate opacity increases as the index score increases. Trading volume is calculated as the natural log of the average daily dollar volume of each firm during the fiscal year. The bid-ask spread variable is calculated by taking the difference of the fiscal year-end ask and bid prices, and dividing by the average of the bid and ask price. Analysts variable is measured by the number of analysts following. The analysts forecast dispersion is calculated as squared difference between the maximum and the minimum forecast value, scaled by the average forecast value. The ability proxy uses the instrument introduced by Uygur (2010) and considers the CEOs with above median ability index score as "high-ability" and those below median as "low-ability". *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

	Mean Value			
Variables	**High vs. Low**	**Difference**	**t value**	**p value**
Ln(Dollar Volume)	>	0.1319	2.23	0.01 ***
Spread (%)	<	-0.0931	-1.17	0.12
Analysts	>	0.4453	1.49	0.06 *
Forecast Dispersion (%)	<	-5.89	-1.58	0.05 **
Opacity Index	<	-0.0166	-2.78	<.01 ***
Number of Observations	1,740			

Table 24 shows the multivariate analysis results using the matched sample. Using the same model used in previous sections for the full sample, I evaluate the association between CEO ability and corporate opacity. The coefficient estimate of the Ability Index is negative and significant, suggesting that high-ability CEOs manage less opaque firms, compared to their low-ability peers. These results provide additional support for my first hypothesis. Overall, these results support the earlier findings, and act as a robustness check.

4.6 Conclusion

I examine the association between CEO ability and corporate opacity. Previous studies indicate that corporate transparency has many tempting benefits, such as reduction of information asymmetries and mitigation of agency costs, along with performance or valuation premiums. My work provides an alternative point of view on corporate opacity, regarding the association with CEOs' ability levels.

Using the CEO ability instrument introduced by Uygur (2010) and developing an opacity index, I show that there is a negative relation between CEO ability and corporate opacity. This result is robust to the use of opacity measure used in my study, as well as the individual components of the measure (trading volume, bid-ask spread, number of analysts following, and analysts forecast dispersion), which have been widely used in the literature. My findings may suggest two different notions. High-ability CEOs, with more accurate forecasts, and therefore, better decision-making abilities, may be using discretion to keep their firms' opacity level low, in order to act at the best interest of the firm and allow their shareholders to enjoy the benefits of transparency, as well as to

Table 24
Matched Sample Results: Multivariate Analysis of the Impact of Ability on Opacity

The table presents the multivariate matched sample results. The matched sample is created based on the propensity score with the following determinants: R&D intensity, firm size, leverage, sales growth, number of segments, and industry as the determinants. The matched sample consists of firms with high-ability CEOs matched with those with low-ability CEOs at 10% propensity score. The opacity index uses four different corporate opacity proxies, namely trading volume, bid-ask spread, analysts following, and analysts forecast dispersion, and it is constructed in a way that the degree of corporate opacity increases as the index score increases. Trading volume is calculated as the natural log of the average daily dollar volume of each firm during the fiscal year. The bid-ask spread variable is calculated by taking the difference of the fiscal year-end ask and bid prices, and dividing by the average of the bid and ask price. Analysts variable is measured by the number of analysts following. The analysts forecast dispersion is calculated as squared difference between the maximum and the minimum forecast value, scaled by the average forecast value. The ability proxy uses the instrument introduced by Uygur (2010) and considers the CEOs with above median ability index score as "high-ability" and those below median as "low-ability". Firm size is the natural logarithm of the book value of total assets. Research and Development (R&D) Intensity is calculated as the R&D expenses, scaled by total assets. Capital expenditure is the ratio of capital expenses to total assets. Sales growth over total assets is used to control for growth opportunities, and included as the Growth variable. Debt Ratio is measured by scaling long-term debt by total assets. Standard deviation of monthly stock returns for the prior 3 fiscal years is included as the Risk variable. Firm age is calculated by the number of year since the firm's data is provided in Compustat database. Prior performance is the return on assets from the previous year, calculated as the ratio of net income over the book value of total assets from the prior year. Industry dummy variables equal one for each 2-digit SIC code and year dummy variable equal one for each year in my sample. *,**,*** denote significance at a 10% level, 5% level and 1% level, respectively.

	Dependent Variable = Opacity Index	
Variables	(1)	(2)
Intercept	0.883 ***	0.861 ***
	(48.02)	(43.98)
Ability	-0.012 **	-0.011 ***
	(-1.99)	(-2.16)
Ln(Total Assets)	-0.066 ***	-0.063 ***
	(-33.41)	(-35.88)
R&D Intensity	-0.474 ***	-0.447 ***
	(-6.53)	(-7.13)
Capital Expenditure	-0.076	-0.322 ***
	(-1.40)	(-6.64)
Growth	-1.420	-2.756 **
	(-0.94)	(-2.11)
Debt Ratio	0.089 ***	0.096 ***
	(4.96)	(6.17)
Risk	0.0003 ***	0.0002 ***
	(5.51)	(4.45)
Firm Age	0.0008 ***	0.001 ***
	(4.08)	(6.00)
$Performance_{(t-1)}$	-0.057 ***	-0.056 ***
	(-15.39)	(-17.42)
Industry and Year Dummies		yes
Adj. R2	0.4148	0.5642
Sample Size	1,740	1,740

signal their abilities to the market, while low-ability CEOs may be signal-jamming the market's inferences about their talent by limiting the available information. Alternatively, it might as well be the case that such a negative association exists because low-ability CEOs seek those more opaque firms, perhaps in order to use opacity to mask poor performance that they expect to have. While it is difficult to distinguish between these two notions, I find that there is a strong negative association between CEO ability and corporate opacity. These findings are also supported by the propensity score matched sample, as an attempt to overcome a possible endogeneity problem.

Lastly, I examine the valuation or performance impact of opacity when firms have CEOs with different levels of abilities. I suggest that when high-ability CEOs increase corporate opacity, it may not necessarily be a value decreasing action, or the destruction in value may be smaller if such a decision comes from a CEO with superior decision-making ability. The findings support my argument that the deteriorating impact of corporate opacity on firm performance decreases when CEO ability increases. This may imply that high-ability CEOs better use corporate opacity than low-ability CEOs. Overall, my analysis suggests that CEO ability is an important factor in firms' corporate opacity decisions.

CHAPTER 5

CONCLUDING REMARKS

In this dissertation, I explore the association between CEO ability and corporate governance, particularly firm performance, executive compensation contracts and firm opacity. I introduce a new instrument for CEO ability assessment. As a proxy for ability, I examine CEO's decision making ability on a different context, namely presidential campaign contributions. Before any decision, a CEO should foresee the possible outcomes, evaluate the results for the company and make decisions based on the assessment of his/her own forecasts. Therefore, I believe that such set of abilities is essential for a CEO while managing a firm. I evaluate decision making ability by examining the CEO's personal contributions to presidential election campaigns and build a "commitment index" based on how accurate the CEO's decision towards making commitment to a particular candidate was. Based on this CEO ability instrument, a CEO who makes a correct decision and contributes to a candidate whose actual performance fulfills or exceeds the expected level, gets a higher index score; on the other hand a CEO who makes a wrong decision and contributes to a candidate whose performance stays below the expected level has a lower index score. The fact that the Commitment Index considers the candidate's primary election performance, public's expectations on the candidate's performance as well as the overall evaluation of all such information by the CEO makes the index more comprehensive on the decision making ability of CEOs. My

ability proxy is different from the others in literature primarily because it is truly exogenous. In addition to the legal limits for personal contributions for a presidential candidate, measuring ability by an evaluation of a real action, not an observable characteristic like age or tenure, provides plausibility to this proxy. This proxy reveals itself as an important step towards a more accurate ability measure.

I present evidence in the first essay that, this instrument of CEO ability is positively related to firm performance. Interestingly, I find that high ability CEOs have a greater impact on Tobin's q in small firms than in large firms. Yet, high ability CEOs have the greatest dollar impact on shareholder value in large firms. Another supporting result is reached by the assessment of merger activities of contributing CEOs. I find that CEO ability is positively associated to merger announcement returns, which implies that a greater ability CEO will get into more value-creating merger activities. The results are robust to industry and time controls, as well as various tests that consider an alternative explanation focusing on political influence.

In the second essay, I examine the effect of CEO ability on the structure and level of compensation contracts. I find that CEO ability is positively associated with total compensation level, suggesting that high-ability CEOs are paid more. I provide further evidence that there is a significant difference in the structure CEO compensation between the highest and lowest ability CEOs. Specifically, I find that the high ability CEOs receive more stock based incentives than low ability CEOs. Thus, the low ability CEOs receive more of their pay in the form of cash compensation than do high ability CEOs. Additional tests indicate that high ability CEOs have significantly greater variance in

their pay than low ability CEOs, specifically due to the higher variance in stock based incentives. Overall, I show that CEO pay is associated with CEO ability. Taken together with the first essay's results, which suggest high-ability CEOs perform better, the results may suggest that firms are in fact aware of those CEOs abilities and therefore they design the CEO compensation contracts accordingly to attract those high-ability CEOs.

Another aspect where CEO ability may have impact is the concept of corporate opacity. I empirically test the association between CEO ability and corporate opacity in the third essay. My analysis indicates that firms with high-ability CEOs are significantly less opaque than firms with low-ability CEOs.

This finding may imply two different notions. High-ability CEOs may be using discretion to keep their firms' opacity level low, in order to act at the best interest of the firm and allow their shareholders to enjoy the benefits of transparency, as well as to signal their abilities to the market, whereas low-ability CEOs may be signal-jamming the market's inferences about their talent by not providing full information. Alternatively, it might as well be the case that such a negative association exists because low-ability CEOs choose to work for those more opaque firms, perhaps in order to use opacity to mask poor performance that they expect to have. While it is difficult to distinguish between these two notions, I find that there is a strong negative association between CEO ability and corporate opacity. Finally, I show that the deteriorating impact of corporate opacity on firm performance decreases when the decision belongs to a high-ability CEO, suggesting that opacity is not necessarily value-destructing decision for corporations. These findings are robust with the use of a propensity score matched sample. Taken as a

whole, my analysis suggests that CEO ability may be considered as an important factor for the concept of corporate opacity.

Overall, in this dissertation, I suggest that CEO ability is one of the essential factors in corporate governance. CEOs with higher forecasting and decision-making abilities create significant difference in their companies, particularly in firm performance. It may also be argued that, therefore, they are paid more than their low-ability peers, and the companies designs CEO pay contracts to attract and retain those CEOs. Their abilities have significant effects on the corporate transparency levels and having a high-ability CEO in a less opaque firm is appreciated by the outside shareholders and the value deteriorating impact of corporate opacity decreases significantly.

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