Three Essays in Empirical Corporate Finance

March 2015

ISBN 978 90 361 0434 0

Cover design: Crasborn Graphic Designers bno, Valkenburg a.d. Geul

This book is no. **616** of the Tinbergen Institute Research Series, established through cooperation between Rozenberg Publishers and the Tinbergen Institute. A list of books which already appeared in the series can be found in the back.
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Three Essays in Empirical Corporate Finance

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Thesis

to obtain the degree of Doctor from the
Erasmus University Rotterdam
by command of the
rector magnificus

Prof.dr. H.A.P. Pols

and in accordance with the decision of the Doctorate Board
The public defense shall be held on

Thursday 11 June 2015 at 13:30 hours
by

Guangyao Zhu, Born in Anhui, **China**

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Acknowledgements

This dissertation documents my exploration of the modern corporation in the past four years. During this process, there can be no doubt that several others have been of invaluable help. I would like to take this opportunity to acknowledge their support.

First and foremost, I thank my supervisor Ingolf Dittmann for getting me started in the academic world. I am really lucky to have Ingolf as my supervisor when I started my research in finance. Ingolf is a role model for me and his work ethic influences me significantly. The influence is beyond research. I become more optimistic, organized and rigorous; whenever I decide to do something, research or anything else, I will try my best. I express my sincere gratitude to Ingolf for helping bring these changes to me. I also feel obliged to his generosity in funding and in the encouragement for my academic pursuit. Second, I take this opportunity to thank David Yermack, whose corporate finance seminar in Tinbergen Institute sparked my interests in empirical corporate finance from the very beginning. David is very busy, but he read all my papers and provide me with very helpful comments. I also thank David for hosting my NYU Stern visit, and for very detailed and helpful advices on my research and for a recommendation letter supporting me during the job market period. I also thank Sjoerd van Bekkum for being co-author of the paper that forms the Chapter 4 of this dissertation. I thank Sjoerd for supervising me writing this paper and for a recommendation letter supporting me in the job market.

I also take this chance to thank my colleagues in Erasmus School of Economics. I thank Marc Gabarro Bonet for his comments to my paper and for helping me prepare the job market interview. I thank Vadym Volosovych for his suggestions to my job market paper. I thank Nico van der Sar and Vadym Volosovych for co-supervising the student's thesis. I thank Melissa Lin, Wendun Wang, Edith Leung, Francisco Urzua Infante, Yun Dai and Te Bao for the mock interviews. I thank Jose L. Moraga for helping prepare my job market. I thank Christina Mansson and Arianne de Jong for excellent secretarial work during the job market period. I also thank my TI and ESE cohorts: Jiangyu Ji, Barra Istvan, Xuedong Wang, Yueshen Zhou, Dan Zhang, Ko-Chia Yu and Yun Dai, among others for all the great time at TI and ESE. I am grateful to Mara Faccio, Kasper Meisner Nielsen, Vadym Volosovych, Bauke Visser, Qinghao Mao, Stefan Obernberger,

Elvira Sojli, Francisco Urzua Infante, Stephanie Chan and Robin Doettling for valuable comments and suggestions for my job market paper that forms the Chapter 2 of this dissertation.

Finally, I express my sincere gratitude to my wife, Siyu Fang, my parents, Yehua Zhu and Yanying Gao, and my brother, Xiaoyang Zhu for their support. My thanks also go to Bowen Shi and Weining Fang. In the past month, I have taken some time to think about the future. The beauty of life is its uncertainty and I am curious what it can bring me in the future.

> *"...you don't reach Serendib by plotting a course for it. You have to set out in good faith for elsewhere and lose your bearings ... serendipitously."* — John Barth

Guangyao Zhu
Rotterdam, March 2015

Contents

List of Figures

List of Tables

Dedicated to Siyu and Xiyan

Chapter 1

Introduction

1.1 Research Questions

This dissertation documents my exploration of the modern corporation in the past few years. I outline a detailed picture of major U.S. public corporations in more recent decades from two perspectives: ownership structure and internal nepotism. I also study the private information carried in the CEOs' unexpected option exercise behavior. This dissertation aims to deepen our understanding of the modern corporation and CEOs' option exercise behavior.

First, I study the ownership structure of modern corporations by drawing a detailed picture of the ownership structure for major U.S. public companies from 1994 to 2012. Berle and Means (1932) find that widely held companies were very prevalent for the 200 largest non-banking corporations, in which the ownership of capital was dispersed among the small shareholders, but control was concentrated in the hands of managers. During the time period from 1929 to 1963, Means (1967) shows that the ultimate ownership of big corporations has become even more widely dispersed and that control has increasingly become separate from ownership. Berle and Means (1932) and Means (1967) established

the image of widely held public companies, around which the modern corporate finance has developed, for major U.S. public companies (La Porta et al., 1999). However, it is unclear how the ownership structure of major U.S. public companies has developed in more recent decades. In this dissertation, I document over the past two decades a sharp upward trend in ownership concentration towards institutional investors, namely financial institutions and private investors, which are the driving forces of the elimination of widely held public companies. In 2012, only 2 percent of major U.S. public companies could be considered as widely held. Widely held public companies are about to become extinct.

The evolution of ownership structure is shaped by investment strategies of blockholders and the interactions among them. I find that institutional investor tends to target undervalued firms—that is, it increases (decreases) its position when the firm's performance is bad (good). By contrast, I find that founding-family ownership is more likely to remain when a firm's performance is good. They tend to quit, voluntarily or involuntarily, when a firm's performance is bad. The different investment strategies adopted by institutional investors and founding-families contributed to the development of such an ownership structure that institutional ownership tends to be formed in firms with poor performance and founding-family ownership is more likely to be observed in well-performing ones. Moreover, institutional ownership interacts with founding-family ownership, and can be seen has having contributed to its decline. I apply standard event study methodology and find that there is a significant abnormal decrease in founding-family ownership and the family CEO ratio around the time in which institutional ownership enters the firm's ownership structure for the first time.

Second, I study the modern corporation in another angle by examining internal nepotism within major U.S. public corporations. The theory of the firm views most organizations, including corporations, as a nexus for a set of contracting

relationships among individuals, e.g., employees, suppliers, customers, creditors, etc., and consider these contractual relations as the essence of corporations (Jensen and Meckling 1976). In this dissertation, however, I find that nepotism is surprisingly prevalent in the S&P 1500 firms, of which 53.46 percent exhibit nepotism. I study nepotism in a social network perspective and measure the strength of nepotism by degree and density. I find that firms with nepotism underperform significantly. The abnormal return is 31 basis points (bps) per month, or 3.8 percent per year, over the estimating period. This point estimate is significant at the 5 percent level; 72 percent of the firms having founding-family ownership exhibit nepotism, which is more than 20 percent higher the one without founding-family ownership. Overall, my empirical results demonstrate that nepotism is associated with worse firm performance, especially for firms having founding-family ownership. This paper aims to deepen our understanding of the internal structure of modern corporations. My contribution to the existing literature is the development of a nepotism database covering family ties within major U.S. public companies from 1994 to 2012, and a nepotism index indicating the strength of nepotism.

Third, I examine the private information carried in the CEOs' unexpected option exercise behavior. Based on a novel CEO option exercises and corresponding option portfolios database, we document that 88 percent of the CEOs option exercises are ex ante identifiable "expected" exercises. The remaining 12 percent deviate from expected option exercises and carry private and negative information on the firm's future performance. We find there is a significant difference in market reaction to the expected and unexpected option exercise. We also document that the unexpected exercises are associated with more negative firm performance in the future, both in short-term and long-term. Our study provides a new framework for examining insider information contained in CEO option exercises.

1.2 Extracting Data in SEC Filings Using Textual Analysis Technique

The data disclosed by the public companies are scattered in filings, which are usually unstructured. In this dissertation, I mainly rely on the Perl programming language, which is a powerful textual analysis instrument, to extract structured or unstructured data from electronic SEC filings. I construct three unique databases: First, blockholder ownership database. My contribution to the existing blockholder literature is the development of a large shareholder ownership database covering a sample of 3,148 major U.S. public companies from 1994 to 2012. Second, I construct a nepotism database, in which I identify all disclosed family connections among corporate insiders within major U.S. public companies. Third, I construct a CEO option exercises and corresponding option portfolio database.

1.3 Outline

The results are reported in chapter 2, 3 and 4, respectively. Each chapter is self-contained. Chapter 2 is based on my job market paper titled "The Extinction of Widely Held Public Companies". Chapter 3 is developed from one of my working papers titled "Nepotism and Equity Prices". Chapter 4 is developed from my working paper titled "Unexpected Executive Stock Option Exercises".

Chapter 2

The Extinction of Widely Held Public Companies

2.1 Introduction

The separation between ownership and control bothered students of corporations from Adam Smith to Berle and Means and Jensen and Meckling (Fama and Jensen 1983). In this paper, I examine the ownership structure of major U.S. public companies in more recent decades and draw a detailed picture of the ownership structure of major U.S. public companies during the period 1994 to 2012. My contribution to the existing blockholder literature (e.g., Dlugosz et al. 2006; Holderness 2009) is the development of a large shareholder ownership database covering a sample of 3,148 major U.S. public companies from 1994 to 2012. I consider four types of ownership in this paper, including: institutional ownership, founding-family ownership, the employee ownership plan, and corporation ownership. In line with previous studies (e.g., Holderness 2009), I consider a company as widely held if there is no large shareholder holding greater than or

equal to 5 percent, which is the cutoff value of a firm for mandatory disclosure with the Securities and Exchange Commission (SEC).

I document over the last two decades a sharp upward trend in ownership concentration towards institutional investors, namely financial institutions and private investors. There is a sharp increase in both their ownership and number. During the period 1994 to 2012, the aggregate institutional ownership has increased from 10.46 percent to 26.27 percent. The concentration of ownership is the driving force of the elimination of widely held public companies. In 2012, only 2 percent of major U.S. public companies could be considered as widely held. The increase in institutional ownership is not evenly distributed. Investment manager ownership has experienced the largest increase during the sample period. For hedge funds, there is an upward trend before the financial crisis in 2008 and a downward trend thereafter. However, the aggregate ownership held by other institutional investors has been relatively stable over the sample period. The concentration of ownership towards institutional investors started as early as the 1980s. Shleifer and Vishny (1986) document the presence of four types of large shareholders using a sample of Fortune 500 firms in 1980. These four types of large shareholders include financial firms at 25.65 percent, families at 32.68 percent, pension and profit-sharing plans at 19.74 percent and firms and family holding companies at 21.93 percent. In 2012, I have determined these numbers were 95.16 percent, 14.04 percent, 2.28 percent, 3.76 percent, respectively. The stability of the ownership structure of major U.S. public companies, which is measured by the ownership life cycle, is significantly lower than two decades ago. The average life cycle of founding-family ownership is 8.78 years, compared to institutional ownership which is only 2.61 years. Institutional ownership replaced family ownership in the 1980s and has become since this time the most prevalent of the large shareholders. Founding-family ownership has experienced a steady decline in the last two decades.

The evolution of ownership structure is shaped by investment strategies of blockholders. Institutional investors are more diversified. They are capable of adopting sophisticated trading strategies to limit their downside risk. By using both firm fixed model and Arellano-Bond dynamic panel GMM model, I find that institutional investors tend to target undervalued firms—that is, it increases (decreases) its position when the firm's performance is bad (good). By contrast, founding-families are usually not diversified (Anderson and Reeb 2003), and take less risk than non-family firms (Naldi et al. 2007). I find that founding-family ownership is more likely to remain when a firm's performance is good. They tend to quit, voluntarily or involuntarily, when a firm's performance is bad. The different investment strategies adopted by institutional investors and founding-families contributed to the development of such an ownership structure that institutional ownership tends to be formed in firms with poor performance and founding-family ownership is more likely to be observed in well-performing ones.

The interaction among different types of ownership determines which type of ownership will survive in a firm's ownership structure. Institutional investors tend to target undervalued firms. This is significantly related to subsequent third-party acquisitions, which leads to an abnormal decrease in founding-family ownership and the family CEO ratio. I calculate normal founding-family ownership and investigate abnormal changes in founding-family ownership and the family CEO ratio. By using a sample of 236 companies, I find that the cumulative abnormal change in founding-family ownership during the time window [-1,5] is -6.05 percent on average, while the cumulative abnormal change in the family CEO ratio during the time window [-1,5] is -16.5 percent. Both of them are significant at the 1 percent level. The causal direction tends to be clear since the subsequent third-party acquisitions, which are significantly facilitated by the institutional ownership, are the main reason for the abnormal change in

founding-family ownership and the family CEO ratio. Institutional ownership interacts with founding-family ownership, and can be seen has having contributed to the decline in founding-family ownership. Institutional ownership also has a significant impact on the composition of boards. It tends to increase the ratio of independent directors and decrease the ratio of insider and family directors. The cumulative abnormal change in the ratio of independent directors during the time window [-1,5] is 2.2 percent on average, which is significant at the 5 percent level, while the cumulative abnormal change in the ratio of insider and family directors during the time window [-1,5] is -2.4 percent and -1.5 percent on average, which is significant at the 1 percent and 5 percent level, respectively.

The ownership structure of major U.S. public companies exhibits some unique characteristics that help blockholders achieve a sort of balance between liquidity and control. In major U.S. public companies, institutional investors together hold a significant stake in the firm, but each institutional investor only holds a relatively small stake. Moreover, founding-family ownership and institutional ownership can co-exist in a firm in the U.S.; founding-family holds more shares than each institutional investor when it is present, but holds less than the aggregate shares held by the institutional investors. By allowing multiple institutional investors to be involved, each institutional investor obtains liquidity at the expense of losing control to a lesser content—that is, the ownership held by institutional investors as a whole can be controlling when necessary. However, an ownership structure that is characterized by multiple institutional investors who have a significantly shorter life cycle of ownership is inherently unstable because of information asymmetry. Institutions herd as a result of inferring information from each other's trades. This may lead to a chain reaction when one powerful blockholder fails.

I add to the available literature on the ownership structure originating from

Berle and Means (1932). They find that widely held companies were very prevalent for the 200 largest non-banking corporations, in which the ownership of capital was dispersed among the small shareholders, but control was concentrated in the hands of managers. During the time period from 1929 to 1963, Means (1967) shows that the ultimate ownership of big corporations has become even more widely dispersed and that control has increasingly become separate from ownership. Berle and Means (1932) and Means (1967) established the image of widely held public companies, around which the modern corporate finance has developed, for major U.S. public companies. According to La Porta et al. (1999), "for at least two generations, their book has fixed the image of the modern corporation. $\cdots$ The modern field of corporate finance has developed around the same image of a widely held corporation, as can be seen in the central contribution of Jensen and Meckling (1976) or Grossman and Hart (1980)". In this paper, I examine the ownership structure of major U.S. public companies in more recent decades and find that a concentration of ownership towards financial institutions and private investors started to form as early as 1980 until after 2010. The concentration of ownership leads to the elimination of widely held public companies. There have been several studies in the literature questioning the empirical validity of widely held public companies. Eisenberg (1976), Demsetz (1983), Demsetz and Lehn (1985), Shleifer and Vishny (1986), and Morck et al. (1988a) show that there is a modest concentration of ownership even among the largest American firms. Demsetz (1983) argues that "In a world in which self-interest plays a significant role in economic behavior, it is foolish to believe that owners of valuable resources systematically relinquish control to managers who are not guided to serve their interests".

For a random sample of 375 U.S. public firms, Holderness (2009) provides evidence that 96 percent of them had blockholders and argues that the image

of the public firm is a myth.[1] However, I show that the image of widely held public companies might not be a myth, that is, major U.S. public companies were widely held, but they are eliminated in more recent decades. Previous studies such as Mintzberg (1983), Chaganti and Damanpour (1991), and Faccio et al. (2011) have shown that firms take strategies responsive to controlling shareholders' goals and expectations. I also add to the growing literature on the blockholder ownership. Dlugosz et al. (2006) report blockholder data for 1,913 companies during the period 1996 until 2001. Cronqvist and Fahlenbrach (2009) analyze the effects of blockholder heterogeneity, and show that different large shareholders have distinct investment and governance styles. Faccio et al. (2011) find that firms controlled by diversified large shareholders undertake riskier investments than firms controlled by nondiversified large shareholders. Edmans and Manso (2011) propose a model in which blockholders monitor firms by trading. Dhillon and Rossetto (2014) develop a model to show that mid-sized blockholders emerge to mitigate the conflicts of interest between one large shareholder and small nonvoting shareholders.

The rest of the paper is structured as follows. In Section 2.2, I present the identification of the ownership data. In Section 2.3, I draw a detailed picture of the ownership structure of major U.S. public companies in order to provide a context for subsequent analyses. In Section 2.4, I study the evolution of the ownership structure. In Section 2.5, I study the impact of ownership structure

[1]There are several studies about the ownership structure of non-American companies. La Porta et al. (1999) choose 30 firms in each country, and studied the ownership structure of large corporations in 27 countries at the end of 1997. They show that few of these corporations were widely held except in economies with very good shareholder protection. Claessens et al. (2000) also document using a sample of 2,980 corporations in 9 East Asian countries that the separation of management from ownership control is rare. Faccio and Lang (2002) document using a sample of 5,232 corporations in 13 Western European countries that 36.93 percent of the firms were widely held and 44.29 percent of the firms were family-controlled. Morck (2005) explains the origins and effects of blockholding around the world. Using a sample of 60 U.K. firms, Franks et al. (2009) study the evolution of investor protection in the long-run and corporate ownership in the United Kingdom over the twentieth century.

on the boards. In Section 4.4, I offer a conclusion and suggest other avenues of potential research.

2.2 Sample Construction

In my sample, I include all companies in the Excecucomp database which mainly includes firms in the S&P 1500 index that covers approximately 90 percent of the U.S. market capitalization. I consider the electronic proxy filings submitted by the companies in the SEC EDGAR database as my data source for ultimate ownership.[2] The company is required to disclose the ultimate beneficial ownership of any person, including any "group" as that term is used in Section 13 (d) (3) of the Securities Exchange Act, who is known to the registrant to be the beneficial owner of more than 5 percent of any class of the shares. Moreover, the company is required to disclose the ownership of all directors, nominees and executive officers. I downloaded all the proxy filings submitted by the firms with the SEC EDGAR database. In total, 3,148 firms submitted 30,690 proxy filings. The dates for the proxy filings range from 1 January 1994 to 6 August 2012. I use the Perl programing language, which provides powerful text processing facilities, to identify and extract the ownership data disclosed in the proxy filings. This is feasible and more efficient since companies are required to disclose ownership in a standard format that can be identified and captured using Perl's regular expression function (Zhu 2014b). I manually checked the proxy filings and cleaned Perl-generated data for three rounds to correct problems with double counting

[2]I did not consider Thomson Reuters 13F database for two reasons. First, for at least 5 percent of the firms in my sample, institutional investors, as reported by Thomson Reuters 13F database, own over 100 percent of the firm, which is unreasonable. Second, it only includes institutional ownership. I did not consider databases such as Orbis for two reasons. First, they fail to consider the ownership double counting and overlapping problem, as noted by Dlugosz et al. (2006). The fact that it is necessary to check the proxy filings to solve the ownership double counting and overlapping problem motivates me to collect the ownership data from proxy filings directly. Second, the Orbis database only offers up to 10 years of history.

ownership, as noted by Dlugosz et al. (2006).[3] I manually correct blockholder name, as noted by Cronqvist and Fahlenbrach (2009), which could be disclosed differently across years or firms. In some cases, ownership data are disclosed in the text instead of the table. I identify such ownership data by manual collection facilitated with the Perl programing language. In my study, there were 4,323 institutional investors, 1,000 founding-families, 593 large corporate shareholders, and 203 employee ownership plans. Over the sample period, there were overall 80,752 firm-year-blockholder observations.

Empirically, it is well documented in the literature (e.g., Dlugosz et al. 2006; Holderness 2009) that it is difficult to calculate aggregate shares held by blockholders when their ownership overlap. This problem, which will significantly overstate aggregate ownership held by blockholders, exists in many ownership databases. In order to overcome this problem, I manually check the footnotes in the proxy filings and choose only the largest owner whenever ownership might be considered to overlap in any way. The identified ownership is considered to be the lower bounds of the institutional ownership; 8.35 percent of the observations have a dual-class ownership structure in my sample. For these observations, I calculate the economic interests of the ownership. By default, the variable "ownership" in this paper indicates the holder's economic interests in the company. I focus on economic interests instead of voting rights because this paper intends to study who owns major U.S. public companies rather than who controls them. Moreover, I take the view that economic interests are more fundamental than voting rights because voting rights tend to converge with underlying economic interests as time passes.

[3] As explained in detail in Dlugosz et al. (2006), the same shares are often double or triple disclosed under different people or entities. While the SEC requires firms to detail the ownership structure of jointly held block in the footnotes, many ownership databases ignore the footnotes. This leads to the overlap of reported ownership, which might be either a full overlap or a partial overlap.

I consider a company as widely held if there is no large shareholder holding greater than or equal to 5 percent, which is the cutoff value of mandatory disclosure for firms with the U.S. Securities and Exchange Commission (SEC). I identify large shareholders based on the information disclosed in the proxy filings. I follow Shleifer and Vishny (1986) and classify shareholders into four types: **institutional investor, founding-family, employee ownership plan**, and **corporation ownership**, respectively. I use *Bloomberg Businessweek* which provides detailed descriptions of both public and private companies to identify the types of shareholders. When this information was not available from *Bloomberg Businessweek*, I conduct a name search in Google. The information has been obtained from miscellaneous data sources, including among other sources InsiderMonkey, SEC 13F filings, and the owner's home page. **Institutional investor** is defined as an institution or an individual with an investment purpose or providing financial services by holding at least 5 percent of a firm. According to my definition, institutional investor includes investment managers/advisors, hedge funds, private equity firms, commercial banks, financial services, private investors, insurance, mutual/pension funds, holding companies, principal investment firms, investment companies, self-management investment trusts, sovereign wealth funds, and real estate investment trusts (REITs). **Founding-family** ownership is the sum of the ownership held by the founder/co-founders of the company and their family members. As noted by Anderson and Reeb (2003), founding-family ownership is very prevalent among major U.S. firms. I focus on founding-family ownership instead of general family ownership because the latter has an ambiguous definition, as noted by Miller et al. (2007). I use Zhu's (2014a) approach for identifying founding-family ownership. I identify all disclosed founding-family ownership, which might be below the 5 percent cutoff value, so as not to underestimate the family ownership. According to my definition, the **employee ownership plan** mainly includes shares under employee stock ownership plans (ESOP), employee profit sharing plans, 401k plans,

employee saving plans, etc. This is considered as a lower bound of employee ownership because many employees can personally own shares. Blasi et al. (1996) document that employee ownership plans became widespread in Western economics in the 1970s and 1980s. **Corporation ownership** includes shares held by a private or public company, most of which are companies in the related industry. Corporation ownership might not serve for an investment purpose. For instance, PepsiCo Inc. holds a significant stake in the Pepsi Bottling Group Inc.[4]

The stability of each type of ownership differs. In the literature, Tirole (2005) documents that institutional investors dominate liquidity trading in the United States. Kojima (1997) documents that mutual funds and active managed pension funds hold their shares for 1.9 years on average. On the other hand, founding-families are believed to be long-term investors (e.g., Anderson and Reeb 2003). In order to measure the stability of each type of ownership, for each blockholder, I trace its evolution over time and calculate its ownership life cycle in the company, which is the period from the owner's initial acquisition to its complete sale. I assume that the time of acquisition and the sale of the ownership are evenly distributed. It follows that the expected acquisition time is half a year before the proxy filing date at which ownership is observed for the first time, while the expected sale date is half a year later than the proxy filing date at which ownership is observed for the last time. The ownership life cycle is the difference between the expected sale date and the expected acquisition date. My approach

[4]The shares owned by CEOs from the founding-families are included in the founding-family ownership. In other cases, I do not consider shares owned by CEOs as a type of ownership since this is more relevant to the managerial compensation literature. As reported in the Execucomp database, CEOs own 2.61 percent of the outstanding shares on average. 18 percent of the CEOs in the Execucomp database are from founding-families; 74 percent of them are the founders and 26 percent of them are the descendants of the founders; 18 percent of the CEOs from the founding-families hold on average 8.68 percent of firms. The remaining 82 percent are non-family CEOs, which are not considered in my identification, hold on average 1.27 percent of the outstanding shares.

will underestimate the life cycle if the acquisition or disposition time is beyond the sample period.

I identify the external network connections between boards and institutional investors using the Perl programing language.[5] The board's link to an institutional investor is a dummy variable, and equals 1 when there is at least one director sitting on the board linked to an investment manager, private equity, venture capital, or hedge fund; otherwise, it is 0. I identify whether a director has a link by searching keywords "private equity", "venture capital", "hedge fund", and "investment manager/advisor", in his or her background information using Perl programing language in the proxy filings. This rationale of this approach is that all companies are required to disclose background information about their nominated directors, including relevant history in the company or industry, positions on other corporate boards, and potential conflicts of interest.

In my sample, there are 30,690 firm-year observations for 3,148 firms. In Table 2.1, I present the summary statistics of the sample. I present in this table the firm characteristics of the sample, the summary statistics of the ownership, and the board's characteristics in Panels A, B, and C, respectively.

2.3 Detailed Picture of the Ownership Structure

I outline a detailed picture of the ownership structure of major U.S. public companies during the period 1994 to 2012. I identify ownership data of shareholders disclosed in the proxy filings that could have an impact on the firm. For each

[5]The Riskmetrics database has a variable (Classification = "L") indicating directors affiliated with a family or a financial institution. The definition fails to consider the difference between a link to a family and to a financial institution and it treats them in an equal way. It is problematic to put them in the same category because their roles are very different. Zhu (2014a) finds that a link to a family indicates the presence of nepotism within the firm, which destroys firm value since nepotism could be used as an entrenching tool. By contrast, a link to a financial institution indicates a potential connection to a blockholder, which improves firm value by monitoring.

TABLE 2.1: **Summary Statistics of Sample.** In my sample, there are 30,690 firm-year observations for 3,148 firms. I present in this table the firm characteristics of the sample, the summary statistics of the ownership, and the board's characteristics in Panels A, B, and C, respectively. These variables on firm characteristics are from the Execucomp, CRSP and Compustat database. Volatility is defined as the standard deviation of stock returns during two adjacent proxy filing dates annualized by multiplying the square root of 252 trading days. I consider (AT+ME-BE)/AT as a proxy of Tobin's Q, where ME is the market value of outstanding equity, BE is the book value of the equity and AT is the total assets. I follow Daniel and Titman (1997) in order to calculate book value of equity. I choose the data from the Compustat FUNDA database that is closest to the proxy filing date. These variables on board characteristics, namely board size, insider director, independent director, linked director and family director, are from the RiskMetrics database. I identify all other variables from the proxy filings. For these firms with dual class ownership structure, I calculate the economic interests of the ownership. ROA are winsorized on both sides by 1% level.

Panel A: Firm Characteristics				
Variable	**N**	**Mean**	**Min**	**Max**
Total Asset (Ln)	30,320	7.40	-2.34	14.63
ROA (%)	30,688	3.39	-52.59	25.11
Firm Age	30,690	23.53	0.00	86.00
Volatility (Annualized)	30,686	0.45	0.01	7.23
Tobin's Q	30,656	1.97	0.22	89.00
Share Repo/Total Payout (%)	30,690	35	0.00	100
IPO Dummy	30,690	2.03%	0.00	1.00
Panel B: Ownership Characteristics				
Variable	**N**	**Mean**	**Min**	**Max**
Institutional Investor (Dummy)	30,690	82.43%	0.00	1.00
Founding-family Ownership (Dummy)	30,690	28.30%	0.00	1.00
Employee ownership plan (Dummy)	30,690	5.06%	0.00	1.00
Institutional Investor Number	30,690	2.21	0.00	13.00
Institutional Ownership (%)	30,690	19.09	0.00	69.90
Invest. Manager Ownership (%)	30,690	13.02	0.00	48.20
Hedge Fund Ownership (%)	30,690	1.81	0.00	87.50
Employee ownership plan (%)	30,690	0.52	0.00	51.80
Founding-family Ownership (%)	30,690	3.88	0.00	50.80
Dual Class Dummy	30,690	8.35%	0.00	1.00
Panel C: Board Characteristics				
Variable	**N**	**Mean**	**Min**	**Max**
Board Size	24,899	9.45	3.00	39.00
Insider Director Ratio (%)	24,899	19.25	0.00	80.00
Independent Director Ratio (%)	24,899	69.48	0.00	100.00
Linked Director Ratio (%)	24,899	11.26	0.00	90.00
Family director Ratio (%)	24,899	3.53	0.00	100.00
Link to Private Equity (Dummy)	30,690	19.66%	0.00	1.00
Link to Venture Capital (Dummy)	30,690	21.14%	0.00	1.00
Link to Hedge Fund (Dummy)	30,690	1.27%	0.00	1.00
Link to Invest. Manager (Dummy)	30,690	38.19%	0.00	1.00

TABLE 2.2: **Descriptive Statistics of Ownership.** I present descriptive statistics of different types of ownership in this table. I use *Bloomberg Businessweek* which provides detailed descriptions of both public and private companies to identify the types of shareholders. When this information was not available from *Bloomberg Businessweek*, I conduct a name search in Google. The information has been obtained from miscellaneous data sources, including among other sources InsiderMonkey, SEC 13F filings, and the owner's homepage. The ownership life cycle is the difference between the expected sale date and acquisition date.

Ownership Type	N	Percent	Freq.	Percent	Ownership (Mean)	Ownership Life Cycle (Years)
1. Institutional Investor (Financial Inst. and Private Investor)	**2,501**	**57.9%**	**68,410**	**84.7%**	**8.6%**	**2.61**
Investment manager/advisor	799	18.5%	49,411	61.2%	8.1%	2.99
Hedge fund	566	13.1%	6,275	7.8%	9.0%	2.34
private equity	440	10.2%	2,588	3.2%	14.5%	2.40
Commercial bank	145	3.4%	1,688	2.1%	9.4%	1.91
Financial services	124	2.9%	3,158	3.9%	8.4%	2.02
Private investor	119	2.8%	716	0.9%	12.1%	3.50
Insurance	106	2.5%	2,635	3.3%	10.2%	2.65
Other investment entities	91	2.1%	514	0.6%	13.7%	3.10
Mutual fund/pension fund	85	2.0%	1425	1.8%	8.9%	2.56
2. Founding-Family	**1,000**	**23.1%**	**8,684**	**10.8%**	**14.3%**	**8.78**
Founding-Family (Ownership≥5%)	694	16.1%	5,560	6.9%	20.9%	8.24
3. Corporation Ownership (Fama-French 12 Industries)	**593**	**13.7%**	**1,987**	**2.5%**	**17.5%**	**2.76**
Others	114	2.6%			17.6%	
health care, and etc.	72	1.7%			16.8%	
Telephone and Television Transmission	72	1.7%			19.8%	
Business Equipment	69	1.6%			17.9%	
Consumer NonDurables	63	1.5%			20.6%	
Utilities	55	1.3%			16.2%	
Manufacturing	49	1.1%			11.9%	
Wholesale, Retail, and Some Services	33	0.8%			19.6%	
Consumer Durables	29	0.7%			10.5%	
Oil, Gas, and etc.	20	0.5%			20.1%	
Chemicals and Allied Products	17	0.4%			21.6%	
4. Employee ownership plan	**203**	**4.7%**	**1,553**	**1.9%**	**10.3%**	**7.65**
5. Non-Profit Organization	**26**	**0.6%**	**118**	**0.1%**	**12.3%**	**2.35**
Overall	**4,323**	**100.0%**	**80,752**	**100.0%**	**9.5%**	

large shareholder, I identify its type and trace its evolution over time. I identify 4,323 institutional investors, 1,000 founding-families, 593 large corporation shareholders, and 203 employee ownership plans. Over the sample period, there are 80,752 firm-year-blockholder observations overall. I present the descriptive statistics of different types of ownership in Table 2.2. I present the evolution of the four different types of ownership over time in Table 2.3.

TABLE 2.3: **Evolution of Ownership Over Time.** I present evolution of four types of ownership, namely institutional ownership, founding-family ownership, corporation ownership and the employee ownership plan, over time in this table. I elaborate on the definition of the ownership in Table 2.2. **Institutional Investor** is defined as an institution or an individual with an investment purpose or providing financial services by holding at least 5 percent of the firm. In my definition, it includes investment managers/advisors (invest. manager), hedge funds, private equity firms (PE), commercial banks, financial services, private investors, insurance, mutual/pension funds, and other investment entities. Institutional Investor Dummy equals 1 when there is at least one institutional investor holding at least 5 percent of the firm; otherwise, it is 0. Institutional Ownership is the aggregate ownership held by institutional investors. N is the number of institutional investors. "Own." is an abbreviation of "ownership" and it is reported in percentage. The "Year" is the calendar year of the proxy filing date where the ownership is identified. I report the mean for all variables in this table.

Year	N	Institutional Investor				Founding-Family				Corporation Ownership		Employee	
						Own. $>$ 0%		Own.$\geq$5%					
		Dummy	Own.	Largest Own.	N	Dummy	Own.	Dummy	Own.	Dummy	Own.	Dummy	Own.
1994	870	0.60	10.46	6.18	1.21	0.27	4.44	0.17	4.24	0.07	0.07	0.06	0.70
1995	1128	0.65	11.86	6.83	1.36	0.30	4.44	0.18	4.19	0.07	0.07	0.06	0.76
1996	1296	0.68	12.14	7.08	1.40	0.31	4.90	0.21	4.67	0.07	0.07	0.07	0.77
1997	1650	0.71	13.86	7.81	1.57	0.33	4.89	0.21	4.63	0.08	0.08	0.06	0.72
1998	1715	0.72	14.85	8.09	1.68	0.33	4.99	0.21	4.72	0.08	0.08	0.06	0.65
1999	1787	0.74	15.16	8.38	1.70	0.32	4.82	0.22	4.58	0.08	0.08	0.06	0.69
2000	1685	0.77	16.06	8.95	1.77	0.32	4.55	0.20	4.28	0.09	0.09	0.06	0.69
2001	1644	0.77	16.46	8.95	1.83	0.31	4.32	0.20	4.07	0.07	0.07	0.06	0.68
2002	1640	0.79	17.25	8.95	1.94	0.30	4.05	0.19	3.82	0.06	0.06	0.06	0.70
2003	1688	0.83	18.43	9.54	2.07	0.29	3.96	0.19	3.75	0.06	0.06	0.06	0.62
2004	1729	0.85	18.96	9.63	2.17	0.28	3.80	0.18	3.58	0.05	0.05	0.06	0.53
2005	1762	0.87	20.16	9.87	2.32	0.27	3.57	0.18	3.36	0.04	0.04	0.05	0.47
2006	1632	0.89	20.89	10.17	2.41	0.25	3.40	0.17	3.21	0.04	0.04	0.05	0.44
2007	1744	0.91	22.40	10.16	2.64	0.26	3.52	0.17	3.33	0.04	0.04	0.04	0.36
2008	1878	0.90	25.22	10.64	2.93	0.26	3.79	0.17	3.58	0.05	0.05	0.04	0.30
2009	1828	0.92	23.78	10.59	2.77	0.26	3.68	0.16	3.46	0.05	0.05	0.03	0.29
2010	1799	0.95	24.59	10.89	2.88	0.25	3.52	0.15	3.30	0.05	0.05	0.03	0.28
2011	1727	0.95	24.91	10.71	2.99	0.24	3.44	0.15	3.22	0.04	0.04	0.03	0.25
2012	1488	0.95	26.27	10.55	3.25	0.23	3.19	0.14	2.99	0.04	0.04	0.02	0.23
Overall	30690	0.82	19.09	9.32	2.21	0.28	4.04	0.18	3.81	0.06	0.06	0.05	0.52

I consider a company as widely held if there is no large shareholder, namely if there is no institutional investor, founding-family, corporation ownership, and employee ownership plan, as described in Table 2.2, holding more than or equal to 5 percent of the firm. As Figure 2.1 shows, in 1994, 28 percent of firms used in my sample, which mainly covers S&P 1500 firms, could be considered as widely held. In 2012, only 2 percent of the firms examined could be considered as widely held companies. Widely held public companies are about to become extinct.[6] My results confirm and extend the findings of Holderness (2009). The elimination of widely held public companies is driven by the dramatic upward trend in the institutional ownership, as documented in Figure 2.2.

The electronic proxy filing in the SEC EDGAR database was not available until 1994. The only paper I am aware of in the literature that provides a systematic empirical analysis of large shareholders in the 1980s is Shleifer and Vishny (1986), in which they collect the data of large shareholders for a sample of 456 out of the Fortune 500 firms in December 1980. They identified the presence of four types of large shareholders: financial firms (25.65 percent), families (32.68 percent), pensions and profit-sharing plans (19.74 percent) and firms and family holding companies (21.93 percent). I document that the numbers of the four types of shareholders in 2012 were 95.16 percent, 14.04 percent, 2.28 percent, 3.76 percent, respectively. Institutional ownership has replaced family ownership and has become the most prevalent large shareholder within major U.S. public companies. The concentration of ownership towards institutional investors started as early as the 1980s.

The extinction of widely held companies occurs ubiquitously in all industries.

[6] La Porta et al. (1999) consider a firm as widely held when there is no controlling shareholder—that is, if the sum of the shareholder's direct and indirect voting rights exceeds an arbitrary cutoff value, which is alternatively, 10 percent or 20 percent. The percentage of widely held companies in my sample decreased from 59 percent to 14 percent under a cutoff value of 10 percent, and decreased from 81 percent to 39 percent under a cutoff value of 20 percent over the sample period.

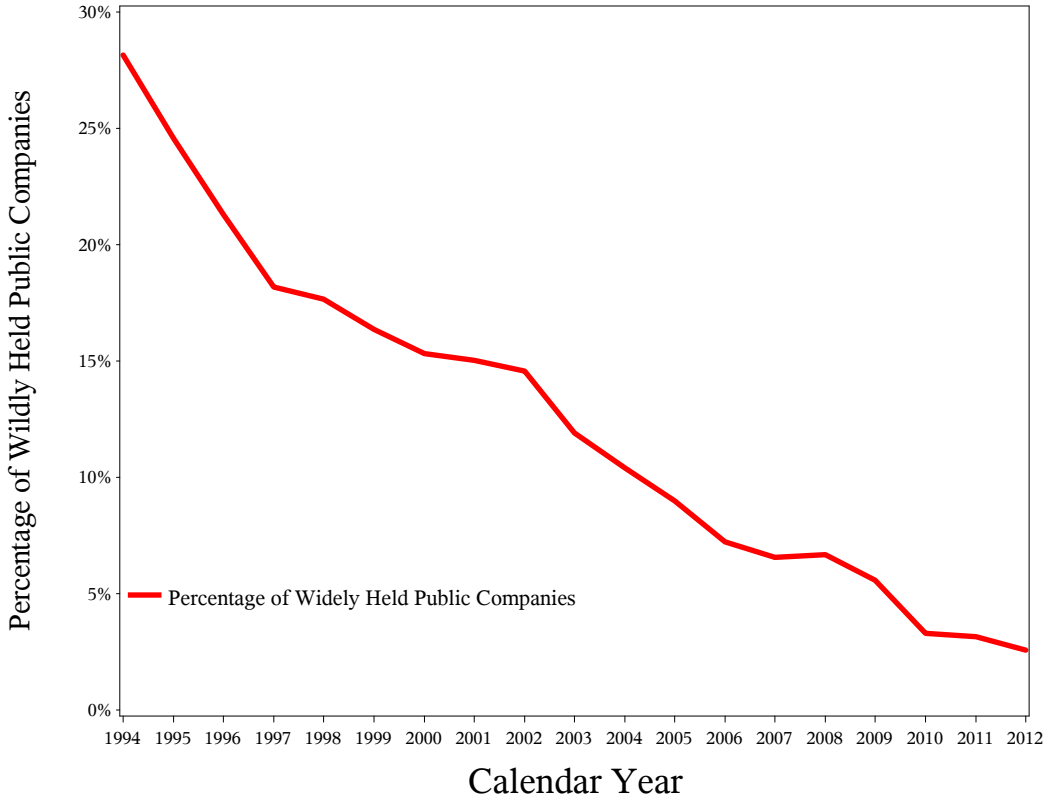


FIGURE 2.1: **Evolution of Widely Held Public Companies in the United States.** I plot the evolution of widely held public companies over time for all firms in the Execucomp database, which mainly covers S&P 1500 firms. I consider a company as widely held if there is no large shareholder holding greater than or equal to 5 percent, which is the cutoff value of a firm for mandatory disclosure with the Securities and Exchange Commission (SEC). I elaborate on the definition of the ownership in Table 2.2.

I group firms in my sample by Fama-French 12 industries. In Figure 2.3, I plot the percentage of firms having at least one institutional investor over time for health care and "Other" industry. The health care industry has experienced the most dramatic increase in institutional ownership: the percentage of firms having at least one institutional investor increased from 39 percent to 94 percent. This also relates to the elimination of legal constraints. Hospital mergers and acquisitions are in conflict with Section 7 of the Clayton Act which prohibits mergers. In the mid-1980s, regulators have brought suits against 13 hospital mergers and won most of them. However, since the mid-1990s, regulators have not successfully enjoined a hospital merger (American Bar Association 2003). During this time,

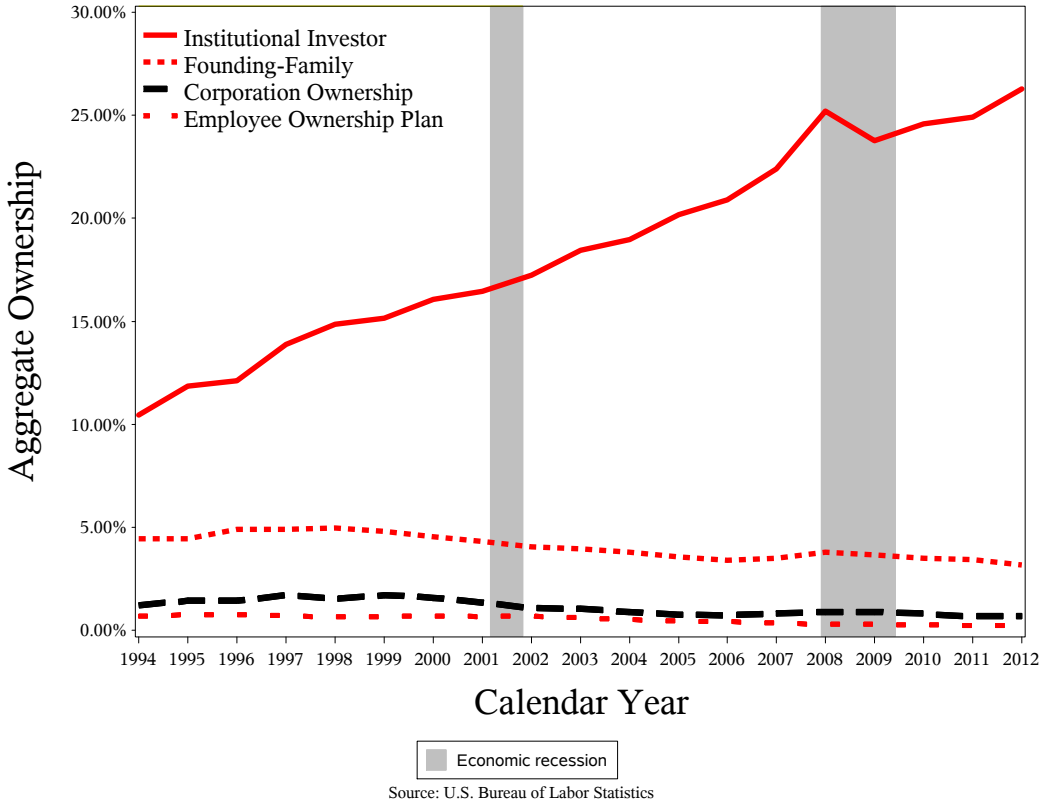


FIGURE 2.2: **Evolution of Ownership of Major U.S. Public Companies.** I plot the evolution of four types of ownership, namely institutional investor, founding-family, corporation ownership, and employee ownership plan, over time in this figure. The **institutional investor** is defined as an institution or an individual with an investment purpose or providing financial services by holding at least 5 percent of a firm. According to my definition, this includes investment managers/advisors, hedge funds, private equity firms, commercial banks, financial services, private investors, insurance, mutual/pension funds, and "other investment entities". "Other investment entities" includes firms or organizations that do not easily fit into the other categories, namely holding companies, principal investment firms, investment companies, self-management investment trusts, sovereign wealth funds, and real estate investment trusts (REITs). My sample includes all firms in the Execucomp database, which mainly covers S&P 1500 firms. The gray areas in the figure indicate two economic recession periods, namely [01Mar01, 01Nov01] and [01Dec07, 01Jun09]. The data are taken from the U.S. Bureau of Labor Statistics.

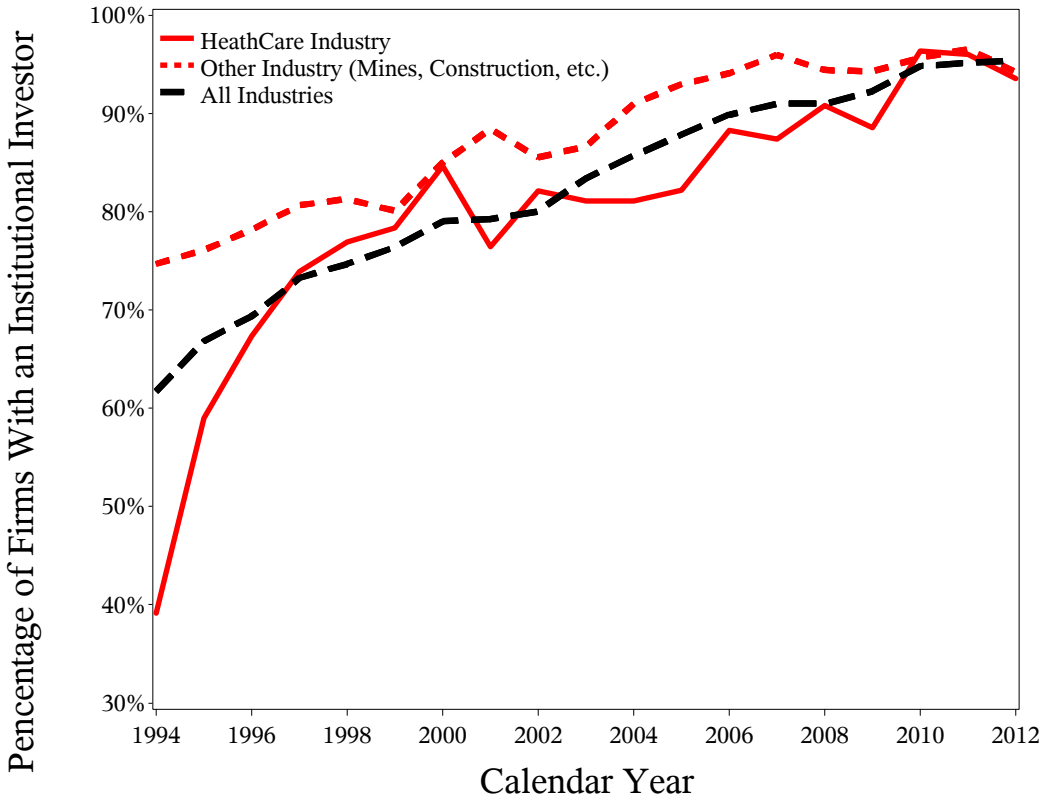


FIGURE 2.3: **Percentage of Firms with Institutional Investor Over Time (By Fama-French 12 Industries).** I plot the percentage of firms having at least one institutional investor over time for health care and "other" industry in this figure. The health care industry has experienced the most dramatic increase in institutional ownership: the percentage of firms having at least one institutional investor increased from 39 percent to 94 percent. The "other" industry, which includes mining, building material, entertainment, etc., has experienced the smallest increase: the percentage of firms having at least an institutional investor increased from 75 percent to 94 percent. The evolution in the remaining 10 industries falls between the health care and "other" industry plotted in this figure.

the percentage of firms in the health care industry having at least one institutional investor increased from 39 percent to 85 percent. This is consistent with the prediction of Roe (1990, 1994), who argues that widely held companies are not a natural consequence of economic and technological forces. He predicts that, absent the legal constraints, the evolution of modern corporations might have resulted in the emergence of a very different organizational form. The "Other" industry, which includes mining, building material, entertainment, etc., has experienced the smallest increase: the percentage of firms having at least an

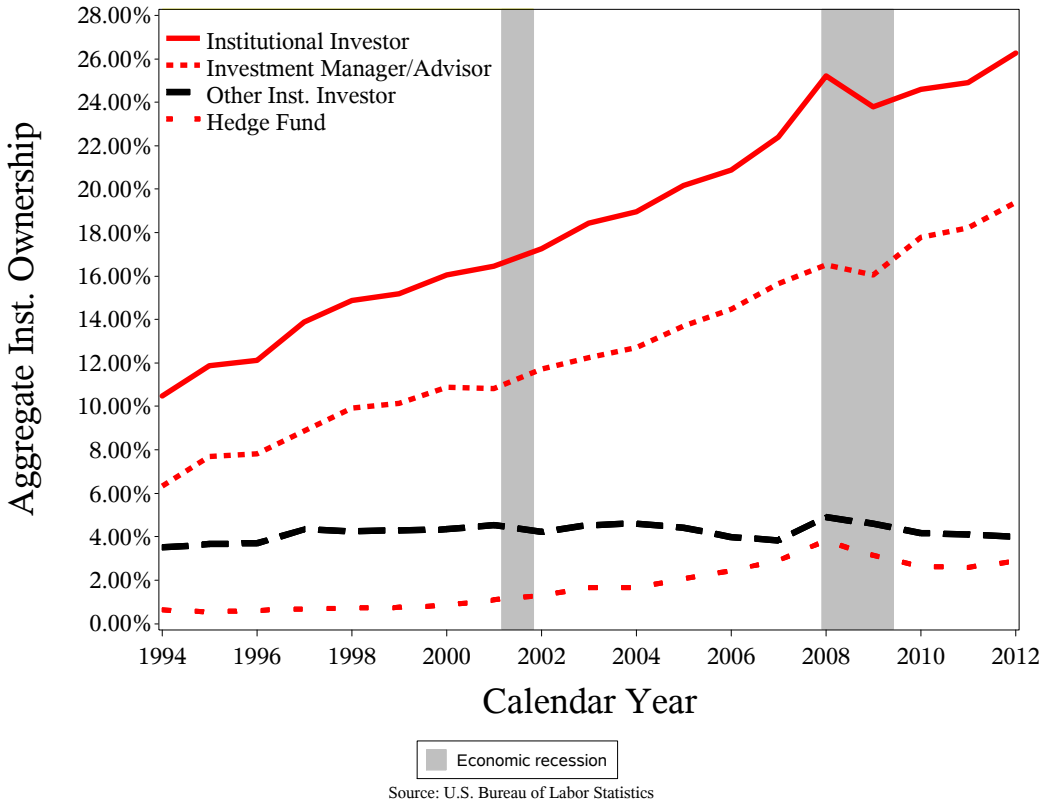


FIGURE 2.4: **Evolution of Institutional Ownership.** I plot the evolution of institutional ownership in this figure. The **institutional investor** is defined as an institution or an individual with an investment purpose or providing financial services by holding at least 5 percent of a firm. According to my definition, this includes investment managers/advisors, hedge funds, private equity firms, commercial banks, financial services, private investors, insurance, mutual/pension funds, and "other investment entities". "Other investment entities" includes firms or organizations that do not easily fit into the other categories, namely holding companies, principal investment firms, investment companies, self-management investment trusts, sovereign wealth funds, and real estate investment trusts (REITs). In the plot, "other inst. investor" include institutional investors other than investment managers and hedge funds.

institutional investor increased from 75 percent to 94 percent.

Ownership has become more concentrated among institutional investors from 1994 to 2012. As noted in Table 2.3, in 1994, 60 percent of the firms had at least one institutional investor, while 95 percent of the firms in 2012 had at least one institutional investor. The aggregate institutional ownership increased from 10.46 percent to 26.27 percent over the sample period.[7] However, the

[7] I find a similar trend for the largest institutional ownership, which on average increased from 6.18 percent to 10.55 percent over the sample period. The largest institutional ownership is

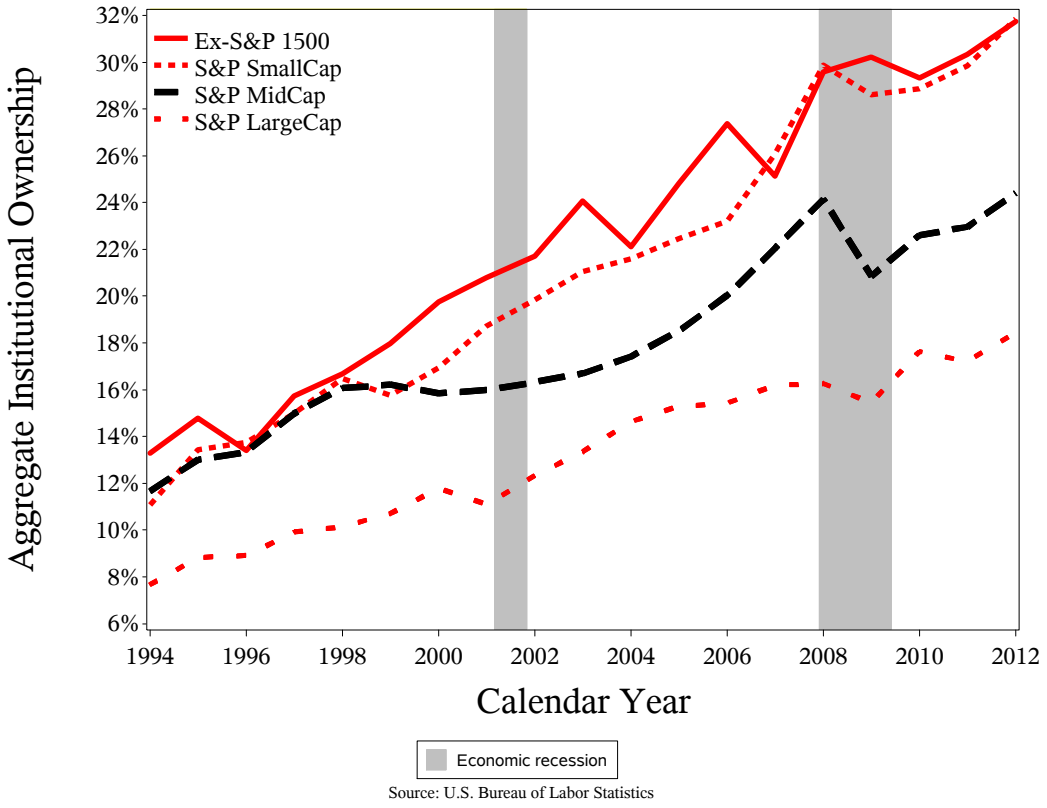


FIGURE 2.5: **Evolution of Institutional Ownership: S&P SmallCap, MidCap, LargeCap and Ex-S&P 1500 Index.** I plot the evolution of institutional ownership in this figure. The concentration of ownership is fastest in the S&P SmallCap Index. Besides the firms in the S&P 1500, the Execucomp database also covers some companies that were once part of the S&P 1500 but removed from the index. For these firms, as indicated by "Ex-S&P 1500 Firms", the concentration of ownership is more or less the same as the S&P SmallCap Index, but faster than the S&P MidCap and S&P LargeCap. This suggests that the concentration of ownership is a universal phenomenon and is not only applicable to the firms in the S&P 1500 index. The **institutional investor** is defined as an institution or an individual with an investment purpose or providing financial services by holding at least 5 percent of a firm. According to my definition, this includes investment managers/advisors, hedge funds, private equity firms, commercial banks, financial services, private investors, insurance, mutual/pension funds, and "other investment entities". "Other investment entities" includes firms or organizations that do not easily fit into the other categories, namely holding companies, principal investment firms, investment companies, self-management investment trusts, sovereign wealth funds, and real estate investment trusts (REITs).

increase in institutional ownership is not evenly distributed. As Figure 2.4 shows, investment manager ownership has experienced the sharpest increase during the sample period. For hedge funds, there was an upward trend before the financial crisis in 2008 and a downward trend thereafter. It seems that the financial crisis in 2008 inflicted a temporary shock on investment manager ownership, but a permanent shock on the hedge fund ownership. Ownership held by other institutional investors remained relatively stable over the same time period. The details of each type of ownership are elaborated in Table 2.4.

Passive management such as index tracking has gained popularity since the 1990s (Mamudi 2009). However, I find that the concentration of ownership is a universal phenomenon and is not only applicable to the firms in the S&P 1500 index. My sample includes all companies in the Execucomp database, which covers some companies that were once included in the S&P 1500 index, but have since been removed. As noted in Figure 2.5, the concentration of ownership in these firms is more or less similar as the S&P SmallCap Index, but faster than the S&P MidCap and S&P LargeCap.

on average 12 percent when it is present. The average size of the founding-family ownership ($\geq$ 5 percent) is 14.27 (20.91) percent when it is present. I elaborate on the evolution of the largest institutional ownership in Table 2.3. In the literature, Holderness (2009) documents that the average size of the largest block is 26 percent where block ownership is present for a random sample of U.S. firms. Becht (2001) reports that the median size of the largest block for a representative sample of firms in the NYSE is 5.4 percent and for NASDAQ firms it was 8.6 percent.

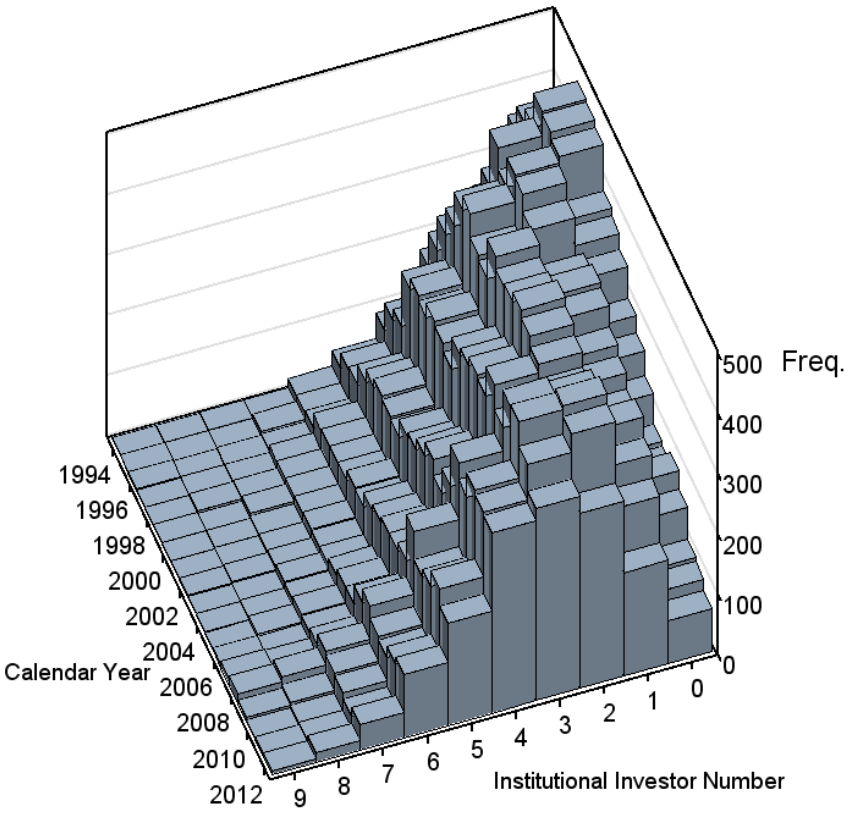
TABLE 2.4: **Evolution of Institutional Ownership Over Time.** I present evolution of institutional ownership over time in this table. I elaborate on the definition of the institutional ownership in Table 2.2. **Institutional Investor** is defined as an institution or an individual with an investment purpose or providing financial services by holding at least 5 percent of the firm. In my definition, it includes investment managers/advisors (invest. manager), hedge funds, private equity firms (PE), commercial banks, financial services, private investors, insurance, mutual/pension funds, and other investment entities.

Year	N	Institutional Investor (Dummy)								
		Invest. Manager	Hedge Fund	Fin. Services	PE	Insurance	Bank	Mutual/Pension	Private Investor	Other Invest. Enti.
1994	870	0.47	0.06	0.06	0.03	0.11	0.08	0.02	0.01	0.01
1995	1128	0.54	0.05	0.05	0.04	0.13	0.08	0.02	0.02	0.02
1996	1296	0.57	0.06	0.06	0.05	0.12	0.07	0.03	0.02	0.01
1997	1650	0.60	0.07	0.08	0.08	0.11	0.07	0.04	0.02	0.01
1998	1715	0.61	0.07	0.09	0.07	0.10	0.07	0.04	0.02	0.01
1999	1787	0.64	0.07	0.08	0.08	0.09	0.06	0.03	0.01	0.01
2000	1685	0.67	0.08	0.08	0.07	0.08	0.05	0.03	0.02	0.02
2001	1644	0.67	0.10	0.07	0.10	0.08	0.04	0.05	0.02	0.02
2002	1640	0.70	0.12	0.06	0.09	0.09	0.04	0.05	0.02	0.02
2003	1688	0.72	0.15	0.07	0.09	0.09	0.05	0.06	0.02	0.02
2004	1729	0.76	0.15	0.08	0.09	0.07	0.06	0.06	0.02	0.02
2005	1762	0.79	0.19	0.09	0.07	0.07	0.05	0.06	0.02	0.01
2006	1632	0.81	0.22	0.11	0.07	0.07	0.03	0.05	0.02	0.01
2007	1744	0.83	0.25	0.11	0.07	0.07	0.03	0.04	0.02	0.01
2008	1878	0.83	0.31	0.12	0.09	0.09	0.06	0.04	0.02	0.01
2009	1828	0.85	0.26	0.11	0.07	0.08	0.05	0.05	0.02	0.02
2010	1799	0.90	0.23	0.09	0.07	0.06	0.04	0.05	0.02	0.02
2011	1727	0.91	0.23	0.11	0.06	0.04	0.03	0.06	0.02	0.02
2012	1488	0.91	0.25	0.13	0.06	0.03	0.02	0.05	0.02	0.02
Overall	30,690	0.74	0.16	0.09	0.07	0.08	0.05	0.04	0.02	0.02

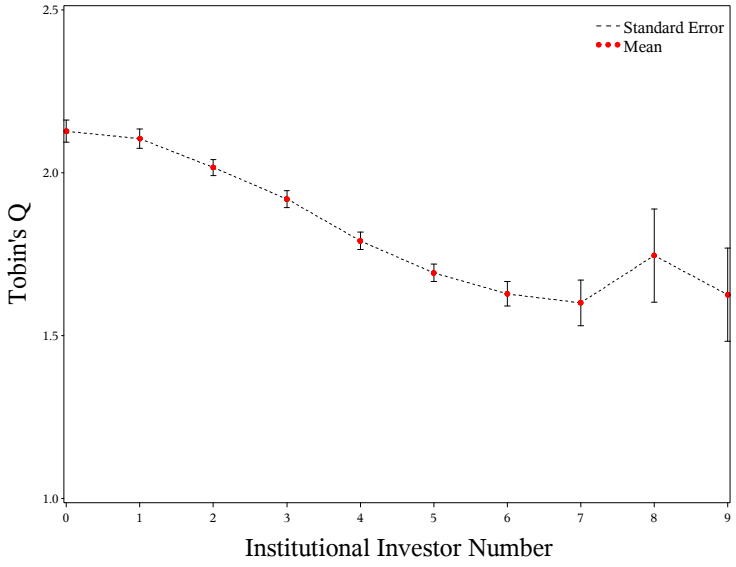
To be Continued

Continued

Year	N	Institutional Ownership (in Percentage)								
		Invest. Manager	Hedge Fund	Fin. Services	PE	Insurance	Bank	Mutual/Pension	Private Investor	Other Invest. Enti.
1994	870	6.33	0.63	0.50	0.58	1.03	0.77	0.23	0.17	0.14
1995	1128	7.68	0.53	0.47	0.58	1.26	0.68	0.22	0.21	0.17
1996	1296	7.83	0.61	0.57	0.68	1.11	0.67	0.26	0.21	0.17
1997	1650	8.87	0.67	0.77	1.12	1.18	0.62	0.29	0.18	0.13
1998	1715	9.91	0.72	0.78	1.14	1.09	0.59	0.31	0.19	0.10
1999	1787	10.12	0.74	0.84	1.25	1.00	0.61	0.30	0.18	0.09
2000	1685	10.88	0.85	0.70	1.44	1.00	0.47	0.30	0.22	0.20
2001	1644	10.83	1.08	0.59	1.49	0.93	0.57	0.47	0.27	0.22
2002	1640	11.73	1.30	0.56	1.34	0.96	0.47	0.46	0.18	0.23
2003	1688	12.25	1.64	0.58	1.42	1.00	0.51	0.54	0.22	0.22
2004	1729	12.69	1.67	0.72	1.41	0.79	0.57	0.58	0.25	0.25
2005	1762	13.69	2.06	0.76	1.17	0.79	0.54	0.61	0.30	0.24
2006	1632	14.46	2.44	0.81	0.95	0.79	0.38	0.53	0.26	0.24
2007	1744	15.65	2.91	0.92	0.99	0.75	0.37	0.42	0.20	0.18
2008	1878	16.50	3.82	1.05	1.49	0.95	0.51	0.40	0.21	0.23
2009	1828	16.05	3.13	0.95	1.37	0.75	0.49	0.43	0.26	0.28
2010	1799	17.80	2.63	0.84	1.52	0.59	0.33	0.36	0.30	0.20
2011	1727	18.21	2.59	0.98	1.21	0.40	0.28	0.43	0.30	0.36
2012	1488	19.39	2.88	1.04	1.15	0.39	0.21	0.35	0.32	0.36
Overall	30,690	13.02	1.81	0.78	1.21	0.87	0.50	0.40	0.23	0.21

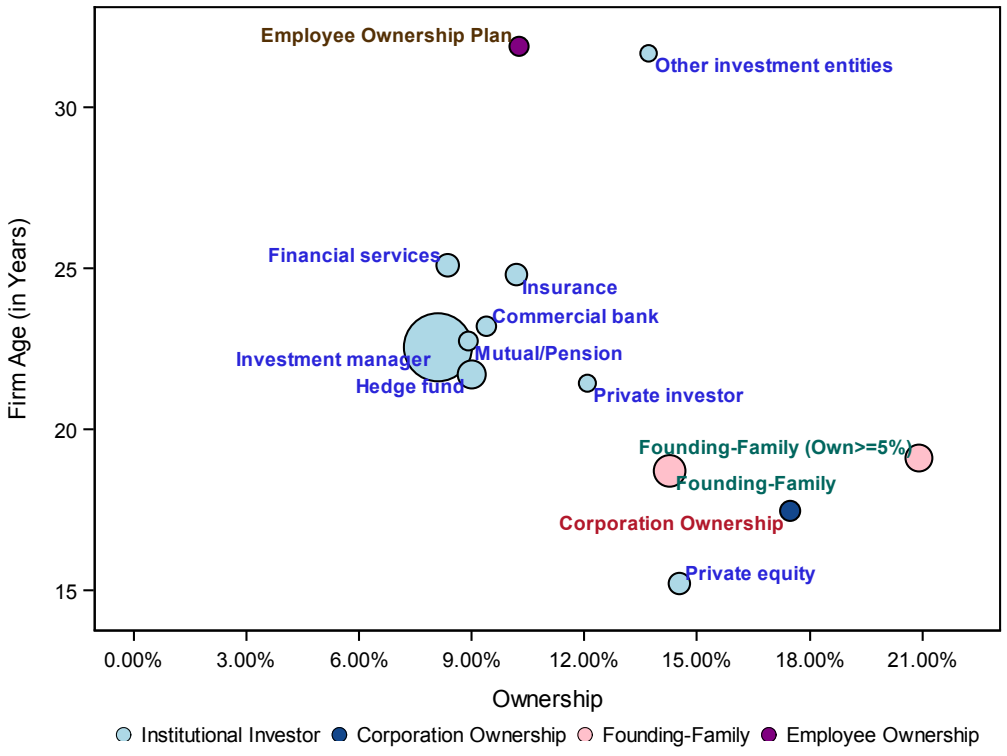


(a)

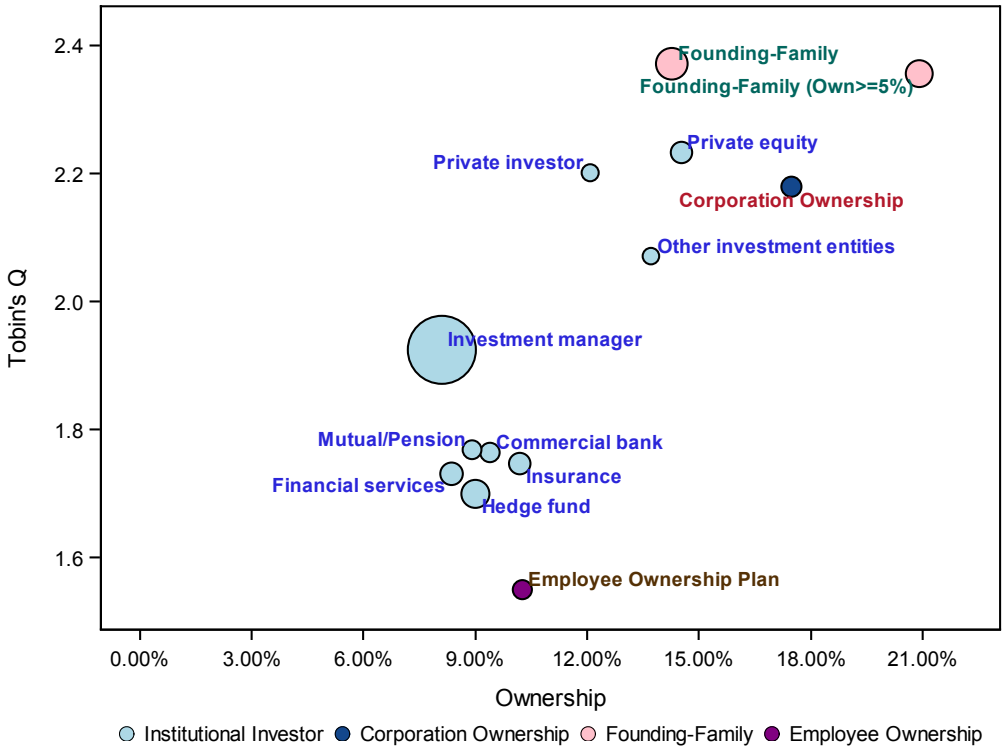


(b)

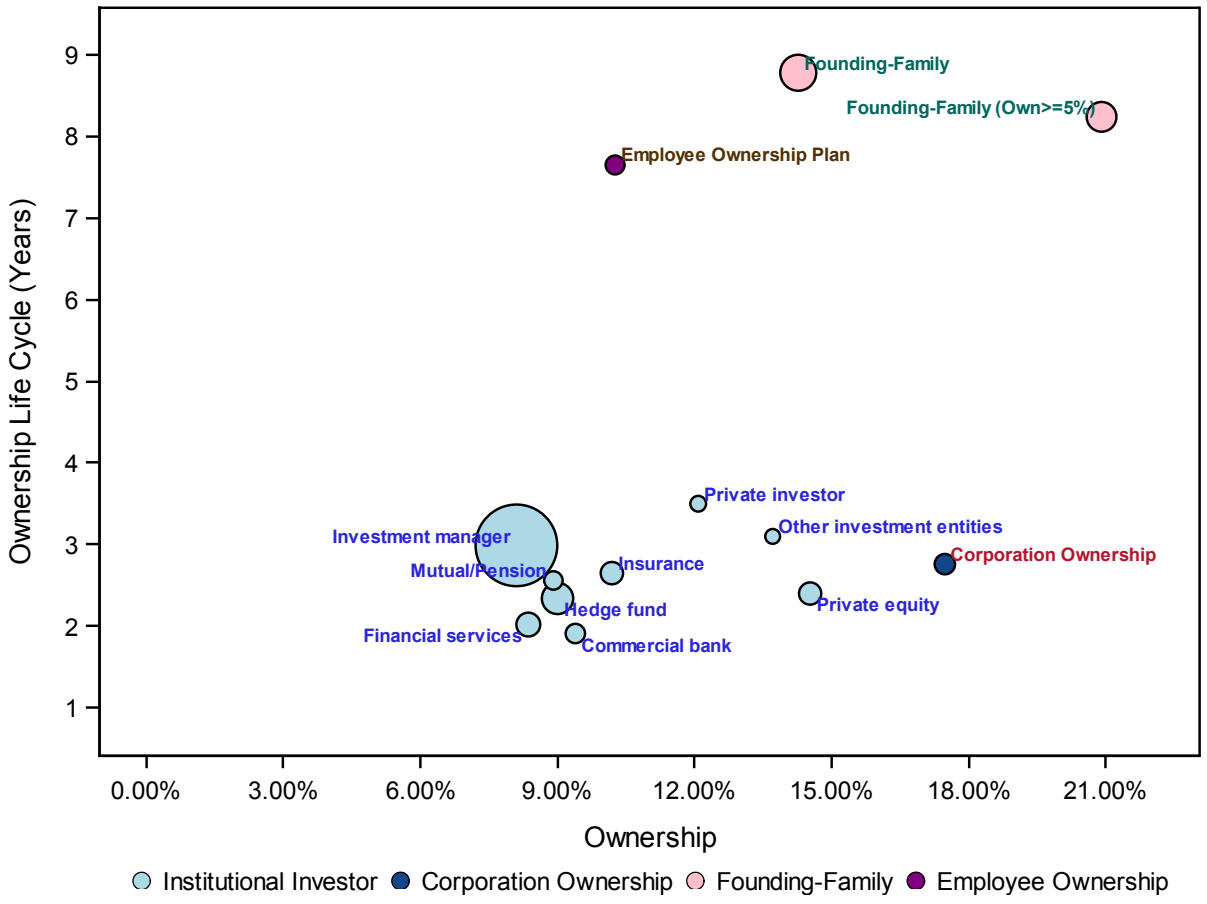
FIGURE 2.6: **Distribution of Institutional Investor.** There are 30,690 observations in my sample. I present a bivariate histogram to show the distribution of institutional investor number over the calendar year in (a). Firms with 9 or more institutional investors are included in the same category. It is noteworthy that my sample period ranges from 1 January 1994 to 6 August 2012. In 2012, firms that submitted their proxy filings after 6 August 2012 are not included in my sample. I calculate the mean and standard error of Tobin's Q for firms with the same number of institutional investors. I plot them over the number in the (b).


Employee Ownership Plan
Other investment entities
Financial services
Insurance
Commercial bank
Investment manager
Mutual/Pension
Hedge fund
Private investor
Founding-Family (Own>=5%)
Founding-Family
Corporation Ownership
Private equity
Firm Age (in Years)
30
25
20
15
0.00%
3.00%
6.00%
9.00%
12.00%
15.00%
18.00%
21.00%
Ownership
Institutional Investor
Corporation Ownership
Founding-Family
Employee Ownership

(a)


Founding-Family
Founding-Family (Own>=5%)
Private equity
Private investor
Corporation Ownership
Other investment entities
Investment manager
Mutual/Pension
Commercial bank
Insurance
Financial services
Hedge fund
Employee Ownership Plan
Tobin's Q
2.4
2.2
2.0
1.8
1.6
0.00%
3.00%
6.00%
9.00%
12.00%
15.00%
18.00%
21.00%
Ownership
Institutional Investor
Corporation Ownership
Founding-Family
Employee Ownership

(b)



(c)

FIGURE 2.7: **Ownership Characteristics.** I present the characteristics of each type of ownership in this figure. The bubble size indicates the frequencies of the institutional investor, as documented in the Table 2.2. I calculate average firm age, Tobin's Q, and ownership life cycle for the firms where one type of ownership is present. I plot them over ownership in (a), (b) and (c), respectively. I calculate Tobin's Q by using data in the Compustat FUNDA database. I consider the difference between the proxy filing date and the date of the beginning stock data, which is the number of days each stock was included in the CRSP database, as a proxy for the firm age. For each blockholder, I trace its evolution over time and calculate its ownership life cycle in the company, which is the period from the owner's initial acquisition to its complete sale in order to measure its stability. I assume that the time of acquisition and the sale of the ownership are evenly distributed. It follows that the expected acquisition time is half a year before the proxy filing date at which ownership is observed for the first time, while the expected sale date is half a year later than the proxy filing date at which ownership is observed for the last time. The ownership life cycle is the difference between the expected sale date and the expected acquisition date. My approach underestimates the ownership life cycle if the acquisition or disposition time is beyond the sample period.

The dramatic change in the ownership structure has given birth to a corporate governance structure that is characterized of multiple blockholders—that is, as the Figure 2.6 (a) shows, the number of firms with 0 or 1 institutional investor experienced a downward trend, while the number of firms with 3 or more institutional investors experienced a dramatic upward trend during the last two decades. As noted in Table 2.3, the average number of institutional investors increased from 1.21 to 3.25. Moreover, as documented in Figure 2.6 (b), the institutional ownership is negatively associated with firm's performance, which is measured by Tobin's Q. This suggests that an ownership structure with multiple institutional investors tends to be formed in firms with poor performance. My findings are consistent with Laeven and Levine (2007). They document a negative relationship between cash-flow rights dispersion and Tobin's Q for a cross section of 1,657 firms across 13 countries in Western Europe.

Different types of ownership exhibit different characteristics, as noted in Figure 2.7. Founding-family ownership and corporation ownership tend to stay in younger firms. Firms with private equity ownership are the youngest. Firms with founding-family ownership have the highest Tobin's Q. Firms with an employee ownership plan are the oldest and have the lowest Tobin's Q. Founding-family ownership has the longest life cycle among all the different types of ownership. As Table 2.2 shows, the average life cycle of founding-family ownership is 8.78 years, compared to institutional ownership which is only 2.61 years. In the 1980s, institutional ownership replaced family ownership to become the most prevalent large shareholder within major U.S. public companies. This suggests that the stability of the ownership structure of major U.S. public companies, which is measured by the ownership life cycle, is significantly less today than before.

The ownership structure of major U.S. public companies exhibits several

unique characteristics, which seem to help institutional investors and founding-families achieve a balance between liquidity and control. First, although institutional investors together hold a significant stake in the firm, each institutional investor holds only a relatively small stake. In 2012, there were 3.25 institutional investors that owned 26.27 percent of the firm within major U.S. public companies. The second characteristic is that in many U.S. firms founding-family ownership and institutional ownership co-exist. In 2012, 23 percent of the major U.S. public companies have founding-family ownership. The third characteristic is that in the U.S. founding-families tend to hold more shares than an average institutional investor, but these families also tend to hold less than the aggregate number of shares held by institutional investors. When founding-family ownership is present, they tend to hold on average 14 percent of the firm. This is above the ownership held by an average institutional investor, but well below the aggregate ownership held by all institutional investors. Previous studies (e.g., Claessens et al. 2000; Faccio and Lang 2002; Becht and Mayer 2001) have not shown similar characteristics for firms in the East Asian and Western European countries. For instance, Becht and Mayer (2001) report that more than 50 percent of European companies have a single block of shareholders that commands a majority of shares. Claessens et al. (2000) document using a sample of 2,980 corporations in 9 East Asian countries that older firms are generally family-controlled. By contrast, I find that founding-family ownership is more likely to appear in younger major U.S. public companies.

However, an ownership structure that is characterized by multiple institutional investors that have a significantly shorter ownership life cycle is inherently unstable because of information asymmetry among institutional investors. Previous studies (e.g., Lakonishok et al. 1992; Devenow and Welch 1996; Nofsinger and Sias 1999; Hirshleifer and Teoh 2003; Sias 2004) have shown that institutions herd as a result of inferring information from each other's trades. A blockholder

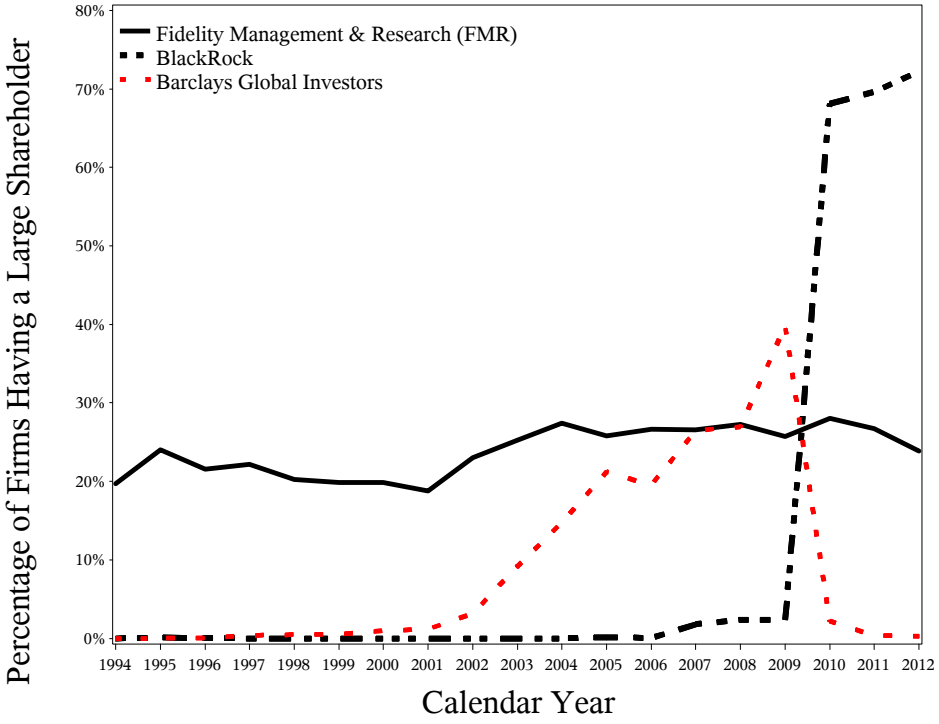


FIGURE 2.8: **Percentage of Firms where FMR or BlackRock is a Large Shareholder.** Two institutional investors have become remarkably powerful. These investors are: Fidelity Management and Research (FMR) which makes up 9.1 percent and BlackRock which makes up 4.5 percent of the overall institutional investors, as noted in Table 2.5. I plot over time in this figure the percentage of the firms where FMR or BlackRock is one of the large shareholders, namely holding at least 5 percent of the firm. Blackrock acquired Barclay Global Capital in 2009. In 2012, BlackRock and FMR were the large shareholder in 72 percent and 24 percent of the 1,488 companies used in my sample, respectively.

cannot tell by observing the liquidation of other blockholders whether it is about private information or the idiosyncratic liquidity shock when a blockholder sells his block. Liquidation can then become a self-fulfilling process and can lead to a chain reaction. Potential systemic failure, namely liquidation can lead to a chain reaction, is exacerbated by the fact that two institutional investors have become remarkably powerful. These include: Fidelity Management and Research (FMR) and BlackRock. As presented in Table 2.5, FMR makes up 9.1 percent and BlackRock 4.5 percent of the overall institutional investors. In 2012, as presented in Figure 2.8, BlackRock and FMR held 5 percent or even more of a firm in 72 percent and 24 percent of the 1,488 companies used in my sample, respectively. The failure of a powerful institutional investor, such as BlackRock or FMR, could

lead to a chain reaction, which ultimately could pose a serious concern to the financial system. Financial institutions were thought to be powerless (e.g., Jensen 1989; Coffee 1991; Chaganti and Damanour 1991). However, my results show that the strength of the financial institutions rather than their weakness may be of public concern today and in the future.

2.4 Evolution of the Ownership Structure

2.4.1 Firm Performance and Ownership Structure

I study the evolution of ownership structure by using both fixed effect and Arellano-Bond dynamic panel GMM model.[8] Helwege et al. (2007) show that the market for a firm's stock and its stock's market performance are critical determinants of the evolution of its ownership. Therefore, I consider firm's performance, which is measured by Tobin's Q, as the main explanatory variable in my analysis. Blockholders may adopt different investment strategies in response to a firm's performance. One major difference between institutional investors and founding-families is that institution investors are diversified and they are capable of conducting sophisticated trading strategies in order to limit their downside risk, while founding-families are usually not diversified (Anderson and Reeb 2003) and take less risk than non-family firms (Naldi et al. 2007). As a result, institutional investors and founding-families may adopt different investment strategies, which in turn have a different impact on the evolution of ownership structure.

[8]The macroeconomic background of the evolution of ownership structure is that the financial sector has grown enormously during the last 30 years (Greenwood and Scharfstein 2013). The fraction of the equity market owned directly by individuals has declined significantly since a reduction in noise trading (Stambaugh 2014). This decline in individual ownership continues a trend that began essentially at the end of World War II, when households held more than 90 percent of U.S. corporate equity (Rydqvist et al. 2014). Legal institutions also have a significant impact on a firm's ownership structure, as shown by the dramatic increase in institutional ownership in the health care industry when legal constraints are eliminated.

TABLE 2.5: **Top Ten Institutional Investors.** For each type of institutional investor, I report top ten institutional investors and their frequencies in the sample. As noted by Cronqvist and Fahlenbrach (2009), blockholder name could be disclosed differently across years or firms. I manually correct the blockholder name by assigning a uniform name to the blockholders disclosed differently across years or firms.

Institutional Investor (Top 10)					
Investment Manager		**Hedge Fund**		**Insurance**	
Name	**Freq.**	**Name**	**Freq.**	**Name**	**Freq.**
Fidelity Mgmt. & Research (FMR)	7,372	Royce & Associates	1,028	AXA	949
BlackRock	3,619	GAMCO	675	Prudential	477
Capital Group Companies	3,197	Third Avenue Mgmt.	167	State Farm Mutual Auto Insurance	274
Barclays Global Investors	2,952	Renaissance Technologies	148	Equitable Companies	184
Dimensional Fund Advisors	2,702	Iridian Asset Mgmt.	113	John Hancock	45
T Rowe Price	2,526	Pzena Investment Mgmt. LLC	90	Cincinnati Financial Corporation	44
Wellington Capital Mgmt.	2,314	Newsouth Capital Mgmt.	76	Loews Corporation	39
Vanguard	1,804	Prescott Investors	76	Guardian Life Insurance Company of America	34
Franklin Templeton Investments	947	Highfields Capital Mgmt.	67	Metropolitan Life Insurance	32
Putnam	922	Citadel	64	State Farm Insurance Companies	29
Total	28,355	Total	2,504	Total	2,107
Financial Services		**Mutual/Pension**		**Bank**	
Name	**Freq.**	**Name**	**Freq.**	**Name**	**Freq.**
State Street Bank & Trust Co	426	Dodge & Cox	386	Citigroup	226
Wells Fargo & Co	346	Ariel Investment	333	Bank of America	210
J P Morgan Chase & Co	234	Columbia Wagner Asset Mgmt. LP	110	Mellon Bank	166
J P Morgan & Co	195	Stichting Pensioenfonds ABP	59	Barclays Bank PLC	118
State Street Corp	182	Vanguard Fiduciary Trust	59	The Bank of New York Mellon Corp	95
Deutsche Bank	163	Growth Fund of America Inc	51	SunTrust Bank	64
William Blair & Co LLC	156	Small Cap World Fund Inc	48	Norwest Corporation	58
American Express Company	142	Federated Equity Fundsd	34	ING Groep NV	38
Lazard Freres & Co	117	Scudder Stevens & Clark Inc	34	Barclays Private Bank	29
Wachovia Corp	108	Berger Small Cap Value	28	Chase Manhattan	27
Total	2,069	Total	1,142	Total	1,031

To Be Continued

Continued

Private Equity		Other Invest. Enti.		Private Investor	
Name	**Freq.**	**Name**	**Freq.**	**Name**	**Freq.**
Private Capital Mgmt.	343	Berkshire Hathaway	194	John R Simplot	43
AIM Capital Mgmt., Ltd	160	Crane Fund	21	Carl C Icahn	38
Warburg Pincus & Co	134	GE	19	MSD Capital Inc	29
Blum Capital Partners Lp	71	Leucadia National Corporation	18	Joseph L Harrosh	26
KKR	44	AEW Capital Mgmt.	12	Carl E Berg	25
Apollo	37	Trust Partnership	12	Lloyd I Miller III	20
Technology Crossover Ventures	37	Orient Star Holdings LLC	9	Sumner M Redstone	19
OrbiMed Advisors	33	Adelante Capital Mgmt. LLC	8	George Gund III	16
Palisade Capital Mgmt. LLC	30	Alleghany Corporation	8	H Wayne Huizenga	16
Thomas H. Lee Partners	27	Giddeon Holdings	8	J Hyatt Brown	16
Total	916	Total	309	Total	248

2.4.1.1 Fixed Effect Estimation

I consider blockholder ownership as the dependent variable and explain it using a two-way fixed effect model. I find that the evolution of institutional ownership and founding-family ownership within a firm is strongly related to the firm's performance, but in an opposite way. In specification (1) and (2) in Panel A of Table 2.6, the negative coefficient of the Tobin's Q suggests that the institutional investor tends to target undervalued firms—that is, it increases (decreases) its position when a firm's performance is bad (good). By contrast, I document a positive and significant coefficient of Tobin's Q for founding-family ownership in specification (3) and (4) in Panel A of Table 2.6, suggesting that they tend to increase (decrease) their positions when growth opportunity is high (low). The negative and significant coefficient of Tobin's Q in specification (5) and (6) in Panel A of Table 2.6 suggests that employee ownership plans tend to emerge in industries and firms with lower growth opportunities. The association between corporation ownership and firm performance is weak, as indicated by specification (7) and (8) in Panel A, which confirms my conjecture that it serves for a purpose other than investment. In order to relieve the concern that the causal direction is the opposite, that is, institutional ownership damages firm performance, while family ownership improves firm performance, I include Tobin's Q lagged one year as an explanatory variable in Panel B. As the Table shows, the coefficient of lagged Tobin's Q is negative and significant in specification (1) and (2), and positive and significant in specification (3) and (4). The opposite causal direction is less likely to be true. I also consider the firm's accounting performance measure (ROA) as an explanatory variable in section 2.6 as a robustness check. As Table 2.11 shows, my results are robust under the alternative performance measure.

Fixed effect estimation can potentially ameliorate the bias arising from unobservable heterogeneity. However, the estimation of current values of the dependent variable on explanatory variable would be negatively (positively) biased if the explanatory variable is positively (negatively) related to past values of the dependent variable (Nickell 1981; Wintoki et al. 2012). The estimation of employee and corporation ownership is less likely to have this bias as firms take strategies responsive to controlling shareholders' goals and expectations and the impact of a small stake on a firm's performance, if any, is limited. Moreover, previous studies (e.g., Blasi 1996) have shown that there is no connection between employee ownership and performance. Demsetz and Villalonga (2001) argue that there is no statistically significant relation between ownership structure and firm performance.

2.4.1.2 Arellano-Bond Dynamic Panel GMM Estimation

However, there is also empirical evidence regarding the relation between ownership structure and firm value (e.g., Morck et al. 1988a; McConnell and Servaes 1990; Holderness et al. 1999; Lemmon and Lins 2003). Moreover, previous studies such as Brickley et al. (1988), Agrawal and Mandelker (1990), Bushee (1998), Hartzell and Starks (2003), Almazan et al. (2005), and Borokhovich et al. (2006) have shown that certain types of institutional investors exert influence on anti-takeover amendments, R&D investment decisions and CEO compensation, which could have a long-run effect on firm performance. In order to further relieve the concern that a firm's performance could be influenced by past ownership structure, I estimate the relation between institutional ownership and firm performance using a dynamic GMM panel estimator. This estimator was introduced by Holtz-Eakin et al. (1988) and Arellano and Bond (1991). The dynamic modeling approach has been used in areas where there could be a dynamic relation between dependent and explanatory variables. Examples in

TABLE 2.6: **Evolution of Ownership Structure (Fixed Effect Model). Institutional Investor** is defined as an institution or an individual with an investment purpose or providing financial services by holding at least 5 percent of the firm. In my definition, it includes investment managers/advisors (invest. manager), hedge funds, private equity firms (PE), commercial banks, financial services, private investors, insurance, mutual/pension funds, and other investment entities. Post Crisis Dummy is a dummy variable and equals 1 when the proxy filing date is later than Jan 1, 2009. Total Asset (AT) and Tobin's Q are taken from or calculated by using the data in the Compustat FUNDA database. Volatility is defined as the annualized standard deviation of the stock returns in the period between two proxy filing dates. I consider a two-way fixed effect model, namely industry and time fixed effect in specification (1), (3), (5), and (7), and firm and time fixed effect in specification (2), (4), (6), and (8), to perform the analysis.

	Panel A: Dependent Variable: Ownership (in Percentage)							
	Institutional Investor		**Founding-Family**		**Employee Ownership**		**Corporation Ownership**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Assets (Ln)	-1.842	-3.102	-0.629	-0.587	0.074	-0.007	0.034	-0.271
	(30.17)***	(15.97)***	(16.14)***	(8.56)***	(7.13)***	-0.310	-1.350	(3.83)***
Tobin's Q	-0.762	-0.475	0.228	0.052	-0.033	-0.011	0.012	0.071
	(9.38)***	(6.12)***	(5.13)***	(2.67)***	(4.55)***	(4.90)***	-0.320	(1.75)*
Volatility	3.656	1.301	-1.084	0.630	-0.433	-0.191	2.047	1.299
	(6.55)***	(2.36)**	(3.74)***	(4.44)***	(6.34)***	(3.28)***	(8.55)***	(6.90)***
Post Crisis Dummy		1.686		-0.544		-0.068		-0.240
		(3.85)***		(3.87)***		-1.250		(1.80)*
Observations	30280	30280	30280	30280	30280	30280	30280	30280
R-squared	0.2	0.61	0.07	0.91	0.04	0.75	0.04	0.66
Industry Fixed Effect	YES	NO	YES	NO	YES	NO	YES	NO
Year Fixed Effect	YES	YES	YES	YES	YES	YES	YES	YES
Firm Fixed Effect	NO	YES	NO	YES	NO	YES	NO	YES
	Panel B: Dependent Variable: Ownership (in Percentage)							
	Institutional Investor		**Founding-Family**		**Employee Ownership**		**Corporation Ownership**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Assets (Ln)	-1.934	-3.097	-0.608	-0.48	0.08	0.003	0.021	-0.24
	(30.21)***	(14.77)***	(15.09)***	(6.98)***	(7.44)***	-0.13	-0.86	(3.33)***
Tobin's Q (-1)	-0.685	-0.299	0.207	0.03	-0.036	-0.012	-0.018	0.064
	(8.89)***	(5.31)***	(4.97)***	(1.80)*	(5.02)***	(5.06)***	-0.5	-1.53
Volatility	4.416	1.691	-1.43	0.499	-0.389	-0.19	1.704	1.018
	(7.31)***	(2.85)***	(4.98)***	(3.74)***	(5.53)***	(3.02)***	(7.49)***	(6.12)***
Post Crisis Dummy		1.768		-0.532		-0.069		-0.193
		(4.00)***		(3.94)***		-1.24		-1.43
Observations	27186	27186	27186	27186	27186	27186	27186	27186
R-squared	0.2	0.63	0.08	0.92	0.05	0.76	0.04	0.69
Industry Fixed Effect	YES	NO	YES	NO	YES	NO	YES	NO
Year Fixed Effect	YES	YES	YES	YES	YES	YES	YES	YES
Firm Fixed Effect	NO	YES	NO	YES	NO	YES	NO	YES

corporate finance include Hoechle et al. (2012) and Wintoki et al. (2012), among others. I estimate following dynamic panel GMM model:

$$y_{it} = \alpha + \sum_{s} \delta_s y_{it-s} + \sum_{s} \beta_s X_{it-s} + \eta_i + \epsilon_{it} \tag{2.1}$$

where y_{it} is the ownership, ϵ_{it} is a random error term and β_s is the effect of factor such as firm performance on ownership. I follow Arellano and Bond (1991) and allow the dependent variable to adjust with delay to changes in factors such as firms' performance, size, volatility and payout policy. The process of adjustment to changes in these factors may depend both on the passage of time, which indicates lagged versions of these factors as regressors, and on the difference between equilibrium institutional ownership level and the previous year's actual level, which argues for a dynamic model, in which lags of the dependent variable are also regressors. I execute the estimation by using xtabond2 in Stata (Roodman 2009), which enables me to estimate the ownership/performance relation while including both past ownership and fixed effect to account for the dynamic aspects of ownership/performance relation and time-invariant unobservable heterogeneity, respectively. I use the system GMM estimator in the estimation.

I use the firm's history beyond $t - s$ as instruments for the explanatory variables. The lagged variables are valid instruments under the assumption of sequential exogeneity, which implies that current shocks are independent of past values of dependent variables (Holtz-Eakin et al. 1988; Arellano and Bond 1991; Wintoki et al. 2012):

$$E(\epsilon_{it}|X_{i,t-s}, ..., X_{i,1}) = 0 \tag{2.2}$$

I utilize the fact that the average life cycle of institutional investor within a firm is 2.61 years and include 2 lags ($s = 2$) in my regression. It is economically justified to consider dependent variables lagged 2 or more years as instruments since institutional ownership in the history that is older than 2 years were on average

held by different institutional investors, which have no direct effect on current institutional ownership; 2 lags of past institutional ownership is sufficient to capture the influence of the firm's past on the present. Any information from the firm's history that is older than 2 years has no direct effect on current institutional ownership and only affects institutional ownership through its effect on current firm performance within s time periods. The firm's history beyond period $t - s$ should be exogenous with respect to any shocks or surprises to institutional ownership in the current or future periods.

As noted in Table 2.7, the coefficient of current Tobin's Q is negative and significant at the 5 percent level in specification (1) and (2), suggesting that institutional ownership, especially investment manager, targets undervalued firms. For other institutional investors, the coefficient of Tobin's Q is negative but insignificant. The coefficient of firm's past performance tends to be positive. This suggests that institutional investors increase more positions in response to current negative shock when a firm's past performance is good. I also report the results of the specification tests—AR (2) second-order serial correlation tests and the Hansen J test of over-identifying restrictions. For instance, in specification (1), the AR (2) test yields a p-value of 0.39 which means that I cannot reject the null hypothesis of no second-order serial correlation. The results in specification (1) in Table 2.7 also reveal a J-statistic with a p-value of 0.58 and as such, I cannot reject the hypothesis that my instruments are valid.

TABLE 2.7: **Evolution of Ownership Structure (Dynamic Panel GMM Model).** I present the estimation results of the dynamic panel GMM model specified in equation 2.1. Firm age (ln) = ln(1+firm age). I execute the regression using xtabond2 in Stata (Roodman 2009). I consider all explanatory variables lagged three or more periods, except Tobin's Q, as instruments. I invoke the "collapse" option of xtabond2 to limit instrument proliferation.

	Dependent Variable: Institutional Ownership (in Percentage)				
	Inst. Own	**Invst. Manager**	**Hedge Fund**	**PE**	**Other**
Tobin's Q	-3.167	-2.137	-0.639	-0.202	-0.582
	(2.06)**	(1.96)**	-1.06	-0.52	-0.72
Tobin's Q (t-1)	0.518	-1.129	0.116	-0.313	1.324
	-0.3	-0.81	-0.2	-0.78	-1.52
Tobin's Q (t-2)	1.772	1.667	0.581	0.162	0.332
	-1.5	(1.94)*	-1.25	-0.52	-0.62
Total Asset (Ln)	5.841	11.025	-4.849	-0.409	-5.291
	-0.71	(1.68)*	(1.85)*	-0.16	-1.54
Total Asset (Ln) (t-1)	-12.816	-9.654	4.999	0.469	0.728
	-0.96	-0.95	-1.25	-0.13	-0.15
Total Asset (Ln) (t-2)	4.85	-2.715	-1.495	0.143	4.317
	-0.56	-0.4	-0.54	-0.08	-1.41
Volatility	7.372	9.914	0.414	3.723	-2.578
	-1.09	(1.77)*	-0.16	(2.08)**	-0.83
Volatility (t-1)	-14.915	-11.373	-3.784	-1.026	-4.176
	-1.62	-1.47	-1	-0.36	-1.13
Volatility (t-2)	3.198	3.104	1.502	-0.376	0.9
	-0.59	-0.73	-0.64	-0.23	-0.42
Share Repo/Total Payout	-0.106	-0.107	-0.011	-0.019	-0.023
	(1.89)*	(2.31)**	-0.57	-1.6	-1.01
Share Repo/Total Payout (t-1)	0.047	0.063	-0.017	0.022	-0.012
	-0.97	-1.47	-0.95	(2.02)**	-0.62
Share Repo/Total Payout (t-2)	0.029	0.048	0.022	0.002	0.007
	-0.86	-1.49	(1.82)*	-0.18	-0.53
Inst. Own (t-1)	0.916				
	(5.25)***				
Inst. Own (t-2)	-0.118				
	-1.09				
Invst. Manager (t-1)		0.631			
		(3.81)***			
Invst. Manager (t-2)		0.035			
		-0.36			
Hedge Fund (t-1)			0.724		
			(3.77)***		
Hedge Fund (t-2)			-0.02		
			-0.15		
PE (t-1)				1.009	
				(4.78)***	
PE (t-2)				-0.209	
				-1.37	
Other Ownership (t-1)					0.692
					(3.66)***
Other Ownership (t-2)					0.014
					-0.12
Firm age (Ln)	0.239	0.062	0.761	-0.191	-0.299
	-0.2	-0.06	-1.42	-0.53	-0.46
AR(1) test P-value	0.00	0.00	0.00	0.00	0.00
AR(2) test P-value	0.39	0.44	0.96	0.25	0.93
Hansen test of over-identification (p-value)	0.58	0.47	0.13	0.95	0.20
Diff-in-Hansen test of exogeneity (p-value)	0.78	0.82	0.16	0.96	0.21
	0.78	0.82	0.16	0.96	0.21
Observations	22673	22673	22673	22673	22673
Number of GVKEY	2788	2788	2788	2788	2788

The assumption of sequential exogeneity in equation 2.2 cannot be economically justified for founding-family ownership, which has an average life cycle of 8.78 years. Previous studies (e.g., Bertrand and Schoar 2006) have shown that the most symptomatic of the cultural constraints within family firms are the inheritance rules that govern many of these firms. Past founding-family ownership could have a persistent and direct impact on current ownership level. This suggests that it is not justified to use lagged values of the dependent variable and endogenous regressors as instruments for family ownership. I consider the standard event study approach to relieve the concern that the estimation of founding-family ownership is biased in Section 2.4.2.

2.4.2 Interactions among Different Types of Ownership

The interaction among different types of ownership determines which type of ownership will survive in a firm's ownership structure. In this section, I examine the interaction between institutional investors and founding-families, which contribute 57.9 percent and 23.1 percent of the overall blockholders, as noted in Table 2.2, respectively.

I apply standard event study methodology and calculate the abnormal changes in the founding-family ownership around the first-time appearance of institutional ownership in the firm's ownership structure. I consider the first-time appearance of institutional ownership since this condition suggests a dramatic change in the firm's ownership structure and this is also when direct interaction between different types of ownership is most likely to occur. In the event window, year 0 indicates the calendar year of the proxy filing when institutional ownership is observed for the first time. The firm is required to have founding-family ownership in event year -1. There are 236 events overall. Of the 236 companies, 130 (or 55 percent) have a family CEO; 82 percent of the family

CEOs are the founders, and the remaining 18 percent are the descendants of the founders. On average, the founding-family holds 20 percent of the firm in event year -1. In event year 0, there are 369 institutional investors entering the 236 firms, 259 of them are investment managers, and 28 of them are hedge funds. Investment managers and hedge funds together contribute 77.78 percent of the overall institutional investors. I calculate the cumulative abnormal change in founding-family ownership as:

$$\begin{aligned}&\text{CAOWN (Family Own)}(t_1, t_2) \\ &= \sum_{t=t_1}^{t_2}(\text{Family Own}_{i,t} - \text{Family Own}_{i,t-1}) - (\overline{\text{Family Own}}_t - \overline{\text{Family Own}}_{t-1})\end{aligned} \tag{2.3}$$

Founding-families have life cycles (Franks et al. 2012) and can regularly sell shares for liquidity. Therefore, family ownership can naturally decline as time passes. I calculate the $\overline{\text{Family Own}}_t$ by averaging the founding-family ownership for all firms in my sample at time t, and consider it as the normal founding-family ownership at t. Similarly, I calculate the cumulative abnormal change in the family CEO ratio as:

$$\begin{aligned}&\text{CACEO (Family CEO)}(t_1, t_2) \\ &= \sum_{t=t_1}^{t_2}(\text{Family CEO}_t - \text{Family CEO}_{t-1}) - (\overline{\text{Family CEO}}_t - \overline{\text{Family CEO}}_{t-1})\end{aligned} \tag{2.4}$$

I calculate the $\overline{\text{Family CEO}}_t$ in a similar way and consider it as the normal family CEO ratio at t. I plot the interaction between founding-family ownership and institutional ownership in Figure 2.9. As Figure 2.9 shows, there is a significant abnormal decrease in founding-family ownership and the family CEO ratio around the time in which institutional ownership enters the firm's ownership structure for the first time. The cumulative abnormal change in founding-family ownership in the time window [-1,0] and [-1,5] is -1.41 percent and -6.05 percent on average, respectively. Both of them are significant at the 1 percent level. The

cumulative abnormal change in the family CEO ratio in the time window [-1,0] and [-1,5] is -0.01 percent and -16.5 percent, respectively. In the time window [-1,5], the change is significant at the 1 percent level.

The abnormal decrease in founding-family ownership and the family CEO ratio is strongly associated with subsequent acquisition. I calculate the percentage of firms being acquired in the event window. I consider the percentage of the S&P 1500 firms being acquired in the event window as the normal percentage of firms being acquired. As Figure 2.10 shows, 18.41 percent of the 236 firms were acquired in the next five years, compared on average only 8.58 percent of the S&P 1500 firms were acquired. In most cases, the bidders are corporations in a related industry. My results are consistent with previous studies (e.g., Martin and McConnell 1991; Hartzell et al. 2004). The CEOs of target firms are usually removed in takeovers. When family CEOs are replaced, they usually dispose their ownership. In my sample, 40 percent of the firms were acquired in the end. The acquisition occurs in event year 6 on average.

2.4.2.1 Caveat and Alternative Explanations

The causal direction tends to be clear since subsequent third-party acquisitions, which are significantly facilitated by institutional ownership, are the main reason for the abnormal change in founding-family ownership and the family CEO ratio. However, the opposite casual direction, that is, the voluntary quit of incumbent family is the reason why institutional blockholders enter into the firm and subsequent acquisition, is also possible. However, we can neither confirm nor reject this possibility since we cannot determine whether the incumbent families were voluntary or involuntary when they quit. I argue that the opposite causal direction is less likely to true for three reasons. First, poor firm performance, relative to what it could be with more efficient management, is the main reason

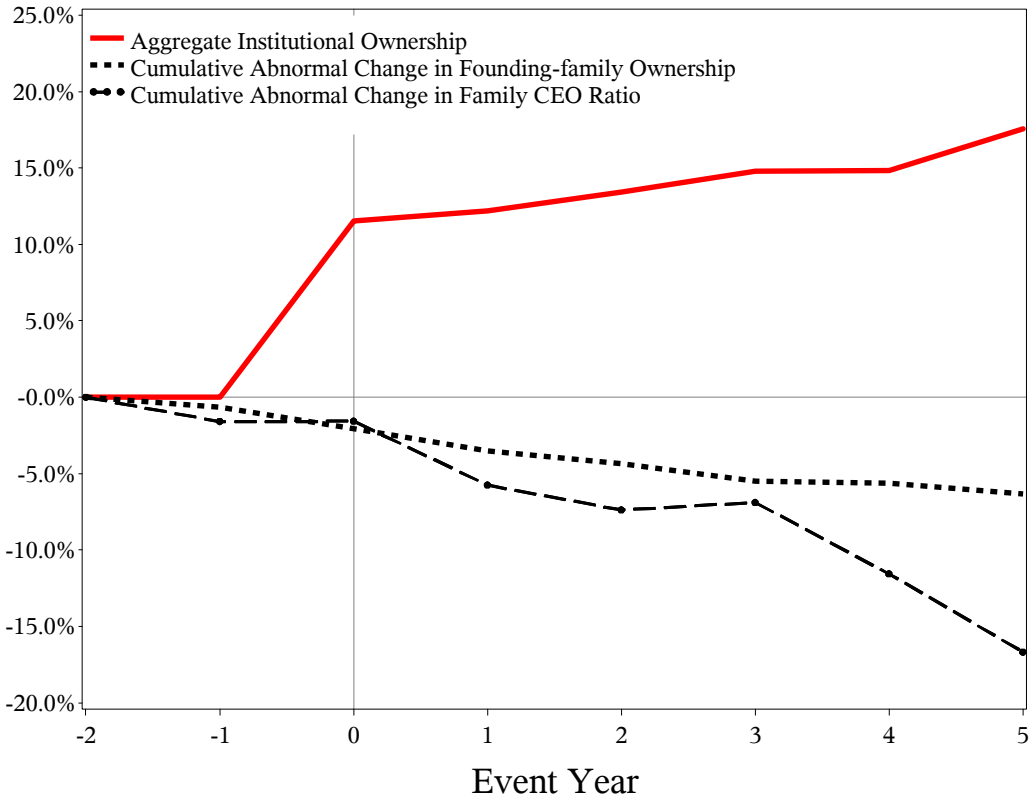


FIGURE 2.9: **Interactions between Institutional and Founding-family Ownership.** I apply standard event study methodology and calculate the abnormal changes in the founding-family ownership around the first-time appearance of institutional ownership in the firm's ownership structure. I consider the first-time appearance of institutional ownership since this condition suggests a dramatic change in the firm's ownership structure and this is also when direct interaction between different types of ownership is most likely to occur. In the event window, year 0 indicates the calendar year of the proxy filing when institutional ownership is observed for the first time. The firm is required to have founding-family ownership in event year -1. There are 236 events overall. Of the 236 companies, 130 (or 55 percent) have a family CEO. On average, the founding-family holds 20 percent of the firm in event year -1. In event year 0, there are 369 institutional investors entering the 236 firms, 259 of them are investment managers, and 28 of them are hedge funds. Investment managers and hedge funds together contribute 77.78 percent of the overall institutional investors. In event year 0, on average, institutional investors held 11.62 percent. I calculate the cumulative abnormal change in the founding-family ownership and in the family CEO ratio as equation 2.3 and 2.4, respectively. I find that the cumulative abnormal change in founding-family ownership during the time window [-1,5] is -6.05 percent on average, while the cumulative abnormal change in the family CEO ratio during the time window [-1,5] is -16.5 percent. Both of them are significant at the 1 percent level.

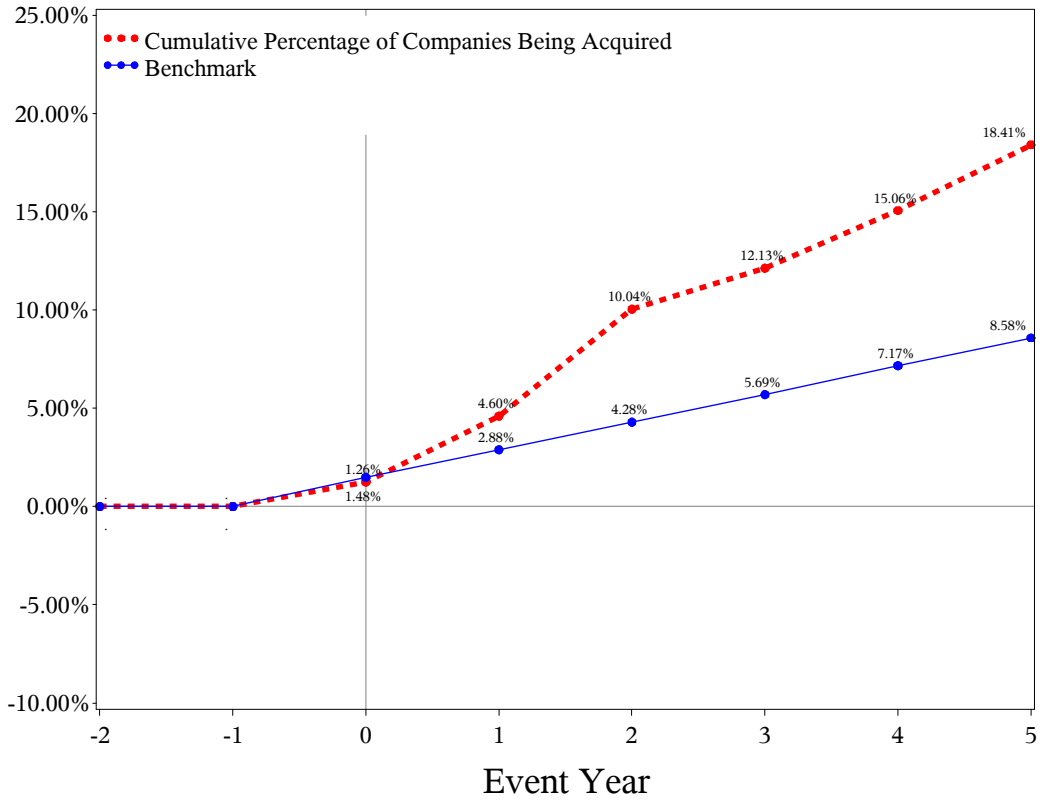


FIGURE 2.10: **Institutional Ownership and Acquisition.** I calculate the percentage of firms being acquired around the first-time appearance of institutional ownership in the firm's ownership structure. I consider the average percentage of S&P 1500 firms being acquired across the 236 observations as a benchmark indicating the normal percentage of firms being acquired. There are 236 firms in my sample in event year 0; 18.41 percent of the 236 firms were acquired in the next five years, compared on average there are only 8.58 percent of firms in the S&P 1500 are acquired during the same period.

why firms are acquired (e.g., Manne 1965; Palepu 1985; Morck et al. 1988b, 1989). Second, a liquidity constraint or shock, which might drive the quit of a family, should be perceived as a signal of its incompetence since a founding-family is usually not diversified and its wealth is highly linked to the firm's performance. Third, previous studies (e.g., Bertrand and Schoar 2006) have shown that the most symptomatic of the cultural constraints within family firms are the inheritance rules that govern many of these firms. A founding-family has incentive to keep their family name and is less likely to voluntarily quit. This probably occurs when the founder suddenly dies and there is no suitable or designated successor. I do not find any evidence in my study to suggest that this

happens.

One possibility is that some unobserved factors may drive both the formation of institutional ownership and subsequent acquisition, suggesting that a target firm will be acquired anyway, no matter institutional ownership is present or not. However, whatever the institutional investor's initial purpose, the presence of institutional ownership increases the probability of firms being acquired ex-post. First, it is very costly to acquire a company with a diffused ownership structure, since the bidder has to pay the expected gains under his management to the shareholders, who can otherwise free ride on the bidder's improvement of the corporation (Grossman and Hart 1980). The presence of multiple blockholders mitigates the free rider problem. Second, the presence of blockholders facilitates the formation of a toehold which makes a bidder has an incentive to bid aggressively (Bulow et al. 1999). For a bidder, it is less costly to form a toehold by negotiating with two or three blockholders than buying them from small shareholders who tend to free ride each other.[9] Another possibility is that institutional investors may tend to target firms with a greater probability of being acquired in the future rather than firms that are undervalued. I take the view that the stock market is efficient and stock price already includes information on the probability of being acquired in the future.

2.4.3 Summary and Discussion

Taken together, the evolution of ownership structure is shaped by investment strategies of blockholders and the interactions among them. The investment strategies adopted by institutional investors and founding-families and the interaction between them can be seen has having contributed to the development of the ownership structure of major U.S. public companies—that is, institutional

[9]Previous studies such as Bulow et al. (1999) have shown that a large percentage of bidders own toeholds, often of 10-20 percent or more, at the time they make offers.

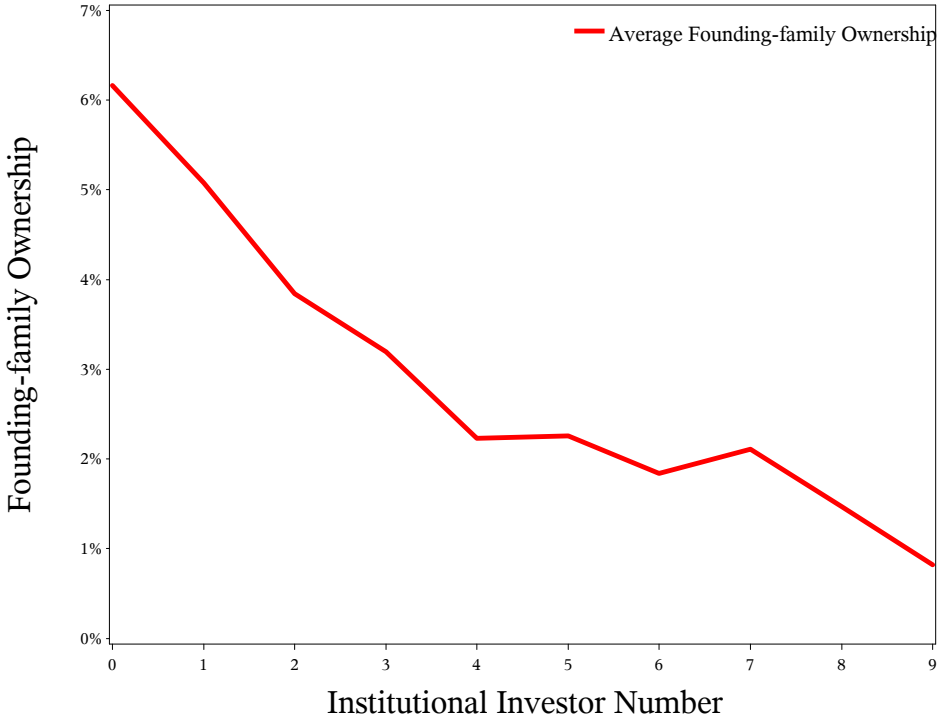


FIGURE 2.11: **Institutional Investor and Founding-family Ownership.** There are 30,690 observations in my sample. I calculate the average founding-family ownership for firms with the same number of institutional investors. I plot average founding-family ownership over institutional investor number in the figure.

ownership tends to be formed in firms with poor performance and founding-family ownership is more likely to be observed in well-performing ones. The evolution of ownership structure is a dynamic and endogenous process, in which the firm's performance in the stock market is a critical determinant. The ownership structure cannot be taken as exogenous.

My empirical findings also shed light on the dispute that which type of ownership structure is more efficient (e.g., Fama and Jensen 1983; Demsetz 1983; Shleifer and Vishny 1997; McConaughy et al. 1998; Anderson and Reeb 2003; Miller et al. 2007). My results suggest that previous studies about founding-family ownership could be subject to survivorship bias—that is, incompetent founding-families are replaced by institutional investors and the firms no longer

exist as family firms. The potential survivorship bias may lead to overly optimistic estimation of the competence of founding-families. Moreover, the argument that founding-family ownership represents a more efficient organizational structure is inconsistent with market efficiency. If founding-family ownership indeed represents a more efficient ownership structure than institutional ownership, then rational institutional investors should invest more in the firms with founding-family ownership, suggesting that institutional ownership and founding-family ownership should exhibit a complementary rather than substitute relationship as shown in Figure 2.11. Alchian (1950) notes that whenever successful enterprises are observed, the elements common to these observable successes will be associated with success and copied by others in their pursuit or success. However, in 2012, founding-family ownership reached an all-time low when compared to the previous two decades. By contrast, according to Shub et al. (2013), the U.S. investment manager's asset under management (AuM) has reached an all-time high of US$36 trillion in 2012.

2.5 Impact of Institutional Ownership on the Board

2.5.1 Event Study Approach

The board of directors in principle monitors management on behalf of shareholders (Tirole 2005) and therefore, the concentration of ownership should have an impact on the boards. A firm with founding-family ownership is an ideal place to evaluate the impact of institutional ownership on board composition, since there are insider directors, independent directors, family directors, and linked directors sitting on the board at the same time when institutional ownership emerges on the scene for the first time. I identify all resigning directors and newly hired directors in the event window. I present the summary statistics of

TABLE 2.8: **Institutional Ownership and Turnover in the Boards.** I examine the turnover in the board of directors around the first-time appearance of institutional ownership in the firm's ownership structure. I consider the first-time appearance of institutional ownership since this condition suggests a dramatic change in the firm's ownership structure and this is also when direct interaction between different types of ownership is most likely to occur. I identify all resigning directors and newly hired directors in the event window. I present the summary statistics of the turnover in directors in this table. In the event window, year 0 indicates the calendar year of the proxy filing when institutional ownership is observed for the first time. The firm is required to have founding-family ownership in event year -1. There are 236 events overall. I follow Riskmetrics database and classify directors into: "insider/employee director", "independent director", and "linked/affiliated director". I manually check whether the director is affiliated with the founding-family and construct variable "family director". I identify resigning directors and newly hired directors by comparing the names of the directors in a row of two years. Those directors showing in the year t-1 but not in the year t are considered as resigning directors in the year t. Those directors showing in the year t but not in the year t-1 are considered as newly hired directors in the year t. Outflow and Inflow in event year t indicate the number of resigning directors and newly hired directors, respectively.

Event Year	**Director**							
	Insider/Employee		**Independent**		**Linked/Affiliated**		**Family**	
	Resign (-)	New (+)	Resign (-)	New (+)	Resign (-)	New (+)	Resign (-)	New (+)
-2	12	14	26	42	14	13	7	3
-1	12	14	40	53	15	5	3	6
0	31	28	48	73	19	11	15	6
1	33	25	72	88	21	16	12	4
2	32	26	76	107	25	16	11	5
3	40	35	81	109	31	14	16	5
4	30	28	96	125	30	12	16	4
5	36	19	83	91	31	29	24	4

the turnover in directors in Table 2.8. I find that there is a net inflow of independent directors and a net outflow of insider and family directors around the first-time appearance of institutional ownership.

I apply standard event study methodology and calculate the abnormal changes in the ratio of insider/employee directors, independent directors, linked directors and family directors in the same way as equation 2.3. I consider the average ratio of each type of directors in firms with founding-family ownership as the normal ratio. I plot the cumulative abnormal change in board composition in Figure 2.12. As the figure shows, there is a significant increase in the ratio of

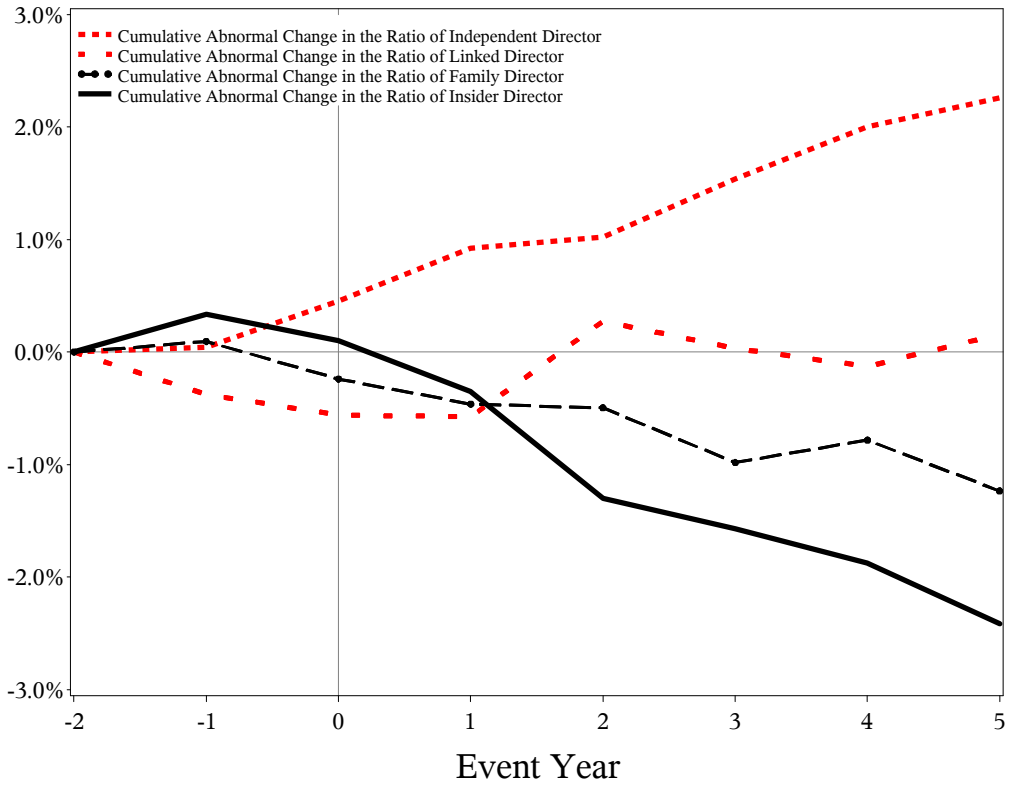


FIGURE 2.12: **Impact of Institutional Ownership Over Board Composition.** I apply standard event study methodology and calculate the abnormal changes in the founding-family ownership around the first-time appearance of institutional ownership in the firm's ownership structure. I consider the first-time appearance of institutional ownership since this condition suggests a dramatic change in the firm's ownership structure and this is also when direct interaction between different types of ownership is most likely to occur. Year 0 indicates the calendar year of the proxy filing when the institutional ownership is observed for the first time. The firm is required to have founding-family ownership in event year -1. There are 236 events overall. There are four types of directors in the RismMetrics database. I calculate the cumulative abnormal change in the ratio of each type of directors in the same way as the one in the Figure 2.9.

independent directors, and a significant decrease in the ratio of insider/employee and family directors. In the time window [-1,5], the average cumulative abnormal change in the ratio of independent directors is 2.2 percent, which is significant at the 5 percent level. In the time window [-1,5], the average cumulative abnormal change in the ratio of insider/employee and family directors is -2.4 percent and -1.5 percent, which is significant at the 1 percent and 5 percent level, respectively.

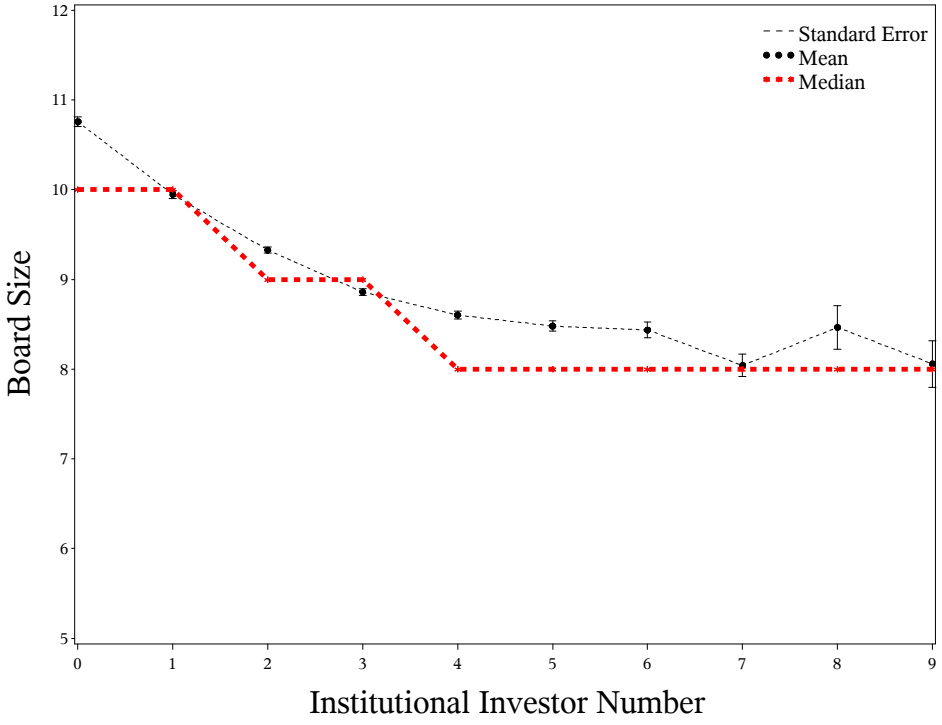


FIGURE 2.13: **Institutional Investor Number and Board Size.** There are 30,690 observations in my sample. I merge my sample with the Riskmetrics database and identify the board size for 24,899 of them. I calculate mean, median and standard error of board size for the firms with the same number of institutional investors. I plot the mean (with standard error) and the median of the board size over the institutional investor number in the figure.

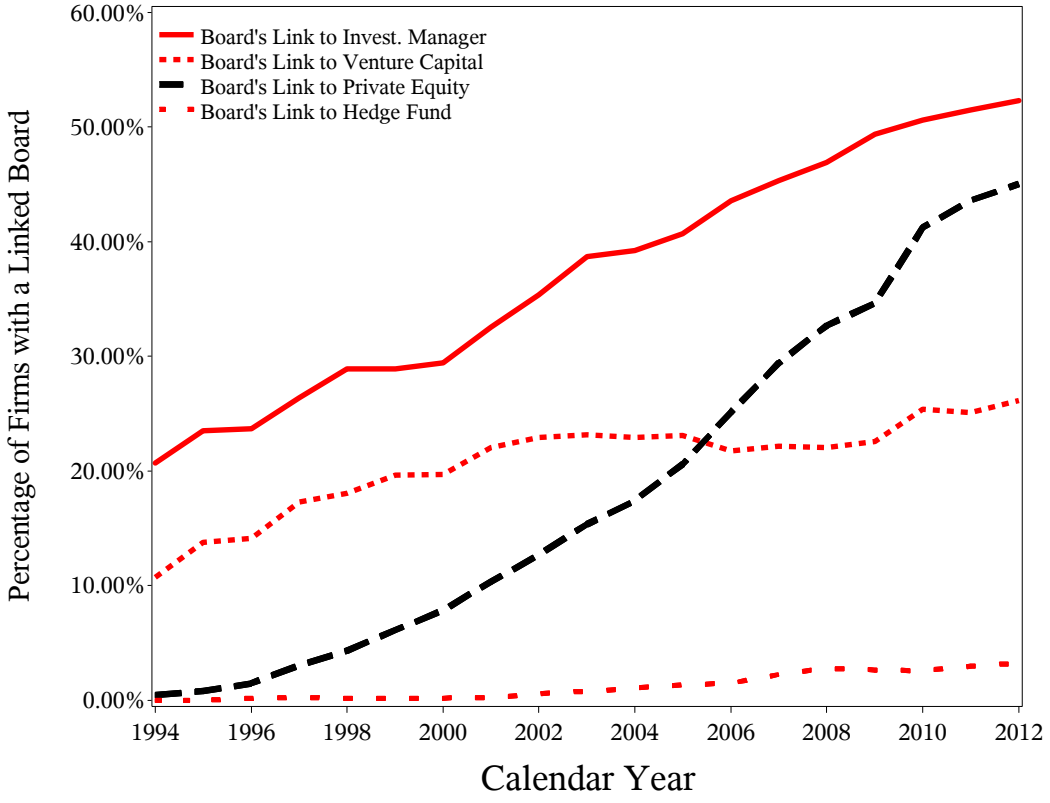


FIGURE 2.14: **Board's Link to Investment Manager, Venture Capital, Private Equity and Hedge Fund.** The concentration of ownership towards institutional investors also changes the board composition in another dimension—that is, it changes the boards' external network connections. The boards are increasingly externally connected with institutional investors. I identify the external network connections between boards and institutional investors using Perl programing language. The board's link to an institutional investor is a dummy variable, and equals 1 when there is at least one director sitting on the board linked to an investment manager, private equity, venture capital, or hedge fund; otherwise, it is 0. I identify whether a director has a link by searching keywords "private equity", "venture capital", "hedge fund", and "investment manager/advisor", in his or her background information using Perl programing language in the proxy filings. This rationale of this approach is that all companies are required to disclose background information about their nominated directors, including relevant history in the company or industry, positions on other corporate boards, and potential conflicts of interest.

2.5.2 Fixed Effect Estimation

In order to evaluate the overall effect of institutional ownership on the boards, I take the board composition as the dependent variable and explain it using a two-way fixed effect model. Dynamic panel GMM model may not add extra benefit since there is no empirical evidence that a dynamic relation between current blockholder ownership and past board composition exists. I merge my sample with the Riskmetrics database and identify the board composition and size for 24,899 of them.

I find that different types of institutional ownership have different impact on the board composition. As Table 2.9 shows, founding-family ownership (institutional ownership) is positively (negatively) associated with the ratio of insider/employee and family director, respectively. The impact on the ratio of independent director also differs among institutional investors. Investment manager tends to increase the ratio of independent directors, while hedge fund has no impact on it. By contrast, other types of institutional ownership tend to decrease the ratio of independent directors.

Institutional ownership also has an impact on board size, which can be considered a side effect of the changes in board composition. The net effect on board size is determined by whether the number of resigning directors is larger or smaller than the number of newly hired directors. Previous studies (e.g., Yermack 1996) have shown that smaller boards are more likely to dismiss CEOs for poor performance, but that this threat of dismissal declines as the board size increases. I find that institutional ownership is associated with a smaller board in Table 2.10 after controlling industry fixed effect. The size-decreasing effect of institutional ownership on the board is not significant in the firm fixed effect model, except for the investment manager ownership. I document a negative

TABLE 2.9: **Impact of Institutional Ownership Over Board Composition (Firm Fixed Effect Model).** I study the impact of institutional ownership on board composition in this table using a two-way firm and time fixed effect model. I merge my sample with the RiskMetrics database. I follow Riskmetrics database and classify directors into four types. I consider the percentage of each type of director as the dependent variable. ROA is rescaled by dividing 100.

	Director (Ratio)							
	Insider				**Independent**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Asset (Ln)	-0.003	-0.005	-0.005	-0.004	0.000	0.001	0.000	0.000
	(1.71)*	(2.24)**	(2.53)**	(2.15)**	-0.160	-0.350	-0.160	-0.050
ROA	2.354	2.200	2.011	2.299	-0.066	0.275	-0.065	-0.442
	(3.61)***	(3.37)***	(3.08)***	(3.53)***	-0.070	-0.280	-0.070	-0.450
Employees (Ln)	-0.006	-0.007	-0.007	-0.007	0.006	0.007	0.007	0.007
	(3.06)***	(3.42)***	(3.48)***	(3.44)***	(1.98)**	(2.26)**	(2.24)**	(2.14)**
Volatility	0.002	0.004	0.003	0.004	-0.016	-0.018	-0.018	-0.018
	-0.550	-0.920	-0.910	-0.930	(2.76)***	(3.03)***	(3.06)***	(3.11)***
Firm Age (Ln)	-0.008	-0.009	-0.009	-0.010	0.009	0.010	0.012	0.010
	(3.01)***	(3.51)***	(3.57)***	(3.87)***	(2.15)**	(2.32)**	(2.69)***	(2.25)**
Founding-Family Ownership	0.220				-0.263			
	(8.91)***				(10.07)***			
Invest. Manager Ownership		-0.021				0.046		
		(3.83)***				(5.31)***		
Hedge Fund Ownership			-0.089				0.000	
			(6.04)***				-0.010	
Other Inst. Ownership				-0.017				-0.120
				(1.86)*				(6.50)***
Observations	22544	22544	22544	22544	22544	22544	22544	22544
R-squared	0.74	0.73	0.74	0.73	0.74	0.74	0.74	0.74
	Linked				**Relatives**			
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Total Asset (Ln)	0.004	0.003	0.004	0.004	0.004	0.003	0.003	0.003
	-1.310	-1.140	-1.540	-1.510	-1.620	-1.220	-1.180	-1.260
ROA	-2.246	-2.438	-1.903	-1.816	1.258	1.196	1.183	1.234
	(2.35)**	(2.54)**	(1.98)**	(1.91)*	(2.22)**	(2.12)**	(2.07)**	(2.17)**
Employees (Ln)	0.000	-0.001	0.000	0.000	-0.002	-0.003	-0.003	-0.003
	-0.130	-0.180	-0.130	-0.040	-1.150	-1.500	-1.510	-1.500
Volatility	0.014	0.014	0.014	0.015	0.001	0.003	0.003	0.003
	(2.53)**	(2.57)**	(2.60)***	(2.66)***	-0.390	-0.790	-0.790	-0.800
Firm Age (Ln)	-0.002	-0.001	-0.002	0.000	-0.004	-0.005	-0.006	-0.006
	-0.370	-0.240	-0.600	-0.070	(1.84)*	(2.51)**	(2.60)***	(2.70)***
Founding-Family Ownership	0.043				0.195			
	(1.68)*				(10.15)***			
Invest. Manager Ownership		-0.026				-0.008		
		(3.20)***				(1.90)*		
Hedge Fund Ownership			0.090				-0.019	
			(3.90)***				-1.580	
Other Inst. Ownership				0.136				-0.007
				(8.07)***				-1.020
Observations	22544	22544	22544	22544	22544	22544	22544	22544
R-squared	0.62	0.62	0.62	0.62	0.76	0.76	0.76	0.76

correlation between the institutional investor number and the board size in Figure 2.13.

TABLE 2.10: **Impact of Institutional Ownership Over Board Size.** I study the impact of institutional ownership on board size using a two-way fixed effect model. There are 30,690 firm-year observations in my sample. I merge it with the RiskMetrics database and identify the board size for 24,899 of them. Firm age (ln) = ln(1+firm age). I consider a two-way fixed effect model, namely industry and time fixed effect in specification (1), (3), (5), and (7), and firm and time fixed effect in specification (2), (4), (6), and (8), to perform the analysis.

	Board Size (Ln)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Assets (Ln)	0.061	0.038	0.060	0.038	0.061	0.038	0.062	0.038
	(30.27)***	(8.40)***	(30.11)***	(8.37)***	(30.43)***	(8.45)***	(30.79)***	(8.50)***
ROA	-0.121	-0.032	-0.123	-0.033	-0.110	-0.030	-0.100	-0.030
	(6.71)***	(2.30)**	(6.90)***	(2.40)**	(6.15)***	(2.17)**	(5.66)***	(2.15)**
Employee (Ln)	0.022	0.032	0.022	0.032	0.023	0.032	0.023	0.032
	(10.96)***	(6.67)***	(10.84)***	(6.67)***	(11.17)***	(6.69)***	(11.26)***	(6.70)***
Volatility	-0.191	-0.079	-0.190	-0.079	-0.190	-0.079	-0.188	-0.078
	(19.56)***	(10.22)***	(19.53)***	(10.22)***	(19.46)***	(10.21)***	(19.28)***	(10.20)***
Firm Age (Ln)	0.037	0.055	0.037	0.056	0.038	0.054	0.038	0.055
	(17.39)***	(9.16)***	(17.34)***	(9.28)***	(17.71)***	(9.13)***	(17.91)***	(9.24)***
Institutional Ownership	-0.071	-0.006						
	(6.32)***	-0.660						
Invest. Manager Ownership			-0.155	-0.030				
			(11.65)***	(2.62)***				
Hedge Fund Ownership					-0.077	0.020		
					(2.33)**	-0.670		
Other Inst. Ownership							0.114	0.040
							(5.37)***	(2.31)**
Observations	22544	22544	22544	22544	22544	22544	22544	22544
R-squared	0.47	0.84	0.47	0.84	0.47	0.84	0.47	0.84
Industry Fixed Effect	YES	NO	YES	NO	YES	NO	YES	NO
Firm Fixed Effect	NO	YES	NO	YES	NO	YES	NO	YES
Year Fixed Effect	YES	YES	YES	YES	YES	YES	YES	YES

The concentration of ownership towards institutional investors also changes the board composition in another dimension—it changes the boards' external network connections. The boards are increasingly connected externally with institutional investors. In 1994, the percentage of firms whose boards were linked to an investment manager was 20.69 percent, venture capital 10.69 percent, private equity 0.46 percent and hedge fund 0 percent, respectively. In 2012, these numbers were 52.28 percent, 26.14 percent, 45.03 percent and 3.23 percent, respectively. As noted in Figure 2.14, there has been an upward trend in the board's external network connection with investment manager, private equity, and venture capital. The connection with private equity has experienced a 45 percent increase, which is the sharpest among all types of institutional investors. Although private equity does not seem to play an important role in the ownership structure, they have had a substantial impact on boards' external network connections. On the other hand, the connection with hedge funds only experienced a 3.23 percent increase, which is the lowest amongst all the institutional investors. Hedge funds tend to be powerful in the ownership structure, but their impact on the boards' external network connections is limited.

2.6 Robustness Check

In this section, I consider blockholder ownership as the dependent variable and explain it using firm's accounting performance measure (ROA) as a robustness check. I use a two-way fixed effect model as Table 2.6. As Table 2.11 shows, my results are robust under the alternative performance measure. In specification (1) and (2) in Panel A of Table 2.11, the negative coefficient of the ROA suggests that the institutional investor tends to target firms with lower ROA. By contrast, I document a positive and significant coefficient of ROA for founding-family ownership in specification (3) and (4) in Panel A of Table 2.11, suggesting that

they tend to increase (decrease) their positions when ROA is high (low). In order to relieve the concern that the causal direction is the opposite, that is, institutional ownership damages firm accounting performance, while family ownership improves firm accounting performance, I include ROA lagged one year as an explanatory variable in Panel B. As the Table shows, the coefficient of lagged ROA is negative and significant in specification (1) and (2), and positive and significant in specification (3) and (4). The opposite causal direction is less likely to be true.

2.7 Conclusion and Future Research

In this paper, I draw a detailed picture of the ownership structure of major U.S. public companies during the period 1994 to 2012. I find that a concentration of ownership towards financial institutions and private investors started to form as early as 1980 until after 2010. Widely held public companies are about to become extinct.[10] Means (1967) shows that the ultimate ownership of big corporations has become even more widely dispersed during the time period from 1929 to 1963, while my paper shows that this trend of dispersion is reversed around the 1980s. In my future research, I will explain the reason behind this reversal.

In a market that is characterized by widely held public companies, investors get liquidity at the expense of high agency costs as there is no disciplinary large shareholder. On the other hand, a market is characterized by one single block of shareholders that commands a majority of the shares is criticized for sacrificing investor liquidity (Tirole 2005). The concentration may also reduce the benefits of market monitoring by reducing stock liquidity (Holmstrom and Tirole

[10]The picture of the ownership structure before 1994 is still incomplete since electronic proxy filings were not available in the SEC EDGAR database until 1994. By merging the ownership data in Shleifer and Vishny (1986), we now understand roughly how ownership evolved in the 1980s. Nevertheless, it is necessary to collect the ownership data in order to fill the gap in knowledge.

TABLE 2.11: **Robustness Check: Evolution of Ownership Structure (Fixed Effect Model). Institutional Investor** is defined as an institution or an individual with an investment purpose or providing financial services by holding at least 5 percent of the firm. In my definition, it includes investment managers/advisors (invest. manager), hedge funds, private equity firms (PE), commercial banks, financial services, private investors, insurance, mutual/pension funds, and other investment entities. Post Crisis Dummy is a dummy variable and equals 1 when the proxy filing date is later than Jan 1, 2009. Total asset (AT) and return on assets (ROA) are taken from or calculated by using the data in the Compustat FUNDA database. Volatility is defined as the annualized standard deviation of the stock returns in the period between two proxy filing dates. I consider a two-way fixed effect model, namely industry and time fixed effect in specification (1), (3), (5), and (7), and firm and time fixed effect in specification (2), (4), (6), and (8), to perform the analysis.

	Panel A: Dependent Variable: Ownership (in Percentage)							
	Institutional Investor		**Founding-Family**		**Employee Ownership**		**Corporation Ownership**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Assets (Ln)	-1.752	-2.737	-0.651	-0.621	0.078	0	0.028	-0.305
	(28.97)***	(14.62)***	(16.89)***	(9.25)***	(7.57)***	-0.01	-1.14	(4.48)***
ROA	-14.977	-13.525	6.939	0.422	-0.025	-0.05	-3.348	-1.33
	(14.14)***	(13.37)***	(11.65)***	-1.41	-0.22	-0.6	(7.38)***	(3.31)***
Volatility	0.335	-0.531	0.41	0.703	-0.472	-0.206	1.358	1.155
	-0.59	-1	-1.34	(4.72)***	(5.92)***	(3.49)***	(5.63)***	(6.04)***
Post Crisis Dummy		1.739		-0.551		-0.066		-0.252
		(4.00)***		(3.93)***		-1.22		(1.90)*
Observations	30298	30298	30298	30298	30298	30298	30298	30298
R-squared	0.2	0.61	0.08	0.91	0.04	0.75	0.04	0.66
Industry Fixed Effect	YES	NO	YES	NO	YES	NO	YES	NO
Year Fixed Effect	YES	YES	YES	YES	YES	YES	YES	YES
Firm Fixed Effect	NO	YES	NO	YES	NO	YES	NO	YES
	Panel B: Dependent Variable: Ownership (in Percentage)							
	Institutional Investor		**Founding-Family**		**Employee Ownership**		**Corporation Ownership**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Assets (Ln)	-1.868	-2.901	-0.634	-0.5	0.082	0.002	0.033	-0.196
	(29.57)***	(13.76)***	(15.79)***	(7.17)***	(7.59)***	-0.07	-1.35	(2.71)***
ROA (-1)	-11.23	-7.694	6.751	0.738	-0.015	0.016	-3.453	-1.308
	(9.89)***	(7.28)***	(11.15)***	(2.71)***	-0.13	-0.16	(7.74)***	(3.55)***
Volatility	1.93	0.805	-0.122	0.561	-0.429	-0.203	1.132	1.004
	(3.29)***	-1.43	-0.42	(4.06)***	(5.37)***	(3.21)***	(5.04)***	(5.65)***
Post Crisis Dummy		1.756		-0.53		-0.065		-0.232
		(3.98)***		(3.92)***		-1.17		(1.73)*
Observations	27198	27198	27198	27198	27198	27198	27198	27198
R-squared	0.2	0.63	0.08	0.92	0.04	0.76	0.04	0.69
Industry Fixed Effect	YES	NO	YES	NO	YES	NO	YES	NO
Year Fixed Effect	YES	YES	YES	YES	YES	YES	YES	YES
Firm Fixed Effect	NO	YES	NO	YES	NO	YES	NO	YES

1993). The ownership structure of major U.S. public companies exhibits some unique characteristics that help striking a balance between liquidity and control. Institutional investors were thought to be remarkably powerless (e.g., Jensen 1989; Chaganti and Damanour 1991; Coffee 1991). Chaganti and Damanour (1991) argue that "It has generally been assumed that institutional owners—unlike individual or family owners—do not exercise their power to challenge the management or, if they do, their chances for success are small". Coffee (1991) argues that "if the public at large has a concern about financial institutions today, it is not their strength, but their weakness, that worries them." This was true in the 1980s, when institutional investors held fewer shares and family ownership was still very powerful. However, the sharp trend in the concentration of ownership among institutional investors in the last two decades suggests that the strength of financial institutions, rather than their weakness, maybe more of a concern for the general public today and in the future.

The literature may need a new theoretical model which allows the participation of multiple blockholders. Empirically, the evolution of the ownership structure of non-American firms still requires further investigation. Based on a sample of firms in the DAX 100 index, Dittmann et al. (2010) find that the banks' equity ownership declined sharply from 1994 to 2005 and that the German financial system lost some of its formerly distinctive features. It seems that the German companies have followed a different evolutionary course than the American firms—that is, ownership is dispersed from financial institutions such as banks to investors whose identities remain anonymous.

Chapter 3

Nepotism and Equity Prices

3.1 Introduction

Nepotism is a special form of social networks, and its prevalence within firms and economic implication has not been systematically studied yet. To fill this gap, I identify family ties among corporate insiders within major U.S. public firms by searching more than 30 keywords indicating the potential presence of nepotism in the proxy filings using the Perl programing language. I follow Wasserman and Faust (1994) and measure the strength of nepotism by degree and density. I find that nepotism is very prevalent in the S&P 1500 firms, of which 53.46 percent exhibit nepotism. My contribution to the existing literature is the development of a nepotism database covering family ties within major U.S. public companies from 1994 to 2012, and a nepotism index indicating the strength of nepotism. This paper aims to deepen our understanding of the internal structure of modern corporations.

I find that firms with nepotism underperform significantly. The abnormal return is 31 basis points (bps) per month, or 3.8 percent per year, over the estimating period. This point estimate is significant at the 5 percent level; 72

percent of the firms having founding-family ownership exhibit nepotism, which is more than 20 percent higher than firms without founding-family ownership. For firms having founding-family ownership, nepotism is associated with worse firm performance.

My paper differs from the family firm literature (e.g., Anderson and Reeb 2003; Villalonga and Amit 2006; Miller et al. 2007; Bennedsen et al. 2007; Lins et al. 2013) in two aspects: First, a firm with nepotism is not necessarily a family firm. Second, I measure the strength of the nepotism quantitatively. My nepotism measure can be used to study nepotism within family firms. My paper is consistent with Perez-Gonzalez (2006), in which they find that nepotism hurts firm performance. In my paper, I find that nepotism in firms with founding-family ownership is associated with worse firm performance. This is consistent with the findings in Miller et al. (2007), in which they find only businesses with a lone founder outperform. My paper also contributes to the fast growing literature investigating the role of social network in corporate finance, e.g., executive compensation (Engelberg et al. 2013; Hwang and Kim 2009; Shue 2013), financial policy (Fracassi 2008), firm policies (Shue 2013), governance (Fracassi and Tate 2012), access to capital (Hochberg et al. 2007; Engelberg et al. 2010), incidence of fraud (Chidambaran et al. 2010), acquisition activity (Cai and Sevilir 2009; Ishii and Xuan 2009; Schmidt 2009), and analysts' ability of gathering superior information (Cohen et al. 2010).

The rest of the paper is structured as follows. In Section 3.2, I identify nepotism and construct nepotism measures. In Section 3.3, I report the empirical results and analysis. In Section 3.4, I show the robustness of my findings. In Section 4.4, I offer a conclusion. In Appendix A, I describe the technical details of the Perl programming language and the SEC EDGAR database.

3.2 Sample Construction

3.2.1 Nepotism Measure

I follow the social network literature and define nepotism degree and density to measure the strength of nepotism. I define two measures which are used widely in the standard social network literature in order to measure the strength of nepotism. The degree of a corporate insider is the number of family connections he or she possesses, while the nepotism degree is the average degree of all corporate insiders within firms, and nepotism density is the ratio of the number of family connections present to the maximum possible. Specifically, the definition of the nepotism measures can be found in the following equations:

$$
\begin{aligned}
D(n_i) &= \text{Degree of actor } n_i\text{, i.e., number of relations incident with actor } n_i \\
L &= \text{Number of lines in the network, } 2L = \textstyle\sum_{i=1}^{N} D(n_i) \\
N &= \text{Number of actors in the network} \\
\text{Nepotism Degree} &= \frac{\sum_{i=1}^{N} D(n_i)}{N} = \frac{2L}{N} \\
\text{Nepotism Density} &= \frac{\sum_{i=1}^{N} D(n_i)}{N(N-1)} = \frac{2L}{N(N-1)}
\end{aligned}
$$

$$
\text{Nepotism Dummy} = \begin{cases} 1 & \text{if Nepotism Degree}>0 \\ 0 & \text{Otherwise} \end{cases}
$$

3.2.2 Nepotism Identification

Nepotism is a special form of social network: First, family ties are exogenous in the sense that they are less likely to be formed by working together in the firm like other relationships. Second, a family relation must be disclosed in the proxy statement. The concern of self-selection bias is relieved. I consider family

relationships among all corporate insiders, defined as a company's officers, directors and beneficial owners holding more than 5 percent a class of the company's equity securities. I only consider family ties among immediate family members, defined in the item 404 in Regulation S-K. I consider proxy filings filed by major U.S. public firms with the SEC EDGAR database as the main data source for nepotism.

The SEC requires that shareholders of a company whose securities are registered under Section 12 of the Securities Exchange Act of 1934 receive a proxy statement prior to a shareholder meeting, and the proxy statement must disclose the family relationships among directors, nominee for election as directors, officers of the company, the person chosen to be an officer of the company, where the family relationship means any relationship by blood, marriage, or adoption, nor more remote than first cousin. The companies are also required to disclose the value of the securities owned by each director or nominee and his or her immediate family member on an aggregate basis. Moreover, the companies are also under an obligation to disclose the relationships if a director, nominee, or an immediate family member has a direct or indirect interest, the value of which exceeds $120,000, in a company if he or she is a party to a contract, arrangement, or understanding with respect to any securities of, or interest in, the company. The data are available since 1996, as companies were phased in to EDGAR filings over a three-year period, ending May 6, 1996. As of that date, all public domestic companies were required to make their filings on EDGAR.

I consider firms in the Execucomp database which mainly includes S&P 1500 firms and remove utility firms (SIC codes between 4910 and 4940). As a robustness check, I also examine all firms in the SEC EDGAR database, which includes all the U.S. public firms. I download all proxy filings from the SEC EDGAR database, and then use a Perl program to search the proxy filings for keywords indicating family relationships. For instance, a disclosure of family

relationship among corporate insiders in proxy statement can be like "A and B are first brothers", and I identify the relationship by matching the keyword "brothers" using a regular expression in the Perl program. My identification strategy captures all the family relationships among corporate insiders disclosed in the proxy filings.

For the firms in the Execucomp database, I manually clean the nepotism identified by the Perl program. I remove firms with dual-class common stock from my sample because the governance structure is completely different from the single-class. There are 23,244 firm-year observations left. I decompose the identified nepotism by verifying manually whether the keyword indicates a family tie between directors and executives, or between directors and large shareholders, etc. I take the number of the identified keywords as a proxy of the number of the family tie in the nepotism (L). I report the cleaned keywords frequencies in Table 3.1.

I use the CRSP header file with the date of beginning stock data to calculate the firm age. I consider the difference between the proxy filing date and the date of beginning stock data, which will give me the number of days each stock was included in the CRSP database, as a proxy of the firm age. I consider the years of accounting data available in Compustat as an alternative proxy for firm age when date of beginning stock data is not available in the CRSP database. I take Thomson Reuters Insider Filing Data Feed (IFDF) as the data source to identify the number of corporate insiders (N). Corporate insiders are defined as a company's officers and directors, and any beneficial owners of a class of the company's equity securities registered under Section 12 of the Securities Exchange Act of 1934. Corporate insiders must file with the SEC a statement of ownership regarding those securities. The initial filing is on Form 3.[1] Changes

[1] An insider of an issuer that is registering equity securities for the first time under Section 12 of the Exchange Act must file this form no later than the effective date of the registration

TABLE 3.1: **Family Tie Distribution.** Tabulation of family tie distribution. I identify family ties among corporate insiders in the proxy filings by searching keywords using Perl program. The Perl program capture all disclosed family ties for firms in the Execucomp database. Utilities firms (SIC code between 4900 and 4940) are removed from the sample. There are 68,775 family ties in total. The validity of the keyword is manually checked.

Keywords	**Frequency**
Wife	10986
Son	8840
Brother	6348
Daughter	4815
Son-In-Law	2075
Father	1998
Brother-In-Law	1993
Husband	1973
Father-In-Law	1404
Sister	1370
Sister-In-Law	1254
Cousin	1187
Nephew	1177
Sibling	1174
Daughter-In-Law	1158
Mother-In-Law	1037
Mother	1030
Niece	733
Uncle	321
Grandfather	157
Grandson	145
Stepson	73
Stepdaughter	44
Step-Daughter	23
Ex-Wife	20
Stepfather	15
Step-Mother	11
Stepmother	11
Step-Father	7
Stepbrother	5
Step-Son-In-Law	4

TABLE 3.2: **Nepotism and Founding-family Ownership.** As described in Section 3.2.3, I consider the proxy statement the Internet, which includes but is not restricted to Wikipedia, Bloomberg Businessweek, FundingUniverse, and local newspapers, as my main data source to identify the founder for each firm in my sample. *Positive Ownership Dummy* equals one if the founding-family holds positive outstanding shares. Otherwise, it equals zero. I also report the founding-family *Ownership* conditional on that there is positive founding-family ownership. *Nepotism Dummy (conditional)* indicates presence of nepotism when founding-family ownership is present in the firm. For each firm with founding-family ownership, I also manually verify if the CEO is from the founding family. A CEO is considered as a first generation CEO if he or she is the founder of the firm, while a CEO is considered as a second generation if the CEO position is held by the founder's descendant or relative.

Year	N	Nepotism Dummy	Founding Family			Family CEO		
			Dummy	Ownership	Nepotism Dummy (Conditional)	Dummy	1st Generation Dummy	2nd Generation Dummy
1996	303	57%	41.58%	4.76%	67.74%	28.05%	23.10%	4.95%
1997	1,239	59%	31.88%	3.85%	74.10%	20.34%	16.87%	3.47%
1998	1,296	58%	32.56%	3.87%	73.08%	20.22%	16.36%	3.86%
1999	1,370	57%	33.21%	3.99%	71.27%	20.15%	16.13%	4.01%
2000	1,388	56%	33.57%	3.90%	68.91%	20.97%	17.00%	3.96%
2001	1,388	57%	31.12%	3.45%	69.58%	19.38%	15.99%	3.39%
2002	1,351	54%	29.98%	3.20%	70.25%	17.62%	13.99%	3.63%
2003	1,358	57%	29.68%	3.01%	72.80%	16.72%	12.81%	3.90%
2004	1,381	59%	28.39%	2.89%	74.68%	16.58%	12.96%	3.62%
2005	1,456	61%	26.92%	2.70%	73.77%	15.11%	11.33%	3.78%
2006	1,405	61%	25.34%	2.53%	75.36%	14.59%	10.82%	3.77%
2007	1,498	63%	26.23%	2.63%	75.26%	14.75%	11.08%	3.67%
2008	1,682	60%	26.28%	2.82%	72.41%	15.16%	11.41%	3.69%
2009	1,636	59%	25.31%	2.76%	72.10%	14.12%	10.70%	3.42%
2010	1,613	56%	24.43%	2.54%	72.80%	13.70%	10.17%	3.53%
2011	1,549	55%	24.08%	2.43%	73.20%	13.17%	9.68%	3.42%
2012	1,331	54%	22.46%	2.32%	73.08%	12.02%	8.41%	3.53%
Overall	23,244	58%	29.00%	3.16%	72.38%	17.21%	13.46%	3.74%

in ownership are reported on Form 4. Insiders must file a Form 5 to report any transactions that should have been reported earlier on a Form 4 or were eligible for deferred reporting. The IFDF is designed to capture all U.S. insider activity as reported on Form 3, 4, 5. Each year, I take the number of insiders disclosed in all previous filings, but still staying at the firm as the number of the actors in the nepotism (N). The concern of this identification strategy is that the number of insiders may be related to the firm's future performance in the long-run. In the robustness check section, I will show the difference in realized returns cannot be attributed to the difference in the number of insiders.

statement. If the issuer is already registered under Section 12, the insider must file a Form 3 within ten days of becoming an officer, director, or beneficial owner.

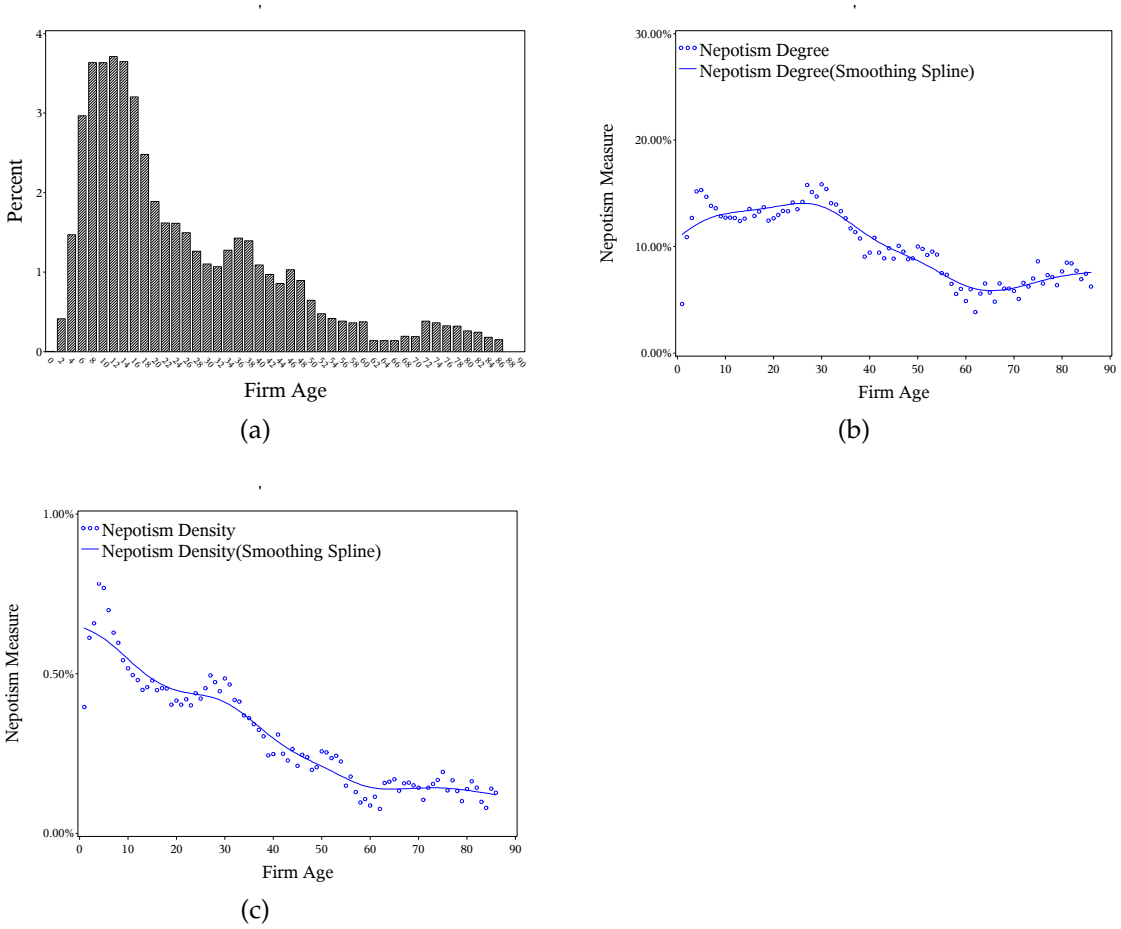


FIGURE 3.1: **Plot of Nepotism Measure Over Firm Age.** Plot of nepotism measure, i.e., nepotism degree and density, over firm age. The distribution of firm age is also reported.

3.2.3 Founding-family Ownership Identification

In order to identify the founding-family ownership, I first identify the founder of the firm. I consider proxy filings and the Internet as my data source to identify a founder's name. I first check whether the founder's name is disclosed in the proxy statement by searching the keyword "founder" in the proxy statement. I then manually verify and collect the disclosed information on a founder or his or her family members in the proxy filings by searching the keywords indicating a family tie. I turn to the public data source on the Internet by searching and reading carefully the firm history when founder information is not available in the proxy statement. My data source includes among others Wikipedia,

Bloomberg Businessweek, FundingUniverse, and local newspapers. I identify the ownership of a founder and his or her family members in the beneficial ownership table by matching the full names.

Founding-family is naturally associated with nepotism. As Table 3.2 shows, 72.36 percent of the firms with founding-family ownership exhibit nepotism within the corporations, which is 20 percent higher than that without founding-family ownership. For each firm with founding-family ownership, I also manually verify if the CEO is from the founding family. A CEO is considered as a first generation CEO if he or she is the founder of the firm. A CEO from the founding-family but not the founder will be classified as the second generation CEO.

3.3 Empirical Methodology and Results

3.3.1 Descriptive Statistics

I report the descriptive statistics of nepotism, family ownership, and blockholder presence, and etc., for my sample in Table 3.2. As the table shows, 29 percent of the firms in my sample have founding-family ownership. On average, the founding-family owns 11 percent of firm's outstanding shares; 17 percent of the firms have a CEO from the founding family, while 13.46 percent of them are considered as the first generation CEO and 3.74 percent of them are considered as the second generation CEO. In my identification, nepotism dummy equals one when a firm exhibits nepotism; Otherwise, it is zero. I calculate nepotism degree and density for each firm-year observation in my sample. As Table 3.3 shows, the nepotism dummy is stable over time. The strength of nepotism is also associated with firm age. As Figure 3.1 shows, the nepotism strength exhibits a downward trend over firm age.

TABLE 3.3: **Nepotism Over Years.** I report the descriptive statistics of nepotism measure over time. Nepotism dummy, degree and density is defined in Section 3.2.1.

Calendar Year	N	Nepotism Dummy	Nepotism Degree	Nepotism Density
1996	296	56.42%	16.11%	0.87%
1997	1204	57.56%	15.04%	0.78%
1998	1253	56.66%	13.88%	0.74%
1999	1332	55.48%	14.25%	0.76%
2000	1351	54.63%	13.98%	0.79%
2001	1359	55.70%	14.52%	0.77%
2002	1326	52.87%	12.69%	0.65%
2003	1330	56.39%	13.64%	0.62%
2004	1352	57.77%	15.18%	0.81%
2005	1433	60.01%	15.55%	0.70%
2006	1376	60.39%	14.82%	0.68%
2007	1473	62.32%	15.82%	0.81%
2008	1654	59.61%	15.61%	0.71%
2009	1614	58.24%	15.27%	0.87%
2010	1598	55.82%	13.46%	0.66%
2011	1536	54.56%	13.42%	0.66%
2012	1326	54.07%	12.47%	0.56%
Overall	23244	57.06%	14.40%	0.73%

3.3.2 Nepotism Measure and Returns: A Fama-French Perspective

I follow Gompers et al. (2003) and test whether there is a relationship between nepotism and firm returns. If nepotism matters for firm performance and this relationship is not completely incorporated by the market, then the realized returns on the stock would differ systematically among portfolios. The disparity in returns could be attributed to the different exposure to the market factor, the firm's market capitalization, book-to-market ratio, and immediate past returns, which have all been shown as important determinants of future returns significantly. There are several methods in the literature developed to account for the difference in returns. I extend Carhart (1997) four-factor model with the addition of factor YMO_t to capture the effect of firm age, as Figure 3.1 clearly shows that

the nepotism is negatively related to firm age.

$$R_{it}^{NepotismDummy=1} - R_{it}^{NepotismDummy=0} \tag{3.1}$$
$$= \alpha_i + \beta_1 RMRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 Momentum_t + \beta_5 YMO_t + \epsilon_t$$

Where $R_{it}^{Network=1} - R_{it}^{Network=0}$ is the return from going long on a portfolio of firms that with nepotism and short on a portfolio of firms without nepotism. $RMRF_t$ is the market excess return in month t. SMB_t, HML_t and $Momentum_t$ are the month t returns on zero-investment factor-mimicking portfolios designed to capture size, book-to-market, and momentum effects, respectively. I use six value-weight portfolios formed on size and firm age to construct YMO_t. The portfolios, which are formed monthly, are the intersections of the two portfolios formed on size (market equity) and three portfolios formed on firm age. The monthly size breakpoint is the median NYSE market equity. The annual firm age breakpoints are the 30th and 70th percentiles. YMO_t is the average return on the two young portfolios minus the average return on the two old portfolios.

The estimated intercept, i.e., alpha, is interpreted as an abnormal return in excess of what could have been achieved by passive investment in the five factors. A positive and significant alpha will lend support to the conjecture that nepotism within a firm is associated with a more effective organizational structure and better corporate governance. A negative and significant alpha will support the conjecture that the nepotism is associated with worse firm performance. The first row and the second row of Table 3.4 Panel A show that results of estimating alpha for portfolios with and without nepotism (P0 and P1), respectively. The dependent variable is the monthly return. The third row shows the result of estimating Equation 3.1 where the dependent variable is the monthly return difference between the portfolio with and without nepotism. The sample period is taken from June 1, 1996, since when all public domestic

TABLE 3.4: **Five-factor Performance-Attribution Regressions for Portfolios on Nepotism.**The sample period is taken from June 1996 through December 2012. Standard errors are reported in parentheses and significance at the 10 percent, 5 percent and 1 percent levels are indicated by *, ** and ***, respectively.

	α	*RMRF*	*SMB*	*HML*	*Momentum*	*YMO*	*Adj.* R^2
Nepotism Dummy=0	0.41***	1.05***	-0.03	0.02	0.01	-0.06	0.91
(P0)	(0.10)	(0.02)	(0.03)	(0.05)	(0.01)	(0.05)	
Nepotism Dummy=1	0.14**	1.01***	-0.11***	0.01	-0.01	0.01	0.96
(P1)	(0.07)	(0.02)	(0.03)	(0.03)	(0.01)	(0.03)	
P1-P0	-0.31**	-0.05	-0.08**	-0.02	-0.02	0.05	0.01
	(0.12)	(0.03)	(0.03)	(0.06)	(0.02)	(0.06)	

companies were required to make their filings on EDGAR, through December 31, 2012. The abnormal return is 31 basis points (bps) per month, or 3.8 percent per year, over the estimating period. This point estimate is significant at the 5 percent level. The result suggests that firms with nepotism underperforms on average. The argument that nepotism represents a more efficient organizational structure is not supported by my results.

3.3.3 Nepotism in Firms having Founding-family Ownership

In the literature, Anderson and Reeb (2003) document that founding-family ownership is very prevalent and firms with founding-family ownership are associated with good firm performance. I consider the portfolio that includes firms having no founding-family ownership as the benchmark. As Table 3.5 shows, firms with founding-family ownership perform better only when there is no nepotism. The performance of the benchmark portfolio is 77 basis points, or 9.6 percent per year below the portfolio without nepotism (P0). The difference in the performance is significant at the 1 percent level. However, for firms having both founding-family ownership and nepotism, the difference in alpha is only 13 basis points, which is statistically insignificant. My paper extends the existing family literature by showing that firms having founding-family

TABLE 3.5: **The Nepotism in the Firms with Founding-Family Ownership** This table presents the results of five-factor performance-attribution regressions for portfolios on founding-family ownership. I consider the portfolio that includes firms having no founding-family ownership as the benchmark portfolio. The portfolios are updated at the beginning of each year. The sample period is taken from June 1996 through December 2012. Standard errors are reported in parentheses and significance at the 10 percent, 5 percent and 1 percent levels are indicated by *, ** and ***, respectively.

	α	*RMRF*	*SMB*	*HML*	*Momentum*	*YMO*	*Adj.* R^2
Nepotism Dummy=0	0.91***	1.15***	-0.06	-0.08	0.05	0.48***	0.80
(P0)	(0.24)	(0.07)	(0.07)	(0.12)	(0.03)	(0.13)	
Nepotism Dummy=1	0.30*	0.98***	-0.12*	-0.09	-0.03	0.34***	0.83
(P1)	(0.18)	(0.04)	(0.07)	(0.08)	(0.04)	(0.09)	
Benchmark - P0	-0.77***	-0.13*	-0.01	0.13	-0.06*	-0.70***	0.53
	(0.24)	(0.07)	(0.08)	(0.13)	(0.04)	(0.15)	
Benchmark - P1	-0.13	0.05	0.05	0.16	0.02	-0.53***	0.45
	(0.2)	(0.05)	(0.07)	(0.10)	(0.05)	(0.12)	

ownership outperform only when there is no nepotism in the firm. My results are consistent with Villalonga and Amit (2006) in which they find that family ownership creates value only when the founder serves as CEO of the family firm or as Chairman with a hired CEO. When descendants serve as CEOs, firm value is destroyed. My results are also consistent with Miller et al. (2007), in which they find only businesses with a lone founder outperform.

3.4 Robustness Check

As a robustness check, I repeat my regression over all the firms in the SEC EDGAR database, which in total covers 13,717 firms and includes 109,404 observations from year 1996 to 2012. Moreover, as I mentioned in Section 3.2.2, one concern of the identification strategy is that the identified number of insiders (N) may be related to the firm's future performance in the long-run, i.e., it is the number of insider (N) in the denominator of nepotism measure that generates the difference in the realized returns. To relieve this concern, I extend models

in Section 3.3.2 with the addition of factor $NMML$ to capture the effect of the number of insiders:

$$R_{it}^{NepotismDummy=1} - R_{it}^{NepotismDummy=0}$$
$$= \alpha_i + \beta_1 RMRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 Momentum_t + \beta_5 YMO_t + \beta_6 NMML_t + \epsilon_t$$

I use six value-weight portfolios formed on size and number of insiders (N) to construct $NMML_t$. The portfolios, which are formed monthly, are the intersections of 2 portfolios formed on size (market equity) and 3 portfolios formed on number of insiders. The monthly size breakpoint is the median NYSE market equity. The annual number of insiders breakpoints is the 30th and 70th percentiles. $NMML_t$ is the average return on the two portfolios with more insiders minus the average return on the two portfolios with fewer insiders. I show the results in Table 3.6.

The difference in realized returns cannot be attributed to the difference in the number of insiders. Panel A of Table 3.6 shows that for the firm in the SEC EDGAR database, the performance of a portfolio of firms with the nepotism is 21 basis points (bps) per month, or 2.5 percent per year below the one of a portfolio of firms without the nepotism. The difference is significant at the 5 percent level. Panel B of Table 3.6 shows that, for the firms in the Execucomp database, the performance of a portfolio of firms with the nepotism is 38 basis points (bps) per month, or 4.7 percent per year below the one of a portfolio of firms without the nepotism. For the firms with founding-family ownership, the performance of a portfolio of firms with the nepotism is 78 basis points (bps) per month, or 9.8 percent per year below the one of a portfolio of firms without the nepotism.

TABLE 3.6: **Robustness Check: Six-factor Performance-Attribution Regressions for Portfolios on Nepotism.** The sample period is taken from June 1996 through December 2012. Standard errors are reported in parentheses and significance at the 10 percent, 5 percent and 1 percent levels are indicated by *, ** and ***, respectively.

Panel A: Firms in the SEC EDGAR Database								
	α	***RMRF***	***SMB***	***HML***	***Momentum***	***YMO***	***NMML***	***Adjusted*** R^2
Nepotism Dummy=0	0.32***	1.03***	0.02	0.05	0.00	-0.04	-0.10**	0.97
(P0)	(0.06)	(0.02)	(0.02)	(0.03)	(0.01)	(0.04)	(0.05)	
Nepotism Dummy=1	0.11**	1.00***	-0.03*	0.03	-0.01**	0.08***	0.11***	0.97
(P1)	(0.05)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)	
P1-P0	-0.21**	-0.03	-0.05	-0.02	-0.02	0.12**	0.21***	0.05
	(0.09)	(0.02)	(0.03)	(0.05)	(0.02)	(0.06)	(0.07)	
Panel B: Firms in the Execucomp Database								
	α	***RMRF***	***SMB***	***HML***	***Momentum***	***YMO***	***NMML***	***Adjusted*** R^2
Nepotism Dummy=0	0.42***	1.05***	-0.03	0.02	0.01	-0.10*	-0.08	0.91
(P0)	(0.11)	(0.02)	(0.03)	(0.05)	(0.01)	(0.06)	(0.07)	
Nepotism Dummy=1	0.08	1.00***	-0.10***	0.01	-0.01	0.14***	0.26***	0.96
(P1)	(0.07)	(0.02)	(0.03)	(0.03)	(0.01)	(0.05)	(0.05)	
P1-P0	-0.38***	-0.05*	-0.06*	-0.03	-0.02	0.23***	0.35***	0.06
	(0.12)	(0.03)	(0.03)	(0.06)	(0.02)	(0.07)	(0.08)	
Panel C: Firms in the Execucomp Database (with Founding-Family Ownership)								
	α	***RMRF***	***SMB***	***HML***	***Momentum***	***YMO***	***NMML***	***Adjusted*** R^2
Nepotism Dummy=0	0.91***	1.16***	-0.06	-0.08	0.05	0.47***	-0.03	0.80
(P0)	(0.24)	(0.07)	(0.07)	(0.12)	(0.03)	(0.15)	(0.16)	
Nepotism Dummy=1	0.19	0.97***	-0.09	-0.11	-0.04	0.62***	0.55***	0.84
(P1)	(0.19)	(0.04)	(0.08)	(0.07)	(0.03)	(0.12)	(0.14)	
P1-P0	-0.78***	-0.19***	-0.02	-0.05	-0.09*	0.14	0.60***	0.13
	(0.28)	(0.07)	(0.08)	(0.13)	(0.05)	(0.17)	(0.19)	

3.5 Conclusion and Future Research

In this paper, I study nepotism within firms in a social network perspective. For the first time in the literature, I show that nepotism is very prevalent in the U.S. public firms, of which 53.46 percent exhibit nepotism. I construct nepotism degree and density to measure the strength of nepotism. I find that nepotism is associated with worse firm performance, especially for firms having founding-family ownership. My contribution to the existing literature is the development of a nepotism database covering family ties within major U.S. public companies from 1994 to 2012 and a nepotism index indicating the strength of nepotism. My paper also extends the existing family literature by showing that firms having founding-family ownership outperform only when there is no nepotism in the firm.

My results can be extended in several directions. In my future research, I will go one step further further and study how the nepotism influences firm performance. Specifically, it will be interesting to study: 1) If firms with female-dominant nepotism perform better than male-dominant one. 2) Blockholder activism could monitor nepotism by intervention and how outside blockholder interacts with internal nepotism.

Chapter 4

Unexpected CEO Option Exercises

4.1 Introduction

In the last two decades, stock option compensation has been one of the major compensation tools which is used to align the Chief Executive Officers (CEOs) interests with shareholders value. A great fraction of public firms regularly grant new at-the-money options with ten years to maturity to their CEOs over the CEOs' tenure. After a CEO has held her position for a few years, she will hold an option portfolio that exhibits great variation in the option exercise price, years to maturity, time value, etc. In this paper, we argue that executive stock option exercises (ESO) provide us with a natural instrument to examine how a CEO's private knowledge on the firm's future performance, influences her current choice in option exercise.

The literature on CEO equity compensation has examined the timing of the CEOs option awards (Yermack 1997; Chauvin and Shenoy 2001; Lie 2005; Heron and Lie 2007), however, there is little empirical research conducted on executive option exercise patterns (Carpenter 1998) and on how the executives' choices are related to the characteristics of other options in the choice set. There are some

theory papers on the optimal option exercise policy. For example, Huddart (1994) considers the optimal dynamic exercise strategy of an employee who receives a stock option. Carpenter (1998) introduces a simpler model which can describe actual option exercises just as well as a complex preference-based model. These models, however, leave out the possibilities that the option holders may also exercise options based on private information on the future path of the stock price. In the empirical literature, Huddart and Lang (1996) describe the exercise behavior of over 50,000 employees who hold long-term options on employer stock at eight corporations and they find exercise decision is strongly associated with recent stock price movements, the market-to-strike ratio, proximity to vesting dates, time to maturity, etc. Heath, Huddart and Lang (1999) investigate stock option exercise decision by 50,000 employees at seven corporations, and find that psychological factors influence exercise. A recent study relevant to the CEO option exercises is Klein and Maug (2011), who analyze how 14,000 US top executives exercise their stock options. They find that exercise decisions depend on past stock prices in a way that is consistent with reference dependence, whereas they find inconsistent evidence for trend extrapolation. However, there is little research on the CEO choice problem about selecting which option to exercise.

In this paper, we rely on a novel approach to distinguish "expected" option exercises, which are more likely to be motivated by factors irrelevant to insider information, from the "unexpected" option exercises, which are more likely to carry insider information. Our analysis builds on the simple idea that expected option exercises are commonplace in the market, and are more associated with time to maturity, time value, diversification or liquidity constraints and etc., and therefore signal no information on the firm to the market. We first evaluate each individual option exercise and classify whether the exercise is an "expected" exercise. We then document to what extent the CEOs make the expected choice.

Exploiting the fact that there is no use of inside information to time option exercises generally (Carpenter and Remmers 2001), we use expected option exercises as a benchmark and take a step further and mainly investigate whether the deviation from the expected exercises carries insider information.

One can easily identify ex ante these expected and unexpected option exercises by examining the CEO option exercises and accordingly their option portfolios. To better understand our approach, consider the following two examples from our sample.[1] Mr. Chen, who became the CEO of the System Inc. since 1998, decided to exercise an option in March, 2008, and there are four options in his choice set with expiration date equals 01JUL2012, 31JAN2013, 14FEB2013, and 04FEB2014, respectively. He chose to exercise the first option, with more than 4 years to expiration, and sacrifice $9.9 time value. It is an "expected" option exercise in our identification as the exercised option has the shortest time to maturity and possesses the lowest time value. While theoretically it maybe be too early to exercise the option, the exercise can be justified by other factors, e.g., he needs money to buy a real estate and faces a liquidity constraint. The reaction in the market is insignificant, e.g., the cumulative abnormal return (CAR) in the interval (-1,1) is 0.4%. He decided to exercise an option again in September, 2008 and in his portfolio there are four options with the expiration date equals 01JUL2012, 31JAN2013, 14FEB2013, and 04FEB2014, respectively. The first option has the shortest time to maturity and possesses the lowest time value. Mr. Steven deviates from the "expected" option exercise and chooses the fourth one to exercise. We note that the fourth option has more than 5 years to expire and the sacrificed time value is $11. There is a strong negative reaction in stock returns when the market learns about the option exercise, e.g., the CAR in the interval (-1, 1) is -2.9%. It is an "unexpected" option exercise in our identification

[1]The name of the firm, the name of the CEO, and the dates involved have been disguised.

and we argue that this unusual exercising pattern carries information on the firm's future performance.

Our work is related but different with the literature in several aspects. The main difference is that instead of examining all the option exercise (e.g., Heath, Huddart and Lang 1999; Carpenter and Remmers 2001; Aboody, Hughes, Liu and Su 2008; Klein and Maug 2011), we filter out any "expected" option exercises which may be justified by many factors irrelevant to insider information, and investigate whether the CEO's deviation from the expected exercises carries insider information. Our paper differs from Brooks, Chance and Cline (2012) in many aspects. The most significant difference is that we study "unexpected" option exercises. By differentiating unexpected from expected option exercises, our paper contributes to the literature by highlighting the role of insider information in the CEO option exercises. Our paper is related to the insider information literature (e.g., Aboody and Lev 2000; Carpenter and Remmers 2001; Lakonishok and Lee 2001; Ravina and Sapienza 2010; Fidrmuc, Goergen and Renneboog 2006; Adams, Wu and Zhu 2012; Cohen, Malloy and Pomorski 2012). We document that 88% of the all the option exercises are strongly associated with the option having the lowest time value or the shortest time to maturity. The remaining 12% deviates from these expected exercises. We follow the literature and employ an event study to examine the impact of insider information contained in the CEO's unexpected option exercise. We also estimate a general difference-in-difference model and find that the unexpected option exercise carries more information on the firm's future than the expected one. Moreover, we find that the information carried in the deviation is associated with the firm's future performance both in short-term and long-term.

Our work is related to Cohen, Malloy and Pomorski (2012) but differs both in the research questions and methodology. Cohen, Malloy and Pomorski (2012) defines a routine trader as an insider who placed a trade in the same calendar

month for at least a certain number of years in the past, and then define opportunistic traders as everyone else. Instead of using the previous trades, we rely on the CEO's choice in her option portfolio to classify a "routine" option exercise. By examining the CEOs option portfolios, there is a natural advantage. As previously mentioned, a great fraction of public firms regularly grant new at-the-money options with ten years to maturity to their CEOs over the CEOs' tenure. When the CEO tenure moves forward, an incumbent CEO will hold an option portfolio that exhibits great variation in the option exercise price, years to maturity and etc. This variation in the options' characteristics, e.g., years to maturity, time value and etc, provides us a natural instrument to examine how the CEO's private knowledge on the firm's future performance, influence her choice nowadays. Our paper differs from Heath, Huddart and Lang (1999) in two aspects. First, instead of explaining the pattern by the psychological belief theory, we examine if the pattern carries insider information. Second, we find that the CEO's unexpected option exercises carries insider information, and the results cannot be explained by the psychological belief theory. The exercise decision may be determined in a psychological way, but considering the fact that all the options in the portfolio are subject to the same stock price trends and it is hard to explain why the CEO deviate from the routine exercises psychologically. Our paper also contributes to the literature of timing CEO stock option awards (Yermack 1997; Chauvin and Shenoy 2001; Lie 2005; Heron and Lie 2007). It is noteworthy that Lie (2005) and Heron and Lie (2007) find that the option awards are timed retroactively. Such option backdating issue is not a concern in our paper as our sample period is over 2006-2011.[2]

The rest of the paper is organized as follows. In Section 4.2 we describe the sample construction process and provide descriptive statistics. In Section 4.3

[2]Since August 29, 2002 firms are required to report the option transaction to the SEC on Form 4 within two business days after the transaction, and the SEC publicly discloses this information one day later on the SEC EDGAR database (Heron and Lie 2007).

we describe the empirical methodology and report the empirical results. In Section 4.4 we conclude and suggest avenues for future research.

4.2 Data and Sample Construction

4.2.1 Sample Selection

We rely on three main data sources to construct our sample: Thomson Reuters Insider Filing Data Feed (IFDF), Execucomp's Outstanding Equity Awards database (EOEA) and SEC EDGAR database for insider trading reports. We consider all firms covered in the EOEA database from fiscal year 2006 to 2011, and remove utility firms (SIC codes between 4910 and 4940). We exclude utility firms as they are regulated, and CEOs have less managerial discretion.

We reply on both IFDF and EOEA to construct each CEO's choice set when she exercises the option. We make sure every individual option exercise does not include reporting error by cross checking IFDF and EOEA. The IFDF is designed to capture all the insider's activities and does not report the option held by the insider, while EOEA is designed to capture the CEO's equity portfolio at the end of the fiscal year and does not report any option exercises in the previous year.[3] We use a novel identification procedure to filter out reporting errors, either in EOEA or IFDF, in order to make sure every individual option exercise in the sample does not include reporting errors by crossing check two databases. We rely on the EOEA to identify which option are exercised and the aggregated amount of the exercised option contracts in each year by comparing the proxy

[3]It is noteworthy we do not rely on the IFDF alone to construct the CEO's option portfolio as Klein and Maug (2011). Besides the data quality problem, the main concern is that the constructed portfolios might be biased to the downside. For example, if an option grant to CEO is somehow not included in the IFDF and this option has never been exercised, then we cannot observe this option in the IFDF. By checking the databases and proxy filings in the SEC EDGAR carefully, we find lots of options reported in the proxy statement, but we cannot track their initial option grants transaction records in IFDF.

statements in adjacent two years.. We require that the aggregate amount of annually exercised option contracts we identify from the EOEA must equal to the sum of individual exercised option we identify from the IFDF. This happens only when all the individual option exercises are reported correctly in the year. We consider the stock split in the year, and adjust the exercised option by the adjustment factor for stock splits.

There are 398,423 observations in the EOEA over fiscal year 2006-2011. After removing utility firms, restricted stock and observations with missing variables, i.e., missing option exercise price, expiration date or the number of options. We also remove interim and retiring CEOs. There are 51,397 observations for 2,425 CEOs in the sample. For each CEO-year observation, we compare her outstanding equity with the one of the previous year and identify the change in the outstanding equity. In this way, we identify 21,327 potential option exercises. We remove 7,527 of them which are strongly associated with proximity to vesting dates. We then remove 3,982 options which expire out of the money, i.e., the maximum stock price over the fiscal year is below the option's exercise price. We then merge the sample with the IFDF by comparing the CEO's full name. A match is valid only when the first name, middle name and last name of the executive reported in the EOEA match the full name of the executive in the IFDF; 100 CEOs are lost during the merging process, which might be due to the reporting errors or to the reporting irregularities in either IFDF or EOEA. We require that the aggregate amount of annually exercised options we identify from the EOEA must equal to the sum of individual exercised option we identify from the IFDF. We successfully identify 2,376 exercised option contracts. We also use the SEC EDGAR database as a complementary data source since we notice that in some cases the IFDF fails to include option exercises existing in the SEC EDGAR database.[4] By merging with SEC EDGAR database, we add

[4]I elaborate more details in Appendix B.

additional 936 observations to the original 2,376 exercised options and improve the sample by more than 40%. In order to construct the CEO's choice set, we take options reported in EOEA as the CEO's initial option portfolio at the beginning of next fiscal year, and then adjust the choice set according to option exercises. We require all the options in the choice set to be in the money. In the end, we construct a high quality database with CEOs option exercises and accordingly their option portfolios. There are 995 CEOs from 904 firms in the sample, and there are 5,919 detailed individual option exercises.

4.2.2 Descriptive Statistics

We report in Table 4.1 the descriptive statistics for the option exercises.[5] Consistent with Klein and Maug (2011), we also document that the CEOs usually sacrifice some of the option time value when they exercise the options. In our sample, the CEOs on average sacrifice \$2 time value, which is roughly 7% of the option's intrinsic value (\$28.6) on average. The exercise date is about two years before the option expiration date, and the CEO has 9 available options in her choice set on average when she makes the option exercise decision. Klein and Maug (2011) documents that top executives choose the option with lowest time value in 61% of all cases, and if they make errors, these errors are generally small. In our case, we document that in 50% of all cases CEOs choose the option with the lowest time value (*MinTVDummy*=1), while in 60% of all cases, they choose option with shortest time to maturity to exercise (*MinToMDummy*=1); 88% of the all the option exercise decisions are either the option having the lowest time value or the shortest time to maturity.

[5]The reason that in our sample there are few option exercises in calender year 2007, is that we filter out these option exercises which are strongly associated with the proximity to vesting date by removing the exercises that appear in the database for the first time.

TABLE 4.1: **Summary Statistics of Option Exercise.** This table reports the distribution and the summary statistics of CEO option exercises. There are 5,919 option exercises for 995 CEOs from 904 firms. We use the Barone-Adesi and Whaley (1987) approach to approximate the American option value. *Option Time Value* is defined as the option value less the option intrinsic value. *Option Intrinsic Value* is calculated as $Max(0, S - K)$, where S and K refers the current price of the underlying and the strike price of the option, respectively. *Time to Maturity* is the remaining time to the option's expiration date, which is the last date on which the holder can exercise the option according to its terms. *Portfolio Size* refers the available options in the CEO's choice set. Trading Volume is the number of the exercised option. *Trading Volume* is the amount of the exercised option. *Lowest Time Value Dummy*(*MinTVDummy*) and *Shortest Time to Maturity Dummy* (*MinTomDummy*) equals 1 if the exercised option has the lowest time value and the shortest time to maturity, respectively. The *DeviationTV* is the time value of the exercised option less the lowest time value in her choice set. *Unexpected Exercises Dummy* (*DeviationDummy*) equals 1 if the CEO deviates from expected option exercises. The *DeviationExDate* is the deviation in the expiration date, that is, the difference between the chosen option's expiration date and the option with the shortest time to maturity in the option portfolio.

Variable and Description	Calendar Year	N	Mean	Std. Dev.	Min	Max
Option Time Value	2007	4	5.4	6.7	0.0	26.2
	2008	1422	4.5	5.9	0.0	45.0
	2009	1361	0.9	1.4	0.0	11.7
	2010	1682	1.1	1.9	0.0	16.0
	2011	1451	1.6	3.0	0.0	33.1
	All	5919	2.0	3.8	0.0	45.0
Option Intrinsic Value	2007	4	50.7	90.0	0.0	669.5
	2008	1422	32.0	47.3	0.0	624.0
	2009	1361	22.7	25.4	0.0	449.6
	2010	1682	25.6	40.3	0.0	455.6
	2011	1451	35.4	75.7	0.0	582.6
	All	5919	28.6	49.0	0	669.5
Time to Maturity (ToM, Year)	2007	4	4.1	2.5	0.1	8.9
	2008	1422	2.3	2.1	0.0	8.9
	2009	1361	1.8	1.9	0.0	9.0
	2010	1682	1.9	1.8	0.0	8.5
	2011	1451	1.8	2.0	0.0	8.9
	2012	9	2.1	2.6	0.1	6.7
	All	5919	2.0	2.0	0.0	9.0
Portfolio Size	2007	4	10.8	8.1	2.0	56.0
	2008	1422	8.2	5.5	2.0	81.0
	2009	1361	8.3	4.1	2.0	36.0
	2010	1682	8.5	4.5	2.0	46.0
	2011	1451	9.8	10.9	2.0	92.0
	2012	9	5.0	2.7	3.0	8.0
	All	5919	8.6	6.4	2.0	92.0

To Be Continued

Continued

Variable and Description	Calendar Year	N	Mean	Std. Dev.	Min	Max
Trading Volume (Thousands)	2007	4	26.0	55.5	0.3	320.0
	2008	1422	63.3	152.6	0.1	2089.1
	2009	1304	81.9	330.8	0.1	10000.0
	2010	1682	81.3	185.9	0.0	2500.0
	2011	1451	83.5	180.4	0.0	3380.0
	2012	9	145.7	100.3	35.0	270.0
	All	5919	76.9	222.5	0.0	10000.0
Lowest Time Value Dummy (*MinTVDummy*)	2007	4	0.3	0.5	0.0	1.0
	2008	1422	0.5	0.5	0.0	1.0
	2009	1361	0.5	0.5	0.0	1.0
	2010	1682	0.4	0.5	0.0	1.0
	2011	1451	0.5	0.5	0.0	1.0
	2012	9	1.0	0.0	1.0	1.0
	All	5304	0.5	0.5	0.0	1.0
Shortest Time to Maturity Dummy (*MinTomDummy*)	2007	4	0.4	0.5	0.0	1.0
	2008	1422	0.6	0.5	0.0	1.0
	2009	1361	0.6	0.5	0.0	1.0
	2010	1682	0.6	0.5	0.0	1.0
	2011	1451	0.6	0.5	0.0	1.0
	2012	9	0.8	0.4	0.0	1.0
	All	5919	0.6	0.5	0.0	1.0
Deviation in Option's Time Value (*DeviationTV*)	2007	4	3.5	5.8	0	26.0
	2008	1422	1.5	3.4	0	29.8
	2009	1361	0.4	1.0	0	11.0
	2010	1682	0.6	1.3	0	11.3
	2011	994	0.9	2.2	0	33.0
	All	5919	0.9	2.3	0.0	33.0
Unexpected Exercises Dummy (*DeviationDummy*)	2007	4	0.25	0.50	0	1
	2008	1422	0.12	0.32	0	1
	2009	1361	0.11	0.32	0	1
	2010	1682	0.10	0.30	0	1
	2011	1451	0.14	0.35	0	1
	2012	9	0.00	0.00	0	0
	All	5919	0.12	0.32	0.0	1
Deviation in Expiration Date (Year) (*DeviationExDate*)	2007	31	2.1	1.7	0.1	6.9
	2008	386	2.0	1.4	0.0	6.9
	2009	339	1.5	1.2	0.0	8.0
	2010	463	1.7	1.2	0.0	8.0
	2011	206	2.0	1.8	0.1	8.2
	All	1425	1.8	1.4	0.0	8.2

4.3 Empirical Setting and Results

4.3.1 Hypothesis

There is little research on the CEO's optimal choice when she decides to exercise an option from her option portfolio. The difficulty is that an option exercise can be justified by many idiosyncrasies other than the private information on the firm. Empirically these factors are hard to identify and sometimes cannot be disentangled from private information. In this paper, our identification comes

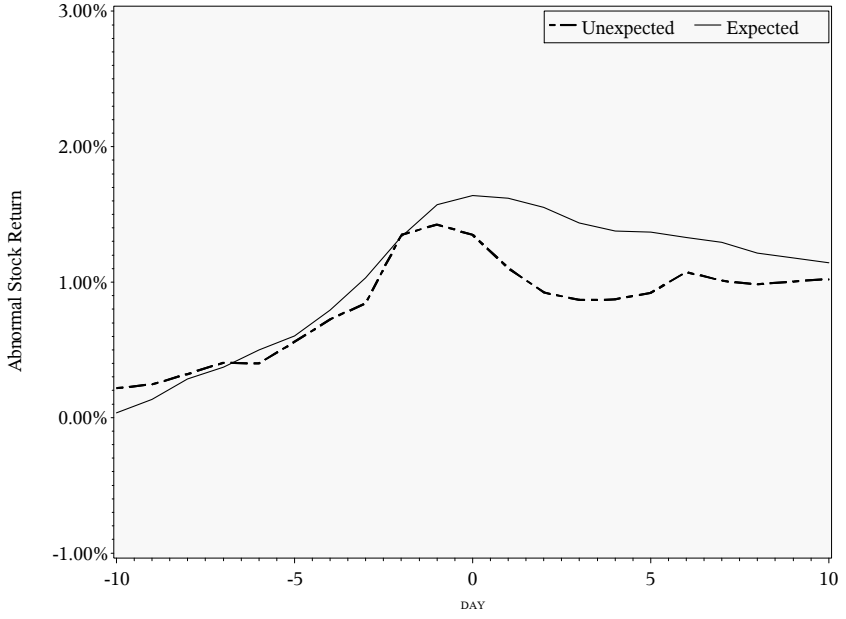
from the fact that the CEOs' choices are strongly associated with the option with lowest time value and shortest time to maturity in the CEOs' choice sets, which together can explain 88% of all option exercises. Our analysis builds on the simple idea that expected option exercises are commonplace in the market, and signal no information on the firm to the market. The essence of our approach is to identify those unusual option exercises which are more likely to contain insider information. We use *DeviationDummy*, a dummy that equals 1 if the exercised option deviates from the one with the lowest time value or the one with the shortest time to maturity, to proxy the CEO's deviation from the expected exercises. We document that the deviation from lowest time value (*DeviationTV*) is \$0.9 on average. It is relatively small to the option's intrinsic value (\$28.6), however, it is substantial compared to the average sacrificed time value of the exercised option (\$2). We conjecture that an unexpected option exercise is more likely to carry negative information on the firm's future performance, e.g., suppose a CEO learns privately that there will be negative shock, which will make a marginally in-the-money option in his portfolio out of money permanently, she may first choose to exercise this option which is over-valued by the market. This conjecture leads to the hypothesis: unexpected option exercises carry private information on firm's future performance.

4.3.2 Event Study

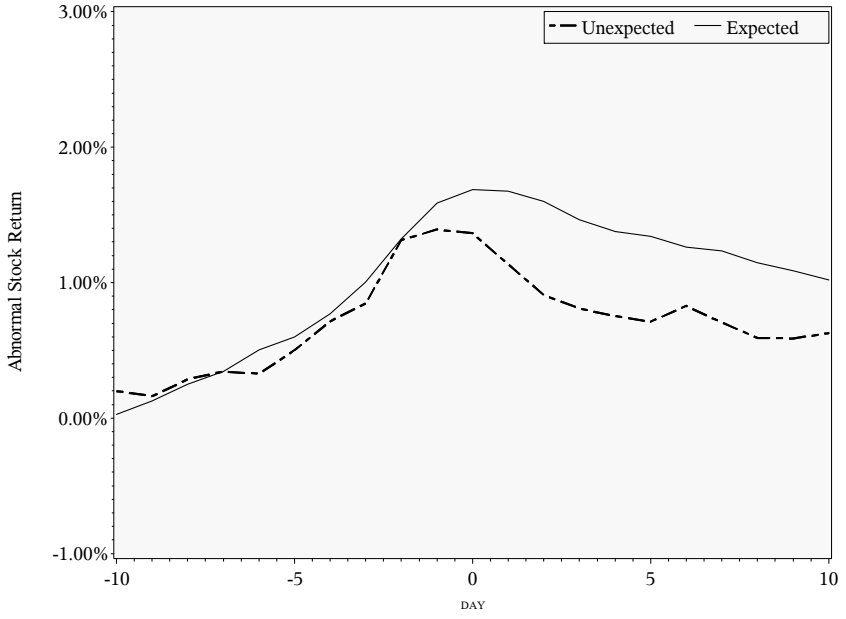
A large literature uses the market reaction to insider trading as a measure of how much information insider have relative to the market (e.g., Aboody and Lev 2000; Lakonishok and Lee 2001; Ravina and Sapienza 2010; Fidrmuc, Goergen and Renneboog 2006; Adams, Wu and Zhu 2012). We have 5,991 option exercises in our sample, and 12% of the option exercises deviate from the expected exercises. We employ the event study to investigate whether these "unexpected" option

exercises are associated with firm's future performance. We note that it is quite common for CEOs to exercise options in consecutive days. Therefore, the over-lapping event window problem, which may over-estimate the market's reaction in the event study, is a concern in the every study. To relieve this concern, we only include the earliest one if there are more than one option exercises in the trading month. The earliest one in a row of transactions is more informative as they are less anticipated by the market. In this way, we have 3,135 option exercises from 879 companies in the event study, 385 (2750) of the 3135 option transactions are unexpected (expected) option exercise, and there are 231 and 836 companies in the transactions, respectively.

We compute the abnormal returns by using the Fama-French three factor model. We use a 21-days event window that comprises 10 pre-event days, the event day and 10 post-event days. We follow Ravina and Sapienza (2006) and estimate the parameters by using 360 trading days preceding the event window. We also follow MacKinlay (1997) and consider the market model using the CRSP equal-weighted index as normal return. Cumulative abnormal returns (CARs) are calculated by summing the daily abnormal returns. We calculate CARs by using the Fama-French three factor model and market model. We plot them from event day -10 to event day 10 in Figure 4.1 (a) and (b), respectively. We find that both CARs follow similar upward trend before the announcement date, however, they diverge immediately after the reporting date, i.e., the CARs of the unexpected option exercises experience more negative trend than the expected option exercises. We note that in Figure 4.1 that the stock market responds to the unexpected option exercises at day -1, one day earlier than the expected option exercises. Our results are robust to different estimation period, e.g., over the 120, 180 day prior to the event window. We also calculate buy-and-hold



(a)



(b)

FIGURE 4.1: **Plot of Market Reaction to Option Exercise**. Plot of cumulative abnormal returns (CARs) for announcement of option exercises from event day -10 to event day 10 for expected and unexpected option exercises. The abnormal returns are calculated by using the Fama-French three factor model and market model in (a) and (b), respectively.

abnormal returns (BHARs).[6] In Table 4.2, we note that before event day -1, both groups experience positive and significant CARs, and a Wilcoxon two-sample test indicates that the difference in CARs is not statistically significant. After the event day, the market's reactions to the unexpected and expected option exercises are significantly different. The CARs of the unexpected option exercises are significant negative, while the CARs (BHARs) of the expected option exercises are still positive. A Wilcoxon two-sample test indicates the differences between the CARs, e.g., CAR (-1, 2), CAR (-1, 3), etc., are statistically significant at the 1% level. We find similar results by using BHARs in Panel C.

4.3.3 Regression Analysis

4.3.3.1 Empirical Methodology

In the previous section, we provide evidence that unexpected option exercises are associated with more negative market reaction in the event study. However, it is possible that there are omitted variables, e.g., unobserved CEOs characteristics, that drive both the option exercise pattern and market reaction. For this reason, we repeat the analysis using essentially a differences-in-differences methodology (Bertrand and Mullainathan 2003; Roberts and Whited 2012). In the CEO-level data, the basic regression is:

$$y_{jt} = \alpha_j + \alpha_t + \gamma X_{jt} + \phi ExerciseDummy_{jt} + \delta DeviationDummy_{jt} + \epsilon_{jt} \quad (4.1)$$

where j indexes CEOs, t indexes time. y_{jt} is the dependent variable which measures the option holder's informativeness. α_j and α_t are CEO and time

[6] $BHAR_{j,T_1,T_2} = \left[\prod_{t=T_1}^{T_2}(1+R_{jt})-1)\right] - \left[(1+\hat{\alpha}_j)^{T_2-T_1+1}-1)\right] - \hat{\beta}_j\left[\prod_{t=T_1}^{T_2}(1+R_{mt})-1\right]$. CRSP Equally weighted market index is considered as normal returns R_{mt}. $\hat{\alpha}_j$ and $\hat{\beta}_j$ are estimated in the same way as the market model.

TABLE 4.2: **Stock Market Reaction to CEO Option Exercises.** This table reports the univariate test result for the cumulative abnormal returns (Fama French three factor model and market model) and Buy-and-hold abnormal returns (BHARs) around the announcement date of the option exercise in Panel A, B and C, respectively. We use a 21-days event window that comprises 10 pre-event days, the event day, 10 post-event days. The market model using the CRSP value-weighted index are considered for normal return. *DeviationDummy*=0 refers the expected option exercises. *DeviationDummy*=1 refers that the exercised option deviate from the expected option exercises. T test and Wilcoxon two-sample test are used to test the mean and median of CARs.

Event Window	Expected Option Exercises (*DeviationDummy*=0)					Unexpected Option Exercises (*DeviationDummy*=1)					Wilcoxon Two-Sample Test
	N	Mean		Median		N	Mean		Median		P-Value (P> $\|Z\|$)
Panel A: Fama-French three factor model											
(-5, -1)	2742	1.07%	***	0.76%	***	385	1.06%	***	0.35%	***	0.72
(-4, -1)	2742	0.96%	***	0.66%	***	385	0.90%	***	0.34%	***	0.43
(-3, -1)	2742	0.77%	***	0.41%	***	385	0.73%	***	0.18%	**	0.55
(-2, -1)	2742	0.53%	***	0.28%	***	385	0.61%	***	0.34%	***	0.76
(-1, 0)	2742	0.30%	***	0.11%	***	385	0.00%		-0.13%		0.06*
(-1, 1)	2742	0.28%	***	0.17%	***	385	-0.24%		-0.31%		0.00***
(-1, 2)	2742	0.22%	**	0.10%	**	385	-0.43%	*	-0.66%	***	0.00***
(-1, 3)	2742	0.10%		0.01%		385	-0.48%	**	-0.66%	**	0.00***
(-1, 4)	2742	0.04%		0.03%		385	-0.48%	*	-0.56%	**	0.01**
(-1, 5)	2742	0.03%		0.04%		385	-0.43%		-0.47%	**	0.02**
Panel B: Market Model											
(-5, -1)	2742	1.08%	***	0.66%	***	385	1.08%	***	0.47%	***	0.87
(-4, -1)	2742	0.98%	***	0.61%	***	385	0.92%	***	0.45%	***	0.59
(-3, -1)	2742	0.81%	***	0.43%	***	385	0.70%	***	0.21%	***	0.63
(-2, -1)	2742	0.57%	***	0.29%	***	385	0.58%	***	0.20%	***	0.97
(-1, 0)	2742	0.36%	***	0.13%	***	385	0.05%		-0.05%		0.07*
(-1, 1)	2742	0.35%	***	0.18%	***	385	-0.18%		-0.29%		0.01**
(-1, 2)	2742	0.28%	***	0.17%	***	385	-0.40%		-0.62%	***	0.00***
(-1, 3)	2742	0.14%		0.04%		385	-0.49%	**	-0.57%	***	0.00***
(-1, 4)	2742	0.05%		-0.06%		385	-0.55%	**	-0.64%	***	0.00***
(-1, 5)	2742	0.01%		-0.03%		385	-0.58%	**	-0.80%	***	0.00***
Panel C: Buy-and-hold Abnormal Returns											
(-5, -1)	2742	1.11%	***	0.71%	***	385	1.03%	***	0.50%	***	0.67
(-4, -1)	2742	1.01%	***	0.69%	***	385	0.86%	***	0.27%	***	0.39
(-3, -1)	2742	0.81%	***	0.47%	***	385	0.68%	***	0.28%	**	0.47
(-2, -1)	2742	0.56%	***	0.31%	***	385	0.58%	***	0.34%	***	0.99
(-1, 0)	2742	0.35%	***	0.15%	***	385	0.03%		-0.12%		0.04**
(-1, 1)	2742	0.32%	***	0.15%	***	385	-0.24%		-0.24%		0.01**
(-1, 2)	2742	0.24%	***	0.12%	**	385	-0.47%	**	-0.67%	***	0.00***
(-1, 3)	2742	0.10%		-0.04%		385	-0.57%	**	-0.78%	***	0.00***
(-1, 4)	2742	0.01%		-0.02%		385	-0.59%	**	-0.63%	***	0.00***
(-1, 5)	2742	-0.01%		-0.09%		385	-0.56%	*	-0.57%	***	0.00***

*, **, ***indicates significance at 10%, 5%, 1% level respectively.

fixed effects. X_{jt} are control variables. $ExerciseDummy_{jt}$ is a dummy variable that equals one if there is an option exercise at time t for CEO j, and $DeviationDummy_{jt}$ is a dummy variable and equals one if the option exercise is an unexpected one. The time dummies α_t control for common market circumstances. This methodology fully controls for fixed differences between 'treated' and 'non-treated' CEOs via CEO fixed effects.[7] Variables ϕ and δ are of our main interests.

4.3.3.2 Short-term Stock Market Reaction Analysis

In this section, we perform a regression analysis using abnormal returns around the option exercises in the event study as a measure of the option holder's informativeness. We focus on these days when there is option exercise. In the CEO-level data, we estimate

$$CAR(t_1, t_2)_{jk} = \alpha_j + \alpha_k + \gamma X_{jk} + \delta DeviationDummy_{jk} + \epsilon_{jgk} \tag{4.2}$$

where k indexes the exercise time and $k \in t$, CAR(t_1, t_2) denotes cumulative abnormal returns over period (t_1, t_2) in the event study, other notations are same as in Equation 4.1. We use year dummies to control for time fixed effects. We drop those CEOs with only one option exercise in the sample as there are no variations in the option exercise pattern within CEOs.[8] There are 2,859 option exercises left for 653 CEOs in our sample. We use CAR(-1,1) as the dependent variable in the regression. We include trading volume to control the quantitative difference in the option exercises. $DeviationDummy_{jk}$ is a dummy variable and equals one if the option exercise is an unexpected one. We also use *DeviationTV*,

[7] We follow the terminology in the literature, and call CEOs with unexpected and expected option exercise as 'treated' and 'control', respectively.

[8] However, our main results are robust by including them and perform a pooled regression.

TABLE 4.3: **Option Exercise and Stock Market Reaction** This table reports the result of the regression using CAR(-1, 1) as the dependent variable. Abnormal returns are calculated using the Fama-French three factor model. The *DeviationDummy* is a dummy and equals 1 if the exercised option deviates from the expected option exercise, otherwise zero. The *DeviationTV* is the time value of the exercised option less the lowest time value in her choice set. *DeviationTV* is re-scaled to $100. *Trading Volume* is the amount of the exercised option. Robust standard errors are used. Robust t-statistics are included in parentheses. Robust standard errors are clustered by the CEO.

	Dependent Variable: Cumulative Abnormal Returns					
	(1)	(2)	(3)	(4)	(5)	(6)
Independent Variable	CAR(-1, 1)	CAR(-1, 1)	CAR(-1, 1)	CAR(-1, 1)	CAR(-1, 1)	CAR(-1, 1)
Intercept	-0.018 (0.84)	-0.036 (1.53)	-0.066 (2.73)***	-0.018 (0.81)	-0.035 (1.55)	-0.067 (2.85)***
DeviationDummy (345)	-0.005 (2.15)**	-0.005 (1.69)*	-0.005 (1.69)*			
DeviationTV				-0.017 (2.65)***	-0.024 (2.81)***	-0.023 (2.73)***
Trading Volume (Ln)	-0.001 (1.07)	-0.000 (0.35)	-0.000 (0.42)	-0.001 (0.97)	-0.000 (0.29)	-0.000 (0.35)
Industry Fixed Effect?	YES	NO	NO	YES	NO	NO
CEO Fixed Effect?	NO	YES	YES	NO	YES	YES
Year Fixed Effect?	YES	NO	YES	YES	NO	YES
Observations	2859	2859	2859	2855	2855	2855
R-squared	0.03	0.26	0.26	0.03	0.26	0.26

which quantitatively captures the variations within unexpected exercises in the regression.

We report regression results in Table 4.3. We present regression results with $DeviationDummy_{jk}$ and $DeviationTV_{jk}$ as the explanatory variables in specification (1)-(3) and (4)-(6), respectively. Abnormal returns are calculated using the Fama-French three factor model.[9] We document in specification (1)-(3) that there is a significant difference in market reaction to the expected and unexpected option exercise both within and between CEOs, and the market reacts more negatively to unexpected option exercise than the expected one. In specification

[9]The regression results are robust using alternative models, e.g., market model and etc., with firm size and book to market as control variables in the regressions.

(1), the difference is statistically significant between CEOs, e.g., difference in CAR(-1,1) is 50 basis points after controlling other factors. In specification (2) and (3), the coefficient of $DeviationDummy_{jk}$ does not change in magnitude, but less statistically significant by controlling all time invariant variables. We repeat the analysis using $DeviationTV_{jk}$ as the explanatory variable in specification (4)-(6). We document a significant and negative coefficient in all specifications, and this indicates that the market reaction is more negative when the deviation from the expected exercise is larger. The stock market reaction to unexpected exercise differs both between and within CEOs.

4.3.3.3 Long-term Firm Performance Analysis

In this section, we investigate whether option exercise patterns are associated with the firm's future stock returns, i.e., whether the immediate stock market reaction is realized into the firm's long term performance. We aggregate option exercise by month and estimate Equation 4.1 using monthly aggregated data. $ExerciseDummy_{jt}$ equals one there are at least one option exercise for CEO j at month t, otherwise zero. If there is at least one unexpected option exercise at the month, then $DeviationDummy_{jt}$ equals one, otherwise zero. Month dummies are used to control time fixed effects. There are 19,238 observations for 766 CEOs in the sample over the sample period. We follow Ravina and Sapienza (2010) and consider market adjusted stock returns of holding the firm's stock for 30, 60, 90, 180, 360 days, respectively, as the dependent variables. In addition, we include controls for well-known determinants of stock returns, e.g., firm size and book to market in Panel B. There are 3,235 CEO-months when there are option exercises for CEOs, and 536 of them are unexpected option exercise. There are no option exercise in the remaining CEO-months.

TABLE 4.4: **Option Exercise and Firm Long-run Performance** This table reports regression of future firm performance and option exercises. Option exercises are aggregated by month. Monthly stock returns are from the CRSP NYSE/AMEX/NASDAQ Monthly Stock database. There are 19,238 CEO-Months. The dependent variables are market adjusted stock return in 30, 60, 90, 180, 360 days. *DeviationDummy* equals 1 if the exercised option deviates from the expected option exercises, otherwise zero. *Trading Volume* is the amount of the exercised option. Firm size is measured by *Total Assets* at the fiscal year end in Compustat Execucomp. *Book to Market* is calculated as the book value of equity over the sum of the market value of common equity and total assets minus the book value of equity. Robust standard errors are used. Robust t-statistics are included in parentheses. Robust standard errors are clustered by the CEO.

Panel A: Dependent Variable: Market-Adjusted Stock Returns					
Independent Variable	(1) RET(t+30)	(2) RET (t+60)	(3) RET (t+90)	(4) RET (t+180)	(5) RET (t+360)
Intercept	0.044	0.019	0.066	0.062	-0.145
	(0.71)	(0.55)	(1.80)*	(0.94)	(9.60)***
DeviationDummy (536)	-0.009	-0.019	-0.038	-0.054	-0.094
	(1.21)	(1.80)*	(2.94)***	(3.07)***	(3.00)***
ExerciseDummy (3,235)	-0.007	-0.008	0.001	-0.109	-0.089
	(0.65)	(0.55)	(0.03)	(3.29)***	(1.82)*
TradingVolume (Ln)	-0.000	-0.002	-0.006	0.012	0.004
	(0.14)	(0.69)	(1.26)	(1.69)*	(0.43)
CEO Fixed Effect?	YES	YES	YES	YES	YES
Month Fixed Effect?	YES	YES	YES	YES	YES
Observations	19,238	19,238	19,238	19,238	19,238
R-squared	0.33	0.36	0.37	0.42	0.52
Panel B: Robustness Check (Dependent Variable: Market-Adjusted Stock Returns)					
Independent Variable	(1) RET(t+30)	(2) RET (t+60)	(3) RET (t+90)	(4) RET (t+180)	(5) RET (t+360)
Intercept	0.203	0.408	0.703	1.097	0.499
	(1.77)*	(2.05)**	(2.29)**	(1.95)*	(0.58)
DeviationDummy (536)	-0.008	-0.018	-0.036	-0.051	-0.088
	(1.11)	(1.66)*	(2.77)***	(2.87)***	(2.81)***
ExerciseDummy (3,235)	-0.008	-0.01	-0.002	-0.113	-0.091
	(0.71)	(0.65)	(0.08)	(3.41)***	(1.86)*
TradingVolume (Ln)	-0.000	-0.002	-0.006	0.012	0.005
	(0.07)	(0.60)	(1.16)	(1.81)*	(0.48)
Total Assets (Ln)	-0.018	-0.042	-0.068	-0.112	-0.084
	(1.90)*	(2.21)**	(2.29)**	(2.06)**	(1.00)
Book to Market	0.093	0.159	0.226	0.416	0.802
	(3.16)***	(2.85)***	(2.76)***	(3.04)***	(3.25)***
CEO Fixed Effect?	YES	YES	YES	YES	YES
Month Fixed Effect?	YES	YES	YES	YES	YES
Observations	19,238	19,238	19,238	19,238	19,238
R-squared	0.33	0.36	0.37	0.42	0.52

*, **, ***indicates significance at 10%, 5%, 1% level respectively.

Table 4.4 presents the results of regression. Panel A and B reports the results without and with firm size and book to market as firm-specific control, respectively. The main variables of our interests are *ExerciseDummy* and *DeviationDummy*, and ϕ and δ denotes the relative informativeness of expected and unexpected option exercises on future stock returns, respectively. We control for CEO fixed effect and month fixed effect. The coefficient of *ExerciseDummy* is negative in all specifications except (3), and statistically significant at the 1% and 10% level in specification (4) and (5), respectively. This implies that if there are option exercises in a particular month, then the stock returns in 180 and 360 days are significantly lower than the one without any option exercises. The coefficient of *DeviationDummy* is negative in all specifications, and statistically significant at 1% level in specification (3)-(5). It is noteworthy that the magnitude of the coefficient becomes larger as the period goes from 30 to 360 days, which implies that the difference in the firm's performance is not only in short-run. Our results are robust by including total assets and book to market as firm-specific control in Panel B. We note that the coefficient of book to market is positive and significant. We also document that a negative relationship between the growth of total firm assets and subsequent firm stock returns. Both are well documented in the literature. On the other hand, this also implies that the option exercise pattern carries information other than the firm assets growth.

Our results also have implication for investors who would like to exploit the information carried in the option exercise patterns by taking short positions in the firm's stock. Since August 29, 2002 firms are required to report the option transaction to the SEC on Form 4 within two business days after the transaction, and the SEC publicly discloses this information one day later on the SEC EDGAR database. Therefore, the investor can track executive option exercise and learn the exercise pattern with high precision. However, our results based on monthly data imply that it may be unnecessary to track the option exercise pattern day

by day, as a profitable portfolio only require monthly accurate information on the option exercise pattern in our case.

4.4 Conclusion

In this paper, we provide a new method for examining the role of insider information in the CEO option exercises. We focus on CEOs from S&P 1500 firms, and construct a high-quality database with detailed information on the executive option exercises and accordingly their option portfolios. We rely on a novel approach to distinguish the "expected" option exercises, which are more likely to be motivated by factors irrelevant to insider information, from the "unexpected" option exercises, which more likely carry insider information. Our analysis builds on the simple idea that expected option exercises are commonplace in the market, and are more associated with time to maturity, time value, diversification or liquidity constraints, etc., and therefore signal no information on the firm to the market. We document that 12% of them are unexpected option exercises and indeed carry insider information. We provide evidence that the unexpected exercises carry insider information on the CEO's future tenure, and on the firm's future short-term and long-term performance.

Our findings make it necessary to build a new theoretical model on optimal option exercise policy to fill the gap between theory and empirical evidence. There is no such a model that considers the role of private knowledge in the optimal option exercise policy in the literature. The new model should consider the possibilities that option holders may also exercise based on the private information on the future path of the stock price, or on the owners' future tenure, etc. Empirically, our research can be extended in two directions. First, more research is needed to investigate what is the content of the insider information. We are curious whether the exercise decision is related to the firm's future policy,

e.g., R&D policy, debt policy, etc. Second, our research can be extended to other top executives and directors to see if their option exercise decisions carry similar information as the ones of the CEOs.

Chapter 5

Samenvatting (Summary in Dutch)

Deze dissertatie is gericht op het verdiepen van ons begrip van moderne ondernemingen. Ik geef vanuit twee perspectieven een gedetailleerd beeld van belangrijke Amerikaanse overheidsbedrijven; eigendomsstructuur en intern nepotisme. Om deze doelstelling te bereiken maak ik twee uitgebreide empirische databanken met Perl programmeertaal. Daarnaast onderzoek ik tevens privé informatie uit twee onverwachte CEO keuzeoefeningen. In Hoofdstuk 2 bestudeer ik de eigendomsstructuur van grote Amerikaanse overheidsbedrijven tijdens de afgelopen decennia en geef ik een gedetailleerd beeld van de eigendomsstructuur van belangrijke Amerikaanse overheidsbedrijven gedurende de periode 1994 tot 2012. Mijn bijdrage aan de bestaande literatuur over blockholders (bijv. Dlugosz e.a. 2006; Holderness 2009) is de ontwikkeling van een grote databank met aandeelhoudereigendom met steekproeven van 1994 tot 2012 genomen bij 3.148 grote Amerikaanse overheidsbedrijven. Met betrekking to afgelopen 20 jaar documenteer ik een scherp opwaartse trend in eigendomsconcentratie naar institutionele investeerders, te weten: financiële instituten en privé investeerders. Er is een scherpe toename in zowel hun eigendom als hun aantal. Gedurende de periode van 1994 tot 2012, is het geaggregeerde institutionele eigendom toegenomen van 10,46 procent tot 26,27 procent. De concentratie van

eigendom is de drijvende kracht voor het opheffen van overheidsbedrijven met veel verschillende aandeelhouders. In 2012, kon slechts 2 procent van de grote Amerikaanse overheidsbedrijven beschouwd worden als gehouden door een grote groep aandeelhouders.

In Hoofdstuk 3, constateer ik nepotisme binnen grote Amerikaanse overheidsbedrijven. Nepotisme is een speciale vorm van sociale netwerken binnen bedrijven, waarvan de prevalentie en de economische gevolgen nog niet systematisch bestudeerd zijn. Ik constateer familiebanden bij het zoeken met meer dan 30 trefwoorden, wat wijst op de mogelijke aanwezigheid van nepotistische relaties in proxybestanden met behulp van de Perl programmeertaal. Ik concludeer dat nepotisme vaak voorkomt bij de SP 1500 bedrijven, waarvan 53,46 procent nepotisme vertoont. Ik ontwerp een nepotisme index om de kracht van het nepotisme te meten. Ik ontdek dat nepotisme in verband wordt gebracht met slechtere bedrijfsprestaties. Mijn bijdrage aan de bestaande literatuur is de ontwikkeling van een databank voor nepotisme die de familiebanden dekt binnen grote Amerikaanse overheidsbedrijven van 1994 tot 2012, en een nepotisme index om de kracht van het nepotisme kwantitatief te meten.

In Hoofdstuk 4, dat gebaseerd is op een nieuwe CEO keuzeoefeningen en daarmee corresponderende keuzeportfolio databank, vinden we dat 88% van de optie oefeningen van de CEOs vooraf geplande identificeerbare 'verwachte' oefeningen zijn. De resterende 12% wijkt af van de verwachte keuzeoefening en geeft informatie over de toekomstige prestaties van het bedrijf. We ontdekken dat er een belangrijk verschil is tussen marktreacties op verwachte en niet verwachte keuzeoefeningen, zowel binnen als tussen CEO's. Ook documenteren we dat de onverwachte oefeningen in verband worden gebracht met meer negatieve toekomstige bedrijfsprestaties, zowel op de lange als op de korte termijn. Onze studie geeft een nieuw raamwerk voor het bestuderen van voorkennis die vervat is CEO keuzeoefeningen.

Appendix A

Extracting Keywords Indicating Nepotism in SEC Filings

Security and Exchange Commission (SEC) uses Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system to manage the filing submission and data retrieval. Practical Extraction and Reporting Language (Perl) provides powerful text processing facilities without the arbitrary data-length limits of other tools, facilitating easy manipulation of text files.[1] SEC EDGAR maintains an index file in its FTP server to store the detailed information about the company, e.g., the CIK of the company, filing type, filing date, and the position of the filing in the SEC EDGAR database.[2] Based on the index file, I identify the positions of all the proxy filings in the database, and then I use the Perl programming language to download and analyze the filing content from the SEC EDGAR database. A regular expression is a sequence of characters that forms a search pattern, mainly for use in pattern matching with strings, or string matching. Regular expressions are implemented in many environments including Perl.

[1] http://en.wikipedia.org/wiki/Perl
[2] http://www.sec.gov/edgar/searchedgar/ftpusers.htm

In my identification, I search following keywords in the proxy filings: 'step-son', 'stepdaughter', 'step-son-in-law', 'son-in-law', 'son', 'sons', 'stepfather', 'step-father', 'step-father-in-law', 'father-in-law', 'father', 'stepmother', 'step-mother', 'step-mother-in-law', 'mother-in-law', 'mother', 'sister-in-law', 'sister', 'stepdaughter', 'step-daughter', 'step-daughter-in-law', 'daughter-in-law', 'daughter', 'daughters', 'cousin', 'cousins', 'brother-in-law', 'stepbrother', 'step-brother', 'brother', 'brothers', 'sibling', 'uncle', 'niece', 'husband', 'ex-husband', 'grandfather', 'grandson', 'wife', 'ex-wife', 'nephew'. I perform a "whole words only" search by using a regular expression form supported by Perl program.

Appendix B

Identifying Option Exercises in SEC XML Filings

Security and Exchange Commission (SEC) uses Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system to manage the filing submission and data retrieval. If you are filing an ownership form (form types 3, 3/A, 4, 4/A, 5 or 5/A), or a Regulation D or Section 4(6) form (form types D or D/A), you need to login to SEC's Online Forms Management website, which only supports the Extensible Markup Language (XML) filings.[1] Since 2002, almost all the companies have submitted Form 4 through XML filing. Extensible Markup Language (XML) is a language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. For each Form 4 filing, there are three files prepared by the SEC EDGAR database: a HTML file for displaying purpose, a XML file which stores the content of Form 4 in a machine-friendly format, and a TXT file for control purposes. The txt file contains all the contents of the XML file, but also adds the information of the issuer and reporting owner, e.g., SEC file number, film number and etc.

[1] https://www.onlineforms.edgarfiling.sec.gov

Practical Extraction and Reporting Language (Perl) provides powerful text processing facilities without the arbitrary data-length limits of other tools, facilitating easy manipulation of text files. We use Perl programming language to download and extract the filing content from the SEC EDGAR database automatically and construct our own option grant and option exercises database. This task is feasible because Extensible Markup Language (XML) is a markup language that is machine-readable and especially friendly to the Perl programming language. First, we locate the Form 4 filings in the EDGAR database by the Central Index Key (CIK), which is used on the SEC's computer systems to identify corporations and individual people who have filed disclosure. SEC EDGAR maintains an index file in its FTP server to store the detailed information about the company. Based on the index file, we identify all the Form 4 filings' positions in the database, and then use Perl code to download and extract the filings' content. By using Perl code, we construct a more complete database than the Thomson Reuters Insider Filing Data Feed (IFDF).

We note that the Film Number in the SEC filing, which uniquely identifies a Form 4 filing, is the same as the Document Control Number (DCN) in IFDF database. By comparing the Film Number with the DCN number, we can compare our database, which is generated by the Perl code, with the IFDF database. For the companies in the Execucomp database, there are 517,123 film numbers in our database, while there are 496,129 DCN number in IFDF in total, i.e., IFDF misses 4.05% of the option transactions for S& 1500 companies in the Execucomp database. Moreover, there are also many errors in IFDF. In our case, we use IFDF and identify 2,376 exercised options. By using the Perl-generated database, we improve the matching result by more than 40% and add additional 936 exercised options to the sample. There are two possible sources for the errors. First, the IFDF cleaning process fails to correct the errors but introduces new errors; the IFDF fails to read the data correctly from the Form 4.

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