

# **THREE ESSAYS IN CORPORATE GOVERNANCE**

by

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# TABLE OF CONTENTS

|                |   |           |
|----------------|---|-----------|
| LIST OF TABLES |   | v         |
| ABSTRACT       |   | vi        |
| CHAPTER        |   |           |
| <b>1</b>       | <b>THE VALUE OF INDEPENDENT DIRECTORS' EXPERIENCE</b>               | <b>1</b>  |
| 1.1            | Introduction  | 1         |
| 1.2            | Experience Variables, Sample Construction, and Summary Statistics   | 6         |
| 1.2.1          | Independent Directors' Experience Variables                         | 6         |
| 1.2.2          | Sample Construction   | 7         |
| 1.2.3          | Summary Statistics  | 9         |
| 1.3            | Independent Directors' Experience and Firm Performance              | 10        |
| 1.3.1          | Performance Changes around Director Appointment                     | 10        |
| 1.3.2          | Panel Regression Estimates  | 11        |
| 1.3.3          | Industry-CEO Experience or Individual talent?                       | 15        |
| 1.3.4          | Investment Efficiency and the Combined Experience                   | 16        |
| 1.4            | Management-Board Interaction and the Value of Experience            | 16        |
| 1.4.1          | Product Market Environment  | 17        |
| 1.4.2          | Management Activeness   | 18        |
| 1.4.3          | Frequency of Board Meetings   | 19        |
| 1.5            | Endogeneity, IV Regressions, and Other Robustness Checks            | 19        |
| 1.5.1          | Determinants of Independent Directors' Experience                   | 20        |
| 1.5.2          | Endogeneity Issues  | 22        |
| 1.5.3          | Other Robustness Tests  | 25        |
| 1.5.3.1        | Alternative Measures of Key Variables                               | 25        |
| 1.5.3.2        | Outliers  | 26        |
| 1.5.3.3        | Alternative Sample Constructions                                    | 27        |
| 1.6            | Implications  | 28        |
| <b>2</b>       | <b>EXPERIENCED INDEPENDENT DIRECTORS</b>                            | <b>48</b> |
| 2.1            | Introduction  | 48        |
| 2.2            | Data  | 52        |
| 2.2.1          | Sample Construction   | 52        |
| 2.2.2          | Proxy for Board Quality   | 52        |
| 2.2.3          | Proxy for Monitoring Effectiveness                                  | 54        |
| 2.2.4          | Control Variables   | 54        |
| 2.2.5          | Summary Statistics  | 55        |
| 2.3            | Board Quality and CEO Turnover-Performance Sensitivity              | 55        |
| 2.4            | Interactive Effects of Board Quality and Product Market Competition | 59        |
| 2.4.1          | Main Results  | 60        |
| 2.4.2          | Endogeneity   | 61        |
| 2.4.3          | Cutoff Year for Independent Directorship Experience                 | 63        |
| 2.4.4          | Non-linear specification  | 64        |

|         |   |    |
|---------|---|----|
| 2.4.5   | Robustness Tests  | 65 |
| 2.4.5.1 | Industry fixed effect in place of firm fixed effect               | 65 |
| 2.4.5.2 | Influence of Regulatory Changes                                   | 65 |
| 2.4.5.3 | Regulated Industries, Distressed firms, and Shorter Sample Period | 66 |
| 2.4.5.4 | Alternative Measures of Independent Directorship Experience       | 66 |
| 2.4.5.5 | Alternative Measures of Product Market Competition                | 67 |
| 2.4.5.6 | Control for Other Board Quality Measures                          | 67 |
| 2.5     | Conclusion  | 68 |

### **3 DETERMINANTS AND CONSEQUENCES OF APPOINTING AFFILIATED**

#### **DIRECTORS 83**

|         |   |     |
|---------|---|-----|
| 3.1     | Introduction  | 83  |
| 3.2     | Affiliated Director Classification and Variables                    | 88  |
| 3.3     | Data  | 92  |
| 3.3.1   | Sample Construction   | 92  |
| 3.3.2   | Summary Statistics  | 93  |
| 3.4     | Empirical Designs   | 94  |
| 3.4.1   | Determinant of Affiliated Directors                                 | 95  |
| 3.4.2   | Factors Affecting the Composition of Affiliated Directors           | 95  |
| 3.4.2.1 | Firm Performance and Financial Conditions                           | 95  |
| 3.4.2.2 | Organizational and Operational Complexity                           | 96  |
| 3.4.2.3 | CEO Characteristics   | 96  |
| 3.4.2.4 | Board Characteristics   | 97  |
| 3.4.3   | Effectiveness of Affiliated Directors in Enhancing Firm Performance | 97  |
| 3.4.3.1 | CEO Wealth-Performance Sensitivity                                  | 98  |
| 3.4.3.2 | Managerial Entrenchment   | 99  |
| 3.4.3.3 | M&A Announcement Returns  | 100 |
| 3.4.3.4 | Overall Firm Performance  | 101 |
| 3.4.3.5 | IV Regression   | 101 |
| 3.5     | Estimation Results  | 102 |
| 3.5.1   | Total Affiliated Directors  | 102 |
| 3.5.1.1 | Determinants of the Total Affiliated Directors                      | 102 |
| 3.5.1.2 | Monitoring and Advising Roles of the Total Affiliated Directors     | 103 |
| 3.5.2   | Business Partner Directors  | 103 |
| 3.5.2.1 | Determinants of the Business Partner Directors                      | 103 |
| 3.5.2.2 | Monitoring and Advising Roles of the Business Partner Directors     | 104 |
| 3.5.3   | Former Employee Directors   | 105 |
| 3.5.3.1 | Determinants of the Former Employee Directors                       | 105 |
| 3.5.3.2 | Monitoring and Advising Roles of the Former Employee Directors      | 106 |
| 3.5.4   | Relative Directors  | 106 |
| 3.5.4.1 | Determinants of the Relative Directors                              | 107 |
| 3.5.4.2 | Monitoring and Advising Roles of the Relative Directors             | 107 |
| 3.5.5   | Blockholder Directors   | 108 |
| 3.5.5.1 | Determinants of the Blockholder Directors                           | 108 |
| 3.5.5.2 | Monitoring and Advising Roles of the Blockholder Directors          | 108 |
| 3.5.6   | Interlock Directors   | 108 |

|              |  |     |
|--------------|--|-----|
| 3.5.6.1      | Determinants of the Interlock Directors                  | 108 |
| 3.5.6.2      | Monitoring and Advising Roles of the Interlock Directors | 109 |
| 3.5.7        | Charity Directors  | 109 |
| 3.5.7.1      | Determinants of the Charity Directors                    | 109 |
| 3.5.7.2      | Monitoring and Advising Roles of the Charity Directors   | 109 |
| 3.6          | Conclusion   | 109 |
| Bibliography |  | 135 |

## LIST OF TABLES

|  |     |
|--|-----|
| Table 1.1: Sample Description by Year.....   | 30  |
| Table 1.2: Summary Statistics.....   | 31  |
| Table 1.3: Firm Performance Changes Around Appointments Independent Directors with Different Experience..... | 32  |
| Table 1.4: Independent Directors' Experience and Firm Value.....   | 33  |
| Table 1.5: Industry-CEO Experience or Individual Talents?.....   | 35  |
| Table 1.6: Independent Directors' Industry-CEO Experience and Investment Efficiency.....                     | 36  |
| Table 1.7: Management-Board Interaction, Independent Directors' Experience, and Firm Value.....              | 37  |
| Table 1.8: Determinants of Independent Directors' Experience.....  | 40  |
| Table 1.9: Second-Stage IV Regression Results.....   | 41  |
| Table 1.10: Robustness Checks.....   | 42  |
| Table 1.11: Variable Definitions and Data Sources.....   | 45  |
| Table 1.12: First-Stage IV Regression Results.....   | 47  |
| Table 2.1: Variable Descriptions.....  | 69  |
| Table 2.2: Summary Statistics.....   | 70  |
| Table 2.3: Correlation Between Variables.....  | 71  |
| Table 2.4: Board Quality And CEO Turnover-Performance Sensitivity.....                                       | 72  |
| Table 2.5: Board Quality And Forced CEO Turnover-Performance Sensitivity.....                                | 73  |
| Table 2.6: Board Quality and CEO Compensation.....   | 74  |
| Table 2.7: Board Quality, Product Market Competition, and Firm Value.....                                    | 75  |
| Table 2.8: Determinant of Independent Directorship Experience.....   | 76  |
| Table 2.9: Instrumental Variable Regression.....   | 77  |
| Table 2.10: Threshold Cutoff Year for Independent Directorship Experience.....                               | 78  |
| Table 2.11: Nonlinear Effect Of Independent Director Experience On Firm Value.....                           | 79  |
| Table 2.12: Robustness Test.....   | 80  |
| Table 3.1: Affiliated Director Classifications and Definitions.....  | 111 |
| Table 3.2: Sample Distribution by Years.....   | 112 |
| Table 3.3: Summary Statistics.....   | 113 |
| Table 3.4a: What Determines the Percentage of Affiliated Directors?.....                                     | 114 |
| Table 3.1b: Impacts of Total Percentage of Affiliated Directors on Firm Monitoring and Performance.....      | 115 |
| Table 3.1a: What Determines the Percentage of Each Type of Business Partner Directors?.....                  | 116 |
| Table 3.1b: Impacts of Each Type of Business Partner Directors on Firm Monitoring and Performance.....       | 117 |
| Table 3.1a: What Determines the Percentage of Each Type of Former Employee Directors?.....                   | 118 |
| Table 3.1b: Impacts of Each Type of Former Employee Directors on Firm Monitoring and Performance.....        | 119 |
| Table 3.1a: What Determines the Percentage of Each Type of Relative Directors?.....                          | 120 |
| Table 3.1b: Impacts of Each Type of Relative Directors on Firm Monitoring and Performance.....               | 121 |
| Table 3.1a: What Determines the Percentage of Blockholder Directors?.....                                    | 122 |
| Table 3.1b: Impacts of Blockholder Investor Directors on Firm Monitoring and Performance.....                | 123 |
| Table 3.1a: What Determines the Percentage of Interlock Directors?.....                                      | 124 |
| Table 3.1b: Impacts of Interlock Directors on Firm Monitoring and Performance.....                           | 125 |
| Table 3.1a: What Determines the Percentage of Charity Directors?.....  | 126 |
| Table 3.1b: Impacts of Charity Directors on Firm Monitoring and Performance.....                             | 127 |
| Table 3.1A1: Variable Descriptions.....  | 128 |
| Table 3.1A2: Correlation Among the Percentage of Independent, Inside, and Affiliated Directors.....          | 129 |
| Table 3.1.A3: First-stage Regression Results for Table 3.4b.....   | 130 |
| Table 3.1A4: First-stage Regression Results for Table 3.5b.....  | 131 |
| Table 3.1A5: First-stage Regression Results for Table 3.6b.....  | 132 |
| Table 3.1A6: First-stage Regression Results for Table 3.7b.....  | 133 |
| Table 3.1A7: First-stage Regression Results for Table 3.8b.....  | 134 |
| Table 3.1A8: First-stage Regression Results for Table 3.9b.....  | 134 |
| Table 3.1A9: First-stage Regression Results for Table 3.10b.....   | 134 |

## ABSTRACT

In Chapter 1, which is a joint work with E. Han Kim and Yao Lu, we find independent directors with CEO experience in a closely-related industry can improve firm value by improving the efficiency of capital expenditures and R&D investments. However, the effectuation of the potential contribution requires sufficient interaction with management. When the interaction is active, the industry-CEO experience has an economically and statistically significant positive impact; otherwise, the impact is insignificant. The interaction is proxied by competitive and dynamic challenges in product markets, the level of new business initiatives, or the frequency of board meetings. All proxies yield consistent evidence. Our findings demonstrate that active management-board interaction is essential to bring out the potential value independent directors can add to the firm.

In Chapter 2, I propose the fraction of experienced independent directors as a better measure of board monitoring than board independence. Serving as an independent director requires skills to effectively interact with management in a short period of time and obtain information necessary to perform the advising and monitoring duties. Skills to perform may be obtained through relevant experience, and inexperienced directors may have difficulty gaining efficiency until they learn by doing. Based on a sample of non-regulated S&P 1500 firms over the period 2000-2010, I find that independent directorship experience, measured by the fraction of independent directors among the board who have at least five years of independent directorship experience in any firm in the past, is a better measure of board quality than the board independence. Independent director experience increases firm value when a firm operates in a non-competitive industry, when the need for board monitoring is high. I find no evidence that board independence, the traditional measure of board quality, has such beneficial influence on firm performance after controlling for the independent directorship experience. Independent directorship experience also increases CEO turnover-performance sensitivity, muting the influence from board independence. While past independent directorship experience is not helpful in setting CEO compensation, past compensation committee experience can significantly reduce total CEO compensation. My results are robust to the use of firm- and year fixed effects, IV regression, alternative measures of independent director experience, and various board quality measures as control variables.

In Chapter 3, which is a joint work with E. Han Kim and Yao Lu, we empirically investigate determinants and performance implications of appointing affiliated directors. Contrary to the prevalent view that it is independent directors that may enhance corporate governance, we find that affiliated directors are also positively related to better governance and firm performance: affiliated directors are appointed when firms suffer from underperformance, and increase CEO pay-for-performance sensitivity, reduce managerial entrenchment, and enhance M&A and operation performance. The material relation of affiliated directors may provide them better firm-specific information and aligned incentives to promote success of appointing firm. Furthermore, we find that all affiliated directors are not the same: Based on hand-collected data on the relation between affiliated directors and the appointing firms, we find that directors that are affiliated through business relationship or blockholding are appointed in underperforming firms, and lead to subsequently improved performance. However, former employee director appointments are affected by the power of current CEO rather than firm performance, and they are associated with lower corporate governance and firm performance. Directors that are precedents or descendents of the CEOs are positively associated with strengthened managerial incentives and improved firm performance, but other types of family-related directors do not show such beneficial relation. These findings demonstrate heterogeneity among the affiliated directors due to the type of relation with appointing firms, and suggest some affiliated directors may improve firm performance.

## **Chapter 1. The Value of Independent Directors' Experience**

### **1.1 Introduction**

Extensive research has been devoted to study board composition and director characteristics, yielding valuable insights into how board independence and independent director characteristics affect firm performance (see Adams, Hermalin, and Weisbach (2010) for a survey of the literature.) However, it is still unclear whether and how an important aspect of independent directors' characteristics, their experience, affects firm performance and valuation. Fich (2005) shows the stock market reacts more favorably to the appointment of directors who are CEOs of other firms. However, Fahlenbrach, Low, and Stulz (2010) do not find the presence of current CEO-directors improve operating performance. The positive stock market reaction is limited to the first appointment of other firms' current CEOs as directors, which Fahlenbrach et al. attribute to a certification effect. In addition, Kroll, Walters, and Wright (2008) argue boards need directors with knowledge gained through industry experience to provide useful advice to top managers, and Faleye, Hoitash, and Hoitash (2013) document independent directors' industry expertise helps facilitate innovative activities. However, our data show independent directors' industry experience *alone* is unrelated to firm value. We also find, consistent with Fahlenbrach et al.'s finding, CEO experience alone does not help improve firm value.

However, when industry experience is combined with CEO experience – CEO experience in a closely related industry – independent directors have an economically and statistically significant positive impact on firm value. This positive effect is not due to their individual effects; when they serve on other firms' boards, there is no evidence the same independent directors enhance the other firms' value. We also identify a channel through which the positive value



effect takes place. Firms with independent directors with industry-CEO experience have higher value-investment sensitivity; that is, capital expenditures and R&D investments have greater positive effects on firm value, implying the combined experience helps increase investment efficiency.

These findings suggest the combination of industry and CEO experience provides a synergy unobtainable through CEO experience or industry knowledge alone. The industry experience provides industry-specific knowledge and CEO experience in that industry helps relate the knowledge to important strategic issues, a critical factor in making their advice value-enhancing. The combined experience also help directors ask relevant questions and detect early signs of trouble, empowering them to be more effective monitors.

The combined experience alone, however, does not necessarily improve firm value. The role of independent directors is to monitor and advise management, not to manage the firm. Thus, if they bring value to the firm, it is through management; thus, the realization of the value requires sufficient management-board interaction. The interaction provides independent directors not only opportunities to utilize their advising and monitoring capabilities, but also with more access to firm-specific information. Better access to relevant information is important because independent directors have limited access to firm-specific information and rely heavily on management as their primary source of it (Dominguez-Martinez, Swank, and Visser, 2008; Adams et al., 2010). Armed with better information, independent directors will be more cognizant of issues in need of advice or closer monitoring, enhancing their effectiveness as advisors and monitors.<sup>1</sup> Consistent with these conjectures, we find independent directors' industry-CEO experience help increase firm value only when management and the board actively interact.

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<sup>1</sup> Consistent with this conjecture, Duchin, Matsusaka, and Ozbas (2010) find board independence is positively related to firm performance when independent directors' cost of acquiring information is low.

Our sample is based on S&P 1500 firms over the period 2000-2010. Because independent directors' primary responsibility is to protect and promote shareholder value, our primary measure of firm performance is Tobin's Q. The industry-CEO experience is measured by the fraction of independent directors with CEO experience in firms with the same three-digit SIC code. The industry-CEO experience is scarce; only 8.2% of our firm-year observations show the presence of at least one independent director with the combined experience. The scarcity is perhaps due to conflicts of interest that can arise if an overlapping firm-pair, in which one firm's CEO sits on the other's board, is about to compete in the same product market. Seventy percent of the independent directors with the Industry-CEO experience are former CEOs, who are less likely to be subject to the conflicts of interest. It is also a common business practice for current CEO-independent directors to immediately resign from the board when the two firms are about to become rivals.

Independent directors with industry-CEO experience can help improve firm value. Our estimate implies that if a firm with seven independent directors (the sample median) has an independent director with industry-CEO experience, its Q will be higher by 0.19. The positive impact is not due to business relationships between the overlapping firm-pairs in which one firm's CEO sits on the other's board. Our sample includes only directors classified as independent by RiskMetrics, which defines a director as "affiliated" if the overlapping firm-pair has a material business relationship. We also conduct web searches and find no material business relationship between any overlapping firm-pairs in our sample; however, we identify 54 firm-years in which they have non-material business relationship. The estimation results are robust to excluding these observations.

The realization of the value associated with the industry-CEO experience, however, is not automatic. It requires active interaction between management and the board. We use three different proxies for the interaction. The first relies on changes in product market environment, consisting of Herfindahl-Hirschman index as defined by Hoberg and Phillips (2010); competitive

threats coming from rivals as measured by Hoberg, Phillips, and Prabhala (2013); and demand shocks as measured by Li, Lu, and Phillips (2013). When the business environment becomes tougher and more challenging, managers may undertake more new business initiatives and efficiency-enhancing measures to stay abreast, or get ahead of the competition, which tend to require board approval, triggering more management-board interaction. Management also may work more closely with independent directors to better utilize their advisory resources. Our estimates imply a ten percent increase in the fraction of independent directors with the combined experience is associated with a 0.249 higher  $Q$  when a firm operates in an industry above the median in the toughness of business environment; however, for firms operating in an industry below the median, the value impact of the experience is insignificant.

These results are robust to an alternative proxy based on business initiatives, such as equity issues, M&As (including divestitures and spinoffs), capital expenditures, and R&D investments. These activities tend to require board approval, generating additional interaction between independent directors and management. The third proxy is perhaps most direct but also most endogenous; the number of board meetings. We find the industry-CEO experience adds value only when a firm is above the median in business initiatives or in the frequency of board meetings.

We address endogeneity concerns by estimating two-stage instrumental variable (IV) regressions. Fahlenbrach et al. (2010) find that current CEO-directors come from firms with similar size, so our IV for industry-CEO experience is the number of firms with the same three-digit SIC code with sales within  $\pm 10\%$  of the sample firm's sales volume. As for management-board interaction, we use the access to one of top 20 U.S. hub airports within 60-mile radius of a firm's headquarter as the IV for the frequency of board meetings; and the cost of R&D capital after state and federal R&D tax credits as the IV for business activities. No separate IV is used for the competitiveness and challenging nature of the product market, because that measure is based on industry-level data. Our main findings are robust to using these IVs.

We also check whether our findings are robust to alternative measures of key variables, to outliers, and to alternative sample constructions. Specifically, we re-estimate key regressions using buy-and-hold stock returns, asset utilization rate, and return on assets as measures of firm performance; a number of alternative measures of industry-CEO experience; and alternative sample constructions. All re-estimation results are robust. We also carefully check whether the results are driven by outliers. They are not.

This paper contributes to our understanding of how independent directors' experience help enhance firm performance. A number of studies emphasize the importance of independent directors' industry experience (e.g., Kroll et al., 2008; Faleye et al., 2013) and investigate the benefits of having current CEOs of other firms as directors (e.g., Fich, 2005, Fahlenbrach et al., 2010). We add to these contributions by providing the evidence that CEO or industry experience *alone* is unrelated to firm value, but the combined experience creates a synergy in enhancing independent directors' effectiveness as advisors and monitors. We also point out and document an important condition for any independent directors to help improve firm performance – sufficient management-board interaction, an important aspect that has received relatively little attention in the literature. In this regard, this study is similar to the previous studies suggesting the benefits of independent directors vary across operational environments (Coles, Daniel, and Naveen, 2008), information environments (Duchin et al., 2010), and the need for advice (Adams and Ferreira, 2007). We add to this literature by identifying another important factor causing heterogeneity in the value of independent directors – the level of interaction between management and the board.

The next section defines key experience variables and describes data and sample construction. Section 1.3 estimates relations between different types of experience and firm value and identifies a channel through which the industry-CEO experience helps improve firm value. Section 1.4 examines the effects of management-board interaction. Section 1.5 explores potential

determinants of the presence of the industry-CEO experience in the board, estimates IV regressions, and conducts other robustness checks. Section 1.6 provides some implications.

## **1.2 Experience Variables, Sample Construction, and Summary Statistics**

### **1.2.1 Independent Directors' Experience Variables**

Our focus on experience is on work experience in a closely related industry, experience as CEO, and the combined experience. We define three variables. *Indu\_Exp\_Only* is the fraction of independent directors with only industry experience without possessing CEO experience in that industry. An independent director is considered to possess industry experience if she has worked for a firm(s) with the same three-digit SIC code for more than five years during the past 15 years. We require five years of experience because it takes time to accumulate industry-specific knowledge. We also require a 15-year shelf-life because industry environments change over time and industry-specific skills and knowledge may become obsolete after 15 years. The experience variable is the number of independent directors with the experience divided by the number of independent directors.<sup>2</sup>

*CEO\_Exp\_Only* is the fraction of independent directors with CEO experience in different industries but not in the same three-digit SIC code. An independent director is considered to possess CEO experience if she has been a CEO of any Compustat firm. We do not apply the five-year working experience for CEO experience because being a CEO is an intensive experience that builds up relevant managerial skills and perspectives in a relatively short period of time. Moreover, CEO skill sets tend to be broad and general in nature, and are less likely to become obsolete over time.

There are overlaps between these two variables because *Indu\_Exp\_Only* may include those with CEO experience in other industries, and *CEO\_Exp\_Only* may include those with non-

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<sup>2</sup> We use the fractional measure instead of an average of independent directors' experience because, as pointed out by Fich and Shivdasani (2006), average characteristics of independent directors may be a noisy measure of board-level characteristics, especially when director characteristics are widely dispersed.

CEO experience in the same industry. CEO and industry experiences are identified from directors' employment history provided by BoardEx. Firm-level SIC information is taken from Compustat.

The third experience variable is our main focus; the combined industry and CEO experience, *Indu\_CEO\_Exp*, the fraction of independent directors with CEO experience in a firm with the same three-digit SIC code. When an independent director has the combined experience, we do not apply the minimum working year experience requirement but still apply the 15-year shelf-life, unless the time lapse between the last year as a CEO in the same industry and the first year as an independent director is less than 15 years. Since the choice of five years of working experience and 15 years of shelf-life is arbitrary, we experiment with three years of working experience and ten years or infinite shelf-life, or with no restrictions as in Faleye et al. (2013). The results are robust.

### **1.2.2 Sample Construction**

We obtain director data from RiskMetrics and BoardEx, financial and accounting data from Compustat, stock return data from CRSP, corporate activity data from SDC Platinum, and CEO related data from ExecuComp. The sample period is 2000 through 2010. It begins in 2000 because BoardEx coverage is quite limited prior to 2000. Firms in financial and utility industries are excluded. The number of observations varies across regressions due to data availability of required variables.

Table 1.1 tabulates the sample distribution by year. The number of observations is more or less evenly distributed over the 11-year period, with a total firm-year observation of 11,050. The vast majority of firm-year observations show the presence of at least one independent director with industry experience (92%) or with CEO experience (62%). Independent directors with those experiences show a steady increasing trend: By 2010, 97% of firms have at least one independent director with industry experience; and 69% with CEO experience. The combined industry-CEO experience is rather scarce. Only 8.2% of observations show the presence of an

independent director(s) with the combined experience. However, they also show an increasing trend; the fraction increased from 4.3% in 2000 to 11.8% in 2010.

The scarcity of the combined experience is due partly to the possibility that the firm-pair, in which one firm's CEO sits on the other's board, could have a material business relationship or become rivals. If they have a material business relationship, RiskMetrics classifies the director as affiliated, not independent. Our sample contains 1,069 firm-year-director observations of independent directors having the combined experience. Of these, 339 observations involve current CEOs; the remaining 730 observations involve former CEOs.

The 339 firm-year-directors, or 321 firm-years, with current CEO-independent directors involve 155 firm pairs. These are of concern because if a firm-pair competes in the same market, the current CEO-independent director may affect firm performance by facilitating cooperative activities rather than through independent advising and monitoring. However, based on our reading of the firms' 10K filings, we find no pair competing directly with each other. Although they belong to the same three-digit SIC code, they focus on related but distinct markets.<sup>3</sup> When firms are about to become competitors, the common business practice for the current CEO-independent director is to quickly resign from the board of the firm she serves as a director.<sup>4</sup>

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<sup>3</sup> The case of Cadence Design Systems and Autodesk is illustrative. Carol Bartz, the CEO of Autodesk during 1992-2006, served as an independent director on the board of Cadence Design Systems during 1994-2001. Although both firms belong to the same three-digit SIC code, they each focus on quite different businesses. Autodesk is specialized in large-scale 3D design software, while Cadence Design Systems focuses on micro-scale semiconductor design automation. To the extent that both firms focus on developing design software, Carol Bartz may possess the insights to provide valuable advice to, or monitor more effectively the management of Cadence Design Systems.

<sup>4</sup> The case involving Eric Schmidt, the CEO of Google from 2001 to 2011, is illustrative. He served at Apple as an independent director from 2006 to 2009. Before 2009 both companies focused on different, non-competing businesses: Apple in computer and mobile phones, and Google in internet software; Apple's SIC is 3571 and Google's SIC is 7370. However, as Google expanded its business into the mobile and computer operating systems in 2009, they became competitors, leading to Eric Schmidt's resignation from Apple's board. Arthur Levinson, who served on both Apple and Google boards in 2009, also resigned from Google's board to avoid potential conflict of interest.

We also read company websites and search the internet for each firm-pair-year to see if they have any business relationship. We find no business relationship for 267 firm-years. The remaining 54 firm-years show non-material business relationships.<sup>5</sup> To check robustness, we re-estimate regressions while excluding the 54 firm-years. The results are robust.

### 1.2.3 Summary Statistics

Table 1.2 contains summary statistics of the variables used in this study.<sup>6</sup> Table 1.A1 contains their definitions and data sources. According to our definition of experience, about half of independent directors have experience in the same industry, about 15% have CEO experience in other industries, but only 1.6% has industry-CEO experience. The other experience variables in Panel A are alternative measures of experience we will use for robustness checks. On average, the board has 9 directors with 70% of directors being independent; CEO own 2.2% of outstanding common shares, while independent directors' total share ownership is 1.5%; and 57% of CEOs chair their boards. Other variables, which will describe them later, are not yet defined.

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<sup>5</sup> Nineteen firm-years show some product-level cooperation; for example, Carly Fiorina, the CEO of Hewlett Packard (HP), served as independent director of Cisco during 2001-2003 and Cisco has cooperated with HP in network connectivity. Twenty-four firm-years show some form of alliance in developing technology or product, but most alliances involve numerous other companies. It seems unlikely that allied firms are in a special business relationship even when they send directors to each other. Consider the CEO of Autodesk over 1992-2006 who served on the board of Cadence Design Systems during 1994-2001 as an independent director. The two companies were participating in an alliance program during part of the overlapping years. However, as of 2012, Cadence Design Systems has eight alliance programs, and one of the alliance programs, the System Realization Alliance, has 29 collaborating companies. The remaining 24 firm-years show business transactions, such as acquisitions and equity investment. However, most transactions occurred when the CEO-independent director was not on the board. In only one case did a transaction occur while the current CEO of MKS Instruments was an independent director of Rudolph Technologies, Inc. Rudolph acquired selected assets from MKS in 2010, but Rudolph's 10-K states "the impact of the acquisition was not material to the Company's consolidated financial position or results of operations." (2011.02.28, page F-13)

<sup>6</sup> Some firm-years' PPE/TA are greater than one because the PPEs are gross-PPEs before subtracting accumulated depreciations. When we use net-PPE, no firm-years show PPE/TA greater than one. One observation is dropped because RiskMetrics shows the total share ownership by all independent directors exceeds one hundred percent.



### **1.3 Independent Directors' Experience and Firm Performance**

We begin by comparing performance changes around the appointment of independent directors with the industry-CEO experience against performance changes associated with the appointment of those with industry- or CEO-only experience. This helps determine whether the combination of industry- and CEO experience generates synergies. It also helps examine a selection issue; whether the pre-appointment firm performance differs between those with the combined experience and those with separate experience. Then we investigate the influence of each type of experience with multivariate regression analyses using panel data. This latter analysis allows us to examine the value each type of independent directors' experience brings to the firm while controlling for various factors that may affect firm performance and the quality and composition of the board.

#### **1.3.1 Performance Changes around Director Appointment**

Table 1.3 examines firm performance changes around the appointment of independent directors with each type of experience. It also compares the difference in performance changes associated with the combined experience with those associated with industry-only or CEO-only experience, i.e., the difference-in-difference in firm performance. This analysis closely follows the approach used in Fahlenbrach et al. (2010), except that our focus is on the comparison between the combined experience and the separate experience.

Firm performance is proxied by *Tobin's Q*, defined as the market value of common equity plus the book value of total liabilities divided by the book value of total assets. *Tobin's Q* is a widely-used measure to analyze how corporate governance affects firm performance. Panel A is based on industry-adjusted *Q*, the difference between the *Q* and the median industry *Q*, where industry is defined by the three-digit SIC code. Panel B is based on size, performance, industry-adjusted *Q*, the difference between the unadjusted *Q* and the *Q* of a control firm that belongs to the same three-digit SIC code with *Tobin's Q* in event year -2 within  $\pm 10\%$  and is closest in sales to the appointing firm. This measure is more refined than industry-adjusted *Q* in

that it also controls for prior performance and firm size. Performance before the appointment is calculated as the average over event years -2 and -3; performance after the appointment, the average over event years +1 through +3. Thus, to be included in the analysis, the newly appointed independent director(s) should remain in the firm until event year 3. The year of appointment is event year 0.<sup>7</sup>

Both Panels show no significant difference in pre-appointment  $Q$  between firms appointing independent directors with the combined experience and those appointing directors with industry- or CEO-only experience. This alleviates our concern for selection, because those with the combined experience seem no more likely to be appointed to well performing firms' boards than those with separate experience.

After the appointment of independent directors with industry-CEO experience, changes in  $Q$  are significantly more positive than changes in  $Q$  following the appointment of those with industry- or CEO-only experience (the diff-in-diff reported in third and sixth rows in Columns (3) and (5)). This is true regardless of whether or not industry-adjusted  $Q$  takes into account of prior performance and size. Consistent with our hypothesis, the combination of industry and CEO experience seems to generate a synergy in enhancing independent directors' effectiveness as advisors and monitors.

### 1.3.2 Panel Regression Estimates

To examine how each type of independent directors' experience is related to firm value, we estimate the following baseline specification:

$$Q_{it} = \alpha_i + \alpha_t + \beta_1 \cdot Ind\_Dir\_Exp_{it} + \beta_2 \cdot Control_{it} + \mu_{it} \quad (1)$$

$Q_{it}$  is firm  $i$ 's Tobin's  $Q$  in year  $t$ .  $Ind\_Dir\_Exp_{it}$  is firm  $i$ 's independent directors' experience variable in year  $t$ .  $Control_{it}$  include control variables similar to those used in previous studies

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<sup>7</sup> When firms appoint multiple directors with different experience in a same year, they are excluded from the analyses because performance changes may reflect the confounded influence of adding different experience to the board.

relating governance mechanisms to *Tobin's Q*.<sup>8</sup> Specifically, we include measures of operating performance, financial conditions, organizational complexity, and CEO and board characteristics. Operating performance is measured by EBITDA divided by total assets, *EBITDA/TA*; and financial conditions, by a financial distress indicator, *Z\_Distress*, equal to one if the Altman Z-score is less than 1.81, and zero otherwise (Altman, 1968). Because constructing Z-score requires many variables, it is missing for some observations. To avoid reducing the sample size, we set missing observations of *Z\_Distress* equal to zero and include *Z\_Dum*, a dummy variable equal to one if Z-score data are available, and zero otherwise. This variable captures the mean of *Z\_Distress* for missing values.

Firms' organizational structure may influence the effectiveness the independent directors and the board composition (Coles, Daniel, and Naveen, 2008; Duchin, Matsusaka, and Ozbas, 2010). Proxies for organizational complexity include firm size as measured by the natural log of sales, *Ln(Sales)*; asset tangibility as measured by properties, plants, and equipment divided by the book value of total assets, *PPE/TA*; and firm age, the natural log of firm age, *Ln(FirmAge)*. Firm sales, PPE, total assets, and SIC codes are as reported in Compustat. Firm age is counted from the year of firm's IPO as reported in CRSP, or the number of years since its first appearance in CRSP or Compustat.

CEO characteristics include CEO share ownership, *CEO\_Own*, the percentage of outstanding common shares held by a CEO, and *CEO\_Own*<sup>2</sup>; and an indicator for CEOs chairing the board *CEO\_Chair*. Kim and Lu (2011) show firm valuation and risk taking is related to CEO share ownership in a hump-shaped fashion. Board characteristics, which may influence firm value and the value of independent directors' experience, include the total percentage of shares owned by all independent directors, *Ind\_Dir\_Own*; and the natural log of the total number of directors on the board, *Ln(BoardSize)*. Independent directors' share ownership may align

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<sup>8</sup> See, for example, Hermalin and Weisbach (1991), Agrawal and Knoeber (1996), Himmelberg, Hubbard, and Palia (1999), Bhagat and Black (2002), Boone, Field, Karpoff, and Raheja (2007), and Kim and Lu (2011).

independent directors' incentives with shareholder value, affecting firm performance. We control for board size because Yermack (1996) shows a negative relation between board size and firm value.

Our baseline regression controls for firm- and year fixed effects,  $\alpha_i$  and  $\alpha_t$ . However, previous studies relating independent directors' industry experience to firm performance control for industry fixed effects based on the two-digit SIC code (e.g., Faleye et al., 2013), and Fahlenblach et al. (2010) adjust firm performance by the industry median based on the two-digit SIC code and control for industry fixed effects based on Fama-French 48-industry classification. To relate our findings to the literature, Table 1.4, Panel A presents estimation results based on industry (two-digit SIC)-, state-, and year fixed effects. Then, we present estimation results based on firm- and year fixed effects in Panel B of the same table. Observations within the same CEO-firm pair may be auto-correlated because CEOs tend to have strong influence on firm performance; hence, standard errors are clustered at the CEO-firm pair level.

The first three columns in Panels A and B are motivated by Faleye et al. (2013), who find independent directors' industry expertise (defined as past employment history in firm(s) with the same two-digit SIC code) can increase firm value. To distinguish industry-only experience and industry-CEO experience within their framework, we construct three industry experience variables based on two-digit SIC code: *FHH\_Indu\_Exp*, the fraction of independent directors with employment history in Compustat firms in the same industry; *FHH\_Indu\_Only\_Exp*, the fraction of independent directors with only non-CEO level employment history in the industry; and *FHH\_Indu\_CEO\_Exp*, the fraction of independent directors with CEO-level employment history in the industry.

Column (1) in both Panels shows results consistent with those of Faleye et al. (2013); independent directors' industry experience is positively related to firm value. However, this positive relation is driven by those with the industry-CEO experience. Column (2) reveals that

non-CEO level industry experience alone is not significantly related to firm value. The positive relation is significant only when the industry experience is combined with CEO experience.

Columns (4) – (6) are motivated by Fahlenbrach et al. (2010), who examine only current CEO-directors. Three parallel experience variables within Fahlenbrach et al.’s framework are constructed: *FLS\_CEO\_Exp*, the fraction of independent directors who are current CEOs of other Compustat firms; *FLS\_CEO\_Only\_Exp*, the fraction of those who are current CEOs of other firms with different two-digit SIC code; and *FLS\_Indu\_CEO\_Exp*, the fraction of those who are current CEOs of other firms in the same two-digit SIC code.

The estimated coefficient of *FLS\_CEO\_Exp* is positive and significant with industry-, state-, and year fixed effects but become insignificant with firm- and year fixed effects, highlighting the importance of controlling for unobservable (time-invariant) firm characteristics. The insignificant result with firm fixed effects is consistent with Fahlenbrach et al.’s finding that current CEO-directors have no significant effects on improving operating performance. The coefficients of *FLS\_CEO\_Only\_Exp* are insignificant in both Panels. However, the coefficients of *FLS\_Indu\_CEO\_Exp* are positive and significant regardless of the choice of fixed effects. Independent director-current CEOs are associated with higher firm value only when they are CEOs of firms in a similar industry.

The last three columns are based on our definitions of independent directors’ experience: *Indu\_Only\_Exp*, *CEO\_Only\_Exp*, and *Indu\_CEO\_Exp*. Our definition of industry expertise is stricter than Faleye et al. (2013), as we require at least 5 years of work experience obtained during the last 15 years in the same three-digit SIC code industry. Our CEO experience also differs from Fahlenbrach et al. (2010), as we include both current and past CEOs.

The results are largely consistent with those in the first six columns, but more precise. CEO-only experience shows an insignificant coefficient even with industry fixed effects. Industry-only experience has a significant coefficient with industry fixed effects, but it becomes insignificant with firm fixed effects. By contrast, the combined industry-CEO experience shows

a positive and significant coefficient under both specifications. The magnitude of the coefficient is also large. Assuming a board with seven independent directors (the sample median), the coefficient of *Indu\_CEO\_Exp* in Panel B, Column (9) implies that if one of the seven independent directors has the industry-CEO experience, the firm's *Q* will be higher by 0.19.

The coefficients of the control variables are also largely consistent with our priors: firm are valued higher when operation is more profitable, not in financial distress, smaller, younger; and have fewer tangible assets, smaller boards, and CEOs chairing the board,.

### **1.3.3 Industry-CEO Experience or Individual talent?**

The positive relation between industry-CEO experience and firm value may not be due to the experience factor. It could simply reflect the individual's ability that enables them to experience a CEO position; that is, what enhances firm value is the individual talent, not industry-CEO experience. To test this individual talent hypothesis against the experience hypothesis, we construct two variables. *Indu\_CEO\_Exp\_Other* is an indicator for other firms having independent directors identified as having industry-CEO experience in their boards as directors. Since this indicator does not rule out non-independent director positions in other firms, we also define *Indu\_CEO\_Exp\_Other\_Indep*, equal to one only when those with industry-CEO experience serve on other firms' boards as independent directors. Our sample contains 677 (425) firm-year observations showing the presence of such directors (independent directors) in other firms. We estimate the baseline regression with each of the two variables with industry-, state- and year fixed effects and with firm- and year fixed effects. The results, reported in Table 1.5, show no significant coefficient on either variable, regardless of the choice of fixed effects. The higher firm value associated with industry-CEO experience is not observed when the same individuals serve on the boards of other firms. The value enhancement seems to arise from the experience, not individual talents per se.

### 1.3.4 Investment Efficiency and the Combined Experience

If the industry-CEO experience helps improve firm value, how does it do it? A potential channel is greater efficiency of corporate investments. An independent director with CEO experience in a closely related industry may have valuable insights into what types of investments should be promoted or curtailed to provide a competitive edge and/or to put the firm in the position of sustainable growth. We explore this channel by estimating the impact of the industry-CEO experience on the value-investment sensitivity with the following specification:

$$Q_{it} = \alpha_i + \alpha_t + \beta_1 \cdot \text{Ind\_Dir\_Exp}_{it} + \beta_2 \cdot \text{Ind\_Dir\_Exp}_{it} \cdot \text{Inv}_{it} + \beta_3 \cdot \text{Inv}_{it} + \beta_4 \cdot \text{Control}_{it} + \mu_{it} \quad (2)$$

The coefficient of main interest is  $\beta_2$ , which measures the impact of independent directors' experience on the value-investment sensitivity. Proxies for investments are capital expenditures and R&D expense divided by property, plant, and equipment,  $\text{Capx/PPE}$  and  $\text{R\&D/PPE}$ , respectively. Control variables are the same as before.

Table 1.6 reports estimation results. Both measures of investments are positively related to  $Q$ , suggesting capital expenditures and R&D investments are on average value enhancing. More important, the interaction between the industry-CEO experience and investment intensity shows a positive and significant coefficient regardless of which proxy is used to measure investments and the choice of fixed effects. We also examine whether industry-only or CEO-only experience also increases the value-investment sensitivity by repeating the estimation with the separate experience variables in place of the combined experience. The coefficients on the interaction between the separate experience variables and investment intensity are insignificant (unreported). Independent directors' experience seems to require the combination of industry-CEO experience to be helpful in enhancing the efficiency of investments.

## 1.4 Management-Board Interaction and the Value of Experience

If independent directors indeed contribute to improving firm value and the efficiency of investments, the effect is likely to accrue through interactions with management, as their primary roles are monitoring and advising management. Hence, the positive effect of the industry-CEO

experience should be stronger when management-board interaction is greater. In this section we test this prediction, employing three distinct proxies for the interaction: product market environment, management activeness, and the frequency of board meetings.

#### **1.4.1 Product Market Environment**

Our first proxy for management-board interaction relies on external circumstances: product market environment. Competitive pressures and changes in the product market keep managers on their toes, prompting new initiatives and efficiency-enhancing measures to stay abreast, or to get ahead of the competition. Many of the activities require board approval, triggering interactions between management and independent directors. Managers facing fierce competition and rapid changes in product markets also need any help they can get. So they may better utilize independent directors' advisory capacity by seeking their advice, generating greater interactions with the board.

The product market environment index, *Prod\_Env*, is based on three components: The first is a traditional industry concentration measure; Herfindahl-Hirschman index, *HHI*, taken from Gordon Phillips' website. It is the squared sum of the market shares of the four biggest firms in sales among competitor firms in the same year, where market share is calculated based on the list of competitor firms defined by Hoberg and Phillips (2010). Lower HHI means less concentration and greater competition. The other components are based on fluctuations in the product market, measuring dynamic aspects of competitive threat and demand shocks. The second is fluidity, *Fluid*, also taken from Gordon Phillips' website. It reflects product market threats and instabilities surrounding a firm, arising out of competitor actions. Hoberg, Phillips, and Prabhala (2013) measure it by how rivals are changing their product descriptions that overlap with the firm's product space. Greater fluidity reflects more actions by the rivals (e.g., new products in reaction to technology improvement) and greater competitive threat. The third component focuses on the demand side of product market, *Vdshock*, defined by Li, Lu, and Phillips (2013). It is the annual percentage change in NAICS two-digit industry level aggregate demand,



measured by the chain-type quantity indexes for gross output from the BEA (Bureau of Economic Analysis) website. A larger *Vdshock* reflects a greater demand increase for the industry's products in a given year.

*Prod\_Env* is the sum of *L\_HHI*, *H\_Fluid*, and *H\_Vdshock*. *L\_HHI* is equal to one if *HHI* is below the sample median; *H\_Fluid* is equal to one if *Fluid* is above the sample median; and *H\_Vdshock* is equal to one if *Vdshock* is above the sample median. A higher value of *Prod\_Env*, therefore, means greater competition, threats from rivals, and demand shocks in the product market. We divide the sample into high- and low product market environment subsamples, *H\_Prod\_Env* and *L\_Prod\_Env*, based on the sample median and re-estimate the baseline regressions separately for each subsample.

The results are reported in Panel A of Table 1.7. The coefficient on the industry-CEO experience variable with firm- and year fixed effects is 2.548 for the high product market environment subsample, significant at the one percent level. The coefficient implies a ten percent increase in the fraction of independent directors with industry-CEO combined experience is associated with a 0.255 higher *Q*. The low product market environment subsample, by contrast, shows an insignificant coefficient on the combined experience variable when we control for firm- and year fixed effects.

#### **1.4.2 Management Activeness**

The second proxy for management-board interaction is based on the level of business initiatives. Unlike the proxy based on product market environment, this proxy is endogenous but is intuitively appealing. We measure management activeness by the frequency and magnitude of corporate events such as equity issues, M&As, capital expenditures, and R&D investments. Many of these activities require board approval, leading to more management-board interaction. The activeness index, *Act*, is the sum of the following four variables during the fiscal year, each divided by total assets: (1) The total amount of equity issued. (2) The total M&A transaction

volume (including divestitures and spinoffs). When M&A transaction volume is missing in SDC, this ratio is replaced by yearly sample median. (3) Capital expenditures. (4) R&D expense.

Higher activeness will lead to more management-board interaction, providing greater opportunities to utilize independent directors' experience. If a firm-year's *Act* is equal to or greater than the sample median, it is assigned to the high activeness subsample, *H\_Act*; if less than the median, the low activeness subsample, *L\_Act*. Table 1.7, Panel B reports the results. Regardless of the choice of fixed effects, the industry-CEO experience variable shows a positive and significant coefficient only in the high-activeness subsample.

### **1.4.3 Frequency of Board Meetings**

Our final proxy is the most direct and endogenous measure of management-board interaction; the number of board meetings held each year. Adams (2003) argues board meetings are the focal point of independent directors' time, energy, and effort. Information on the number of board meetings is available in ExecuComp only through 2005 with partial observations in 2006. (S&P stopped collecting the number of board meetings in 2007.) We hand-collect the number of board meeting data after 2005 from company proxy statements.

As before, we estimate the baseline regressions separately for high- and low frequency board meeting subsamples, as defined by the sample median. The results are reported in Table 1.7, Panel C. The estimated coefficient on the combined experience variable is significant only for the high-frequency board meeting subsample.

Taken together, these results imply the industry-CEO experience adds value only with a high level of management-board interaction. This evidence is robust to using different proxies for the interaction, including a more exogenous proxy based on product market environment.

## **1.5 Endogeneity, IV Regressions, and Other Robustness Checks**

We begin by exploring possible factors affecting the likelihood of having independent directors with industry-CEO experience in the board. To address endogeneity issues, we use the

instrumental variables approach. We also check robustness to alternative measures of key variables, to outliers, and to alternative sample constructions.

### **1.5.1 Determinants of Independent Directors' Experience**

Whether a firm has independent directors with industry-CEO experience is the result of matching. Fahlenbrach et al. (2010) articulate the matching process for current CEO-directors by considering the supply and demand. We apply their approach to the case of independent directors with industry-CEO experience. Intuitively, we expect firms where the potential benefits are greatest will more actively recruit independent directors with the combined experience, with those directors preferring firms with less reputational risk and unfamiliarity, and more prestige and compensation.

Small and young firms with growth prospects may benefit more from useful advice and guidance from independent directors with industry-CEO experience. We proxy the size and age by lagged values of sales volume and firm age,  $\ln(Sales)_{t-1}$  and  $\ln(FirmAge)_{t-1}$ . Firms with more complicated organizational structure may need more effective monitoring and advising (Coles, Daniel, and Naveen, 2008), leading to more active recruitment of independent directors with industry-CEO experience. The natural log of the number of business segments as reported in Compustat,  $\ln(Segments)_{t-1}$ , is used to proxy organizational complexity/

When a firm is more active in new business initiatives, it would benefit more from having independent directors with industry-CEO experience. The level of business initiatives is proxied by the lagged value of  $Act$ ,  $Act_{t-1}$ . Firms operating in more competitive product markets with high fluidity and positive industry demand shocks may benefit more from the advice and guidance by independent directors with industry-CEO experience. So we also include  $Prod\_Env$  as a possible determinant. We do not lag this variable because it is an exogenous variable unlikely to be subject to a reverse causality.

Independent directors with industry-CEO experience may have more options (i.e., in a greater demand) and, hence, are more likely to avoid underperforming firms and firms in

financial distress to protect their reputation. We use  $EBITDA/TA_{t-1}$  to proxy for past firm performance, and Altman's Z-score,  $Zscore_{t-1}$ , to proxy for financial condition.

CEO characteristics may also matter. CEOs with high share ownership have a greater incentive to recruit independent directors with valuable experience. Powerful CEOs may feel more secure to recruit someone who may challenge them with strong experience. We proxy CEO incentives with CEO share ownership,  $CEO\_Own$  and  $CEO\_Own^2$ ; and powerful CEOs with  $CEO\_Chair$  and CEO tenure,  $Log(CEO\_Ten)$ . Finally, a larger board with more independent directors has more room to include independent directors with unique experience. We include  $\%\_Independent$  and  $Ln(BoardSize)$  as potential determinants.

One complicating factor for examining the determinants is that we are considering three types of independent directors' experience. Given that no clear ordering exists among them, we follow Fahlenbrach et al. (2010) and estimate a multinomial logit model. In Table 1.8, Model (1) focuses on industry experience, while Model (2) is on CEO experience. In Model (1), we group all firms into three categories: firms with independent directors with industry-CEO experience (the dependent variable equals to zero); industry-only experience but no industry-CEO experience (the dependent variable equals to one); or no industry experience (the dependent variable equals to two). Similarly, in Model (2), we groups all firms into those with independent directors with industry-CEO experience; CEO-only experience but no industry-CEO experience; or no CEO experience. All regressions control for industry (two-digit SIC code) and year fixed effects. Standard errors are clustered at the CEO-firm pair level.

In Model (1), we are primarily interested in differences between firms with industry-CEO experience and firms with industry-only experience. In Column (1), industry-only experience is the baseline, and the coefficients are changes in the odds ratio of the presence of industry-CEO experience. Firms with independent directors with industry-CEO experience tend to be smaller and younger, operate in tougher product market environment, are more active, and have a higher percentage of independent directors. Estimates in Column (3) of Model (2) show mostly similar

differences between firms with industry-CEO experience and firms with CEO-only experience. Overall, smaller and younger firms, operating in tougher product markets with demand shocks and taking on more activities, are more likely to have independent directors with industry-CEO experience.

### 1.5.2 Endogeneity Issues

The relation between the presence of industry-CEO experience, management-board interaction, and *Tobin's Q* is subject to endogeneity. For example, higher-valued firms or firms with more active management may have greater success in attracting independent directors with the valuable experience; and those directors may be more inclined to quit when a firm is about to suffer from poor performance. There may also be time-varying omitted variables affecting *Tobin's Q*, the fraction of the independent directors with industry-CEO experience, and management-board interaction at the same time. We address these endogeneity issues with the instrumental variable regression approach.

The relation between the industry-CEO experience and firm value is examined first. Fahlenbrach et al. (2010) find that current CEO-directors come from firms with similar size. If this pattern extends to the case of independent directors with industry-CEO experience, firms with a greater number of similar sized firms within the same industry are more likely to have independent directors with industry-CEO experience. We use the number of firms in the three-digit SIC code with sales within  $\pm 10\%$  of the sample firm's sales volume, *Similar\_Size*, as the instrumental variable for the fraction of independent directors with industry-CEO experience. This variable is unlikely to have a direct effect on firm performance, other than the indirect effect through a higher likelihood of having an independent director with industry-CEO experience, satisfying the exclusion restriction. One possible concern is that a greater number of firms in the same industry may pose greater competition; however, it is not clear whether such competition will increase or decrease *Q*. Nevertheless, we safeguard against the potential effects through

competition by including the *HHI* defined by Hoberg and Phillips (2010).<sup>9</sup> The IV regressions control for industry-, state- and year fixed effects, because the time series variation in the number of similar-sized firms in the three-digit SIC code is too limited to control for firm fixed effects. Standard errors are corrected by bootstrapping.

As expected, the first-stage results, reported in Column (1) of Table 1.A2, show that *Similar\_Size* is positively related to the industry-CEO experience variable at the 1% significance level. The second-stage results, reported in Column (1) of Table 1.9, illustrate the robustness of the positive effect of the industry-CEO experience on firm value.

In the remaining columns of Table 1.9, we address endogeneity in the interactive effect of the experience and management-board interaction. Of the three proxies for management-board interaction, endogeneity is of less concern for *Prod\_Env*, which is based on industry-level data. However, *Act* and *Meet* are subject to endogeneity issues. For example, firms with higher *Tobin's Q* tend to have more investment opportunities, leading to more corporate financing and investment activities, i.e., higher *Act*. Vafeas (1999) shows board meetings are more frequent when performance declines. In addition, omitted variables related to both firm performance and management activeness or the number of board meetings are of concern. Thus, we employ instrumental variables for *H\_Act* and *H\_Meet*. In instrumenting the interactive effects, we use the full-sample with interaction terms instead of subsample analyses.

In Table 1.9, Column (2), we instrument *Indu\_CEO\_Exp* and *Indu\_CEO\_Exp\*H\_Prod\_Env* using two IVs: *Similar\_Size* and *Similar\_Size\*H\_Prod\_Env*. The first-stage results are reported in Columns (2)-(3) of Table 1.A2. The second-stage result in Table 1.9 shows a positive and significant coefficient on the predicted value of the interaction term, *Indu\_CEO\_Exp\*H\_Prod\_Env*.

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<sup>9</sup> Since the baseline regressions do not control for *HHI*, we re-estimate all regressions while adding *HHI* as a control. The results hardly change. The IV regression results also remain mostly unaffected when we do not control for *HHI*.

Table 1.9, Column (3) reports the second stage IV regression result on the interactive effect of *Indu\_CEO\_Exp* and *H\_Act* treating *Indu\_CEO\_Exp*, *H\_Act*, and *Indu\_CEO\_Exp\*H\_Act* as endogenous. We use three IVs: The first IV is *Similar\_Size* for *Indu\_CEO\_Exp*. The IV for *H\_Act* is *Rho*, taken from Wilson (2009). It is a measure of the cost of R&D capital after taking account of state and federal R&D tax credits. Because the tax credits change the costs of investment, it may affect the investment activities. R&D tax credits also apply to other firms at the state- and the nation-wide level, not to a specific firm, and, hence, may not have a direct impact on an individual firm performance, other than through their impacts on *Act*. Because firms tend to conduct R&D activities near their headquarters, we use *Rho* value of the state of headquarter location. The third IV is the interaction term of *Similar\_Size* and *Rho*, IV for *Indu\_CEO\_Exp\*H\_Act*. The first-stage results are reported in Columns (4)-(6) of Table 1.A2. The second-stage regression result, reported in Column (3) of Table 1.9, shows a positive, albeit insignificant, coefficient on the predicted value of the interaction term. The insignificant coefficient may be due to multi-collinearity between the predicted values of *Indu\_CEO\_Exp* and *Indu\_CEO\_Exp\*H\_Act*. Their coefficients are jointly significant at 10% level (F-statistic of 4.89).

Lastly, we estimate IV regressions for the interactive effect of *Indu\_CEO\_Exp* and *H\_Meet* on firm value using three IVs: *Similar\_Size*, *AirHub*, and *Similar\_Size\*AirHub*. *AirHub* is an indicator for whether a firm's headquarter is located within 60-mile radius of top 20 U.S. hub airports by passenger traffic volume. The distance is based on ZIP codes. We use *AirHub* to instrument the number of board meetings, because firms with a convenient access to a large airport may hold board meetings more frequently. It satisfies the exclusion restriction, because the easy access to top 20 hub airports is unlikely to be directly related to firm value.<sup>10</sup> The first-stage results are reported in Columns (7)-(9) of Table 1.A2. The second-stage result, reported in

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<sup>10</sup> Masulis, Wang, and Xie (2012) use the proximity to U.S. top 20 airports by international traffic as an IV for the fraction of foreign independent directors in the board.

Column (4) of Table 1.9, also shows a positive, albeit insignificant, coefficient on the predicted value of the interaction term. The statistical insignificance seems to be due to multi-colinearity between the predicted values of *Indu\_CEO\_Exp* and *Indu\_CEO\_Exp\*H\_Meet*. The coefficients are jointly significant at the 1% level (F-statistic of 15.34).

In sum, our findings that (1) independent directors' industry-CEO experience help increase firm value and (2) the effectuation of the value enhancement requires active management-board interaction seem to be robust to endogeneity issues.

### **1.5.3 Other Robustness Tests**

In this section we test whether our findings are also robust to alternative measures of key variables, to outliers, and to alternative sample constructions.

#### **1.5.3.1 Alternative Measures of Key Variables**

##### *Alternative performance measures*

To examine the sensitivity of our main findings to other measures of firm performance, we re-estimate baseline regressions using as the dependent variable buy-and-hold stock returns during the fiscal year; asset utilization rate (sales divided by total assets); and return on assets (*EBITDA/TA*). The results are reported in the first three sections of Table 1.10, Panel A without reporting control variables' coefficients.<sup>11</sup> The first column reports the results on the total sample; and the next six columns, on high and low management-board interaction subsamples using different proxies for the interaction. All results are robust, except when *ROA* is used as the dependent variable and the number of board meetings is used to proxy for management-board interaction.

##### *Alternative measures of industry-CEO experience.*

We define the industry-CEO experience based on three-digit SIC code, requiring industry work experience for more than five years during the past 15 years. However, Faleye et al. (2013)

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<sup>11</sup> Control variables are same as before, except when *ROA* is used as the dependent variable *EBITDA/TA* is excluded from the control variables.



construct industry expertise of independent directors based on two-digit SIC code with no minimum work experience or shelf life. To examine the sensitivity of our results to their definition of industry experience, we redefine industry-CEO experience using two-digit SIC code, requiring no minimum work experience or shelf life and re-estimate the regressions. The results reported in Section 4 of Panel A are robust.

Fahlenbrach et al. (2010) consider only current CEO-directors, whereas our definition of industry-CEO experience includes former CEOs in the same industry. Some of the former CEOs could be former CEOs of the same company, who could be classified as independent after a certain passage of time. This is of concern because Fahlenbrach, Minton, and Pan (2011) show that firms with their own former CEOs on the board have significantly better operating performance. Hence, the industry-CEO experience value effect could be driven by former CEOs of the same firm. To address this concern, we construct two alternative industry-CEO experience; *FLS\_Ind\_CEO\_Exp*, which includes only current CEOs of firms in two-digit SIC code, and *Indu\_CEO\_Exp\_No\_FCEO*, which is the same as our definition of *Indu\_CEO\_Exp* except that all former CEOs of the same company are excluded. The re-estimation results using these alternative definitions are reported in Sections 5 and 6 of Panel A. The results are again robust. In the last two sections, we redefine *Indu\_CEO\_Exp* based on two-digit SIC code and Fama-French 48 industry groupings. The results are robust.

### **1.5.3.2 Outliers**

Since the number of firm-year observations with independent directors with industry-CEO experience is relatively small, the results on the combined experience are susceptible to outliers. We take three steps to examine whether our results are driven by outliers. First, Tobin's  $Q$  is winsorized at top 1%. This reduces the maximum value of  $Q$  from 55.729 to 8.179. Second, we exclude firms with within-firm standard deviation in  $Q$  in the top 1%. Third, we exclude firms that have within-firm standard deviation in the fraction of independent directors with

industry-CEO experience in the top 1%. Re-estimation results based on these modified samples, reported Table 1.10, Panel B, show our findings are not driven by outliers.

### **1.5.3.3 Alternative Sample Constructions**

#### *Business relationships between appointing and appointee firms*

Our sample includes 321 firm-year (339 firm-year-director) observations in which an independent director is current CEO of another firm in the same 3-digit SIC code. Among the 321 observations, we find some business relationship between the appointing and appointee firm pairs in 54 firm-year observations. These business relationships are not material. If they are material, RiskMetrics will not classify the outside director as independent. Our web search also confirms that the business relationships are immaterial. Nevertheless, we re-estimate the baseline regressions while excluding the 54 firm-years and report the results in Section 1 of Table 1.10, Panel C. The results are very similar in both magnitude and statistical significance.

#### *Are results driven by specific industries?*

Independent directors with industry-CEO experience are over-represented in the industry with SIC 7370 (computer programming, data processing, and other computer related services). Of the 1,069 firm-year-director observations with industry-CEO experience, 297 are in SIC 7370. SIC 2830 (drugs) has 134 observations, and SIC 3670 (electronic components and accessories) shows 118 observations. No other SIC contains more than 100 observations.<sup>12</sup> We re-estimate the baseline regressions while excluding all observations belonging to SIC code 7370 and report the results in Section 2 of Table 1.10, Panel C. The results are robust.

#### *Firms in financial distress*

Boards tend to become more active when firms are in financial distress (Vafeas, 1999). To check whether the interactive estimates of industry-CEO experience and management-board

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<sup>12</sup> SIC code 3840 (surgical, medical, and dental instruments and supplies) shows 61; SIC code 3660 (communications equipment), 41; SIC code 3550 (special industry machinery, except metalworking), 38; SIC code 3820 (laboratory apparatus and analytical, optical, measuring, and controlling instruments), 36; SIC code 1310 (crude petroleum and natural gas), 35; SIC code 1380 (oil and gas field services), 35; and the remaining 274 firm-year-director observations are spread over 41 other SIC codes.

interaction are driven by observations in financial distress, we exclude firms in financial distress, which are defined as those receiving the Altman Z-score less than 1.81. The re-estimation results, reported in Section 3 of Panel C, are robust.

#### *Firms affected by the independent board requirement*

The independent board requirement promulgated by NYSE and NASDAQ in 2002 has changed board compositions for firms that did not have a majority of independent directors prior to the regulation, affecting their likelihood of having independent directors with industry-CEO experience. We exclude firms affected by the exchange regulation, and report re-estimation results in Section 4 of Panel C. The results are robust.

## **1.6 Implications**

We find independent directors with CEO experience in a closely related industry can have positive impacts on firm value. However, only a small fraction of firms show the presence of such an independent director on their boards, which suggests shareholders may be better served by more aggressive recruiting of independent directors with the combined experience. However, there may be reasons for the scarcity. Firms may be reluctant to recruit CEOs of firms in a closely related industry because they may become rivals in the same product market. Such concerns may be alleviated by recruiting former rather than current CEOs; indeed, we find 68% of independent directors with industry-CEO experience are former CEOs.

The beneficial impact of industry-CEO experience is observed only when business circumstances call for greater management-board interaction. This evidence provides another normative implication: To extract the most value out of independent directors' experience, management should actively engage their independent directors by seeking their advice and sharing relevant information. Independent directors also should proactively demand greater interaction with management. Schwartz-Ziv and Weisbach (2013) suggest one way independent directors can generate more interactions. They examine board and committee meeting minutes of 11 partially government-owned Israeli firms and find in about 20% of issues discussed during

meetings, boards request further information or updates, or take some initiatives. These actions will generate more interactions with management and enhance independent directors' effectiveness as advisors and monitors.

Finally, a caveat is in order. We focus on a specific, rather scarce, independent director characteristic. There may be other characteristics that are as valuable. More research on the interplay between other independent director characteristics and management-board interaction may help identify other qualities that help improve the functioning of the board.

**Table 1.1: Sample Description by Year.**

This table reports, by year, the number of observations and the fraction of firms with independent director(s) with relevant experience. Column (2) shows the number of firms in each fiscal year. Columns (3) and (4) show the number and fraction of firms with independent directors who have at least 5 years of experience in the same industry (three-digit SIC code). Columns (5) and (6), and Columns (7) and (8) show the number and fraction of firms with independent directors who have CEO experience, and of independent directors with CEO experience in the same industry (three-digit SIC code), respectively.

| Year  | Total number of firms | Independent directors with industry experience |                  | Independent directors with CEO experience |                  | Independent directors with industry-CEO experience |                  |
|-------|-----------------------|--|------------------|---|------------------|--|------------------|
|       |                       | Number of firms                                | Percent of firms | Number of firms                           | Percent of firms | Number of firms                                    | Percent of firms |
| (1)   | (2)                   | (3)  | (4)              | (5)                                       | (6)              | (7)  | (8)              |
| 2000  | 956                   | 761  | 79.6             | 490                                       | 51.3             | 41   | 4.3              |
| 2001  | 985                   | 841  | 85.4             | 535                                       | 54.3             | 58   | 5.9              |
| 2002  | 989                   | 872  | 88.2             | 563                                       | 56.9             | 64   | 6.5              |
| 2003  | 1,003                 | 900  | 89.7             | 586                                       | 58.4             | 73   | 7.3              |
| 2004  | 1,007                 | 922  | 91.6             | 591                                       | 58.7             | 77   | 7.6              |
| 2005  | 980                   | 920  | 93.9             | 598                                       | 61               | 79   | 8.1              |
| 2006  | 998                   | 947  | 94.9             | 630                                       | 63.1             | 85   | 8.5              |
| 2007  | 1,010                 | 976  | 96.6             | 669                                       | 66.2             | 102  | 10.1             |
| 2008  | 950                   | 915  | 96.3             | 662                                       | 69.7             | 92   | 9.7              |
| 2009  | 1,095                 | 1,056  | 96.4             | 743                                       | 67.9             | 113  | 10.3             |
| 2010  | 1,077                 | 1,042  | 96.8             | 743                                       | 69               | 127  | 11.8             |
| Total | 11,050                | 10,152   | 91.9             | 6,810                                     | 61.6             | 911  | 8.2              |

**Table 1.2: Summary Statistics.**

This table reports summary statistics of variables used in the paper. Variable definitions are provided in Table 1.A1.

| Variable Name  | Mean<br>(1) | Median<br>(2) | Std. Dev.<br>(3) | Min<br>(4) | Max<br>(5) |
|--|-------------|---------------|------------------|------------|------------|
| <i>Panel A: Independent directors' experience variables</i>    |             |               |                  |            |            |
| Indu_Only_Exp  | 0.555       | 0.6           | 0.286            | 0          | 1          |
| CEO_Only_Exp   | 0.149       | 0.125         | 0.166            | 0          | 1          |
| Indu_CEO_Exp   | 0.016       | 0             | 0.061            | 0          | 1          |
| FHH_Indu_Exp   | 0.893       | 1             | 0.244            | 0          | 1          |
| FHH_Indu_Only_Exp  | 0.866       | 1             | 0.249            | 0          | 1          |
| FHH_Indu_CEO_Exp   | 0.027       | 0             | 0.075            | 0          | 1          |
| FLS_CEO_Exp  | 0.068       | 0             | 0.11             | 0          | 1          |
| FLS_CEO_Only_Exp   | 0.058       | 0             | 0.102            | 0          | 1          |
| FLS_Indu_CEO_Exp   | 0.009       | 0             | 0.043            | 0          | 0.5        |
| Indu_CEO_Exp_Other   | 0.053       | 0             | 0.223            | 0          | 1          |
| Indu_CEO_Exp_Other_Ind   | 0.033       | 0             | 0.179            | 0          | 1          |
| <i>Panel B: Management-board interaction variables</i>         |             |               |                  |            |            |
| H_Prod_Env   | 0.39        | 0             | 0.488            | 0          | 1          |
| H_Act  | 0.5         | 0.5           | 0.5              | 0          | 1          |
| H_Meet   | 0.551       | 1             | 0.497            | 0          | 1          |
| <i>Panel C: Firm performance and characteristics variables</i> |             |               |                  |            |            |
| Tobin's Q  | 1.989       | 1.589         | 1.434            | 0.389      | 55.729     |
| EBITDA/TA  | 0.132       | 0.134         | 0.107            | -1.877     | 0.447      |
| Z-Score  | 4.125       | 2.794         | 7.598            | -57.427    | 154.743    |
| Z_Dum  | 0.834       | 1             | 0.372            | 0          | 1          |
| Z_Distress   | 0.065       | 0             | 0.246            | 0          | 1          |
| Ln(Sales)  | 7.353       | 7.243         | 1.555            | -1.149     | 12.96      |
| PPE/TA   | 0.516       | 0.423         | 0.372            | 0.005      | 3.956      |
| Ln(FirmAge)  | 2.92        | 2.89          | 0.795            | 0          | 4.454      |
| Ln(Segments)   | 0.574       | 0.693         | 0.602            | 0          | 2.398      |
| Capx/PPE   | 0.118       | 0.094         | 0.099            | 0.001      | 4.302      |
| R&D/PPE  | 0.246       | 0.063         | 0.648            | 0          | 28.184     |
| <i>Panel D: Governance variables</i>                           |             |               |                  |            |            |
| CEO_Own  | 0.022       | 0.003         | 0.058            | 0          | 0.761      |
| CEO_Chair  | 0.573       | 1             | 0.495            | 0          | 1          |
| CEO_Ten  | 7.3         | 5             | 7.385            | 0          | 60         |
| Ind_Dir_Own  | 0.015       | 0.004         | 0.047            | 0          | 0.942      |
| BoardSize  | 8.936       | 9             | 2.283            | 3          | 21         |
| %_Indep_Dir  | 0.701       | 0.727         | 0.164            | 0          | 1          |
| <i>Panel E: Instrumental variables</i>                         |             |               |                  |            |            |
| Similar_Size   | 50.586      | 13            | 77.826           | 0          | 518        |
| Rho  | 1.166       | 1.177         | 0.044            | 1.028      | 1.238      |
| AirHub   | 0.315       | 0             | 0.465            | 0          | 1          |

**Table 1.3: Firm Performance Changes Around Appointments Independent Directors with Different Experience.**

This table reports changes in firm performance around appointments of independent directors with different types of experience. Tobin's Q is the measure of firm performance. In Panel A, Tobin's Q is adjusted by subtracting the industry (three-digit SIC) median Tobin's Q. In Panel B, Tobin's Q is adjusted by subtracting the control firm's Tobin's Q, where the control firm has the same three-digit SIC code with Tobin's Q in event year -2 within  $\pm 10\%$  of the sample firm and is closest in sales. Event year 0 is the fiscal year a firm appoints independent director(s) with relevant experience. Performance before the appointment is the average over event years -2 and -3; performance after the appointment, the average over event years +1 through +3. The third row is the difference in the performance before and after the appointment. Columns (1) and (2) show the mean performance of firms appointing independent directors with industry-CEO experience and of firms appointing independent directors with industry-only experience, respectively, with Column (3) showing the difference between the two types of appointment. Columns (4) and (5) show the mean performance of firms appointing independent directors with CEO-only experience and the difference with appointment of independent directors with industry-CEO director experience, respectively. T-tests are used to determine whether the mean is significantly different from zero, and two-sample t-tests are used to test whether the mean for industry-CEO experience is significantly different from that for industry-only or for CEO-only experience. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

|  | <b>Industry-CEO<br/>director<br/>appointment</b> | <b>Industry-only<br/>director<br/>appointment</b> | <b>Difference<br/>between<br/>(1) and (2)</b> | <b>CEO-only<br/>director<br/>appointment</b> | <b>Difference<br/>between<br/>(1) and (4)</b> |
|--|--|---|---|--|---|
|  | <b>(1)</b>                                       | <b>(2)</b>  | <b>(3)</b>                                    | <b>(4)</b>                                   | <b>(5)</b>                                    |
| <b><i>Panel A: Industry-adjusted Tobin's Q.</i></b>                    |  |   |   |  |   |
| Before   | 0.415***   | 0.549***  | -0.134  | 0.469***                                     | -0.054  |
| After  | 0.542***   | 0.297***  | 0.245**                                       | 0.322***                                     | 0.220**                                       |
| Difference   | 0.128  | -0.252***   | 0.380***                                      | -0.147***                                    | 0.275**                                       |
| <b><i>Panel B: Size, performance, industry-adjusted Tobin's Q.</i></b> |  |   |   |  |   |
| Before   | -0.096   | 0.009   | -0.105  | -0.03  | -0.066  |
| After  | 0.238  | -0.001  | 0.239*  | -0.021                                       | 0.259**                                       |
| Difference   | 0.335*   | -0.015  | 0.350**                                       | 0.011  | 0.324**                                       |

**Table 1.4: Independent Directors' Experience and Firm Value.**

*Panel A: Controlling for Industry-, State-, and year Fixed Effects.*

This table estimates the relation between various types of independent directors' experience and firm value. Variable definitions are provided in Appendix 1. The dependent variable is Tobin's Q. The sample period covers 2000 through 2010. All regressions control for industry (two-digit SIC), state, and year fixed effects. Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES               | Tobin's Q |           |           |           |           |           |           |           |           |
|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                         | (1)       | (2)       | (3)       | (4)       | (5)       | (6)       | (7)       | (8)       | (9)       |
| FHH_Indu_Exp            | 0.283***  |           |           |           |           |           |           |           |           |
|                         | -0.082    |           |           |           |           |           |           |           |           |
| FHH_Indu_Only_Exp       |           | 0.139     |           |           |           |           |           |           |           |
|                         |           | -0.085    |           |           |           |           |           |           |           |
| FHH_Indu_CEO_Exp        |           |           | 0.670**   |           |           |           |           |           |           |
|                         |           |           | -0.321    |           |           |           |           |           |           |
| FLS_CEO_Exp             |           |           |           | 0.285**   |           |           |           |           |           |
|                         |           |           |           | -0.137    |           |           |           |           |           |
| FLS_CEO_Only_Exp        |           |           |           |           | 0.135     |           |           |           |           |
|                         |           |           |           |           | -0.138    |           |           |           |           |
| FSL_Indu_CEO_Exp        |           |           |           |           |           | 1.055**   |           |           |           |
|                         |           |           |           |           |           | -0.445    |           |           |           |
| Ind_Only_Exp            |           |           |           |           |           |           | 0.207***  |           |           |
|                         |           |           |           |           |           |           | -0.067    |           |           |
| CEO_Only_Exp            |           |           |           |           |           |           |           | 0.089     |           |
|                         |           |           |           |           |           |           |           | -0.098    |           |
| Indu_CEO_Exp            |           |           |           |           |           |           |           |           | 1.185**   |
|                         |           |           |           |           |           |           |           |           | -0.466    |
| EBITDA/TA               | 5.561***  | 5.561***  | 5.579***  | 5.565***  | 5.565***  | 5.569***  | 5.557***  | 5.563***  | 5.593***  |
|                         | -0.601    | -0.603    | -0.602    | -0.602    | -0.603    | -0.603    | -0.6      | -0.603    | -0.6      |
| Z_Distress              | -0.274*** | -0.280*** | -0.282*** | -0.284*** | -0.285*** | -0.278*** | -0.275*** | -0.285*** | -0.280*** |
|                         | -0.065    | -0.065    | -0.065    | -0.065    | -0.065    | -0.065    | -0.065    | -0.065    | -0.065    |
| Z_Dum                   | -0.830*** | -0.828*** | -0.828*** | -0.822*** | -0.824*** | -0.829*** | -0.832*** | -0.823*** | -0.824*** |
|                         | -0.074    | -0.074    | -0.074    | -0.074    | -0.074    | -0.074    | -0.074    | -0.074    | -0.073    |
| Ln(Sales)               | -0.168*** | -0.167*** | -0.165*** | -0.170*** | -0.168*** | -0.167*** | -0.165*** | -0.169*** | -0.162*** |
|                         | -0.021    | -0.021    | -0.021    | -0.021    | -0.021    | -0.021    | -0.021    | -0.021    | -0.02     |
| PPE/TA                  | -0.508*** | -0.507*** | -0.515*** | -0.511*** | -0.510*** | -0.511*** | -0.506*** | -0.510*** | -0.504*** |
|                         | -0.082    | -0.083    | -0.083    | -0.083    | -0.083    | -0.083    | -0.082    | -0.083    | -0.082    |
| Ln(FirmAge)             | -0.071*** | -0.071*** | -0.065**  | -0.074*** | -0.072*** | -0.068*** | -0.088*** | -0.071*** | -0.065**  |
|                         | -0.026    | -0.026    | -0.026    | -0.026    | -0.026    | -0.026    | -0.026    | -0.026    | -0.026    |
| CEO_Own                 | 0.318     | 0.309     | 0.374     | 0.357     | 0.338     | 0.325     | 0.223     | 0.358     | 0.372     |
|                         | -0.818    | -0.819    | -0.821    | -0.823    | -0.821    | -0.82     | -0.814    | -0.82     | -0.821    |
| CEO_Own <sup>2</sup>    | -0.604    | -0.574    | -0.636    | -0.618    | -0.595    | -0.556    | -0.429    | -0.638    | -0.644    |
|                         | -2.05     | -2.05     | -2.052    | -2.066    | -2.057    | -2.054    | -2.02     | -2.046    | -2.048    |
| CEO_Chair               | 0.018     | 0.019     | 0.021     | 0.019     | 0.019     | 0.021     | 0.02      | 0.019     | 0.02      |
|                         | -0.036    | -0.036    | -0.037    | -0.037    | -0.037    | -0.037    | -0.036    | -0.037    | -0.037    |
| Ind_Dir_Own             | 0.549*    | 0.542     | 0.572*    | 0.556*    | 0.549     | 0.563*    | 0.522     | 0.551*    | 0.568*    |
|                         | -0.333    | -0.334    | -0.334    | -0.333    | -0.334    | -0.337    | -0.331    | -0.333    | -0.334    |
| Ln(BoardSize)           | -0.157*   | -0.159*   | -0.161*   | -0.160*   | -0.161*   | -0.162*   | -0.148*   | -0.163*   | -0.169**  |
|                         | -0.085    | -0.086    | -0.086    | -0.086    | -0.086    | -0.086    | -0.085    | -0.086    | -0.085    |
| Constant                | 2.810***  | 2.943***  | 3.060***  | 3.102***  | 3.083***  | 3.081***  | 2.971***  | 3.093***  | 3.041***  |
|                         | -0.25     | -0.258    | -0.251    | -0.252    | -0.252    | -0.252    | -0.253    | -0.252    | -0.25     |
| Observations            | 9,937     | 9,937     | 9,937     | 9,937     | 9,937     | 9,937     | 9,937     | 9,937     | 9,937     |
| Adjusted R <sup>2</sup> | 0.331     | 0.33      | 0.331     | 0.33      | 0.33      | 0.331     | 0.331     | 0.33      | 0.332     |



**Table 1.4: Independent Directors' Experience and Firm Value.****Panel B: Controlling for Firm- and Year Fixed Effects.**

This table estimates the relation between various types of independent directors' experience and firm value. Variable definitions are provided in Appendix 1. The dependent variable is Tobin's Q. The sample period covers 2000 through 2010. All regressions control for firm-, and year fixed effects. Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES               | Tobin's Q |           |           |           |           |           |           |           |           |
|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                         | (1)       | (2)       | (3)       | (4)       | (5)       | (6)       | (7)       | (8)       | (9)       |
| FHH_Indu_Exp            | 0.165**   |           |           |           |           |           |           |           |           |
|                         | -0.074    |           |           |           |           |           |           |           |           |
| FHH_Indu_Only_Exp       |           | 0.05      |           |           |           |           |           |           |           |
|                         |           | -0.085    |           |           |           |           |           |           |           |
| FHH_Indu_CEO_Exp        |           |           | 0.676*    |           |           |           |           |           |           |
|                         |           |           | -0.364    |           |           |           |           |           |           |
| FLS_CEO_Exp             |           |           |           | 0.258     |           |           |           |           |           |
|                         |           |           |           | -0.157    |           |           |           |           |           |
| FLS_CEO_Only_Exp        |           |           |           |           | 0.007     |           |           |           |           |
|                         |           |           |           |           | -0.153    |           |           |           |           |
| FSL_Indu_CEO_Exp        |           |           |           |           |           | 1.615***  |           |           |           |
|                         |           |           |           |           |           | -0.578    |           |           |           |
| Ind_Only_Exp            |           |           |           |           |           |           | -0.012    |           |           |
|                         |           |           |           |           |           |           | -0.059    |           |           |
| CEO_Only_Exp            |           |           |           |           |           |           |           | -0.12     |           |
|                         |           |           |           |           |           |           |           | -0.133    |           |
| Indu_CEO_Exp            |           |           |           |           |           |           |           |           | 1.301**   |
|                         |           |           |           |           |           |           |           |           | -0.538    |
| EBITDA/TA               | 3.974***  | 3.976***  | 3.973***  | 3.980***  | 3.977***  | 3.984***  | 3.976***  | 3.976***  | 3.971***  |
|                         | -0.414    | -0.414    | -0.411    | -0.413    | -0.414    | -0.41     | -0.414    | -0.414    | -0.409    |
| Z_Distress              | -0.198*** | -0.199*** | -0.202*** | -0.201*** | -0.200*** | -0.197*** | -0.200*** | -0.199*** | -0.199*** |
|                         | -0.045    | -0.045    | -0.045    | -0.045    | -0.045    | -0.045    | -0.045    | -0.045    | -0.045    |
| Z_Dum                   | -0.404*** | -0.405*** | -0.405*** | -0.405*** | -0.405*** | -0.406*** | -0.405*** | -0.406*** | -0.407*** |
|                         | -0.074    | -0.074    | -0.073    | -0.074    | -0.074    | -0.073    | -0.074    | -0.073    | -0.073    |
| Ln(Sales)               | -0.617*** | -0.616*** | -0.616*** | -0.618*** | -0.615*** | -0.620*** | -0.615*** | -0.613*** | -0.612*** |
|                         | -0.087    | -0.087    | -0.087    | -0.088    | -0.088    | -0.087    | -0.087    | -0.088    | -0.086    |
| PPE/TA                  | -0.227*   | -0.229*   | -0.244*   | -0.235*   | -0.231*   | -0.244*   | -0.232*   | -0.231*   | -0.237*   |
|                         | -0.134    | -0.135    | -0.135    | -0.134    | -0.134    | -0.134    | -0.134    | -0.134    | -0.134    |
| Ln(FirmAge)             | -0.153*   | -0.150*   | -0.151*   | -0.146*   | -0.149*   | -0.146*   | -0.146*   | -0.151*   | -0.153*   |
|                         | -0.088    | -0.088    | -0.088    | -0.087    | -0.088    | -0.087    | -0.087    | -0.088    | -0.088    |
| CEO_Own                 | 0.744     | 0.75      | 0.698     | 0.729     | 0.747     | 0.704     | 0.753     | 0.765     | 0.662     |
|                         | -0.691    | -0.693    | -0.694    | -0.692    | -0.693    | -0.692    | -0.694    | -0.693    | -0.694    |
| CEO_Own <sup>2</sup>    | -2.881*   | -2.877*   | -2.803*   | -2.873*   | -2.869*   | -2.805*   | -2.878*   | -2.887*   | -2.776*   |
|                         | -1.555    | -1.565    | -1.576    | -1.571    | -1.571    | -1.569    | -1.569    | -1.568    | -1.582    |
| CEO_Chair               | 0.057*    | 0.057*    | 0.060*    | 0.059*    | 0.057*    | 0.060*    | 0.057*    | 0.055*    | 0.062*    |
|                         | -0.032    | -0.032    | -0.032    | -0.032    | -0.032    | -0.032    | -0.032    | -0.032    | -0.032    |
| Ind_Dir_Own             | 0.353     | 0.355     | 0.354     | 0.362     | 0.356     | 0.37      | 0.356     | 0.348     | 0.356     |
|                         | -0.286    | -0.286    | -0.286    | -0.284    | -0.286    | -0.285    | -0.286    | -0.289    | -0.287    |
| Ln(BoardSize)           | -0.345*** | -0.353*** | -0.359*** | -0.358*** | -0.357*** | -0.363*** | -0.360*** | -0.359*** | -0.361*** |
|                         | -0.104    | -0.105    | -0.104    | -0.104    | -0.104    | -0.104    | -0.104    | -0.105    | -0.104    |
| Constant                | 7.544***  | 7.653***  | 7.701***  | 7.701***  | 7.700***  | 7.735***  | 7.703***  | 7.720***  | 7.670***  |
|                         | -0.791    | -0.807    | -0.78     | -0.786    | -0.786    | -0.783    | -0.79     | -0.786    | -0.774    |
| Observations            | 9,963     | 9,963     | 9,963     | 9,963     | 9,963     | 9,963     | 9,963     | 9,963     | 9,963     |
| Adjusted R <sup>2</sup> | 0.644     | 0.643     | 0.644     | 0.644     | 0.643     | 0.645     | 0.643     | 0.643     | 0.644     |

**Table 1.5: Industry-CEO Experience or Individual Talents?**

This table estimates effects on firm value when independent directors with industry-CEO experience sit on other firms' boards. Indu\_CEO\_Exp\_Other is an indicator for other firms having independent directors identified as having industry-CEO experience in their boards as directors. Indu\_CEO\_Exp\_Other\_Indep is an indicator for other firms having independent directors identified as having industry-CEO experience in their boards as independent directors. The dependent variable is Tobin's Q of other firms and control variables are also of other firms. The sample period covers 2000 through 2010. Variable definitions are provided in Appendix 1. Regressions control for industry (two-digit SIC), state, and year fixed effects in Columns (1) and (2), and firm- and year fixed effects in Columns (3) and (4). Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES                | Tobin's Q |           |           |           |
|--------------------------|-----------|-----------|-----------|-----------|
|                          | (1)       | (2)       | (3)       | (4)       |
| Indu_CEO_Exp_Other       | 0.089     |           | -0.11     |           |
|                          | -0.064    |           | -0.08     |           |
| Indu_CEO_Exp_Other_Indep |           | 0.076     |           | -0.044    |
|                          |           | -0.077    |           | -0.106    |
| EBITDA/TA                | 5.563***  | 5.565***  | 3.981***  | 3.978***  |
|                          | -0.603    | -0.603    | -0.413    | -0.414    |
| Z_Distress               | -0.284*** | -0.284*** | -0.199*** | -0.199*** |
|                          | -0.065    | -0.065    | -0.045    | -0.045    |
| Z_Dum                    | -0.824*** | -0.824*** | -0.407*** | -0.406*** |
|                          | -0.074    | -0.074    | -0.074    | -0.073    |
| Ln(Sales)                | -0.167*** | -0.166*** | -0.614*** | -0.615*** |
|                          | -0.021    | -0.021    | -0.087    | -0.087    |
| PPE/TA                   | -0.509*** | -0.510*** | -0.231*   | -0.230*   |
|                          | -0.083    | -0.083    | -0.134    | -0.134    |
| Ln(FirmAge)              | -0.069*** | -0.069*** | -0.151*   | -0.149*   |
|                          | -0.026    | -0.026    | -0.088    | -0.088    |
| CEO_Own                  | 0.343     | 0.328     | 0.748     | 0.749     |
|                          | -0.822    | -0.821    | -0.694    | -0.694    |
| CEO_Own <sup>2</sup>     | -0.612    | -0.587    | -2.858*   | -2.867*   |
|                          | -2.059    | -2.055    | -1.567    | -1.569    |
| CEO_Chair                | 0.021     | 0.02      | 0.057*    | 0.057*    |
|                          | -0.037    | -0.037    | -0.032    | -0.032    |
| Ind_Dir_Own              | 0.539     | 0.54      | 0.367     | 0.362     |
|                          | -0.331    | -0.332    | -0.292    | -0.286    |
| Ln(BoardSize)            | -0.163*   | -0.163*   | -0.354*** | -0.357*** |
|                          | -0.086    | -0.086    | -0.103    | -0.104    |
| Constant                 | 3.071***  | 3.069***  | 7.699***  | 7.703***  |
|                          | -0.252    | -0.253    | -0.783    | -0.785    |
| Industry/State/Year FE   | Y         | Y         | N         | N         |
| Firm/Year FE             | N         | N         | Y         | Y         |
| Observations             | 9,937     | 9,937     | 9,963     | 9,963     |
| Adjusted R <sup>2</sup>  | 0.33      | 0.33      | 0.644     | 0.643     |

**Table 1.6: Independent Directors' Industry-CEO Experience and Investment Efficiency.**

This table estimates the impacts of independent directors' industry-CEO experience on the firm value-investment sensitivity. The dependent variable is Tobin's Q. Investment is measured by capital expenditures divided by PPE in Columns (1)-(2), and R&D expense divided by PPE in Columns (3)-(4). The sample period covers 2000 through 2010. Variable definitions are provided in Appendix 1. Regressions control for industry (two-digit SIC), state, and year fixed effects in Columns (1) and (3), and firm- and year fixed effects in Columns (2) and (4). Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES               | Tobin's Q |           |           |           |
|-------------------------|-----------|-----------|-----------|-----------|
|                         | (1)       | (2)       | (3)       | (4)       |
| Indu_CEO_Exp            | 0.29      | 0.203     | -0.143    | 0.407     |
|                         | -0.284    | -0.306    | -0.502    | -0.571    |
| Capx/PPE                | 1.465***  | 0.903***  |           |           |
|                         | -0.13     | -0.131    |           |           |
| Indu_CEO_Exp*Capx/PPE   | 6.043***  | 8.762***  |           |           |
|                         | -1.558    | -1.428    |           |           |
| R&D/PPE                 |           |           | 0.222**   | 0.104*    |
|                         |           |           | -0.095    | -0.063    |
| Indu_CEO_Exp*R&D/PPE    |           |           | 1.484**   | 1.985***  |
|                         |           |           | -0.58     | -0.466    |
| EBITDA/TA               | 5.358***  | 3.833***  | 5.935***  | 4.971***  |
|                         | -0.126    | -0.155    | -0.764    | -0.516    |
| Z_Distress              | -0.239*** | -0.175*** | -0.372*** | -0.173*** |
|                         | -0.052    | -0.051    | -0.098    | -0.062    |
| Z_Dum                   | -0.783*** | -0.409*** | -0.981*** | -0.515*** |
|                         | -0.036    | -0.043    | -0.088    | -0.1      |
| Ln(Sales)               | -0.155*** | -0.631*** | -0.166*** | -0.690*** |
|                         | -0.011    | -0.033    | -0.024    | -0.106    |
| PPE/TA                  | -0.395*** | -0.172**  | -0.379*** | -0.259    |
|                         | -0.041    | -0.076    | -0.121    | -0.208    |
| Ln(FirmAge)             | -0.029*   | -0.06     | -0.087*** | -0.223*   |
|                         | -0.016    | -0.057    | -0.034    | -0.123    |
| CEO_Own                 | 0.099     | 0.681     | 1.802     | 1.895     |
|                         | -0.436    | -0.591    | -1.227    | -1.248    |
| CEO_Own <sup>2</sup>    | 0.055     | -2.787*   | -4.292    | -7.212**  |
|                         | -1.192    | -1.448    | -3.545    | -3.669    |
| CEO_Chair               | 0.022     | 0.064**   | 0.052     | 0.073*    |
|                         | -0.022    | -0.025    | -0.047    | -0.041    |
| Ind_Dir_Own             | 0.573**   | 0.316     | 1.202**   | 0.496     |
|                         | -0.235    | -0.283    | -0.513    | -0.557    |
| Ln(BoardSize)           | -0.181*** | -0.351*** | -0.194*   | -0.431*** |
|                         | -0.054    | -0.071    | -0.115    | -0.139    |
| Constant                | 2.241***  | 7.409***  | 4.373***  | 8.852***  |
|                         | -0.594    | -0.311    | -0.355    | -0.86     |
| Industry/State/Year FE  | Y         | N         | Y         | N         |
| Firm/Year FE            | N         | Y         | N         | Y         |
| Observations            | 9,893     | 9,919     | 6,648     | 6,667     |
| Adjusted R <sup>2</sup> | 0.346     | 0.654     | 0.335     | 0.625     |

**Table 1.7: Management-Board Interaction, Independent Directors' Experience, and Firm Value.**

**Panel A: Interactive Effects of Product Market Environment and Independent Directors' Experience on Firm Value.**

This table estimates the interactive effects of industry-CEO experience and product market environment. The dependent variable is Tobin's Q. H\_Prod\_Env and L\_Prod\_Env are defined by the median of the product market index, Prod\_Env, which is the sum of L\_HHI, H\_Fluid, and H\_VDshock. L\_HHI is equal to one if HHI is below the sample median; zero otherwise. H\_Fluid is equal to one if Fluidity is above the sample median; zero otherwise. H\_VDshock is equal to one if VDshock is above the sample median; zero otherwise. HHI is 10-K text based Herfindahl-Hirschmann index developed by Hoberg and Phillips (2010). Fluidity is 10-K text based product market fluidity measure developed by Hoberg, Phillips and Prabhala (2013). It assesses the degree of competitive threat and product market changes surrounding a firm. VDshock is annual percentage change in NAICS two-digit industry level aggregate demand, measured by the chain-type quantity indexes for gross output from the BEA website. The sample period covers 2000 through 2010. Variable definitions are provided in Appendix 1. Regressions control for industry (two-digit SIC), state, and year fixed effects in Columns (1) and (2), and firm- and year fixed effects in Columns (3) and (4). Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES               | Tobin's Q  |            |            |            |
|-------------------------|------------|------------|------------|------------|
|                         | H_Prod_Env | L_Prod_Env | H_Prod_Env | L_Prod_Env |
|                         | (1)        | (2)        | (3)        | (4)        |
| Indu_CEO_Exp            | 0.799***   | 0.965*     | 2.548***   | -0.073     |
|                         | -0.298     | -0.542     | -0.895     | -0.404     |
| EBITDA/TA               | 4.706***   | 7.020***   | 3.123***   | 5.434***   |
|                         | -0.232     | -1.053     | -0.673     | -0.373     |
| Z_Distress              | -0.510***  | -0.081     | -0.305***  | -0.095**   |
|                         | -0.115     | -0.1       | -0.105     | -0.041     |
| Z_Dum                   | -1.105***  | -0.607***  | -0.677***  | -0.124     |
|                         | -0.071     | -0.08      | -0.151     | -0.075     |
| Ln(Sales)               | -0.255***  | -0.091***  | -0.793***  | -0.504***  |
|                         | -0.023     | -0.02      | -0.163     | -0.074     |
| PPE/TA                  | -0.512***  | -0.359***  | -0.143     | -0.416***  |
|                         | -0.081     | -0.127     | -0.201     | -0.113     |
| Ln(FirmAge)             | -0.073**   | -0.029     | -0.139     | -0.054     |
|                         | -0.035     | -0.028     | -0.226     | -0.089     |
| CEO_Own                 | 0.705      | -0.036     | -1.475     | 1.649**    |
|                         | -0.939     | -0.857     | -1.596     | -0.783     |
| CEO_Own <sup>2</sup>    | -2.094     | 0.813      | -0.013     | -3.606**   |
|                         | -2.562     | -2.033     | -3.829     | -1.588     |
| CEO_Chair               | 0.065      | 0.005      | 0.153**    | 0.01       |
|                         | -0.046     | -0.04      | -0.071     | -0.032     |
| Ind_Dir_Own             | 0.342      | 0.817*     | 0.086      | 0.172      |
|                         | -0.543     | -0.45      | -0.438     | -0.266     |
| Ln(BoardSize)           | -0.336***  | -0.109     | -0.619***  | -0.174*    |
|                         | -0.113     | -0.078     | -0.236     | -0.095     |
| Constant                | 7.995***   | 4.107***   | 10.061***  | 5.729***   |
|                         | -1.033     | -0.568     | -1.334     | -0.774     |
| Industry/State/Year FE  | Y          | Y          | N          | N          |
| Firm/Year FE            | N          | N          | Y          | Y          |
| Observations            | 3,651      | 5,836      | 3,662      | 5,850      |
| Adjusted R <sup>2</sup> | 0.31       | 0.416      | 0.556      | 0.741      |

**Table 1.7: Management-Board Interaction, Independent Directors' Experience, and Firm Value.****Panel B: Interactive Effects of Management Activeness and Independent Directors' Experience on Firm Value.**

This table estimates the interactive effects of industry-CEO experience and management activeness. The dependent variable is Tobin's Q. H\_Act and L\_Act are defined by the median of the management activeness index, Act, which is the sum of the following variables: (1) total amount of equity a firm has issued during the fiscal year divided by total assets; (2) total M&A transaction volume a firm has engaged in during the fiscal year divided by total assets; (3) R&D expense during the fiscal year divided by total assets; (4) Capital expenditures during the fiscal year divided by total assets. The sample period covers 2000 through 2010. Variable definitions are provided in Appendix 1. Regressions control for industry (two-digit SIC), state, and year fixed effects in Columns (1) and (2), and firm- and year fixed effects in Columns (3) and (4). Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES               | Tobin's Q    |              |              |              |
|-------------------------|--------------|--------------|--------------|--------------|
|                         | H_Act<br>(1) | L_Act<br>(2) | H_Act<br>(3) | L_Act<br>(4) |
| Indu_CEO_Exp            | 1.133**      | 0.431        | 1.938***     | -0.037       |
|                         | -0.534       | -0.75        | -0.705       | -0.59        |
| EBITDA/TA               | 4.485***     | 7.951***     | 3.676***     | 4.412***     |
|                         | -0.749       | -0.413       | -0.623       | -0.419       |
| Z_Distress              | -0.429***    | -0.034       | -0.245**     | -0.080**     |
|                         | -0.102       | -0.048       | -0.101       | -0.038       |
| Z_Dum                   | -0.977***    | -0.487***    | -0.656***    | -0.184*      |
|                         | -0.093       | -0.088       | -0.121       | -0.094       |
| Ln(Sales)               | -0.181***    | -0.114***    | -0.715***    | -0.362***    |
|                         | -0.025       | -0.023       | -0.154       | -0.056       |
| PPE/TA                  | -0.431***    | -0.570***    | -0.146       | -0.255***    |
|                         | -0.117       | -0.072       | -0.208       | -0.087       |
| Ln(FirmAge)             | -0.092**     | 0.005        | -0.14        | 0.007        |
|                         | -0.038       | -0.024       | -0.195       | -0.062       |
| CEO_Own                 | 1.994*       | -0.494       | 0.527        | 0.667        |
|                         | -1.193       | -0.755       | -1.504       | -0.676       |
| CEO_Own <sup>2</sup>    | -3.542       | 1.115        | -4.655       | -1.895       |
|                         | -2.953       | -1.76        | -4.042       | -1.357       |
| CEO_Chair               | -0.032       | 0.069**      | 0.073        | 0.013        |
|                         | -0.052       | -0.035       | -0.058       | -0.031       |
| Ind_Dir_Own             | 0.589        | 0.473        | 0.496        | 0.006        |
|                         | -0.46        | -0.292       | -0.69        | -0.36        |
| Ln(BoardSize)           | -0.087       | -0.289***    | -0.584***    | -0.116       |
|                         | -0.118       | -0.093       | -0.191       | -0.107       |
| Constant                | 5.907***     | 2.519***     | 8.672***     | 4.158***     |
|                         | -0.329       | -0.473       | -1.262       | -0.53        |
| Industry/State/Year FE  | Y            | Y            | N            | N            |
| Firm/Year FE            | N            | N            | Y            | Y            |
| Observations            | 5,096        | 4,794        | 5,111        | 4,805        |
| Adjusted R <sup>2</sup> | 0.29         | 0.466        | 0.561        | 0.798        |

**Table 1.7: Management-Board Interaction, Independent Directors' Experience, and Firm Value.****Panel C: Interactive Effects of the Frequency of Board Meetings and Independent Directors' Experience on Firm Value.**

This table estimates the interactive effects of industry-CEO experience and the frequency of board meetings. The dependent variable is Tobin's Q. H\_Meet and L\_Meet are defined by the sample median of the number of board meetings. The sample period covers 2000 through 2010. Variable definitions are provided in Appendix 1. Regressions control for industry (two-digit SIC), state, and year fixed effects in Columns (1) and (2), and firm- and year fixed effects in Columns (3) and (4). Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES               | Tobin's Q |           |           |           |
|-------------------------|-----------|-----------|-----------|-----------|
|                         | H_Meet    | L_Meet    | H_Meet    | L_Meet    |
|                         | (1)       | (2)       | (3)       | (4)       |
| Indu_CEO_Exp            | 1.236**   | 0.84      | 2.048***  | -0.111    |
|                         | -0.574    | -0.664    | -0.707    | -0.757    |
| EBITDA/TA               | 4.255***  | 7.369***  | 3.261***  | 5.094***  |
|                         | -0.787    | -0.747    | -0.542    | -0.683    |
| Z_Distress              | -0.346*** | -0.168*   | -0.275*** | -0.094*   |
|                         | -0.084    | -0.088    | -0.068    | -0.055    |
| Z_Dum                   | -0.761*** | -0.996*** | -0.317*** | -0.563*** |
|                         | -0.077    | -0.12     | -0.072    | -0.151    |
| Ln(Sales)               | -0.174*** | -0.148*** | -0.695*** | -0.568*** |
|                         | -0.024    | -0.03     | -0.111    | -0.115    |
| PPE/TA                  | -0.356*** | -0.717*** | -0.158    | -0.348    |
|                         | -0.099    | -0.105    | -0.146    | -0.223    |
| Ln(FirmAge)             | -0.033    | -0.101*** | -0.029    | -0.267*   |
|                         | -0.032    | -0.036    | -0.102    | -0.159    |
| CEO_Own                 | 1.416     | -0.143    | 1.325     | 1.028     |
|                         | -1.179    | -0.897    | -1.291    | -0.951    |
| CEO_Own <sup>2</sup>    | -2.623    | 0.077     | -3.545    | -3.433*   |
|                         | -2.69     | -2.237    | -3.318    | -2.005    |
| CEO_Chair               | 0.009     | 0.004     | 0.034     | 0.092*    |
|                         | -0.046    | -0.047    | -0.043    | -0.049    |
| Ind_Dir_Own             | 0.601     | 0.397     | 0.722     | 0.532*    |
|                         | -0.488    | -0.359    | -0.515    | -0.297    |
| Ln(BoardSize)           | -0.058    | -0.291**  | -0.185    | -0.462*** |
|                         | -0.11     | -0.116    | -0.133    | -0.165    |
| Constant                | 4.823***  | 4.205***  | 7.510***  | 7.975***  |
|                         | -0.294    | -0.543    | -1.031    | -1.039    |
| Industry/State/Year FE  | Y         | Y         | N         | N         |
| Firm/Year FE            | N         | N         | Y         | Y         |
| Observations            | 5,384     | 4,410     | 5,392     | 4,428     |
| Adjusted R <sup>2</sup> | 0.276     | 0.421     | 0.699     | 0.704     |

**Table 1.8: Determinants of Independent Directors' Experience.**

The table reports results from multinomial logit regression of the determinants of independent directors' experience. In Model (1), the dependent variable is equal to zero if Indu\_CEO\_Exp is greater than zero, one if Indu\_Only\_Exp is greater than zero and Indu\_CEO\_Exp is equal to zero, two if both Indu\_Only\_Exp and Indu\_CEO\_Exp are equal to zero. In Model (2), the dependent variable is equal to zero if Indu\_CEO\_Exp is greater than zero, one if CEO\_Only\_Exp is greater than zero and Indu\_CEO\_Exp is equal to zero, two if both CEO\_Only\_Exp and Indu\_CEO\_Exp are equal to zero. In Model (1), the independent directors with industry-only experience is the baseline, and the coefficients in Column (1) represent changes in the odds ratio of the presence of independent directors with industry-CEO experience vs. industry-only experience. In Model (2), independent directors with CEO-only experience is the baseline and the coefficients in Column (3) represent changes in the odds ratio of the presence of independent directors with industry-CEO experience vs. CEO-only experience. The sample period covers 2000 through 2010. Variable definitions are provided in Appendix 1. All regressions control for industry (two-digit SIC) and year fixed effects. Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES                  | Type of Independent Director's Experience        |   |   |   |
|----------------------------|--|---|---|---|
|                            | Model (1)  |   | Model (2)                                       |   |
|                            | Exist_Indu_CEO_Exp<br>vs.<br>Exist_Indu_Only_Exp | No_Indu_Exp<br>vs.<br>Exist_Indu_Only_Exp | Exist_Indu_CEO_Exp<br>vs.<br>Exist_CEO_Only_Exp | No_CEO_Exp<br>vs.<br>Exist_CEO_Only_Exp |
|                            | (1)  | (2)                                       | (3)   | (4)                                     |
| EBITDA/TA <sub>t-1</sub>   | -0.461   | -2.057***                                 | -0.583  | 0.092                                   |
| Z-Score <sub>t-1</sub>     | -0.674   | -0.702                                    | -0.75   | -0.521                                  |
| Z_Dum <sub>t-1</sub>       | 0.003  | 0.002                                     | 0.006   | -0.011                                  |
|                            | -0.01  | -0.009                                    | -0.01   | -0.007                                  |
|                            | -1.244   | 0.15                                      | -1.481  | -0.831                                  |
|                            | -1.1   | -0.661                                    | -1.106  | -0.513                                  |
| Ln(Sales) <sub>t-1</sub>   | -0.168**   | 0.153**                                   | -0.339***                                       | -0.381***                               |
|                            | -0.078   | -0.076                                    | -0.082  | -0.053                                  |
| Ln(FirmAge) <sub>t-1</sub> | -0.460***  | -0.837***                                 | -0.402***                                       | -0.11                                   |
|                            | -0.115   | -0.138                                    | -0.116  | -0.082                                  |
| Ln(Segment) <sub>t-1</sub> | -0.024   | -0.209*                                   | -0.096  | -0.231**                                |
|                            | -0.148   | -0.124                                    | -0.15   | -0.091                                  |
| Prod_Env                   | 0.384***   | -0.146*                                   | 0.423***  | 0.075                                   |
|                            | -0.087   | -0.078                                    | -0.088  | -0.053                                  |
| Act <sub>t-1</sub>         | 0.296***   | -0.267                                    | 0.388***  | 0.15                                    |
|                            | -0.113   | -0.315                                    | -0.132  | -0.119                                  |
| CEO_Own                    | -2.53  | -0.232                                    | -1.837  | 0.834                                   |
|                            | -1.929   | -1.384                                    | -2.131  | -1.21                                   |
| CEO_Chair                  | -0.168   | -0.031                                    | -0.143  | -0.046                                  |
|                            | -0.175   | -0.159                                    | -0.181  | -0.109                                  |
| Ln(CEO_Ten)                | 0.118  | -0.242***                                 | 0.179*  | 0.146**                                 |
|                            | -0.094   | -0.077                                    | -0.095  | -0.057                                  |
| Ln(BoardSize)              | 0.632  | -0.342                                    | -0.038  | -1.543***                               |
|                            | -0.393   | -0.325                                    | -0.404  | -0.242                                  |
| %_Indep_Dir                | 2.030***   | -0.415                                    | 0.143   | -4.009***                               |
|                            | -0.607   | -0.566                                    | -0.635  | -0.336                                  |
| Constant                   | -4.261***  | -0.329                                    | 0.198   | 8.957***                                |
|                            | -1.358   | -1.192                                    | -1.404  | -0.658                                  |
| Industry/Year FE           | Y  | Y   | Y   | Y                                       |
| Observations               | 8,843  | 8,843                                     | 8,843   | 8,843                                   |
| Pseudo R <sup>2</sup>      | 0.172  | 0.172                                     | 0.206   | 0.206                                   |

**Table 1.9: Second-Stage IV Regression Results.**

This table reports the second-stage IV regression results of the interactive effects of industry-CEO experience of independent directors and management-board interaction. The dependent variable is Tobin's Q. The predicted endogenous variables are Indu\_CEO\_Exp\_Hat in Column (1); Indu\_CEO\_Exp\_Hat and (Indu\_CEO\_Exp\*H\_Prod\_Env)\_Hat in Column (2); Indu\_CEO\_Exp\_Hat, (Indu\_CEO\_Exp\*H\_Act)\_Hat, and H\_Act\_Hat in Column (3); Indu\_CEO\_Exp\_Hat, (Indu\_CEO\_Exp\*H\_Meet)\_Hat, and H\_Meet\_Hat in Column (4). Variable definitions are provided in Appendix 1. The sample period covers 2000 through 2010. First-stage regression results are reported in Appendix 2. All regressions control for industry (two-digit SIC), state, and year fixed effects. Bootstrapped robust standard errors are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES  | Tobin's Q |           |           |           |
|--|-----------|-----------|-----------|-----------|
|  | (1)       | (2)       | (3)       | (4)       |
| Indu_CEO_Exp_Hat                                 | 21.153*** | 16.306**  | -14.899   | 5.134     |
| (Indu_CEO_Exp*H_Prod_Env)_Hat                    | -4.919    | -6.724    | -61.851   | -16.847   |
| (Indu_CEO_Exp*H_Act)_Hat                         |           | 7.793**   |           |           |
| (Indu_CEO_Exp*H_Meet)_Hat                        |           | -3.682    | 25.49     |           |
| H_Prod_Env                                       |           |           | -76.298   |           |
| H_Act_Hat  |           |           |           | 8.219     |
| H_Meet_Hat                                       |           |           |           | -30.846   |
| EBITDA/TA  |           | -0.152*   |           |           |
| Z_Distress                                       |           | -0.078    |           |           |
| Z_Dum  |           |           | 1.486**   |           |
| Ln(Sales)  |           |           | -0.718    |           |
| PPE/TA   |           |           |           | 1.398**   |
| Ln(FirmAge)                                      |           |           |           | -0.58     |
| CEO_Own  | 6.000***  | 6.110***  | 5.275***  | 6.618***  |
| CEO_Own <sup>2</sup>                             | -0.22     | -0.222    | -0.282    | -0.841    |
| CEO_Chair  | -0.212*** | -0.212**  | -0.009    | -0.362*** |
| Ind_Dir_Own                                      | -0.082    | -0.086    | -0.255    | -0.088    |
| Ln(BoardSize)                                    | -0.780*** | -0.864*** | -0.534*   | -0.780*** |
| HHI  | -0.056    | -0.058    | -0.287    | -0.067    |
| Constant   | -0.081*** | -0.090*** | -0.119*** | -0.190*** |
| Industry/State/Year FE                           | -0.026    | -0.028    | -0.027    | -0.034    |
| Observations                                     | -0.418*** | -0.371*** | -0.642*** | -0.433*** |
| Wald   | -0.065    | -0.067    | -0.147    | -0.106    |
| F-statistic (the top two instrumented variables) | 0.015     | 0.015     | 0.021     | 0.007     |
| Prob > F (the top two instrumented variables)    | -0.031    | -0.033    | -0.029    | -0.032    |
|  | 1.226*    | 1.300*    | 1.659     | 2.189**   |
|  | -0.703    | -0.727    | -2.122    | -1.02     |
|  | -1.865    | -2.009    | -2.61     | -3.052    |
|  | -1.853    | -1.897    | -5.128    | -1.921    |
|  | 0.014     | 0.005     | -0.008    | 0.117     |
|  | -0.034    | -0.036    | -0.095    | -0.088    |
|  | 0.980***  | 0.998***  | 0.492     | 0.889*    |
|  | -0.373    | -0.381    | -0.363    | -0.503    |
|  | -0.339*** | -0.328*** | -0.241*** | -0.306*** |
|  | -0.091    | -0.099    | -0.093    | -0.087    |
|  | 0.275*    | 0.296*    | 0.242     | 0.001     |
|  | -0.158    | -0.167    | -0.337    | -0.129    |
|  | 3.463***  | 3.695***  | 1.96      | 2.889***  |
|  | -0.626    | -0.639    | -1.423    | -0.732    |
|  | Y         | Y         | Y         | Y         |
|  | 9,740     | 9,431     | 9,632     | 8,945     |
|  | 17941     | 17088     | 20665     | 19663     |
|  |           | 31.77     | 2.93      | 12.6      |
|  |           | 0         | 0.0535    | 0.0018    |



**Table 1.10: Robustness Checks.****Panel A: Alternative Measures of Key Variables.**

This table re-estimates key regressions using alternative measures of key variables. Sections 1 through 3 use alternative performance measures: 1-year buy-and-hold stock return, asset utilization rate, and ROA. The remaining Sections test robustness to alternative measures of industry-CEO experience of independent directors: industry experience based on the definition of Faleye et al. (2013) in Section 4; CEO experience based on the definition of Fahlenbrach et al. (2010) in Section 5; industry-CEO experience excluding former CEOs of the same company in Section 6; and industry-CEO experience based on two-digit SIC code and Fama-French 48 industry groupings in Sections 7 and 8. Variable definitions are provided in Appendix 1. The sample period covers 2000 through 2010. The same set of control variables as in the baseline specification is included, except when ROA is the dependent variable. All regressions include firm- and year fixed effects. Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| <b>Section 1:</b>       |             | <b>Buy-Hold Returns</b> |                   |              |              |               |               |
|-------------------------|-------------|-------------------------|-------------------|--------------|--------------|---------------|---------------|
| <b>VARIABLES</b>        | <b>Full</b> | <b>H_Prod_Env</b>       | <b>L_Prod_Env</b> | <b>H_Act</b> | <b>L_Act</b> | <b>H_Meet</b> | <b>L_Meet</b> |
|                         | <b>(1)</b>  | <b>(2)</b>              | <b>(3)</b>        | <b>(4)</b>   | <b>(5)</b>   | <b>(6)</b>    | <b>(7)</b>    |
| Indu_CEO_Exp            | 0.911**     | 1.463**                 | -0.08             | 1.033**      | 0.887        | 1.351**       | 0.515         |
|                         | -0.363      | -0.648                  | -0.322            | -0.493       | -0.694       | -0.637        | -0.494        |
| Firm/Year FE            | Y           | Y                       | Y                 | Y            | Y            | Y             | Y             |
| Observations            | 9,917       | 3,643                   | 5,827             | 5,091        | 4,779        | 5,365         | 4,410         |
| Adjusted R <sup>2</sup> | 0.293       | 0.259                   | 0.372             | 0.242        | 0.389        | 0.345         | 0.372         |
| <b>Section 2:</b>       |             | <b>Sales/TA</b>         |                   |              |              |               |               |
| Indu_CEO_Exp            | 0.132*      | 0.228**                 | -0.016            | 0.201***     | -0.063       | 0.173*        | 0.094         |
|                         | -0.067      | -0.102                  | -0.094            | -0.075       | -0.139       | -0.089        | -0.103        |
| Firm/Year FE            | Y           | Y                       | Y                 | Y            | Y            | Y             | Y             |
| Observations            | 9,963       | 3,662                   | 5,850             | 5,111        | 4,805        | 5,392         | 4,428         |
| Adjusted R <sup>2</sup> | 0.94        | 0.939                   | 0.949             | 0.935        | 0.952        | 0.938         | 0.958         |
| <b>Section 3:</b>       |             | <b>ROA</b>              |                   |              |              |               |               |
| Indu_CEO_Exp            | 4.795**     | 7.901**                 | -1.815            | 7.228**      | 3.234        | -3.711        | 16.154*       |
|                         | -2.341      | -3.686                  | -3.844            | -3.123       | -4.645       | -7.547        | -8.5          |
| Firm/Year FE            | Y           | Y                       | Y                 | Y            | Y            | Y             | Y             |
| Observations            | 9,958       | 3,646                   | 5,853             | 5,074        | 4,838        | 5,352         | 4,459         |
| Adjusted R <sup>2</sup> | 0.423       | 0.412                   | 0.468             | 0.431        | 0.435        | 0.388         | 0.529         |
| <b>Section 4:</b>       |             | <b>Tobin's Q</b>        |                   |              |              |               |               |
| FHH_Indu_CEO_Exp        | 0.676*      | 2.030***                | -0.196            | 1.161**      | -0.047       | 1.387***      | -0.287        |
|                         | -0.364      | -0.714                  | -0.262            | -0.526       | -0.34        | -0.503        | -0.529        |
| Firm/Year FE            | Y           | Y                       | Y                 | Y            | Y            | Y             | Y             |
| Observations            | 9,963       | 3,662                   | 5,850             | 5,111        | 4,805        | 5,392         | 4,428         |
| Adjusted R <sup>2</sup> | 0.644       | 0.556                   | 0.741             | 0.56         | 0.798        | 0.698         | 0.704         |
| <b>Section 5:</b>       |             | <b>Tobin's Q</b>        |                   |              |              |               |               |
| FLS_CEO_Indu_Exp        | 1.615***    | 2.835**                 | 0.519             | 2.044**      | 0.838        | 1.401**       | 2.259*        |
|                         | -0.578      | -1.105                  | -0.491            | -0.873       | -0.527       | -0.65         | -1.189        |
| Firm/Year FE            | Y           | Y                       | Y                 | Y            | Y            | Y             | Y             |
| Observations            | 9,963       | 3,662                   | 5,850             | 5,111        | 4,805        | 5,392         | 4,428         |
| Adjusted R <sup>2</sup> | 0.645       | 0.556                   | 0.741             | 0.561        | 0.798        | 0.697         | 0.707         |
| <b>Section 6:</b>       |             | <b>Tobin's Q</b>        |                   |              |              |               |               |
| Indu_CEO_Exp_No_FCEO    | 1.342**     | 2.549***                | -0.099            | 2.013***     | -0.05        | 2.178***      | -0.133        |
|                         | -0.588      | -0.928                  | -0.489            | -0.754       | -0.709       | -0.775        | -0.808        |
| Firm/Year FE            | Y           | Y                       | Y                 | Y            | Y            | Y             | Y             |
| Observations            | 9,963       | 3,662                   | 5,850             | 5,111        | 4,805        | 5,392         | 4,428         |
| Adjusted R <sup>2</sup> | 0.644       | 0.556                   | 0.741             | 0.562        | 0.798        | 0.699         | 0.704         |
| <b>Section 7:</b>       |             | <b>Tobin's Q</b>        |                   |              |              |               |               |
| Indu_CEO_Exp_SIC2       | 0.766**     | 2.049***                | -0.049            | 1.220**      | 0.025        | 1.417***      | -0.103        |
|                         | -0.363      | -0.718                  | -0.268            | -0.523       | -0.342       | -0.504        | -0.518        |
| Firm/Year FE            | Y           | Y                       | Y                 | Y            | Y            | Y             | Y             |
| Observations            | 9,963       | 3,662                   | 5,850             | 5,111        | 4,805        | 5,392         | 4,428         |
| Adjusted R <sup>2</sup> | 0.644       | 0.556                   | 0.741             | 0.56         | 0.798        | 0.698         | 0.704         |
| <b>Section 8:</b>       |             | <b>Tobin's Q</b>        |                   |              |              |               |               |
| Indu_CEO_Exp_FF48       | 0.809**     | 1.707***                | -0.241            | 1.253**      | 0.11         | 1.633***      | -0.349        |
|                         | -0.339      | -0.635                  | -0.285            | -0.51        | -0.303       | -0.475        | -0.494        |
| Firm/Year FE            | Y           | Y                       | Y                 | Y            | Y            | Y             | Y             |
| Observations            | 9,963       | 3,662                   | 5,850             | 5,111        | 4,805        | 5,392         | 4,428         |
| Adjusted R <sup>2</sup> | 0.644       | 0.555                   | 0.741             | 0.56         | 0.798        | 0.699         | 0.704         |

**Table 1.10: Robustness Checks.****Panel B: Outliers.**

This table re-estimates key regressions while winzorizing Tobin's Q at top 1% in Section 1; dropping firms with within-firm standard deviation in Tobin's Q greater than 4.01 (top 1%) in Section 2; and dropping firms with within-firm standard deviation in Indu\_CEO\_Exp greater than 0.141 (top 1%) in Section 3. Variable definitions are provided in Appendix 1. The sample period covers 2000 through 2010. The same set of control variables as in the baseline specification is included but not reported. All regressions include firm- and year fixed effects. Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| <i>Section 1: Winzorize Tobin's Q at Top 1%.</i>  |           |            |            |          |        |          |        |
|---|-----------|------------|------------|----------|--------|----------|--------|
| VARIABLES   | Tobin's Q |            |            |          |        |          |        |
|   | Full      | H_Prod_Env | L_Prod_Env | H_Act    | L_Act  | H_Meet   | L_Meet |
|   | (1)       | (2)        | (3)        | (4)      | (5)    | (6)      | (7)    |
| Indu_CEO_Exp  | 1.058**   | 2.156***   | -0.155     | 1.580**  | 0.091  | 1.701*** | -0.208 |
|   | -0.472    | -0.738     | -0.387     | -0.641   | -0.448 | -0.626   | -0.663 |
| Firm/Year FE  | Y         | Y          | Y          | Y        | Y      | Y        | Y      |
| Observations  | 9,963     | 3,662      | 5,850      | 5,111    | 4,805  | 5,392    | 4,428  |
| Adjusted R <sup>2</sup>   | 0.704     | 0.652      | 0.779      | 0.634    | 0.831  | 0.678    | 0.765  |
| <i>Section 2: Drop Firms with Within-Firm Standard Deviation in Tobin's Q Greater than 4.01 (Top 1%).</i>     |           |            |            |          |        |          |        |
| VARIABLES   | Tobin's Q |            |            |          |        |          |        |
|   | Full      | H_Prod_Env | L_Prod_Env | H_Act    | L_Act  | H_Meet   | L_Meet |
|   | (1)       | (2)        | (3)        | (4)      | (5)    | (6)      | (7)    |
| Indu_CEO_Exp  | 1.162**   | 2.311***   | -0.07      | 1.784**  | -0.037 | 2.045*** | -0.309 |
|   | -0.531    | -0.884     | -0.404     | -0.701   | -0.589 | -0.706   | -0.745 |
| Firm/Year FE  | Y         | Y          | Y          | Y        | Y      | Y        | Y      |
| Observations  | 9,875     | 3,608      | 5,822      | 5,037    | 4,791  | 5,346    | 4,394  |
| Adjusted R <sup>2</sup>   | 0.67      | 0.612      | 0.74       | 0.602    | 0.798  | 0.646    | 0.72   |
| <i>Section 3: Drop Firms with Within-Firm Standard Deviation in Indu_CEO_Exp Greater than 0.141 (Top 1%).</i> |           |            |            |          |        |          |        |
| VARIABLES   | Tobin's Q |            |            |          |        |          |        |
|   | Full      | H_Prod_Env | L_Prod_Env | H_Act    | L_Act  | H_Meet   | L_Meet |
|   | (1)       | (2)        | (3)        | (4)      | (5)    | (6)      | (7)    |
| Indu_CEO_Exp  | 1.760***  | 3.260***   | -0.052     | 2.573*** | -0.054 | 2.580*** | 0.134  |
|   | -0.615    | -1.078     | -0.418     | -0.795   | -0.661 | -0.801   | -0.911 |
| Firm/Year FE  | Y         | Y          | Y          | Y        | Y      | Y        | Y      |
| Observations  | 9,790     | 3,555      | 5,792      | 4,992    | 4,752  | 5,306    | 4,352  |
| Adjusted R <sup>2</sup>   | 0.643     | 0.556      | 0.739      | 0.56     | 0.797  | 0.7      | 0.703  |

**Table 1.10: Robustness Checks.****Panel C: Alternative Sample Constructions.**

This table re-estimates the key regressions with alternative sample constructions. Section 1 is based on a sample excluding firms with non-material business relationships with firms to which the independent director with industry-CEO experience belongs; Section 2, on a sample excluding firms in SIC code 7370; Section 3, on a sample excluding financially distressed firms; and Section 4, on a sample excluding firms affected by the independent board requirement. Variable definitions are provided in Appendix 1. The sample period covers 2000 through 2010. The same set of control variables is included as in the baseline specification but not reported. All regressions include firm- and year fixed effects. Robust standard errors clustered at the CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| <i>Section 1: Exclude Firms with Non-Material Business Relationship with the Appointee Firm.</i> |         |            |            |          |        |          |        |
|--|---------|------------|------------|----------|--------|----------|--------|
| Tobin's Q  |         |            |            |          |        |          |        |
| VARIABLES  | Full    | H_Prod_Env | L_Prod_Env | H_Act    | L_Act  | H_Meet   | L_Meet |
|  | (1)     | (2)        | (3)        | (4)      | (5)    | (6)      | (7)    |
| Indu_CEO_Exp   | 1.199** | 2.363***   | -0.054     | 1.807**  | -0.037 | 1.950*** | -0.24  |
|  | -0.55   | -0.916     | -0.41      | -0.726   | -0.59  | -0.72    | -0.767 |
| Firm/Year FE   | Y       | Y          | Y          | Y        | Y      | Y        | Y      |
| Observations   | 9,915   | 3,627      | 5,838      | 5,065    | 4,803  | 5,368    | 4,404  |
| Adjusted R <sup>2</sup>  | 0.65    | 0.566      | 0.741      | 0.569    | 0.798  | 0.706    | 0.712  |
| <i>Section 2: Exclude Firms in IT industries (SIC code 7370).</i>                                |         |            |            |          |        |          |        |
| Tobin's Q  |         |            |            |          |        |          |        |
| Indu_CEO_Exp   | 1.233** | 2.521***   | -0.297     | 1.857*** | -0.038 | 1.914*** | -0.066 |
|  | -0.549  | -0.899     | -0.393     | -0.72    | -0.59  | -0.712   | -0.766 |
| Firm/Year FE   | Y       | Y          | Y          | Y        | Y      | Y        | Y      |
| Observations   | 9,778   | 3,602      | 5,746      | 4,991    | 4,740  | 5,258    | 4,379  |
| Adjusted R <sup>2</sup>  | 0.645   | 0.556      | 0.748      | 0.563    | 0.795  | 0.698    | 0.707  |
| <i>Section 3: Exclude Financially Distressed Firms.</i>  |         |            |            |          |        |          |        |
| Tobin's Q  |         |            |            |          |        |          |        |
| Indu_CEO_Exp   | 1.324** | 2.588***   | 0.02       | 1.963*** | -0.002 | 2.020*** | -0.037 |
|  | -0.552  | -0.929     | -0.421     | -0.725   | -0.627 | -0.717   | -0.811 |
| Firm/Year FE   | Y       | Y          | Y          | Y        | Y      | Y        | Y      |
| Observations   | 9,481   | 3,498      | 5,570      | 4,948    | 4,492  | 5,108    | 4,238  |
| Adjusted R <sup>2</sup>  | 0.641   | 0.551      | 0.738      | 0.56     | 0.794  | 0.7      | 0.697  |
| <i>Section 4: Exclude Firms Affected by the Independent Board Requirement.</i>                   |         |            |            |          |        |          |        |
| Tobin's Q  |         |            |            |          |        |          |        |
| Indu_CEO_Exp   | 1.477** | 2.806***   | 0.254      | 2.127*** | -0.026 | 2.248*** | -0.169 |
|  | -0.577  | -0.977     | -0.393     | -0.745   | -0.681 | -0.701   | -0.847 |
| Firm/Year FE   | Y       | Y          | Y          | Y        | Y      | Y        | Y      |
| Observations   | 8,834   | 3,223      | 5,209      | 4,584    | 4,218  | 4,845    | 3,862  |
| Adjusted R <sup>2</sup>  | 0.65    | 0.553      | 0.759      | 0.569    | 0.802  | 0.721    | 0.704  |

**Table 1.11: Variable Definitions and Data Sources.**

| <b>Variable Name</b>  | <b>Definition</b>  | <b>Source</b>                                      |
|---|--|--|
| <b><i>Panel A: Independent Directors' Experience Variables.</i></b> |  |  |
| Ind_Only_Exp  | Fraction of independent directors with at least 5 years of non-CEO level employment history in Compustat firms with the same three-digit SIC code during the last 15 years, excluding those with CEO-level employment history in the industry.   | RiskMetrics;<br>BoardEx;<br>Compustat              |
| CEO_Only_Exp  | Fraction of independent directors with CEO level employment history in Compustat firms in different three-digit SIC during the last 15 years, excluding those with CEO-level employment history in the same industry.  |  |
| Indu_CEO_Exp  | Fraction of independent directors with CEO-level employment history in Compustat firms with the same three-digit SIC code during the last 15 years.  |  |
| FHH_Indu_Exp  | Fraction of independent directors with employment history in Compustat firms with the same two-digit SIC code.   |  |
| FHH_Indu_Only_Exp   | Fraction of independent directors with non-CEO level employment history in Compustat firms in the same two-digit SIC code, excluding those with CEO-level employment history in the same industry.   |  |
| FHH_Indu_CEO_Exp  | Fraction of independent directors with CEO-level employment history in Compustat firms with the same two-digit SIC code.   |  |
| FLS_CEO_Exp   | Fraction of independent directors who are current CEOs of Compustat firms.   |  |
| FLS_CEO_Only_Exp  | Fraction of independent directors who are current CEOs of Compustat firms with different two-digit SIC code.   |  |
| FLS_Indu_CEO_Exp  | Fraction of independent directors who are current CEOs of Compustat firms with the same two-digit SIC code.  |  |
| Indu_CEO_Exp_Other  | An indicator for other firms having independent directors identified as having industry-CEO experience in their boards as directors.   |  |
| <i>Indu_CEO_Exp_Other_Indep</i>                                     | An indicator for other firms having independent directors identified as having industry-CEO experience in their boards as independent directors.   |  |
| <b><i>Panel B: Management-Board Interaction Variables.</i></b>      |  |  |
| Prod_Env  | The sum of L_HHI, H_Fluid, and H_VDshock. L_HHI is equal to one if HHI is below the sample median; zero otherwise. H_Fluid is equal to one if Fluidity is above the sample median; zero otherwise. H_VDshock is equal to one if VDshock is above the sample median; zero otherwise. HHI is 10-K text based Herfindahl-Hirschman index developed by Hoberg and Phillips (2010). Fluidity is 10-K text based product market fluidity measure developed by Hoberg, Phillips, and Prabhala (2013). VDshock is annual percentage change in NAICS two-digit industry level aggregate demand, measured by the chain-type quantity indexes for gross output from the BEA website, as defined by Li, Lu, and Phillips (2013). | Gordon<br>Phillip's<br>website; the<br>BEA website |
| Act   | Management activeness index, the sum of the following four variables during the fiscal year divided by total assets: (1) The total amount of equity a firm has issued. (2) The total M&A transaction volume (including divestitures and spinoffs). When M&A transaction volume is missing in SDC, this ratio is replaced by yearly sample median. (3) Capital expenditures. (4) R&D expense.   | SDC;<br>Compustat                                  |

**Table 1.A1: Variable Definitions and Data Sources (continued).**

|   |   |                               |
|---|---|-------------------------------|
| Num of Meetings   | The number of board meetings held during the fiscal year. The number of board meetings after 2005 are hand-collected from proxy filings.  | ExecuComp;<br>Proxy filings   |
| H_Prod_Env  | An indicator equal to one if Prod_Env is greater than sample median, and zero otherwise.  |                               |
| H_Act   | An indicator equal to one if Act is greater than the sample median, and zero otherwise  |                               |
| H_Meet  | An indicator equal to one if the number of board meetings is greater than the sample median, and zero otherwise.  |                               |
| <b><i>Panel C: Firm Performance and Characteristic Variables.</i></b> |   |                               |
| Tobin's Q   | The market value of common equity plus the book value of total liabilities divided by the book value of total assets.   | Compustat                     |
| EBITDA/TA   | Earnings before interest, tax, depreciation, and amortization divided by total assets   | Compustat                     |
| Z-Score   | Altman's Z-Score, calculated following Altman (1968). If any accounting variable necessary to calculate Z-Score is missing, Z-Score is set equal to zero to maintain the sample size.             | Compustat                     |
| Z_Dum   | An indicator variable equal to zero if any accounting variable necessary to calculate Z-Score is missing, and one otherwise.  | Compustat                     |
| Z_Distress  | An indicator for financial distress, equal to one if Altman's Z-score is less than 1.81, and zero otherwise. Z_Distress is equal to zero when Z_Dum is equal to zero to maintain the sample size. | Compustat                     |
| Ln(Sales)   | The natural log of sales.   | Compustat                     |
| PPE/TA  | Property, plant, and equipment divided by total assets.   | Compustat                     |
| FirmAge   | The number of years from the firm's IPO as reported in CRSP or the number of years since its first appearance in CRSP.  | CRSP                          |
| Segments  | The number of business segments reported in Compustat Segment database  | Compustat                     |
| Capx/PPE  | Capital expenditures divided by property, plant, and equipment.   | Compustat                     |
| R&D/PPE   | Research and development expense divided by property, plant, and equipment.   | Compustat                     |
| <b><i>Panel D: CEO and Board Characteristic Variables.</i></b>        |   |                               |
| CEO_Own   | The percentage of outstanding common shares held by the CEO.  | ExecuComp                     |
| CEO_Chair   | An indicator for the CEO chairing the board.  | ExecuComp                     |
| CEO_Ten   | The number of years the CEO has been in office.   | ExecuComp                     |
| Ind_Dir_Own   | The percentage of total outstanding common shares held by independent directors.  | RiskMetrics                   |
| BoardSize   | Total number of directors in the board.   | RiskMetrics                   |
| %_Indep_Dir   | The percentage of independent directors in the board.   | RiskMetrics                   |
| <b><i>Panel E: Instrument Variables.</i></b>                          |   |                               |
| Similar_Size  | Number of firms in the same industry (three-digit SIC) with sales volume within $\pm 10\%$ of the sample firm   | Compustat                     |
| Rho   | A measure of the user cost of R&D capital (per dollar of investment) taking into account of state and federal R&D tax credit.   | Daniel<br>Wilson's<br>website |
| AirHub  | Indicator for whether a firm's headquarter is located within 60-mile radius of top 20 U.S. hub airports by passenger traffic volume.  | FAA website                   |

**Table 1.12: First-Stage IV Regression Results.**

This table reports the first-stage IV regression results. The endogenous variable(s) is Indu\_CEO\_Exp in Model (1); Indu\_CEO\_Exp and Indu\_CEO\_Exp\*H\_Prod\_Env in Model (2); Indu\_CEO\_Exp, Indu\_CEO\_Exp\*H\_Act, and H\_Act in Model (3); and Indu\_CEO\_Exp, Indu\_CEO\_Exp\*H\_Meet, and H\_Meet in Model (4). The instrumental variable for Indu\_CEO\_Exp is Similar\_Size; for H\_Act, Rho; for H\_Meet, AirHub. The dependent variable is Indu\_CEO\_Exp in Columns (1), (2), (4) and (7); Indu\_CEO\_Exp\*H\_Prod\_Env in Column (3); Indu\_CEO\_Exp\*H\_Act in Column (5); H\_Act in Column (6); Indu\_CEO\_Exp\*H\_Meet in Column (8); and H\_Meet in Column (9). Variable definitions are provided in Appendix 1. The sample period covers 2000 through 2010. The same set of control variables used in Table 7 and HHI are included in the regressions but not shown for brevity. All regressions control for industry (two-digit SIC), state, and year fixed effects. Robust standard errors reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES               | Model (1)    |              | Model (2)                   |              | Model (3)              |        |              | Model (4)               |          |
|-------------------------|--------------|--------------|-----------------------------|--------------|------------------------|--------|--------------|-------------------------|----------|
|                         | Indu_CEO_Exp | Indu_CEO_Exp | Indu_CEO_Exp<br>*H_Prod_Env | Indu_CEO_Exp | Indu_CEO_Exp<br>*H_Act | H_Act  | Indu_CEO_Exp | Indu_CEO_Exp<br>*H_Meet | H_Meet   |
|                         | (1)          | (2)          | (3)                         | (4)          | (5)                    | (6)    | (7)          | (8)                     | (9)      |
| Similar_Size            | 0.001***     | 0.001*       | -0.001***                   | 0.032***     | 0.026***               | 0.054* | 0            | 0                       | 0.010*** |
|                         | 0            | 0            | 0                           | -0.006       | -0.006                 | -0.029 | 0            | 0                       | -0.003   |
| Similar_Size*           |              | 0.001*       | 0.003***                    |              |                        |        |              |                         |          |
| H_Prod_Env              |              | 0            | 0                           |              |                        |        |              |                         |          |
| Rho                     |              |              |                             | -0.026       | -0.052                 | -0.19  |              |                         |          |
|                         |              |              |                             | -0.076       | -0.069                 | -0.738 |              |                         |          |
| Similar_Size*Rho        |              |              |                             | -0.027***    | -0.022***              | -0.035 |              |                         |          |
|                         |              |              |                             | -0.005       | -0.005                 | -0.025 |              |                         |          |
| AirHub                  |              |              |                             |              |                        |        | 0.008***     | 0.006***                | -0.036** |
|                         |              |              |                             |              |                        |        | -0.002       | -0.001                  | -0.018   |
| Similar_Size*AirHub     |              |              |                             |              |                        |        | 0.002***     | 0.001**                 | -0.004   |
|                         |              |              |                             |              |                        |        | 0            | 0                       | -0.003   |
| Industry/State/Year FE  | Y            | Y            | Y                           | Y            | Y                      | Y      | Y            | Y                       | Y        |
| Observations            | 9,881        | 9,431        | 9,431                       | 9,816        | 9,769                  | 9,769  | 9,213        | 9,078                   | 9,078    |
| Adjusted R <sup>2</sup> | 0.106        | 0.1          | 0.135                       | 0.101        | 0.095                  | 0.166  | 0.098        | 0.07                    | 0.113    |
| F-statistic (IVs)       | 20.71        | 7.08         | 55.11                       | 9.63         | 7.18                   | 28.17  | 21.59        | 14.09                   | 8.66     |
| Prob > F (IVs)          | 0            | 0.0008       | 0                           | 0            | 0.0001                 | 0      | 0            | 0                       | 0        |

## Chapter 2. Experienced Independent Directors

### 2.1 Introduction

The board of directors is an important governance mechanism to alleviate agency problems. However, the evidence on its impacts on firm performance is largely mixed.<sup>13</sup> This discrepancy raises the need to understand how the board works, what are the characteristics of a good board, and under which conditions it becomes effective.

The board's role of resolving agency problems and protecting shareholder values derives from independent directors. They are outsiders of a firm, serving on the board as part-time jobs. Independent directors have limited time and resources: They govern a firm mainly through board meeting attendance, reviewing firm documents and business proposals, and discussing or voting on them. Independent directors rely on management as their primary source of information (Dominguez-Martinez, Swank, and Visser 2008; Adams, Hermalin, and Weisbach, 2010). However, the quality of information independent directors get may be limited, because the management may be unwilling to share information due to the monitoring role of the independent directors (Adams and Ferreira, 2007). Interacting efficiently with management to obtain pertinent information within a short period of time is crucial for independent directors to be effective.

While the academic literature has extensively used board independence as a measure of board quality, it is not clear how well it works because utilizing directors' affiliation alone may be too simplistic. Researchers have suggested other measures of board quality utilizing the heterogeneity of directors' incentives and experience, such as financial incentives (Shivdasani, 1993; Fich and Shivdasani, 2005), number of directorships in other firms (Ferris, Jagannathan, and Pritchard 2003; Fich and Shivdasani, 2006), industry or CEO experience (Fich, 2005; Faleye, Hoitash, and Hoitash, 2013), financial expertise (Burak Güner, Malmendier, and Tate, 2008),

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<sup>13</sup> While many papers show positive correlations between board independence and firm value (Weisbach, 1988; Rosenstein and Wyatt, 1990; Brickley, Coles, and Terry, 1994; Borokhovich, Parrino, and Trapani, 1996), still some studies do not (Hermalin and Weisbach, 1991; Agrawal and Knoeber, 1996; Core, Holthausen, and Larcker, 1999; Huson, Parrino, and Starks, 2001; Bhagat and Black, 2002).

director tenure (Vafeas, 2003), social connections between independent directors and CEO (Hwang and Kim, 2009), and connections to the directors on other firms' boards (Coles, Daniel, and Naveen, 2012).

Extending the previous literature, I propose past independent directorship experience as a new proxy of board quality. To make contributions to management proposals, independent directors need to identify areas of improvement and ask discerning questions to obtain additional information to perform their advising and monitoring duties. Independent directors need skills to accomplish tasks quickly during the board meetings, which may be learned through past independent director experience. Inside director experience may not provide such skills, because those positions are usually full-time commitment with sufficient access to firm resources, working for the CEO and hence provide neither outside perspectives nor serve as monitors of the management. I argue that independent but inexperienced directors may not be able to perform as well as experienced ones, and therefore focusing on the experienced directors rather than all independent directors is a better way to measure board quality. I use the fraction of independent directors with at least five years of past independent directorship experience as a proxy of board quality.<sup>14</sup>

In addition to the independent directorship experience, I utilize prior experience in specific boardroom activities such as CEO turnover events and setting CEO compensation. These activities are either rare events that not all independent directors may have experienced, or are the responsibility of to a subset of the board of directors (compensation committee members). The directors who have experienced certain type of board work may be more suitable to perform similar tasks in the board, compared to other directors who do not have such experience.

To show the validity of the independent director experience measure as proxies for board quality, I compare the impact of the independent director experience with board independence, the traditional measure of board quality, in enhancing firm performance across various environments where board quality is expected to have significant impact.

My investigation begins with estimations of the effects of board quality measures in monitoring management. Replacing CEO in case of deteriorating performance and setting CEO compensation are the primary roles of the board of directors. Consistent with Weisbach (1988), I find that board independence increases CEO turnover-performance sensitivity. Furthermore, I

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<sup>14</sup> I allow double-counting if an independent director has served multiple independent directorships in a given year.



find that the monitoring power of the board independence mainly comes from the independent directors who have relevant experience in the past: specifically, I find that the fractions of independent directors who have at least five years of prior independent directorship experience, or have administered at least one CEO turnover event in the past, may increase the CEO turnover-performance sensitivity, but the fraction of independent directors without those experiences does not have such effect. This result suggests that having independent directors alone may not be sufficient to perform proper monitoring role of the board, but independent directors with relevant prior experience may perform better monitoring role. When facing forced CEO turnover event, a more drastic situation among the CEO turnovers, I find that neither board independence nor fraction of independent directors with 5 years of experience or CEO turnover experience can enhance forced CEO turnover-performance sensitivity. However, the fraction of independent directors who have experience in forced CEO turnover in the past may increase forced CEO turnover-performance sensitivity. This result suggests independent directors may develop required skills only through relevant experience. Regarding the CEO compensation, I also find that while board independence, fraction of experienced independent directors, and fraction of independent directors in the compensation committee are not related to the level of CEO compensation, the fraction of independent directors in the compensation committee who have at least three years of compensation committee experience in the past may decrease the level of total CEO compensation, which may be considered as strong monitoring. In sum, these findings support my argument that independent directors may accumulate capabilities to perform monitoring duties through relevant independent directorship experience, and it is the experienced independent directors who can serve as monitors of the management, not just independent and inexperienced directors.

As another test on the effect of board quality, I investigate the interactive effects of board quality measures and product market competition on firm performance. Product market competition is a governance mechanism that mitigates managerial slack (Giroud and Mueller, 2010, 2011). Competitive environment keep managers on their toes, striving to enhance firm performance for survival. Due to the disciplining role of the competition, there may remain little need for the board to monitor management. When competition is high, strong monitoring from the board may even harm firm performance. Managers facing fierce competition may need any help they can get, including the advice from the board (Kang, Kim, and Lu, 2013). However,

strong monitoring from the board may discourage management to seek advice from the board (Adams and Ferreira, 2007). When the monitoring intensity is too high, then the negative advising effect may dominate the monitoring effectiveness, leading to decrease in firm performance. Faleye, Hoitash, and Hoitash (2011) show that firms suffer greater value losses from intense monitoring, especially when the need for board advising is high. Giroud and Mueller (2010) show that managers insulated from product market competition may enjoy “quiet life”, which can be mitigated by monitoring role of the board. As such, board quality measures may have positive relation to performance for firms under relatively weak product market competition, where the marginal effect of stronger monitoring is higher.

Consistent with this argument, I find each measure of board quality, the board independence and fraction of independent directors with at least five years of prior experience, is positively related to firm performance when a firm operates under weak product market competition, but the relation becomes negative under strong competition. When both board quality measures are used together, I find the fraction of experienced independent directors may increase firm performance, but no such evidence is found from the board independence.<sup>15</sup> My findings suggest that it is the experienced independent directors, not independent but inexperienced directors, who can perform the monitoring duty of the board. These results are obtained controlling for firm- and year fixed effects. To address the potential endogeneity issue between board quality and firm performance, I employ the instrumental variable (IV) regression. My IV is based on the exchange regulation that requires all firms listed in NYSE and NASDAQ to have majority of independent directors in the board by the end of 2003. When a firm’s board independence is low in year 2001, the need to increase board independence thereafter is higher for such firms. However, the board independence of year 2001 can be considered as exogenous to the regulation because the regulation is first announced in year 2002. The results are robust to the use of board independence of year 2001 as IV.

I find my results robust to various alternative specifications: use of industry fixed effect instead of firm fixed effect, alternative proxies of independent directorship experience and

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<sup>15</sup> All experienced independent directors belong to independent directors, and there exist mechanical correlation between board independence and the fraction of experienced independent directors. Using fraction of inexperienced independent directors, the complement of the fraction of experienced independent directors, instead of board independence alleviates concern on the mechanical correlation. Both board independence and fraction of inexperienced independent directors are used as comparison measures for the fraction of experienced independent directors throughout this paper.

product market competition, alternative sample constructions, and additional board quality measures as control variables.

Together, my findings support the argument that experienced independent directors enhance the effectiveness of the board's abilities to monitor the management, but inexperienced ones may not. The remainder of this paper is arranged as follows: Section 2 describes sample construction, data, and summary statistics. Section 3 compares impact of the experienced and inexperienced independent directors on CEO turnover-performance sensitivity and CEO compensation. Section 4 examines the interactive effects of board quality and product market competition. Section 5 concludes.

## **2.2 Data**

### **2.2.1 Sample Construction**

To construct sample, I merge board independence and independent director experience data from RiskMetrics, financial and accounting data from CRSP/Compustat, and CEO data from ExecuComp. While RiskMetrics data is available during 1996~2010, my sample starts from 2000 because I need past few years of observations to construct independent director experience measure. My sample ends in 2010 due to data availability. Firms in regulated industries are excluded from the sample, because the operational and governance environment for those firms may be different from others in non-regulated industries (Demsetz and Lehn, 1985). The number of observations varies across regressions due to data availability of variables required.

### **2.2.2 Proxy for Board Quality**

My main proxy for board quality is the fraction of experienced independent directors, *FracExperience*, which is defined as the number of independent directors who have served five years or more as independent directors in any firm in the past divided by the board size. I allow double-counting if an independent director has served multiple independent directorships in a given year. For example, imagine director A who has served firm X during 1997~2000, and firm Y during 1999~2003 as independent director. In 1997, she does not have any past independent director experience because her experience begins in 1997. In 1999, she has two years of experience, from firm X during 1997~1998. During 1999, she accumulates two more years of independent directorship experience, one from firm X, and the other from firm Y. As a result, she is considered to have four years of experience in year 2000, three from firm X during 1997~1999,

and one from firm Y in 1999. Past independent directorship experience is identified based on the director appointment history from RiskMetrics. Due to the RiskMetrics coverage, independent directorship experience is identified among S&P 1500 firms starting from 1996, and hence experience before year 1996 or from non-S&P 1500 firms are not counted. By construction, all directors in 1996 are considered to have no prior independent director experience, which is not true. To overcome this truncation issue, I use first four years of observations (1996~1999) to allow director experience measure to build up, and include observations from 2000 and after in the sample for analyses. Inability to capture independent directorship from non-S&P 1500 firms may also pose concern on potential downward bias in the board quality measure. However, if the governance environment of small and large firms are different (Boone et al., 2007a; Linck, Netter, and Yang, 2008), using independent director experience from firms with comparable size may make more sense because experience based on different governance environment may not be useful.<sup>16</sup>

While past independent directorship experience may capture general monitoring capabilities, it may not be sufficient to perform more specific boardroom activities, such as dealing with CEO turnover or determining CEO compensation. To proxy for independent directors' capability regarding CEO turnover events, I use *FracTurnoverExperience*, which is defined as the number of independent directors who have experienced at least one CEO turnover event as independent directors in the past. Considering the scope of the board subcommittees, quality of compensation committee rather than entire board may be more relevant to setting CEO compensation. For this reason, I use *CompCommIndependence*, the number of independent directors in the compensation committee divided by compensation committee size, and *CompCommExperience*, the number of independent directors in the compensation committee who have at least three years of prior compensation committee experience as independent directors divided by the compensation committee size, as proxies for the quality of compensation committee.

The benchmark proxy of board quality is board independence (*BoardIndependence*), the fraction of independent directors among the board. Board independence is the most widely used measure of the quality of board monitoring in finance and economics literature. Because experienced independent directors are a subset of independent directors, comparing the effect of

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<sup>16</sup> Coles, Daniel, and Naveen (2012) also construct a measure of board quality based on RiskMetrics sample only.

the fraction of experienced independent directors and board independence is not straightforward.<sup>17</sup> For cleaner comparison, I decompose board independence into the fraction of experienced independent directors, and the fraction of independent directors who do not have such experience.

### 2.2.3 Proxy for Monitoring Effectiveness

Monitoring effectiveness of the board may be proxied by the board's decision to retain/replace CEO based on firm performance, and the level of CEO compensation. CEO turnover event is identified by *CEOTurnover*, an indicator variable equal to one in the last year where the CEO appears in the ExecuComp database as CEO. While the identification of *CEOTurnover* is straightforward and easy to implement, it is unable to distinguish CEO turnover initiated by board due to concern on the CEO's ability, and voluntary departure by the CEO that are unrelated to the monitoring effectiveness of the board. Following Parrino (1997) and Jenter and Kanaan (forthcoming), I construct forced CEO turnover indicator, *ForcedTurnover*, which becomes one only when the CEO turnover is a forced one to proxy for the CEO turnover events that are initiated by the board.<sup>18</sup> I use the total direct compensation to the CEO (variable TDC1 in the ExecuComp dataset) as the measure of CEO pay level.

Firm value may also serve as a measure of monitoring effectiveness, because increasing firm value is the ultimate goal of monitoring management. As the measure of firm performance, I use *Tobin's Q*, defined by the sum of the market value of common stocks plus the book value of total liabilities divided by the book value of total assets. *Tobin's Q* has been the most widely-used proxy for firm performance to analyze the relation between corporate governance mechanisms and firm performance.

### 2.2.4 Control Variables

Control variables used in this study are similar to those used in previous studies relating governance mechanisms to *Tobin's Q*.<sup>19</sup> They represent the factors which may affect firm value and the measure of board quality. Detailed definitions of the control variables and other major variables used in this paper are shown in Table 2.1.

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<sup>17</sup> Increase in the fraction of experienced independent directors may also lead to increase in the board independence, and vice versa.

<sup>18</sup> The classification of turnover into forced or voluntary closely follows the methodology described in Parrino (1997) and Jenter and Kanaan (forthcoming), which utilize the description about the turnover event in the press reports.

<sup>19</sup> See Hermalin and Weisbach (1991), Agrawal and Knoeber (1996), Himmelberg, Hubbard, and Palia (1999), Bhagat and Black (2002), Boone, Field, Karpoff, and Raheja (2007), and Kim and Lu (2011).

Variables that control for firm characteristics are return on assets, *ROA*; firm size, *Log(Sales)*; leverage, *Leverage*; R&D investment, *R&D/Assets*; firm age, *Log(FirmAge)*; and asset tangibility, *PPE/Assets*. I set missing observations of *R&D/Assets* equal to zero to maintain sample size. To capture the mean of *R&D/Assets* for missing values, I also control for *R&D\_Dum*, a dummy variable equal to one if R&D data is missing, and zero otherwise.

Because CEOs may have important influence on firm performance and effectiveness of the independent directors (Coles, Daniel, and Naveen, 2006; Fich and Shivdasani, 2005), I also control for relevant CEO characteristics: CEO share ownership, *CEOOwnership*; and CEO-chairman duality dummy, *CEOChairman*. Board characteristics may also influence firm value and effectiveness of the board. I control for the natural log of the total number of directors in the board, *Log(BoardSize)*; and the total percentage of shares owned by all independent directors, *IndDirOwnership*. Independent director share ownership may impact their incentive to provide helpful advice and hence firm value. Yermack (1996) finds a negative relation between board size and firm value.

### **2.2.5 Summary Statistics**

Table 2.2 contains summary statistics of the variables used in this study. The means of *FracExperience* and *BoardIndependence* are 0.394 and 0.709, indicating about half of independent directors have at least five years of past independent directorship experience. About one-third of the directors have experienced at least one CEO turnover event in the past, but only 8% of the directors have experienced forced CEO turnover. Compensation committee is composed of almost all independent directors, and about half of the committee members have more than three years of past compensation committee experience. The average board has about nine directors, and the average total share ownership of all independent directors is 1.2%, while the average CEO share ownership is 2.2%. 57% of CEOs chair their boards. 10.4% of CEOs step down from the CEO position every year, and about one fourth of the CEO turnovers (2.3% of all CEOs) are forced ones.

### **2.3 Board Quality and CEO Turnover-Performance Sensitivity**

My investigation begins with an estimation of the effects of board quality on the CEO turnover-performance sensitivity, which is considered as a direct measure of the monitoring management (Weisbach, 1988). The following specification is used for turnover-performance sensitivity analyses:

$$P(CEOTurnover_{it})=F(a_i+a_t+\beta_1\cdot Performance_{it}+\beta_2\cdot Quality_{it}\cdot Performance_{it}+\beta_3\cdot Quality_{it}+\beta_4\cdot Control_{it}+\mu_{it}) \quad (1)$$

$P(CEOTurnover_{it})$  is the probability of firm  $i$ 's CEO turnover event happening in year  $t$ .  $F(\cdot)$  stands for the cumulative probability density function, which I use logistics function.  $Quality_{it}$  is the board quality measures, and  $Performance_{it}$  is industry-adjusted stock return of the firm during the fiscal year, which reflects firm-specific component of the stock return. Jenter and Kanaan (forthcoming) show that CEO turnover decision is influenced not only by the firm specific performance, but also by the industry and market-driven component of the stock returns. To account for these influences, I include market return and market-adjusted industry stock return during the fiscal year in the control variables. To account for the retirement of CEO, an indicator variable that equals one when the CEO's age is between 64 and 66 is included as a control variable, and firm- and year-fixed effects are also included. The coefficient of interest is  $\beta_2$ , which represents the effect of board quality on CEO turnover-performance sensitivity.

If board quality measures are good proxies of monitoring, then the coefficients of the interaction of board quality and firm performance will be negative and significant, implying that the CEO turnover-performance sensitivity increases with board quality. Table 2.4 provides the results using fixed-effect logit regression on specification (1). Column (1) shows results with *BoardIndependence* as the board quality measure. Consistent with Jenter and Kanaan (forthcoming), both market- and industry-returns show negative and statistically significant influence on CEO turnover. Unlike market- or industry-returns, firm specific return does not show statistically significant influence on the CEO turnover. The insignificant coefficient does not imply that firm-specific return is not an important determinant of CEO turnover. Rather, the explanatory power of the firm-specific return seems to be absorbed by the interaction of board independence and firm return.<sup>20</sup> The negative and statistically significant (at 10% level) coefficient on the interaction of firm-specific stock return and board independence suggests that board independence increases CEO turnover-performance sensitivity.

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<sup>20</sup> When the interaction terms of board quality measures and firm-specific return are excluded from the specification, I find negative and significant coefficient on the firm specific return in all specifications used in table 2.4.

The fraction of experienced independent directors, *FracExperience*, is also shown to increase CEO turnover-performance sensitivity. In column (2), the coefficient of the interaction of *FracExperience* and firm-specific return is negative and significant (at 5% level), and the magnitude of coefficient is comparable to that of the board independence in column (1). When both board independence and *FracExperience* are used together in column (3), I find that only interaction of *FracExperience* retains statistical (at 10% level) and economic significance, while the influence of board independence on CEO turnover-performance sensitivity becomes statistically insignificant with smaller coefficient compared to the column (1) result. Due to the mechanical correlation between board independence and *FracExperience*, it is hard to directly interpret the coefficients in the column (3) result. When board independence is decomposed into the fraction of experienced and inexperienced independent directors (*FracExperience* and *FracNoExperience*, in column (4)), both statistical and economic significance of the effect of *FracExperience* on the turnover-performance sensitivity becomes stronger (5% significance level). I interpret these results as the fraction of experienced independent directors, *FracExperience*, may increase the CEO turnover-performance sensitivity, while board independence, the conventional measure of the board's monitoring quality, or the inexperienced independent directors, may not have explanatory power over *FracExperience*.

I achieve similar results when the fraction of independent directors who have experienced CEO turnover event in the past, *FracTurnoverExperience*, is used as the main measure of board quality instead of *FracExperience*. When used as the sole measure of board quality in column (5), the coefficient on the interaction of *FracTurnoverExperience* and firm-specific stock return is negative and statistically significant (10% level), suggesting the monitoring effectiveness of the independent directors with such experience. Unlike columns (1) to (4) results, the coefficient on the firm-specific return becomes negative and significant, suggesting that the interaction term of *FracCEOTurnover* and firm-specific return may explain only part of the influence of the firm specific return. When both board independence and *FracCEOTurnover* are used together in column (6), the coefficients on the interaction of both board independence and *FracCEOTurnover* with firm-specific return becomes negative but statistically insignificant. When board independence is decomposed into the fraction of independent directors with and without past CEO turnover experience (column (7)), the coefficient on the interaction of *FracCEOTurnover* and firm



return becomes negative and significant, while that of *FracNoCEOTurnover* is statistically insignificant.

When *ForcedTurnover*, an indicator of forced CEO turnover event, is used instead of *CEOTurnover* in Table 2.5, I find that the influence of board independence, fraction of experienced independent directors, and fraction of independent directors with past CEO turnover experience all become statistically insignificant (columns (1) to (3), respectively). This change may be due to the decreased sample size resulting from forced CEO turnover.<sup>21</sup> However, when the fraction of independent directors who have experienced forced CEO turnover in the past is used as the board quality measure in column (4), the coefficient on the interaction term becomes statistically significant (at 5% level). When compared with board independence and the fraction of independent directors without forced CEO turnover experience in columns (5) and (6) respectively, the statistical significance and the magnitude of the coefficient on the interaction of *FracForcedExperience* and firm-specific return remains strong.

I also find the monitoring effectiveness of experienced independent directors from the relation between the level of CEO compensation and board quality using the following specification:

$$CEOCompensation_{it} = \alpha_i + \alpha_t + \beta_1 \cdot Quality_{it} + \beta_2 \cdot Control_{it} + \mu_{it} \quad (2)$$

Table 2.6 provides estimation results using the natural log of total direct compensation to CEO as dependent variable, and the board quality measures as explanatory variables together with other control variables.<sup>22</sup> When board independence, fraction of experience independent directors, or the fraction of independent directors in the compensation committee are used as board quality measures in columns (1) to (3), respectively, I do not find statistically significant relation between these board quality measures and the level of CEO compensation. However, I find the fraction of independent directors in the compensation committee with at least three years of past compensation committee experience may decrease the level of CEO compensation (result in column (4)). The results in Tables 2.4, 2.5 and 2.6 suggest that independent directors with relevant

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<sup>21</sup> Many firms in the sample do not have any forced CEO turnover event during the sample period. Due to the use of firm-fixed effects, firms with no forced CEO turnover are dropped out from the analyses.

<sup>22</sup> OLS with firm- and year fixed effects are used in this analysis.

experience may serve as monitors of the management, but without relevant experience, their effectiveness becomes weaker.

## 2.4 Interactive Effects of Board Quality and Product Market Competition

The evidence on how boards impact corporate activities and performance is largely mixed (see John and Senbet (1998) and Hermalin and Weisbach (2003) for a review). To overcome this ambiguity, recent studies utilize specification that focus on environments where impact of board can be more pronounced and easier to detect. I focus on the estimation of the interactive effects of board quality and product market competition on firm performance. Governance mechanisms that serve as monitoring management tend to work as substitutes with product market competition, because high product market competition itself is a strong governance tool that reduces managerial slack (Giroud and Mueller, 2010, 2011). The baseline specification for the interaction analyses is the following:

$$Q_{it} = \alpha_i + \alpha_t + \beta_1 \cdot Quality_{it} \cdot H\_Competition_{it} + \beta_2 \cdot Quality_{it} \cdot L\_Competition_{it} + \beta_3 \cdot L\_Competition_{it} + \beta_4 \cdot Control_{it} + \mu_{it} \quad (3)$$

$Q_{it}$  is firm  $i$ 's Tobin's  $Q$  in year  $t$ .  $Quality_{it}$  contains firm  $i$ 's board quality measures in year  $t$ , which include the board independence and the fraction of experienced independent directors.  $H\_Competition_{it}$  and  $L\_Competition_{it}$  represent the competitive environment around firm  $i$  in year  $t$  that is utilized to find influence of director quality on firm performance. As the measure of high (low) product market competition where the impact of the board may be less (more) pronounced, I use indicator variables which are equal to one if firm  $i$  operates in an industry with below (above) yearly median Herfindahl-Hirschman index based on top 4 firms in each 3-digit SIC industry by sales, and zero otherwise.  $Control_{it}$  includes the control variables described in section 2.2, together with the low product market competition indicator  $L\_Competition$ .<sup>23</sup> The effect of board quality on firm performance under high/low product market competition may be directly inferred from the coefficient  $\beta_1$  and  $\beta_2$ . I control for firm- and year fixed effects,  $\alpha_i$  and  $\alpha_t$ . Standard errors are clustered at the firm level.

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<sup>23</sup>  $H\_Competition$  may be defined by  $1 - L\_Competition$ , and hence is perfectly correlated with  $L\_Competition$ . As such, only  $L\_Competition$  is included in the control variables.

### 2.4.1 Main Results

The results are reported in Table 2.7. Column (1) shows estimation result using board independence as explanatory variable but no interaction terms with *H\_Compensation* or *L\_Compensation* are included. The coefficient on board independence is statistically insignificant, suggesting that identifying impact of board quality on firm performance is not straightforward in general settings. However, when the interaction terms of *BoardIndependence* and product market competition are used in Column (2), I find positive and significant coefficient (0.222, significant at 10% level) on the interaction of board independence and *L\_Compensation*, but statistically insignificant negative coefficient (-0.333) on the interaction with *H\_Compensation*. This result suggests board independence may increase firm value for the firms operating in low product market competition, but the influence becomes statistically insignificant for firms operating under high product market competition. In terms of economic significance, increasing board independence by one standard deviation (0.158) may lead to 0.035 increase in *Tobin's Q*, which is about 1.8% change from the sample average. In Column (3), the fraction of experienced independent directors is included as the board quality measure instead of board independence. *FracExperience* shows similar effects on firm value, significantly increasing *Tobin's Q* under low product market competition (0.295 at 1% significance level), but associated with negative coefficient under high product market competition. Compared to the Column (2) result where board independence is used as board quality measure, signs and magnitudes of the interaction term coefficients are in similar order. In Column (4), where both *BoardIndependence* and *FracExperience* are used together as board quality measures, the coefficients of the interaction terms between *FracExperience* and the competition measures are statistically significant, and the magnitudes are also similar to the Column (3) result. However, the coefficients of the interaction terms of board independence and competition measures become small and statistically insignificant. This result suggests that the monitoring effectiveness of board independence is mainly driven by the experienced independent directors. Comparing the firm value implication of experienced and inexperienced independent directors based on Column (4) result is not straightforward, because board independence includes both experienced and inexperienced independent directors. For cleaner comparison, Column (5) reports the estimation results by decomposing board independence into *FracExperience* and *FracNoExperience*, the fraction of

experienced and inexperienced independent directors.<sup>24</sup> The coefficients of the interaction terms with *FracExperience* and competition measures are statistically significant (at 10% level), and the magnitudes are also similar to Column (3) result. However, the coefficients on the *FracNoExperience* are statistically insignificant, and the magnitudes are also small. The estimation result in Column (5) suggests that increasing the fraction of experienced independent directors by 0.11 (i.e., replacing one inexperienced director with experienced one in a nine-person board) leads to 0.03 increase in Tobin's Q for firms operating under low product market competition, which is about 1.5% increase from the sample average. The negative coefficient on the interaction of *FracExperience* and *H\_Compensation* may be interpreted as the experienced independent directors harm firm performance when competition is high. This result is consistent with Adams and Ferreira (2007) and Faleye et al. (2011), who show that increasing board independence may decrease firm performance when the need for board advising is high or the monitoring intensity is high.

I interpret these results as follows: the monitoring effectiveness of board independence on firm performance is mainly from experienced independent directors, not from independent but inexperienced ones. If a firm operating under low product market competition hires a new independent director to increase board independence and thereby firm performance, it will achieve the expected result only when the newly hired director is an experienced one. If not, then the firm value may not change significantly, as expressed by the statistically insignificant coefficients on the interaction terms between *BoardIndependence* and *L\_Compensation* (in Column (4)), or between *FracNoExperience* and *L\_Compensation* (in Column (5)). Alternatively, if the firm replaces part of its independent directors who are inexperienced with experienced ones, then it may achieve firm value increase even without increasing board independence.

#### **2.4.2 Endogeneity**

The observed results may be due to reverse causation or endogeneity among the board quality, firm performance, and product market competition. For example, experienced independent directors may choose to join successful firms operating in non-competitive industry, because of the prestige of successful firms and light workload from low competition. Or, there

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<sup>24</sup> Because independent directors can be classified either experienced or inexperienced, board independence can be rewritten as  $BoardIndependence = FracExperience + FracNoExperience$ .

may be time-varying omitted variables that influence the fraction of experienced independent directors and firm performance at the same time.

Table 2.8 provides estimation result on the determinants of the fraction of experienced independent directors, using *FracExperience* as dependent variable, and proxies of firm performance and product market competition as explanatory variables together with other control variables.<sup>25</sup> The control variables are selected to proxy for firm performance and financial conditions, organizational and operational environment, and other governance-related factors including board and CEO characteristics. Coefficient of return on assets (*ROA*), a proxy of firm performance, is negative and significant, which does not support experienced independent directors joining successful firms. The statistically insignificant coefficient on Herfindahl-Hirschman index (*HHI4*), the measure of product market competition, also suggests that product market competition may not be related with independent directorship experience. Positive and significant coefficients on firm size and age suggest that more visible and established firms are in better position to attract experienced independent directors.

To address potential endogeneity of time-varying omitted variables, I employ instrumental variable (IV) regression. As the instrument, I utilize the exchange regulation mandating majority of independent directors by 2003: In 2002, NYSE and NASDAQ proposed a new regulation requiring firms listed in the two exchanges to have majority of independent directors by the end of 2003.<sup>26</sup> Since some firms have had majority of independent directors before 2002, this new rule generates exogenous changes in board composition both in cross sections and time series. Since part of the newly added independent directors may be experienced ones, increasing board independence may also lead to increase in the fraction of experienced independent directors. I use the product of *Post*, an indicator variable for post-regulation period (year 2004 and after), and the board independence as of year 2001, *Independence<sub>2001</sub>*, as the instrumental variable. The regulation requires firms to comply by the end of year 2003, and hence the effect of regulation will be pronounced after that. Because the regulation sets minimum board independence, the lower board independence of firms before the regulation, the higher the need to increase board independence.

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<sup>25</sup> Firm performance and accounting variables in the explanatory variables are lagged one year because board composition is determined at the beginning of fiscal year while the firm characteristics are constructed at the end of the year.

<sup>26</sup> Chhaochharia and Grinstein (2007) provide a detailed description on the scope and implications of the regulation.

Table 2.9 provides the IV regression result based on Table 2.7 Column (5) specification, where the fraction of experienced and inexperienced independent directors are used as board quality measures. The endogenous variables to be instrumented are the interaction terms of the fraction of experienced independent directors and high/low product market competition indicators,  $FracExperience*H\_Competition$  and  $FracExperience*L\_Competition$ . In the first-stage regressions, I use the interaction terms of the instrumental variable and the high/low product market competition indicators to predict endogenous variables. The negative and significant coefficients of the IVs and large F-statistic in Columns (1) and (2) suggest the IV is valid. The second stage regression uses the predicted values from the first stage regressions as the key explanatory variables. The result is shown in Column (3): the positive and significant coefficient on the  $FracExperience*L\_Competition$  confirms the earlier results that the fraction of experience independent directors increases firm value when product market competition is low.

### 2.4.3 Cutoff Year for Independent Directorship Experience

A five year threshold to be classified as experienced independent director is used in the paper, but the choice is not grounded in economic theory. Table 2.10 compares the effect of different threshold years to be classified as experienced directors, ranging from 2 years to 6 years with the same specification used in Table 2.7 Column (4), which uses board independence and the fraction of experienced independent directors as board quality measures.<sup>27</sup> If the cutoff year is too short for directors to obtain necessary skills, then the fraction of experienced directors may not have explanatory power, and the coefficients associated with it will be small. If the cutoff year is long enough, then the effect of board independence will be subsumed by the fraction of experienced independent directors, and the coefficients associated with interaction terms of board independence and product market competition will be small, while the coefficients on the fraction of experienced independent directors being large and statistically significant. Starting from Column (2), the cutoff years for experienced independent director increases from 2 years to 6 years in Column (6). For comparison purpose, Column (1) replicates Table 2.7 Column (2) result, which uses board independence as the sole board quality measure. For all cutoff thresholds up to 4 years, the coefficients on the interaction of experienced independent directors and  $L\_Competition$  are statistically insignificant. For the 5 years and above thresholds, the

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<sup>27</sup> All the control variables used in Table 2.7 Column (5) are included in the analysis, but not shown in the table for brevity. This applies to all the following tables.

coefficients on the interaction of experienced independent directors and *L\_Comp* become statistically significant. The coefficients on the interaction between board independence and high/low competition also becomes small in magnitude for the 5 years and above thresholds, which suggests that the explanatory power of board independence is absorbed by the fraction of experienced independent directors. This result suggests that use of 5 years as cutoff threshold is appropriate.

#### **2.4.4 Non-linear specification**

The effect of experienced independent directors on firm value may have differential impact, especially when the fraction of experienced independent director is at the low- or high-end region. To examine the potential non-linearity, squared term of the fraction of experienced independent directors is added to the specification used in Column (5) Table 2.7. Considering that the fraction of experienced independent directors is interacted with both high- and low-product market competition indicator, *H\_Comp* and *L\_Comp*, squared experienced independent directors is also interacted with both indicator variables. Column (1) of Table 2.11 shows the estimation result. For the firms operating in low product market competition, the positive and significant coefficient on the *FracExperience* and the negative and significant coefficient on the squared *FracExperience* suggest that the relation between the fraction of experienced independent directors and firm performance is non-linear, with the inflection point at 0.56. Coefficients associated with *FracExperience* and the squared term are insignificant when interacted with *H\_Comp*, suggesting that the relation between *FracExperience* and firm value is weak when the product market competition is high. Inflection point at 0.56 may be interpreted as having more than majority experienced independent directors may lead to decreasing firm value. To further examine this non-linear relation, I include segmented *FracExperience* instead of the squared term and re-run the analyses. In Column (2), *FracExperience* is segmented into three subgroups (below 0.4; between 0.4 and 0.7; and above 0.7), and interacted with high- and low product market competition. The coefficients on the experienced independent directors interacted with low product market competition are all positive and significant, suggesting that increasing *FracExperience* may increase firm performance when competition is low. However, the magnitude of the coefficients is decreasing in *FracExperience*, suggesting that the effect of experienced independent directors is also decreasing. The decreasing effect of *FracExperience* on firm value also holds when the product

market competition is high: coefficients of the segmented *FracExperience* are negative and significant, and the magnitudes are decreasing.

#### **2.4.5 Robustness Tests**

I re-estimate the relation of the board quality and firm value using various alternative specification, sample constructions, variable definitions, and additional control variables. Control variables used in Table 2.7 are included in the robustness analyses but not shown in the table for brevity.

##### ***2.4.5.1 Industry fixed effect in place of firm fixed effect***

Use of firm fixed effect focuses on within-firm variations of the variables, which leads to not capturing meaningful cross-sectional variation. Panel A of Table 2.12 re-estimates Columns (2), (4) and (5) of Table 2.7, with industry and year fixed effects instead of firm and year fixed effects. Similar to the firm and year fixed effects results, both board independence and the fraction of experienced independent directors are positively (negatively) related to the firm value when the product market competition is low (high). When board independence is decomposed into fraction of experienced and inexperienced independent directors, the positive relation to firm value under low product market competition is observed only for the fraction of experienced independent directors, which is consistent with the results obtained under firm and year fixed effects shown in Table 2.7.

##### ***2.4.5.2 Influence of Regulatory Changes***

Adoption of Sarbanes-Oxley Act and the exchange regulation in 2002 led to large changes in the corporate governance environment, especially for the firms with weak corporate governance. The main variable of interest in this study, the fraction of experienced independent directors, is also strongly influenced by the regulatory changes. It may be the case that regulatory changes drive both the changes in the fraction of experienced independent directors and firm performance, and the observed relation between the experienced independent directors and firm value is endogenous. To examine this possibility, I construct two subsamples, one with the firms that are affected by the exchange regulation and the other that are not affected, and analyze the relation between experienced independent directors and firm performance based on specification used in Column (4) Table 2.7. Columns (1) and (2) of Panel B show the result for the firms that are not affected, and affected by the regulation, respectively. In both cases, the coefficients on



the interaction of the fraction of experienced independent directors and indicator for low product market competition are positive and significant, and those on the interaction with high product market competition are negative. The coefficients on the interaction terms of board independence and product market competition are all insignificant. These results are consistent with the Table 2.7 results, which suggest that fraction of experienced independent directors may increase (decrease) firm value under low (high) product market competition, and board independence does not have influence on firm value over the fraction of experienced independent directors.

#### ***2.4.5.3 Regulated Industries, Distressed firms, and Shorter Sample Period***

Financial and utility firms are excluded in the sample because they are heavily regulated, and may face different governance and operational environment. Including the regulated industry firms back results in 24% increase in the sample size. The results are shown in Column (1) of Panel C Table 2.12. Financial distress is a crisis situation, and during that time both management and the board may behave differently from the business as usual. Excluding firms in financial distress (defined by Altman's Z-score below 1.81) does not change the result (shown in column (2)). RiskMetrics provides two separate directors datasets, one for 1996~2006, and the other for 2007 and after. While the definitions of variables in each datasets are very similar, one may concern about potential inconsistency between the two datasets. Restricting sample years to 2000-2006 does not alter the result (shown in column (3)).

#### ***2.4.5.4 Alternative Measures of Independent Directorship Experience***

Following Fich and Shivdasani (2006) who suggest that using the fraction of independent directors with certain characteristics (director busyness in their analyses) may serve better than using average value or indicator variable of such characteristics, I use the fraction of experienced independent directors as the main proxy of independent director experience. Instead of the fraction, the number of experienced independent directors in the board (*NumExperience*) and an indicator of majority experienced independent directors in the board (*ExperiencedBoard*) are used as the proxy of independent director experience in Panel D Columns (1) and (2), respectively. The positive (negative) and significant coefficients on the interaction terms with low (high) product market competition suggest the earlier findings are robust to the use of alternative measures.

#### **2.4.5.5 Alternative Measures of Product Market Competition**

The estimation results based on the alternative measures of competition are provided in Panel E of Table 2.12. Instead of the top four company sales HHI, I use top eight company sales HHI (Column (1)), and top four company sales ICR (industry concentration ratio, Column (2)) as the measure of product market competition. In Column (3), as a robustness test to the use of three-digit SIC code as industry definition, top four company sales HHI in two-digit SIC industry is used as the measure of product market competition. The results are consistent with the findings in Table 2.7.

#### **2.4.5.6 Control for Other Board Quality Measures**

I include three additional measures of board quality that may be correlated with *FracExperience*. The first control variable is based on board co-option (Coles, Daniel, and Naveen, 2010). Coles et al. shows that if CEO of the firm is engaged in the nomination process of independent directors (co-opted), then those directors may not be fully independent. Following their logic, I take independent directors who are not co-opted by the management as a board quality measure. *FracNonCoOpted* is defined as the number of independent directors who are appointed to the board as independent directors before the current CEO is appointed, divided by the board size. The second control is *FracNonBusy*, defined as the number of non-busy independent directors divided by board size. Fich and Shivdasani (2006) show that busy independent directors are associated with lower monitoring capacity and worse firm performance. Maybe independent directors who are not busy are the ones that can perform as good independent directors. The third control variable is *TotalQuality*, which is the total number of connections of independent directors to directors on other boards. Coles et al. (2012) argue that while the number of independent directors in the board may serve as quantity of board advising, the number of connections per independent directors is the quality of the advising capacity. The total capacity of board advising is constructed by multiplying the quantity and quality of the board advising. Panel F provides re-estimation results using these additional control variables separately (Columns (1)-(3)) and all three together (Column (4)). Including these additional board quality measures in the main analyses does not diminish the influence of experienced independent directors on firm performance.

## 2.5 Conclusion

I show that independent directors who have past independent directorship experience may enhance firm value under conditions when board quality matters, but inexperienced independent directors may not be effective in monitoring and advising management. Independent directors need skills to efficiently interact with management during the board meetings and obtain information that are not readily available to them, which may be learnt from past independent directorship experience. I also show that what matters is relevant experience. For example, independent directors with CEO turnover-related experience may perform better when the need for management change is high, but may not be useful in setting the CEO compensation.

I don't find evidence that board independence, the traditional measure of board quality, has statistically significant influence on firm performance after controlling for the independent directorship experience, which implies that experienced independent directors, not inexperienced ones, may serve the monitoring and advising role of the board.

My findings have an important implication for board composition. Recent governance regulations mandate increase in the quantity of independent directors (board independence). However, what really matters is how many qualified independent directors are in the board, not just independent but inexperienced ones. Without proper consideration on the quality (past independent directorship experience), such regulations may not be effective in protecting shareholder value.

**Table 2.1: Variable Descriptions**

This table provides variable definitions and the source of data.

| <b>Variable name</b>  | <b>Description</b>  | <b>Source</b>             |
|---|---|---------------------------|
| <b><i>Panel A: Board quality variables</i></b>                        |   |                           |
| FracExperience  | Fraction of independent directors in the board who have at least 5 years of independent directorship experience in S&P 1500 firms in the past   | RiskMetrics               |
| FracTurnoverExperience  | Fraction of independent directors in the board who have experienced at least one CEO turnover event as independent directors in S&P 1500 firms in the past  | RiskMetrics;<br>ExecuComp |
| FracForcedExperience  | Fraction of independent directors in the board who have experienced at least one forced CEO turnover event as independent directors in S&P 1500 firms in the past   | RiskMetrics;<br>ExecuComp |
| CompCommIndependence  | Fraction of independent directors in the compensation committee   | RiskMetrics               |
| CompCompExperience  | Fraction of independent directors in the compensation committee who have at least 3 years of compensation committee experience as independent directors in S&P 1500 firms in the past                           | RiskMetrics               |
| BoardIndependence   | Fraction of independent directors in the board  | RiskMetrics               |
| BoardSize   | Number of directors in the board  | RiskMetrics               |
| IndDirOwnership   | Total share ownership of all independent directors  | RiskMetrics               |
| <b><i>Panel B: Firm characteristics</i></b>                           |   |                           |
| Tobin's Q   | Market value of total assets divided by book value of total assets, where market value is defined as the sum of market value of equity and book value of total assets less book value of equity                 | Compustat                 |
| ROA   | EBITDA divided by total assets  | Compustat                 |
| Log(Sales)  | Natural log of firm's sales   | Compustat                 |
| Leverage  | Book leverage   | Compustat                 |
| R&D/Assets  | R&D divided by total assets (missing R&D expenses values are replaced with 0)   | Compustat                 |
| R&D_Dum   | Indicator variable equal to one when R&D expenses value is missing in Compustat database  | Compustat                 |
| FirmAge   | Number of years from the first year a firm appears in Compustat or CRSP database  | Compustat;<br>CRSP        |
| PPE/Assets  | Asset tangibility defined by total net property, plant, and equipments divided by total assets  | Compustat                 |
| <b><i>Panel C: CEO Characteristics and performance management</i></b> |   |                           |
| CEOOwnership  | Share ownership of CEO  | ExecuComp                 |
| CEOChairman   | Indicator variable equal to one where CEO is also the chairman of the board   | ExecuComp                 |
| CEOAge  | Age of CEO  | ExecuComp                 |
| CEOTurnover   | Indicator variable equal to one in the last year where the CEO appears in the ExecuComp database as CEO   | ExecuComp                 |
| ForcedTurnover  | Indicator variable equal to one in the last year where the CEO appears in the ExecuComp database as CEO, and the descriptions in news articles about the turnover event suggest it is not planned or voluntary. | ExecuComp;<br>Factiva     |
| CEOCompensation   | Natural log of total direct compensation to the CEO   | ExecuComp                 |
| <b><i>Panel D: Competition and financial distress</i></b>             |   |                           |
| HHI4  | Herfindahl-Hirschman index based on top 4 firm sales in same 3-digit SIC industry   | Compustat                 |
| Z-Score   | Altman's Z-score  | Compustat                 |
| Z_Dum   | Indicator variable equal to one where any one of the components used to construct Z-score is missing  | Compustat                 |

**Table 2.2: Summary Statistics**

This table reports summary statistics for major variables used in the text of the paper. Variable definitions are provided in Table 2.1.

| Variable  | # Obs. | Mean   | Std.Dev. | Min     | Median | Max     |
|---|--------|--------|----------|---------|--------|---------|
|   | (1)    | (2)    | (3)      | (4)     | (5)    | (6)     |
| <b><i>Panel A: Board quality variables</i></b>                        |        |        |          |         |        |         |
| FracExperience  | 12197  | 0.394  | 0.241    | 0       | 0.417  | 1       |
| FracTurnoverExperience  | 12197  | 0.329  | 0.262    | 0       | 0.300  | 1       |
| FracForcedExperience  | 12197  | 0.080  | 0.158    | 0       | 0      | 1       |
| CompCommIndependence  | 12128  | 0.937  | 0.158    | 0       | 1      | 1       |
| CompCompExperience  | 12197  | 0.551  | 0.343    | 0       | 0.625  | 1       |
| BoardIndependence   | 12197  | 0.709  | 0.158    | 0       | 0.733  | 1       |
| BoardSize   | 12197  | 8.974  | 2.268    | 3       | 9      | 21      |
| IndDirOwnership   | 12197  | 0.012  | 0.046    | 0       | 0      | 0.881   |
| <b><i>Panel B: Firm characteristics</i></b>                           |        |        |          |         |        |         |
| StockReturn   | 12186  | 0.130  | 0.522    | -0.977  | 0.083  | 7.359   |
| Tobin's Q   | 12197  | 1.986  | 1.338    | 0.401   | 1.595  | 36.189  |
| ROA   | 12197  | 0.139  | 0.108    | -1.319  | 0.136  | 0.949   |
| Log(Sales)  | 12197  | 7.403  | 1.547    | -1.149  | 7.288  | 12.96   |
| Leverage  | 12197  | 0.208  | 0.175    | 0       | 0.197  | 1.743   |
| R&D/Assets  | 12197  | 0.032  | 0.059    | 0       | 0.004  | 1.129   |
| R&D_Dum   | 12197  | 0.346  | 0.476    | 0       | 0      | 1       |
| FirmAge   | 12197  | 25.343 | 19.015   | 0       | 19     | 86      |
| PPE/Assets  | 12197  | 0.267  | 0.215    | 0.002   | 0.203  | 0.965   |
| <b><i>Panel C: CEO Characteristics and performance management</i></b> |        |        |          |         |        |         |
| CEOOwnership  | 12197  | 0.022  | 0.057    | 0       | 0.003  | 0.612   |
| CEOChairman   | 12197  | 0.574  | 0.495    | 0       | 1      | 1       |
| CEOAge  | 11755  | 55.427 | 7.370    | 31      | 55     | 94      |
| CEOTurnover   | 12197  | 0.104  | 0.305    | 0       | 0      | 1       |
| ForcedTurnover  | 12197  | 0.023  | 0.151    | 0       | 0      | 1       |
| CEOCompensation   | 12142  | 1.528  | 0.778    | 0       | 1.445  | 6.399   |
| <b><i>Panel D: Competition and financial distress</i></b>             |        |        |          |         |        |         |
| HHI4  | 11726  | 0.167  | 0.148    | 0.022   | 0.120  | 0.970   |
| Z-Score   | 12197  | 4.191  | 7.686    | -57.427 | 2.839  | 154.743 |
| Z_Dum   | 12197  | 0.027  | 0.163    | 0       | 0      | 1       |

**Table 2.3: Correlation Between Variables**

This table reports pair-wise correlation between major variables used in the text of the paper. Variable definitions are provided in Table 2.1.

|                               | <b>Board<br/>Independence</b> | <b>Frac<br/>Experience</b> | <b>FracNo<br/>Experience</b> | <b>CompComm<br/>Independence</b> | <b>CompComp<br/>Experience</b> | <b>FracTurnover<br/>Experience</b> | <b>FracForced<br/>Experience</b> | <b>Tobin's Q</b> | <b>StockReturn</b> | <b>ROA</b> |
|-------------------------------|-------------------------------|----------------------------|------------------------------|----------------------------------|--------------------------------|------------------------------------|----------------------------------|------------------|--------------------|------------|
| <b>FracExperience</b>         | 0.528***                      |                            |                              |                                  |                                |                                    |                                  |                  |                    |            |
| <b>FracNoExperience</b>       | 0.147***                      | -0.762***                  |                              |                                  |                                |                                    |                                  |                  |                    |            |
| <b>CompCommIndependence</b>   | 0.534***                      | 0.268***                   | 0.093***                     |                                  |                                |                                    |                                  |                  |                    |            |
| <b>CompCompExperience</b>     | 0.292***                      | 0.644***                   | -0.528***                    | 0.328***                         |                                |                                    |                                  |                  |                    |            |
| <b>FracTurnoverExperience</b> | 0.439***                      | 0.607***                   | -0.372***                    | 0.213***                         | 0.396***                       |                                    |                                  |                  |                    |            |
| <b>FracForcedExperience</b>   | 0.211***                      | 0.265***                   | -0.148***                    | 0.100***                         | 0.171***                       | 0.437***                           |                                  |                  |                    |            |
| <b>Tobin's Q</b>              | -0.051***                     | -0.099***                  | 0.076***                     | -0.025***                        | -0.091***                      | -0.093***                          | -0.063***                        |                  |                    |            |
| <b>StockReturn</b>            | -0.012                        | -0.017*                    | 0.010                        | -0.020**                         | -0.021**                       | -0.015*                            | -0.013                           | 0.260***         |                    |            |
| <b>ROA</b>                    | 0.007                         | 0.018*                     | -0.015*                      | 0.013                            | -0.003                         | -0.013                             | -0.043***                        | 0.350***         | 0.117***           |            |
| <b>HHI4</b>                   | 0.011                         | 0.018**                    | -0.012                       | 0.004                            | 0.026***                       | 0.039***                           | 0.000                            | -0.036***        | -0.010             | 0.008      |

**Table 2.4: Board Quality And CEO Turnover-Performance Sensitivity**

This table reports conditional logit estimation results on the interactive effects of board quality and firm performance on CEO turnover events. Board quality includes board independence, fraction of experienced independent directors, fraction of independent directors who have experienced CEO turnover event in the past as independent directors, fraction of independent directors who have experienced forced CEO turnover event in the past as independent directors, and the fractions of independent directors who do not have aforementioned experiences. Column (1) estimates interactive effect of board independence and industry-adjusted stock return of the firm during the fiscal year on the CEO turnover. Columns (2) to (4) estimate interactive effect of the fraction of experienced independent directors and firm performance, where fraction of experienced independent director alone is used in Column (2), board independence and fraction of experienced independent directors together in Column (3), and fraction of experienced and inexperienced independent directors together in Column (4). Columns (5) to (7) use fraction of independent directors who have experienced CEO turnover event as board quality measure. The dependent variable is an indicator variable equal to one when it is the last year where the CEO appears in the ExecuComp database as CEO. The sample period is 2000-2010. Variable definitions are provided in Table 2.1. All regressions include firm- and year fixed effects. Standard errors clustered at the firm level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1% level, respectively.

|                                 | Dependent variable: Indicator for CEO turnover |                      |                      |                      |                      |                      |                      |
|---------------------------------|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                 | (1)  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  | (7)                  |
| Market return                   | -0.534**<br>(0.263)                            | -0.549**<br>(0.263)  | -0.554**<br>(0.263)  | -0.554**<br>(0.263)  | -0.580**<br>(0.258)  | -0.582**<br>(0.259)  | -0.582**<br>(0.259)  |
| Market-adjusted industry return | -0.351***<br>(0.120)                           | -0.374***<br>(0.121) | -0.372***<br>(0.120) | -0.372***<br>(0.120) | -0.374***<br>(0.122) | -0.377***<br>(0.122) | -0.377***<br>(0.122) |
| Industry-adjusted firm return   | 0.132<br>(0.343)                               | -0.150<br>(0.152)    | 0.019<br>(0.333)     | 0.019<br>(0.333)     | -0.250*<br>(0.138)   | 0.070<br>(0.330)     | 0.070<br>(0.330)     |
| BoardIndependence               | -0.761*<br>(0.447)                             |                      | -0.291<br>(0.479)    |                      |                      | -0.527<br>(0.464)    |                      |
| * Industry-adjusted firm return |  |                      |                      |                      |                      |                      |                      |
| FracExperience                  |  | -0.768**<br>(0.325)  | -0.669*<br>(0.349)   | -0.960**<br>(0.466)  |                      |                      |                      |
| * Industry-adjusted firm return |  |                      |                      |                      |                      |                      |                      |
| FracNoExperience                |  |                      |                      | -0.291<br>(0.479)    |                      |                      |                      |
| * Industry-adjusted firm return |  |                      |                      |                      |                      |                      |                      |
| FracTurnoverExperience          |  |                      |                      |                      | -0.572*<br>(0.341)   | -0.416<br>(0.355)    | -0.943*<br>(0.483)   |
| * Industry-adjusted firm return |  |                      |                      |                      |                      |                      |                      |
| FracNoTurnoverExperience        |  |                      |                      |                      |                      |                      | -0.527<br>(0.464)    |
| * Industry-adjusted firm return |  |                      |                      |                      |                      |                      |                      |
| FracForcedExperience            |  |                      |                      |                      |                      |                      |                      |
| * Industry-adjusted firm return |  |                      |                      |                      |                      |                      |                      |
| BoardIndependence               | -0.692*<br>(0.376)                             |                      | -0.644*<br>(0.384)   |                      |                      | 0.288<br>(0.405)     |                      |
| FracExperience                  |  | -0.206<br>(0.236)    | -0.101<br>(0.242)    | -0.745*<br>(0.408)   |                      |                      |                      |
| FracNoExperience                |  |                      |                      | -0.644*<br>(0.384)   |                      |                      |                      |
| FracTurnoverExperience          |  |                      |                      |                      | -3.799***<br>(0.261) | -3.806***<br>(0.264) | -3.518***<br>(0.452) |
| FracNoTurnoverExperience        |  |                      |                      |                      |                      |                      | 0.288<br>(0.405)     |
| CEO age between 64 and 66       | 1.204***<br>(0.099)                            | 1.197***<br>(0.099)  | 1.201***<br>(0.099)  | 1.201***<br>(0.099)  | 1.017***<br>(0.110)  | 1.015***<br>(0.110)  | 1.015***<br>(0.110)  |
| Firm and year fixed effects     | Y  | Y                    | Y                    | Y                    | Y                    | Y                    | Y                    |
| Observations                    | 7,922  | 7,922                | 7,922                | 7,922                | 7,922                | 7,922                | 7,922                |
| Pseudo-R <sup>2</sup>           | 0.054  | 0.054                | 0.055                | 0.055                | 0.126                | 0.126                | 0.126                |

**Table 2.5: Board Quality And Forced CEO Turnover-Performance Sensitivity**

This table reports conditional logit estimation results on the interactive effects of board quality and firm performance on forced CEO turnover events. Board quality includes board independence, fraction of experienced independent directors, fraction of independent directors who have experienced CEO turnover event in the past as independent directors, fraction of independent directors who have experienced forced CEO turnover event in the past as independent directors, and the fractions of independent directors who do not have aforementioned experiences. Column (1) estimates interactive effect of board independence and industry-adjusted stock return of the firm during the fiscal year on the CEO turnover. Column (2) estimates interactive effect of the fraction of experienced independent directors and firm performance. Column (3) uses fraction of independent directors who have experienced CEO turnover event as board quality measure. Columns (4) to (6) use fraction of independent directors who have experienced forced CEO turnover event as board quality measure, where fraction of independent directors with forced CEO turnover experience alone is used in Column (4), board independence and fraction of independent directors together in Column (5), and fraction of independent directors with and without such experience used together in Column (6). The dependent variable is an indicator variable equal to one when it is the last year where the CEO appears in the ExecuComp database as CEO, and descriptions in the news article about the turnover event suggest it is forced turnover. The sample period is 2000-2010. Variable definitions are provided in Table 2.1. All regressions include firm- and year fixed effects. Standard errors clustered at the firm level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1% level, respectively.

|                                 | Dependent variable: Indicator for forced CEO turnover |                      |                      |                      |                      |                      |
|---------------------------------|---|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                 | (1)   | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  |
| Market return                   | -0.921<br>(0.595)                                     | -0.923<br>(0.589)    | -0.923<br>(0.565)    | -1.217**<br>(0.553)  | -1.225**<br>(0.561)  | -1.225**<br>(0.561)  |
| Market-adjusted industry return | -0.827***<br>(0.309)                                  | -0.840***<br>(0.308) | -0.793**<br>(0.310)  | -0.930***<br>(0.319) | -0.938***<br>(0.318) | -0.938***<br>(0.318) |
| Industry-adjusted firm return   | -0.227<br>(0.777)                                     | -0.541<br>(0.369)    | -0.686**<br>(0.290)  | -0.707***<br>(0.257) | -0.154<br>(1.015)    | -0.154<br>(1.015)    |
| BoardIndependence               | -1.011<br>(1.023)                                     |                      |                      |                      | -0.792<br>(1.290)    |                      |
| * Industry-adjusted firm return |   |                      |                      |                      |                      |                      |
| FracExperience                  |   | -1.200<br>(0.754)    |                      |                      |                      |                      |
| * Industry-adjusted firm return |   |                      |                      |                      |                      |                      |
| FracTurnoverExperience          |   |                      | -0.741<br>(0.811)    |                      |                      |                      |
| * Industry-adjusted firm return |   |                      |                      |                      |                      |                      |
| FracForcedExperience            |   |                      |                      | -2.792**<br>(1.206)  | -2.687**<br>(1.185)  | -3.480*<br>(1.813)   |
| * Industry-adjusted firm return |   |                      |                      |                      |                      |                      |
| FracNoForcedExperience          |   |                      |                      |                      |                      | -0.792<br>(1.290)    |
| * Industry-adjusted firm return |   |                      |                      |                      |                      |                      |
| BoardIndependence               | -0.433<br>(0.781)                                     |                      |                      |                      | -0.620<br>(0.870)    |                      |
| FracExperience                  |   | -0.489<br>(0.467)    |                      |                      |                      |                      |
| FracTurnoverExperience          |   |                      | -3.557***<br>(0.627) |                      |                      |                      |
| FracForcedExperience            |   |                      |                      | -8.099***<br>(1.387) | -8.094***<br>(1.388) | -8.714***<br>(1.715) |
| FracNoForcedExperience          |   |                      |                      |                      |                      | -0.620<br>(0.870)    |
| CEO age between 64 and 66       | -1.339***<br>(0.276)                                  | -1.337***<br>(0.275) | -1.565***<br>(0.294) | -1.376***<br>(0.328) | -1.386***<br>(0.325) | -1.386***<br>(0.325) |
| Firm and year fixed effects     | Y   | Y                    | Y                    | Y                    | Y                    | Y                    |
| Observations                    | 2,153   | 2,153                | 2,153                | 2,153                | 2,153                | 2,153                |
| Pseudo-R <sup>2</sup>           | 0.0783  | 0.0802               | 0.147                | 0.293                | 0.294                | 0.294                |



**Table 2.6: Board Quality and CEO Compensation**

This table reports estimation results on the effects of board quality on CEO compensation. Board quality includes board independence, fraction of experienced independent directors, fraction of independent directors in the compensation committee, and fraction of experienced independent directors in the compensation committee. Firm characteristics are based on previous fiscal year. The dependent variable is natural log of total direct compensation to CEO (TDC1). The sample period is 2000-2010. Variable definitions are provided in Table 2.1. Regressions include firm- and year fixed effects. Constant is included in the regression but not shown for brevity. Standard errors clustered at the firm level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1% level, respectively.

|                             | <b>Dependent variable: CEOCompensation</b> |                     |                     |                     |
|-----------------------------|--|---------------------|---------------------|---------------------|
|                             | <b>(1)</b>                                 | <b>(2)</b>          | <b>(3)</b>          | <b>(4)</b>          |
| BoardIndendence             | 0.114<br>(0.078)                           |                     |                     |                     |
| FracExperience              |  | -0.055<br>(0.047)   |                     |                     |
| CompCommIndependence        |  |                     | -0.011<br>(0.047)   |                     |
| CompCommExperience          |  |                     |                     | -0.041*<br>(0.024)  |
| Log(BoardSize)              | 0.010<br>(0.057)                           | 0.003<br>(0.057)    | 0.009<br>(0.057)    | 0.009<br>(0.056)    |
| Log(Sales)                  | 0.129***<br>(0.026)                        | 0.133***<br>(0.026) | 0.128***<br>(0.026) | 0.133***<br>(0.026) |
| ROA                         | 0.355***<br>(0.117)                        | 0.340***<br>(0.118) | 0.361***<br>(0.117) | 0.342***<br>(0.117) |
| StockReturn                 | 0.109***<br>(0.017)                        | 0.109***<br>(0.017) | 0.110***<br>(0.017) | 0.108***<br>(0.017) |
| ReturnVolatility            | 0.125<br>(0.236)                           | 0.103<br>(0.236)    | 0.137<br>(0.236)    | 0.111<br>(0.236)    |
| CEOOwnership                | -0.586**<br>(0.269)                        | -0.602**<br>(0.272) | -0.631**<br>(0.280) | -0.600**<br>(0.272) |
| CEOChairman                 | -0.007<br>(0.025)                          | -0.006<br>(0.025)   | -0.002<br>(0.025)   | -0.005<br>(0.025)   |
| Log(CEOTenure)              | 0.028***<br>(0.011)                        | 0.029***<br>(0.011) | 0.029***<br>(0.011) | 0.029***<br>(0.011) |
| Firm and year fixed effects | Y  | Y                   | Y                   | Y                   |
| Observations                | 11,245                                     | 11,245              | 11,179              | 11,245              |
| Adjusted R <sup>2</sup>     | 0.686                                      | 0.686               | 0.685               | 0.686               |

**Table 2.7: Board Quality, Product Market Competition, and Firm Value**

This table reports estimation results on the interactive effects of board quality and product market competition on firm value. Board quality includes board independence, fraction of experienced independent directors, and fraction of inexperienced independent directors. Column (1) estimates without any interaction terms. Columns (2) and (3) estimate interaction effect of board independence and product market competition, and the fraction of experienced independent directors and product market competition, respectively. Columns (4) and (5) estimate interaction effects on the fraction of experienced independent director and board independence, and fractions of experienced and inexperienced independent directors, respectively. High/low competition is defined by yearly sample median sales HHI of top 4 firms in 3-digit SIC industry. The dependent variable is Tobin's Q. The sample period is 2000-2010. Variable definitions are provided in Table 2.1. Regressions include firm- and year fixed effects. Constant is included in the regression but not shown for brevity. Standard errors clustered at the firm level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1% level, respectively.

|                                   | Dependent variable: Tobin's Q |                      |                      |                      |                      |
|-----------------------------------|-------------------------------|----------------------|----------------------|----------------------|----------------------|
|                                   | (1)                           | (2)                  | (3)                  | (4)                  | (5)                  |
| BoardIndependence                 | -0.054<br>(0.139)             |                      |                      |                      |                      |
| BoardIndependence * H_Competition |                               | -0.333<br>(0.218)    |                      | -0.087<br>(0.222)    |                      |
| BoardIndependence * L_Competition |                               | 0.222*<br>(0.135)    |                      | -0.027<br>(0.138)    |                      |
| FracExperience * H_Competition    |                               |                      | -0.382***<br>(0.126) | -0.366***<br>(0.129) | -0.453*<br>(0.232)   |
| FracExperience * L_Competition    |                               |                      | 0.295***<br>(0.099)  | 0.295***<br>(0.103)  | 0.268*<br>(0.147)    |
| FracNoExperience * H_Competition  |                               |                      |                      |                      | -0.087<br>(0.222)    |
| FracNoExperience * L_Competition  |                               |                      |                      |                      | -0.027<br>(0.138)    |
| L_Competition                     | 0.032<br>(0.040)              | -0.368**<br>(0.173)  | -0.245***<br>(0.080) | -0.282*<br>(0.169)   | -0.282*<br>(0.169)   |
| Log(BoardSize)                    | -0.440***<br>(0.125)          | -0.432***<br>(0.124) | -0.432***<br>(0.125) | -0.432***<br>(0.125) | -0.432***<br>(0.125) |
| IndDirOwnership                   | 0.005<br>(0.003)              | 0.004<br>(0.003)     | 0.004<br>(0.003)     | 0.004<br>(0.003)     | 0.004<br>(0.003)     |
| ROA                               | 3.948***<br>(0.406)           | 3.937***<br>(0.407)  | 3.948***<br>(0.412)  | 3.947***<br>(0.411)  | 3.947***<br>(0.411)  |
| Log(Sales)                        | -0.475***<br>(0.089)          | -0.476***<br>(0.089) | -0.466***<br>(0.089) | -0.467***<br>(0.088) | -0.467***<br>(0.088) |
| Leverage                          | -0.890***<br>(0.204)          | -0.875***<br>(0.202) | -0.853***<br>(0.200) | -0.853***<br>(0.200) | -0.853***<br>(0.200) |
| R&D/Assets                        | 3.973***<br>(1.129)           | 3.995***<br>(1.131)  | 3.972***<br>(1.126)  | 3.975***<br>(1.126)  | 3.975***<br>(1.126)  |
| R&D_Dum                           | -0.058<br>(0.067)             | -0.048<br>(0.066)    | -0.033<br>(0.065)    | -0.033<br>(0.065)    | -0.033<br>(0.065)    |
| Log(FirmAge)                      | -0.540***<br>(0.183)          | -0.530***<br>(0.182) | -0.516***<br>(0.183) | -0.514***<br>(0.183) | -0.514***<br>(0.183) |
| PPE/Assets                        | -0.929***<br>(0.320)          | -0.934***<br>(0.321) | -0.920***<br>(0.322) | -0.921***<br>(0.321) | -0.921***<br>(0.321) |
| CEOOwnership                      | -0.105<br>(0.320)             | -0.105<br>(0.323)    | -0.062<br>(0.318)    | -0.070<br>(0.321)    | -0.070<br>(0.321)    |
| CEOChairman                       | 0.064*<br>(0.039)             | 0.063<br>(0.039)     | 0.058<br>(0.038)     | 0.059<br>(0.039)     | 0.059<br>(0.039)     |
| Firm and year fixed effects       | Y                             | Y                    | Y                    | Y                    | Y                    |
| Observations                      | 11,726                        | 11,726               | 11,726               | 11,726               | 11,726               |
| Adjusted R <sup>2</sup>           | 0.643                         | 0.643                | 0.645                | 0.645                | 0.645                |

**Table 2.8: Determinant of Independent Directorship Experience**

This table reports estimation result on the determinants of the independent directorship experience. Dependent variable is the fraction of experienced independent directors in the board, and explanatory variables include board and firm characteristics, product market competition, and CEO characteristics. Firm characteristics are based on previous fiscal year. The sample period is 2000-2010. Variable definitions are provided in Table 2.1. Regressions include firm- and year- fixed effects. Constant is included in the regression but not shown for brevity. Standard errors clustered at the firm level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1% level, respectively.

| <b>Dependent variable: FracExperience</b> |                      |
|---|----------------------|
| ROA                                       | 0.198***<br>(0.023)  |
| Z-Score                                   | -0.114***<br>(0.019) |
| Log(Sales)                                | -0.003<br>(0.003)    |
| Log(FirmAge)                              | -0.122***<br>(0.036) |
| Log(Segments)                             | -0.015<br>(0.051)    |
| HHI4                                      | 0.054***<br>(0.009)  |
| CEO_Own                                   | -0.019<br>(0.025)    |
| CEO_Chair                                 | -0.044<br>(0.084)    |
| Log(CEOTenure)                            | 0.003<br>(0.016)     |
| BoardIndependence                         | -0.072<br>(0.072)    |
| Log(BoardSize)                            | 0.016<br>(0.055)     |
| Firm and year fixed effects               | Y                    |
| Observations                              | 10,915               |
| Adjusted R <sup>2</sup>                   | 0.728                |

**Table 2.9: Instrumental Variable Regression**

This table addresses potential endogeneity in the relation between the fraction of experienced independent directors and Tobin's Q. Columns (1) and (2) report the first-stage results, and Column (3) reports the second-stage result with Tobin's Q as the dependent variable. The instrumental variables are interaction terms of pre-sox board dependence and high/low product market competition indicators. High/low competition is defined by yearly sample median sales HHI of top 4 firms in 3-digit SIC industry. The sample period is 2000-2010. Variable definitions are provided in Table 2.1. Regressions include firm- and year fixed effects. Constant is included in the regression but not shown for brevity. Standard errors clustered at the firm level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1% level, respectively.

|  | 1st Stage                          |                                    | 2nd stage            |
|--|------------------------------------|------------------------------------|----------------------|
|  | Dependent variable:                |                                    |                      |
|  | FracExperience *<br>H_Compensation | FracExperience *<br>L_Compensation | Tobin's Q            |
|  | (1)                                | (2)                                | (3)                  |
| BoardIndependence <sub>2001</sub> * Post<br>* H_Compensation | -0.335***<br>(0.019)               | -0.057***<br>(0.012)               |                      |
| BoardIndependence <sub>2001</sub> * Post<br>* L_Compensation | -0.057***<br>(0.013)               | -0.318***<br>(0.016)               |                      |
| FracExperience * H_Compensation<br>[instrumented]            |                                    |                                    | -0.956*<br>(0.538)   |
| FracExperience * L_Compensation<br>[instrumented]            |                                    |                                    | 0.822*<br>(0.474)    |
| FracNoExperience * H_Compensation                            | -0.808***<br>(0.012)               | 0.03***<br>(0.006)                 | -0.468<br>(0.445)    |
| FracNoExperience * L_Compensation                            | 0.015***<br>(0.006)                | -0.806***<br>(0.013)               | 0.344<br>(0.363)     |
| L_Compensation   | -0.611***<br>(0.011)               | 0.612***<br>(0.012)                | -0.984***<br>(0.336) |
| Log(BoardSize)   | -0.011<br>(0.008)                  | -0.025***<br>(0.008)               | -0.428***<br>(0.127) |
| IndDirOwnership  | 0.000<br>(0.000)                   | 0.002***<br>(0.000)                | 0.004<br>(0.003)     |
| ROA  | -0.039*<br>(0.02)                  | 0.007<br>(0.014)                   | 4.117***<br>(0.455)  |
| Log(Sales)   | -0.001<br>(0.004)                  | 0.004<br>(0.004)                   | -0.449***<br>(0.090) |
| Leverage   | 0.017<br>(0.015)                   | -0.023**<br>(0.010)                | -0.909***<br>(0.211) |
| R&D/Assets   | -0.005<br>(0.04)                   | -0.045**<br>(0.019)                | 4.267***<br>(1.212)  |
| R&D_Dum  | 0.013*<br>(0.007)                  | -0.010<br>(0.012)                  | -0.016<br>(0.067)    |
| Log(FirmAge)   | 0.031***<br>(0.011)                | 0.010<br>(0.011)                   | -0.539**<br>(0.237)  |
| PPE/Assets   | -0.008<br>(0.023)                  | -0.002<br>(0.022)                  | -0.766**<br>(0.336)  |
| CEOOwnership   | 0.012<br>(0.028)                   | 0.048<br>(0.031)                   | -0.275<br>(0.304)    |
| CEOChairman  | 0.005*<br>(0.003)                  | 0.007**<br>(0.003)                 | 0.039<br>(0.038)     |
| Firm and year fixed effects                                  | Y                                  | Y                                  | Y                    |
| Observations   | 9,536                              | 9,536                              | 9,536                |
| Adjusted R <sup>2</sup>                                      | 0.835                              | 0.831                              | 0.200                |
| F-statistic  | 246.49                             | 294.84                             |                      |

**Table 2.10: Threshold Cutoff Year for Independent Directorship Experience**

This table reports estimation results on the interactive effects of independent director experience and product market competition on firm value with different threshold value for being categorized as experienced. From Column (1) to (6), independent director experience is defined by at least 2 to 6 years of prior independent directorship experience accordingly. High/low competition is defined by yearly sample median sales HHI of top 4 firms in 3-digit SIC industry. The dependent variable is Tobin's Q. The sample period is 2000-2010. The same set of control variables used in table 2.7 are used but not shown in the table for brevity. Variable definitions are provided in Table 2.1. Regressions include firm- and year fixed effects. Standard errors clustered at the firm level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1% level, respectively.

|                                    | Dependent variable: Tobin's Q |                    |                          |                          |                          |                     |
|------------------------------------|-------------------------------|--------------------|--------------------------|--------------------------|--------------------------|---------------------|
|                                    | (1)                           | (2)                | (3)                      | (4)                      | (5)                      | (6)                 |
| BoardIndependence * H_Compensation | -0.333<br>(0.218)             | -0.139<br>(0.217)  | -0.096<br>(0.211)        | -0.047<br>(0.217)        | -0.087<br>(0.222)        | -0.125<br>(0.224)   |
| BoardIndependence * L_Compensation | 0.222*<br>(0.135)             | 0.119<br>(0.144)   | 0.119<br>(0.146)         | 0.024<br>(0.145)         | -0.027<br>(0.138)        | -0.012<br>(0.137)   |
| 2-YearExperience * H_Compensation  |                               | -0.259*<br>(0.146) |                          |                          |                          |                     |
| 2-YearExperience * L_Compensation  |                               | 0.083<br>(0.092)   |                          |                          |                          |                     |
| 3-YearExperience * H_Compensation  |                               |                    | -<br>0.357***<br>(0.133) |                          |                          |                     |
| 3-YearExperience * L_Compensation  |                               |                    | 0.054<br>(0.098)         |                          |                          |                     |
| 4-YearExperience * H_Compensation  |                               |                    |                          | -<br>0.452***<br>(0.137) |                          |                     |
| 4-YearExperience * L_Compensation  |                               |                    |                          | 0.166<br>(0.101)         |                          |                     |
| 5-YearExperience * H_Compensation  |                               |                    |                          |                          | -<br>0.366***<br>(0.129) |                     |
| 5-YearExperience * L_Compensation  |                               |                    |                          |                          | 0.295***<br>(0.103)      |                     |
| 6-YearExperience * H_Compensation  |                               |                    |                          |                          |                          | -0.307**<br>(0.138) |
| 6-YearExperience * L_Compensation  |                               |                    |                          |                          |                          | 0.320***<br>(0.107) |
| Firm and year fixed effects        | Y                             | Y                  | Y                        | Y                        | Y                        | Y                   |
| Observations                       | 11,726                        | 11,726             | 11,726                   | 11,726                   | 11,726                   | 11,726              |
| Adjusted R <sup>2</sup>            | 0.643                         | 0.644              | 0.644                    | 0.645                    | 0.645                    | 0.644               |

**Table 2.11: Nonlinear Effect Of Independent Director Experience On Firm Value**

This table reports estimation results on the interactive effects of independent director experience and product market competition on firm value with nonlinear specification. Column (1) includes both linear and squared value of independent director experience decomposed into fraction of experienced and inexperienced independent directors. Column (2) includes piecewise independent director experience variable. High/low competition is defined by yearly sample median sales HHI of top 4 firms in 3-digit SIC industry. The dependent variable is Tobin's Q. The sample period is 2000-2010. The same set of control variables used in table 2.7 are used but not shown in the table for brevity. Variable definitions are provided in Table 2.1. Regressions include firm- and year fixed effects. Standard errors clustered at the firm level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1% level, respectively.

|  | <b>Dependent variable: Tobin's Q</b> |                     |
|--|--------------------------------------|---------------------|
|  | <b>(1)</b>                           | <b>(2)</b>          |
| FracExperience * H_Compensation                | -0.534<br>(0.435)                    |                     |
| (FracExperience) <sup>2</sup> * H_Compensation | 0.122<br>(0.416)                     |                     |
| FracExperience * L_Compensation                | 0.896***<br>(0.287)                  |                     |
| (FracExperience) <sup>2</sup> * L_Compensation | -0.798***<br>(0.283)                 |                     |
| (FracExp<=0.4) * H_Compensation                |                                      | -0.668**<br>(0.336) |
| (0.4<FracExp<=0.7) * H_Compensation            |                                      | -0.517**<br>(0.249) |
| (0.7<FracExp) * H_Compensation                 |                                      | -0.428*<br>(0.237)  |
| (FracExp<=0.4) * L_Compensation                |                                      | 0.597***<br>(0.197) |
| (0.4<FracExp<=0.7) * L_Compensation            |                                      | 0.382**<br>(0.157)  |
| (0.7<FracExp) * L_Compensation                 |                                      | 0.249*<br>(0.144)   |
| FracNoExperience * H_Compensation              | -0.089<br>(0.221)                    | -0.085<br>(0.221)   |
| FracNoExperience * L_Compensation              | -0.057<br>(0.138)                    | -0.047<br>(0.137)   |
| Firm and year fixed effects                    | Y                                    | Y                   |
| Observations                                   | 11,726                               | 11,726              |
| Adjusted R <sup>2</sup>                        | 0.645                                | 0.645               |

**Table 2.12: Robustness Test**

This table reports the results of robustness checks to the use of industry fixed effect in place of firm fixed effect, control for exchange regulation mandating majority independent board, alternative measure of key variables, sample constructions, and additional control variables. Panel A reports the results of using industry and year fixed effects instead of firm and year fixed effects. Other than the choice of fixed effects, regression specification is identical to that of Table 2.7 Columns (2), (4) and (5); Panel B reports the results controlling for exchange regulation mandating majority independent board by 2003: Column (1) is based on subsample consisting of firms that are not affected by the regulation, and Column (2) consisting of firms affected by the regulation. Other than the sample construction, regression specification is identical to that of Table 2.7 column (3); Panel C reports the results based on alternative samples: Column (1) including firms in regulated industries, Column (2) excluding financially distressed firms, and Column (3) over shorter sample period of 2000-2006. Other than the choice of sample, regression specification is identical to that of Table 2.7 Column (3); Panel D reports the results of using alternative measures of independent directorship experience: Column (1) uses number of experienced independent directors instead of fraction in the board, and Column (2) indicator of majority experienced independent directors in the board. Other than the choice of independent directorship experience measure, regression specification is identical to that of Table 2.7 Column (4); Panel E reports the results estimated with the alternative measures of product market competition: Column (1) based on top 8 company sales HHI, Column (2) based on top 4 company sales ICR, and Column (3) based on top 4 company sales HHI where industry is defined by 2-digit SIC code; Panel F reports estimation results using additional control variables: Column (1) adding the fraction of non co-opted independent directors, Column (2) adding the fraction of non-busy independent directors, Column (3) adding TotalAdvising, a measure of board advising (Coles et al., 2012), and Column (4) includes all three additional control variables. Other than the additional control variables, regression specification is identical to that of Table 2.7 Column (3). Except panel D where different competition measure is used, high/low competition is defined by yearly sample median sales HHI of top 4 firms in 3-digit SIC industry. The dependent variable is Tobin's Q. The sample period is 2000-2010 except Column (3) of Panel E, where the sample period is 2000-2006. Variable definitions are provided in Table 2.1. Regressions include firm- and year fixed effects. Standard errors clustered at the firm level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1% level, respectively. Control variables used in Table 2.7 are included in the estimation but not shown in the table for brevity.

| <b>Panel A: Industry and year fixed effect regression</b>                                |   |                                    |            |
|--|---|------------------------------------|------------|
|  | <b>Dependent variable: Tobin's Q</b>    |                                    |            |
|  | <b>(1)</b>                              | <b>(2)</b>                         | <b>(3)</b> |
| BoardIndependence * H_Compensation   | -0.22                                   | -0.015                             |            |
|  | -0.179                                  | -0.195                             |            |
| BoardIndependence * L_Compensation   | 0.124                                   | -0.244*                            |            |
|  | -0.122                                  | -0.131                             |            |
| FracExperience * H_Compensation  |   | -0.250*                            | -0.265     |
|  |   | -0.128                             | -0.186     |
| FracExperience * L_Compensation  |   | 0.480***                           | 0.235*     |
|  |   | -0.096                             | -0.129     |
| FracNoExperience * H_Compensation  |   |                                    | -0.015     |
|  |   |                                    | -0.195     |
| FracNoExperience * L_Compensation  |   |                                    | -0.244*    |
|  |   |                                    | -0.131     |
| 3-digit SIC industry and year fixed effects  | Y                                       | Y                                  | Y          |
| Observations   | 11,726                                  | 11,726                             | 11,726     |
| Adjusted R <sup>2</sup>  | 0.374                                   | 0.376                              | 0.376      |
| <b>Panel B: Controlling for exchange regulation mandating majority independent board</b> |   |                                    |            |
|  | <b>Dependent variable: Tobin's Q</b>    |                                    |            |
|  | <b>Firms not affected by regulation</b> | <b>Firms subject to regulation</b> |            |
|  | <b>(1)</b>                              | <b>(2)</b>                         |            |
| BoardIndependence * H_Compensation   | -0.087                                  | -0.19                              |            |
|  | -0.312                                  | -0.423                             |            |
| BoardIndependence * L_Compensation   | -0.103                                  | -0.111                             |            |
|  | -0.165                                  | -0.298                             |            |
| FracExperience * H_Compensation  | -0.471***                               | -0.036                             |            |
|  | -0.162                                  | -0.322                             |            |
| FracExperience * L_Compensation  | 0.381***                                | 0.515**                            |            |
|  | -0.12                                   | -0.236                             |            |
| Firm and year fixed effects  | Y                                       | Y                                  |            |
| Observations   | 7,828                                   | 1,800                              |            |
| Adjusted R <sup>2</sup>  | 0.619                                   | 0.606                              |            |

**Table 2.12: Robustness Test (continued)**

| <i>Panel C: Alternative sample construction</i>                        |                                       |  |  |
|--|---------------------------------------|--|--|
|  | Dependent variable: Tobin's Q         |  |  |
|  | Including financial and utility firms | Excluding financially distressed firms | Sample period over 2000-2006                   |
|  | (1)                                   | (2)                                    | (3)  |
| BoardIndependence * H_Compensation                                     | -0.196                                | -0.09                                  | -0.073   |
|  | -0.186                                | -0.224                                 | -0.325   |
| BoardIndependence * L_Compensation                                     | -0.119                                | 0.009                                  | -0.119   |
|  | -0.15                                 | -0.158                                 | -0.16  |
| FracExperience * H_Compensation  | -0.245**                              | -0.211                                 | -0.731***                                      |
|  | -0.104                                | -0.149                                 | -0.188   |
| FracExperience * L_Compensation  | 0.243***                              | 0.420***                               | 0.468***                                       |
|  | -0.088                                | -0.124                                 | -0.131   |
| Firm and year fixed effects  | Y                                     | Y                                      | Y  |
| Observations   | 14,564                                | 8,873                                  | 7,577  |
| Adjusted R <sup>2</sup>  | 0.655                                 | 0.721                                  | 0.665  |
| <i>Panel D: Alternative proxies of independent director experience</i> |                                       |  |  |
|  | Dependent variable: Tobin's Q         |  |  |
|  | (1)                                   | (2)                                    |  |
| BoardIndependence * H_Compensation                                     | -0.115                                | -0.237                                 |  |
|  | -0.227                                | -0.223                                 |  |
| BoardIndependence * L_Compensation                                     | -0.045                                | 0.115                                  |  |
|  | -0.139                                | -0.133                                 |  |
| NumExperience * H_Compensation   | -0.032**                              |  |  |
|  | -0.015                                |  |  |
| NumExperience * L_Compensation   | 0.038***                              |  |  |
|  | -0.012                                |  |  |
| ExperiencedBoard * H_Compensation                                      |                                       |  | -0.086*  |
|  |                                       |  | -0.045   |
| ExperiencedBoard * L_Compensation                                      |                                       |  | 0.078**  |
|  |                                       |  | -0.031   |
| Firm and year fixed effects  | Y                                     | Y                                      |  |
| Observations   | 11,726                                | 11,726                                 |  |
| Adjusted R <sup>2</sup>  | 0.645                                 | 0.644                                  |  |
| <i>Panel E: Alternative measures of product market competition</i>     |                                       |  |  |
|  | Dependent variable: Tobin's Q         |  |  |
|  | Competition based on HHI8             | Competition based on ICR4              | Competition based on 2-digit SIC industry HHI4 |
|  | (1)                                   | (2)                                    | (3)  |
| BoardIndependence  | -0.092                                | -0.058                                 | -0.295   |
| * H_Compensation   | -0.238                                | -0.219                                 | -0.205   |
| BoardIndependence  | -0.007                                | -0.06                                  | 0.186  |
| * L_Compensation   | -0.145                                | -0.141                                 | -0.133   |
| FracExperience   | -0.404***                             | -0.373***                              | -0.300**                                       |
| * H_Compensation   | -0.142                                | -0.134                                 | -0.116   |
| FracExperience   | 0.242**                               | 0.293***                               | 0.210**  |
| * L_Compensation   | -0.107                                | -0.102                                 | -0.094   |
| Firm and year fixed effects  | Y                                     | Y                                      | Y  |
| Observations   | 10,572                                | 11,726                                 | 12,178   |
| Adjusted R <sup>2</sup>  | 0.629                                 | 0.645                                  | 0.651  |



**Table 2.12: Robustness Test (continued)***Panel F: Additional control variables*

|                                 | Dependent variable: Tobin's Q |           |           |           |
|---------------------------------|-------------------------------|-----------|-----------|-----------|
|                                 | (1)                           | (2)       | (3)       | (4)       |
| FracExperience * H_Compensation | -0.312***                     | -0.352*** | -0.385*** | -0.381*** |
|                                 | -0.119                        | -0.124    | -0.118    | -0.126    |
| FracExperience * L_Compensation | 0.281***                      | 0.258***  | 0.300***  | 0.348***  |
|                                 | -0.09                         | -0.094    | -0.099    | -0.102    |
| FracNonCoOpted * H_Compensation | -0.155                        |           |           | -0.195    |
|                                 | -0.119                        |           |           | -0.124    |
| FracNonCoOpted * L_Compensation | -0.188***                     |           |           | -0.158**  |
|                                 | -0.061                        |           |           | -0.064    |
| FracNonBusy * H_Compensation    |                               | 0.081     |           | 0.144     |
|                                 |                               | -0.137    |           | -0.136    |
| FracNonBusy * L_Compensation    |                               | 0.021     |           | 0.049     |
|                                 |                               | -0.109    |           | -0.119    |
| TotalQuality * H_Compensation   |                               |           | 0.001     | 0.001     |
|                                 |                               |           | -0.001    | -0.001    |
| TotalQuality * L_Compensation   |                               |           | -0.001*   | -0.001    |
|                                 |                               |           | -0.001    | -0.001    |
| Firm and year fixed effects     | Y                             | Y         | Y         | Y         |
| Observations                    | 11,726                        | 11,726    | 11,726    | 11,726    |
| Adjusted R <sup>2</sup>         | 0.645                         | 0.645     | 0.645     | 0.646     |

## **Chapter 3. Determinants and Consequences of Appointing Affiliated Directors**

### **3.1 Introduction**

The board of directors is at the apex of corporate governance, and directors are considered to have fiduciary duty of representing the shareholders by monitoring and advising management. While the board is composed of inside, affiliated, and independent directors, both practitioners and academics have stressed the importance of independent directors as the key of good corporate governance.<sup>28</sup> For example, the regulatory pressure on the composition of the board after accounting scandals in early 2000s mandates listed firms to have majority of independent directors among the board. If independent directors are so important, then why shouldn't firms construct their boards with entire independent directors? Why do firms maintain inside or affiliated directors at all?

Several studies suggest that inside directors may contribute to better firm performance, because they have better knowledge on firm-specific environments (e.g., Adams and Ferreira, 2007; Raheja, 2005; Harris and Raviv, 2008). However, relatively little attention has paid on the affiliated directors, who are outsiders but not independent due to their affiliated relations with the hiring firms. In this paper, we investigate the characteristics and governance implications of affiliated directors, an important but ignored part of corporate boards.

Similar to the inside directors, affiliated directors also have both benefits and concerns on corporate governance. Affiliated directors have closer material relation to the appointing firm, which may make them less willing to monitor the management because monitoring can make the

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<sup>28</sup> See Adams, Hermalin, and Weisbach (2010) and Bebchuk and Weisbach (2010) for review.

management uncomfortable, which in turn disturb the relation between the affiliated directors and the firm. On the other hand, firm-specific knowledge and strong incentive alignment arising from the close relation may make them do better job monitoring and advising. We start by investigating the determinants of the composition of affiliated directors, followed by their implications on the monitoring and advising functions of the board and firm performance.

Based on the RiskMetrics director dataset during 1996-2008, we find that affiliated directors are more prevalent in firms that are suffering from under-performance, matured, and with larger board. Powerful CEO and regulatory pressure for majority independent directors among the board are associated with lower fraction of affiliated directors among the board. These results may be interpreted as affiliated directors are symptoms of agency problem and associated with low performance. However, a different interpretation is also possible: the close relation may be the source of firm-specific knowledge or expertise, reducing the cost of information about the company and management. And the relation itself may serve as a strong incentive mechanism for the affiliated directors, because the success of the appointing firm can directly influence the success of the affiliated directors.<sup>29</sup> If this is the case, then the above results may be the outcome of the suffering firms' effort to bolster the board by increasing affiliated directors and enhance firm performance.

To tease out these confronting views, we analyze the impact of affiliated directors on firm performance, and find that on average affiliated directors increase CEO pay-for-performance sensitivity, reduce management entrenchment, and enhance M&A performance and firm overall performance. These results suggest that on average affiliated directors can strength monitoring on management and providing advices.

Not all directors are the same. Previous literature show heterogeneity in the independent and inside directors, and some of them may function better than others in facilitating good

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<sup>29</sup> This channel of incentive alignment would be particularly strong if the relation between them are built base on business partnership or equity investment.

governance.<sup>30</sup> Similarly, affiliated directors may also be heterogeneous and have different firm performance implications. For this reason, we classify affiliated directors into several subgroups and investigate them separately. Based on RiskMetrics director classification and hand-collected data about the relation to the appointing firms, we classify affiliated directors into six major subgroups: (1) business partner directors (directors or directors' employers have business transaction with the appointing firm); (2) former executive directors (former employees of the appointing or affiliated firms); (3) relative directors (directors are immediate family members or relatives of the appointing firms' current or former executives); (4) blockholder directors (directors or directors' employers are significant shareholders of the appointing firm); (5) interlock directors (executives of firms that have board interlock with the appointing firm); (6) charity directors (trustee, director, or employee of a charitable organization that receives "material" grants from the appointing firm).<sup>31</sup> For the first three major subgroups, we further separate them into more detailed subgroups: Business partner directors into service provider, supplier, customer, and merged firm directors;<sup>32</sup> Former executive directors into former CEO, CFO, COO, chairman, and founder directors; Relative directors into older generation, younger generation, sibling, and spouse directors.<sup>33</sup>

Among the subgroups of affiliated directors, business partner directors and blockholder directors may be most strongly correlated with firm performance, given that they may have the strongest incentive alignment with the appointing firms. Indeed, we find that underperforming firms are associated with more business partner and blockholder directors, while other types of

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<sup>30</sup> Masulis and Mobbs (2011) show that inside directors with outside directorships may strengthen board monitoring on management.

<sup>31</sup> Detailed description on the definition of each subgroup is in 2013 U.S. Proxy Voting Manual of ISS.

<sup>32</sup> Service providers include the suppliers of professional services such as consulting, HR, and legal counsel; Merged firm directors are the executives or directors of firms that are merged into the appointing firm.

<sup>33</sup> Older (younger) generation relative directors include parents and grandparents (children and grandchildren) of the firm executives.

affiliated directors are not influenced by firm performance.<sup>34</sup> In addition to the firm performance, the power of CEO also seems to reduce the appearance of business partner and blockholder directors, who may increase monitoring intensity on the management. Relation between the business partner and blockholder directors on firm performance support the argument that they enhance both the monitoring and advising function of the board: increase CEO pay-for-performance sensitivity, reduce management entrenchment, and enhance M&A performance and ROA of the firm.

Unlike business partners or blockholder directors, former employee directors are not affected by firm performance but strongly influenced by the CEO characteristics: proxies of CEO power are associated with lower frequency of former employee directors, suggesting that strong CEOs may not need former employees in the boardroom because there are little that former executives can contribute in addition to already successful CEOs, or CEOs may not need support or protection from intense monitoring. This result can also be interpreted as weak CEOs trying to capture the board with more former employee directors, who are more likely to be under his influence. Firm performance implications of the former employee directors suggest that they are detrimental: they are associated with lower CEO pay-for-performance sensitivity, higher management entrenchment, and lower M&A performance. Among the former employee director, however, the founder directors seem to be different from others: founder directors are more likely to be found in firms suffering from financial distress, and they are positively related with higher CEO pay-for-performance sensitivity, lower management entrenchment, and better firm performance. Maybe the status as founder gives them stronger incentive to enhance firm performance and influence over the management to make changes.

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<sup>34</sup> Relative directors as a whole show negative and significant relation with previous year firm performance. However, we do not find such relation at more detailed subgroup analyses on the relative directors, rendering concern on the robustness of the results.

Existence of relative directors in the board is affected by CEO characteristics more than other factors such as firm performance. While relative directors at aggregated level show negative and significant relation with past firm performance, operational complexity, and CEO tenure and age, we don't find strong relation in most of the subcategories of relative directors. Only the fraction of old-generation relative directors shows negative relation with the CEO tenure, which may be explained as family seniors remaining in the board to nurture the younger generation as a competent managers. In line with this reasoning, the CEO age is positively (negatively) related with the fraction of young- (old) generation relative directors, suggesting that aged (young) CEOs training (be trained by) younger-generation (older-generation) relative directors. Contrary to the previous studies on the value of families in firm performance (see Bertrand and Schoar (2006) for a review), we find that existence of older and younger generation relative directors are positively related to firm performance (higher CEO pay-for-performance sensitivity and lower managerial entrenchment).

We also investigate the determinants and performance implications of interlock directors and charity directors, but find little patterns regarding the determinants of them. We find both interlock and charity directors are positively and significantly related to monitoring and advising functions of the board, suggesting they may enhance firm performance. However, considering the small sample size of each type of affiliated directors, we need caution in interpreting the results (less than one percent of directors are classified as interlock or charity directors).

These findings demonstrate corporate governance and performance implications of the affiliated directors. Affiliated directors due to business relations or blockholding tend to be beneficial to the firm. The roles of affiliated directors due to former employment except founder directors are more detrimental than beneficial. Relative directors across different generations may be beneficial, while relative directors in the same generation are harmful for efficiency of their monitoring and advising roles. For our knowledge, this is the first attempt to investigate the role of affiliated directors, important but ignored members on corporate board. Fahlenbrach, Minton, and

Pan (2011) is an exception, demonstrating that hiring former CEOs as directors may enhance firm performance especially when the quality of succeeding CEOs are highly uncertain or unsatisfactory. Unlike Fahlenbrach et al. who focus on former CEO directors only, we examine a wide array of affiliated directors. We identify heterogeneity in the composition of affiliated directors, and show that different types of affiliated directors may have different firm performance implications.

The rest of this paper is organized as follows: Section II describes affiliated director classification and variables. Section III describes the data and sample construction. Section IV discusses the empirical designs. Section V provides empirical results on the determinants and performance implications of the affiliated directors as a whole and by subgroups. Section VI concludes.

### **3.2 Affiliated Director Classification and Variables**

RiskMetrics classifies directors in the following categories: Inside directors, affiliated outside directors, and independent outside directors. Both affiliated directors and independent directors are considered as outside directors. If an outside director is not independent from the appointing firm, then this director is considered as an affiliated director. RiskMetrics determines outside director's independence based on the following criteria: board attestation, past employment history, family relation, business transactions with the appointing firm, charitable donations, board interlock, and other material relationship.

In this study, we denote the percentage of total affiliated directors, as *Pct\_Affiliated*. An outside director becomes not independent when 1) one provides or receives (or is associated with a company that provides or receives) professional services or has material transactional relationship with the appointing company;<sup>35</sup> 2) one is a former executive officer of the appointing company or

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<sup>35</sup> Transaction in excess of \$10,000 per year is considered as material transaction.

a company that was acquired by the appointing company within the past five years;<sup>36</sup> 3) one is an immediate family member of a current or former executive officers; 4) one is associated with an organization which receives material grants or endowments from the appointing company;<sup>37</sup> 5) one is the employee of a firm which has interlocking directorship with the appointing firm;<sup>38</sup> 6) the board attest that one is not independent;<sup>39</sup> 7) one has other material relationship with the appointing firm.<sup>40</sup>

Considering characteristics of different relations between the directors and the appointing firms, we separate affiliated directors into six types. In some types, depending on the availability of more detailed information on the relation between a director and the appointing firm, we separate them into detailed subgroups. The characteristics of the relationship may influence affiliated directors' incentives and abilities to monitor and advise the management. Additionally, the grouping of directors may not be mutually exclusive: A director may fall into multiple types or subgroups (e.g., a director who is former employee (a former CEO) and relative of current officers (father of current CEO)).

The first type is business partner directors, who (or their employer) have business transactions with the appointing firm. Percentage of this type of directors is denoted as *Pct\_Bus*. Business transaction with the appointing firm may be further separated into four subgroups: (1)

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<sup>36</sup> Executive officer positions include (but not limited to) the SEC section 16 officer (e.g., CEO/CFO/COO, president/treasurer/secretaries of the appointing or affiliated companies). For some positions that are less important (e.g., non-CEO positions), only the past five years employment history counts.

<sup>37</sup> Transactions over certain criteria (e.g., \$200,000 or 5% of the recipient's gross revenues for NASDAQ listed companies, and \$1,000,000 or 2% for NYSE/Amex listed companies) are considered as material.

<sup>38</sup> Board interlock forms when executive officers of two companies sit in each others' board (and especially in the compensation or similar committees).

<sup>39</sup> Board may determine its members' independence based on similar criteria that RiskMetrics use.

<sup>40</sup> Material relationship is defined as relationship that a reasonable person might conclude could potentially influence one's objectivity in the boardroom in a manner that would have a meaningful impact on an individual's ability to satisfy requisite fiduciary standards on behalf of shareholders. This may include agreement to vote in line with management.



professional services<sup>41</sup> (e.g., legal, financial, or consulting); (2) suppliers; (3) customers; (4) or acquisition/divestiture by the appointing firm.<sup>42</sup> The percentage of the above four subgroups of directors is denoted as *Pct\_Service*, *Pct\_Supplier*, *Pct\_Customer*, and *Pct\_Merged*, respectively.

The second type is former employee directors, who are former employees of the board or its affiliated firms. Percentage of this type of directors is denoted as, *Pct\_FormEmp*. Based on the positions a director served in the appointing firm (or affiliated firms), we separate former employee directors into five subgroups: (1) former CEO; (2) former CFO; (3) former COO; (4) former chairman of the board; (5) founder of the appointing firm. The percentage of the above five subgroups of directors are denoted as *Pct\_CEO*, *Pct\_CFO*, *Pct\_COO*, *Pct\_Chair*, and *Pct\_Founder*, respectively.

The third type is relative directors who are immediate family members or relatives of the appointing firm's current or former executives. Percentage of the relative directors is denoted as *Pct\_Relative*. Based on the relations with the appointing firm's executives, we separate relative directors into three subgroups: (1) parents or grandparents (older generation); (2) children or grandchildren (younger generation); (3) siblings; (4) spouses. The percentage of the above four subgroups of directors are denoted as *Pct\_OldGen*, *Pct\_YoungGen*, *Pct\_Sibling*, and *Pct\_Spouse*, respectively.

The fourth type is blockholder directors who are significant shareholders or whose employer has equity investment in the appointing firm (i.e., more than 5%). The percentage of blockholder directors is denoted as *Pct\_Blockholder*.

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<sup>41</sup> RiskMetrics characterizes professional services as advisory in nature, generally involving access to sensitive company information or to strategic decision-making.

<sup>42</sup> Executive officers of companies that are acquired or spun-off by the appointing firm may also be categorized as former employee directors. However, the relation between the directors and management of appointing firms are built mainly through the business transactions rather than personal/hierarchical relation. For this reason, we classify such relation into business transaction.

The fifth and sixth types are interlock directors and charity directors. Interlock directors are the executives of firms that have board interlock with the appointing firm, and the charity directors are trustees, directors, or employees of a charitable organization that receives material grants from the appointing firm. The percentage of this type of directors is denoted as *Pct\_Interlock* and *Pct\_Charity*, respectively.

We classify affiliated directors based on both RiskMetrics and hand collected information from regulatory filings, company IR reports, and news search. First we consider directors as affiliated directors when we find RiskMetrics data item “*CLASSIFICATION*” equals “L”. Among the identified affiliated directors, we classify directors as business partner directors when “*BUSINESS\_TRANSCATION*” or “*PROF\_SERVICES\_YN*” in the RiskMetrics data items equal one; former employee directors when “*FORMER\_EMPLOYEE\_YN*” equals one; relative directors when “*RELATIVE\_YN*” equals one; interlock directors when “*INTERLOCKING*” equals one; charity directors when “*CHARITY*” equals one. RiskMetrics does not identify blockholder directors separately, but it provides director shareholdings. We classify blockholder director when the director’s (or the employer of director) shareholding is larger than 5%. Some affiliated directors are associated with none of above identifiers (missing values or zeros). To supplement RiskMetrics dataset, we collect additional information about the relation between affiliated directors and appointing firms from other data sources in the order of 10-K filings to SEC, investor relation section of company websites, and news article searches based on the company and director names.<sup>43</sup> Business transaction or interlocking relations are often formed between the appointing firm and primary employers of directors. We include the name of primary employers in the news

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<sup>43</sup> We look for the past employment history, family relationship with executive officers, business transaction between appointing firm and employers of the directors, and other miscellaneous details.

search whenever it is provided by RiskMetrics. Information search stops when we find relevant information, or we reach 100th news article.<sup>44</sup>

RiskMetrics also provides “*TYPE\_OF\_SERVICES*” and “*RELATION*”, which describe scope of professional services business partner directors are involved, and the family relationship of relative directors respectively. We utilize above information together with hand-collected data to classify business transaction, relative, and former employee directors into detailed subgroups.

Table 3.1 provides definitions of affiliated director classifications.

### **3.3 Data**

In this section, we describe the sample construction, followed by the summary statistics of affiliated director variables.

#### **3.3.1 Sample Construction**

The sample is constructed by merging director data from RiskMetrics, financial and accounting data from Compustat, stock return data from CRSP, M&A data from SDC Platinum, CEO related data from ExecuComp, institutional investor ownership data from Thomson Reuters, and the anti-takeover index from Lucian Bebchuk’s website.<sup>45</sup> The merged data allow us to track the time-series variation in the composition of affiliated directors and their influences on corporate governance and firm performance while controlling for other relevant information.

The sample is based on S&P 1500 firms, which are covered by both RiskMetrics and ExecuComp during 1996-2010. We use unbalanced panel data allowing firms to enter and exit from the sample during the sample period, which may reduce potential survivorship bias. Using balanced panel that includes firms that survive throughout entire sample period only does not change our results.<sup>46</sup>

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<sup>44</sup> We search for about 10,000 director-firm pairs, and the large volume of search makes us stop searching at this point. Usually relevant information about the relation between directors and appointing firms are found within first 20 news search results.

<sup>45</sup> Bebchuk’s website: <http://www.law.harvard.edu/faculty/bebchuk/data.shtml>

<sup>46</sup> Using balanced panel may reduce potential noise caused by bankruptcy, delisting, or IPOs.

Table 3.2 reports the sample distribution by year. The total number of firm-year observations with the affiliated director information available over the fifteen year period covers 18,766 observations. Due to availabilities of certain variables, the number of observations may change over regressions. Column (2) reports the number of observations in each year, suggesting that the number of observations is more or less balanced across sample years. Column (3) reports the percentage of firms with at least one affiliated directors in the board. Unlike inside or independent directors, not all firms appoint affiliated directors. In our sample, 63.8% of firm-year observations have affiliated directors in the boards. The percentage of firms with affiliated directors decreases over years, reflecting the impacts of 2002 stock exchange regulation requiring majority independent directors.<sup>47</sup>

Columns (4)-(9) report the percentage of firms with each of the six major groups of affiliated directors respectively. The most popular group of affiliated directors is business partner directors, followed by former employee, relative, blockholder, interlock, and charity directors. About half of the sample firms have business partner directors, but less than 1% of firms have charity directors in their boards. After the majority independent directors requirement in 2002, all major groups of affiliated directors tend to shrink except charity directors.<sup>48</sup>

### 3.3.2 Summary Statistics

Table 3.3 contains the summary statistics of the variables used in this study. The mean and median values of *Pct\_Affiliated* are 13.1% and 11.1%. Given that the median board size is 10, these numbers suggest that on average each board includes about one affiliated director. The

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<sup>47</sup> By construction, increasing any one of the percentages of independent, inside, or affiliated directors will lead to decrease in the others. Table 3.A2 shows piece-wise correlation coefficients across the percentage of different types of directors. As expected, the correlation among independent, inside, and various types of affiliated directors are all negative and statistically significant. The correlation coefficients among the affiliated directors are positive and significant in general, suggesting firms that have one type of affiliated directors are likely to have other types, too.

<sup>48</sup> The peculiar movement in the number of charity directors may stem from its rarity: appointment of a few more charity directors may be seen as doubled up.

minimum and maximum values of *Pct\_Affiliated* is 0 and 0.9, suggesting that some firms don't have any affiliated directors, while others choose to have almost all of directors as affiliated ones.

Mean values of the fraction of each group of affiliated directors in the board, *Pct\_Bus*, *Pct\_FormEmp*, *Pct\_Relative*, *Pct\_Blockholder*, *Pct\_Interlock*, and *Pct\_Charity* are 8.5%, 5.4%, 1.5%, 1.2%, 0.8% and 0.1%, respectively.<sup>49</sup> This result confirms that among the different types of affiliated directors, business partner, former employee, and relative directors are the most popular ones. Business partner directors account for more than half of the total affiliated directors, and former employee directors representing about a third. Interlock directors and charity directors are the two smallest types of affiliated directors.

At the subgroup level, the mean values of *Pct\_Service*, *Pct\_Supplier*, *Pct\_Customer*, and *Pct\_Merged* are 6%, 0.2%, 0.2%, and 0.7% for business partner directors, which suggests that about 70% of business partner affiliated directors are service provider directors.<sup>50</sup> For former employee directors, the mean values of *Pct\_CEO*, *Pct\_CFO*, *Pct\_COO*, *Pct\_Chair* and *Pct\_Founder* are 1.7%, 0.2%, 0.3%, 1.6%, and 0.5%. Among the former employee directors, former CEO and former chairman directors account for the largest two portions. For relative directors, the mean values of *Pct\_OldGen*, *Pct\_YoungGen*, *Pct\_Sibling* and *Pct\_Spouse* are 0.3%, 0.2%, 0.3% and 0.1%. This implies that the four subgroups of relative directors are more or less evenly distributed.

### **3.4 Empirical Designs**

It is important to understand the factors affecting the composition of affiliated directors before investigating their influence on firm performance. We start empirical investigation on the determinants of the affiliated directors, and then proceed to the test of affiliated directors' impact on monitoring and advising management.

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<sup>49</sup> Sum of the fraction of each type of affiliated directors are greater than the fraction of affiliated directors in the board, because director types are not mutually exclusive.

<sup>50</sup> Sum of the subgroup affiliated directors may be smaller than the major group, because no detailed information on the detailed relation is found, and hence not included in the subgroup construction for some observations.

### 3.4.1 Determinant of Affiliated Directors

Following prior literature of board composition (e.g., Boone et al., 2007a; Linck, Netter, and Yang, 2008; Coles, Daniel, and Naveen, 2008, Masulis and Mobbs, 2011), we estimate the following specification

$$Pct\_(\text{Type})_{it} = \alpha_i + \alpha_t + \beta_1 \cdot X_{it} + \mu_{it} \quad (1)$$

where  $Pct\_(\text{Type})_{it}$  is the variable measuring the percentage of the affiliated directors as a whole or at the major type/subgroup level.  $X_{it}$  represents a vector of variables which may influence the occurrence of affiliated directors. We use past performance, financial conditions, organizational and operational complexity, strength of CEO influence, and board-related factors as the explanatory variables. To control for unobservable characteristics that may influence the composition of affiliated directors, we include firm- and year fixed effects,  $\alpha_i$  and  $\alpha_t$  in the regression. Since CEOs have important influence on corporate decisions, auto-correlation among observations with the same CEO-firm pairs is of a concern. For this reason, we cluster standard errors at the CEO-firm pair level.

### 3.4.2 Factors Affecting the Composition of Affiliated Directors

The structure of the board is determined based on the costs and benefits of monitoring and advising by the board. Following prior literature, we examine the influence of the following four sets of firm characteristics on the composition of affiliated directors:

#### 3.4.2.1 Firm Performance and Financial Conditions

Firm performance and financial conditions are important indicators for needs for better monitoring, advising and even help from outside the firm (Linck, Netter, and Yang, 2008). We use return to assets,  $ROA$ , to proxy for past firm performance; and Altman's Z-score,  $Zscore$ , to proxy for financial conditions. Low value of  $Zscore$  suggests that the firm is financial constrained. To avoid potential reverse-causality problem, lagged values of  $ROA$  and  $Zscore$  are used.

### 3.4.2.2 *Organizational and Operational Complexity*

Coles, Daniel, and Naveen (2008) suggest that firm's organizational and operational complexity may affect the costs and needs for monitoring, and the needs for advising to the management. To proxy for firm organizational complexity, we use the number of business segments,  $Ln(Segments)$ , total asset as firm size,  $Ln(TA)$ , and firm age,  $Ln(FirmAge)$  from CRSP/Compustat. We take natural logs of the variables to account for skewness. For the firms that do not report segment information, we consider it as a single-segment firm ( $Segments$  equals one). Value of total assets is adjusted to the 2000 U.S. dollars in millions. Firm age is counted from the IPO date or the year when a firm first appears in CRSP database. To proxy for operational environment of a firm, we use product market competition,  $ICR$ , measured as the industry concentration ratio: the sum of the percentage market share (in sales) of the four biggest firms among all firms in Compustat in each three-digit SIC industry.

### 3.4.2.3 *CEO Characteristics*

As a central player of a firm, CEO may influence the composition of the board (Hermalin and Weisbach, 1998). We include four CEO characteristics that proxy for the strength of CEO influence. The first proxy is the share ownership of CEO,  $CEO\_OWN$ , measured as the number of shares held by CEO divided by the number of total common shares outstanding. High CEO ownership may serve as either CEO entrenchment or better incentive alignment. The second and third CEO variables about the ability of the CEO: an indicator for a CEO also chairing the board,  $CEO\_Chair$ , and CEO tenure,  $CEO\_Tenure$ , measured as the number of years a CEO has been in office. Successful CEOs may stay in position for longer period, and also assume the chairmanship at the same time. The last CEO variable is CEO age,  $Ln(CEO\_Age)$ , measured as the logged value of CEO age. Age may be related to retirement or succession plan of the CEO, which may have bearings on the structure of the board.

#### 3.4.2.4 Board Characteristics

Affiliated directors need to split board seats with inside and independent directors. The competition for board seats among inside, affiliated, and independent directors will be less severe when the number of board seats are plenty. Board size,  $Ln(BoardSize)$ , measured by the natural log of one plus the total number of directors in the board is included in the regression.

Given the board size is fixed, when firms need to increase the fraction of independent directors, it is likely that the number of affiliated directors goes down. The board independence regulation requires firms listed in NYSE and NASDAQ to have a majority of independent directors. The proposal for the regulation was submitted to the SEC in 2002 and approved in 2003, setting the deadline for compliance as October 31, 2004. This regulation directly affects the percentage of independent directors and hence may affect the percentage of affiliated directors.<sup>51</sup>

Firms with high board dependence (low board independence) before the regulation are under stronger pressure to increase board independence. Hence, we construct a variable which is the product of *Affect*, the fraction of non-independent directors in year 2001, and *Post*, an indicator variable for post-regulation period (year 2003 and after). We use 2001 as the reference year because many firms began changing their board structure once the recommendations were promulgated by the exchanges in 2002. *Affect\_Post*, the product of *Affect* and *Post*, proxies the regulatory pressure to increase the fraction of independent directors (and possibly decrease the fraction of affiliated directors) in the board, and is included in Regression (1).

Table 3.A1 describes definitions of these variables and Table 3.3 provides the summary statistics.

#### 3.4.3 Effectiveness of Affiliated Directors in Enhancing Firm Performance

There are two primary roles of board of directors through which they influence firm performance: monitoring and advising management. Compared with independent directors,

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<sup>51</sup> Kim and Lu (2012) find that on average firms replaced existing non-independent directors by independent directors, rather than just simply added more independent directors when they are affected by the regulation.



affiliated directors have closer relation to the appointing firm. On one hand, the close relation may help reduce information asymmetry between firm insiders and affiliated directors. Information asymmetry has been considered as an important barrier for outside directors to become effective (Adams and Ferreira, 2007; Duchin, Matsusaka, and Ozbas, 2010). Thus, such relation may enhance the efficiency of the monitoring and advising functions of affiliated directors. Additionally, if the close relation strengthens interdependence of affiliated directors' interest with success of appointing firm, such relation may enhance the incentive of affiliated directors to perform better monitoring. On the other hand, if appointing certain affiliated directors reflects CEO's or management's private interest and entrenchment, such relation may reduce affiliated directors' incentive for monitoring. How do affiliated directors affect firm performance through their monitoring and advising roles? To answer this question, we investigate the impacts of the fraction of affiliated directors as a whole and by subgroups on CEO wealth-performance sensitivity, managerial entrenchment, M&A announcement returns, and operational performance.

#### **3.4.3.1 CEO Wealth-Performance Sensitivity**

Broadly speaking, monitoring role of the board requires scrutinizing management to guard against harmful behaviors such as shirking or stealing. A number of studies show that in the absence of adequate monitoring, CEOs manipulate the compensation process to pay themselves what they can (e.g., Bertrand and Mullainathan, 2000, 2001; Bebchuk and Fried, 2004; and Morse, Nanda, and Seru, 2011). The evidence also suggests that more effective monitoring makes CEO pay more sensitive to performance. In this regard, wealth-performance sensitivity has been widely used to test the efficiency of monitoring management. We estimate the impact of affiliated directors on monitoring effectiveness by estimating the following specification:

$$CEO\_Delta_{it} = \alpha_i + \alpha_t + \beta_1 Pct\_ (Type)_{it} + \beta_2 Control_{it} + \mu_{it} \quad (2)$$

$CEO\_Delta_{it}$  is measures as the dolloar change in CEO wealth for a percentage change in firm value scaled by total compensation, which is downloaded from Alex Admans' website (Edmans,

Gabaix, and Landier, 2009).<sup>52</sup>  $Pct\_(\text{Type})_{it}$  is the variable measuring the percentage of the affiliated directors as a whole and by subgroups.  $Control_{it}$  includes a vector of control variables which may affect CEO pay for performance sensitivity: accounting performance,  $ROA_{t-1}$ ; firm value, *Tobin's*  $Q_{t-1}$ ; financial conditions,  $Zscore_{t-1}$  and  $Leverage_{t-1}$ ; organizational complexity variables,  $Ln(\text{Segment})$ ,  $Ln(TA)$  and  $Ln(\text{FirmAge})$ ; assets tangibility,  $PPE/TA$ ; and product market competition,  $ICR$ . Board size,  $Ln(\text{BoardSize})$ , and institutional investor concentration,  $IOC$ , are also included in the control variables because they are widely documented to have influence on firm monitoring. We also control for proxies of CEO power,  $CEO\text{-}Chair$  and  $CEO\_Tenure$ , because they may influence the monitoring intensity on management.<sup>53</sup> Firm- and year fixed effects  $\alpha_i$  and  $\alpha_t$  are also included to account for unobservable factors, and standard errors are clustered at the CEO-firm pair level.

### 3.4.3.2 Managerial Entrenchment

Another important indicator of the effectiveness in monitoring management is the level of managerial entrenchment. We measure the managerial entrenchment by  $Eindex$ , which consists of six provisions that are negatively related to the shareholder rights regarding the market for corporate control, one of the external governance mechanisms that alleviate managerial entrenchment (Bebchuk, Cohen, and Ferrell, 2009). We investigate how affiliated directors affect managerial entrenchment by estimating the following specification:

$$Ln(Eindex+1)_{it} = \alpha_i + \alpha_t + \beta_1 Pct\_(\text{Type})_{it} + \beta_2 Control_{it} + \mu_{it} \quad (3)$$

$Eindex$  is a count data variable ranging from 0 to 6, and histograms indicate a bell shaped distribution with no obvious truncations at either zero or six. Thus, we use OLS to estimate the

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<sup>52</sup><http://finance.wharton.upenn.edu/~aedmans/data.html>; Previous studies suggest two other ways to measure pay-performance sensitivity: dollar change in wealth for a dollar change in firm value (Jensen and Murphy, 1990) and dollar change in wealth for a percentage change in firm value (Hall and Liebman, 1998). We use Edmans et al.'s compensation-scaled wealth-sensitivity measure because, as they point out, it is independent of firm size and accounts for multiplicative effects of CEO actions on firm value and CEO utility.

<sup>53</sup> We do not control for CEO ownership, another important proxy of CEO power, because it is included in the construction of the dependent variable.

model and use the logged value of one plus the *Eindex* as the dependent variable. *Eindex* is available only for 1995, 1998, 2000, 2002, 2004, and 2006. For missing years, we use the closest previous year's value.<sup>54</sup> As a robustness check, we re-estimate the model using ordered logistic regressions.  $Pct\_(\textit{Type})_{it}$  is as defined earlier, and  $\textit{Control}_{it}$  includes all control variables in Regression (2) together with CEO ownership, *CEO\_OWN*, another factor that may influence managerial entrenchment (Shleifer and Vishny, 1986). We control for firm- and year fixed effects  $\alpha_i$  and  $\alpha_t$ , and standard errors are clustered at the CEO-firm pair level

### 3.4.3.3 M&A Announcement Returns

The board's advising function is to help management make good decisions on firm strategies and actions. Advising will be more important when firms conduct important corporate activities such as M&A (Kang, Kim, and Lu, 2013). Following previous studies (e.g., Kroll, Walters, and Wright, 2008; Faleye, Hoitash, and Hoitash, 2012), we estimate how affiliated directors affect M&A performance to examine their advising function.

Acquisition bid data are obtained from Thompson Reuters' SDC M&A database. We include all acquisition bids made by our sample firms over 1996-2008 for domestic and foreign targets. When a firm makes multiple acquisition bids within a year, we only include the acquisition bid with the largest transaction value for that year. The specification is as follows:

$$CAR(-3,+5)_{it} = \alpha_i + \alpha_t + \beta_1 Pct\_(\textit{Type})_{it} + \beta_2 \textit{Control}_{it} + \mu_{it} \quad (5)$$

where  $CAR(-3,+5)$  stands for cumulative abnormal returns over (-3,+5) event days surrounding the announcement day. Cumulative abnormal returns are estimated using the market model over (-255,-6) event day window using the value weighted market return provided by CRSP. The mean and median  $CAR(-3,+5)$  is 0.8% and 0.5%, respectively.<sup>55</sup> Explanatory variables are the same to

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<sup>54</sup> For example, we use the index in 2002 for 2003.

<sup>55</sup> The mean is comparable to Moeller, Schlingemann, and Stulz (2004), who report a mean abnormal return of 1.1% over (-1,+1) event day window surrounding the acquisition announcement for over 12,000 acquisitions during 1980-2001.

the ones used in Regression (3) including firm- and year fixed effects, and standard errors are clustered at the CEO-firm pair level.

#### **3.4.3.4 Overall Firm Performance**

Finally, we examine the relation between affiliated directors and overall firm performance by estimating the following specification:

$$ROA_{it} = \alpha_i + \alpha_t + \beta_1 Pct\_ (Type)_{it} + \beta_2 Control_{it} + \mu_{it} \quad (6)$$

We use returns to assets,  $ROA_{it}$ , as the measure of firm performance. Explanatory variables are the same to the ones used in Regression (3) including firm- and year fixed effects, and standard errors are clustered at the CEO-firm pair level.

#### **3.4.3.5 IV Regression**

Board composition variables are well known for their endogenous relation with other firm characteristics. Given the concern on endogeneity problem, the results of OLS regressions may be biased. For example, affiliated directors may be related to strong monitoring, not because they serve as good monitors, but because CEOs require friendly board to offset tight monitoring from high wealth-performance sensitivity or threat from the market for corporate control. Or, CEOs who achieved good performance may retain stronger bargaining power over the board, and exert influence to construct more friendly board by appointing affiliated directors. If this is the case, we may find positive relation between the affiliated directors and firm performance, even though affiliated directors may not lead to increased firm performance or monitoring. To alleviate this problem, we incorporate instrumental variables (IV) regression. We employ two IVs. The first is *Affect\_Post*, the indicator of 2002 majority independent board regulation. The regulatory change is exogenous to firm decision (satisfying exclusion restriction), and directly affects the fraction of affiliated directors (satisfying relevance condition).<sup>56</sup> The second IV we use is the fraction of affiliated directors among industry peer,  $Pct\_ (Type)_{iy(-i)}$ . It is constructed by taking the average of the fraction of affiliated directors (as a whole and by subgroups) for firms in the same three-digit

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<sup>56</sup> See Chhaochharia and Grinstein (2007) for a discussion on the 2002 majority independent board regulation.

SIC industry in the same year except the firm itself. The rationale of this instrumental variable is that board composition may be similar to firms in its peer group, but it is less likely to directly affect the monitoring and advising functions of the affiliated directors and other firm characteristics. In the first stage, we regress each affiliated director variable on all control variables and the two IVs. In the second stage, we regress each outcome variable on the predicted value from the first stage regression and other control variables.

### **3.5 Estimation Results**

We investigate the determinants of the composition of affiliated directors, and the monitoring and advising roles of affiliated directors as a whole and by types/subgroups based on the specifications outlined in Section V.

#### **3.5.1 Total Affiliated Directors**

##### ***3.5.1.1 Determinants of the Total Affiliated Directors***

We begin by analyzing the fraction of total affiliated directors. The results of estimating what determines the fraction of total affiliated directors are reported in Table 3.4a. Among firm performance and financial condition variables, *Pct\_Affiliated* is negatively related to  $ROA_{t-1}$  and  $Zscore_{t-1}$ , suggesting that underperforming or financially distressed firms tend to have more affiliated directors. Among the complexity factors,  $Ln(Segments)$  and  $Ln(FirmAge)$  are negatively related to *Pct\_Affiliated*, but the relation of  $Ln(TA)$  is positive. This mixed result suggests firm complexity may not be important in determining the composition of affiliated directors. Among all CEO characteristics variables, only *CEO\_Tenure* shows significantly negative impacts on *Pct\_Affiliated*. Negative impact of *CEO\_Tenure* may be explained as powerful CEO, who maintains the CEO position for a long time, may be less likely to appoint affiliated directors. Not surprisingly,  $Ln(BoardSize)$  is positively and significantly related to *Pct\_Affiliated*, suggesting larger board tend to include more affiliated directors. *Affect\_Post* is negatively and significantly related to *Pct\_Affiliated*, suggesting that firms increase board independence at the cost of reducing the fraction of affiliated directors.

### **3.5.1.2 Monitoring and Advising Roles of the Total Affiliated Directors**

The second-stage IV regression results of the monitoring and advising roles for the fraction of total affiliated directors are reported in Table 3.4b. The results show that *Pct\_Affiliated* is positively and significantly related to *CEO\_Delta*, negatively related to *Ln(Eindex+1)*, and positively related to *CAR(-3,+5)* and *ROA*. These results suggest that on average affiliated directors may increase CEO wealth-performance sensitivity, reduce managerial entrenchment, and enhance M&A performance and firm overall performance. Overall, these imply that on average appointing affiliated directors may be beneficial to firm performance. The first stage regression results for the fraction of total affiliated directors are reported in Appendix 3.A2. The coefficients of control variables other than IVs are not shown for brevity. F-statistics for the joint tests of IVs are all above 10, indicating that our IVs are valid.

## **3.5.2 Business Partner Directors**

Determinants and firm value implications of affiliated directors may differ along the type of relation affiliated directors have. To investigate this possibility, we run the same set of analyses we perform with the fraction of total affiliated directors using each type and subgroup of affiliated directors. We start the type/subgroup analyses with business partner directors, which consists the largest portion among the affiliated directors.

### **3.5.2.1 Determinants of the Business Partner Directors**

The results of estimating what determines the fraction of total and each subgroup of business partner directors are reported in Table 3.5a. Column (1) reports the results on the fraction of total business partner directors. The negative and significant coefficient of *ROA<sub>t-1</sub>* suggests that underperforming firms tend to appoint directors whose employer are their business partners, who may provide valuable advice. The negative and significant coefficient of *Ln(FirmAge)* suggests that younger firms are more likely to appoint their business partners on their board, maybe because they need more support from business partners than their matured peers. The coefficient of *Affect\_Post* is significantly negative, implying that firms may replace

business partner directors with independent directors when they are required to increase independent directors.

Columns (2)-(5) report what determines the fraction of each subgroup of business partner directors. *Pct\_Service* shows similar results compared to the total business partner directors, and negatively affected by *Ln(FmriAge)* and *CEO\_Chair*. There is no factor showing significant impact on *Pct\_Supplier*. *Pct\_Customer* is affected by *Ln(Segments)*, *CEO\_Chair*, and *Affect\_Post*. *Pct\_Merged* is affected by *LN(TA)* only.

### **3.5.2.2 Monitoring and Advising Roles of the Business Partner Directors**

The second-stage regression results of the monitoring and advising role of the business partner directors and its subgroups are reported in Table 3.5b. Column (6) results show that *Pct\_Bus* is related positively and significantly to *CEO\_Delta*, negatively to *Ln(Eindex+1)*, and positively to both *CAR(-3,+5)* and *ROA*. These results suggest that on average business partner directors can increase CEO wealth-performance sensitivity, reduce managerial entrenchment, and enhance M&A performance and firm overall performance. Overall, these results imply that on average business partner directors can strength monitoring on management and provide advices. The first stage regression results are reported in Appendix 1.

Columns (7)-(10) report the second-stage regression results of the subgroups of business partner directors. In general, service provider, supplier, and customer directors show similar results to that of total business partner directors, suggesting that they may enhance both monitoring and advising roles.

The fraction of merged firm directors shows significant positive relation to managerial entrenchment and M&A performance. Considering that merged firm directors are directly related to M&A activities, it seems reasonable that they increase M&A performance. It is likely that management of the firm directly involves in the decision to have directors from M&A partners in their board or not, which may make merged firm directors not strong monitors.

In sum, the directors who have business transaction with the board firm generally play positive monitoring and advising roles to enhance firm performance. Among all types of business partner directors, directors from service providers seem to be most beneficial to firm performance, while directors from merged firms are least beneficial.

### **3.5.3 Former Employee Directors**

Fahlenbrach, Minton, and Pan (2011) show that unlike the general perception that having former CEO, who may be entrenched with current management, as outside directors may harm corporate governance, former CEO directors may be beneficial because they have firm specific knowledge and serve as interim- or replacement CEO when needed. Generalizing to a variety of former executive directors, we investigate determinants and performance implications of former employee directors.

#### ***3.5.3.1 Determinants of the Former Employee Directors***

Table 3.6a reports the estimation results on the determinants of former employee directors as a whole and by subgroups. Column (1) shows that former employee directors as a whole are mostly affected by CEO characteristics, but not by firm performance or complexity variables. Proxies of CEO power (*CEO\_OWN*, *CEO\_Chair*, *CEO\_Tenure*, and *Ln(CEO\_Age)*) are all negatively and significantly related to *Pct\_FormEmp*. They are all consistent with the notion that powerful CEOs may not need former executives in the board. Board size is positively and significantly related to *Pct\_FormEmp*, which is expected.

Columns (2)-(6) report estimation results on the subgroups of former employee directors. Similar to the total former employee directors, CEO power variables are in general negatively and significantly related to the subgroups of former employee directors. Interestingly, former COO directors are positively related to CEO share ownership, and founder directors are positively related to firm size and financial strength (*Ln(TA)* and *Zscore*).



### **3.5.3.2 Monitoring and Advising Roles of the Former Employee Directors**

The second-stage regression results on the monitoring and advising roles of former employee directors as a whole and by subgroups are reported in Table 3.6b. Column (7) reports the second-stage regression results on the fraction of total former employee directors. Unlike business partner directors, the relations between former employee directors and monitoring and advising functions are all insignificant.

Columns (8)-(12) report the second-stage regression results based on the subgroups of former employee directors. Interestingly, we find that former CEO and chairman directors are related negatively to CEO wealth-performance sensitivity, positively to managerial entrenchment, and negatively to firm performance (chairman directors are negatively related to M&A returns, too). This suggests that appointing former CEO or chairman directors may weaken both monitoring and advising function of the board.

The results of CFO and COO directors are somewhat mixed: CFO directors are positively related to monitoring functions (increase wealth-performance sensitivity and decrease entrenchment), but no significant relation is found to advising role. COO directors are positively related to CEO wealth-performance sensitivity and overall firm performance (*ROA*), suggesting they may increase both monitoring and advising. However, COO directors are positively related to managerial entrenchment, suggesting detrimental effect on monitoring management.

Finally, founder directors are related positively to CEO wealth-performance sensitivity and overall performance, and negatively to managerial entrenchment, suggesting they are the most beneficial subgroup affiliated directors among former employee directors.

### **3.5.4 Relative Directors**

Hermalin and Weisbach (1998) propose that board structure depends on CEO's bargaining power and that the CEO's bargaining power efficiently derives from his/her perceived ability. CEO ownership may affect his/her bargaining power relative to the board, and hence affect his/her ability to appoint inside directors or his/her family members on the board.

#### **3.5.4.1 Determinants of the Relative Directors**

Table 3.7a provides estimation results on the determinants of relative directors. Column (1) shows that relative directors as a whole is related negatively to firm performance and complexity. They are also negatively related to *CEO\_Tenure* and  $\ln(\text{CEO\_Age})$ , but positively to *CEO\_Tenure*. The majority independent board requirement, *Affect\_Post*, is negatively related to relative directors.

Columns (2)-(5) report estimation results on the subgroups of relative directors. Sibling and spouse directors are not influenced by any of the factors considered. Old and young generation directors are both influenced by the age of CEO, but with opposite signs: old (young) generation directors are negatively (positively) related to  $\ln(\text{CEO\_Age})$ , suggesting that CEOs tend to appoint relative directors that are in complementary generation (old CEOs prefer young relatives, and young CEOs prefer old relatives).

#### **3.5.4.2 Monitoring and Advising Roles of the Relative Directors**

The second-stage regression results on the monitoring and advising roles of the relative directors as a whole and by subgroups are reported in Table 3.7b. Column (6) shows that *Pct\_Relative* is significantly positively related to *CEO\_Delta*, negatively related to  $\ln(\text{Eindex}+1)$ , and positively related to both *CAR(-3,+5)* and *ROA*, suggesting relative directors may enhance both monitoring and advising functions of the board and beneficial to firm performance.

Columns (7)-(10) report the second-stage regression results on the subgroups of relative directors. Old generation directors are negatively related to managerial entrenchment, and positively to both M&A returns and firm performance. Young generation directors are positively related to CEO wealth-performance sensitivity and overall performance, and negatively to managerial entrenchment. Sibling directors are positively related to wealth-performance sensitivity, M&A returns, and overall firm performance, and negatively to managerial entrenchment. These results suggest that in general, relative directors enforce monitoring and advising functions of the board, and beneficial to firm performance. However, spouse directors do not seem to have such

beneficial influence: they are negatively related to M&A returns and firm performance, and positively related to managerial entrenchment.

### **3.5.5 Blockholder Directors**

#### ***3.5.5.1 Determinants of the Blockholder Directors***

Estimation result on the determinants of blockholder directors is reported in Table 3.8a. *Pct\_Blockholder* is negatively related to  $ROA_{t-1}$ , suggesting that there are more blockholder directors on the board of underperforming firms. This is consistent with the notion that blockholder investors tend to intervene and play important role when firms are in trouble. Among the CEO characteristics variables, blockholder directors are negatively and significantly related to three of the CEO power variables, *CEO\_OWN*, *CEO\_Chair*, and *CEO\_Tenure*. This result may arise if powerful CEOs resist appointing blockholder directors due to their strong monitoring role. Board size is positively related to blockholder directors, which is expected.

#### ***3.5.5.2 Monitoring and Advising Roles of the Blockholder Directors***

Table 3.8b provides estimation results on the influence of blockholder directors on monitoring and advising roles of the board. Consistent with the literature that blockholders strengthen corporate governance, we find that the fraction of blockholder directors is positively and significantly related to CEO wealth-performance sensitivity and overall firm performance, and negatively related to managerial entrenchment. We do not find significant relation between blockholder directors and M&A performances. Maybe blockholders enhance monitoring role of the board, which may result in better overall firm performance, but may not influence M&A returns because specific knowledge and expertise are required to contribute in M&A deal process.

### **3.5.6 Interlock Directors**

#### ***3.5.6.1 Determinants of the Interlock Directors***

Estimation result on the determinants of interlock directors is reported in Table 3.9a. Among all factors, *Pct\_Interlock* is negatively related to  $\ln(\text{Segments})$ , *Founder*, and *Affect\_Post*, but insignificantly related to the other factors.

### **3.5.6.2 Monitoring and Advising Roles of the Interlock Directors**

Table 3.9b provides estimation results on the influence of interlock directors on monitoring and advising roles of the board. We find that interlock directors are positively and significantly related to *CEO\_Delta*, *CAR(-3,+5)* and *ROA*, and negatively related to *Ln(Eindex+1)*, suggesting interlock directors may strengthen monitoring and advising functions of the board.

### **3.5.7 Charity Directors**

#### **3.5.7.1 Determinants of the Charity Directors**

Table 3.10a provides the estimation result of the determinants of charity directors, where we don't find any significant relation. This may be due to the small sample size of charity directors (less than 1% of the total firm-year observations).

#### **3.5.7.2 Monitoring and Advising Roles of the Charity Directors**

Estimation result of the influence of charity director on monitoring and advising roles, shown in Table 3.10b, suggests that charity directors are positively and significantly related to *CEO\_Delta*, *CAR(-3,+5)* and *ROA*, and negatively related to *Ln(Eindex+1)*. However, considering the small sample size of the firms with charity directors, interpreting these results as charity directors beneficial for governance and firm performance may need caution.

## **3.6 Conclusion**

In this paper, we study affiliated directors, a group of important but ignored members in corporate boards. We empirically investigate what determines the composition of affiliated directors and their influences on monitoring and advising roles on the management, at both aggregated affiliated directors as a whole and separated by the types of relation they have with the appointing firm.

Supplemented with the hand-collected data on the relation between affiliated directors and appointing firms, we find: affiliated directors as a whole, business partner directors, and blockholder directors are negatively related to firm performance and CEO power; former employee directors are negatively related to CEO power; relative directors are negatively related to

firm performance; interlock directors are negatively related to complexity of the firm and CEO power.

We also find: all types of affiliated directors except former employee directors are in general positively and significantly related to the monitoring and advising functions of the board, suggesting affiliated directors may be beneficial to firm performance. Among the former employee directors, founder directors show generally beneficial influence on firm performance, but former CEO and chairman directors are negatively related to monitoring and advising functions of the board.

**Table 3.1: Affiliated Director Classifications and Definitions.**

This table provides the classifications of each type of affiliated directors and the definitions of each affiliated director variables.

| <b>Affiliated Director</b>               |  |
|--|--|
| <b>Variable</b>                          | <b>Definitions</b>   |
| Pct_Affiliated                           | Number of affiliated directors divided by the board size. Affiliated directors are directors who RiskMetrics classifies as “L” in the CLASSIFICATION variable of the “Director” data file.   |
| <b><i>Business Partner Directors</i></b> |  |
| Pct_Bus                                  | The number of directors who or whose employers have business transaction with the appointing firm divided by the board size.   |
| Pct_Service                              | The number of directors who's employer is a service provider (e.g., legal, financial, or consulting) of the board firm divided by the board size.  |
| Pct_Supplier                             | The number of directors who's employer is a supplier of the board firm divided by the board size.  |
| Pct_Customer                             | The number of directors who's employer is a customer of the board firm divided by the board size.  |
| Pct_Merged                               | The number of directors who's previous employer was acquired by the hiring firm, or have merged/formed alliance with the hiring firm divided by the board size.  |
| <b><i>Former Employee Directors</i></b>  |  |
| Pct_FormEmp                              | The number of directors who are former employees of the focal or affiliated firms divided by the board size.   |
| Pct_CEO                                  | The number of directors who were former employees served as CEOs divided by the board size.  |
| Pct_CFO                                  | The number of directors who were former employees served as CFOs divided by the board size.  |
| Pct_COO                                  | The number of directors who were former employees served as COOs divided by the board size.  |
| Pct_Chair                                | The number of directors who were former employees served as Chairmen divided by the board size.  |
| Pct_Founder                              | The number of directors who were the founders of the board firms   |
| <b><i>Relative Directors</i></b>         |  |
| Pct_Relative                             | The number of directors who are immediate family members or relatives of the focal firms' current or former executives divided by the board size.  |
| Pct_OldGen                               | The number of directors who are parents or grandparent of employee divided by the board size.  |
| Pct_YoungGen                             | The number of directors who are child or grandchild of employee divided by the board size.   |
| Pct_Sibling                              | The number of directors who are the sibling of employee divided by the board size.   |
| Pct_Spouse                               | The number of directors who are the spouse of employee divided by the board size.  |
| <b><i>Block Investor Directors</i></b>   |  |
| Pct_Blockholder                          | The number of directors who are significant shareholder of the board firm (i.e., more than 5%) or, who's employer has equity investment in the board firm (i.e., more than 5%) divided by the board size.  |
| <b><i>Interlock Directors</i></b>        |  |
| Pct_Interlock                            | The number of directors who are the executives of firms that have board interlock with the focal firm divided by the board size.   |
| <b><i>Charity Directors</i></b>          |  |
| Pct_Charity                              | The number of directors who are trustee, director, or employee of a charitable organization that receives material grants from the board firm divided by the board size. The definition of "material" differs by company (usually 2~5% of total endowment coming from the board firm). |

**Table 3.2: Sample Distribution by Years.**

This table shows the sample distribution by years. Column (2) reports the number of firms for which we have information on the percentage of affiliated directors. Columns (3)-(9) report the percentage of firms with business partner directors, percentage of firms with former employee directors, percentage of firms with relative directors, percentage of firms with blockholder directors, percentage of firms with interlock directors, percentage of firms with charity directors, respectively.

| <b>Year</b> | <b>Obs.</b> | <b>% of Firms with Affiliated Directors</b> | <b>% of Firms with Business Partner Directors</b> | <b>% of Firms with Former Employee Directors</b> | <b>% of Firms with Relative Directors</b> | <b>% of Firms with Blockholder Directors</b> | <b>% of Firms with Interlock Directors</b> | <b>% of Firms with Charity Directors</b> |
|-------------|-------------|---|---|--|---|--|--|--|
| <b>(1)</b>  | <b>(2)</b>  | <b>(3)</b>                                  | <b>(4)</b>  | <b>(5)</b>                                       | <b>(6)</b>                                | <b>(7)</b>                                   | <b>(8)</b>                                 | <b>(9)</b>                               |
| 1996        | 1,141       | 0.785                                       | 0.637   | 0.449  | 0.105                                     | 0.032  | 0.138                                      | 0.003                                    |
| 1997        | 1,429       | 0.749                                       | 0.584   | 0.425  | 0.115                                     | 0.086  | 0.119                                      | 0.001                                    |
| 1998        | 1,541       | 0.738                                       | 0.602   | 0.398  | 0.134                                     | 0.099  | 0.119                                      | 0.003                                    |
| 1999        | 1,535       | 0.721                                       | 0.565   | 0.406  | 0.122                                     | 0.107  | 0.115                                      | 0.004                                    |
| 2000        | 1,537       | 0.705                                       | 0.552   | 0.412  | 0.107                                     | 0.100  | 0.098                                      | 0.005                                    |
| 2001        | 1,564       | 0.684                                       | 0.527   | 0.402  | 0.123                                     | 0.099  | 0.077                                      | 0.005                                    |
| 2002        | 1,412       | 0.664                                       | 0.499   | 0.378  | 0.098                                     | 0.083  | 0.067                                      | 0.006                                    |
| 2003        | 1,443       | 0.644                                       | 0.463   | 0.372  | 0.100                                     | 0.094  | 0.051                                      | 0.009                                    |
| 2004        | 1,466       | 0.608                                       | 0.469   | 0.362  | 0.102                                     | 0.076  | 0.038                                      | 0.013                                    |
| 2005        | 1,439       | 0.582                                       | 0.405   | 0.352  | 0.129                                     | 0.076  | 0.031                                      | 0.013                                    |
| 2006        | 1,405       | 0.590                                       | 0.397   | 0.347  | 0.127                                     | 0.082  | 0.019                                      | 0.014                                    |
| 2007        | 1,429       | 0.419                                       | 0.266   | 0.305  | 0.094                                     | 0.054  | 0.006                                      | 0.010                                    |
| 2008        | 1,425       | 0.404                                       | 0.246   | 0.293  | 0.081                                     | 0.059  | 0.006                                      | 0.007                                    |
| 2009        | 1,444       | 0.417                                       | 0.273   | 0.273  | 0.078                                     | 0.193  | 0.007                                      | 0.012                                    |
| 2010        | 1,452       | 0.395                                       | 0.255   | 0.242  | 0.075                                     | 0.197  | 0.009                                      | 0.006                                    |
| Total       | 18,766      | 0.638                                       | 0.478   | 0.377  | 0.111                                     | 0.082  | 0.068                                      | 0.007                                    |

**Table 3.3: Summary Statistics.**

This table reports summary statistics of the variables used in this paper. Definitions of the variables are provided in Table 3.1 and Table 3.A1.

| <b>Variables</b>                            | <b>N</b>   | <b>Mean</b> | <b>Median</b> | <b>Std. Dev.</b> | <b>Min</b> | <b>Max</b> |
|---|------------|-------------|---------------|------------------|------------|------------|
|   | <b>(1)</b> | <b>(2)</b>  | <b>(3)</b>    | <b>(4)</b>       | <b>(5)</b> | <b>(6)</b> |
| <i><b>Affiliated Director Variables</b></i> |            |             |               |                  |            |            |
| Pct_Affiliated                              | 18766      | 0.131       | 0.111         | 0.138            | 0.000      | 0.900      |
| Pct_Bus                                     | 18766      | 0.085       | 0.000         | 0.116            | 0.000      | 0.800      |
| Pct_Service                                 | 18766      | 0.060       | 0.000         | 0.096            | 0.000      | 0.800      |
| Pct_Supplier                                | 18766      | 0.002       | 0.000         | 0.018            | 0.000      | 0.400      |
| Pct_Customer                                | 18766      | 0.002       | 0.000         | 0.015            | 0.000      | 0.375      |
| Pct_Merged                                  | 18766      | 0.007       | 0.000         | 0.035            | 0.000      | 0.700      |
| Pct_FormEmp                                 | 18766      | 0.054       | 0.000         | 0.082            | 0.000      | 0.727      |
| Pct_CEO                                     | 18766      | 0.017       | 0.000         | 0.044            | 0.000      | 0.400      |
| Pct_CFO                                     | 18766      | 0.002       | 0.000         | 0.017            | 0.000      | 0.286      |
| Pct_COO                                     | 18766      | 0.003       | 0.000         | 0.018            | 0.000      | 0.250      |
| Pct_Chair                                   | 18766      | 0.016       | 0.000         | 0.043            | 0.000      | 0.333      |
| Pct_Founder                                 | 18766      | 0.005       | 0.000         | 0.027            | 0.000      | 0.400      |
| Pct_Relative                                | 18766      | 0.015       | 0.000         | 0.049            | 0.000      | 0.600      |
| Pct_OldGen                                  | 18766      | 0.003       | 0.000         | 0.019            | 0.000      | 0.333      |
| Pct_YoungGen                                | 18766      | 0.002       | 0.000         | 0.016            | 0.000      | 0.300      |
| Pct_Sibling                                 | 18766      | 0.003       | 0.000         | 0.020            | 0.000      | 0.600      |
| Pct_Spouse                                  | 18766      | 0.001       | 0.000         | 0.010            | 0.000      | 0.273      |
| Pct_Blockholder                             | 18766      | 0.012       | 0.000         | 0.044            | 0.000      | 1.100      |
| Pct_Interlock                               | 18766      | 0.008       | 0.000         | 0.033            | 0.000      | 0.500      |
| Pct_Charity                                 | 18766      | 0.001       | 0.000         | 0.014            | 0.000      | 0.778      |
| <i><b>Other Variables</b></i>               |            |             |               |                  |            |            |
| CEO_Delta                                   | 17992      | 0.113       | 0.007         | 2.294            | 0.000      | 121.028    |
| Eindex                                      | 15794      | 2.608       | 3.000         | 1.365            | 0.000      | 6.000      |
| CAR(-3,+5)                                  | 7244       | 0.008       | 0.005         | 0.073            | -0.599     | 0.635      |
| ROA   | 18521      | 0.038       | 0.041         | 0.087            | -0.695     | 0.267      |
| Zscore                                      | 13869      | 9.240       | 4.179         | 23.491           | -24.319    | 1314.372   |
| Leverage                                    | 18178      | 0.195       | 0.174         | 0.171            | 0.000      | 1.604      |
| Ln(segments)                                | 17581      | 2.512       | 2.565         | 0.666            | 0.693      | 4.466      |
| ICR   | 18766      | 0.555       | 0.542         | 0.227            | 0.135      | 1.000      |
| CEO_OWN                                     | 17383      | 0.023       | 0.003         | 0.059            | 0.000      | 0.761      |
| CEO_Chair                                   | 17985      | 0.623       | 1.000         | 0.485            | 0.000      | 1.000      |
| CEO_Tenure                                  | 17382      | 8.007       | 6.000         | 7.218            | 1.000      | 58.000     |
| Ln(CEO_Age)                                 | 17167      | 4.012       | 4.025         | 0.133            | 3.466      | 4.522      |
| Ln(BoardSize)                               | 16000      | 2.328       | 2.303         | 0.260            | 1.099      | 3.689      |
| Ln(FirmAge)                                 | 18040      | 2.939       | 2.996         | 0.792            | 0.000      | 4.431      |
| Ln(TA)                                      | 18225      | 7.592       | 7.479         | 1.507            | 1.835      | 11.357     |
| IOC   | 18764      | 0.232       | 0.242         | 0.132            | 0.000      | 0.948      |
| Affect                                      | 13387      | 0.169       | 0.000         | 0.374            | 0.000      | 1.000      |
| Post  | 18766      | 0.459       | 0.000         | 0.498            | 0.000      | 1.000      |



**Table 3.4a: What Determines the Percentage of Affiliated Directors?**

This table reports estimates of the determinants of the percentage of total affiliated directors and each type of affiliated directors. The dependent variable is the percentage of total affiliated directors. The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and Table 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors clustered at CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES             | Pct_Affiliated<br>(1) |
|-----------------------|-----------------------|
| ROA <sub>t-1</sub>    | -0.051**<br>(0.022)   |
| Zscore <sub>t-1</sub> | -0.009*<br>(0.005)    |
| Ln(segments)          | -0.004<br>(0.005)     |
| Ln(FirmAge)           | -0.033***<br>(0.013)  |
| Ln(TA)                | 0.003<br>(0.005)      |
| ICR                   | 0.042<br>(0.029)      |
| CEO_OWN               | -0.041<br>(0.052)     |
| CEO_Chair             | -0.006<br>(0.005)     |
| CEO_Tenure            | -0.001*<br>(0.000)    |
| Ln(CEO_Age)           | -0.021<br>(0.018)     |
| Founder               | -0.017<br>(0.011)     |
| Ln(BoardSize)         | 0.076***<br>(0.013)   |
| Affect_Post           | -0.061***<br>(0.011)  |
| Constant              | 0.161*<br>(0.090)     |
| Firm FE & Year FE     | Y                     |
| Observations          | 9,841                 |
| Adjusted R-squared    | 0.539                 |

**Table 3.5b: Impacts of Total Percentage of Affiliated Directors on Firm Monitoring and Performance.**

This table reports the estimates of the impacts of the percentage of total affiliated directors on monitoring and firm performance. The key independent variable, Pct\_Affiliated is the percentage of total affiliated directors. The dependent variable is CEO\_Delta in Columns (1) and (5); Ln(Eindex+1) in Columns (2) and (6); CAR(-3,+5) in Columns (3) and (6); and ROA in Columns (4) and (8). Panel A reports the OLS regressions and Panel B reports the second-stage results of IV regressions. The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Appendix 1. All regressions control for firm- and year-fixed effects. Robust standard errors reported in parentheses are clustered at CEO-firm pair level. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES               | Panel A: OLS                  |                                  |                                 |                          | Panel B: IV Regressions        |                                  |                                 |                          |
|-------------------------|-------------------------------|----------------------------------|---------------------------------|--------------------------|--------------------------------|----------------------------------|---------------------------------|--------------------------|
|                         | Section1:<br>CEO_Delta<br>(1) | Section2:<br>Ln(Eindex+1)<br>(2) | Section 3:<br>CAR(-3,+5)<br>(3) | Section 4:<br>ROA<br>(4) | Section 1:<br>CEO_Delta<br>(5) | Section2:<br>Ln(Eindex+1)<br>(6) | Section 3:<br>CAR(-3,+5)<br>(7) | Section 4:<br>ROA<br>(8) |
| Pct_Affiliated          | 0.096**<br>(0.037)            | -0.182***<br>(0.052)             | 0.016**<br>(0.008)              | -0.009<br>(0.008)        | 0.987***<br>(0.316)            | -1.446***<br>(0.542)             | 0.357**<br>(0.145)              | 0.213**<br>(0.094)       |
| ROA                     | 0.064**<br>(0.026)            | -0.065<br>(0.069)                | -0.029*<br>(0.017)              |                          | 0.096**<br>(0.046)             | -0.038<br>(0.059)                | -0.051*<br>(0.030)              |                          |
| Zscore                  | 0.067*<br>(0.039)             | -0.062**<br>(0.025)              |                                 | 0.045***<br>(0.012)      | 0.091*<br>(0.052)              | -0.021<br>(0.021)                |                                 | 0.042***<br>(0.012)      |
| Ln(BoardSize<br>)       | -0.039*<br>(0.020)            | 0.227***<br>(0.039)              | -0.006<br>(0.005)               | -0.007<br>(0.006)        | -0.155**<br>(0.066)            | 0.130**<br>(0.059)               | -0.033**<br>(0.014)             | -0.020<br>(0.013)        |
| Ln(FirmAge)             | -0.008<br>(0.005)             | 0.014<br>(0.013)                 | 0.000<br>(0.002)                | -0.002<br>(0.006)        | 0.017<br>(0.030)               | 0.008<br>(0.053)                 | 0.049***<br>(0.018)             | 0.010<br>(0.009)         |
| Ln(segments)            | 0.008<br>(0.006)              | 0.023*<br>(0.014)                | -0.001<br>(0.002)               | -0.009***<br>(0.002)     | 0.006<br>(0.008)               | 0.001<br>(0.014)                 | 0.002<br>(0.006)                | -0.010***<br>(0.003)     |
| Leverage                | -0.090***<br>(0.023)          | 0.024<br>(0.045)                 |                                 | -0.134***<br>(0.011)     | 0.061<br>(0.057)               | 0.016<br>(0.059)                 |                                 | -0.136***<br>(0.014)     |
| Ln(TA)                  | 0.013***<br>(0.004)           | -0.018**<br>(0.008)              | -0.002***<br>(0.001)            | 0.013***<br>(0.004)      | -0.002<br>(0.021)              | 0.009<br>(0.016)                 | -0.009*<br>(0.005)              | 0.008<br>(0.007)         |
| PPE/TA                  |                               |                                  |                                 | -0.052***<br>(0.009)     |                                |                                  |                                 | -0.056***<br>(0.012)     |
| ICR                     | 0.047<br>(0.032)              | -0.168*<br>(0.091)               | 0.005<br>(0.005)                | 0.004<br>(0.013)         | 0.049<br>(0.045)               | -0.064<br>(0.090)                | -0.062***<br>(0.024)            | 0.004<br>(0.017)         |
| IOC                     | -0.104***<br>(0.035)          | 0.067<br>(0.064)                 | -0.010<br>(0.010)               | -0.051***<br>(0.011)     | -0.033<br>(0.032)              | 0.015<br>(0.061)                 | -0.002<br>(0.024)               | -0.057***<br>(0.014)     |
| CEO_Chair               | 0.007<br>(0.006)              | 0.079***<br>(0.015)              |                                 |                          | 0.019**<br>(0.008)             | -0.002<br>(0.013)                |                                 |                          |
| CEO_Tenure              | 0.003***<br>(0.001)           | -0.003**<br>(0.001)              |                                 | 0.000*<br>(0.000)        | 0.003***<br>(0.001)            | -0.001<br>(0.002)                |                                 | 0.001***<br>(0.000)      |
| Founder                 | 0.040**<br>(0.018)            | -0.063**<br>(0.031)              | -0.004<br>(0.004)               | 0.002<br>(0.005)         | 0.058**<br>(0.026)             | -0.096***<br>(0.033)             | 0.014<br>(0.009)                | -0.007<br>(0.006)        |
| CEO_OWN                 |                               | -0.677***<br>(0.155)             | 0.069***<br>(0.022)             | 0.026<br>(0.028)         |                                | 0.159<br>(0.177)                 | 0.108<br>(0.078)                | -0.028<br>(0.037)        |
| Constant                | -0.007<br>(0.052)             | 0.717***<br>(0.106)              | 0.035***<br>(0.013)             | 0.064*<br>(0.034)        | 0.187<br>(0.296)               | 0.975***<br>(0.202)              | 0.006<br>(0.066)                | 0.050<br>(0.061)         |
| Firm/Year FE            | Y                             | Y                                | Y                               | Y                        | Y                              | Y                                | Y                               | Y                        |
| Observations            | 14,276                        | 12,292                           | 6,186                           | 13,844                   | 7,686                          | 6,758                            | 3,850                           | 7,475                    |
| Adjusted R <sup>2</sup> | 0.124                         | 0.306                            | 0.012                           | 0.467                    | 0.328                          | 0.767                            | 0.085                           | 0.444                    |

**Table 3.6a: What Determines the Percentage of Each Type of Business Partner Directors?**

This table reports estimates of the determinants of the percentage of each type of directors who have business transaction with the board firm. The dependent variable is percentage of total business partner directors in Column (1); the percentage of directors whose employer is a service provider (e.g., legal, financial, or consulting) of the board firm in Column (2); the percentage of directors whose employer is a supplier of the board firm in Column (3), the percentage of directors whose employer is a customer of the board firm in Column (4), and the percentage of directors whose previous employer was acquired by the hiring firm, or have merged/formed alliance with the hiring firm in Column (5). The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and Table 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors clustered at CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES             | Pct_Bus<br>(1)       | Pct_Service<br>(2)   | Pct_Supplier<br>(3) | Pct_Customer<br>(4) | Pct_Merged<br>(5)   |
|-----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|
| ROA <sub>t-1</sub>    | -0.027*<br>(0.015)   | -0.027**<br>(0.013)  | -0.001<br>(0.003)   | -0.001<br>(0.001)   | -0.005<br>(0.004)   |
| Zscore <sub>t-1</sub> | -0.005<br>(0.004)    | -0.004<br>(0.004)    | 0.000<br>(0.001)    | 0.001<br>(0.001)    | -0.001<br>(0.001)   |
| Ln(segments)          | -0.000<br>(0.004)    | -0.002<br>(0.003)    | -0.001<br>(0.001)   | -0.001*<br>(0.000)  | 0.000<br>(0.001)    |
| Ln(FirmAge)           | -0.020**<br>(0.010)  | -0.020**<br>(0.008)  | 0.001<br>(0.002)    | 0.000<br>(0.001)    | -0.003<br>(0.003)   |
| Ln(TA)                | -0.004<br>(0.004)    | 0.001<br>(0.003)     | -0.000<br>(0.001)   | -0.000<br>(0.000)   | -0.003**<br>(0.001) |
| ICR                   | 0.034<br>(0.023)     | 0.047**<br>(0.019)   | -0.001<br>(0.005)   | -0.003<br>(0.002)   | -0.005<br>(0.006)   |
| CEO_OWN               | 0.041<br>(0.046)     | 0.037<br>(0.034)     | 0.003<br>(0.011)    | 0.001<br>(0.003)    | 0.005<br>(0.012)    |
| CEO_Chair             | -0.005<br>(0.003)    | -0.008***<br>(0.003) | 0.000<br>(0.001)    | 0.001*<br>(0.000)   | -0.000<br>(0.001)   |
| CEO_Tenure            | -0.001<br>(0.000)    | -0.000<br>(0.000)    | -0.000<br>(0.000)   | -0.000<br>(0.000)   | 0.000<br>(0.000)    |
| Ln(CEO_Age)           | 0.001<br>(0.014)     | 0.008<br>(0.012)     | 0.002<br>(0.002)    | -0.001<br>(0.002)   | -0.001<br>(0.004)   |
| Founder               | 0.013<br>(0.008)     | -0.001<br>(0.007)    | 0.000<br>(0.001)    | 0.001<br>(0.001)    | -0.000<br>(0.002)   |
| Ln(BoardSize)         | 0.016<br>(0.010)     | 0.008<br>(0.008)     | 0.003<br>(0.002)    | 0.000<br>(0.001)    | 0.002<br>(0.003)    |
| Affect_Post           | -0.041***<br>(0.009) | -0.015**<br>(0.007)  | -0.002<br>(0.003)   | -0.003**<br>(0.001) | -0.000<br>(0.002)   |
| Constant              | 0.134*<br>(0.068)    | 0.060<br>(0.057)     | -0.013<br>(0.010)   | 0.008<br>(0.008)    | 0.034**<br>(0.017)  |
| Firm FE & Year        |                      |                      |                     |                     |                     |
| FE                    | Y                    | Y                    | Y                   | Y                   | Y                   |
| Observations          | 9,841                | 9,841                | 9,841               | 9,841               | 9,841               |
| Adjusted R-squared    | 0.505                | 0.506                | 0.489               | 0.379               | 0.367               |

**Table 3.7b: Impacts of Each Type of Business Partner Directors on Firm Monitoring and Performance.**

This table reports estimates of the impacts of each type of directors who have business transaction with the board firm on monitoring and firm performance. The key independent variable, Pct\_Bus\_Var is the percentage of total business partner directors in Columns (1)-(6), the percentage of directors whose employer is a service provider (e.g., legal, financial, or consulting) of the board firm in Column (2)-(7), the percentage of directors whose previous employer was acquired by the hiring firm, or have merged/formed alliance with the hiring firm in Columns (3)-(8), the percentage of directors whose employer is a supplier of the board firm in Columns (4)-(9), and the percentage of directors whose employer is a customer of the board firm in Columns (5)-(10). The dependent variable is CEO\_Delta in Section 1; Ln(Eindex+1) in Section 2; CAR(-3,+5) in Section 3; and ROA in Section 4. Unreported control variables in Section 1-4 are the same as the control variables in Columns (1)-(4) in Table 3.4b, respectively. Panel A reports the OLS regressions and Panel B reports the second-stage results of IV regressions. The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors reported in parentheses are clustered at CEO-firm pair level. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES    | Panel A: OLS           |                     |                   |                    |                   | Panel B: IV Regressions |                      |                      |                      |                       |
|--------------|------------------------|---------------------|-------------------|--------------------|-------------------|-------------------------|----------------------|----------------------|----------------------|-----------------------|
|              | Section1: CEO_Delta    |                     |                   |                    |                   |                         |                      |                      |                      |                       |
|              | Pct_Bus                | Pct_Service         | Pct_Supplier      | Pct_Customer       | Pct_Merged        | Pct_Bus                 | Pct_Service          | Pct_Supplier         | Pct_Customer         | Pct_Merged            |
|              | (1)                    | (2)                 | (3)               | (4)                | (5)               | (6)                     | (7)                  | (8)                  | (9)                  | (10)                  |
| Pct_Bus_Var  | 0.166**<br>(0.076)     | 0.074**<br>(0.035)  | 0.053<br>(0.142)  | 0.052*<br>(0.030)  | 0.245<br>(0.181)  | 1.208***<br>(0.386)     | 2.470***<br>(0.800)  | 19.468***<br>(5.637) | 13.723***<br>(4.290) | -40.090<br>(49.529)   |
| Observations | 14,276                 | 14,276              | 14,276            | 14,276             | 14,276            | 7,686                   | 7,686                | 10,271               | 10,271               | 7,686                 |
| Adj-Rsquare  | 0.125                  | 0.123               | 0.122             | 0.122              | 0.123             | 0.328                   | 0.328                | 0.297                | 0.298                | 0.328                 |
| VARIABLES    | Section2: Ln(Eindex+1) |                     |                   |                    |                   |                         |                      |                      |                      |                       |
| Pct_Bus_Var  | -0.192***<br>(0.071)   | -0.175**<br>(0.086) | 0.181<br>(0.287)  | -0.449*<br>(0.258) | -0.287<br>(0.277) | -1.954***<br>(0.726)    | -4.942***<br>(1.853) | 4.085<br>(12.216)    | -12.400*<br>(6.333)  | 31.341***<br>(11.752) |
| Observations | 12,292                 | 12,292              | 12,292            | 12,292             | 12,292            | 6,758                   | 6,758                | 9,030                | 9,030                | 6,758                 |
| Adj-Rsquare  | 0.305                  | 0.305               | 0.771             | 0.771              | 0.304             | 0.767                   | 0.767                | 0.763                | 0.764                | 0.767                 |
| VARIABLES    | Section3: CAR(-3,+5)   |                     |                   |                    |                   |                         |                      |                      |                      |                       |
| Pct_Bus_Var  | 0.011<br>(0.015)       | 0.008<br>(0.018)    | -0.100<br>(0.094) | -0.008<br>(0.122)  | 0.021<br>(0.055)  | 0.544***<br>(0.201)     | 1.001**<br>(0.394)   | 3.026*<br>(1.837)    | 2.492<br>(1.935)     | 19.046***<br>(7.006)  |
| Observations | 6,186                  | 6,186               | 6,186             | 6,186              | 6,186             | 3,850                   | 3,850                | 4,983                | 4,983                | 3,850                 |
| Adj-Rsquare  | 0.084                  | 0.084               | 0.085             | 0.084              | 0.084             | 0.086                   | 0.085                | 0.069                | 0.068                | 0.086                 |
| VARIABLES    | Section4: ROA          |                     |                   |                    |                   |                         |                      |                      |                      |                       |
| Pct_Bus_Var  | -0.010<br>(0.010)      | -0.024*<br>(0.012)  | 0.009<br>(0.052)  | 0.030<br>(0.063)   | -0.025<br>(0.030) | 0.277**<br>(0.121)      | 0.277**<br>(0.121)   | 2.820*<br>(1.673)    | 3.627***<br>(1.085)  | 6.090<br>(13.506)     |
| Observations | 13,844                 | 13,844              | 13,844            | 13,844             | 13,844            | 7,475                   | 7,475                | 9,984                | 9,984                | 7,475                 |
| Adj-Rsquare  | 0.467                  | 0.468               | 0.467             | 0.467              | 0.467             | 0.444                   | 0.444                | 0.435                | 0.436                | 0.444                 |

**Table 3.8a: What Determines the Percentage of Each Type of Former Employee Directors?**

This table reports estimates of the determinants of the percentage of each type of directors who were former employee of the firm. The dependent variable is the percentage of total former employee directors in Column (1), the percentage of directors who were former employees served as CEOs in Column (2), the percentage of directors who were former employees served as CFOs in Column (3), the percentage of directors who were former employees served as COOs in Column (4), the percentage of directors who were former employees served as Chairman in Column (5), and the percentage of directors who were founder in Column (6). The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors clustered at CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES             | Pct_FormEmp          | Pct_CEO              | Pct_CFO            | Pct_COO             | Pct_Chair            | Pct_Founder         |
|-----------------------|----------------------|----------------------|--------------------|---------------------|----------------------|---------------------|
|                       | (1)                  | (2)                  | (3)                | (4)                 | (5)                  | (6)                 |
| ROA <sub>t-1</sub>    | 0.004<br>(0.016)     | 0.012<br>(0.008)     | -0.006<br>(0.004)  | 0.000<br>(0.005)    | 0.011<br>(0.008)     | -0.005<br>(0.005)   |
| Zscore <sub>t-1</sub> | -0.001<br>(0.003)    | 0.001<br>(0.002)     | 0.001<br>(0.001)   | -0.000<br>(0.001)   | -0.000<br>(0.001)    | -0.003*<br>(0.001)  |
| Ln(segments)          | -0.001<br>(0.003)    | -0.000<br>(0.002)    | 0.000<br>(0.001)   | 0.001<br>(0.001)    | 0.000<br>(0.002)     | -0.002*<br>(0.001)  |
| Ln(FirmAge)           | 0.003<br>(0.007)     | 0.001<br>(0.004)     | 0.001<br>(0.001)   | 0.002<br>(0.001)    | -0.000<br>(0.004)    | -0.001<br>(0.002)   |
| Ln(TA)                | 0.004<br>(0.003)     | 0.002<br>(0.002)     | -0.001<br>(0.001)  | -0.000<br>(0.001)   | 0.003*<br>(0.002)    | 0.002**<br>(0.001)  |
| ICR                   | 0.015<br>(0.018)     | 0.004<br>(0.011)     | -0.002<br>(0.002)  | -0.005<br>(0.004)   | -0.003<br>(0.010)    | 0.007<br>(0.006)    |
| CEO_OWN               | -0.076**<br>(0.038)  | -0.041***<br>(0.014) | 0.005<br>(0.008)   | 0.018***<br>(0.006) | -0.029**<br>(0.015)  | -0.018**<br>(0.008) |
| CEO_Chair             | -0.006*<br>(0.003)   | -0.003*<br>(0.002)   | 0.000<br>(0.001)   | -0.001<br>(0.001)   | -0.001<br>(0.002)    | -0.001<br>(0.001)   |
| CEO_Tenure            | -0.001***<br>(0.000) | -0.001***<br>(0.000) | 0.000<br>(0.000)   | -0.000**<br>(0.000) | -0.000<br>(0.000)    | -0.000<br>(0.000)   |
| Founder               | -0.009<br>(0.008)    | -0.005<br>(0.005)    | 0.001<br>(0.002)   | 0.000<br>(0.002)    | -0.017***<br>(0.004) | -0.003<br>(0.002)   |
| Ln(CEO_Age)           | -0.022*<br>(0.012)   | -0.005<br>(0.009)    | -0.005*<br>(0.003) | 0.001<br>(0.004)    | -0.004<br>(0.007)    | -0.006*<br>(0.003)  |
| Ln(BoardSize)         | 0.045***<br>(0.008)  | 0.017***<br>(0.004)  | -0.001<br>(0.002)  | 0.002*<br>(0.001)   | 0.012***<br>(0.004)  | -0.000<br>(0.002)   |
| Affect_Post           | -0.004<br>(0.007)    | 0.006*<br>(0.004)    | -0.000<br>(0.001)  | -0.001<br>(0.001)   | 0.001<br>(0.003)     | -0.003<br>(0.003)   |
| Constant              | 0.037<br>(0.059)     | -0.006<br>(0.039)    | 0.029**<br>(0.014) | -0.005<br>(0.017)   | 0.002<br>(0.035)     | 0.021<br>(0.017)    |
| Firm FE & Year FE     | Y                    | Y                    | Y                  | Y                   | Y                    | Y                   |
| Observations          | 9,841                | 9,841                | 9,841              | 9,841               | 9,841                | 9,841               |
| Adjusted R-squared    | 0.531                | 0.468                | 0.451              | 0.458               | 0.500                | 0.615               |

**Table 3.9b: Impacts of Each Type of Former Employee Directors on Firm Monitoring and Performance.**

This table reports estimates of the impacts of each type of directors who were former employee of the firm on monitoring and firm performance. The key independent variable, Pct\_FormEmp\_Var is the percentage of total form employees in Columns (1) and (7), the percentage of directors who were former employees served as CEOs in Columns (2) and (8), the percentage of directors who were former employees served as CFOs in Columns (3) and (9), the percentage of directors who were former employees served as COOs in Columns (4) and (10), the percentage of directors who were former employees served as Chairmen in Columns (5) and (11), and the percentage of directors who were founder in Columns (6) and (12). The dependent variable is CEO\_Delta in Section 1; Ln(Eindex+1) in Section 2; CAR(-3,+5) in Section 3; and ROA in Section 4. Unreported control variables in Section 1-4 are the same as the control variables in Columns (1)-(4) of Table 3.4b, respectively. Panel A reports the OLS regressions and Panel B reports the second-stage results of IV regression. The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors reported in parentheses are clustered at CEO-firm pair level. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES              | Panel A: OLS            |                     |                    |                     |                     |                     | Panel B: IV Regressions |                      |                     |                        |                       |                        |
|------------------------|-------------------------|---------------------|--------------------|---------------------|---------------------|---------------------|-------------------------|----------------------|---------------------|------------------------|-----------------------|------------------------|
|                        | Section 1: CEO_Delta    |                     |                    |                     |                     |                     |                         |                      |                     |                        |                       |                        |
|                        | Pct_FormEmp             | Pct_CEO             | Pct_CFO            | Pct_COO             | Pct_Chair           | Pct_Founder         | Pct_FormEmp             | Pct_CEO              | Pct_CFO             | Pct_COO                | Pct_Chair             | Pct_Founder            |
| (1)                    | (2)                     | (3)                 | (4)                | (5)                 | (6)                 | (7)                 | (8)                     | (9)                  | (10)                | (11)                   | (12)                  |                        |
| Pct_Affiliated_Bus_Var | 0.59<br>(0.675)         | -0.217**<br>(0.085) | -0.831*<br>(0.475) | 0.775*<br>(0.409)   | -0.362**<br>(0.184) | 2.580***<br>(0.514) | 0.740<br>(1.616)        | -5.809***<br>(1.838) | 6.605**<br>(3.133)  | 38.679**<br>(15.361)   | -22.616***<br>(6.731) | 22.870***<br>(6.532)   |
| Observations           | 14,276                  | 14,276              | 14,276             | 14,276              | 14,276              | 14,276              | 7,686                   | 7,686                | 7,686               | 7,686                  | 7,686                 | 7,686                  |
| Adj-Rsquare            | 0.123                   | 0.123               | 0.123              | 0.123               | 0.123               | 0.124               | 0.298                   | 0.299                | 0.299               | 0.299                  | 0.299                 | 0.299                  |
|                        | Section 2: Ln(Eindex+1) |                     |                    |                     |                     |                     |                         |                      |                     |                        |                       |                        |
| Pct_Affiliated_Bus_Var | -0.095<br>(0.087)       | 0.290**<br>(0.145)  | 0.425*<br>(0.239)  | -0.334*<br>(0.187)  | 0.438***<br>(0.137) | -0.315**<br>(0.140) | -2.322<br>(3.338)       | 12.521***<br>(4.120) | -12.547*<br>(6.648) | -40.263***<br>(13.057) | 22.300***<br>(7.723)  | -42.227***<br>(13.909) |
| Observations           | 12,292                  | 12,292              | 12,292             | 12,292              | 12,292              | 12,292              | 6,758                   | 6,758                | 6,758               | 6,758                  | 6,758                 | 6,758                  |
| Adj-Rsquare            | 0.304                   | 0.305               | 0.772              | 0.304               | 0.305               | 0.304               | 0.757                   | 0.758                | 0.758               | 0.758                  | 0.758                 | 0.758                  |
|                        | Section 3: CAR(-3,+5)   |                     |                    |                     |                     |                     |                         |                      |                     |                        |                       |                        |
| Pct_Affiliated_Bus_Var | 0.026<br>(0.021)        | 0.023<br>(0.033)    | 0.071<br>(0.075)   | -0.124**<br>(0.063) | 0.049<br>(0.038)    | 0.040<br>(0.068)    | 0.438<br>(0.405)        | 0.007<br>(4.812)     | -1.491<br>(2.845)   | 1.244<br>(4.526)       | -1.838***<br>(0.706)  | -0.855<br>(3.728)      |
| Observations           | 6,186                   | 6,186               | 6,186              | 6,186               | 6,186               | 6,186               | 3,850                   | 3,850                | 3,850               | 3,850                  | 3,850                 | 3,850                  |
| Adj-Rsquare            | 0.085                   | 0.084               | 0.085              | 0.085               | 0.085               | 0.084               | 0.074                   | 0.074                | 0.074               | 0.074                  | 0.076                 | 0.074                  |
|                        | Section 4: ROA          |                     |                    |                     |                     |                     |                         |                      |                     |                        |                       |                        |
| Pct_Affiliated_Bus_Var | 0.003<br>(0.014)        | 0.015<br>(0.022)    | -0.044<br>(0.069)  | 0.031<br>(0.046)    | 0.076***<br>(0.024) | -0.084*<br>(0.051)  | 0.299<br>(0.746)        | -1.539**<br>(0.626)  | 1.064<br>(1.886)    | 8.533**<br>(4.006)     | -4.022**<br>(1.848)   | 4.534**<br>(1.864)     |
| Observations           | 13,844                  | 13,844              | 13,844             | 13,844              | 13,844              | 13,844              | 7,475                   | 7,475                | 7,475               | 7,475                  | 7,475                 | 7,475                  |
| Adj-Rsquare            | 0.467                   | 0.467               | 0.467              | 0.467               | 0.468               | 0.468               | 0.440                   | 0.441                | 0.440               | 0.441                  | 0.441                 | 0.441                  |

**Table 3.10a: What Determines the Percentage of Each Type of Relative Directors?**

This table reports estimates of the determinants of the percentage of each type of directors who are relative of current or former employee. The dependent variable is the percentage of total relative directors in Column (1), the percentage of directors who are parents or grandparent of employee in Column (2), the percentage of directors who are child or grandchild of employee in Column (3), the percentage of directors who are the sibling of employee in Column (4), and the percentage of directors who are the spouse of employee in Column (5). The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors clustered at CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES             | Pct_Relative<br>(1)  | Pct_OldGen<br>(2)   | Pct_YoungGen<br>(3) | Pct_Sibling<br>(4) | Pct_Spouse<br>(5)  |
|-----------------------|----------------------|---------------------|---------------------|--------------------|--------------------|
| ROA <sub>t-1</sub>    | -0.011*<br>(0.006)   | -0.007<br>(0.004)   | -0.002<br>(0.003)   | 0.003<br>(0.002)   | -0.002<br>(0.001)  |
| Zscore <sub>t-1</sub> | 0.000<br>(0.001)     | -0.000<br>(0.001)   | 0.000<br>(0.000)    | 0.000<br>(0.000)   | 0.000<br>(0.000)   |
| Ln(segments)          | -0.002*<br>(0.001)   | -0.001<br>(0.001)   | -0.000<br>(0.000)   | -0.001<br>(0.001)  | -0.000<br>(0.000)  |
| Ln(FirmAge)           | -0.001<br>(0.003)    | -0.003<br>(0.002)   | -0.000<br>(0.001)   | 0.002<br>(0.002)   | -0.003*<br>(0.002) |
| Ln(TA)                | -0.000<br>(0.002)    | 0.000<br>(0.001)    | -0.000<br>(0.001)   | 0.000<br>(0.000)   | 0.000<br>(0.000)   |
| ICR                   | -0.005<br>(0.007)    | -0.003<br>(0.005)   | -0.001<br>(0.002)   | 0.003<br>(0.003)   | 0.003<br>(0.002)   |
| CEO_OWN               | -0.016<br>(0.020)    | -0.010<br>(0.011)   | 0.013<br>(0.009)    | 0.000<br>(0.007)   | -0.003<br>(0.003)  |
| CEO_Chair             | 0.003**<br>(0.001)   | 0.001<br>(0.001)    | 0.000<br>(0.000)    | 0.000<br>(0.001)   | 0.000<br>(0.000)   |
| CEO_Tenure            | -0.000**<br>(0.000)  | -0.000*<br>(0.000)  | -0.000<br>(0.000)   | -0.000<br>(0.000)  | 0.000<br>(0.000)   |
| Founder               | 0.000<br>(0.003)     | -0.002<br>(0.002)   | -0.001<br>(0.001)   | 0.001<br>(0.001)   | -0.000<br>(0.001)  |
| Ln(CEO_Age)           | -0.010*<br>(0.006)   | -0.007**<br>(0.003) | 0.007**<br>(0.003)  | -0.001<br>(0.002)  | 0.002<br>(0.001)   |
| Ln(BoardSize)         | 0.007**<br>(0.003)   | 0.005***<br>(0.002) | 0.001<br>(0.001)    | -0.001<br>(0.001)  | -0.000<br>(0.001)  |
| Affect_Post           | -0.012***<br>(0.004) | -0.002<br>(0.002)   | -0.002<br>(0.001)   | -0.001<br>(0.001)  | 0.000<br>(0.001)   |
| Constant              | 0.047*<br>(0.025)    | 0.028*<br>(0.015)   | -0.023**<br>(0.011) | -0.003<br>(0.011)  | -0.003<br>(0.006)  |
| Firm FE & Year FE     | Y                    | Y                   | Y                   | Y                  | Y                  |
| Observations          | 9,841                | 9,841               | 9,841               | 9,841              | 9,841              |
| Adjusted R-squared    | 0.556                | 0.303               | 0.576               | 0.552              | 0.605              |

**Table 3.11b: Impacts of Each Type of Relative Directors on Firm Monitoring and Performance.**

This table reports estimates of the impacts of each type of directors who are relative of current or former employee on monitoring and firm performance. The key independent variable, Pct\_Relative\_Var is the percentage of total relative directors in Columns (1) and (6), the percentage of directors who are parents or grandparent of employee in Columns (2) and (7), the percentage of directors who are child or grandchild of employee in Columns (3) and (8), and the percentage of directors who are the sibling of employee in Columns (4) and (9), and the percentage of directors who are the spouse of employee in Columns (5) and (10). The dependent variable is CEO\_Delta in Section 1; Ln(Eindex+1) in Section 2; CAR(-3,+5) in Section 3; and ROA in Section 4. Unreported control variables in Section 1-4 are the same as the control variables in Table 3.5-3.8, respectively. Panel A reports the OLS regressions and Panel B reports the second-stage results of IV regression. The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors reported in parentheses are clustered at CEO-firm pair level. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| <b>Section 1: CEO_Delta</b>    |                      |                   |                      |                     |                    |                      |                      |                      |                         |                       |
|--------------------------------|----------------------|-------------------|----------------------|---------------------|--------------------|----------------------|----------------------|----------------------|-------------------------|-----------------------|
|                                | <b>Pct_Relative</b>  | <b>Pct_OldGen</b> | <b>Pct_YoungGen</b>  | <b>Pct_Sibling</b>  | <b>Pct_Spouse</b>  | <b>Pct_Relative</b>  | <b>Pct_OldGen</b>    | <b>Pct_YoungGen</b>  | <b>Pct_Sibling</b>      | <b>Pct_Spouse</b>     |
|                                | <b>(1)</b>           | <b>(2)</b>        | <b>(3)</b>           | <b>(4)</b>          | <b>(5)</b>         | <b>(6)</b>           | <b>(7)</b>           | <b>(8)</b>           | <b>(9)</b>              | <b>(10)</b>           |
| Pct_Relative_Var               | 0.354<br>(0.215)     | 0.102<br>(0.196)  | 1.299**<br>(0.617)   | -0.135<br>(0.192)   | -0.124<br>(0.304)  | 4.709***<br>(1.491)  | -0.058<br>(4.659)    | 12.844***<br>(3.706) | 43.291***<br>(14.193)   | -2.093<br>(15.951)    |
| Observations                   | 14,276               | 14,276            | 14,276               | 14,276              | 14,276             | 9,912                | 9,912                | 9,912                | 9,912                   | 9,912                 |
| Adj-Rsquare                    | 0.124                | 0.122             | 0.125                | 0.122               | 0.122              | 0.298                | 0.297                | 0.297                | 0.298                   | 0.297                 |
| <b>Section 2: Ln(Eindex+1)</b> |                      |                   |                      |                     |                    |                      |                      |                      |                         |                       |
| Pct_Relative_Var               | -0.600***<br>(0.191) | -0.051<br>(0.315) | -1.111***<br>(0.320) | -0.495**<br>(0.221) | -1.170<br>(0.964)  | -6.473***<br>(2.094) | -13.992**<br>(6.120) | -10.087*<br>(5.444)  | -118.197***<br>(42.133) | 65.549***<br>(20.877) |
| Observations                   | 12,292               | 12,292            | 12,292               | 12,292              | 12,292             | 8,748                | 8,748                | 8,748                | 8,748                   | 8,748                 |
| Adj-Rsquare                    | 0.306                | 0.304             | 0.305                | 0.304               | 0.304              | 0.763                | 0.762                | 0.762                | 0.763                   | 0.763                 |
| <b>Section 3: CAR(-3,+5)</b>   |                      |                   |                      |                     |                    |                      |                      |                      |                         |                       |
| Pct_Relative_Var               | -0.039<br>(0.046)    | -0.052<br>(0.082) | 0.018<br>(0.119)     | 0.002<br>(0.062)    | -0.247*<br>(0.141) | 1.252*<br>(0.642)    | 1.934*<br>(1.034)    | 0.186<br>(1.200)     | 17.006**<br>(8.537)     | -9.726**<br>(4.856)   |
| Observations                   | 6,186                | 6,186             | 6,186                | 6,186               | 6,186              | 4,818                | 4,818                | 4,818                | 4,818                   | 4,818                 |
| Adj-Rsquare                    | 0.085                | 0.084             | 0.084                | 0.084               | 0.085              | 0.069                | 0.069                | 0.068                | 0.069                   | 0.069                 |
| <b>Section 4: ROA</b>          |                      |                   |                      |                     |                    |                      |                      |                      |                         |                       |
| Pct_Relative_Var               | -0.048<br>(0.029)    | -0.048<br>(0.029) | -0.014<br>(0.092)    | -0.021<br>(0.058)   | 0.121<br>(0.159)   | 1.019***<br>(0.358)  | 4.765***<br>(1.562)  | 3.497**<br>(1.726)   | 9.785***<br>(3.522)     | -13.948***<br>(4.885) |
| Observations                   | 13,844               | 13,844            | 13,844               | 13,844              | 13,844             | 9,688                | 9,688                | 9,688                | 9,688                   | 9,688                 |
| Adj-Rsquare                    | 0.468                | 0.468             | 0.467                | 0.467               | 0.467              | 0.447                | 0.447                | 0.444                | 0.447                   | 0.447                 |



**Table 3.12a: What Determines the Percentage of Blockholder Directors?**

This table reports estimates of the determinants of the percentage of blockholder investor directors. The dependent variable is the percentage of directors who are significant shareholder of the board firm (more than 5%) or whose employer has equity investment in the board firm (more than 5%). The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors clustered at CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES             | Pct_Blockholder<br>(1) |
|-----------------------|------------------------|
| ROA <sub>t-1</sub>    | -0.017**<br>(0.007)    |
| Zscore <sub>t-1</sub> | -0.000<br>(0.001)      |
| Ln(segments)          | -0.000<br>(0.002)      |
| Ln(FirmAge)           | -0.001<br>(0.004)      |
| Ln(TA)                | -0.002<br>(0.002)      |
| ICR                   | 0.007<br>(0.009)       |
| CEO_OWN               | -0.081***<br>(0.027)   |
| CEO_Chair             | -0.004**<br>(0.002)    |
| CEO_Tenure            | -0.001***<br>(0.000)   |
| Ln(CEO_Age)           | 0.009<br>(0.006)       |
| Founder               | 0.000<br>(0.004)       |
| Ln(BoardSize)         | 0.011***<br>(0.004)    |
| Affect_Post           | -0.005<br>(0.004)      |
| Constant              | -0.031<br>(0.030)      |
| Firm FE & Year FE     | Y                      |
| Observations          | 9,841                  |
| Adjusted R-squared    | 0.476                  |

**Table 3.13b: Impacts of Blockholder Investor Directors on Firm Monitoring and Performance.**

This table reports estimates of the impacts of blockholder investor directors on firm monitoring and performance. The key independent variable is the percentage of directors who are significant shareholder of the board firm (more than 5%) or whose employer has equity investment in the board firm (more than 5%). The dependent variable is CEO\_Delta in Section 1; Ln(Eindex+1) in Section 2; CAR(-3,+5) in Section 3; and ROA in Section 4. Unreported control variables in Section 1-4 are the same as the control variables in Columns (1)-(4) of Table 3.4b, respectively. Panel A reports the OLS regressions and Panel B reports the second-stage results of IV regression. The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors reported in parentheses are clustered at CEO-firm pair level. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES              | Panel A: OLS            | Panel B: IV Regressions |
|------------------------|-------------------------|-------------------------|
|                        | Section 1: CEO_Delta    |                         |
|                        | (1)                     | (2)                     |
| <b>Pct_Blockholder</b> | 0.255***<br>(0.075)     | 16.730**<br>(6.653)     |
| Observations           | 14,276                  | 7,686                   |
| Adj-Rsquare            | 0.268                   | 0.328                   |
|                        | Section 2: Ln(Eindex+1) |                         |
| <b>Pct_Blockholder</b> | -0.183**<br>(0.085)     | -4.545***<br>(1.166)    |
| Observations           | 12,292                  | 6,758                   |
| Adj-Rsquare            | 0.772                   | 0.286                   |
|                        | Section 3: CAR(-3,+5)   |                         |
| <b>Pct_Blockholder</b> | -0.036<br>(0.036)       | 1.919<br>(1.374)        |
| Observations           | 6,186                   | 3,850                   |
| Adj-Rsquare            | 0.084                   | 0.086                   |
|                        | Section 4: ROA          |                         |
| <b>Pct_Blockholder</b> | -0.031<br>(0.023)       | 5.837**<br>(2.295)      |
| Observations           | 13,844                  | 7,475                   |
| Adj-Rsquare            | 0.468                   | 0.444                   |

**Table 3.14a: What Determines the Percentage of Interlock Directors?**

This table reports estimates of the determinants of the percentage of interlock directors. The dependent variable is the percentage of directors who are interlocking directors. The sample period is 1996 – 2008 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors clustered at CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES             | Pct_Interlock<br>(1) |
|-----------------------|----------------------|
| ROA <sub>t-1</sub>    | -0.003<br>(0.005)    |
| Zscore <sub>t-1</sub> | -0.001<br>(0.001)    |
| Ln(segments)          | -0.002*<br>(0.001)   |
| Ln(FirmAge)           | -0.002<br>(0.005)    |
| Ln(TA)                | 0.001<br>(0.001)     |
| ICR                   | 0.007<br>(0.007)     |
| CEO_OWN               | 0.011<br>(0.021)     |
| CEO_Chair             | -0.001<br>(0.001)    |
| CEO_Tenure            | 0.000<br>(0.000)     |
| Ln(CEO_Age)           | 0.003<br>(0.005)     |
| Founder               | -0.008***<br>(0.003) |
| Ln(BoardSize)         | 0.004<br>(0.005)     |
| Affect_Post           | -0.014***<br>(0.004) |
| Constant              | -0.006<br>(0.025)    |
| Firm FE & Year FE     | Y                    |
| Observations          | 9,841                |
| Adjusted R-squared    | 0.417                |

**Table 3.15b: Impacts of Interlock Directors on Firm Monitoring and Performance.**

This table reports estimates of the impacts of interlock directors on firm monitoring and performance. The key independent variable is the percentage of directors who are interlocking directors. The dependent variable is CEO\_Delta in Section 1; Ln(Eindex+1) in Section 2; CAR(-3,+5) in Section 3; and ROA in Section 4. Unreported control variables in Section 1-4 are the same as the control variables in Columns (1)-(4) of Table 3.4b, respectively. The sample period is 1996 – 2008 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. Panel A reports the OLS regressions and Panel B reports the second-stage results of IV regression. All regressions control for firm- and year-fixed effects. Robust standard errors reported in parentheses are clustered at CEO-firm pair level. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES            | Panel A: OLS            | Panel B: IV Regressions |
|----------------------|-------------------------|-------------------------|
|                      | Section 1: CEO_Delta    |                         |
|                      | (1)                     | (2)                     |
| <b>Pct_Interlock</b> | -0.088                  | 4.685***                |
|                      | (0.194)                 | (1.518)                 |
| Observations         | 14,276                  | 7,686                   |
| Adj-Rsquare          | 0.268                   | 0.328                   |
|                      | Section 2: Ln(Eindex+1) |                         |
| <b>Pct_Interlock</b> | -0.248*                 | -6.021***               |
|                      | (0.142)                 | (2.173)                 |
| Observations         | 12,292                  | 6,758                   |
| Adj-Rsquare          | 0.304                   | 0.767                   |
|                      | Section 3: CAR(-3,+5)   |                         |
| <b>Pct_Interlock</b> | 0.047                   | 1.826***                |
|                      | (0.044)                 | (0.626)                 |
| Observations         | 6,186                   | 3,850                   |
| Adj-Rsquare          | 0.085                   | 0.086                   |
|                      | Section 4: ROA          |                         |
| <b>Pct_Interlock</b> | -0.037                  | 0.892**                 |
|                      | (0.030)                 | (0.414)                 |
| Observations         | 13,844                  | 7,475                   |
| Adj-Rsquare          | 0.467                   | 0.444                   |

**Table 3.16a: What Determines the Percentage of Charity Directors?**

This table reports estimates of the determinants of the percentage of interlock directors. The dependent variable is the percentage of directors who are trustee, directors, or employee of charitable organizations that receives material grants (usually 2-5% of total endowment coming from the board firm) from the board firm. The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors clustered at CEO-firm pair level are reported in parentheses. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES             | Pct_Charity<br>(1) |
|-----------------------|--------------------|
| ROA <sub>t-1</sub>    | 0.001<br>(0.002)   |
| Zscore <sub>t-1</sub> | -0.000<br>(0.000)  |
| Ln(segments)          | -0.000<br>(0.000)  |
| Ln(FirmAge)           | 0.001<br>(0.001)   |
| Ln(TA)                | -0.000<br>(0.001)  |
| ICR                   | -0.004<br>(0.003)  |
| CEO_OWN               | -0.003<br>(0.002)  |
| CEO_Chair             | -0.000<br>(0.000)  |
| CEO_Tenure            | 0.000<br>(0.000)   |
| Ln(CEO_Age)           | -0.001<br>(0.001)  |
| Founder               | -0.000<br>(0.001)  |
| Ln(BoardSize)         | -0.001<br>(0.001)  |
| Affect_Post           | -0.001<br>(0.001)  |
| Constant              | 0.008<br>(0.006)   |
| Firm FE & Year FE     | Y                  |
| Observations          | 9,841              |
| Adjusted R-squared    | 0.118              |

**Table 3.17b: Impacts of Charity Directors on Firm Monitoring and Performance.**

This table reports estimates of the impacts of charity directors on firm monitoring and performance. The key independent variable is the percentage of directors who are trustee, directors, or employee of charitable organizations that receives material grants (usually 2-5% of total endowment coming from the board firm) from the board firm. The dependent variable is CEO\_Delta in Section 1; Ln(Eindex+1) in Section 2; CAR(-3,+5) in Section 3; and ROA in Section 4. Unreported control variables in Section 1-4 are the same as the control variables in Columns (1)-(4) of Table 3.4b, respectively. Panel A reports the OLS regressions and Panel B reports the second-stage results of IV regression. The sample period is 1996 – 2010 and includes all industries. Definitions of all variables are provided in Table 3.1 and 3.A1. All regressions control for firm- and year-fixed effects. Robust standard errors reported in parentheses are clustered at CEO-firm pair level. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

| VARIABLES               | Panel A: OLS        | Panel B: IV Regressions |
|-------------------------|---------------------|-------------------------|
|                         | Section1: CEO_Delta |                         |
|                         | (1)                 | (2)                     |
| Pct_Charity             | -0.094<br>(0.138)   | 26.508***<br>(8.880)    |
| Observations            | 14,276              | 7,686                   |
| Adj-Rsquare             | 0.267               | 0.328                   |
| Section 2: Ln(Eindex+1) |                     |                         |
| Pct_Charity             | 0.016<br>(0.262)    | -32.179**<br>(14.263)   |
| Observations            | 12,292              | 6,758                   |
| Adj-Rsquare             | 0.771               | 0.766                   |
| Section 3: CAR(-3,+5)   |                     |                         |
| Pct_Charity             | 0.123<br>(0.102)    | 7.151***<br>(2.656)     |
| Observations            | 6,186               | 3,850                   |
| Adj-Rsquare             | 0.085               | 0.086                   |
| Section 4: ROA          |                     |                         |
| Pct_Charity             | 0.014<br>(0.065)    | 4.477*<br>(2.403)       |
| Observations            | 13,844              | 7,475                   |
| Adj-Rsquare             | 0.467               | 0.444                   |

**Table 3.18A1: Variable Descriptions.**

Descriptions of other variables used in this paper.

| <i>Outcome Variables</i>              | <i>Definitions</i>   |
|---------------------------------------|--|
| CEO_Delta                             | Dollar change in wealth for a percentage change in firm value scaled by compensation, a delta measure suggested by Edmans, Gabaix, and Landier (2009). Downloaded from Edmans' website.  |
| Eindex                                | Entrenchment index based on the number of anti-takeover devices adopted by a firm, as constructed by Bebchuk, Cohen, and Ferrell (2009).   |
| Forced_CEO_Turnover                   | Forced CEO turnover indicator equal to one if the turnover is involuntary; zero, otherwise. The identification procedure is the same as in Parrino (1997) and Jenter and Kanaan (forthcoming).   |
| CAR(-3,+5)                            | Cumulative abnormal returns to acquisition bids during the event days (-3, +5) surrounding the announcement day. They are estimated using the market model over [-255, -6] event days with the value weighted market index.  |
| ROA                                   | Return to assets.  |
| <i>Other Variables</i>                |  |
| Ch_SV                                 | Changes in shareholder value, as measured by the product of shareholder value in 2000 dollars at year t-2 and the geometric mean of shareholder rates of returns from t-2 to t.  |
| Tobin's Q                             | The market value of common equity plus the book value of total liabilities divided by the book value of total assets.  |
| Zscore                                | Altman's Z-score.  |
| Leverage                              | Long term debt divided by total assets.  |
| Ln(segments)                          | Logged value of the number of business segments a firm has in a given year as reported by Compustat/Segment plus one.  |
| ICR                                   | Industry concentration ratio: The sum of the percentage market share (in sales) of the four biggest firms among all firms in Compustat in each industry as defined by 3-digit SIC code.  |
| CEO_OWEN                              | The percentage of outstanding common shares held by a CEO.   |
| Ln(BoardSize)                         | Logged value of the total number of directors on the board plus one.   |
| Ln(FirmAge)                           | Logged value of one plus the number of years from the firm's IPO as reported in CRSP or the number of years since its first appearance in CRSP.  |
| Ln(TA)                                | The logged value of total assets in 2000 US dollars in millions.   |
| IOC                                   | Institutional ownership concentration: The sum of the shareholder ownership held by the top five institutional investors   |
| CEO_Chair                             | Indicator for CEO also chairing the board and zero otherwise.  |
| CEO_Tenure                            | The number of years a CEO has been in office.  |
| Ln(CEO_Age)                           | The logged value of CEO age.   |
| Affect                                | Dependent board indicator equal to one if a firm does not have a majority of independent directors in 2001; zero, otherwise.   |
| Post                                  | Post-regulation period indicator equal to one for years 2003 and thereafter; zero, otherwise.  |
| Pct_Affiliated(-i)<br>(or Pct_XX(-i)) | Mean Pct_Affiliated or (Pct_Affiliated_XX) of all firms in the same industry and the same year as firm i, excluding firm i's own Pct_Affiliated or (Pct_Affiliated_XX). It is treated as a missing value if there is no other firm in the same industry and same year. Industry is defined as based on 3-digits of SIC code. Pct_Affiliated_XX reflects the variable of each type of affiliated directors. |

**Table 3.19A2: Correlation Among the Percentage of Independent, Inside, and Affiliated Directors**

This table shows correlation between the percentage of independent directors, inside directors, and various types of affiliated directors. Percentage of inside directors, *Pct\_Inside*, is defined as the number of directors who are current employees of the firm divided by board size. By construction, the sum of the percentages of independent, inside, and affiliated directors equals to one. Coefficients marked with \*, \*\*, and \*\*\* are significant at 10%, 5%, and 1%, respectively.

|                        | <b>Pct_Independent</b> | <b>Pct_Inside</b> | <b>Pct_Affiliated</b> | <b>Pct_Bus</b> | <b>Pct_FormEmp</b> | <b>Pct_Relative</b> | <b>Pct_Blockholder</b> | <b>Pct_Interlock</b> |
|------------------------|------------------------|-------------------|-----------------------|----------------|--------------------|---------------------|------------------------|----------------------|
|                        | (1)                    | (2)               | (3)                   | (4)            | (5)                | (6)                 | (7)                    | (8)                  |
| <b>Pct_Inside</b>      | -0.631***              |                   |                       |                |                    |                     |                        |                      |
| <b>Pct_Affiliated</b>  | -0.767***              | -0.014*           |                       |                |                    |                     |                        |                      |
| <b>Pct_Bus</b>         | -0.600***              | 0.032***          | 0.747***              |                |                    |                     |                        |                      |
| <b>Pct_FormEmp</b>     | -0.392***              | -0.070***         | 0.562***              | 0.196***       |                    |                     |                        |                      |
| <b>Pct_Relative</b>    | -0.266***              | 0.054***          | 0.297***              | 0.136***       | 0.185***           |                     |                        |                      |
| <b>Pct_Blockholder</b> | -0.270***              | -0.024***         | 0.367***              | 0.212***       | 0.254***           | 0.248***            |                        |                      |
| <b>Pct_Interlock</b>   | -0.215***              | 0.074***          | 0.217***              | 0.090***       | 0.020***           | 0.077***            | 0.009                  |                      |
| <b>Pct_Charity</b>     | -0.053***              | -0.019***         | 0.082***              | 0.024***       | 0.001              | -0.004              | 0.015**                | 0.018**              |



**Table 3.20.A3: First-stage Regression Results for Table 3.4b**

| VARIABLES             | Section 1: CEO_Delta | Section 2: Ln(Eindex+1) | Section 3: CAR(-3,+5) | Section 4: ROA       |
|-----------------------|----------------------|-------------------------|-----------------------|----------------------|
|                       | Pct_Affiliated       |                         |                       |                      |
|                       | (1)                  | (2)                     | (3)                   | (4)                  |
| Pct_Affiliated_IY(-i) | -0.003<br>(0.038)    | 0.023<br>(0.040)        | -0.069<br>(0.056)     | 0.010<br>(0.038)     |
| Affect_post           | -0.057***<br>(0.008) | -0.057***<br>(0.008)    | -0.058***<br>(0.011)  | -0.058***<br>(0.008) |
| F-statistics (IVs)    | 29.37                | 24.25                   | 13.92                 | 29.23                |
| Prob > F (IVs)        | 0.0000               | 0.0000                  | 0.0000                | 0.0000               |

**Table 3.21A4: First-stage Regression Results for Table 3.5b**

| VARIABLES          | Section 1: CEO_Delta    |                      |                     |                      |                    |
|--------------------|-------------------------|----------------------|---------------------|----------------------|--------------------|
|                    | Pct_Bus                 | Pct_Service          | Pct_Supplier        | Pct_Customer         | Pct_Merged         |
|                    | (1)                     | (2)                  | (3)                 | (4)                  | (5)                |
| Pct_Bus_IY(-i)     | -0.000<br>(0.038)       |                      |                     |                      |                    |
| Pct_Service_IY(-i) |                         | -0.035<br>(0.039)    |                     |                      |                    |
| UP_HHI             |                         |                      | 0.026**<br>(0.011)  |                      |                    |
| Down_HHI           |                         |                      |                     | 0.014**<br>(0.006)   |                    |
| Pct_Merged_IY(-i)  |                         |                      |                     |                      | 0.013<br>(0.034)   |
| Affect_post        | -0.047***<br>(0.006)    | -0.022***<br>(0.005) | -0.001<br>(0.001)   | -0.003***<br>(0.001) | 0.001<br>(0.001)   |
| F-statistics (IVs) | 30.49                   | 9.26                 | 2.88                | 10.23                | 0.13               |
| Prob > F (IVs)     | 0.0000                  | 0.0001               | 0.0560              | 0.0000               | 0.8759             |
| VARIABLES          | Section 2: Ln(Eindex+1) |                      |                     |                      |                    |
|                    | Pct_Bus                 | Pct_Service          | Pct_Supplier        | Pct_Customer         | Pct_Merged         |
|                    | (1)                     | (2)                  | (3)                 | (4)                  | (5)                |
| Pct_Bus_IY(-i)     | 0.044<br>(0.040)        |                      |                     |                      |                    |
| Pct_Service_IY(-i) |                         | -0.000<br>(0.041)    |                     |                      |                    |
| UP_HHI             |                         |                      | 0.035***<br>(0.013) |                      |                    |
| Down_HHI           |                         |                      |                     | 0.019**<br>(0.008)   |                    |
| Pct_Merged_IY(-i)  |                         |                      |                     |                      | -0.001<br>(0.036)  |
| Affect_post        | -0.043***<br>(0.007)    | -0.017***<br>(0.006) | -0.000<br>(0.001)   | -0.004***<br>(0.001) | 0.003**<br>(0.001) |
| F-statistics (IVs) | 21.12                   | 4.41                 | 3.52                | 9.33                 | 1.94               |
| Prob > F (IVs)     | 0.0000                  | 0.0122               | 0.0297              | 0.0001               | 0.1432             |
| VARIABLES          | Section 3: CAR(-3,+5)   |                      |                     |                      |                    |
|                    | Pct_Bus                 | Pct_Service          | Pct_Supplier        | Pct_Customer         | Pct_Merged         |
|                    | (1)                     | (2)                  | (3)                 | (4)                  | (5)                |
| Pct_Bus_IY(-i)     | -0.020<br>(0.056)       |                      |                     |                      |                    |
| Pct_Service_IY(-i) |                         | -0.025<br>(0.056)    |                     |                      |                    |
| UP_HHI             |                         |                      | 0.034<br>(0.021)    |                      |                    |
| Down_HHI           |                         |                      |                     | 0.026**<br>(0.013)   |                    |
| Pct_Merged_IY(-i)  |                         |                      |                     |                      | 0.008<br>(0.038)   |
| Affect_post        | -0.043***<br>(0.009)    | -0.022***<br>(0.008) | -0.003*<br>(0.002)  | -0.002*<br>(0.001)   | -0.001<br>(0.002)  |
| F-statistics (IVs) | 11.05                   | 4.12                 | 2.76                | 3.22                 | 0.32               |
| Prob > F (IVs)     | 0.0000                  | 0.0163               | 0.0633              | 0.0400               | 0.7266             |
| VARIABLES          | Section 4: ROA          |                      |                     |                      |                    |
|                    | Pct_Bus                 | Pct_Service          | Pct_Supplier        | Pct_Customer         | Pct_Merged         |
|                    | (1)                     | (2)                  | (3)                 | (4)                  | (5)                |
| Pct_Bus_IY(-i)     | 0.005<br>(0.040)        |                      |                     |                      |                    |
| Pct_Service_IY(-i) |                         | -0.029<br>(0.040)    |                     |                      |                    |
| UP_HHI             |                         |                      | 0.030***<br>(0.012) |                      |                    |
| Down_HHI           |                         |                      |                     | 0.014**<br>(0.006)   |                    |
| Pct_Merged_IY(-i)  |                         |                      |                     |                      | 0.008<br>(0.036)   |
| Affect_post        | -0.045***<br>(0.006)    | -0.020***<br>(0.005) | -0.001<br>(0.001)   | -0.003***<br>(0.001) | -0.000<br>(0.001)  |
| F-statistics (IVs) | 26.7                    | 7.12                 | 3.64                | 9.97                 | 0.03               |
| Prob > F (IVs)     | 0.0000                  | 0.0008               | 0.0263              | 0.0000               | 0.9662             |

**Table 3.22A5: First-stage Regression Results for Table 3.6b**

| VARIABLES          | Section 1: CEO Delta    |                     |                      |                    |                     |                    |
|--------------------|-------------------------|---------------------|----------------------|--------------------|---------------------|--------------------|
|                    | Pct_FormEmp             | Pct_CEO             | Pct_CFO              | Pct_COO            | Pct_Chair           | Pct_Founder        |
|                    | (1)                     | (2)                 | (3)                  | (4)                | (5)                 | (6)                |
| Pct_FormEmp_IY(-i) | -0.025<br>(0.019)       |                     |                      |                    |                     |                    |
| Pct_CEO_IY(-i)     |                         | -0.016<br>(0.020)   |                      |                    |                     |                    |
| Pct_CFO_IY(-i)     |                         |                     | -0.061***<br>(0.018) |                    |                     |                    |
| Pct_COO_IY(-i)     |                         |                     |                      | 0.012<br>(0.023)   |                     |                    |
| Pct_Chair_IY(-i)   |                         |                     |                      |                    | -0.015<br>(0.024)   |                    |
| Pct_Founder_IY(-i) |                         |                     |                      |                    |                     | -0.001<br>(0.019)  |
| Affect_post        | -0.001<br>(0.004)       | 0.009***<br>(0.002) | -0.001<br>(0.001)    | -0.001<br>(0.001)  | 0.002<br>(0.004)    | -0.003<br>(0.003)  |
| F-statistics (IVs) | 0.98                    | 9.4                 | 5.77                 | 0.89               | 0.3                 | 0.41               |
| Prob > F (IVs)     | 0.3746                  | 0.0001              | 0.0031               | 0.4113             | 0.7427              | 0.6607             |
| VARIABLES          | Section 2: Ln(Eindex+1) |                     |                      |                    |                     |                    |
|                    | Pct_FormEmp             | Pct_CEO             | Pct_CFO              | Pct_COO            | Pct_Chair           | Pct_Founder        |
|                    | (1)                     | (2)                 | (3)                  | (4)                | (5)                 | (6)                |
| Pct_FormEmp_IY(-i) | -0.028<br>(0.018)       |                     |                      |                    |                     |                    |
| Pct_CEO_IY(-i)     |                         | -0.007<br>(0.022)   |                      |                    |                     |                    |
| Pct_CFO_IY(-i)     |                         |                     | -0.066***<br>(0.020) |                    |                     |                    |
| Pct_COO_IY(-i)     |                         |                     |                      | 0.017<br>(0.029)   |                     |                    |
| Pct_Chair_IY(-i)   |                         |                     |                      |                    | -0.021<br>(0.021)   |                    |
| Pct_Founder_IY(-i) |                         |                     |                      |                    |                     | -0.001<br>(0.017)  |
| Affect_post        | -0.002<br>(0.004)       | 0.006***<br>(0.002) | -0.002**<br>(0.001)  | -0.002*<br>(0.001) | 0.002<br>(0.002)    | -0.002<br>(0.001)  |
| F-statistics (IVs) | 1.37                    | 3.66                | 7.03                 | 2.09               | 0.98                | 0.84               |
| Prob > F (IVs)     | 0.2530                  | 0.0258              | 0.0009               | 0.1233             | 0.3764              | 0.4326             |
| VARIABLES          | Section 3: CAR(-3,+5)   |                     |                      |                    |                     |                    |
|                    | Pct_FormEmp             | Pct_CEO             | Pct_CFO              | Pct_COO            | Pct_Chair           | Pct_Founder        |
|                    | (1)                     | (2)                 | (3)                  | (4)                | (5)                 | (6)                |
| Pct_FormEmp_IY(-i) | -0.057**<br>(0.024)     |                     |                      |                    |                     |                    |
| Pct_CEO_IY(-i)     |                         | -0.013<br>(0.031)   |                      |                    |                     |                    |
| Pct_CFO_IY(-i)     |                         |                     | -0.101**<br>(0.045)  |                    |                     |                    |
| Pct_COO_IY(-i)     |                         |                     |                      | 0.041<br>(0.043)   |                     |                    |
| Pct_Chair_IY(-i)   |                         |                     |                      |                    | -0.047*<br>(0.028)  |                    |
| Pct_Founder_IY(-i) |                         |                     |                      |                    |                     | -0.031<br>(0.035)  |
| Affect_post        | -0.014**<br>(0.007)     | -0.000<br>(0.003)   | 0.001<br>(0.002)     | -0.001<br>(0.001)  | 0.009***<br>(0.003) | -0.001<br>(0.002)  |
| F-statistics (IVs) | 5.42                    | 0.1                 | 3.01                 | 0.58               | 6.18                | 0.53               |
| Prob > F (IVs)     | 0.0044                  | 0.9020              | 0.0495               | 0.5616             | 0.0021              | 0.5912             |
| VARIABLES          | Section 4: ROA          |                     |                      |                    |                     |                    |
|                    | Pct_FormEmp             | Pct_CEO             | Pct_CFO              | Pct_COO            | Pct_Chair           | Pct_Founder        |
|                    | (1)                     | (2)                 | (3)                  | (4)                | (5)                 | (6)                |
| Pct_FormEmp_IY(-i) | -0.023<br>(0.019)       |                     |                      |                    |                     |                    |
| Pct_CEO_IY(-i)     |                         | -0.013<br>(0.021)   |                      |                    |                     |                    |
| Pct_CFO_IY(-i)     |                         |                     | -0.059***<br>(0.019) |                    |                     |                    |
| Pct_COO_IY(-i)     |                         |                     |                      | 0.009<br>(0.023)   |                     |                    |
| Pct_Chair_IY(-i)   |                         |                     |                      |                    | -0.019<br>(0.020)   |                    |
| Pct_Founder_IY(-i) |                         |                     |                      |                    |                     | -0.002<br>(0.015)  |
| Affect_post        | -0.003<br>(0.004)       | 0.007***<br>(0.002) | -0.001<br>(0.001)    | -0.001<br>(0.001)  | 0.001<br>(0.002)    | -0.002*<br>(0.001) |
| F-statistics (IVs) | 0.94                    | 5.66                | 5.28                 | 0.82               | 0.58                | 1.75               |
| Prob > F (IVs)     | 0.3909                  | 0.0035              | 0.0051               | 0.4401             | 0.5601              | 0.1737             |

**Table 3.23A6: First-stage Regression Results for Table 3.7b**

| VARIABLES          | Section 1: CEO_Delta    |            |              |             |            |
|--------------------|-------------------------|------------|--------------|-------------|------------|
|                    | Pct_Relative            | Pct_OldGen | Pct_YoungGen | Pct_Sibling | Pct_Spouse |
|                    | (1)                     | (2)        | (3)          | (4)         | (5)        |
| Ln(CEOAge)         | -0.008*                 | -0.006**   | 0.006***     | -0.001      | 0.002*     |
|                    | (0.004)                 | (0.002)    | (0.002)      | (0.002)     | (0.001)    |
| Affect_post        | -0.010***               | -0.000     | -0.002***    | -0.001      | 0.000      |
|                    | (0.002)                 | (0.001)    | (0.001)      | (0.001)     | (0.001)    |
| F-statistics (IVs) | 11.54                   | 2.8        | 8.19         | 0.77        | 1.95       |
| Prob > F (IVs)     | 0.0000                  | 0.0608     | 0.0003       | 0.4638      | 0.1426     |
| VARIABLES          | Section 2: Ln(Eindex+1) |            |              |             |            |
|                    | Pct_Relative            | Pct_OldGen | Pct_YoungGen | Pct_Sibling | Pct_Spouse |
|                    | (1)                     | (2)        | (3)          | (4)         | (5)        |
| Ln(CEOAge)         | -0.011**                | -0.008***  | 0.007***     | 0.001       | 0.000      |
|                    | (0.005)                 | (0.003)    | (0.002)      | (0.002)     | (0.001)    |
| Affect_post        | -0.011***               | -0.002     | -0.003***    | -0.001      | 0.001*     |
|                    | (0.003)                 | (0.001)    | (0.001)      | (0.001)     | (0.001)    |
| F-statistics (IVs) | 11.85                   | 6.63       | 8.17         | 0.14        | 2.1        |
| Prob > F (IVs)     | 0.0000                  | 0.0013     | 0.0003       | 0.8732      | 0.1228     |
| VARIABLES          | Section 3: CAR(-3,+5)   |            |              |             |            |
|                    | Pct_Relative            | Pct_OldGen | Pct_YoungGen | Pct_Sibling | Pct_Spouse |
|                    | (1)                     | (2)        | (3)          | (4)         | (5)        |
| Ln(CEOAge)         | -0.012**                | -0.009***  | 0.010***     | -0.001      | 0.001      |
|                    | (0.006)                 | (0.003)    | (0.003)      | (0.003)     | (0.000)    |
| Affect_post        | -0.009***               | -0.005***  | -0.001       | -0.001      | 0.001      |
|                    | (0.003)                 | (0.002)    | (0.001)      | (0.002)     | (0.001)    |
| F-statistics (IVs) | 6.04                    | 10.23      | 3.96         | 0.18        | 1.93       |
| Prob > F (IVs)     | 0.0024                  | 0.0000     | 0.0191       | 0.8355      | 0.1460     |
| VARIABLES          | Section 3: CAR(-3,+5)   |            |              |             |            |
|                    | Pct_Relative            | Pct_OldGen | Pct_YoungGen | Pct_Sibling | Pct_Spouse |
|                    | (1)                     | (2)        | (3)          | (4)         | (5)        |
| Ln(CEOAge)         | -0.007                  | -0.006**   | 0.007***     | -0.001      | 0.002**    |
|                    | (0.004)                 | (0.002)    | (0.002)      | (0.002)     | (0.001)    |
| Affect_post        | -0.011***               | -0.001     | -0.002***    | -0.001      | 0.000      |
|                    | (0.002)                 | (0.001)    | (0.001)      | (0.001)     | (0.001)    |
| F-statistics (IVs) | 13.15                   | 3.85       | 8.53         | 0.82        | 3.31       |
| Prob > F (IVs)     | 0.0000                  | 0.0214     | 0.0002       | 0.4389      | 0.0366     |

**Table 3.24A7: First-stage Regression Results for Table 3.8b**

| VARIABLES              | Section 1: CEO_Delta | Section 2: Ln(Eindex+1) | Section 3: CAR(-3,+5) | Section 4: ROA    |
|------------------------|----------------------|-------------------------|-----------------------|-------------------|
|                        | Pct_Blockholder      |                         |                       |                   |
|                        | (1)                  | (2)                     | (3)                   | (4)               |
| Pct_Blockholder_IY(-i) | -0.028<br>(0.045)    | -0.452***<br>(0.067)    | -0.038<br>(0.031)     | -0.013<br>(0.075) |
| affect_post            | -0.001<br>(0.003)    | 0.009***<br>(0.002)     | -0.003<br>(0.003)     | 0.006<br>(0.005)  |
| Affect_post            | 0.24                 | 26.57                   | 1.09                  | 0.82              |
| Prob > F (IVs)         | 0.7884               | 0.0000                  | 0.3358                | 0.4398            |

**Table 3.25A8: First-stage Regression Results for Table 3.9b**

| VARIABLES            | Section 1: CEO_Delta | Section 2: Ln(Eindex+1) | Section 3: CAR(-3,+5) | Section 4: ROA       |
|----------------------|----------------------|-------------------------|-----------------------|----------------------|
|                      | Pct_Interlock        |                         |                       |                      |
|                      | (1)                  | (2)                     | (3)                   | (4)                  |
| Pct_Interlock_IY(-i) | -0.052<br>(0.054)    | -0.050<br>(0.061)       | 0.108*<br>(0.065)     | -0.056<br>(0.055)    |
| affect_post          | -0.012***<br>(0.002) | -0.014***<br>(0.002)    | -0.013***<br>(0.003)  | -0.013***<br>(0.002) |
| Affect_post          | 16.41                | 17.7                    | 10.85                 | 18.81                |
| Prob > F (IVs)       | 0.0000               | 0.0000                  | 0.0000                | 0.0000               |

**Table 3.26A9: First-stage Regression Results for Table 3.10b**

| VARIABLES          | Section 1: CEO_Delta | Section 2: Ln(Eindex+1) | Section 3: CAR(-3,+5) | Section 4: ROA     |
|--------------------|----------------------|-------------------------|-----------------------|--------------------|
|                    | Pct_Charity          |                         |                       |                    |
|                    | (1)                  | (2)                     | (3)                   | (4)                |
| Pct_Charity_IY(-i) | -0.037*<br>(0.020)   | -0.042**<br>(0.021)     | 0.067<br>(0.109)      | -0.038*<br>(0.020) |
| affect_post        | -0.002*<br>(0.001)   | -0.002*<br>(0.001)      | -0.003*<br>(0.002)    | -0.002*<br>(0.001) |
| Affect_post        | 2.57                 | 2.57                    | 1.78                  | 2.41               |
| Prob > F (IVs)     | 0.0766               | 0.0769                  | 0.1688                | 0.0896             |

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