DISPROPORTIONAL VOTING RIGHTS AND SHAREHOLDER WEALTH: THE EVIDENCE FROM THE US DUAL CLASS FIRMS

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Thesis submitted to the University of Nottingham
for the degree of Doctor of Philosophy

JAN 2018

ABSTRACT

I use a unique sample of 617 U.S. firms adopting the dual class structures for at least a period of their lifetime from 1994 to 2013 to examine the relation between the presence of disproportional voting rights and outside shareholder wealth. I find that the presence of restricted-voting shares is insignificantly related to the buy-and-hold-abnormal returns for the windows of 1-, 3- and 5-year after the initial public offerings. In addition, the presence of dual class structures would reduce a firm's probability of being taken over by around 20% but would not increase the amount of takeover premium conditional on the successful takeover. Theses empirical findings are consistent with the theoretical prediction that dual class structures may have both positive and negative impact upon shareholder wealth and it is difficult to tell whether the positive or the negative impact prevails. Practically, the finding implies that, for policy makers, the decisions to allow for or abolish dual class structures may depend on the country's legal environment.

ACKNOWLEDGEMENTS

During my enrolment in the PhD program, I have benefited a lot from the support and advice from many people that I have met at The University of Nottingham. Without their help and support it would have been impossible for me to have completed this thesis. Firstly, I would like to sincerely express my gratitude to my supervisors, Professor Steve Thompson and Dr. Ye Bai, for their support and guidance throughout the course of this research. I am grateful for their patience with my shortcomings and continued encouragement and interest for my research and personal development. I also want to thank my previous supervisor, Professor Huainan Zhao, who offered me the chance to start the PhD career and supervised me during my first year.

This thesis is dedicated to my parents in Beijing for their unconditional love and support. It would not be possible if not for their continuous support and understanding. To Xiyang, who has always been at my side supporting me throughout this journey, I want to thank her for her patience and understanding. To my fellow PhD colleagues and friends from Nottingham University Business School, I appreciate their encouragement and contribution, whether directly or indirectly to the realisation of my thesis. Specially, I would like to thank Dr. Adele Cresswell and Miss. Andrea Tomlinson who greatly supported me in different ways in the completion of this thesis. I also would like to thank

my friends Conghui Chen and Lanlan Liu. Their encouragement inspired me a lot when I faced difficulties during my research.

I am really grateful for what I have received during the past few years. This precious experience has shaped me as a person, and my years in NUBS have become one of the most precious things in my memory.

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CHAPTER 1: INTRODUCTION

1.1 Background and Motivation

A corporation's common stocks give the holder claims to the firm's income stream and voting rights and these stocks can be designed in various ways. Under "one share-one vote" there is no wedge between cash flow and voting rights. Under a disproportional ownership structure, one share of a given class may have a claim to votes disproportionately larger than its claim to income. The methods that have been advanced for ownership disproportionality include dual class structures, pyramid structures and cross-ownership of shares. The firms with these ownership structure often gives the insiders more voting rights than the firms with one share-one vote. For example, Alibaba's founder Jack Ma may comfortably control the firm by owning only 7% of the common stocks.

Disproportional ownership confront financial economists with a puzzle in which the basic idea is that there is no concesus on whether disportional ownership structure is value-enhancing or value-destructive. On one hand, the disproportional voting rights have kept raising fierce resistence among many finance practitioners as dual class structures may damage outside shareholder wealth. For example, Julie Goodridge, president and chief executive of

Northstar Asset Management was encouraging other shareholders to vote for a proposal that would see holders of class B Facebook stock give up their rights to ten votes per share1. In addtion, Hong Kong Stock Exhange prevented the largest IPO firm in the world – Alibaba – from listing its shares since the management team refused to give up the dual class structure in 2014. Some previous researchers gave concrete theoretical works to demonstrate the problem of disproportional ownership. For example, Grossman and Hart (1988) show that, given disproportional ownership, the best management team is less likely to be chosen in the market for corporate control. Also, Bebchuk et al. (2000) show that how disproportional ownership may damage shareholder wealth by facilitating managers to extract private benefits from outside shareholders.

One the other hand, it is an undeniable fact that disproportional ownership structures are pervasive outside the handful of Angelo-Saxon countries with a tradition of one share – one vote. According to Lins (2003) who use a sample of 1433 firms from 18 emerging markets, 66% of the sample achieve the presence of disproportional voting rights through pyramids. In addition, a survey conducted by Institutioanl Shareholder Services (2007) documents that, in Europe, 44% of the sample companies are associated with the presence of disproportional voting rights. Among these firms, the most frequent mechanisms are pyramids (27%) and dual class structures (24%). Moreover, it

[1] "Facebook investor renews campaign against dual-class structure" from Financial Times. https://www.ft.com/content/41031abc-7274-35c2-832a-ea0739259cfd

seems that the prevalence of such ownership structure is far from diminishing. For example, the mega-deals of the high-tech IPO of the firms with dual class structures, such as Facebook and Alibaba, have kept impacting the US financial market for the recent years. Very recently, Singapore Stock Exchange and Hong Kong Stock Exchange plan to introduce the dual class strucutres to attract the potential IPOs of the high-tech start-ups[2].

Therefore, the chapter 4 in this thesis is directly motivated by this puzzle and investigates whether disproportional ownership structures are destructive to outside shareholder wealth. Chapter 5 further shed lights on this puzzle by investigating through what channel disproportional voting rights may affect shareholder wealth.

1.2 Research and Related Literature

As I hope to revisit the puzzle, I start with a brief review on the empirical evidence of the wealth effects of disproportional voting rights. A large number of exisiting literatures can be related to this issue and, on one hand, some empirical evidence suggesting that disproportional voting rights reduce shareholder wealth. Using a sample of 1301 firms from eight countries in East Asia in 1996, Claessens et al. (2002) find that, for the largest shareholders, the presence of a wedge between control rights and cash flow rights is associated

[2] "Rivals Singapore and Hong Kong Fight to Snag the Hottest IPOs" from Bloomberg.

with a value discount and that the discount generally increases with the size of the wedge between control rights and cash flow rights. In particular, the ownership disproportionality greater than the median separation reduces the value of equity by roughly 9%. This is not only statistically significant, but also economically significant. In a similar vein, Lins (2003) estimates the effect of managerial control rights on q using a cross section of 1433 firms in 18 emerging markets. Instead of analysing the impact of ownership of the largest shareholder, Lins (2003) focuses on the impact of the ownership of all insiders as a group. He finds that firm values are lower even when the insider group's control rights exceed its cash flow rights. Next, Maury and Pajuste (2005) use a sample of 136 Finnish listed firms between 1993 and 2000 and find that the control-to-ownership ratio of the largest shareholder has a significant negative effect on firm value. Furthermore, Dittmann and Ulbricht (2008) examine the wealth effect of dual class firms by using a sample of 39 dual class firms from Germany. They find that there is a 10% discount associated with the non-voting shares of the dual class firms. Bennedsen and Nielsen (2010) find a negative effect of a dummy indicating that voting rights exceed cash flow rights on market-to-book by using a sample of 4096 listed firms from 14 Western European countries. From the evidence of these literatures, it can be concluded that the presence of disproportional voting rights significantly destroy shareholder wealth.

On the other hand, some evidence documented from the US, which offers the strongest legal protection for the outside shareholders in the world (de Silanes et al. 1998) and thus effectively restrains managers from extracting private benefits (La Porta et al. 2000)[3], maintains that disproportional voting rights are not destructive to shareholder wealth. Gompers et al. (2010) regress Tobin's q on a dual class dummy for all US firms in Compustat database. They find no statistically significant effect of dual class status on shareholder wealth. However, it is worth noting that the Tobin's q used by Gompers et al. (2010) is a weaker proxy for shareholder wealth compared with the stock returns in the event studies. For the event studies, Partch (1987) finds that dual class structures do not destroy shareholder wealth by examining the announcement effects of 44 events when the firm switches from the single class structure to the dual class structure. However, Jarrell et al. (1988) find significant negative abnormal stock returns of 1.4% after expending on Partch's work to include 94 events of dual class recapitalisation. Moreover, Dimitrov and Jain (2006) use a long-run event method to examine the announcement effect of dual class recapitalisation. They conclude that dual class structures enhance shareholder

[3] For example, if a dual class firms is required to disclose all the relevant information related to the spending, the managers may be less willing to extract the private benefits as their misbehaviour might be exposed to the public and incurs significant reputation loss.

wealth. Therefore, it is clearly that there is no consensus about the wealth effects of disproportional voting rights in the US[4].

For the second issue of the thesis, there is also some existing evidence suggesting the channels through which disproportional voting rights may affect shareholder wealth. In particular, the evidence has been focused on the channel of agency conflicts affected by disproportional voting rights. Some maintain that disproportional voting rights aggregate the agency conflicts and thus damage shareholder wealth. For example, Masulis et al. (2009) use a sample of dual class firms from the US and find that greater divergence between insider voting rights and cash flow rights may result in lower marginal value of cash[5], higher excess CEO pay[6], more value-destroying takeovers[7] and lower marginal value of capital expenditures. Similar to Masulis et al. (2009), Baran and Forst (2015) show that the presence of dual class structures may aggravate the conflicts between managers and shareholders as the board of dual class firms are more likely to be captured by managers.

[4] A vast majority of the US literature focuses on the wealth effects of dual class structures because the most of the disproportional voting rights is created through dual class structures in the US (Villalonga and Amit (2006)).

[5] Cash is a type of fungible corporate assets. Lower marginal value of cash means that shareholders anticipate the corporate cash holdings are more likely to be misused.

[6] Excessive CEO compensation is a direct way of shifting wealth from shareholders to managers.

[7] Managers may use acquisitions as a channel to extract private benefits at the expense of shareholders.

However, some other evidence suggesting that disproportional voting rights may increase shareholder wealth by actively bonding against the agency conflicts. For example, Jordan et al. (2014) show that dual class firms are more likely to pay dividends to shareholders and thus less likely to extract private benefits from shareholders. Similarly, Dey et al. (2015) find that dual class firms are associated with higher level of debt financing and the debt financing includes a greater proportion of private debts. Finally, McGuire et al. (2014) show that it is harder for the insiders of dual class firms to hide rent extraction as the dual class firms engage in significantly less risky tax avoidance.

1.3 Proposed Contribution

Given the existing literature on the wealth effects of disproportional voting rights, chapter 4 intends to contribute to the literature by examining the impact of dual class structures upon the announcements of the initial public offerings. Compared with the existing event studies of dual class recapitalisations, there are two advantages for examining the event of initial public offerings. First, the evidence drawn from IPO is more representative to the current legal environment as the listing requirements of NYSE and NASDAQ have changed substantially after 1994. In particular, initial public offerings are the only stage when a firm can choose the dual class structure because the new requirements make it exceedingly difficult for existing single class firms to adopt dual class recapitalisations. Second, there is no reverse causality between the presence of

dual class structures and stock performance, because there is no stock performance at all prior to the IPO and thus it is unlikely that good or bad stock performance may determine the presence of dual class structures.

Given the existing literature on the channels through which disproportional voting rights may affect shareholder wealth, chapter 5 intends to contribute to the literature by examining the impact of dual class structures upon the expected takeover premiums received by shareholders. There are two reasons for me to focus on the channel of the expected takeover premiums. First, takeover premium is closely related to shareholder wealth and usually amount to 30% to 40% of the equity value. Second, it enables me to quantify the impact of dual class structures upon the expected takeover premiums and thus tell exactly whether the expected takeover premiums received by shareholders is a positive or a negative channel. In contrast, the existing evidence on the channel of agency conflicts does not tell how disproportional voting rights may affect shareholder wealth.

1.4 Thesis Structure

The remainder of the thesis is organised as follows. Chapter 2 presents a background section on dual class structure. Introductions on the origin, development and operations of dual class can be found here. This chapter also contains sections to introduce why the firm chooses or gives up dual class

structure. There are many interesting descriptive results in this chapter from my own data. A description of the sample construction of my dual class firms is included in Chapter 3. Data sources, collection approaches and sample characteristics are also included. Chapters 4 empirically investigates the wealth effect of dual class structures around initial public offerings. Chapter 5 empirically investigates the impact of dual class presence upon how easy an outside shareholder can receive takeover premiums. Chapter 6 concludes and summarises.

CHAPTER 2: THE BACKGROUND OF DUAL CLASS STRUCTURES

2.1 An Overview of Dual Class Structure in the US

The primary difference between a single class firm and a dual class firm roots from the allocation of voting rights. For voting rights, a single class firm gives every share one vote whereas a dual class firm gives one restricted-voting share one vote but more than one vote to the voting share. In the US, 36% of the dual class firms give ten votes to the voting share; 15% of dual class firms give more than 10 votes; 18% of dual class firms give less than 10 votes. The rest of the dual class firms use a 'proportional voting' in which both classes have one vote per share but the restricted-voting shares can only elect a minority of the directors (Gompers et al. (2010)). For cash flow rights, a single class firm gives every share proportional rights to claim the dividend while 86% of dual class firms also pay equal dividends to the two classes (Gompers et al. (2010))[8].

[8] For the remaining dual class firms, more than 13% of them give the restricted-voting class a higher dividend and less than 1% give the voting class a higher dividend.

The different allocation of voting rights resulted from the presence of dual class structures may lead to different managerial voting rights. In a single class firm, managers have limited votes if they have limited ownership. In a dual class firm, the managers may significantly enhance their managerial voting rights by owning the vast majority of the voting shares. For example, Gompers et al. (2010) show that the executives serving in the board have approximately 60% of the voting rights while having only 40% of the cash flow rights in dual class firms. Facebook is a good example of the US dual class firm in which the holders of Class A common stock and the holders of Class B common stock are entitled to one vote and ten votes, respectively, for each share. At the close of business on April 7, 2017, Facebook had 2,363,736,836 shares of Class A common stock outstanding and 533,627,121 shares of Class B common stock outstanding and the CEO Mark Zuckerberg beneficially owns 2,627,554 shares of Class A common stock and 410,758,857 shares of Class B common stock. Given that equal dividends are paid to both Class A and Class B common stock, Mark Zuckerberg had 53.4% of the voting power with only 14.3% of the common stocks.

The US policy makers have hovered between prohibiting and allowing the implementation of dual class structures for the past century. At the beginning of the 20th century, it was difficult to find any reference to the common share

with more or less than one vote[9] though there was no restriction on the voting rights attached to each share in the entire US financial market (Stevens (1926)). In 1925, Dodge Brothers, Inc. and a few other leading corporations issued non-voting stocks but raised fierce resistance among practitioners and criticism upon the legitimacy of dual class structures from the media coverage and the academia (Ripley (1927)).

In 1926, it was in this atmosphere that the NYSE first disapproved the issue of nonvoting common stock. To support this disapproval, NYSE formally issued a statement entitled "Statement of Listing Requirements as to Preferred Stock Voting Rights" on May 7, 1940. This should be the first formal published enunciation that the Exchange would refuse to list non-voting common stock (Seligman (1986)). However, in 1956, NYSE compromised its policy by allowing several firms, such as Ford Motor Company, to list the restricted-voting stocks in the exchange.

In 1972, the AMEX adopted the language found in paragraph 122 prohibiting the listing of a nonvoting common stock issue. However, thirty seven corporations with dual class structures were listed on the AMEX on April 1976. Through that date, the AMEX did not have a clear policy concerning disproportionate common stock voting rights, but approved listings on a case-by-case basis (Seligman (1986)). NASDAQ had never prohibited the

[9] With only one exception - International Silver Company - who authorized 20 million non-voting stocks in 1989 and converted the non-voting stocks into the restricted-voting stocks in 1902

listing of restricted-voting shares since the day it was created in 1971. By 1985, approximately 60 of the 785 companies listed on the AMEX had two classes of stock and at least 110 of the 4101 companies traded on NASDAQ had multiple classes of stock (Seligman (1986)).

In the early 1980s, there was increased concern of corporate managements with creating effective takeover defences due to the emergence of the great hostile takeover wave. Therefore NYSE lost some current and potential listings to AMEX and NASDAQ those did not ask for equal voting rights among every share. In order to stay competitive, the NYSE directors adopted a proposal permitting dual class capitalization in July 1986. The new standards only required a company proposing to recapitalize to obtain approval of the plan by a majority of its publicly held shares, as well as a majority of its independent directors[10].

With the relaxed policies and the increased use of dual class structures, a new call came from congress and SEC for regulation against the implementation of the structures. On July 12, 1988, SEC implemented rule 19C-4 that prohibited stock exchanges from listing and trading the stocks of any company that issued new shares carrying more than one vote per share[11] (see Appendix A for the full text of rule 19C-4). However, on June, 1990, the United States Court for the District of Columbia Circuit ruled the SEC had

[10] "Big board ends equal vote rule", *New York Times*, July 4, 1986

[11] The rule allowed companies to issue shares with less than one vote per share and permitted all shares of the existing dual class companies to still be traded.

exceeded its authority and thus rejected the implementation of rule 19C-4 (Stephen (1991)). Despite the rejection, SEC never gave up to suggest all US markets to implement a uniform policy regarding voting rights of common stock.

By May of 1994, a uniformed policy was approved by three major stock exchanges and set as the listing requirement in the manual of each stock exchange (see Appendix B for full text). The policy was enacted based on the former SEC Rule 19C-4 and aimed to barred companies from taking steps to reduce their existing shareholders' voting rights. In particular, there are three key points stated in the policy. First, it bars listed companies from the issuance of super voting stock and the issuance of stock with voting rights less than the per share voting rights of the existing common stock through an exchange offer, because existing shareholders are likely to be coerced into giving up their voting rights via these transactions[12]. Second, it allows the stocks of the companies with dual class structures to be listed at the stage of initial public offering and sets no restriction on the voting rights of these stocks, because there is no public shareholders at the stage of IPO and thus no impact upon the voting rights of the public shareholders. Third, it allows the listed companies to issue inferior voting stocks that would not reduce the voting rights of the existing shareholders.

[12] Ruback (1988) theoretically shows how existing shareholders may be coerced into giving up the voting rights.

Since the implementation of the compromised policy, dual class structures were officially recognised in the US financial markets and have become very popular in the past 20 years. Gompers et al. (2010) construct a universe sample of the US dual class firms between 1995 and 2002 and find that about 6% of all Compustat firms are dual class, comprising about 8% of the market capitalisation of all firms. In addition, Villalonga and Amit (2006) collect data on 515 fortune 500 firms during the period from 1994 to 2000. In their sample, around 12% of firms have two or more classes of common stock. My data gives a clearer trend concerning the yearly distribution of dual class firms. The source and construction of the data is explained later in Chapter 3. If without other explanation, all the descriptive data analysis results in this chapter are generated from my sample in Chapter 3.

Table 2.1: The Yearly Distribution of The US Dual Class Firms

The sample consists of 617 dual-class firms identified between 1994 and 2013. *Fraction of Dual Class Firms* is the percentage of the number of the dual class firms in the corresponding year. *Fraction of The Market Capitalisation of Dual Class Firms* illustrates the percentage of the market capitalisation of the firms with dual class structures in the corresponding year.

Year	Number of Dual Class Firms	Fraction of Dual Class Firms	Fraction of The Market Capitalisation of Dual Class Firms
1994	401	5.89%	6.73%
1995	439	6.10%	6.99%
1996	451	6.16%	6.73%
1997	446	6.17%	7.11%
1998	437	6.12%	6.68%
1999	424	6.19%	8.33%
2000	400	6.25%	7.18%
2001	378	6.33%	8.66%
2002	364	6.37%	10.02%
2003	351	6.37%	9.62%
2004	333	6.06%	9.39%
2005	321	5.98%	8.93%
2006	315	6.02%	9.13%
2007	300	5.88%	9.47%
2008	299	6.01%	8.07%
2009	292	5.93%	8.86%
2010	282	5.85%	9.24%
2011	275	5.63%	9.61%
2012	266	5.50%	10.48%
2013	247	5.28%	11.74%

As shown in the first column of Table 2.1, the number of dual class firms consistently fell from the peak of 451 in 1996 to the low of 247 in 2013. This fact, however, should not be interpreted as that the firms with dual class

structures became increasingly unpopular in the US financial market. The third column in the table reports the proportion of the market capitalisation of dual class firms. Even though the number of dual class firms had been almost halved after heading to the 21st century, the proportion of the overall market capitalisation possessed by dual class firms was stabilised at around 10%. It implies that dual class firms should be those with large market capitalisation such as Google and Facebook.

2.2 The Incidence of Dual Class Structures in the US

Technically, the vast majority of the firms implemented the dual class structures at the stage of IPO since the stock exchanges introduced rule 19C-4 to their listing requirements that prohibited the listed companies from either issuing new stocks with superior voting rights or granting existing shareholders with superior voting shares. However, it does not mean that listed firms cannot be recapitalised into dual class firms[13]. Dual class structures may also be created by a listed company that issues the common stocks with inferior voting rights. For example, Cherry Corporation issued a class of non-voting shares as the stock dividends for the existing shareholders on July 11, 1994[14] and thus created the dual class structure. Table 2.1 shows that there were only 20 firms implementing the dual class structures via this way.

[13] Please refer to the previous section on the history of the policy history of dual class structures in the US.

[14] The 10-K report filed by Cherry Corp., February 28.

To understand the incidence of dual class structures, the most crucial question should be why firms want to adopt dual class structures? For this question, it has been widely accepted that using the dual class structure is to fix control of the company in the hands of managers who end up holding the class of common stock with superior voting rights[15] (DeAngelo and DeAngelo (1985)). Then the next question should be why the managers want to control the firm and what benefits can be obtained from doing so. A good understanding of this question is vital as it helps to explain a lot of other issues, for instance, why the industry distribution of dual class firms are so different from the single class firm. Broadly speaking, there are four reasons for managers to desire control over the firm.

The first possible reason is that retaining control enables the managers to extract private benefits from the outside shareholders (DeAngelo and DeAngelo (1985)). Private benefits might be classified into pecuniary and non-pecuniary private benefits. For the pecuniary private benefits, managers may claim excessive managerial compensation for themselves or use company resources to pay for personal consumptions. For the non-pecuniary private benefits, for example, managers may grant employment to their relatives those are not qualified for the job position. If managers retain control over the firm, they would not be penalised by both the board and the market for corporate control while extracting private benefits from the shareholders. For this reason, family firms those are more willing to grant employment to relatives or to

[15] Using dual class structure to retain control may also come at costs for the firm as the share price may be discounted by the market. Therefore the firms need to trade-off between the benefits of retaining control and the costs of the discounted share price when considering to implement dual class structures (Gompers et al. (2010)).

transfer control to heirs are more likely to adopt dual class structures (DeAngelo and DeAngelo (1985)). Moreover, media firms are more likely to have dual class status (Gompers et al. (2010)) as influencing public opinion provides significant utility to the managers themselves (Demsetz and Lehn (1985)).

The second reason for managers to retain control is to avoid being replaced by less productive managers due to the presence of the information asymmetry between the inside managers and the outside investors (Fischel (1987) and Chemmanur and Jiao (2012)). It is possible that relatively uninformed outside investors may mistakenly replace the incumbent management team with a less productive group (Stein (1988)). Given the consolidation of control, the incumbent managers would be less likely to be replaced by the less productive group.

Next, managers may also retain control to firmly define their property rights to returns on their investments in organisation-specific human capital (DeAngelo and DeAngelo (1985) and (Gilson 1987)). Human capital refers to the managers' firm-specific knowledge concerning the firm's investment opportunities, personnel, specific practices, and the organisation. For the investment on human capital, managers always run the risk that they will be terminated by the board or the market for corporate control and thus the returns on the investment can go wasted. One important method of assuring managers to claim their investment on human capital is to retain control via the dual class structure.

Finally, managers need control to encourage the business partners (eg. Customers or suppliers) to make relation-specific investments (Johnson et al. (2015)). Very often, a business partner becomes reluctant to make a relation-specific investment if she has concerns about the firm's future operation. For example, a sub-contracted oil exploration company may be reluctant to invest in the equipment for a contracting oil firm if they are uncertain about the return in the future. One important solution to moderate the concerns of the business partners is to use an implicit contract that are enforced informally through personal connections and reputation (Klein and Leffler (1981)). However, the implicit contract is not secured unless the managers retain control. Therefore managers may use dual class structures to retain control and thus secure the implicit contract that encourages the business partner to invest.

As I mentioned earlier, since the choice of the dual class structure is affected by the manager's preference in retaining control, the industry distribution of the dual class firms may be different from that of the single class firms as different industries are associated with different levels of private benefits. An extreme example is Media and Communication. Private benefit associated with control is extremely attractive as the controller can utilize it to influence the public. To better illustrate the industry distribution of the dual class structure, I use my sample to make the following table 2.2.

Table 1.2: Fraction of Firms Grouped by Industries

Table 2.2 provides the percentages of the numbers of the firms grouped by two issue types in 49 different industries. The sample consists of 12496 firms extracted from Compustat database between 1994 and 2008. We follow Fama and French (1997) and classify the sample as belonging to one of 49 different industrial groups. The sample does not include Utility, Insurance, Real Estate and Trading industries as financial and utility firms are not analysed in this thesis.

Industry	%Single	%Dual	Industry	%Single	%Dual
Agriculture	0.39%	0.81%	Automobiles and Trucks	1.35%	1.46%
Food Products	1.50%	2.76%	Aircraft	0.33%	0.65%
Candy & Soda	0.24%	0.49%	Shipbuilding & Railroad	0.18%	0.16%
Beer & Liquor	0.25%	1.30%	Defence	0.14%	0.16%
Tobacco Products	0.08%	0.49%	Precious Metals	0.77%	0.00%
Recreation	1.02%	0.49%	Industrial Metal	0.84%	0.49%
Entertainment	2.07%	4.39%	Coal	0.28%	0.00%
Printing and Publishing	0.61%	3.09%	Petroleum and Natural Gas	5.30%	1.46%
Consumer Goods	1.57%	2.60%	Communication	3.60%	18.86%
Apparel	1.07%	2.11%	Personal Services	1.36%	2.11%
Healthcare	2.46%	1.30%	Business Services	6.91%	5.20%
Medical Equipment	4.26%	0.98%	Computer Hardware	2.82%	1.63%
The Pharmaceutical	8.60%	2.44%	Computer Software	13.72%	7.97%
Chemicals	1.95%	0.81%	Electronic Equipment	5.87%	4.23%
Rubber and Plastic	0.97%	0.81%	Measuring and Control	2.07%	0.98%
Textiles	0.41%	1.14%	Business Supplies	0.92%	1.14%
Construction Materials	1.68%	1.63%	Shipping Containers	0.20%	0.65%
Construction	1.31%	1.30%	Transportation	2.31%	3.41%
Steel Works Etc	1.20%	0.98%	Wholesale	4.22%	4.07%
Fabricated Products	0.35%	0.00%	Retail	5.18%	8.78%
Machinery	3.14%	2.28%	Restaurants & Hotels, Motels	2.22%	2.11%
Electrical Equipment	1.58%	1.14%	Almost Nothing	2.70%	1.14%

To examine the difference of the industrial distribution between the firms with single- and dual-class structures, I classify the sample of dual class firms and single class firms as belonging to one of 49 different industrial groups defined in Fama and French (1997). It can be seen from table 2.2, the difference of the industry distribution between the two groups centre around three industries: Communication, Printing and Publishing and Entertainment. The Communication industry includes the businesses like radio-TV broad caster, cable TV, media and telecommunication. The Printing and Publishing industry includes the businesses like newspaper, books and periodicals. The firms in these two industries are more likely to adopt dual class structures as the managers of these firms may call forth tight control in order to indulge personal preferences, because the power of the influence upon public opinion provides considerable utility to themselves (Demsetz and Lehn (1985)). The Entertainment industry includes the businesses such as professional sports, motion picture and musical production. Similar to the Communication industry, this industry may also offer great private benefits for the managers. For example, many football clubs may run at loss every year just for winning the titles. Therefore, the firms in this industry also need dual class structures to retain control for the managers.

Granted, an alternative way to retain control is to buy more shares in a single class firm. However, this way requires greater personal wealth committed in a single enterprise and brings excessive idiosyncratic risk Fama and Jensen (1983)). Therefore, dual class structures arise when managers value control rights and yet greater ownership of the single class shares is unattractive (DeAngelo and DeAngelo (1985)).

2.3 The Elimination of Dual Class Structures in the US

Some dual class firms ultimately give up the dual class structures and revert to single class firm, which we term as “elimination of dual class structure” or “stock unification”. It is worth noting that, in my sample of dual class firms, there were 117 firms once being dual class firms but later on eliminating their dual class structures and thus turning into single class firms. This section describes how and why these firms switched from dual class structures to single class structures.

In particular, these 117 dual class firms may eliminate their share classes in six ways: shareholder proposal, direct conversion, sunset provision, conversion clauses, merger/reorganization and bankruptcy/litigation. The eliminations triggered by shareholder proposals and direct conversions are voluntary elimination as the firm has control over the timing of the elimination. In the shareholder-proposal unification, the board usually recommends the unification plan in the proxy statement and asks all shareholders to approve the plan. The plan usually contains the detailed information of the motivation behind the unification, the impact upon the shareholders after the unification and the compensation terms for the voting shareholders. These proposals are approved by both classes of shareholders voting separately at the annual meeting or at an extraordinary general meeting. As to the second type, that is, a unification achieved via direct conversion, the dual class firm usually has a conversion clause that allows the shareholders to convert from the voting class to the restricted-voting class at any time. For example, “Dayton Superior Corp

has a conversion clause allowing the Class B shares (superior with 10 votes per share) to be converted to class A shares at the holder's option. So in February 17, 1999, Ripplewood (the sole owner of the class B shares) informed the Company that it was converting all 757,569 Class B Common Shares into an equal number of Class A Common Shares. There are also multiple direct conversions by one or many holders. For example, "the Class B shareholders of Base Ten Systems, Inc converted 53000, 75731000, and 101000 Class B shares into Class A shares in year 1997, 1998 and 1999, respectively. On March 17, 2000, only 9450 Class B shares were outstanding."

The eliminations triggered by sunset provision, conversion clauses, merger and bankruptcy are not the voluntary eliminations as the firms have no control over the timing of the eliminations. For the dual class firm that implements a sunset provision, the voting-class shares are required to be automatically converted into the shares with one vote at a certain time point. For example, "the charter provision of Carriage Services INC states that all Class B Common Stock which were outstanding on December 31, 2001 should be automatically converted into Class A Common Stock." For the dual class firm that implements an automatic conversion clause, the converging of the classes of stock would be triggered when certain conditions are met. There are four clauses in the sample: stock transfer[16], minimum outstanding[17], retirement[18]

[16] Some dual class firms may also have the Certificates of Incorporation addressing that only the particular individuals or a particular institution are eligible to hold the superior-voting stocks. For example, "4,000,000 shares of Class B common stock of LCC International INC were forced to be converted into shares of Class A common stock as a result of the transfer of those shares by RF Investors through a donation to the Foundation on December 22, 2006."

and underperformance[19]. Finally, stock classes may also be converged because of bankruptcy[20] and M&A activities[21]. In table 2.3, I include the full list of the classification of all 117 unifications.

[17] Some dual class firms might also force the voting shares to be converted into non-voting shares when the percentage of the outstanding shares of the voting class is below a threshold value. For example, "Cognizant Technology Solutions certificate of incorporation stated that if the outstanding shares of class B common stock cease to represent 35% of the aggregate number of shares outstanding then they would automatically convert to class A shares. On Feb 21, 2003 the class B shares fell under 35% and they were automatically converted to class A shares."

[18] There are two incidences of automatic stock unification conditional on the retirement of the founder (G&K Services INC).

[19] There is one incidences of automatic stock unification conditional on the failure to deliver the promised performance (Gaylord Container CP).

[20] For example, "Carmike Cinemas INC and the United States Bankruptcy Court for the District of Delaware entered a Plan of Reorganization, which cancelled all then existing Class A and Class B Common Stock and Preferred Stock, Under Chapter 11 of the Bankruptcy Code on August 8, 2000."

[21] Firms may announce plans to unify two classes at the same time they announce takeover bids for other companies or the unification plan results from a public contest for control of a firm's board of directors. For example, "Method Electronics INC entered into an agreement with their founding family members and the Marital Trusts, pursuant to which the founding family sold 750,000 shares of its Class B common stock to the Company and agreed to vote their remaining shares of Class B common stock in favour of a merger with the Marital Trusts. In the merger, all then outstanding Class B common stock and the Class A common stock would be converted into new Method common stock."

Table 2.2: The Full List of the Classification of the Unifications

Table 2.3 reports the full list of the classification of the share class unifications. *Shareholder Proposal* refers the unifications by which the board proposes the unification plan and require ratification from the shareholder meeting. *Direct Conversion* refers to the unifications by which the dual class firm has a conversion clause that allow the voting shareholders to convert from voting class to the restricted-voting class at any time. *Sunset Provision* refers to the unifications that triggered by a sunset provision. *Stock Transfer* refers to the unifications triggered by a change of ownership. *Minimum Outstanding* refers to the unifications triggered when the outstanding shares of the voting class is below a threshold value. *Retirement* refers to the unifications triggered by the retirement of the founder. Underperformance refers to the unifications triggered by a failure to deliver the promised performance. *Bankruptcy* refers to the unifications triggered by a bankruptcy agreement. *Merger Agreement* refers to the unifications triggered by a merger agreement.

Shareholder Proposal	AARON'S INC; ALBERTO-CULVER CO; AMPAL-AMERICAN ISRAEL CORP; CANNON EXPRESS INC; AGERE SYSTEMS INC; AMSURG CORP; CHIPOTLE MEXICAN GRILL INC; COMMONWLTH TELE ENTER; DRS TECHNOLOGIES INC; DAIRY MART CONVENIENCE STRS; DIAMOND MANAGEMENT & TECHNL; E-Z-EM INC; GP STRATEGIES CORP; GAMESTOP CORP; GARTNER INC; HERITAGE MEDIA CORP; KAMAN CORP; KEANE INC; MARRIOTT INTL INC; RAYTHEON CO; SCOTT TECHNOLOGIES; SOTHEBY'S; TRANS-LUX CORP; TRANZONIC COS; WHITEWAVE FOODS CO
Direct Conversion (*Multiple Conversions*)	ARDEN GROUP INC; AVIAT NETWORKS INC; CROWN MEDIA HOLDINGS INC; CYNOSURE INC; DAYTON SUPERIOR CORP; EASYLINK SERVICES CP; MONDELEZ INTERNATIONAL INC; MONSTER WORLDWIDE INC; NORTHLAND CRANBERRIES; REAL GOODS SOLAR INC; REVLON INC; SABRE HOLDINGS CORP; SUCAMPO PHARMACEUTICALS INC; TW TELECOM INC; US LEC CORP; VAIL RESORTS INC (*TUCOWS INC; ABERCROMBIE & FITCH; ABIOMED INC; ACI WORLDWIDE INC; BADGER METER INC; BAKER (MICHAEL) CORP; BASE TEN SYSTEMS; BENIHANA INC; BLOUNT INTL INC; CABELAS INC; CINEDIGM CORP; COVAD COMMUNICATIONS GROUP; DURA AUTOMOTIVE SYS; EMERGE INTERACTIVE INC; GENTEK INC; GUNTHER INTERNATIONAL LTD; HUNGRY MINDS INC; MAXWELL SHOE CO; MEDICIS PHARMACEUT CP; NEXSTAR BROADCASTING GROUP; NU SKIN ENTERPRISES; OFFICIAL PAYMENTS HLDGS INC; SCHNITZER STEEL INDS; TALEO CORP; WET SEAL INC; TW TELECOM INC; XM SATELLITE RADIO HLDGS INC; XO HOLDINGS INC -CL A*
Sunset Provision	CTI INDUSTRIES CORP; CALGON CARBON CORP; CARRIAGE SERVICES INC; CHARTER COMMUNICATIONS INC; GLOBAL TECHNOLOGIES LTD; GNC HOLDINGS INC; INGRAM MICRO INC; LEE ENTERPRISES INC; MAGELLAN MIDSTREAM PRTNRS; HEWITT ASSOCIATES INC; NATCO GROUP INC; TEXAS ROADHOUSE INC; TOWERS WATSON & CO; US UNWIRED INC; WEYCO GROUP INC; ZEBRA TECHNOLOGIES CP
Stock Transfer	CONTINENTAL AIRLS INC; LCC INTERNATIONAL INC; LURIA (L.) & SON INC; REINHOLD INDUSTRIES; REVOLUTION LIGHTING TECHNLGS; STEINWAY MUSICAL INSTRS INC
Minimum Outstanding	GREEN DOT CORP; INTERFACE INC; MATTHEWS INTL CORP; OSHKOSH CORP; ROCK-TENN CO; SBA COMMUNICATIONS CORP; SPANSION INC; WORLDSPACE INC
Retirement	G&K SERVICES INC; FINISH LINE INC
underperformance	COGNIZANT TECH SOLUTIONS; GAYLORD CONTAINER CP
Bankruptcy	CARMIKE CINEMAS INC; DEP CORP; DIGITAL PRIVACY INC; PIONEER COS INC; SEABULK INTERNATIONAL INC; SIMON TRNSPT SVCS INC
Merger Agreement	CENTENNIAL COMMUN CP; DELTATHREE INC; IHS INC; METHODE ELECTRONICS INC; SOUTHERN COPPER CORP; SUNPOWER CORP; TIME WARNER CABLE INC

The average duration of the presence of the dual class structures for these 117 dual class firms that experienced the elimination of dual class structures is 7.38 years. This average duration is roughly 2 years shorter than the average duration of the dual class firms that did not experience the elimination of dual class structures (9.59 years)[22]. Within the group of 117 dual class firms with elimination, the average durations of the presence of dual class structure for the dual class firms that implement sunset provision and conversion clauses are the longest and reach 8.07 years and 9.01 years respectively. In contrast, the average duration of the presence of dual class structure for the dual class firms that experienced the eliminations triggered by merger and by bankruptcy are the shortest and are only 5.86 years and 4.83 years respectively. For the duration of the overall sample of 617 dual class firms, the shortest duration of the presence of dual class structures is less than 1 year and the longest duration covers the whole sample period between 1994 and 2013.

After describing how the elimination of dual class structure happens, it is instructive to examine why the elimination happens. Since the eliminations triggered by sunset provisions, automatic clauses, takeovers and bankruptcies are not the voluntary eliminations, I do not discuss the motivations behind these eliminations. For an instead, I focus on the motivation behind the eliminations triggered by shareholder proposals and direct conversions. As shown in the previous section, the board usually points out the reasons for the

[22] The actual duration for these firms should be longer as the ending year of the data set is 2013

elimination in the proxy statement for the shareholder-proposal elimination. I thus review all of these proxy statements and find that three reasons are mentioned with the highest frequency: to improve the liquidity of the voting shares, to eliminate the trading discount of the voting shares, to dissolve shareholder confusion and to facilitate equity financing.

First, the voting shareholders usually suffer from severe liquidity discounts in the presence of dual class structures. If the voting stocks are listed in the market, the trading volume of the voting stocks are far lower than that of the restricted-voting stocks. For example, the average daily trading volume for the Class A common stock of AARON's INC (the voting class) has been approximately 1800 shares per day in the three years prior to the announcement of the stock unification, while the average for the Common Stock (the non-voting class) has been nearly 995000 shares per day. The inferior liquidity of the voting class is resulted from the low free float of the voting class[23] due to, first, the stable and the concentrated holdings of the voting shareholders and; second, the lower outstanding of the voting class in the market (Neumann (2003)). The elimination of the dual class structure may thus increase the liquidity of the voting stocks, at least, to the level of the non-voting stocks due to the increased free float. At the extreme, if the voting stocks are not listed in the market, voting shareholders cannot liquidate their voting shares at all in the

[23] Free float is the share outstanding that is available for day-to-day trading. Greater free float may attract more investors and results in smaller information asymmetry between the insiders and the outsiders.

presence of dual class structure. Therefore, the elimination of dual class structure is the only way for the voting shareholders to liquidate their holdings.

Second, the voting-class shares may be traded at discounts to their counterpart non-voting shares in many occasions. For example, the closing prices for the Common Stock and Class A Common Stock of AARON's INC were $29.8 and $24.3 respectively on Feb 24, 2010. That means the Class A Common Stock of AARON's INC was traded at an approximately 18% discount to the Common Stock prior to the announcement of the elimination of dual class structures. The phenomenon has not been thoroughly discussed in the existing literature. Lease et al. (1983) find there are four dual class firms with negative voting premiums that average at -1.25% in their sample. Neumann (2003) attribute the discounted voting class to the inferior stock liquidity associated with the voting shares. The elimination of the dual class structure may help eliminate the price discount of the voting share.

Next, dual class structures may raise extra administrative expenses when investors do not understand the difference between the two classes of shares. If investors are wary of the unknown characteristics of the dual class structures, they might be reluctant to invest in the firms with such structures. Moreover, dual class structures may deter some equity issues as some investors may refuse the non-voting shares. The elimination of dual class structures may thus facilitate equity financing.

2.4 Dual Class Structures in the World

Although the dual class structure is legally accepted in the US, other financial markets have mixed attitude towards the implementation of the dual class structure. On one hand, the UK, Hong Kong, Singapore, Japan, Germany, Italy and Korea, prohibited the listed firms from using the dual class structures. On the other hand, Sweden, France, Netherland, Finland and Denmark have the convention of using dual class structures for decades. In particular, 64% of the Swedish public firms, 54% of the French public firms, 43% of the Netherland public firms, 31% of the Finnish firms and 28% of the Danish public firms employ the dual class structures. Similar to the US, the dual class structures in Sweden, Denmark and Finland serve the purpose of retaining control at the hands of the voting shareholders who are usually the members of the founding family. In contrast, the purpose of the implementation of dual class structures in France is to grant long term (two years minimum) registered shareholders of ordinary shares a double voting right to reward them for their long-term commitment to the company[24].

Over the recent years, some major stock exchanges have actively debated over the legitimacy of the dual class structure and reconsidered to introduce the dual class structure. In 2017, Singapore Stock Exchange asked for views on whether it should allow companies to list with dual class shares and obtained

[24] The double voting rights does not consist in a new class of shares and will be lost when the share is traded

approval from Prime Minister Lee Hsien Loong. Similarly, Hong Kong Stock Exchanges considered for a proposed third exchange in the city to exclusively allow for the IPO firms implementing the dual class structures. Both Singapore and Hong Kong stock exchanges have been passed over by giant IPO deals due to their prohibition against dual class structures[25] and intensively compete for the future IPO deals that require a relaxation of the regulation[26]. Moreover, France seems to reinforce the importance of dual class structures by adopting the Florange Act, whereby shares that are registered for two years will automatically receive double voting rights, in 2014. Prior to the adoption of the Florange Act, French companies were only allowed to grant such double voting rights to shareholders having registered their shares for at least two years, provided the companies had provisions in their articles of association explicitly allowing such a structure.

[25] For example, Hong Kong Stock Exchange was passed over by Alibaba Group Holding Ltd. and Baidu Inc and Singapore Stock Exchange was passed over by Manchester United.

[26] For example, the two stock exchanges may have to compete for Alibaba's banking and payments arm Ant Financial in the near future

CHAPTER 3: A SAMPLE OF THE US DUAL CLASS FIRMS

In chapter 2, I have given some preliminary findings with regarding to the operations of dual class firms in the US, by employing my manually collected data set. The compilation and verification of this data set requires much effort for this research thus in this chapter I will explain the steps and details of the data processing. Noteworthy, I start with the construction of a complete dual class firm sample, but in the following empirical chapters, when I analyse a particular empirical question, the sample is refined accordingly.

To extract a sample of dual class firms, I first search the entire database of Compustat Fundamentals Annual Dataset from 1994 to 2014. Several exclusion criteria are then applied to the whole sample: 1) firms whose asset value is smaller than one dollar, 2) financial firms (SIC: 6000-6999), utility and government agencies (SIC: 4900-4999), 3) all non-US firms, and 4) firm's whose stock is not traded in NYSE, AMEX or NASDAQ. The resulting sample consists of 12496 firms and 110605 firm years.

Now I need to identify the firms that adopt dual class structures from the 12496 firms. It is commonly known that there is not an available database specialising in the identification of dual class firms. The only way to accurately identify the presence of dual class structures is to manually browse the section

concerned with voting rights in the firm's proxy statements. However, given the large sample size (i.e. 12496), it is extremely time consuming to browse the proxy statements of all the firms. Therefore, following the approach of Gompers, Ishii et al. (2010), I conduct a series of tests to construct a pool of potential candidates which enable us to reduce the amount of manual work. The following paragraph will illustrate these tests and the weaknesses associated with each of them.

First, I examine the company name field of Compustat database to find the firms with two share classes. Since the firms in Compustat database occasionally have "CLA" or "CLB" in the company name field[27], any firms with a share class field containing one of these indicators are likely to be dual class firms[28]. Second, I use the share class field (SHRCLS) in CRSP database to find firms with a share class identified. Specifically, the firms with a non-blank share class field can be identified as potential dual-class firms[29]. Next, I also try to use the field (MULTI) denoting if the issuer had multiple classes of stock in Thomson's SDC New Issues database to do the third test

[27] For example, the full name of APS Holding Corporation appears as "APS HOLDING CORP -CL A" in the company field of Compustat.

[28] The weakness with this method is that some dual class firms may not have a class reference in the company name field (e.g. Google or Blockbuster).

[29] The problem with this method is that firms with a share class identified are not always dual class. For example, a firm can have only one common share class named Class A.

filtering the dual class firms[30]. Moreover, I download the list of IPO firms with dual class structures from Jay Ritter's personal website[31]. The list contains 646 firms who went public with multiple classes of shares between Jan 1980 and Apr 2014[32]. After that, I tried the method suggested by Zhang (2007) that compares the number of shares outstanding between Compustat and CRSP database. Since lists shares outstanding by class, whereas Compustat lists shares outstanding by firm[33]. A difference between the two measures on shares outstanding may be due to the existence of multiple classes. Therefore a firm passes this test if the difference between the Compustat and CRSP shares outstanding field is greater than 5%[34]. Finally, I use the dual class field of RiskMetrics database to identify the firms with dual class structures by using the dual class variable[35].

[30] However, the presence of multiple classes does not necessarily mean that the voting rights attached to each of the share classes differ. For example, an issuance of preferred stocks might result in a record of multiple share classes but not necessarily dual class structures.

[31] Smart and Zutter (2003) collect most of the data from Jay Ritter's website and the link is http://bear.warrington.ufl.edu/ritter/ipodata.htm.

[32] The problem with this method is that, again, the presence of multiple classes may differ from the presence of dual class structures.

[33] The shares outstanding field of Compustat comes from the financial statement and thus includes all classes of common shares outstanding.

[34] This method may only identify the dual class firms in which the difference between the shares outstanding of two classes of shares is greater than 5%.

[35] However, the database is limited to eight years spaced out between 1998 and 2006. In addition, only approximately 1900 firms are available per year and thus only a small proportion of the dual class firms are identified by using this method.

Given the weakness associated with each of the tests, it is clear that I cannot thoroughly identify all the dual class firms by using only one of the above 6 methods, I need to create a pool of potential dual class firms by referring to the 6 methods. Specifically, if a sample firm passes any of the six tests in any fiscal year, then it is scored 1 and put into a pool of potential dual class firms. This results in a potential pool of 1482 firms. If a sample firm is scored more than 1, it is more likely to be confirmed as a dual class firm.

After that, I try to manually confirm the status of the candidates through the proxy statements (DEF-14A) and/or 10-Ks. For example, the 2014 proxy statements of Google states that "*Holders of class A and class B common stock as of record date are entitled to vote. Each share of class A common stock is entitled to one vote for each director nominee and one vote for each of the proposal to be voted on. Each share of class B common stock is entitled to ten votes for each director nominee and ten votes for each of the proposals to be voted on. The holder of shares of class A common stock and class B common stock are voting as a single class on all matters.*" Therefore I know that two classes of stock with different voting rights per share are used to vote for the director nominees[36] and thus this is a typical dual class firm.

[36] Some dual class firms may allow for equal voting rights per share across share classes. However, they restrict the shareholders with one class to vote on only a proportion of the director nominees. For example, the shareholders of class A shares may be only eligible to the election of "class A directors". This is still a typical type of dual class firm.

Table 3.1 illustrates the number and the percentage of the dual class firms confirmed from the subsample scored more than 1 by manually browsing the proxy statements. It can be seen from the table that there is a reduction in the number of potential firms that pass more dual-class tests, but the proportion of the firms confirmed as dual class firms is increasing in the test scores. It is in accordance with my expectation because a dual class firm is more likely to pass more tests. Overall, I obtain 617 firms adopting the dual class structures for at least a period of their lifetime. To test the confidence of the whole approach, I randomly selected 100 firms from outside the pool of the potential dual class firms and checked their proxies. None of these 100 firms were actually dual class firms.

Table 3.1: The Percentage of the Confirmed Dual Class Firms

Table 3.1 illustrates the number and the percentage of the dual class firms confirmed from the subsample of potential dual class firms that pass at least one of the six tests by manually browsing the proxy statements. *The Test Scores.* is the number of tests passed by the corresponding firms. *Dual Class Confirmed* is the number of firms confirmed as dual class firms within each subsample of test scores. *%* is the ratio of *Dual Class Confirmed* to the number of tested firms.

	The Test Scores						
	1	2	3	4	5	6	Sum
No.	786	227	196	150	99	24	1482
Dual class Confirmed	99	109	154	137	96	22	617
%	12.6%	48.0%	78.6%	91.3%	97.0%	91.7%	41.6%

In this chapter I illustrate the methodology of the construction of a complete sample of dual class firms. Later in chapter 4, since I study the wealth effects of dual class structures around the event of initial public offerings, a sub-sample of dual class firms that adopted the initial public offerings is required to be identified. There will be a section describing the refining process in chapter 4.

CHAPTER 4: THE LONG-TERM PERFORMANCE OF THE RESTRICTED-VOTING SHARES AFTER IPO

4.1 Introduction

Whether dual class structures enhance or destroy shareholder wealth is an ongoing debate in the literature. Many influencing theories formally show that how dual class structures may damage shareholder value by adversely affecting the efficiency of the market for corporate control and facilitating the managers to extract private benefits from the shareholders. For example, Grossman and Hart (1988) find that dual class structures make inefficient management less likely to be replaced by an outside party whoever is able to improve the value of the firms' assets. In addition, Bebchuck et al. (2000) show that how the insiders of dual class firms may 'steal' money from the outside shareholders without being punished by the company board and the market for corporate control.

However, it is undeniable that dual class structures have been persistently popular for many decades and the policy makers in the world do not seem to

ban their use. The most prestigious companies, such as Alibaba, Facebook and Google, have kept attributing their success to the adoption of dual class structures. Therefore, some researches theoretically demonstrate the value-enhancing aspects of dual class structures. For example, Chemmanur and Jiao (2012) argue that dual class structures enable the talented managers to create greater shareholder wealth by encouraging the investments in risky, long-term projects.

The aim of this chapter is to join in this discussion and empirically test the wealth effects of dual class structure in the US. The importance of the study arises as it offers practical guidance to the policy makers who need to decide the legitimacy of the dual class structure in the financial markets. At the moment, the policy makers have mixed attitude towards dual class structure among the different financial markets over the world. I focus on the US market as the legal protection offered by the US market for the shareholders is the greatest in the world and leads to higher wealth effects of dual class structures. At the moment, the evidence drawn from the non-US financial markets all support the negative effect of dual class structure. Given the different legal environment, the conclusion from US evidence might change and dual class structure might not be destructive. I will come back to this discussion later.

Some prior empirical researches can be referred to this issue. Ang et al. (2000) use a sample of 24 dual class firms from the UK to examine the announcement effect around the enfranchisement of the non-voting shares and

find that the market capitalisation is increased by 3.65 percent after the announcement of enfranchisement. Similarly, Dittmann and Ulbricht (2008) also discover a significant positive reaction from the market after the enfranchisement of the non-voting shares by using a sample of dual class firms in German market. In particular, they find a 10% significant positive abnormal return for non-voting shares and a 3% significant positive abnormal return for voting shares. Moreover, Bigelli et al. (2011) also report the reaction of voting-and non-voting shareholders separately by using a sample of Italian unifications. They find that while the voting shares earn slightly negative excess returns of -1.5%, non-voting shares earn significantly positive excess returns of 11% in the three-day window. Therefore, from the evidence of the three European countries, it is clear that dual class structures are destructive to outside shareholder wealth.

Nevertheless, the legal protection for the outside shareholders in these European countries is much weaker than that in the US (de Silanes et al. (1998)). Therefore, it is expected to result in lower wealth effects of dual class structures in the US financial market as managers can effectively extract private benefits from the outside shareholders (La Porta et al. (2000) and Lins (2003)). Consistent with this notion, the evidence documented from the US financial market on the wealth effects of dual class structures is no longer consistently negative. For example, Gompers et al. (2010) find no statistically significant effect of dual class status on shareholder wealth by regressing Tobin's q on a

dual class dummy for all US firms in Compustat database between 1995 and 2002. However, Tobin's q is a weaker proxy for shareholder wealth compared with the stock returns in the event studies. Partch (1987) is the first US event study of dual class recapitalisation. She studies 44 firms issuing dual classes of common stock from 1962 to 1984 and finds a positive excess return of 1.2% on the announcement of the creation of low-vote stock. However, a positive response to the announcement is not representative of the sample as the median price response is insignificantly negative. Thus, Partch concludes that dual class structures do not destroy shareholder wealth. Jarrell et al. (1988) expended on Partch's work to include 94 events of dual class recapitalisation between 1962 and 1988. In contrast to Partch, they find significant negative abnormal stock returns of 1.4% at the day of announcement. Moreover, Dimitrov and Jain (2008) also investigate the announcement effects of dual class recapitalisations. Instead of using a short-run event method, they use a long-run event method to examine the market reaction. They find significant positive abnormal returns of 23.11% (of the non-voting shares[37]) in a period of 4 years following the announcement. The 1-, 2- and 3-year results are also significantly positive. Therefore, they conclude that dual class recapitalisations are enhancing shareholder wealth.

To sum up, the existing empirical studies in the US can be divided into two groups. The first group uses measures like Tobin's q to capture the shareholder

[37] The authors do not mention which class of the shares they are focusing on. However, since 85% of the US dual class firms have only the non-voting classes publicly listed, I believe that this should be the non-voting class.

wealth and conducts an OLS regression. The second group resorts to event studies and examine how shareholders respond to the announcement of dual class recapitalisation. Problem associated with first group has been explained earlier. While regarding the second group, to the best of my knowledge, all the existing event studies used to examine the wealth effects of dual class structures focus exclusively on the events of dual class recapitalisation. This is somehow problematic as, since 1994, the listing requirements of NYSE and NASDAQ have prohibited the public firms from issuing the superior-voting class shares and thus the evidence drawn from dual class recapitalisations might no longer representative to the wealth effects of dual class structures. For an instead, the vast majority of the dual class structures are created at the stage of initial public offerings that are more representative to the current policy environment.

Thus, the main contribution of this chapter is to refrain from the "tradition" of dual class recapitalisation and re-examine the wealth effect of dual class structure by focusing on the events of initial public offerings, instead of dual class recapitalisation. Besides the regulation concerns mentioned in previous paragraph, there are several extra advantages for the investigation of IPO. First, the sample size of the IPO firms with dual class structures is significantly larger than that of the recapitalised firms. Second, the event of IPOs is suffered less from the contamination of the announcement effects and result in more accurate findings. In contrast, some irrelevant events may be announced simultaneously at a dual class recapitalisation. Lastly, examining the wealth effects of dual class

structures around the event of recapitalisation may suffer from the problem of reverse causality as it is not guaranteed that the firm's stock performance does not affect the decision of the implementation of the dual class structure. In contrast, at the stage of IPO, it is unlikely that good or bad stock performance may determine the presence of dual class structures as there is no stock performance at all prior to the IPO.

The remainder of the chapter is organised as follows. Section 2 summarises the theoretical and empirical development of hypothesis, Section 3 offers the description of data and the results of bivariate analysis, Section 4 and Section 5 offer the results of multivariate analysis and robustness check. Section 6 concludes.

4.2 Theoretical Consideration and Hypothesis Construction

Besides the mixed conclusion from empirical studies, as introduced in previous section, in theory, shareholder wealth might be positively or negatively affected by the presence of dual class structure as well. The essence of dual class structure is "protection" to the manager, which is a double-edged sword to the firm. If used properly, this "protection" to the manager helps to encourage long term strategic planning of the firm, human capital investment

of the manager, etc. However, if used improperly, this "protection" serves as a shield for the dishonest managers to easily steal from the shareholders.

Specifically, on one hand, given the existing theories, investors may view dual class structures as a value reducing mechanism as the dual class structures significantly facilitate the managers to extract private benefits at the expense of shareholder wealth (DeAngelo and DeAngelo (1985), Gilson (1987) and Ruback (1988))[38]. The private benefits are the benefits that are enjoyed by the incumbent management at the expense of outside shareholders (Grossman and Hart (1988)). The concept can be further classified into two categories: pecuniary and non-pecuniary private benefits. For the pecuniary benefits, managers may claim excessive managerial compensation for themselves or use company resources to pay for personal consumptions. For the non-pecuniary benefits, managers may grant employment to their relatives those are not qualified for the job position.

Dual class structures may facilitate the managers to extract private benefits by rendering them a majority of the voting rights and make outside shareholders unable to choose their board of directors (DeAngelo and DeAngelo (1985)). Given that the board of directors who have the power to hire, fire and compensate the managers play an important role in restraining managers from extracting private benefits (Fama and Jensen (1983)), the

[38] The private benefits of control are the benefits that are enjoyed by the incumbent management at the expense of outside shareholders (Grossman and Hart (1988)).

malfunctioned board of directors may result in greater extraction of private benefits. In addition, the consolidation of managerial voting rights achieved via dual class structures may also isolate the managers from the market for corporate control. Given that the market for corporate control helps replace the incumbent managers who fail to maximise the market valuation due to the extraction of private benefits with other managers (Manne 1965), a breakdown of the market for corporate control may encourage the extraction of private benefits.

On the other hand, investors may also view dual class structures as a value increasing mechanism, which seems to be a more popular opinion among the scholars. This positive effect can be explained by five reasons in theoretical works. First, dual class structures facilitate the managers to capture the investment opportunities with equity finance. Incumbent management often face a dilemma: if they finance investment opportunities with equity finance, the control of the firm will be diluted. Therefore, the incumbent may refuse the additional equity and thus hurt shareholder wealth by eschewing profitable investment opportunities (Gilson (1987)). However, dual class structures allow the managers to raise equity without diluting their control and thus secure capital for positive net present value investments (Gilson (1987), Lehn et al. (1990) and (Banerjee (2006)).

Second, dual class structures facilitate the managers to capture the long-term investment opportunities. In a world of asymmetric information, the

firms with long-term strategic projects may often suffer from an underpricing of equity since outside investors may have no idea about the projects until the projects begin to yield earnings (Stein (1988)). The underpricing of the equity may lead the managers to shift funds from the long-term projects to short-term projects due to the risks of being fired and the near-term takeover pressure (Stein (1988)). Since dual class structures significantly enhance the voting power of the managers, they considerably alleviate managers' risks of being fired and reduce the incentive for managers to cut long-term investments (Fischel (1987) and Chemmanur and Jiao (2012)).

Third, dual class structures may benefit shareholders by encouraging the managers to invest in firm-specific human capital[39] that is beneficial for shareholder wealth. Human capital refers to the managers' firm-specific knowledge on, for example, investment opportunities, personnel, specific practices and organisation. If incumbent managers are threatened by a takeover or a proxy fight that could lead to their replacement, they would be reluctant to invest in the firm-specific human capital, because the returns to the investment may become useless once they leave the firm (Fama and French (1997)). However, dual class structures may isolate managers from the threat of takeovers and proxy fights by consolidating managerial voting control and thus create incentives for managers to make investments on human capital (DeAngelo and DeAngelo (1985), Fischel (1987) and Gilson (1987)).

[39] For example, the knowledge related to the firm's investment opportunities, personnel, specific practice and corporate culture. See more details in Klein et al. (1978).

Fourth, dual class structures reduce the signalling costs arising when managers need to send costly signals to outsiders that they are making proper decisions for the firm. Very often, managers may try to boost stock prices by sending signals to outsiders in order to secure their work places (Stein (1988)). The signals include, for example, high debt equity ratios, dividend changes or share repurchases. In an extreme occasion, the managers may also window dress the earnings by selling off productive assets whose value shareholders are unable to gauge properly. All these signals can be very costly to the firm and thus destructive to shareholder wealth. Since the voting protection offered by dual class structures help secure the work places of the managers already, there is no need to send costly signals to the outsiders.

Finally, dual class structures encourage the business partners, such as customers and suppliers, to invest in the business relation and give the firm favourable contracting terms (Johnson et al. (2015)). Business partners may be reluctant to make relation-specific investment when they perceive the risks that the firm may change its operating strategy. For example, a sub-contracted oil exploration company who heavily acquires the equipment suited for their long-term customer may incur losses if the customer refuses to compensate them for the investment. Hence the oil exploration company may be reluctant to acquire the equipment for the customer unless they know the customer's operating strategy would not be changed. One important solution to convince the oil exploration company is for managers to create an implicit contract with

them (Shleifer and Summers (1988)). By their nature, implicit contracts are enforced informally through personal connections and reputation: If violating an implicit contract today would make the managers untrustworthy in the future (Klein and Leffler (1981)). However, the implicit contract is not secured unless the managers retain control. Therefore, dual class structures help the managers to contract implicitly with the business partner and encourage them to make relation-specific investment.

Therefore, whether the dual class structure improves or harms shareholder wealth is an open question empirically, and might varies among different countries. To empirically disentangle the negative and the positive impacts of dual class structures upon shareholder wealth in the US, I examine long-run IPO returns[40]. If the negative impacts prevail, the non-voting shares issued by the dual class firms should exhibit lower long-run abnormal performance than the single class shares after the initial public offerings, and vice versa.

[40] IPO returns can be classified into initial return and after-market performance. Since the initial return may not reflect investors' attitude upon the presence of dual class structures, I only focus on the impact of dual class structure upon after-market performance.

4.3 Data and Variables

4.3.1 Sample Construction and Characteristics

To examine the after-market performance of the IPOs of restricted voting shares issued by dual class firms, I need to construct a sample of IPO firms with dual class structures. As shown from the third chapter, I obtain 617 firms that have some outstanding of restricted-voting shares between 1994 and 2013. Within this sample, I need to identify a sub-sample that issued initial public offerings between Jan 1994 and Jan 2009[41]. To do so, I merge the 617 dual class firms with a sample of 4315 IPO firms obtained from the SDC New Issues Database[42] and obtain a sub-sample of 193 IPO firms with dual class structures. In order to check the validity and the sufficiency of this sub-sample, I compare it with Jay Ritter's dataset that contains 272 IPO firms with multiple

[41] The sample period ends in 2009 because the IPO firms are required to be tracked for 5 years after the IPO date in order to measure the after-market performance.

[42] To obtain the 4315 IPOs, an initial sample of 5091 US IPOs that occur between Jan 1994 and Jan 2009 is obtained from the SDC New Issues Database. In line with prior research on IPOs (eg. Loughran and Ritter (2002)), the sample excludes American Depositary Receipts (ADR), unit offers, financial institutions (SIC: 6000-6999), government agencies, real-estate investment trusts (REITs), and limited partner interests since their institutional characteristics are fundamentally different from that of a typical IPO firm. To reduce the influence of microcap stocks, the gross proceeds raised at IPO must be greater than $5 million. In addition, the offer price is above $5 per share because the penny stocks are thinly traded and are very likely to become the target of manipulators. The US Securities and Exchange Commission define a penny stock as a security that trades below $5 per share. After eliminating the duplicate offerings, there are 4315 IPOs remaining in the sample.

classes of share outstanding from Jan 1994 to Jan 2009[43]. It shows that there are 42 IPO firms with dual class structures missed from my sample but identified in Jay Ritter's dataset[44]. Therefore, there are overall 235 firms that adopted dual class structures at the stage of IPO. For these 235 dual class firms, there exists shares with superior voting rights and shares with restricted voting rights. In the following analysis, I only focus on the restricted-voting shares that are priced in the stock exchange rather than the superior-voting shares that are typically not traded in the stock exchange[45].

The Panel A of Table 4.1 reports the yearly distribution of the number of IPOs of restricted voting shares[46] between 1994 and 2008 in the third column. The numbers of IPO firms each year is similar to the numbers documented in

[43] Jay Ritter offers the data on his personal page. Since the IPOs of multiple classes of shares involve the IPOs of preferred stocks, many IPOs in Jay Ritter's data are not the IPOs of restricted-voting shares issued by dual class firms.

[44] In particular, 160 out of the 272 firms overlap with the dual class IPO firms in our dataset and the rest of the firms (i.e. 112 firms) are missed out from our dataset. Many of these missed firms are not dual class firms but just the firms with preferred stock outstanding. Therefore, I need to manually check the proxy statements to examine whether the 112 firms really issued a class of restricted-voting shares at the stages of IPO. I found that 42 out of these firms had a class of restricted-voting shares and they are thus included in our sample. The reason for us to miss out these firms is that they do not appear in the dataset of Compustat at where I identify the dual class firms in the previous chapter.

[45] The vast majority of the voting stocks are not quoted in the stock exchange and thus there are no available stock prices (Gompers et al. (2010)).

[46] As I have explained earlier, instead of using "IPO of dual class firm", I use "IPO of restricted voting shares" as I am only interested in the performance of the shares with restricted voting rights.

Arugaslan et al. (2010) and other studies. The percentage in the parenthesis is the proportion of the number of the IPOs to the total number of the IPOs in the corresponding years.

It can be seen that, in terms of number, the proportion of IPO firms issuing restricted-voting shares is very small through the testing period. None of the percentages of them exceeds 10% in a single year. If I focus on the first decade of the 21st century, the number of IPO firms issuing restricted-voting shares even consistently fell to below ten, which means that the IPOs of restricted-voting shares might be a declining phenomenon in the US financial markets.

However, I should evaluate the impact of IPOs of restricted voting shares upon the financial market by not only looking at their numbers, but also at their size. Many IPOs of restricted-voting shares, such as United Parcel Services, Google and Facebook, account for enormous proportions of the total IPO markets in the corresponding years. Panel B of Table 4.1 reports the yearly distribution of the market value (in million dollars) and the proportion of the market value for the two groups of IPO firms in the corresponding years. The majority of the percentages of the market capitalisation of the IPO firms issuing restricted-voting shares exceeded 10% during the testing period. In 1998, this percentage is even higher than that of the IPO firms with issuing one-class shares, even though there were only 20 IPO firms issuing restricted-voting shares by only looking at Panel A. In addition, the percentage

of the market value of the IPO firms issuing restricted-voting shares reached 29.1% and 20.7% in 2004 and in 2007 respectively. Therefore, dual class firms are still able to cause significant impact in the US IPO markets.

Table 4.1: Frequency Distribution by IPO Year

Table 4.1 gives the yearly distribution of IPO firms issuing single-class shares versus the firms issuing restricted-class shares. The sample consists of 4315 IPOs that occur between 1994 and 2008. The table reports the yearly distribution of number of IPOs (Panel A) as well as of market value of IPOs (Panel B).

Panel A: The Number of The IPO Firms

Year	All IPO Firms	IPO Firms Issuing Singel-Class Shares		IPO Firms Issuing Restricted-Voting Shares	
	N	*N*	*(%)*	*N*	*(%)*
1994	446	418	(93.7%)	28	(6.3%)
1995	447	427	(95.5%)	20	(4.5%)
1996	662	618	(93.4%)	44	(6.6%)
1997	470	446	(94.9%)	24	(5.1%)
1998	298	278	(93.3%)	20	(6.7%)
1999	452	419	(92.7%)	33	(7.3%)
2000	364	348	(95.6%)	16	(4.4%)
2001	77	73	(94.8%)	4	(5.2%)
2002	86	78	(90.7%)	8	(9.3%)
2003	68	64	(94.1%)	4	(5.9%)
2004	247	238	(96.4%)	9	(3.6%)
2005	184	173	(94.0%)	11	(6.0%)
2006	199	193	(97.0%)	6	(3.0%)
2007	236	229	(97.0%)	7	(3.0%)
2008	79	78	(98.7%)	1	(1.3%)
Total	4315	4080	(94.6%)	235	(5.4%)

Panel B: The Market Value of The IPO Firms ($ Million)

Year	IPO Firms Issuing Single-Class Shares	%	IPO Firms Issuing Restricted-Voting Shares	%
1994	50983	94.6%	2932	5.4%
1995	80991	94.2%	4991	5.8%
1996	140412	86.0%	22909	14.0%
1997	90781	87.2%	13329	12.8%
1998	46916	41.9%	65101	58.1%
1999	371372	74.9%	124524	25.1%
2000	234665	89.7%	27073	10.3%
2001	46531	62.1%	28410	37.9%
2002	38151	83.4%	7567	16.6%
2003	28049	90.3%	3021	9.7%
2004	99054	70.9%	40576	29.1%
2005	73348	87.9%	10122	12.1%
2006	88735	92.2%	7482	7.8%
2007	83112	79.3%	21671	20.7%
2008	20150	99.4%	117	0.6%

Table 4.2: Percentage of IPOs by Industry

Table 4.2 provides the percentages of the numbers of the IPO firms grouped by two issue types in 49 different industries. The sample consists of 4315 IPOs that occur between 1994 and 2008. I follow Fama and French (1997) and classify the sample IPOs as belonging to one of 49 different industrial groups.

Industry	%Single	% Restricted	Industry	%Single	% Restricted
Agriculture	0.12%	1.27%	Shipbuilding & Railroad	0.27%	0.00%
Food Products	0.79%	0.85%	Defence	0.10%	0.00%
Candy & Soda	0.22%	0.85%	Precious Metals	0.05%	0.00%
Beer & Liquor	0.20%	0.85%	Industrial Metal	0.12%	0.00%
Tobacco Products	0.07%	1.27%	Coal	0.17%	0.00%
Recreation	1.01%	0.85%	Petroleum and Natural Gas	2.45%	1.69%
Entertainment	1.59%	5.08%	Utilities	0.69%	0.00%
Printing and Publishing	0.49%	2.12%	Communication	4.12%	23.73%
Consumer Goods	0.91%	1.69%	Personal Services	1.42%	2.54%
Apparel	0.64%	2.12%	Business Services	11.02%	5.08%
Healthcare	3.02%	0.85%	Computer Hardware	2.65%	1.69%
Medical Equipment	4.86%	0.85%	Computer Software	19.55%	10.59%
The Pharmaceutical	7.73%	1.69%	Electronic Equipment	7.14%	5.93%
Chemicals	1.08%	0.42%	Measuring and Control	1.82%	0.42%
Rubber and Plastic	0.39%	0.42%	Business Supplies	0.59%	0.85%
Textiles	0.22%	0.42%	Shipping Containers	0.20%	0.00%
Construction Materials	0.66%	2.54%	Transportation	2.11%	4.66%
Construction	0.83%	0.85%	Wholesale	3.43%	3.39%
Steel Works Etc	0.76%	0.85%	Retail	4.54%	5.93%
Fabricated Products	0.15%	0.42%	Restaurants & Hotels, Motels	2.48%	2.12%
Machinery	1.72%	2.12%	Insurance	0.37%	0.00%
Electrical Equipment	0.71%	0.42%	Real Estate	0.54%	0.00%
Automobiles and Trucks	0.79%	0.42%	Trading	4.29%	1.27%
Aircraft	0.34%	0.42%	Almost Nothing	0.59%	0.42%
			Total	100%	100%

To examine the industrial distribution of the sample IPOs, I follow Fama and French (1997) and classify the sample IPOs as belonging to one of 49 different industrial groups. Table 4.2 presents the percentage of the numbers of the IPO firms grouped by issue types. Consistent with Chapter 2, it can be seen that the industry with the most IPO firms issuing restricted-voting shares is Communication. More than one fifth of the IPO firms issuing restricted-voting shares belong to this single segment. According to the definition in Fama and French (1997), Communication industry includes the businesses like telecommunication, Radio-TV broadcaster, cable-TV, communication service and media. This is the industry that suggests considerable private benefits for potential rivals. For example, Demsetz and Lehn (1985) argue that the owners of mass media firms may call forth tight control in order to indulge personal preferences, because the power of the influence upon public opinion provides considerable utility to the owners. However, Chemmanur and Jiao (2012) argue that the presence of restricted-voting shares may help the media companies keep their journalistic integrity by avoiding the pursuit of transient profits.

4.3.2 Post-IPO Stock Performance

I use the buy-and-hold abnormal returns (BHAR) to calculate long-run stock returns. Specifically, the buy and hold returns are generated by compounding the monthly returns from the beginning of the 2^{nd} month until the 13^{th} month (1-year window), the 37^{th} month (3-year window) or the 61^{th} month (5-year window). If the firm delists prior to the end of the tested window, the

delisting month is used as the ending point for the compounding period. In addition, if an IPO firm with a dual class structure (or with single class structure) is recapitalised into a single class firm (or a dual class firm) prior to the end of the tested window, the December of the year of the single-class recapitalisation (or dual-class recapitalisation) is used as the ending point for the compounding period [47].

Table. 4.3: The Number of Issues that Experienced Recapitalisations or Delisting

	Restricted-Voting Shares	Single-Class Shares
The number of Issues in The Sample	223	2811
The number of issues experienced recapitalisations within 12 months	0	0
The number of issues experienced recapitalisations within 36 months	2	0
The number of issues experienced recapitalisations within 60 months	16	0
The number of issues experienced recapitalisations or delisting within 12 months	3	46
The number of issues experienced recapitalisations or delisting within 36 months	44	760

[47] Since the identification of dual class status is done by checking the annual report of proxy statements, I cannot identify the specific month in which single-class recapitalisation or dual-class recapitalisation happens. Therefore, I assume that the December of the year in which single-class recapitalisation (dual-class recapitalisation) happens is the ending month for the buy-and-hold period of the dual-class (single-class) firms those experienced recapitalisations.

The number of issues experienced recapitalisations or delisting within 60 months	90	1343

Table 4.3 shows the number of issues with available monthly returns from CRSP database and the number of issues having insufficient monthly returns prior to their one-year, three-year or five-year anniversary due to the incidences of recapitalisation or delisting. It can be seen that there are 223 issues of restricted-voting shares with available data of monthly returns. Out of the 223 issues, 90 of them would be missed out in the calculation of the five-year buy-and-hold returns due to recapitalisations or delisting. For the single-class shares, 1343 out of 2811 issues experienced delisting within 5 years after the initial public offerings.

The buy and hold abnormal returns can be calculated as follows,

$$BHAR(t_1, t_2) = \prod_{t=t_1}^{t_2}[(1 + R_{it})] - \prod_{t=t_1}^{t_2}[(1 + R_{mt})] \qquad (4.1)$$

where R_{it} is the holding-period return of IPO firm i on month t and R_{mt} is the return on the benchmark on the same month t. For IPO firm issuing restricted-voting shares, R_{it} is the holding-period returns of the restricted-voting shares[48]. The month t_1 is the second month after the IPO and t_2 is the earliest of its delisting month, unification/recapitalisation month, 13th month, 37th month or 60th month. BHARs are reported for three benchmarks: 1)

[48] Although some dual-class IPO firms may list both restricted- and unrestricted-voting in the stock exchanges, I manually select the restricted-voting shares by referring to the proxy statements.

CRSP equally-weighted index, 2) an industry-benchmark reflecting the broad industry classification of each IPO, and 3) a style benchmark matching the individual characteristics (size and book-to-market) of the firms in the IPO firms in the sample[49].

I collect the equally-weighted return of the market portfolios (NYSE/AMEX/NASDAQ/ARCA) from CRSP database.[50] The industry portfolio consists of all seasoned firms assigned to one of the 49 industry portfolios[51] constructed from Kenneth French's data library. The 1-year, 3-year and 5-year buy and hold returns of each portfolio is calculated by compounding the monthly returns for the windows of 1-year, 3-year and 5-year.

The style benchmark portfolios are built as the intersections of 5 portfolios based on size (i.e. market value) and 5 portfolios based on the book-to-market ratios $(5 \times 5 = 25)$ in each year. The construction of these portfolios requires

[49] Kothari and Warner (1997) argue that the direction and magnitude of bias in long-horizon studies can be sensitive to the chosen benchmarks. Therefore, it is necessary to apply several different benchmarks.

[50] When a firm in the index is delisted from the CRSP data, the portfolio returns for the next month is an equally-weighted average of the remaining firms in the portfolio. The return of the market index for months t_1 to t_2, $R_{m_{t_1,t_2}}$, thus involves monthly rebalancing, with the proceeds of a delisted firm equally allocated among the surviving members of the index in each subsequent month.

[51] Each NYSE, AMEX, and NASDAQ stock is assigned to an industry portfolio at the end of June of year t based on its four digits SIC code at that time. The returns are computed from July of t to June of t+1.

4 size breakpoints and 4 book-to-market breakpoints in each year[52]. Following the instruction of Kenneth French's website[53] (Fama and French (1993)), the size breakpoints for year t are constructed by using the market equity of NYSE firms[54] at the end of June of year t. The book-to-market breakpoints for year t are constructed by dividing the book equity of NYSE firms at the end of year $t-1$ by the market equity of NYSE firms at the end of year $t-1$.

Table 4.4: Size Breakpoints

Year	Size1	Size2	Size3	Size4
1994	111	247	568	1634
1995	111	260	594	1795
1996	127	306	703	2055
1997	144	362	807	2419
1998	153	391	901	2697
1999	133	359	829	2634
2000	119	321	807	2751
2001	135	375	1007	3171
2002	142	414	1004	2983
2003	158	427	1066	2962
2004	204	587	1362	3770
2005	228	660	1532	4265
2006	240	717	1671	4600
2007	283	784	1974	5395
2008	225	626	1658	4956
2009	163	444	1174	3337

[52] In order to sort 25 (5×5) portfolios, I need 16 (4×4) breakpoints, because sorting 5 portfolios requires 4 breakpoints.

[53] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/tw_5_ports.html

[54] This is to assure sufficient dispersion in size between quintiles.

Table 4.5: Book-To-Market Breakpoints

Year	BTM1	BTM2	BTM3	BTM4
1994	0.298	0.444	0.588	0.787
1995	0.327	0.488	0.648	0.851
1996	0.292	0.440	0.589	0.774
1997	0.275	0.407	0.535	0.712
1998	0.246	0.352	0.474	0.633
1999	0.256	0.417	0.578	0.837
2000	0.264	0.455	0.660	0.966
2001	0.269	0.441	0.629	0.989
2002	0.291	0.451	0.612	0.860
2003	0.337	0.512	0.694	0.961
2004	0.278	0.417	0.556	0.729
2005	0.260	0.393	0.518	0.676
2006	0.251	0.374	0.506	0.671
2007	0.239	0.360	0.490	0.645
2008	0.247	0.379	0.540	0.758
2009	0.384	0.613	0.901	1.314

Table 4.4 and Table 4.5 show the breakpoints constructed based on size ($ million) and book-to-market, respectively, in each year. Given these break points, all NYSE, AMEX, and NASDAQ firms are allocated into the 25 (5×5) portfolios. In 1994, for example, if the market value of a firm is 200 million dollars and its book-to-market ratio is 0.90, it should be allocated into the intersection portfolio with the size portfolio containing the firms with the size greater than 111 million dollars and smaller than 247 million dollars (the

second smallest) and with the book-to-market portfolio containing the firms with the book-to-market ratios greater than 0.787. In order to avoid comparing IPO firms to themselves, I follow the approach of Brav and Gompers (1997) and eliminate dual class IPO and SEO firms from the various portfolios for 5 years after the issuances of equity. For comparison, I also calculate the returns for single class IPOs with its benchmark adjusted similarly. In addition, these benchmark portfolios are reformed each year and, following Lyon et al. (1999), the equally-weighted average returns for these portfolios are calculated by monthly rebalancing the firms in the portfolios.

Specifically, equally-weighted-mean return for each portfolio in each month is compounded until the earliest of its delisting month, 13th month (1-year window), 37th month (3-year window) or 61th month (5-year window). The equally-weighted average returns for the 25 portfolios can be shown as follows,

$$R_m = \prod_{t=t_1}^{t_2} [1 + \frac{\sum_{i=1}^{n_t} R_{it}}{n_t}] - 1 \qquad (4.2)$$

where t_1 is the beginning period; t_2 is the earliest of the firm's delisting month, 13th month, 37th month or 61th month; R_{it} is the holding-period return on security i in month t; and n_t is the number of securities contained in the portfolio m in month t.

To make sure the returns of the IPO of the restricted-voting shares are compared with proper benchmark portfolio, the final step is to identify the cell in the matrix that the IPO of the restricted-voting shares should fall into, based

on two dimensions of size and book-to-market ratio. For the sample IPO firms, the market value of equity is calculated on the date of issuance and the book value is the first available after the offer from SDC New Issues database. Then these values are used to assign the IPO to the appropriate portfolio. Therefore, I can calculate the abnormal returns benchmarked against the portfolios of similar size and book-to-market ratio via equation (4.1).

Table 4.6: The 1-, 3-, and 5-year Buy-and-Hold Abnormal Returns of IPO Firms

Table 4.6 reports long-run buy-and-hold abnormal returns for the IPOs of restricted-voting shares and IPOs of single-class shares. The sample consists of 208 IPOs of restricted voting shares and 2709 IPOs of single-class shares that occur between 1994 and 2008. The benchmark return adjustments for the excess returns are based on 1) style-matched firms according to size and book-to-market ratio, 2) the CRSP equally-weighted index, or 3) the equally-weighted returns of the firms in the same industry defined by Fama-French 49 industry classification. Mean values of post-IPO buy-and-hold and buy-and-hold abnormal returns and the corresponding t-statistics are reported in the tables. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

	Voting Shares (n= 2709)		Restricted-Voting Shares (n= 208)		Difference	
Return	Mean	*t*	Mean	*t*	Mean	*t*
Panel A. 1-Year Horizon (%)						
Compounded Holding-Period Returns	5.29***	3.01	7.14	1.42	-1.85	-0.28
The Returns in Excess of Style Portfolio	-11.19***	-6.15	-12.98***	-2.52	1.79	0.26
The Returns in Excess of CRSP Equally-Weighted Portfolio	-5.17***	-3.87	-5.30	-1.08	0.13	0.02
The Returns in Excess of Industry Portfolio	-4.61***	-2.84	-2.48	-0.49	-2.13	-0.35
Panel B. 3-Year Horizon (%)						
Compounded Holding-Period Returns	10.25***	2.86	22.61	1.44	-12.36	-0.90
The Returns in Excess of Style Portfolio	-36.06***	-9.63	-34.35*	-1.88	-1.71	-0.12
The Returns in Excess of CRSP Equally-Weighted Portfolio	-23.67***	-6.70	-12.73	-0.81	-10.93	-0.81
The Returns in Excess of Industry Portfolio	-18.82***	-5.46	0.76	0.05	-19.58	-1.49
Panel C. 5-Year Horizon (%)						
Compounded Holding-Period Returns	15.32***	3.61	22.41	1.39	-7.09	-0.44
The Returns in Excess of Style Portfolio	-76.10***	-17.57	-78.10***	-3.74	2.00	0.12
The Returns in Excess of CRSP Equally-Weighted Portfolio	-51.81***	-12.21	-50.57***	-3.03	-1.248	-0.08
The Returns in Excess of Industry Portfolio	-47.29***	-11.32	-32.75**	-1.91	-14.54	-0.92

Table 4.6 presents the compounded holding-period returns and the buy-and-hold abnormal returns against alternative benchmarks in the 1-year, 3-year and 5-year measurement windows. In the table, the figures reported under the column "Single-Class Shares" are the market performance measures for the shares issued by the IPO firms with the single-class structure during the sampling period. Under the column of "Restricted-Voting Shares", I report the market performance measures of the restricted-voting shares issued by the IPO firms with dual class structures. The reported *t*-statistics indicate whether the different types of returns are different from zero.

Compounded holding-period returns are the average buy-and-hold returns (without being benchmarked against any portfolios) of any of the two types of the stocks in the three measurement windows.[55] It can be seen that the compounded holding-period returns of the portfolio of the restricted-voting shares issued by the IPO firms with dual-class structures (i.e. 7.14%, 22.61% and 22.41%) are consistently higher than that of the portfolio of the voting shares (i.e. 5.29%, 10.25% and 15.32%) issued by single class IPO firms in the three different measurement windows. However, I cannot reject the null hypothesis that the compounded holding-period returns are equal across the two groups from the difference tests.

---

[55] $R_P = \prod_{t=t_1}^{t_2}[1 + \frac{\sum_{i=1}^{n_t} R_{it}}{n_t}] - 1$, where R_P is the buy-and-hold returns of the portfolio of either voting- or restricted-voting shares; R_{it} is the holding-period return on security i in month t; t_1 is the beginning period; t_2 is the earliest of the firm's delisting month, 13th month, 37th month or 60th month.

Then I examine the excess returns benchmarked against the style portfolio matched by size and book-to-market ratios, the CRSP equally-weighted portfolio and the portfolio of the firms in the same industry according to Fama and French 49 industry classifications. Consistent with a range of literature on IPO performance (Ritter (1991) and Ritter and Welch (2002)), the excess returns of the two types of IPOs are in general significantly negative. Specifically, the restricted-voting shares issued by the IPO firms with dual class structures generate an average excess return of -12.98%, -34.35% and -78.10%, when benchmarked against the portfolio with similar size and book-to-market ratios over 1-year, 3-year and 5-year return measurement period, respectively. The underperformance of the restricted-voting shares narrows when compared to the equally-weighted CRSP index (-5.2%, -22.9% and -51.7%) and the benchmark portfolio matched by industry (-4.5%, -17.4 and -46.4%). Although the restricted-voting shares issued by the dual class firms generate consistently negative excess returns, there is no significant differences between the excess returns generated by them and that generated by the shares issued by the single class firms. Therefore, this analysis suggests that the IPOs of the restricted-voting shares issued by dual class firms performed similarly to the IPO of voting shares issued by the single class firms.

4.3.3 Other Variables

This section illustrates the control variables I use which may affect the buy-and-hold abnormal returns of the IPOs.

Table 4.7: Summary of the Controls

Table 4.7 provides a comparison of the IPOs of single-class and restricted-voting shares on six offer characteristics. The sample consists of 4315 IPO issues that occur during the period 1994-2008. Venture is the percentage of the IPO firms backed by venture capitalist. *Venture* is the percentage of the IPO firms backed by venture capitalist. *EBITDA/Total Assets* is the ratio of firm's capital expenditures divided by total assets. *Offer Value* is the gross proceeds raised at the IPO. *Cash/Total Assets* is the ratio of firm's cash and short-term investments divided by total assets. *Capital Expenditure/Total Assets* is the ratio of firm's capital expenditures divided by total assets. *Initial Return* is equal to the ratio of the difference between the closing price at the end of the first day of trading and the offer price over the offer price. *EBITDA/Total Assets*, *Cash/Total Assets* and *Capital Expenditure/Total Assets* are all measured in the fiscal year of the IPO, as reported on the 1st available data in Compustat after the IPOs. The last column reports the t(Z) test statistics of the difference in mean (medians). Respectively, ***, **, and * denote significant difference from zero at 1,5, and 10 percent.

Variable	All IPO Firms	IPOs of Single-Class Shares	IPOs of Restricted-Voting Shares	Test of Difference t-Test
Initial Return	0.256	0.259	0.215	0.044
Venture	0.402	0.415	0.197	0.217***
EBITDA/Total Assets	-0.004	-0.009	0.057	-0.067***
Offer Value ($ mil)	453.7	383.8	1573.0	-1189.2***
Cash/Total Assets	0.263	0.268	0.186	0.083***
Capital Expenditure/Total Assets	0.073	0.072	0.086	-0.013*

In Table 4.7, *Initial Return* is the percentage change from the offer price to the first-day closing market price. Both the offer price and the first-day closing market price are extracted from the database of SDC New Issues. This variable has been proved to be negatively related to the aftermath performance as a high initial return indicates the presence of market overreaction at the time of IPO

(Ritter (1991)). *Venture* is a dummy variable that proxy for VC backing and extracted from SDC New Issues. The variable *Venture* is included in our regression on the basis of research which suggests that venture capital's participation has the potential to improve governance, attract higher quality underwriters, increase institutional investor interest, and generate great analyst coverage, which in turn affects the long-run performance of IPO firms (Brav and Gompers (1997)). Consistent with the conjecture that venture capitals provide post-issue value-added monitoring services, Jain and Kini (1994) find that venture capitalist-backed IPO firms exhibit relatively superior post-issue operating performance compared to non-venture capital-backed IPO firms empirically. The next control variable I use, *EBITDA/Total Asset*, is to control the profitability of the firm. *EBITDA/Total Assets* is the ratio of firm's earnings before interest taxes depreciation and amortization divided by total assets at the IPO year. This measure proxies for pre-IPO operating performance, which is expected to influence the stock performance positively after IPO (Gao and Jain (2011)). Reason behind this relationship is more straightforward: the fundamental goal of the firm is shareholder wealth maximization. The ability of the firm to achieve this goal is met by the accounting ratio of profitability. *Offer Value* is measured as the log of the gross proceeds raised at the IPO. This variable is extracted from the database of SDC New Issues. Since larger IPOs are often made by more established firms, there should be smaller risks associated with the issues and the market may not overreact to the announcement (Carter et al. (1998)). Therefore, larger offers should be

associated with greater aftermarket performance.[56] Inspired by Gao and Jain (2011), I also introduce Capital *Expenditure/Total Assets* as a control variable to proxy capital expenditures;–*Expenditure/Total Assets* is the ratio of firm's capital expenditures divided by total assets. Stock performance is expected to be more superior when the firm shows higher willingness to invest in higher capital expenditure and to pursue longer term strategies. On the contrary, the decline in post-issue operating performance can be expected if the firms cannot generate pre-IPO levels of positive NPV projects or if managers fail to maintain the required levels of capital expenditures (Kim et al., (2004)).[57]

Table 4.7 gives the comparison of the five variables between the IPOs of single-class and restricted-voting shares. Smart and Zutter (2003) suggest that the IPOs of restricted-voting shares experience less underpricing than the IPOs of single-class shares, because the insiders of dual class IPO firms have no need to retain control via underpricing. Therefore, the initial return of the IPOs of restricted-voting shares should be higher than that of single-class shares. However, Smart and Zutter (2003) do not document statistically significant difference between the initial return of two types of IPOs in their bivariate

[56] Offer size is a frequently used control variable in IPO literature. However, the existing empirical results on its impact upon IPO performance show substantial variations and conflicts. For instance, Mikkelson et al. (1997) suggest that firm size can explain the variation of post-IPO operating performance while Kim et al. (2004) find size does not seem to play an important role.

[57] Previous research, such as Morck et al. (1988) and McConnell and Servaes (1990) include capital expenditure as a control variable for firm performance. Kim et al. (2004) find capital expenditures can explain the declining performance on Thai IPO firms.

comparison. My finding is consistent with this. In addition, only 19.8% of the IPO firms issuing restricted-voting shares are backed by venture capitalists. This is in sharp contrast with the 41.9% of the single class IPO firms. This might be the consequence that a large proportion of IPO firms issuing restricted-voting shares are supported by family business before going to IPO (Amoako-Adu and Smith (2001) and Gompers et al. (2010)). Next, the ratio of EBITDA to total assets of the IPO firms issuing restricted-voting shares is significantly higher than that of the IPO firms issuing only one class of shares. This suggests that the IPO firms issuing restricted-voting shares is more profitable around the announcements of IPO. Moreover, the average offer value of the IPOs of the restricted-voting shares is as more than twice large as that of the IPOs of unrestricted-voting shares. This is consistent with the literature that document a positive impact of dual class structures upon firm size (e.g. Gompers et al. (2010)). Finally, the IPO firms that issue restricted-voting shares make significantly more capital expenditure. This is consistent with Chammanur and Jiao (2012) who predict that dual class structures are more prevalent when long-term investments are very demanding[58].

[58] The capital expenditure can be regarded as a proxy for long-term investment.

4.4 Multivariate Analysis

In order to provide a more robust test of my hypotheses, I conduct a multivariate analysis to test whether the post-IPO performance is related to the absence of voting rights after controlling for other factors that might potentially influence long-run performance. I test this relationship with the following regression model:

$$
\begin{aligned}
IPO\ Performance \\
&= \alpha + \beta_1 Restricted + \beta_2 Venture \\
&+ \beta_3\, EBITDA/Total\ Assets + \beta_4 \mathrm{Ln}(Offer\ Value) \\
&+ \beta_5 Cash/Total\ Assets + \beta_6 Expenditure/Total\ Assets \\
&+ \beta_7 Initial\ Return + \beta_8 \mathrm{Year}_{\mathrm{Dummies}} \\
&+ \beta_9 \mathrm{Industry}_{\mathrm{Dummies}} \qquad (4.3)
\end{aligned}
$$

IPO performance is measured by the one-, three- and five-year BHARs benchmarked against three portfolios. Our primary variable of interest is *Restricted*, which equals 1 for the IPO of restricted-voting shares issued by a dual-class firm. In addition to the control variables discussed above, I also include industry and calendar year dummy variables to control for influential industries and time periods. For those models where the dependent variables are industry-adjusted buy-and-hold abnormal returns, I do not control for the industry effects to avoid repetitively controlling for the industry effects.

Table 4.8: Multivariate Regressions Explaining Post-IPO Performance

Table 4.8 gives the cross-sectional regressions of the buy-and-hold abnormal returns for IPOs under three different holding periods. The dependent variables are 1) style-adjusted buy-and-hold returns benchmarked against 25 portfolios with similar size and book-to-market ratios in the first three columns; 2) market-adjusted buy-and-hold returns benchmarked against CRSP equally-weighted index, and 3) industry-adjusted buy-and-hold returns benchmarked against the portfolio of the firms in the same industry classified by Fama-French 49 industries. *Restricted* equals 1 if the voting rights of the IPO is restricted. *Venture* equals 1 if the IPO is VC-backed. *EBITDA/Total Assets* is the ratio of firm's earnings before interest taxes depreciation and amortization divided by total assets. *Ln(Offer Value)* is the log of the gross proceeds raised at the IPO. *Cash/Total Assets* is the ratio of firm's cash and short-term investments divided by total assets. *Expenditure/Total Assets* is the ratio of firm's capital expenditures divided by total assets. The variables *EBITDA/Total Assets*, *Cash/Total Assets* and *Expenditure/Total Assets* are all measured in the end of the fiscal year of the IPO. The p-values are reported in parentheses. Respectively, ***, **, and * denote significant difference from zero at 1, 5, and 10 percent.

	Style-Adjusted			CRSP-Adjusted			Industry-Adjusted		
Variable	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
Restricted	-0.008	0.151	0.211	-0.011	0.121	0.232	-0.018	0.190	0.201
	(0.91)	(0.36)	(0.27)	(0.88)	(0.45)	(0.20)	(0.81)	(0.23)	(0.27)
Venture	0.002	0.040	0.101	0.017	0.052	0.156	0.046	0.090	0.121
	(0.97)	(0.67)	(0.36)	(0.69)	(0.57)	(0.13)	(0.26)	(0.33)	(0.25)
EBITDA/Total Assets	0.438***	0.328*	0.630***	0.498***	0.409**	0.752***	0.472***	0.320*	0.666***
	(0.00)	(0.08)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.07)	(0.00)
Ln(Offer Value)	0.011	-0.022	-0.041	0.029	0.072*	0.075	0.039**	0.060	0.099**
	(0.57)	(0.60)	(0.40)	(0.11)	(0.07)	(0.10)	(0.03)	(0.14)	(0.03)
Cash/Total Assets	0.131	-0.056	0.171	0.104	-0.077	0.051	0.176**	-0.099	0.205
	(0.11)	(0.76)	(0.43)	(0.20)	(0.67)	(0.80)	(0.03)	(0.58)	(0.32)
Expenditure/Total Assets	0.174	-0.361	-0.773	0.236	-0.234	-0.729	0.373*	-0.198	-0.595
	(0.40)	(0.44)	(0.15)	(0.24)	(0.60)	(0.14)	(0.06)	(0.65)	(0.25)
Initial Return	-0.064*	-0.077	-0.056	-0.046	-0.085	-0.183**	-0.063*	-0.039	-0.126
	(0.07)	(0.33)	(0.54)	(0.19)	(0.27)	(0.03)	(0.07)	(0.61)	(0.15)
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2071	2071	2071	2151	2151	2151	2151	2151	2151
Adj. R^2	0.06	0.02	0.05	0.05	0.03	0.07	0.04	0.00	0.03

As indicated in Table 4.8, the variable *Restricted* is not a key factor associated with long-run performance regardless of the benchmark used for the calculation of excess return and the holding period. For example, although the absence of voting rights reduces the 1-year style-adjusted abnormal returns by 0.8%, this is insignificant at a *P*-value of 0.91. Thus, I cannot infer to a negative relation between the absence of voting rights and stock performance[59]. Therefore, the regression analysis leads us to conclude that the absence of voting rights ends up being neither destructive nor constructive to long-term shareholder wealth at the initial public offerings. The finding is consistent with the theoretical groundings that offer both the positive and the negative channels through which dual class structures may affect shareholder wealth. In addition, the finding is also consistent with the vast majority of the empirical evidence documented from the US. For example, Gompers et al. (2010) and Partch (1988) also find that the presence of dual class structures insignificantly affects shareholder wealth. However, this finding is very different from those documented in Europe in which the dual class structures are found to considerably damage the shareholder wealth. For example, Dittmann and Ulbricht (2008) maintain that the restricted-voting shares of dual class firms are traded at an average 10% discount to the single-class shares. The difference between the wealth effects of dual class structures documented in the US and

[59] If I only look at the models with the excess returns of 3- or 5-year holding period, the coefficients of Restricted are positive, which means that the absence of voting rights enhance the investors' long-term returns.

that documented in Europe implies that certain fundamental market characteristics that may affect the wealth effects of dual class structures may differ between the two financial markets.

In examining the influence of other IPO-related characteristics, I find that the coefficients of the ratio of *EBITDA/Total Assets* are positive and significant throughout the models. This is consistent with my expectation as pre-IPO operational profitability should have positive effect upon the investment performance. In addition, the coefficients of *Initial Return* are consistently negative and occasionally significant throughout the models. This suggests that the short-run price effect hurt long-run IPO performance due to market overreaction, as suggested by Ritter (1991). In the CRSP-adjusted models and the industry-adjusted models, three coefficients of *Ln(Offer Value)* are significantlypositive and imply that larger IPOs are associated with smaller risks and cause less overreaction from the market at the time of IPO (Carter et al. (1998)). Next, the coefficients of *Venture* are consistently positive throughout the models and thus show that the IPOs backed by venture capitalists attract higher-quality underwriters and also increase institutional investors (Brav and Gompers (1997)). However, the results are not statistically significant. Finally, the ratio of *Expenditure/Total Assets* has significantly positive impact on the 1-year industry-adjusted abnormal return. This is consistent with the prediction that the firms with higher willingness to invest in

capital expenditure and to pursue longer term strategies are expected to deliver greater stock performance (Gao and Jain (2011)).

4.5 Robustness Tests

For robustness, in this section I firstly substitute calendar time abnormal return for the holding period return, which is another frequently used approach in the literature of IPO performance. I find similar pattern after the recalculation of IPO performance. Next, I replace the dual class dummy with the wedge between the managerial voting rights and the managerial cash flow rights to further capture the impact of disproportional voting rights raised by the presence of dual class structures upon shareholder wealth. Finally, I also control for the endogeneity issue between stock performance and the adoption of dual class structures by using a methodology of instrumental variable regression. The results remain unchanged as well.

4.5.1 Calendar Time Abnormal Return

The calendar time abnormal return (CTAR) models track the performance of an event portfolio in calendar time relative to either a benchmark. The intercepts in these models have an interpretation analogous to Jensen's alpha in the CAPM framework and are therefore considered as the indicator of risk-adjusted performance. In particular, the event portfolios are formed each

period to include all the companies that have completed the event within the prior *n* periods.

I first start with the three-factor model introduced in Fama and French (1993). The model is

$$R_{pt} - r_{ft} = AR_t + \alpha_1\left(R_{mt} - r_{ft}\right) + \alpha_2 SMB_t + \alpha_3 HML_t + \varepsilon_t \qquad (4.4)$$

where R_{pt}[60] is the equally-weighted average holding-period returns of the portfolio of IPO firms in calendar month t; r_{ft} is the beginning-of-month 1-month T-bill yield in month t; AR_t is the intercept term, alpha, which provides the mean monthly abnormal return on the calendar-time portfolio; R_{mt} is the return of the value-weighted index of NYSE, AMEX, and Nasdaq stocks in month t; SMB_t is the difference, each month, between the returns of a value-weighted portfolio of small and big stocks in month t, purged of IPO firms; HML_t is the difference, each month, between the returns of a value-weighted portfolio of high book-to-market stocks and low book-to-market stocks in month t, purged of IPO firms. Fama and French (1993) argue that the three factors of $R_{mt} - r_{ft}$, SMB_t and HML_t capture

[60] For the 1-year (3- and 5-year) measure, the time-series observations of portfolio returns consist of the equally-weighted average returns of either the voting shares issued by single-class IPO firms or the restricted-voting shares issued by dual-class IPO firms within the window of 2nd to 13th (2nd to 37th and 2nd to 61th) month of the IPO issuances. The portfolios are rebalanced monthly to drop all companies that reach the end of their tested window and add all companies that have just executed a transaction.

systematic patterns in stock returns. The three factors are from Kenneth French's website.

I first use the traditional Fama-French 3-factor model as the base case to estimate the calendar time abnormal returns of the IPOs of single-class shares and the IPOs of restricted-voting shares. Since the sample of IPOs covers the period from Jan 1994 to Dec 2008[61], I have about 180 observations[62] for the calendar-time regressions. Panel A of Table 4.9 reports that for the 1-year portfolio of the restricted-voting shares issued by dual class IPO firms, the monthly abnormal return is -0.256% with an insignificant *t*-statistic, while the monthly abnormal return for the 1-year portfolio of voting shares issued by single-class IPO firms is -0.249% and also insignificant.

To gauge the magnitude of the differential performance during IPO, I follow Das et al. (2006) and Brau et al. (2012), and construct a hedged portfolio that goes long in an equally-weighted portfolio of the restricted-voting shares issued by dual class IPO firms and goes short in the equal-weighted portfolio of the voting shares issued by single class IPO firms. As our result indicates, the estimated monthly abnormal return on the 1-year-window hedged portfolio is -0.019% with an insignificant *t*-statistic. This suggests that the restricted-voting stocks issued by the dual class IPO firms do not have significantly poorer post-IPO returns than those issued by the

[61] The reason for ending in 2008 is that I require enough firms to be in the portfolio of dual class IPO firms in order to make reliable inferences.

[62] This is because there were 180 months span in the time-series regressions.

single class IPO firms in the 1-year window subsequent to the month of IPO issuance. For the portfolios with 3- and 5-years holding horizon, the estimated intercepts in the regressions of the hedged portfolio that buys the dual class portfolio and shorts the single class portfolio are also insignificant. Therefore, the absence of voting

Table 4.9: Calendar-Time Factor Model Regressions

This 4.9 reports 1-, 3- and 5-year calendar-time regressions by three portfolios of stocks of IPO firms. The portfolios of "Restricted-Voting" consist of the restricted-voting shares issued by the dual class IPO firms. The portfolio of "Single-Class" consists of the stocks of the single class IPO firms. The "Hedged Portfolio" goes short in an equally-weighted portfolio of the restricted-voting stocks of the dual class IPO firms and goes long in the equally-weighted portfolio of the stocks of the single class IPO firms. "RM-RF" is the market factor in which the excess return on a value-weighted market index. SMB factor is the return on a zero investment portfolio constructed by shorting a portfolio of large firms and investing in a portfolio of small firms. HML factor is the return on a zero investment portfolio constructed by shorting low book-to-market stocks and buying high book-to-market stocks. PR12 is the return on a zero investment portfolio constructed by shorting a low prior return portfolio and investing in a high prior return portfolio. Respectively, ***, **, and * denote significant difference from zero at 1, 5, and 10 percent.

	1-Year			3-Year			5-Year		
Variable	Restricted-Voting	Single-Class	Hedged Portfolio	Restricted-Voting	Single-Class	Hedged Portfolio	Restricted-Voting	Single-Class	Hedged Portfolio
Panel A. Three-Factor equal-weighted portfolios regressions									
Intercept	-0.256	-0.249	-0.019	-0.249	-0.26	0.004	-0.323	-0.142	-0.189
RM-RF	1.285***	1.185***	0.102	1.341***	1.370***	-0.027	1.304***	1.327***	-0.022
SMB	0.406*	0.947***	-0.544***	0.698***	1.003***	-0.306***	0.732***	1.045***	-0.314***
HML	-0.559**	-0.742***	0.186	-0.182	-0.400***	0.219**	0.035	-0.229**	0.266***
Adj. R^2	0.368	0.805	0.048	0.677	0.824	0.155	0.729	0.842	0.265
No.	178	179	178	178	179	178	178	179	178
Panel B. Four-Factor equal-weighted portfolios regressions									
Intercept	0.041	-0.197	0.224	0.364	0.24	0.104	0.237	0.289	-0.071
RM-RF	1.174***	1.166***	0.012	1.113***	1.182***	-0.064	1.096***	1.166***	-0.066
SMB	0.452**	0.955***	-0.506**	0.793***	1.081***	-0.290***	0.819***	1.112***	-0.296***
HML	-0.640**	-0.756***	0.119	-0.350***	-0.538***	0.192*	-0.119	-0.348***	0.233***
PR12	-0.278*	-0.049	-0.227	-0.573***	-0.478***	-0.094	-0.524***	-0.411***	-0.111**
Adj. R^2	0.376	0.804	0.057	0.771	0.881	0.162	0.827	0.89	0.284
No.	178	179	178	178	179	178	178	179	178

rights are not significantly destructive to the long-term shareholder wealth. It is in line with the evidence in Loughran and Ritter (1995) and Brav and Gompers (1997), I document similar patterns in almost all the factor loadings of $R_m - r_f$, SMB and HML for the returns on all portfolios. Specifically, the market excess return, $R_m - r_f$, and size factor, SMB, are significantly positively related to the portfolio returns; the growth factor, HML, is significantly negatively related to the portfolio returns in most of the portfolios.

Since the breakthrough three factor model, researches in asset pricing field have been rectifying the factors continuously. Among them, the most influential work is Carhart (1997), which extends the Fama-French model by including a fourth (momentum) factor, $PR12$, and reports an increase in explanatory power for the return of mutual funds. In what follows, I then add this factor to check if my results still hold. Carhart's fourth factor is based on ranking firms by their return over the previous year, or price momentum. This notion follows the empirical observation of Jegadeesh and Titman (1993) that firms having high returns in the previous year tend to continue to enjoy high returns in the next year. $PR12$ is formed by taking the return on high momentum stocks minus the return on low momentum stocks[63]

[63] Momentum here is defined as the previous 11-month nominal stock return lagged one month. The factor breakpoints by taking the average return on the top 50% of all firms (winners) minus the return on the bottom 50% of all firms (losers).

$$R_{pt} - r_{ft} = AR_t + \alpha_1\left(R_{mt} - r_{ft}\right) + \alpha_2 SMB_t + \alpha_3 HML_t + \alpha_4 PR12_t + \varepsilon_t \qquad (4.5)$$

The data of $PR12$ is also obtained from Ken French's data library. The Panel B of Table 4.9 presents the four-factor time series regression results. I find that all the factor loadings of $PR12$ are negatively correlated with the equally-weighted average returns of almost all portfolios. This means that the returns on the two portfolios correlate positively with the returns of low past-return stocks. In addition, given the increase in the adjusted R-square, all other factor loadings are consistent with that generated from the 3-factor regressions. However, none of the intercepts is significant and the previous findings are still robust in these four-factor regressions.

4.5.2 The Wedge between Control Rights and Cash Flow Rights

So far, I find insignificant effect of the presence of restricted-voting shares on share value after the initial public offerings. However, the presence of non-voting shares only displays the existence of disproportional voting rights but not the level of disproportional voting rights: it is likely that the choice of the proxy describing the level of disproportional voting rights may alter the regression results. For example, Gompers et al. (2010) also fail to find economically or statistically significant effect of the presence of restricted-voting shares on firm value by using a large sample of seasoned firms. However, once they use the wedge between insider voting rights and

insider cash-flow rights as the key explanatory variable, the negative relation between the wedge and firm value is significant at 10%. Some other researches also apply the wedge between insider voting rights and insider cash-flow rights as the key explanatory variable. For example, McGuire et al. (2014) find that the difference between voting rights and cash flow rights is associated with higher effective tax rates. In addition, Baran and Forst (2015)) find that greater wedge between insider voting rights and insider cash-flow rights is associated with lower board experience and independence (tenure/age).

As a robustness test, I also use the wedge between insider voting rights and insider cash-flow rights as the explanatory variable for the value of restricted-voting share value after IPO. Gompers et al. (2010) make a comprehensive dataset of the insiders' ownership of dual class firms covering the period between 1995 and 2002 available to us[64]. For each class of the dual class shares, they collect information on the voting rights per share, the dividend rights per share, the number of shares outstanding, the number of shares held by officers and directors, that is, insiders as a group. I use this information to calculate the percentages of voting rights and cash flow rights[65]

[64] These data, which I download from Andrew Metrick's website, is the most comprehensive US dual class dataset. The link: http://faculty.som.yale.edu/andrewmetrick/data.html.

[65] For example, the percentage of voting rights is the ratio of the insiders' holding of votes to the total number of votes. In particular, the insiders' holding of votes equals the product of insiders' ownership and the votes per share across different share classes; the total

controlled by insiders in each company. I experiment with two measures to capture the divergence between insider voting rights and cash flow rights. The first measure comes from Lins (2003), and it is equal to the ratio of the percentage of the firm's voting rights controlled by insiders to the percentage of cash flow rights controlled by insiders. It is denoted as *VCRatio*. The second method is used in the study of Claessens et al. (2002) and Gompers et al. (2010), and it is defined as the difference between the insider-controlled percentage of voting rights and cash flow rights. It is denoted as *VCDiff*. Both measures increase with insider-controlled voting rights and decrease with insider cash flow rights. For single-class firms, by definition, *VCRatio* is one and *VCDiff* is zero.

number of votes equals the product of the shares outstanding and the votes per share across different share classes.

Table 4.10: VCRatio Explaining Post-IPO Performance

Table 4.10 gives the cross-sectional regressions of the buy-and-hold abnormal returns for IPOs issued during the period between 1994 and 2002 under three different holding periods. The dependent variables are 1) style-adjusted buy-and-hold returns benchmarked against 25 portfolios with similar size and book-to-market ratios in the first three columns; 2) market-adjusted buy-and-hold returns benchmarked against CRSP equally-weighted index, and 3) industry-adjusted buy-and-hold returns benchmarked against the portfolio of the firms in the same industry classified by Fama-French 49 industries. *VCRatio* is the ratio of the percentage of the firm's voting rights controlled by insiders to the percentage of cash flow rights controlled by insiders. *Venture* equals 1 if the IPO is VC-backed. *Profitability* is the ratio of firm's earnings before interest taxes depreciation and amortization divided by total assets. *Size* is the log of the gross proceeds raised at the IPO. *Cash* is the ratio of firm's cash and short-term investments divided by total assets. *Expenditure* is the ratio of firm's capital expenditures divided by total assets. The variables *Profitability*, *Cash* and *Expenditure* are all measured in the end of the fiscal year of the IPO. The *p*-values are reported in parentheses. Respectively, ***, **, and * denote significant difference from zero at 1, 5, and 10 percent.

	Style-Adjusted			CRSP-Adjusted			Industry-Adjusted		
Variable	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
VCRatio	-0.046	-0.068	-0.065	-0.033	-0.083	-0.088	-0.013	-0.023	-0.071
	(-0.59)	(-0.37)	(-0.32)	(-0.41)	(-0.45)	(-0.44)	(-0.17)	(-0.12)	(-0.35)
Venture	0.040	0.132	0.167	0.050	0.130	0.196*	0.058	0.111	0.055
	(0.87)	(1.22)	(1.39)	(1.07)	(1.20)	(1.69)	(1.27)	(1.05)	(0.46)
Profitability	0.540***	0.495**	0.844***	0.595***	0.664***	1.106***	0.571***	0.460**	0.873***
	(5.99)	(2.34)	(3.60)	(6.54)	(3.15)	(4.86)	(6.46)	(2.23)	(3.78)
Size	-0.000**	-0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000
	(-1.99)	(-0.79)	(0.36)	(-1.53)	(-0.13)	(0.21)	(-0.91)	(0.18)	(1.43)
Cash	0.054	0.077	0.138	0.040	0.005	-0.058	0.089	-0.079	0.076
	(0.58)	(0.35)	(0.57)	(0.43)	(0.03)	(-0.25)	(0.98)	(-0.37)	(0.32)
Expenditure	-0.077	-0.742	-1.154*	0.015	-0.712	-1.000*	0.293	-0.340	-0.516
	(-0.33)	(-1.34)	(-1.88)	(0.06)	(-1.30)	(-1.68)	(1.27)	(-0.63)	(-0.86)
Initial Return	-0.083*	-0.173	-0.359***	-0.021	-0.173	-0.445***	-0.079*	-0.033	-0.270**
	(-1.78)	(-1.57)	(-2.94)	(-0.45)	(-1.58)	(-3.77)	(-1.72)	(-0.31)	(-2.25)
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1601	1601	1601	1626	1626	1626	1626	1626	1626
Adj. R^2 (%)	3.10	0.50	1.40	2.70	0.67	2.80	2.80	0.20	1.04

Table 4.11: VCDiff Explaining Post-IPO Performance

Table 4.11 gives the cross-sectional regressions of the buy-and-hold abnormal returns for IPOs issued during the period between 1994 and 2002 under three different holding periods. The dependent variables are 1) style-adjusted buy-and-hold returns benchmarked against 25 portfolios with similar size and book-to-market ratios in the first three columns; 2) market-adjusted buy-and-hold returns benchmarked against CRSP equally-weighted index, and 3) industry-adjusted buy-and-hold returns benchmarked against the portfolio of the firms in the same industry classified by Fama-French 49 industries. *VCDiff* is the difference between the insider-controlled percentage of voting rights and cash flow rights. *Venture* equals 1 if the IPO is VC-backed. *Profitability* is the ratio of firm's earnings before interest taxes depreciation and amortization divided by total assets. *Size* is the log of the gross proceeds raised at the IPO. *Cash* is the ratio of firm's cash and short-term investments divided by total assets. *Expenditure* is the ratio of firm's capital expenditures divided by total assets. The variables *Profitability*, *Cash* and *Expenditure* are all measured in the end of the fiscal year of the IPO. The *p*-values are reported in parentheses. Respectively, ***, **, and * denote significant difference from zero at 1, 5, and 10 percent.

	Style-Adjusted			CRSP-Adjusted			Industry-Adjusted		
Variable	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
VCDiff	-0.114	-0.002	0.067	-0.024	0.222	0.601	0.133	0.589	0.741
	(-0.30)	(-0.00)	(0.07)	(-0.06)	(0.25)	(0.62)	(0.36)	(0.67)	(0.76)
Venture	0.041	0.135	0.171	0.051	0.136	0.208*	0.060	0.119	0.067
	(0.88)	(1.24)	(1.41)	(1.09)	(1.26)	(1.78)	(1.32)	(1.13)	(0.57)
Profitability	0.541***	0.498**	0.848***	0.596***	0.669***	1.114***	0.573***	0.465**	0.882***
	(6.01)	(2.36)	(3.61)	(6.56)	(3.18)	(4.90)	(6.48)	(2.26)	(3.82)
Size	-0.000*	-0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	0.000
	(-1.96)	(-0.79)	(0.36)	(-1.52)	(-0.15)	(0.15)	(-0.94)	(0.13)	(1.36)
Cash	0.054	0.079	0.141	0.041	0.010	-0.050	0.091	-0.073	0.086
	(0.58)	(0.37)	(0.58)	(0.44)	(0.05)	(-0.21)	(1.00)	(-0.34)	(0.36)
Expenditure	-0.078	-0.741	-1.152*	0.015	-0.709	-0.991*	0.295	-0.332	-0.506
	(-0.33)	(-1.34)	(-1.88)	(0.06)	(-1.29)	(-1.67)	(1.28)	(-0.62)	(-0.84)
Initial Return	-0.084*	-0.173	-0.358***	-0.021	-0.171	-0.441***	-0.078*	-0.030	-0.266**
	(-1.78)	(-1.57)	(-2.93)	(-0.45)	(-1.56)	(-3.73)	(-1.71)	(-0.28)	(-2.22)
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1601	1601	1601	1626	1626	1626	1626	1626	1626
Adj. R^2 (%)	3.10	0.50	1.40	2.70	0.70	2.80	2.80	0.20	1.11

Table 4.10 and Table 4.11 illustrate the relation between the wedge between insider voting rights and insider cash-flow rights and the long-run performance of the non-voting share. Since the dataset of Gompers et al. (2010) only cover the period between 1994 and 2002, I limit the time of the sample IPO issues to the same period. The regression setting of the two tables remain the same as table 4.8 and the coefficients of the control variables remain similar to those in table 4.8. It can be seen that *VCRatio* and *VCDiff* are insignificantly related to the buy-and-hold abnormal returns regardless of the benchmark used for the calculation of excess return and the holding period. Therefore, the main results are robust to the swap of the proxy indicating the level of disproportional voting rights.

4.5.3 Endogeneity

A potential issue associated with my regression equation (4.3) is that the presence of dual class structure might be endogenous. "As pointed out by Demsetz and Lehn (1985), the ownership structure is one of many governance variables that are endogenously determined with firm value and performance and it will always be difficult to uncover the underlying relationships with reduced-form empirical analysis." It is widely shown in chapter 2 that the dual class structure is an endogeneous choice dictated by the insiders' need for greater control over a company. For example, insiders may implement the dual

class structure in order to extract private benefits to themselves (DeAngelo and DeAngelo (1985), Masulis et al. (2009) and Gompers et al. (2010)), or, to protect their investments in firm-specific human capital (DeAngelo and DeAngelo (1985) and Fischel (1987)). Therefore, it is better to perform a Durbin test and a Wu-Hausman test to check whether the presence of restricted-voting shares is endogenously correlated with the buy-and-hold abnormal returns at the stage of IPO.

To do so, I need to first obtain a set of instrumental variables that are significantly correlated with the endogenous governance variable (i.e. the presence of the restricted voting shares), and be uncorrelated with the error term in the second-stage regression upon buy-and-hold abnormal returns. Gompers et al. (2010) introduce 7 potential variables to deal with the endogeneity between the governance structure and firm value. I use 5 of these variables for our IV regressions[66].

The first one is the percentile ranking of the firm age at IPO (*Age*) [67]. The reasoning is that, other things equal, firm age may determine founder status: Private benefits of control are stronger for firms where the founders are still active. Thus, I expect founders to be less active when the firm is older at the

[66] I have limited data for 2 of the 7 instruments: Company name and state law. Company name is a dummy variable with value 1 if the firm's name at IPO contains a person's name; 0 otherwise. Gompers et al. (2010) manually collect the data that covers the period ending at year 2002. State law is the antitakeover index of Gompers et al. (2003). Again, I do not have access to this dataset.

[67] The data is obtained from the personal website of Prof. Ritter.

stage of IPO. In other words, *Age* is negatively correlated with the likelihood of issuing restricted-voting shares. The second instrument is the percentile ranking of the IPO-year profits of the firm relative to other firms with the same IPO year (*ProfitRank*). Private benefits of control are likely to be positively correlated with cash flow and profitability, as free cash flows can be diverted toward pet projects and excess compensation[68]. Next, *%Firms* is the percentage of all Compustat firms located in the same metropolitan or metropolitan statistical area (MSA) as the sample firm in the year before the firm's IPO; *%Sales* is the percentage of sales from firms in the same MSA as the sample firm in the year before the firm's IPO. Gompers et al. (2010) argue that private benefits of control are bigger when insiders have the opportunity to be the major employer in their region[69]. In this case, I would be less likely to observe dual class status the more "large" firms are located in the same region[70]. Finally, *%RegionSales* is the ratio of firm i's sales to the sales of all firms in the same MSA. This measure is a proxy of the firm's share in the local pie, while %Sales measure is a proxy for the size of the local pie.

[68] Since investors recognize this relationship, they are likely to demand control discounts that are positively correlated with profitability, thus increasing the private cost of control. Ultimately the effect of these benefits and costs is an empirical question.

[69] In addition, Gompers et al. (2010) argue that firms with an important local presence may use dual class structures as a promise to local authorities that the firm will resist unsolicited takeovers in order to honor implicit contracts with local governments and other stakeholders.

[70] Under this construction, if firm i is the only Compustat Company in its MSA, then % Firm and %Sales will both be zero.

Table 4.12: The Test for Endogeneity between the Presence of Restricted-Voting Shares and Stock Performance

Table 4.12 reports the test statistics and the corresponding p-value of the Durbin tests and the Wu-Hausman tests. Respectively, ***, **, and * denote significant difference from zero at 1, 5, and 10 percent.

	Style-Adjusted			CRSP-Adjusted			Industry-Adjusted		
	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
Durbin	0.419	0.036	0.084	0.564	0.299	0.111	0.665	0.232	0.010
	(0.51)	(0.85)	(0.77)	(0.45)	(0.58)	(0.73)	(0.41)	(0.62)	(0.92)
Wu-Hausman	0.404	0.034	0.081	0.545	0.289	0.107	0.642	0.225	0.010
	(0.52)	(0.85)	(0.77)	(0.46)	(0.59)	(0.74)	(0.42)	(0.63)	(0.92)

Given these instrumental variables, I then perform the Durbin tests and the Hausman tests. As can be seen from table 4.12, none of the statistics of Durbin tests and of Wu-Hausman tests in the table is significant and thus I cannot reject null hypothesis that the presence of restricted-voting share is exogenous to the buy-and-hold abnormal returns at the stage of IPO. Therefore, the results discovered in this chapter are not suffered from the problem of endogeneity.

Noteworthy, endogeneity problem in this chapter is conceptually distinct from the sample-selection problem that will be discussed in chapter 5 later. Chapter 5 examine the impact of dual class structure on takeover premium. Therefore, the sample in chapter 5 is the dual class firms that have been taken over instead of the full dual class sample. The potential concern of sample selection occurs as those dual class firms that have been acquired might not be representative of all dual class firms. However, in this chapter the sample is all dual class firms and no sample-selection bias appears here. For example, even if the residuals in Equation (4.3) are uncorrelated with the regressors, it could still be the case that dual-class companies that have been takeover are not representative of all dual class companies for the relationship between ownership structure and firm value. In that case, we would have a sample-selection problem without an endogeneity problem. Conversely, dual-class companies that have been acquired could be representative of all dual class companies while ownership structure is endogenous for all

companies. In that case, we would have an endogeneity problem without a sample-selection problem.

4.6 Conclusion

This chapter investigates whether non-voting shares are traded at a discount after the initial public offerings. I find that there are no significant differences between the excess returns generated by the restricted-voting shares issued by the dual class firms and that generated by the voting-shares issued by the single class firms. The result remains robust after switching to the method of Calendar Time Abnormal Return. Moreover, the relation between the absence of voting rights and the excess returns remain insignificant after replacing the dual class dummy with the wedge between the managerial voting rights and the managerial cash follow rights.

My analysis suggests that the IPOs of the restricted-voting shares issued by dual class firms perform similarly to the IPO of voting shares issued by the single class firms. In other words, the absence of voting rights ends up being neither destructive nor constructive to long-term shareholder wealth from the perspective of initial public offerings. This conclusion is consistent with the theoretical grounding on the wealth effects of the absence of voting rights and the empirical evidence documented from the US financial market. Practically, the conclusion implies that there is no solid ground for the policy makers, who are still hovering between prohibiting and allowing the implementation of the dual class structure, to refuse the dual class structure for the reason of value destruction.

However, my evidence is in sharp contrast with the empirical evidence documented from the European financial market in which the restricted-voting shares of a dual class firm are traded at a significant discount to the single-class shares. This sharp contrast implies that some characteristics of the US financial market may systematically affect the wealth effects of dual class structures. I suggest that the most likely characteristic is the legal protection upon the outside shareholders. Good legal protection for outside shareholders neutralizes the negative impact of disproportional voting rights upon shareholder wealth, because it restrains managers from extracting private benefits at the expense of the outside shareholders (La Porta et al. (2000)). For example, if a dual class firm is required to disclose all the relevant information related to the spending, the managers may be less willing to extract the pecuniary private benefits as their misbehaviour might be exposed to the public and incurs significant reputation loss. In addition, if the law enforcement is very strict, there would be a higher likelihood of lawsuit to the managers who intend to treat outsiders unfairly. Given that the US financial market offers the best legal protection in the world (La Porta et al. (1998)), it is reasonable to suspect the systematic impact of legal protection upon the wealth effects of dual class structures.

CHAPTER 5: DUAL CLASS STRUCTURES AND THE LIKELIHOOD OF RECEIVING TAKEOVER PREMIUM: A SURVIVAL ANALYSIS

5.1 Introduction

Since Chapter 4 has shown that dual class structures have insignificant impact upon outside shareholder wealth, the next urgent question should be how dual class structures come up with such insignificant impact – Is it because there are both positive and negative impacts cancelling each other out? Or is it because dual class structures have no impact at all? The answers of these questions may give me more insight on the wealth effects of dual class structures and thus in this chapter I investigate through what channel dual class structures may affect shareholder wealth. The vast majority of the literature related to this research question focuses on the channel of agency conflicts. In particular, Baran and Forst (2015) suggest that dual class structures may

destroy shareholder wealth by increasing the extent of agency conflicts, whereas Jordan et al. (2014), Dey et al. (2015) and McGuire et al. (2014) maintain that dual class structures do not destroy shareholder wealth via the increase agency conflicts, because the insiders of dual class firms may actively bond against the agency conflicts.

However, it is difficult to tell how dual class structures may affect shareholder wealth via the channel of agency conflicts from the existing evidence, because the concept of agency conflicts is not quantifiable and predictable. In addition, despite the fact that dual class structures are one of the most effective anti-takeover devices (DeAngelo and DeAngelo (1985) and Gompers et al. (2010)), none of the existing evidence suggests how dual class structures may affect shareholder wealth via the market for corporate control. On one hand, managers may use anti-takeover devices to deter takeovers and entrench themselves from the market for corporate control. On the other hand, managers may also use anti-takeover devices to enhance management's ability in extracting takeover premiums from the bidders (DeAngelo and Rice (1983)). Therefore the presence of anti-takeover devices may significantly impact the expected takeover premiums received by shareholders.

Given that the expected takeover premiums are closely related to shareholder wealth[71], this chapter intends to first contribute to the literature by examining the impact of dual class structure upon the channel of expected takeover premiums. One advantage for examining this new channel is that it gives more accurate estimate about how dual class structures may affect shareholder wealth as takeover probability and takeover premiums are predictable and quantifiable. In contrast, the existing evidence on the channel of agency conflicts may never reach a consensus as agency conflicts are not quantifiable at all. A second contribution of this chapter, is that, to the best of my knowledge, this is the first work to study the systematic impact of dual class structures upon the market for corporate control. Existing literatures document the systematic evidence on the impact of a range of anti-takeover devices upon takeover frequencies and takeover premiums, but miss out the evidence on the impact of dual class structures that are supposed to be the most powerful antitakeover device. The next section will review the literature in details.

[71] The literature on the impact of takeovers upon shareholder wealth is unanimous: shareholders of target firms invariably receive large premiums (on average 20–40%) relative to the preannouncement share price.

5.2 Literature Review and Hypothesis Construction

As mentioned in the introduction, this chapter is closely related to two sets of literature: the first set is to investigate through what channels dual class structures may affect shareholder wealth; the second set is to investigate how anti-takeover devices may systematically affect takeover frequencies and takeover premiums. This section will review the two sets of literature respectively.

The first set of literature is very new and thus there are not many relevant studies. Almost all these studies focus on the channel of agency conflicts through which dual class structures may affect shareholder wealth. For example, Baran and Forst (2015) maintains that dual class structures may damage shareholder wealth by aggregating the agency conflicts between managers and shareholders. In particular, they find that the presence of dual class structure is negatively associated with board experience, independence, and the tenure/age of directors. This evidence implies that dual class firms are associated with higher agency conflicts as their board are more likely to be captured by insiders who want to diminish the effectiveness of directors' monitoring role.

However, some other studies maintain that the insiders of dual class firms may actively bond against the agency conflicts. For example, Jordan et al.

(2014) find that dual class firms are more likely to pay out than single class firms and the proportional of cash dividends is greater among dual class firms. They interpret the pay-out policy of the dual class firms as a pre-commitment device to mitigate agency conflicts. In a similar vein, Dey et al. (2015) find that dual class structures are associated with higher levels of debt financing to alleviate the conflicts between the managers and the shareholders, because debt reduces managers' incentives and opportunities to extract private benefits from shareholders as borrowed funds must be repaid (Jensen (1986)). In addition, Dey et al. (2015) further show that dual class firms may bond against agency conflicts by using more private debt rather than public debt, given that private lenders are more efficient monitors than public debt lenders. Moreover, McGuire et al. (2014) show that it is harder for the insiders of dual class firms to hide rent extraction as the dual class firms engage in significantly less risky tax avoidance.

From the evidence on the channel of agency conflicts, it is difficult to conclude the impact of dual class structures upon agency conflicts as there are both positive and negative impacts documented by the literature and the concept of agency conflicts is not quantifiable. Therefore, my contribution is to discover a new channel through which dual class structures may affect shareholder wealth: the expected takeover premium received by shareholders. Since the concept of takeover premium is quantifiable and predictable, I can

estimate the accurate impact of dual class structures upon shareholder wealth via this new channel.

For the second set of literatures on how antitakeover mechanisms may affect the market for corporate control, the vast majority of studies focus on the antitakeover provisions of poison pill, staggered board and classified board. For poison pills, Rynaert (1988) find that the firms with poison pills are more likely to deter takeovers but receive higher premiums. The findings of Comment and Schwert (1995) show that, however, there is no significant evidence on the takeover deterrence from poison pills. The empirical design of Comment and Schwert (1995) is apparently more superior to that of Rynaert (1988) in two aspects. First, Comment and Schwert (1995) use a multivariate analysis to control for the impact other than the presence of poison pills upon the likelihood of takeovers. Second, Comment and Schwert (1995) control for the self-selection issue between the adoption of poison pills and the incidence of takeovers. In particular, the self-selection issue may arise as there is tendency for managers to adopt pills when a takeover is unusually likely. Comment and Schwert (1995) predict the adoption of poison pills first and then input a dummy variable that indicates the predicted pill to the estimation of takeover likelihood. Consistent with Comment and Schwert (1995), Sokolyk et al. (2011) also find that the presence of poison pill does not significantly deter takeovers but positively affects takeover premiums. It is worth noting that Sokolyk et al. (2011) examines an updated time span between 1994 and 2004

and uses a Cox proportional hazard model to estimate the takeover likelihood. The updated time span may avoid drawing evidence from 1980s when hostility is too prevalent to represent other decades and the use of Cox proportional hazard incorporates the time-varying covariates into the prediction of takeover likelihood. To sum up, poison pills do not deter takeovers but increase the takeover premiums conditional on the successful takeover.

For staggered board, Sokolyk et al. (2011) find that the presence of staggered board significantly deter takeovers but has no significant impact on takeover premiums. In particular, Sokolyk et al. (2011) employ a Cox proportional hazard model to estimate the impact of staggered board upon takeover likelihood by examining a sample of 14643 firm-year observations between 1994 and 2004. For board classification, Bates et al. (2008) find that targets with a classified board are ultimately acquired at an equivalent rate as targets with a single class of directors. In addition, board classification has an insignificant impact on the cumulative abnormal returns realized by target shareholders.

It can be seen from the existing evidence, the implementation of poison pills significantly enhance the expected takeover premiums received by target shareholders whereas the implementation of staggered board significantly reduce the expected takeover premiums received by target shareholders. The implementation of board classification neither increase nor decrease the expected takeover premiums received by target shareholders. However, none

of the evidence suggests how the presence of dual class structure may systematically affect takeover probability and the takeover premiums conditional on the successful takeovers. This chapter thus intends to fill in the void. The evidence of dual class structures is important as, first, it is the most powerful antitakeover provision among all the antitakeover provisions (Gompers et al. (2010)), and; as shown in the chapter 2, dual class structures have become increasingly more important in the US capital market in recent years.

5.2.1 Hypothesis Development

Dual class structures are a kind of anti-takeover provision as the enhanced managerial voting rights achieved through the dual class structure enable the managers to effectively block some of the takeovers (DeAngelo and DeAngelo (1985) and Gompers et al. (2010)). The literature on antitakeover provisions has documented two hypothesises on the impact of antitakeover provisions upon the expected takeover premiums received by shareholders. Managerial entrenchment hypothesis maintains that managers have strong incentives to deprive private benefits from shareholders and thus deter the takeovers that lead to loss of managerial compensation, prestige and human capital[72]. Once the managers have antitakeover provisions in hands, they would use them to

[72] My characterisation of the managerial entrenchment hypothesis for the context of the expected takeover premium comes from the prior work first summarised in DeAngelo and Rice (1983)

deter takeovers by defeating the takeover attempts or raising the bidders' transaction costs. Therefore, the presence of antitakeover provisions should lead shareholders to receive less takeover premiums that account for a large proportion of share value.

On the other hand, stock holder interest hypothesis maintains that managers may use antitakeover devices to increase shareholder wealth by solving the collective action problems that arise when the bidder does not need to acquire all the shares in the takeover (DeAngelo and DeAngelo (1983)). Once the bidder obtains 50% of the target's shares, he may not need to acquire the rest of the shares if the minority shareholders refuse to tender, because the bidder may dilute the value of the minority stocks by, for example, diverting corporate opportunities or selling products to firms they own at low transfer prices (Grossman and Hart (1980)). Therefore, DeAngelo and DeAngelo (1983) argue that any individual shareholder attempting to hold out and bargain with target management for the economically competitive takeover premium faces the possibility of being undercut by the bidder. Since the shareholders cannot act collectively, they would rush to accept a low premium before the bidder obtains the 50%. In contrast, the presence of antitakeover device makes the bidder less likely to gain the 50% of the target's shares at the first place and thus may solve the collective action problem.

Given the predictions of the two competing theories, I obtain the following two competing hypothesises

Hypothesis 1: *Dual class structures have positive impact upon the likelihood of takeovers but no impact upon the premiums of the successful takeovers*

Hypothesis 2: *Dual class structures have no impact upon the likelihood of takeovers but positive impact upon the premiums of the successful takeovers*

5.3 The Method of Survival Analysis

Restrictive presuppositions and structural limitations of the traditional methods based on a dichotomous classification of failure versus non-failure, such as probit or logit model, are ill-suited to tackle survival analysis. One critical drawback of this type of classifying methods is that the fate of each firm is already known in the stage of estimation and there always persists a number of cases that did not fail. In fact, the information with respect to duration should be incomplete in the survival analysis and all the analyst knows is that durations exceed a given (known) threshold. Standard estimation procedures do not account properly for this problem and produce biased and inconsistent estimates. Next, the traditional methods reflect neither the panel property of financial statements nor the common influence of macroeconomic condition on each company, because a static model cannot incorporate time-varying covariates into the prediction. For example, a takeover target usually suffers from low valuation before the occurrence of takeover and thus the financial data revealing its changing status is important for the prediction of

takeover. However, a static model cannot exploit the firm's time-series data by including annual observations as time-varying covariates. Another deficiency in the traditional static method is the requirement of stability of the failure process over a period of time as there is no recognition of failure timing. For example, some firms may be taken over in the first year of the testing period while some may not be taken over until the last year of the testing period. Although the former group is more likely to exit due to the shorter survival period, a static model (i.e. probit, logit or OLS) cannot adjust for this period at risk and therefore leads to biased predictions.

To address the manner in which firms evolve over time, I use Cox (1972) proportional hazard model with time-varying covariates, estimated by maximising the partial likelihood function, to examine the impact of dual class structures on the firms' takeover probability. Under the Cox model, the firms' takeover probability can be analysed using a model where inference is based on the hazard rate that gives the likelihood of takeover occurring in the next instant, conditional upon it having not occurred up to that point in time. The dependent variable in a Cox model is the time spent by a firm in the healthy group[73] and there are several reasons to prefer Cox model for forecasting takeovers. First, the model handles censored observations in an unbiased manner and thus avoid sampling bias: In modelling the takeover hazard, the data of non-target firms can be regarded as censored data that do not provide

[73] A healthy group is defined as a group of firms without being taken over yet.

any information about latent takeover when the duration of a study is limited. In addition, a firm's risk for takeover changes through time in Cox model. For example, the likelihood contribution for a firm that was taken over in 1980 would incorporate not only the information that the firm was taken over in 1980, but also the fact that it was not taken over in any of the previous years of its existence. Finally, Cox model exploits each firm's time-series data by incorporating time-varying covariates, or explanatory variables that change with time[74].

Let T be a nonnegative random variable denoting the number of years to the takeover. The time T is a continuous random variable that follows a probability density function, *f*(*t*), and a cumulative density function, *F*(*t*). The survivor function, also called the survivorship function, is simply the reverse cumulative distribution function of T:

$$S(t) = \Pr(T \geq t) = 1 - F(t) = \int_{t}^{\infty} f(t)du \qquad (5.1)$$

The survivor function reports the probability that there is no takeover event prior to t. The function is equal to one at $t = 0$ and decreases toward zero as t goes to infinity. The density function can be shown as:

[74] The model may produce more efficient out-of-sample forecasts by utilizing much more data. For example, since firms in the sample have an average of 10 years of financial data, approximately 10 times more data is available to estimate the hazard model than is available to estimate corresponding static models.

$$f(t) = \frac{dF(t)}{dt} = \frac{d}{dt}\{1 - S(t)\} = -S'(t). \quad (5.2)$$

The hazard function, $h(t)$ is the probability that the takeover occurs in a given interval, conditional upon the subject having survived to the beginning of that interval, divided by the width of the interval:

$$h(t) = \lim_{\Delta t \to 0} \frac{\Pr(t \leq T \leq t + \Delta t | T \geq t)}{\Delta t} = \frac{f(t)}{S(t)}. \quad (5.3)$$

In other words, $h(t)$ is the instantaneous risk of a takeover[75]. It can vary from zero (meaning no takeover risk at all) to infinity (meaning the certainty of takeover at that instant). Over time, the hazard rate can increase, decrease, remain constant, or even take on more serpentine shapes.

I use Cox (1972) semiparametric proportional hazard model with time-varying covariates, estimated by maximizing the partial likelihood function, to examine firms' takeover exit. The hazard rate of takeover can be shown as follows,

$$h_j(t) = h_0(t) \exp(\beta_0 + x_j \beta_x) \quad (5.4)$$

where $h_j(t)$ is the takeover hazard rate that the jth firm faces conditional on survival to time t; $x_j(t)$ is the vector of covariates and β_x is the vectors of coefficients corresponding the xth covariate; $h_0(t)$ is the baseline hazard

[75] Three functional forms in equation (5.3) are different expressions with the same information. Most duration models are formulated with a form of hazard function as a matter of convenience.

describing the expected pattern of survival time for all the firms in the sample. This equation means that the probability of takeover that the jth firm faces is multiplicatively proportional to the baseline hazard, $\lambda_0(t)$, that all firm face, modified by covariates $x_j(t)$. In other words, the effect of a unit change in a covariate is to produce a constant proportional change in the hazard rate. The function exp() is chosen simply to avoid the problem of $h_j()$ ever turning negative. The model is a semi-parametric method, in which the baseline hazard is left unspecified as it will be cancelled out from the calculations in the estimation procedure. Therefore, β_0 and β_x can be estimated without imposing any assumptions regarding the baseline hazard via the definition of the proper partial likelihood function[76] (Cleves (2008)). This is convenient for our purposes since I have few priors concerning the form of the underlying baseline hazard. Semi-parametric models amount to combining individual binary-outcome analyses at each failure time and thus the parameters can be estimated by maximizing the following 'partial likelihood function':

$$L(\beta) = \prod_{i=1}^{k} \frac{\exp(x_i'\beta)}{\sum_{j \in R(t)} \exp(x_i'\beta)}. \qquad (5.5)$$

[76] The model only concerns itself with the ordering of failure times, not the distribution of failure times. Therefore, the baseline hazard λ_0 remains unestimated. In standard parametric survival analysis one needs to assume an explicit form for the underlying hazard rate, which imposes restrictions on the range of allowable behaviour.

The maximum likelihood estimator of equation (5.4) is calculated over the separate binary-outcome analyses suggested in Cleves (2008).

5.4 Data

5.4.1 Data Sources and Sample Construction

The data for the empirical analysis in this chapter mainly comes from four independent sources: Compustat fundamentals annual dataset, the merger and acquisition dataset of SDC platinum, CRSP daily stock price and the 617 dual class firms identified in chapter 3.

The empirical context for the first part of analysis, which is the investigation of the impact of dual class structures upon takeover likelihood, is the entire population of the US listed firms. I use the initial sample obtained in the first paragraph of chapter 3 as the sample of all US listed firms. In particular, this sample is constructed by searching the entire database of Compustat Fundamentals Annual Dataset from Jan 1994 to Dec 2013 and excluding the financial and utility firms, the government agencies, the firms with less than one dollar asset value and the firms whose stocks are not traded in NYSE, AMEX or NASDAQ. The sample comprises 12496 firms and 110605 firm years. To identify the incidence of the takeover, I use the database of SDC Platinum that contains the universe takeovers for the US listed targets.

There are overall 4539 takeovers identified in the sample of 12496 firms. Moreover, as shown in chapter 3, there are 617 dual class firms among the 12496 firms.

The empirical context for the second part of analysis, which is the investigation of the impact of dual class structures upon takeover premium conditional on the successful takeover, is the US takeover market. I use the 4539 takeovers obtained in the first part of analysis as the sample of the US takeovers. To calculate the takeover premium for each of the takeover, I collect stock prices for the firms subject to theses takeovers from the daily stock file of CRSP database. The sample size becomes 4326 takeover targets after matching the CRSP database. Among these targets, the targets with dual class structures are also identified by using the 617 dual class firms constructed in chapter 3[77].

5.4.2 Variables

This section explains the key variables and the control variables employed to conduct the two parts of empirical analysis respectively. Since the first part of analysis focuses on the competing risks analysis[78] of the impact of dual

[77] There are 229 takeover targets with dual class structures.

[78] The survival analysis in this chapter will use the competing risks approach that minimizes the estimation bias by reducing the impact of the competing risks. In particular, takeover and other exit forms could be competing hazards, a situation that could occur if firms, for example, filed for bankruptcy to avoid takeover or if takeover served as an alternative crisis resolution mechanism for financial failure. See more details in section 5.5.1.

class structures upon takeover likelihood, the key inputs for the analysis should be the presence of the dual class status, the incidence of the takeover and the incidence of the firm exit other than the takeover. For the takeover status, 4539 takeovers have been identified by using the SDC platinum database in the previous section. In particular, these takeovers do not include share repurchases, privatizations, exchange offers, recapitalizations, and the cases in which the bidder already owns 50% or more of the target's equity. For the firm exit other than the takeover, I need to identify the bankruptcy and the exits other than the takeover and the bankruptcy. The incidence of bankruptcy is identified by using the deletion code of Compustat database. As shown in table 5.1, the deletion code 2 and 3 represent the firm deletions via bankruptcy and liquidation. I define the firms other than the 4539 takeover targets have either one of these two deletion code as the bankrupt firms. I obtain 429 firm exits via the incidence of bankruptcy. The incidence of the firm exits other than takeovers and bankruptcies are identified by using the Compustat deletion code from 4 to 14. I obtain 2904 firm exits via other exits.

Table 5.1: Compustat Delisting Reasons

Code	Reason for Deletion
1	Acquisition or merger
2	Bankruptcy
3	Liquidation
4	Reverse acquisition (1983 forward)
5	No longer fits original format (1978 forward)
6	Leveraged buyout (1982 forward)
7	Other (no longer files with SEC among other possible reasons), but pricing continues
9	Now a private company
10	Other (no longer files with SEC among other reasons)
11	Agency governing settlement of securities' trading inactivated the issue's Local Settlement Code because the issue matured, expired or was called. No successor settlement code was established.
12	Agency governing settlement of securities' trading inactivated the issue's Local Settlement Code. A successor settlement code was established; issue was changed for another, as in a par value change.
13	Price source for the SEDOL was no longer available. Issue now identified under different SEDOL.
14	Fully paid issue was replaced or partly paid issue was replaced by a subsequent instalment. Successor settlement code was established.

To control for the impact other the presence of dual class structures upon takeover likelihood, I include a range of control variables by referring to the ~~P~~previous researcher~~s~~, including Palepu (1986), Comment and Schwert (1995), Ambrose and Megginson (1992), Song and Walkling (1993), and Field and Karpoff (2002). All the variables are calculated by using the database of Compustat. Table 5.2 illustrates the control variables used to predict the

takeover likelihood and their definitions as well as their expected impact upon takeover likelihood.

Table 5.2: The Control Variables for Takeover Likelihood and bankruptcy likelihood

Variable	Description	Expected sign
Size	Log of the market value of assets	-
Profitability	EBITDA divided by total assets	?/-
Tangibility	Property, plant, and equipment divided by book assets	+
Tobin's q	The book value of assets minus the book value of equity plus the market value of equity, all divided by the book value of assets	-
Cash	Cash and short-term investments divided by the book value assets	?/+
Leverage Ratio	Book value of debt divided by book assets	-
Asset Growth	Relative change in total assets	?

I then need to justify the expected impact upon the takeover likelihood. Firms with greater *Size* should face lower takeover risk for two reasons. First, the transaction costs[79] are likely to increase with the target size and thus deter the takeover attempts (Palepu (1986)). Second, larger targets may cause the acquirers extra difficulty in raising the finance for the takeovers (Hasbrouck (1985)).

Profitability is indicative of operational performance. This variable should be negatively related to takeover threat, because, according to the natural

[79] The transaction costs include the cost associated with the absorption of the target into the acquirer's organizational framework as well as the costs associated with fighting a prolonged battle that a target may wage to defend itself.

selection hypothesis proposed by Singh (1975), acquisitions are a mechanism by which managers who fail to achieve the goal of profit maximisation on account of competition in the capital market should be replaced by others. However, Ali et al. (2016) suggests that the firms with greater profitability subject to more takeovers because the profitable targets are more attractive to the acquirer's managers. Given that the managers' interest is not always aligned with shareholders' interests, acquiring profitable targets may improve the acquirer's managerial benefits in both the short run and the long run. In the short run, acquiring the profitable target enables the acquirer's managers to increase the profitability of the combined entity and thus claim better managerial compensation for the enhanced operational performance. In the long run, acquiring more profitable target improves the likelihood of survival of the combined entity and thus increases the acquirer's manager's job security.

Next, Higher *Tangibility* should invite takeovers, because target firms with more tangible assets are easy to be valued and offer greater borrowing capacity for the bidders (Ambrose and Megginson (1992)).

For *Tobin's q*, the rationale behind the relation between the variable and takeover likelihood is complex. First, a firm with a low *Tobin's q* is regarded as a cheap buy and thus may attract bidders (Hasbrouck (1985)). In particular, the firms wishing to expand would compare the costs of *de novo* investment and the costs of acquiring assets already in place. In an extreme, if the target's Tobin's q is smaller than one, any acquirer desiring to expand would prefer

acquisition to the *de novo* investment. Second, Tobin's q may capture the market's expectation of the future firm performance and thus also apply to the natural selection hypothesis introduced above. However, Tobin's q should be distinguished from the variable of operating profitability illustrated above in the sense that the operating profitability only describes the existing performance whereas Tobin's q capture the future expectation. Many researches include both performance measures in their analysis (e.g., Palepu (1986), Powell (1997) and Loderer and Waelchli (2015)).

Cash is the ratio of cash and short-term investments to the book value of assets. This variable may proxy for firm liquidity and impact takeover likelihood in the sense that the firms which have abundant liquid assets provide acquirers with funds for their own project and thus should be attractive targets for takeovers (Palepu (1986)).

However, Rege (1984) also suggests that a firm with lower liquidity is likely to be a takeover target because the buyer, after take-over, can easily achieve synergy by bringing additional funds into the firm to improve its liquidity. Furthermore, the relation between *Leverage* and takeover likelihood is that low leverage firms may well be attractive targets as the leverage ratio of the bidder falls after making the acquisition (Hasbrouck (1985)). The falling leverage ratio may reduce the bidder's bankruptcy risk and also offer the bidder extra debt capacity to finance new projects. Finally, low *Asset Growth* may

also signal poor performance and thus it encourages takeovers (Dickerson et al. (2003)).

It is worth noting that, among these variables, *Size*, *Profitability*, *Tangibility*, *Cash* and *Leverage* are also used to control for the bankruptcy likelihood in order to conduct the competing risks analysis. In particular, the firms with small *Size* are more likely to go bankrupt as they are more vulnerable to cash flow difficulties (Altman et al. (2008)). The vulnerability may arise for two reasons. First, small firms rely heavily on trade finance from suppliers when bank finance is not available to them. Second, small companies frequently extend trade credit to customers as a means of gaining and retaining customers. Next, the firms with lower *Profitability* are more likely to survive from bankruptcy as no retained profit may cause the firms to be financially distressed (e.g., (Shumway 2001)). Moreover, creditors are less likely to force the firms with greater *Tangibility* to go bankrupt as tangible assets are thought to reduce the costs of liquidation to creditors for two reasons (Helwege and Packer (2003) and Wilson et al. (2013)). First, they are easy to use as secured debt and therefore reduce uncertainty as to who owns which assets. Second, they are typically assets that can be readily sold and redeployed by another firm (Scott (1977) and Williamson (1988)). Furthermore, the firms with lower *Cash* should be more likely to go bankrupt, because a lack of liquid assets may lead to financial distress (Altman et al. (2008)). Finally, greater *Leverage* may result

in bankrupt as financially distressed firms would be expected to have larger liabilities relative to shareholders funds (Altman et al. (2008)).

Table 5.3: The Summary and the Pearson Correlation Matrix for the Control Variables of Takeover Likelihood

The sample consists of 109236 firm-years (12448 firms) identified between 1994 and 2013. Takeover targets are US public firms that are identified by SDC, in which only takeovers (i.e. the acquirer intends to acquire all the target shares) are included. Variable definitions are provided in Table 5.2. All variables are winsorised at a 1% level. * indicates statistical significance at the 10% or higher.

Panel A: Summary statistics

Variable	Mean	Median	Standard Deviation
Size ($ million)	1785	123.3	6128
Profitability	-0.050	0.088	0.516
Tangibility	0.251	0.172	0.055
Tobin's q	2.262	1.271	3.866
Cash	0.118	0.059	0.164
Leverage	0.510	0.067	1.489
Asset Growth	0.387	0.064	1.371

Panel B: Pearson correlation matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Takeover	1.000								
(2) Dual class	-0.006*	1.000							
(3) Size	-0.005	0.110*	1.000						
(4) Profitability	0.022*	0.062*	0.278*	1.000					
(5) Tangibility	-0.004	0.018*	0.068*	0.112*	1.000				
(6) Tobin's q	-0.030*	-0.047*	0.081*	-0.404*	-0.104*	1.000			
(7) Cash	0.020*	-0.044*	-0.180*	-0.071*	-0.289*	-0.133*	1.000		
(8) Leverage	0.014*	0.062*	-0.185*	0.049*	0.174*	-0.107*	-0.118*	1.000	
(9) Asset Growth	-0.019*	-0.023*	0.037*	-0.045*	-0.097*	0.216*	0.004	-0.060	1.000

To validate these variables, Panel A of Table 5.3 provides the summary statistics on these control variables. Panel B of Table 5.3 presents Pearson correlations for takeover dummy, dual class dummy and control variables. It can be seen that the dual class dummy is significantly positively correlated with firm size and firm leverage. This is consistent with the findings in Gompers et al. (2010) and Moyer et al. (1992). In addition, consistent with Gompers, Ishii et al. (2010), dual class firms have significantly lower Tobin's q than their single class counterpart. Moreover, consistent with the second hypothesis, the dual class dummy is significantly negatively correlated with the variable that indicates whether or not the firm becomes a takeover target.

Now I move to the key variables and the control variables employed to conduct the second part of analysis that focuses on how dual class structures may affect the takeover premiums of the successful takeovers. The key variable for this part of analysis is the takeover premium. I estimate the takeover premium as the market-model adjusted abnormal returns (MacKinlay (1997) and Kothari and Warner (2007)). In particular, CRSP value-weighted market index is used as a proxy for the market portfolio. The market-model parameters are estimated from 240 to 21 days before the date of announcement. Following Officer (2003), the abnormal returns are cumulated from 10 days before to 10 days after the first news about takeover decision. It is worth noting that, for the vast majority of the takeover targets with dual class structures, I can only estimate the takeover premiums for the restricted-voting class of shares

because the voting class of shares are not publicly traded. In addition, for 29 dual class targets with two listed classes prior to the takeover announcements, I estimate the takeover premiums by using a value-weighted portfolio of two classes of shares.

Table 5.4: Estimates of The Takeover Premium

Table 5.4 presents the stock market returns around the announcement for the sub-sample of single class shares and restricted-voting shares. In Panel A, abnormal returns are reported from 10 days before to 10 days after the first news about takeover decision. Abnormal returns are calculated as the market-model adjusted returns with an estimation window from 240 to 21 days before the date of announcement. The announcement dates are collected from the M&A database of SDC. CRSP value-weighted market index is used as a proxy for the market portfolio. For 202 out of the 213 dual class targets, the takeover premiums are estimated by using only the restricted-voting shares. For 29 out of the 213 dual class targets, the takeover premiums are estimated by using a value-weighted portfolio of two classes of shares. Panel B reports the cumulative abnormal returns with five different windows. The significance of the market-model adjusted returns are tested by means of z-values (MacKinlay, 1997). *** significant at the 1% level; ** significant at the 5% level; * significant at the 1% level.

Panel A: The Abnormal Returns

	Single Class Targets (N=4326)	Dual Class Targets (N=213)
-10	0.001	-0.001
-9	0.002***	-0.004
-8	0.005***	-0.002
-7	0.003***	0.003
-6	0.005***	0.011**
-5	0.005***	0.002
-4	0.006***	0.002
-3	0.006***	0.006
-2	0.010***	0.010***
-1	0.016***	0.010***
0	0.184***	0.176***
+1	0.054***	0.033***
+2	-0.001	-0.001
+3	0.000	0.003
+4	-0.001	-0.003
+5	0.001	-0.001
+6	-0.001***	-0.004
+7	0.000	-0.001
+8	0.002***	-0.003
+9	0.000	-0.002
+10	-0.001	-0.002

Panel B: The Cumulative Abnormal Returns

-10 to +10	0.296***	0.231***
-10 to +1	0.296***	0.247***
-5 to +5	0.280***	0.237***
-5 to +1	0.280***	0.239***
-1 to +1	0.254***	0.219***

To validate the estimated takeover premiums, table 5.4 illustrates the pattern of the estimated abnormal returns around the announcement (Panel A) and the cumulative abnormal returns with different windows (Panel B) for the single class targets and the dual class targets. In panel A, the pattern of the abnormal returns of the single-class targets that consist of the vast majority of the takeover deals is consistent with Schwert (1996) from three folds. First, there are consistently significant and positive abnormal returns from day -9 to day +1 as the informed agents may actively trade and cause a significant price run-up the week before the date of deal announcement. Second, the daily abnormal returns reaches the highest on the date of deal announcement when the public investors are informed about the news. Finally, few of the abnormal returns after day +1 are significant[80] as no more information is conveyed to the market. Therefore, I can validate the estimated abnormal returns used to calculate the takeover premium. In panel B, I report cumulative abnormal returns for five testing windows to check whether the cumulative abnormal returns of the target shares around the announcement are consistent with that suggested by the previous researches. It can be seen that the cumulative abnormal returns that vary from 25 percent to 30 percent for the single class shares are similar to those reported in Officer (2003). Moreover, it can be seen that the cumulative returns reported for the single class shares are consistently

[80] I also examined the average abnormal returns from day -20 to day -11, but found no significant returns.

higher than that reported for the non-voting shares of all dual class firms. That means the presence of dual class structures does not encourage high takeover premiums for the non-voting shareholders.

To control for the determinants of the takeover premium other than the presence of dual class structure, I refer to a number of researches including Huang and Walkling (1987), Bradley et al. (1988), Betton and Eckbo (2000), and Schwert (2000). Table 5.5 illustrates the control variables used to estimate the takeover premium of the successful takeover. The data for the variables come from both the database of SDC Platinum and Compustat.

Table 5.5: The Control Variables for Takeover Premium

Variable	Description	Expected Sign
Hostile	A dummy variable that equals to one if the bid is hostile and zero otherwise	+
Tender	A dummy variable that equals to one if the bid involves a tender offer and zero otherwise	+
Cash	A dummy variable that equals to one if the bid involves a payment of cash (even if mixed with other securities) to target shareholders and zero otherwise	+
Toehold	A dummy variable that equals to one if the fraction of the target's common stock owned by the bidder on the bid announcement date is greater than 5% and zero otherwise	–
Competing	The number of bidders competing for the target	+
SIND	A dummy variable that equals to one if the bidder is from the same industry as the target (where industries are categorised by four-digits SIC codes) and zero otherwise	-
BTA	The total assets of the bidder in million in the year prior to the deal announcement	+
TTA	The total assets of the target in million in the year prior to the deal announcement	-
BM2B	The ratio of market to book value of equity for the bidder from the year prior to the deal announcement	+
TM2B	The ratio of market to book value of equity for the target from the year prior to the deal announcement	-

It can be seen from table 5.5, *HOSTILE* is equal to one if the bid is hostile and zero otherwise. A hostile offer should be associated with a higher takeover premium as the presence of managerial resistance should result in higher premiums (Huang and Walkling (1987)). *TENDER* and *CASH* are dummy variables equal to one if the bid involved a tender offer or a payment of cash

(even if mixed with other securities) to target shareholders and zero otherwise. Target shareholders will earn higher premiums in tender offer as there are no post-acquisition contracts between the bidders and the target managements and thus no extra costs incurred from the target managements (Huang and Walkling (1987)). A cash offer cannot be completed without giving greater returns to target shareholders since a transaction that exchanges ownership for cash is taxable (Bradley and Kim (1985)). *TOEHOLD* is a dummy variable equal to one if the fraction of the target's common stock owned by the bidder on the bid announcement date is greater than 5% and zero otherwise. Since a toehold helps overcome the free-rider problem among target shareholders described by Grossman and Hart (1980), a bidder may be able to pay lower premium to the target shareholders when they have toehold prior to the acquisition (Shleifer and Vishny (1986)). *COMPETING* is the number of bidders competing for the target. Takeover premiums should be higher when multiple bidders are in presence as competition creates an auction that creates a positive stock price effect (Bradley et al. (1988)). *BTA* and *TTA* are the proxies for the size of the bidder and the target respectively. Moeller et al. (2004) suggest that larger bidders are likely to pay more to the target shareholders as the managers of the larger firms are prone to overconfidence. Thus I also control for the bidder size by adding a variable of bidders' total assets. The same rationale may also apply to the target size in which larger targets may attract hubris bidder managers and thus increase the bid premium. However, Alexandridis et al. (2013) argue that bidders may pay lower premiums for larger targets for two reasons. First, the

large transaction associated with the larger deals results in more careful valuation and greater resistance from the board on hefty premiums. Second, the tougher integration process associated with the larger targets makes the expected synergies more uncertain and result in a smaller pool of potential acquirers. Finally, I include the market-to-book ratio of the acquirer and the target (*BM2B* and *TM2B*) as Dong et al. (2006) suggest that the bidder and the target valuation are closely related to bid premiums. In particular, the acquiring firm with greater valuation is likely to pay higher premium in case of equity offer and the target firm with greater valuation may require less premium to secure the takeover deal.

Table 5.6: Descriptive Statistics for Bidder, Target and Deal Characteristics

Table 5.6 contains means and medians, and associated test statistics, for bidder, target, and deal characteristics in a sample of 4326 successful takeovers from 1994 to 2013. HOSTILE is equal to one if the bid is recorded by SDC as ''hostile'' or ''unsolicited'' and zero otherwise. TENDER and CASH are dummy variables equal to one if the bid involved a tender offer or a payment of cash (even if mixed with other securities) to target shareholders and zero otherwise. TOEHOLD is a dummy variable equal to one if the fraction of the target's common stock owned by the bidder on the bid announcement date is greater than 5% and zero otherwise. COMPETING is the number of bidders competing for the target. SIND is equal to one if the bidder is from the same industry as the target (where industries are categorised by four-digits SIC codes) and zero otherwise. BTA (TTA) is the total assets of the bidder (target) in million, respectively, in the year prior to the deal announcement. BM2B (TM2B) is the ratio of market to book value of stockholders equity for the bidder (target) computed using data from COMPUSTAT from the year prior to the deal announcement. The Tests column contains test statistics for the null hypothesis of zero difference in mean (median) between the two sub-samples. Medians are only reported where appropriate. ***, **,* indicate significance at the 1%, 5%, or 10% level, respectively, using a two-tailed test.

	Full Sample Mean [Median]	Single Class Targets Mean [Median]	Dual class Targets Mean [Median]	Tests *t*-test [Wilcoxon Test]
HOSTILE	0.015	0.016	0.004	1.38
TENDER	0.246	0.248	0.203	1.56
CASH	0.461	0.464	0.414	1.49
TOEHOLD	0.098	0.090	0.246	-7.82***
COMPETING	1.057	1.056	1.078	-1.19
SIND	0.315	0.315	0.310	0.14
BTA	11519	11486	12303	-0.27
	[1579]	[1552]	[3294]	[-1.819]*
TTA	720	693	1223	-3.92
	[141]	[132]	[512]	[-9.797]***
BM2B	4.26	4.29	3.60	1.07
	[2.86]	[2.89]	[2.35]	[2.24]***
TM2B	2.55	2.56	2.33	0.83
	[1.79]	[1.80]	[1.64]	[1.73]*

Table 5.6 contains descriptive statistics of the control variables for all the overall sample of the target firms. I also report for the subgroups of the single class targets and the dual class targets, respectively, as well as the Wilcoxon test results of the difference between the statistics of the two subgroups. The statistics of the full sample are very consistent with those reported in Officer (2003). In addition, it appears that some characteristics related to the dual class targets may significantly differ from that related to the single class targets. First, a bidder who aims to acquire a dual class target form should have greater ownership of the target firm prior to the takeover announcement. Only 9% of the bidders in the single class sub-sample possess a toehold greater than 5% of the target's outstanding shares at bid announcement, while a quarter of bidders in the dual class sub-sample hold a stake of more than 5%. Second, consistent with the existing literature, the total asset of a dual class target (TTA) is significantly greater than that of a single class target from the Wilcoxon test result.

Table 5.7: Correlation Coefficients

Table 5.7 contains Pearson correlation coefficients for a sample of 4326 successful takeover bids between 1994 and 2013. 11-Day CAR is the cumulative abnormal returns for the target over the 11 trading-day period cantered on bid announcement. HOSTILE is equal to one if the bid is recorded by SDC as ‘‘hostile’’ or ‘‘unsolicited’’ and zero otherwise. TENDER and CASH are dummy variables equal to one if the bid involved a tender offer or a payment of cash (even if mixed with other securities) to target shareholders and zero otherwise. TOEHOLD is a dummy variable equal to one if the fraction of the target's common stock owned by the bidder on the bid announcement date is greater than 5% and zero otherwise. COMPETING is the number of bidders competing for the target. SIND is equal to one if the bidder is from the same industry as the target (where industries are categorised by four-digits SIC codes) and zero otherwise. ***, **, * indicate that the correlation coefficient is significantly different from zero at the 1%, 5%, or 10% level, respectively, using a two-tailed test.

	11-Day CAR	DUAL	HOSTILE	TENDER	CASH	TOEHOLD	COMPETING	SIND
11-Day CAR	1.000							
DUAL	-0.033*	1.000						
HOSTILE	-0.009	-0.020	1.000					
TENDER	0.181***	-0.023	0.109***	1.000				
CASH	0.159***	-0.022	0.011	0.011	1.000			
TOEHOLD	-0.024	0.115***	0.104***	0.104***	0.142***	1.000		
COMPETING	-0.051***	0.018	0.166***	0.166***	0.051***	0.001	1.000	
SIND	-0.020	-0.002	0.005	0.005	-0.125***	-0.086***	0.026*	1.000

Table 5.7 contains a correlation matrix for the principal variables in my analysis. There is a significantly negative correlation between the 11-day cumulative returns and the presence of dual class structures, as noted in Table 5.7. In addition, premiums are significantly higher in tender offers and cash deals[81] (Betton and Eckbo (2000)), but significantly lower if the bidder owns a substantial stake in the target firm at bid announcement. Bidders appear to acquire significantly greater toeholds and use more tender offers as the mode of acquisitions in hostile deals. Moreover, the positive correlation between the use of cash and bid competition confirms the intuition that the existence of multiple competing suitors for the same target makes it more likely that a bidder offers cash to target shareholders (Fishman (1989)).

[81] It is potentially because of the tax-related consequences of cash bids. See Huang and Walkling (1987).

5.5 Results

Do dual class structures damage shareholder wealth by prevent the firms from receiving lucrative takeover premiums? This section illustrates the results of the empirical analysis. The sub-section 5.5.1 examines the impact of ~~the~~ dual class structures upon takeover likelihood; the sub-section 5.5.2 examines the impact of dual class structures upon the takeover premium of the successful takeover and briefly concludes; the sub-section 5.5.3 offers several robustness checks on the results obtained from 5.5.1 and 5.5.2.

5.5.1 Dual Class Structure and Takeover Likelihood

To examine the relation between dual class structure and takeover likelihood, I will first provide with a bivariate analysis to compare the percentage of the target firms with dual class structures and the percentage of the target firms without dual class structures in order to see whether the dual class firms are more likely to be takeover targets. After that I will report and interpret the results obtained from the Cox Proportional Hazards Model in which takeover exits and two alternative exit states are directly compared in a common framework.

Table 5.8: Difference in The Presence of Dual Class Structures

between Target and Non-Target Firms

The sample consists of 109236 firm-years (12448 firms) identified between 1994 and 2013. Takeover targets are US public firms that are identified by SDC, in which only completed takeovers (i.e. the acquirer owns all the target shares) are included. 4539 firms were delisted from the stock exchanges due to takeover events. The number of observations is given in the parentheses. *Difference* is the difference between the percentage of dual class firms in the sub-group of non-target firms and that in the sub-group of target firms.

	Pct. Of Dual Class Firms			
Year	Targets (N=4539)	Non-Targets (N=104697)	Difference	*t*-statistics for differences
1994	0.0441	0.0571	0.013	0.84
1995	0.0613	0.0583	-0.003	-0.19
1996	0.0569	0.0586	0.002	0.11
1997	0.0597	0.0581	-0.002	-0.13
1998	0.0404	0.0598	0.019*	1.69
1999	0.0488	0.0587	0.010	0.83
2000	0.0491	0.0595	0.010	0.78
2001	0.0647	0.0603	-0.004	-0.25
2002	0.0514	0.0598	0.008	0.51
2003	0.0575	0.0596	0.002	0.11
2004	0.0516	0.0566	0.005	0.31
2005	0.0553	0.0549	0.000	-0.02
2006	0.0286	0.0553	0.027	1.53
2007	0.0441	0.0568	0.013	0.63
2008	0.0462	0.0566	0.010	0.58
2009	0.0342	0.0563	0.022	1.15
2010	0.0435	0.0556	0.012	0.61
2011	0.0435	0.0556	0.012	0.61
2012	0.0682	0.0546	-0.014	-0.67
2013	0.0745	0.0547	-0.020	-0.83
Overall Sample	0.051	0.058	0.007**	1.98

Table 5.8 reports summary statistics on the percentage of the firms with dual class structures by the subgroups of target and non-target firms. It can be seen that firms are grouped by targets or non-targets and grouped by years. For example, for firms covered in 1994, I identify which of them were targets of corporate takeovers in 1994 and document the percentage of firms with dual class structures for target and non-target firms. The same procedure is repeated for firms in other tested years. As shown in the table, targets of corporate takeovers are typically associated with a smaller proportion of dual class firms than non-targets (with the exception of year 1995, 1997, 2001, 2005, 2012 and 2013); however, the differences are generally not statistically significant (with the exception of year 1998, 2007 and of the overall sample).

Next, I use the Cox Proportional Hazard Model to examine the relation between dual class structure and takeover probability. As a preliminary check, I test whether the proportional-hazards assumption holds for the dual class firm versus the single class firm. First, I use a log-log plots of survival function to test the assumption.

Figure 5.1: Log-Log Plots of Survival Function

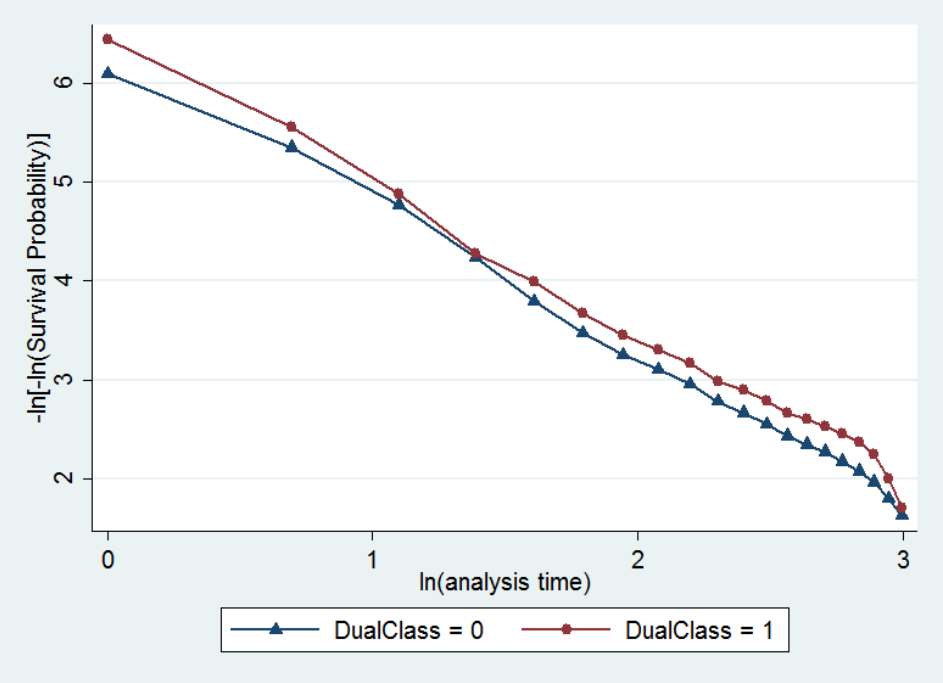
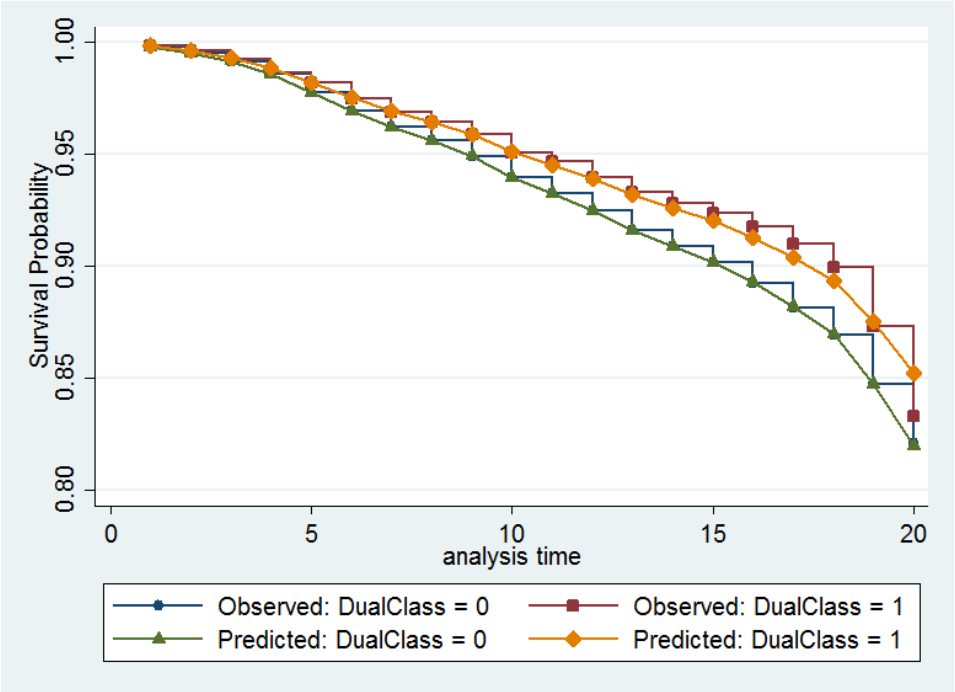


Figure 5.2: Kaplan-Meier and Predicted Survival Plot



As can be seen from figure 5.1, the log-log survival probability of dual class firms is generally parallel to that of single-class firms (at least there is no cross between the two lines), implying that the proportional-hazards assumption for dual class structures has not been violated. This is confirmed in figure 5.2 that shows Kaplan-Meier and predicted survival plot for both dual class and single class firms. It can be seen that the observed survival probabilities and predicted survival probabilities are close together. Apart from the graphical assessment of the proportionality assumption, I also conduct the Schoenfeld residuals test for the relation between dual class dummy and takeover likelihood. In particular, the Chi square of the test is 0.46 and the P-value is 0.50. Therefore, the null hypothesis that the impact of dual class structures upon takeover hazard is proportional cannot be rejected.

I adopt the framework of competing risks analysis as ignoring the competing risks, such as bankruptcy or other exit forms, may produce biased estimates. The risks are competing in the sense that the different states are mutually exclusive outcomes, influenced by their own determinants, competing to restrict the survival of a firm. For example, the likelihood contribution for a firm that was acquired in 2000 would incorporate not only the information that the firm was acquired in 2000 and had survived before 2000, but also the fact that it neither went bankrupt (or was delisted via the reasons other than acquisition or bankruptcy) in 2000 nor in any of the previous years. Therefore, in order to model the acquisition hazards, bankruptcy hazards and other

hazards must also be modelled along with the exit process. Thus it is necessary to adopt a competing risks methodology in which alternative exit states are directly compared in a common framework Kalbfleisch and Prentice (2011) to reassess the correlation between the presence of dual class structures and takeover risk. I distinguish between three competing exit types: acquisition, bankruptcy and the deletions other than acquisition or bankruptcy. The estimates for the deletions other than acquisition or bankruptcy are not reported in the following results.

I follow the method B of Lunn and McNeil (1995) and stratify the data by risk types (i.e. acquisition, bankruptcy and other deletions), since I do not wish to restrict the baseline hazards of the different risk types to share a constant ratio. Specifically, the data is duplicated so that there are three entries per observation, one for each risk type. The duplicated entries show the other risk types and are always censored. If the original observation is rights censored, then three entries exist, one for each failure type, all of which are censored. A Cox regression, stratified by failure type, is then performed with the covariates interacted with each risk type. By this method I can identify how the covariates impact upon each competing risk.

Table 5.9: Dual Class Structures and Competing Exit Risks

Table 5.9 reports the coefficients of the corresponding covariates from running a competing risks model introduced by Lunn and McNeil (1995). The competing risks include delisting via acquisitions, delisting via bankruptcies and delisting via the reasons other than acquisitions and bankruptcies. The estimates are based on 12448 firms with 7871 failures from 1994 to 2013.The robust t-statistics, clustered on firm, are reported in the parentheses. The estimates of the competing risk of the delisting via reasons other than acquisitions and bankruptcies are unreported in the table. Variable definitions are provided in Table 5.2. Significance levels: ***, **, * are 0.01, 0.05, and 0.10 respectively.

	(1)		(2)		(3)	
	Takeover	Bankruptcy	Takeover	Bankruptcy	Takeover	Bankruptcy
Dual	1.384***	0.084***			0.846**	0.627
	(4.89)	(-9.25)			(-2.35)	(-1.51)
Size			0.884***	0.568***	0.886***	0.570***
			(-21.88)	(-22.05)	(-21.44)	(-21.43)
Profitability			1.295***	0.737***	1.296***	0.738***
			(4.70)	(-5.77)	(4.70)	(-5.76)
Tangibility			0.979	0.332***	0.977	0.336***
			(-0.32)	(-4.90)	(-0.35)	(-4.86)
Tobin's q			0.980**	0.780***	0.979**	0.778***
			(-2.39)	(-3.21)	(-2.46)	(-3.22)
Cash			0.826**	0.224***	0.821**	0.224***
			(-2.05)	(-5.22)	(-2.11)	(-5.23)
Leverage			0.984*	0.940***	0.986	0.942***
			(-1.68)	(-2.83)	(-1.51)	(-2.73)
Asset Growth			1.086***	1.137***	1.085***	1.136***
			(6.39)	(3.75)	(6.33)	(3.72)
Wald (χ^2)	179.7		5184.6		5179.4	
N	327192		259658		259658	
No. Firms	12432		10972		10972	
No. Failures	7871		6783		6783	

Table 5.9 shows the results. I report only the hazard ratios for the takeover and the bankruptcy exits and leave the hazard ratios for the exits other than takeover and bankruptcy unreported. The reported hazard ratios indicate the effect of a one-unit change in the covariate on the baseline hazard $\lambda_0(t)$. Therefore, a hazard ratio of 1.0 suggests a one unit change in the covariate increase the likelihood of firm exit by a factor of 1.0 (i.e. no effect); a hazard ratio of less (more) than 1.0 suggests a lower (higher) likelihood of firm exit.

The first regression is bivariate and the hazard ratio associated with dual class dummy is 1.384, which is significantly higher than 1 and means that the presence of dual class structures would increase the probability of takeovers by around 40% (i.e. 1.384-1). Although this is consistent with the first hypothesis, the inference cannot be drawn from the bivariate result and it can be seen that the hazard ratio of the dual class dummy turns to be significantly smaller than one after incorporating the control variables in the third regression. In particular, a hazard ratio of 0.846 means that the presence of dual class structure reduces the baseline takeover probability by around 15% (1-0.846). Therefore, the target shareholders' expected takeover premium is significantly reduced in the presence of dual class structures.

Next, the first column of the second regression illustrates how other firm and market characteristics are responsible for the relation between the presence of dual class structures and takeover hazards. First, the estimates imply that

larger firms are less likely to be taken over and the relation is consistent with that in Palepu (1986) and Ambrose and Megginson (1992). Next, takeover hazard is higher for firms with stronger operating performance (*Profitability*) and this is consistent with Ali et al. (2016) who suggest~~s~~ that acquiring profitable targets is more attractive to acquirer's managers who want to maximise their personal benefits, because, first, acquiring a profitable target improves the profitability of the combined entity and thus enables the acquirer's manager to claim better managerial compensation; second, acquiring a profitable target increase the survival likelihood of the combined entity and thus improves the acquirer's manager's job security. Empirically, the result is consistent with Loderer and Waelchli (2015) and Rege (1984)). After that, the firms with greater tangibility are associated with lower takeover risks but the hazard ratio is not statistically significant different from one. Moreover, the significantly negative correlation between Tobin's q and takeover hazard is consistent with Hasbrouck (1985) who attribute the effect to the impact of the target valuation. Furthermore, larger cash holdings (*Cash*) that proxy for greater firm liquidity are associated with lower takeover hazard. This is consistent with Rege (1984) who suggests illiquid firms may attract buyers who may achieve synergy by injecting addition funds to the target. Empirically, the relation is consistent with Loderer and Waelchli (2015) and Dickerson et al. (2003). Next, the hazard ratio of the target's leverage ratio is significantly smaller than one and indicates that the firms with greater leverage are less likely to be taken over. This is consistent with Hasbrouck (1985) who suggests

that lower target leverage makes the acquirer less difficult to raise debt finance against target firm assets. Finally, firms with lower leverage or higher asset growth are likely to attract more takeovers.

It is worth noting that Dickerson et al. (2003) and Loderer and Waelchli (2015) also apply for the discrete-time hazard model to deal with takeover likelihood. The key reason for the application is that the discrete-hazard model may better cope with the dataset in which the survival times of the firms are observed at only an interval of one year within which the takeover may happen. This section therefore also apply for the discrete-time hazard model to give a robust check on the relation between the presence of dual class structure and takeover likelihood.

To set up the discrete-hazard model, I first recall the hazard function of Cox proportional hazard function (equation 5.4) shown in the section 5.3,

$$\mathrm{h_j(t)} = \mathrm{h_0(t)}\exp\left(\beta_0 + x_j\beta_x\right)$$

The discrete analogue of this function can be estimated through a form of multi-period logit models (Prentice and Gloeckler (1978), Beck et al. (1998) Dickerson et al. (2003)) shown below

$$\mathrm{h_j(t)} = 1 - \exp\left[-\exp\left\{x_j\beta_x + \theta_j(t)\right\}\right] \qquad (5.6)$$

Where

$$\theta_j(t) = ln\left[\int_t^{t+1} \mathrm{h}_0(v)dv\right] \qquad (5.7)$$

Thus $\theta_j(t)$ yields the proportional baseline hazard at each discrete duration t. Moreover, the discrete-time hazard model should also be undertaken as a competing risk model as ignoring the competing risks of bankruptcy and other exits may generate biased results. Therefore, I follow Loderer and Waelchli (2015) and implement a discrete-time competing risk proportional hazard models. In particular, I use the multinomial logit model suggested by Jenkins (2005) to provide estimates that are close approximation to a discrete-time competing risk model assumed that the takeover hazard is constant between the two consecutive years[82].

[82] The on-line course of Professor Stephen P. Jenkins illustrate the Stata sytax for the application of the discrete-time competing risk proportional hazard models (lesson 8). I follow the steps suggested by the course. The website is given in the following link: https://www.iser.essex.ac.uk/resources/survival-analysis-with-stata

Table 5.10: Discrete-Time Hazard Model with Competing Risks

Table 5.10 reports the coefficients of the corresponding covariates from running a discrete-time hazard model in which takeover exits and two alternative exit states are directly compared in a common framework. Log(t) is included as the baseline hazard. The estimates are based on 12448 firms with 7871 failures from 1994 to 2013.The robust t-statistics, clustered on firm, are reported in the parentheses. The estimates of the competing risk of the delisting via reasons other than acquisitions and bankruptcies are unreported in the table. Variable definitions are provided in Table Control. Significance levels: ***, **, * are 0.01, 0.05, and 0.10 respectively.

	(1)		(2)		(3)	
	Takeover	Bankruptcy	Takeover	Bankruptcy	Takeover	Bankruptcy
Dual	-0.185***	-0.601**			-0.223***	-0.327
	(-2.65)	(-2.21)			(-3.02)	(-1.05)
Size			-0.009	-0.324***	-0.006	-0.320***
			(-1.12)	(-11.28)	(-0.77)	(-11.06)
Profitability			0.135**	-0.565***	0.135**	-0.565***
			(2.50)	(-9.06)	(2.50)	(-9.07)
Tangibility			-0.150**	0.009	-0.155**	0.011
			(-1.97)	(0.04)	(-2.04)	(0.05)
Tobin's q			-0.052***	-0.132***	-0.053***	-0.134***
			(-5.59)	(-3.86)	(-5.71)	(-3.89)
Cash			0.423***	0.685***	0.414***	0.681***
			(4.27)	(2.82)	(4.18)	(2.80)
Leverage			0.034***	0.090***	0.036***	0.092***
			(3.27)	(4.43)	(3.49)	(4.51)
Asset Growth			-0.056***	0.038	-0.057***	0.037
			(-3.52)	(1.16)	(-3.56)	(1.14)
Pseudo R^2	0.005		0.063		0.063	
N	109066		86553		86553	
No. Firms	12432		10972		10972	
No. Failures	7871		6783		6783	

For the dual class dummies, the equation (1) of table 5.10 shows that the presence of dual class structure is associated with significantly lower takeover hazard: those dual class firms have hazard rates around 80% as low as those single class firms (exp(-0.185) = 0.831). Equation (3) shows a similar pattern in which dual class firms have statistically significantly lower takeover hazard rates than those single class firms. Therefore, the conclusions drawn from the previous analysis on the relation between the presence of the dual class structure and takeover hazard remains robust after applying for the discrete-time hazard model. For the control variables, there are two noticeable differences between the takeover hazard rates calculated by the discrete-time hazard model and the hazard rates calculate by Cox proportional hazard model. First, in table 5.10, the firms with greater *Cash* are significantly more likely to be taken over by others. This is consistent with the theory in which the firms with abundant liquid assets are more attractive targets for takeovers, because the liquid assets provide acquirers with funds for their own project (Palepu (1986)). Second, the firms with greater *Leverage* seem to be more attractive to the acquirers. This is, however, not consistent with the theory that higher target leverage should deter takeovers as the leverage ratio of the bidder increases after making the acquisition.

5.5.2 Dual Class Structure and the Takeover Premiums of the Successful Takeovers

To examine the relation between dual class structure and the takeover premiums of the successful takeovers, I report the coefficients obtained from the OLS regression of the takeover premiums of the successful takeovers.

Table 5.11: The Determinants of the Market Reaction to Takeover Bids

The regressions are based on a sample of 4326 successful takeover bids between 1994 and 2013. The dependent variables are the cumulative abnormal returns for the target firms over the 11 trading-day period centred on bid announcement. For the 29 dual class firms with both classes of shares listed in the stock exchanges, the CARs are estimated by using the non-voting class of shares only. HOSTILE is equal to one if the bid is recorded by SDC as ''hostile'' or ''unsolicited'' and zero otherwise. TENDER and CASH are dummy variables equal to one if the bid involved a tender offer or a payment of cash (even if mixed with other securities) to target shareholders and zero otherwise. TOEHOLD is a dummy variable equal to one if the fraction of the target's common stock owned by the bidder on the bid announcement date is greater than 5% and zero otherwise. COMPETING is the number of bidders competing for the target. SIND is equal to one if the bidder is from the same industry as the target (where industries are categorised by four-digits SIC codes) and zero otherwise. BTA (TTA) is the total assets of the bidder (target) in million, respectively, in the year prior to the deal announcement. BM2B (TM2B) is the ratio of market to book value of stockholders equity for the bidder (target) computed using data from COMPUSTAT from the year prior to the deal announcement. *t*-Statistics are reported in parentheses. ***, **, * indicate that the parameter estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)
DUAL	-0.028	-0.013	-0.011
	(-1.03)	(-0.64)	-0.25
HOSTILE		-0.016	0.031
		(-0.39)	(0.57)
TENDER		0.106***	0.103***
		(8.34)	(5.58)
CASH		0.070***	0.036**
		(6.08)	(2.05)
TOEHOLD		-0.048***	-0.102***
		(-2.62)	(-3.44)
COMPETING		-0.073***	-0.046
		(-3.76)	(-1.57)
SIND		0.000	0.002
		(0.02)	(0.13)
Ln(TTA)	-0.015***	-0.014***	-0.031***
	(-4.29)	(-4.12)	(-5.57)
TM2B		-0.004***	-0.005***
		(-3.00)	(-2.60)
Ln(BTA)			0.023***
			(5.21)
BM2B			-0.001
			(-0.37)
Number of Observations	3470	3435	1585
Adjusted R^2	0.006	0.057	0.081

Table 5.11 contains the results of regressions of target cumulative abnormal returns on bidder, target, and deal characteristics. For the 29 dual class firms with both classes of shares listed in the stock exchanges, the cumulative abnormal returns are estimated by using the non-voting class of shares only. The only explanatory variables in the first regression in Table 5.11 are a dummy variable indicating whether the target uses dual class structures and the logs of the total asset of the target. The coefficient on the dual class dummy variable is insignificantly related to the cumulative abnormal returns in an 11-day window. In addition, the firm size of the target also appears to affect the bid premium, with large target paying lower premiums. This result is consistent with Moeller et al. (2004) who suggest that takeover bids with smaller target incur a greater takeover premium. The second and the last regression show that, when I include the control variables to explain the cumulative abnormal returns, the coefficient of dual class dummy maintains insignificant. Therefore, the presence of dual class structures is unrelated to the takeover premium in a successful takeover event. That means the presence of dual class structures does not enhance the wealth of the non-voting shareholders via an increase in the takeover premiums conditional on a successful takeover event. Combined with the previous result on the impact of dual class structures upon takeover likelihood, it can be inferred that dual class structures may reduce shareholder wealth by reducing the expected takeover premiums received by the shareholders.

Many of the control variables in the second and the third regression are significant in explaining premiums. In particular, premiums are higher if the bidder uses a tender offer and cash payment during the acquisition process, but significantly lower when the bidder has a toehold of more than 5% of the target's outstanding equity. In addition, the target firms with higher market-to-book ratios is likely to receive lower takeover premium as high market-to-book ratios indicate high valuation of the targets' stocks (Dong et al. (2006)). Moreover, the bidder with greater total assets is more likely to offer a higher premium as the managers of larger firms are prone to overconfidence and likely to pay more (Alexandridis et al. (2013)). However, it is somehow unexpected that more bidders involved in the bidding results in significantly lower takeover premium in the second regression. This is likely because that the competition involved in the same bidding reduce the surprise associated with the bid. Consistent with this result, Officer (2003) finds a significant negative relation between a dummy indicating whether the target received any bids from different bidders in the preceding six-month period and takeover premium.

5.5.3 Sample Selection Bias and the Heckman Regression

In the test of the impact of dual class structures upon takeover likelihood, I use all firms in the sample with dual class dummy serving as an independent variable. Therefore, there should not be any sample-selection bias in the test. In the test of the impact of dual class structure upon the takeover premium of

successful takeovers, however, I use only the firms subject to successful takeovers in the sample. Thus the ability to draw inference for all firms may be clouded by the possibility that takeover targets are different from non-takeover targets, with these differences inducing different relationships between dual class structure and the premium of successful takeovers.

Therefore, to identify the marginal effect of the presence of dual class structures on premium, I need to control for sample selection. Following Li and Prabhala (2005), I adopt Heckman (1977) two-stage procedure to account for sample selection by augmenting the regression of takeover premium with the nonselection hazard computed using Probit estimates of the takeover probability. In particular, I estimate the following system of equations:

$$Premium_k = X_{Dual,k}\beta_2 + X_{PremiumControl,k}\delta_2 + \sigma\lambda_k + v_k \qquad (5.7)$$

where Premium is observed if

$$X_{Dual,k}\beta_1 + X_{ProbabilityControl,k}\delta_1 + u_k > 0 \qquad (5.8)$$

where λ_k in equation 5.7 is a term known as Heckman's Lambda, constructed using the estimates from the equation 5.8 and helping to correct the standard errors according to the procedure described by Greene (2008). The significance of the estimate of its coefficient (i.e. σ) provides a test of the null of no sample selection bias.

I now turn to Heckman selection models where I first estimate the likelihood that the firm will be taken over. The results are reported in the first column of Table 5.12. It can be seen that the use of dual class shares is negatively significant (at the 1% level) in the selection equation, i.e. the presence of dual class structures reduces the likelihood that the firm will be taken over. In the second columns of Table 5.12, I report estimated premium equations where I control for the selection bias from the takeover likelihood. In the regression, I also include the firm size and the Tobin's q as the explanatory variables[83]. Our basic conclusions are left unchanged. The coefficient on the dummy variable of the presence of dual class structure is still insignificantly negative in the model. Therefore, I conclude that my results do not stem from a potential sample selection problem. In fact, the coefficient of Heckman's Lambda is insignificant for the premium regression, which means that sample selection was empirically irrelevant.

[83] We exclude the variables about the bidders' and the offers' characteristics, which are not known prior to the offer announcement, employed in the previous regression.

Table 5.12: Takeover Premium Estimates with Heckman Sample Selection Model

Table 5.12 presents the estimates for the relation between the presence of dual class structures and the acquisition premium using Heckman's sample-selection correction technique (Heckman, 1979). The first column presents a probit regression of the likelihood of a firm being taken over. The base sample includes 82393 firm-year observations between 1994 and 2013. The definitions of the variables are reported in Table 5.2 and Table 5.12. Coefficients are reported with hereroscedasticity-robust z-statistics in parentheses. The third column presents an OLS regression of the takeover premiums conditional on the 1461 successful takeover bids between 1994 and 2013. The takeover premium is estimated as the cumulative market-model adjusted return from day −10 to +10. The statistical significance of Heckman's Lambda can also be seen as a test for the null hypothesis that sample selection is irrelevant in the sample. T-statistics for the second stage are calculated using the procedure described in Greene (1997). The symbols ***, **, and * denote significance levels of 1%, 5%, and 10% respectively, for the two-tailed hypothesis test that the coefficient equal zero.

	Selection	z-statistics	Premium	t-statistics
Dual	-0.216***	(-4.07)	0.019	(0.44)
HOSTILE			0.037	(0.66)
TENDER			0.097***	(5.01)
CASH			0.036*	(1.92)
TOEHOLD			-0.092***	(-2.82)
COMPETING			-0.041	(-1.30)
SIND			0.008	(0.50)
Ln(TTA)			-0.034***	(-5.62)
TM2B			-0.006***	(-2.79)
Ln(BTA)			0.023***	(4.91)
BM2B			-0.000	(-0.11)
Size	0.031***	(5.66)		
Tobin's q	-0.001	(-0.15)		
Profitability	0.177***	(4.27)		
Tangibility	-0.125**	(-2.43)		
Cash	0.330***	(5.00)		
Leverage	-0.059***	(-4.86)		
Asset Growth	-0.018*	(-1.91)		
Heckman's Lambda	-0.05	(-0.05)		
Wald (χ^2)			120.03	
N	82393		1461	

5.6 Additional Analysis

So far, I have shown that the presence of dual class structures is associated with lower takeover hazard. However, the existing evidence suggests that other antitakeover provisions, such as poison pill and staggered board, are not associated with significantly lower takeover likelihood (Comment and Schwert (1995), Bates et al. (2008) and Sokolyk et al. (2011)). Therefore, this section intends to explain why the negative relation between the dual class structure and the takeover likelihood is particularly strong.

I argue that the presence of the wedge between the managerial voting rights and the managerial cash flow rights in dual class firms may negatively affect takeover likelihood and thus lead to stronger negative relation between the dual class structure and the takeover likelihood. This is because the presence of the wedge facilitates the extraction of private benefits that render the managers greater incentives to deter takeovers. In particular, given a level of managerial cash flow rights, the presence of wedge increases the managerial voting rights and thus facilitates the extraction of private benefits in two ways. This is because the greater managerial voting rights lead to a weaker board that refrains the extraction of private benefits[84].

To verify the argument, I will test the relation between the level of wedge between the insiders' control rights and the cash flow rights and the takeover

[84] More details can be referred to the second and the third paragraph of section 4.2.

likelihood by looking at the sample of dual class firms and expect to see that the dual class firms with greater wedge are more resistant to takeovers. To calculate the wedge, I use the dataset of Gompers et al. (2010) who collect information on the insiders' ownership of the dual class firms covering the period between 1995 and 2002[85]. I experiment with two measures to capture the divergence between insider voting rights and cash flow rights: the ratio of the percentage of the firm's voting rights controlled by insiders to the percentage of cash flow rights controlled by insiders (*VCRatio*), and; the difference between the insider-controlled percentage of voting rights and cash flow rights (*VCDiff*)[86].

[85] These data, which I download from Andrew Metrick's website (http://faculty.som.yale.edu/andrewmetrick/data.html), is the most comprehensive US dual class dataset I can find.

[86] See section 4.5.2 for more details

Table 5.13: Disproportional Voting Rights and the Probability of Takeover

The sample consists of 586 Dual Class firms identified between Jan 1995 and Dec 2002. This table compares the percentage of the delisted dual class firms with high and low wedges in insiders' voting rights and cash flow rights due to takeovers. High and low wedges are defined based on the median of *VCRatio* and of *VCDiff* of each year. *VCRatio* is the ratio of the percentage of the firm's voting rights controlled by insiders to the percentage of cash flow rights controlled by insiders. *VCDiff* is the difference between the insider-controlled percentage of voting rights and cash flow rights. *Difference* is the difference between the percentage of the target firms with dual class structures with high wedges in insiders' voting rights and cash flow rights and that with low wedges in the corresponding years. Significance levels: ***, **, * are 0.01, 0.05, and 0.10 respectively.

	1995	1996	1997	1998	1999	2000	2001	2002	Total
Takeover High *VCRatio*	0.043	0.029	0.043	0.037	0.038	0.011	0.035	0.025	0.032
Takeover Low *VCRatio*	0.025	0.050	0.081	0.065	0.067	0.063	0.047	0.029	0.055
Difference	0.018	-0.021	-0.038	-0.028	-0.030	-0.052***	-0.012	-0.005	-0.023***
t-Statistics	0.90	-1.01	-1.52	-1.27	-1.29	-2.64	-0.56	-0.26	-3.08
Takeover High *VCDiff*	0.037	0.025	0.061	0.036	0.037	0.016	0.034	0.025	0.033
Takeover Low *VCDiff*	0.031	0.053	0.065	0.066	0.068	0.058	0.048	0.029	0.054
Difference	0.005	-0.029	-0.004	-0.030	-0.031	-0.042**	-0.014	-0.005	-0.020***
t-Statistics	0.26	-1.37	-0.14	-1.34	-1.34	-2.16	-0.67	-0.24	-2.72

If an increasing wedge between the voting rights and cash flow rights controlled by insiders deters the potential takeover, the difference in takeover frequency should be most apparent between high- and low-wedge firms. In this case it is expected that high-wedge firms are acquired less often than low-wedge firms. Table 5.13 presents takeover frequencies of high- and low-wedge firms. I divide dual class firms into two groups based on the median value of *VCRatio* and of *VCDiff* in each year. The table shows that the pattern of the takeover frequencies is consistent with the hypothesis: apart from 1995, persistently smaller proportions of high-wedge dual class firms in terms of *VCRatio* and *VCDiff* were taken over in the eight-year period between 1995 and 2002. However, the difference is only significant in the year 2000. Overall, the difference between the percentage of the target firms with high wedge and the percentage of the target firms with low wedge is significantly negative across the whole testing period.

Table 5.14: Disproportional Voting Rights and The Probability of Takeover: The Cox Model

Table 5.14 presents the coefficients of the corresponding covariates from running a basic Cox proportional hazards model with takeover exits constituting a single failure event. The estimates are based on 585 dual-class firms with 128 failures from 1994 to 2002. The robust t-statistics, clustered on firm, are reported in the parentheses. *VCRatio* is the ratio of the percentage of the firm's voting rights controlled by insiders to the percentage of cash flow rights controlled by insiders. *VCDiff* is the difference between the insider-controlled percentage of voting rights and cash flow rights. Other variable definitions are provided in Table 5.2. Significance levels: ***, **, * are 0.01, 0.05, and 0.10 respectively.

Variable	(1)	(2)	(3)	(4)	(5)
VCRatio	0.812*			0.817*	
	(-1.96)			(-1.70)	
VCDiff		0.378**			0.398*
		(-1.98)			(-1.72)
Size			0.873**	0.881**	0.878**
			(-2.17)	(-1.96)	(-2.00)
Profitability			0.856	0.853	0.877
			(-0.44)	(-0.47)	(-0.38)
Tangibility			0.596	0.522	0.547
			(-0.99)	(-1.23)	(-1.14)
Tobin's q			1.128*	1.129**	1.129**
			(1.95)	(2.05)	(2.00)
Cash			0.274	0.277	0.275
			(-1.25)	(-1.27)	(-1.30)
Leverage			1.051	1.054	1.052
			(1.17)	(1.23)	(1.21)
Asset Growth			0.893	0.896	0.883
			(-0.63)	(-0.64)	(-0.71)
Wald (χ^2)	3.84	3.91	17.63	20.69	21.70
N	2921	2922	2657	2657	2657
No. Firms	585	585	560	560	560
No. Failures	128	128	119	119	119

Again, I need to use Cox (1972) proportional hazard model with time-varying covariates to conduct the multivariate analysis upon the correlation between the wedge between the voting rights and cash flow rights controlled by insiders and the takeover hazard. Table 5.14 estimates takeover hazard by using a basic Cox proportional hazards model with takeover exits constituting a single failure event. The first and the second regression are univariate, controlling for year and industry fixed effects. The hazard ratio associated with *VCRatio* is 0.812, which is significantly lower than 1 and means that a one percent increase in *VCRatio* is associated would lower the probability of takeovers by around 20%. This is consistent with our hypothesis in which a bigger wedge between the voting rights and cash flow rights controlled by insiders should deter takeovers. I obtain similar results by using *VCDiff* in the second regression. The last two regressions show that, when I include the control variables in the univariate regression specifications of the first two columns, *VCRatio* and *VCDiff* maintain their negative and significant hazard ratios. However, they are only significant at ten percent level. It is worth noting that the hazard ratios of *Size* in the last three models are smaller than one and consistent with that reported in table 5.10. However, the hazard ratios of *Tobin's q* in the last three models become larger than one and mean that the firms with greater *Tobin's q* are more likely to be taken over. For a sample of all firms, this relation may not be plausible as a firm with low *Tobin's q* is regarded as cheap buys and thus may attract bidders. However, for a sample of only dual class firms, this relation is plausible, because the targets

regarded as cheap buys may have stronger incentive to deter takeovers and be able to veto the takeover attempts, even though the bidders have more interests in these targets.

Table 5.15: Disproportional Voting Rights and Competing Exit Risk

Table 5.15 reports the coefficients of the corresponding covariates from running a competing risks model introduced by Lunn and McNeil (1995). The competing risks include delisting via acquisitions, delisting via bankruptcies and delisting via the reasons other than acquisitions and bankruptcies. The estimates are based on 561 firms with 163 failures from 1994 to 2002.The robust t-statistics, clustered on firm, are reported in the parentheses. The estimates of the competing risk of the delisting via reasons other than acquisitions and bankruptcies are unreported in the table. Variable definitions are provided in Table 5.2. Significance levels: ***, **, * are 0.01, 0.05, and 0.10 respectively.

	(1)		(2)	
	Takeover	Bankruptcy	Takeover	Bankruptcy
VCRatio	0.770**	0.485		
	(-2.01)	(-1.27)		
VCDiff			0.303**	0.162
			(-2.19)	(-0.76)
Size	0.899*	0.619***	0.894*	0.561***
	(-1.84)	(-3.26)	(-1.95)	(-3.42)
Profitability	0.787	5.378	0.821	6.074
	(-0.57)	(0.73)	(-0.47)	(0.77)
Tangibility	0.482	0.002*	0.509	0.001**
	(-1.38)	(-1.77)	(-1.25)	(-2.13)
Tobin's q	1.168**	0.376	1.171**	0.328
	(2.17)	(-0.65)	(2.08)	(-0.71)
Cash	0.411	1.561	0.429	1.175
	(-0.72)	(0.23)	(-0.70)	(0.09)
Leverage	1.039	1.141	1.037	1.12
	(0.97)	(1.08)	(0.93)	(0.86)
Asset Growth	0.893	0.019**	0.873	0.023**
	(-0.59)	(-2.09)	(-0.68)	(-1.99)
Wald (χ^2)	142.7		155.4	
N	7981		7981	
No. Firms	561		561	
No. Failures	163		163	

After conducting a single-destination model, I reassess the correlation between the two proxies of wedge between the voting rights and cash flow rights controlled by insiders and the likelihood of takeover by adopting a competing risks methodology. I still distinguish between three competing exit types (acquisition, bankruptcy and the deletions other than acquisition or bankruptcy). It is worth noting that there were only 5 incidences of bankruptcies for the US dual class firms during the testing period, thus the standard error associated with each covariates is very big and thus the estimates of the bankruptcy are not reliable. Table 5.15 shows the results. As one can see, switching from single destination models to competing risk regressions does not change the relation between two proxies of wedge and takeover hazard.

5.6 Conclusion and Further Notes

In this chapter, I find that the presence of dual class structures lower the probability of takeovers by around 20%. This result remains almost unchanged after adopting a competing risks methodology in which bankruptcy exits and other exits are directly compared in a common framework. In addition, I find that dual class structures do not encourage high takeover premium in a successful takeover event. Overall, dual class structures damage shareholder wealth by reducing the takeover premiums received by shareholders.

The findings are consistent with the managerial entrenchment hypothesis which suggests that antitakeover amendments primarily act to increase incumbent management's job protection and decision-making prerogatives at the expense of current stockholders. They contribute to the two streams of

literature: First, they extend the empirical literature on the impact of antitakeover amendments on the market for corporate control (Pound (1987), Ryngaert (1988), Comment and Schwert (1995), Bebchuck (2002) and Sokolyk (2011)) to the analysis of dual class structures; Second, the findings extend the literature on that through which dual class structures may affect shareholder wealth (Baran and Forst (2015), Dey et al. (2015), Jordan et al. (2014) and McGuire et al. (2014)) to the analysis of the market for corporate control and shed light on the wealth effects of dual class structures.

The findings of this chapter imply that there must be positive channels of dual class structures upon shareholder wealth, given that chapter 4 shows that, overall, dual class structures do not destroy shareholder wealth. However, limited empirical literature can be referred to this issue. It could be a direction for the future research.

CHAPTER 6: CONCLUSION

This thesis investigates how dual class structures may affect outside shareholder wealth in the US by looking at two research questions: the first empirical chapter investigates what are the overall wealth effects of dual class structures; the second empirical chapter investigates through what channel dual class structures may affect shareholder wealth. In the first empirical chapter, I find that the restricted-voting shares of the dual class firms are not traded with a discount after the initial public offerings and thus dual class structures do not have significant impact upon shareholder wealth in the US; In the second empirical chapter, I find that the presence of dual class structures lower the probability of takeovers by around 20% but does not increase the takeover premium of the successful takeover. Therefore, dual class structures damage shareholder wealth by reducing the expected takeover premiums received by the shareholders. The findings contribute to three streams of literature. First, it incorporates the event study of the initial public offering into the literature on the wealth effects of dual class structures; second, it extends the literature on the channels through which dual class structures may affect shareholder wealth to the analysis of the expected takeover premiums; last, it incorporates the dual class structures into the literature on the impact of antitakeover provisions upon expected takeover premiums.

The findings from the two empirical chapters are consistent with two primary theoretical predictions. First, dual class structures may have both positive and negative impact upon shareholder wealth and it is difficult to tell

whether the positive or the negative impact prevails. Second, manages are prone to use antitakeover provisions to entrench themselves by deterring takeovers that lead to loss of managerial compensation, prestige and human capital. The findings can also relate to a range of the existing empirical evidence. In the first empirical chapter, the finding is consistent with the empirical evidence documented from the US financial markets in which dual class structures do not damage overall shareholder wealth (Partch (1987), Dimitrov and Jain (2008) and Gompers et al. (2010)), but inconsistent with the empirical evidence documented from the European financial market in which dual class structures persistently damage shareholder wealth (Ang and Megginson (1989), Dittman and Ulbricht (2008) and Bigelli et al. (2011)). The inconsistency of the evidence may arise from the different degree of legal protection upon outside shareholders between the US and the European financial markets. In particular, the US financial market has the greatest legal protection upon outside shareholders in the world (La Porta et al. (1998)) and thus neutralizes the negative impact of disproportional voting rights upon shareholder wealth, because it restrains managers from extracting private benefits at the expense of the outside shareholders (La Porta et al. (2000)). In the second empirical chapter, the finding is consistent with the empirical evidence documented from the antitakeover provisions of the staggered board that deter takeovers but do not increase the takeover premiums of the successful takeovers (Sokolyk et al. (2011)), but inconsistent with the empirical evidence documented from the antitakeover provisions of the poison pill (Comment and Schwert (1995) and Sokolyk et al. (2011)) that do not deter takeovers but increase the takeover premiums of the successful takeovers. To

explain why a firm with the dual class structure is more likely to deter takeovers than a firm with the poison pill, I argue that the presence of the wedge between the managerial voting rights and the managerial cash flow rights in dual class firms may lead to stronger negative impact upon the takeover likelihood[87].

Academically, the findings have two primary implications. First, there must be positive channels through which dual class structures may significantly enhance shareholder wealth in the US, because the overall wealth effect of dual class structures is insignificant from the existing evidence whereas I discover a negative channel through which dual class structure may significantly damage shareholder wealth. At the moment, the positive channels discovered by Jordan et al. (2014) and Dey et al. (2015) do not seem to balance out the loss of the expected takeover premiums discovered in this thesis. In addition, many positive impacts suggested by the theoretical literature have not been documented empirically[88].

I suggest that this should be one of the future research directions. Second, more importantly, the finding implies that the market with different degree of legal protection upon outside shareholder wealth may lead to different wealth effects of dual class structures. Therefore, the research on the wealth effects of dual class structures should always be augmented with the consideration of legal environment. At the moment, there is limited evidence on the

[87] More details can be referred to section 6.6.

[88] Section 4.2 has shown five positive impact of dual class structures upon shareholder wealth in the theoretical literature.

cross-country evidence of the wealth effects of dual class structures and I suggest that this should be one of the future directions.

Practically, the finding implies that, for policy makers, the decisions to allow for or abolish dual class structures may depend on the country's legal environment. At the moment, Singapore and Hong Kong stock exchanges are considering to allow for dual class structures in order to attract the lucrative IPO firms those do not list their shares with one share one vote. Since these two financial markets also have strong legal environments, they should not make decision by referring to the empirical evidence documented from East Asian or European countries in which the legal environments are much weaker than that of Singapore and Hong Kong.

The key limitation of the thesis may appear in chapter 6 in which the method of Cox Proportional Hazard Model may not be able to deal with the self-selection issue between the adoption of dual class structures and the incidence of takeovers. However, this limitation is unavoidable in the sense that Cox Proportional Hazard Model may offer other solid benefits that have been shown in section 5.3. To mitigate the problem, it might be better to use another method that controls for the self-selection issue to test the impact of dual class structures upon takeover likelihood again. For example, it might follow Comment and Schwert (1995) that predict the adoption of an antitakeover provision first and then input a dummy variable that indicates the predicted antitakeover provision to the estimation of takeover likelihood.

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APPENDICES

Appendix A: SEC Rule 19C-4

"(a) The rules of each exchange shall provide as follows: No rule, stated policy, practice, or interpretation of this exchange shall permit the listing, or the continuance of the listing, of any common stock or other equity security of a domestic issuer, if the issuer of such security issues any class of security, or takes other corporate action, with the effect of nullifying, restricting or disparately reducing the per share voting rights of holders of an outstanding class or classes of common stock of such issuer registered pursuant to section 12 of the Act.

(b) The rules of each association shall provide as follows: No rule, stated policy, practice, or interpretation of this association shall permit the authorization for quotation and/or transaction reporting through an automated inter- dealer quotation system (''authorization''), or the continuance of authorization, of any common stock or other equity security of a domestic issuer, if the issuer of such security issues any class of security, or takes other corporate action, with the effect of nullifying, restricting, or disparately reducing the per share voting rights of holders of an outstanding class or classes of common stock of such issuer registered pursuant to section 12 of the Act.

(c) For the purposes of paragraphs (a) and (b) of this section, the following shall be presumed to have the effect of nullifying, restricting, or disparately

reducing the per share voting rights of an outstanding class or classes of common stock:

(1) Corporate action to impose any restriction on the voting power of shares of the common stock of the issuer held by a beneficial or record holder based on the number of shares held by such beneficial or record holder;

(2) Corporate action to impose any restriction on the voting power of shares of the common stock of the issuer held by a beneficial or record holder based on the length of time such shares have been held by such beneficial or record holder;

(3) Any issuance of securities through an exchange offer by the issuer for shares of an outstanding class of the common stock of the issuer, in which the securities issued have voting rights greater than or less than the per share voting rights of any outstanding class of the common stock of the issuer.

(4) Any issuance of securities pursuant to a stock dividend, or any other type of distribution of stock, in which the securities issued have voting rights greater than the per share voting rights of any outstanding class of the common stock of the issuer.

(d) For the purpose of paragraphs (a) and (b) of this section, the following, standing alone, shall be presumed not to have the effect of nullifying, restricting, or disparately reducing the per share voting rights of holders of an outstanding class or classes of common stock:

(1) The issuance of securities pursuant to an initial registered public offering;

(2) The issuance of any class of securities, through a registered public offering, with voting rights not greater than the per share voting rights of any outstanding class of the common stock of the issuer;

(3) The issuance of any class of securities to effect a bona fide merger or acquisition, with voting rights not greater than the per share voting rights of any outstanding class of the common stock of the issuer.

(4) Corporate action taken pursuant to state law requiring a state's domestic corporation to condition the voting rights of a beneficial or record holder of a specified threshold percentage of the corporation's voting stock on the approval of the corporation's independent shareholders.

(e) Definitions. The following terms shall have the following meanings for purposes of this section, and the rules of each exchange and association shall include such definitions for the purposes of the prohibition in paragraphs (a) and (b), respectively, of this section:

(1) The term Act shall mean the Securities Exchange Act of 1934, as amended.

(2) The term common stock shall include any security of an issuer designated as common stock and any security of an issuer, however designated, which, by statute or by its terms, is a common stock (e.g., a security which entitles the holders thereof to vote generally on matters submitted to the issuer's security holders for a vote).

(3) The term equity security shall include any equity security defined as such pursuant to Rule 3a11–1 under the Act (17 CFR 240.3a11–1).

(4) The term domestic issuer shall mean an issuer that is not a ''foreign private issuer'' as defined in Rule 3b–4 under the Act (17 CFR 240.3b–4).

(5) The term security shall include any security defined as such pursuant to section 3(a)(10) of the Act, but shall exclude any class of security having a preference or priority over the issuer's common stock as to dividends, interest payments, redemption or payments in liquidation, if the voting rights of such securities only become effective as a result of specified events, not relating to an acquisition of the common stock of the issuer, which reasonably can be expected to jeopardize the issuer's financial ability to meet its payment obligations to the holders of that class of securities.

(6) The term exchange shall mean a national securities exchange, registered as such with the Securities and Exchange Commission pursuant to section 6 of the Act (15 U.S.C. 78f), which makes transaction reports available pursuant to §242.601 of this chapter; and

(7) The term association shall mean a national securities association registered as such with the Securities and Exchange Commission pursuant to section 15A of the Act.

(f) An exchange or association may adopt a rule, stated policy, practice, or interpretation, subject to the procedures specified by section 19(b) of the Act, specifying what types of securities issuances and other corporate actions are covered by, or excluded from, the prohibition in paragraphs (a) and (b) of this section, respectively, if such rule, stated policy, practice, or interpretation is consistent with the protection of investors and the public interest, and otherwise in furtherance of the purposes of the Act and this section.

[53 FR 26394, July 12, 1988, as amended at 70 FR 37618, June 29, 2005]"

Appendix B: Section 313.00 of the NYSE Listed Company Manual

(A) Voting Rights Policy

On May 5, 1994, the Exchange's Board of Directors voted to modify the Exchange's Voting Rights Policy, which had been based on former SEC Rule 19c-4. The Policy is more flexible than Rule 19c-4. Accordingly, the Exchange will continue to permit corporate actions or issuances by listed companies that would have been permitted under Rule 19c-4, as well as other actions or issuances that are not inconsistent with the new Policy. In evaluating such other actions or issuances, the Exchange will consider, among other things, the economics of such actions or issuances and the voting rights being granted. The Exchange's interpretations under the Policy will be flexible, recognizing that both the capital markets and the circumstances and needs of listed companies change over time. The text of the Exchange's Voting Rights Policy is as follows:

Voting rights of existing shareholders of publicly traded common stock registered under Section 12 of the Exchange Act cannot be disparately reduced or restricted through any corporate action or issuance. Examples of such corporate action or issuance include, but are not limited to, the adoption of time phased voting plans, the adoption of capped voting rights plans, the issuance of super voting stock, or the issuance of stock with voting rights less than the per share voting rights of the existing common stock through an exchange offer.

(B) Non-Voting Common Stock

The Exchange's voting rights policy permits the listing of the voting common stock of a company which also has outstanding a non-voting common stock as well as the listing of non-voting common stock. However, certain safeguards must be provided to holders of a listed non-voting common stock:

(1) Any class of non-voting common stock that is listed on the Exchange must meet all original listing standards.

The rights of the holders of the non-voting common stock should, except for voting rights, be substantially the same as those of the holders of the company's voting common stock.

(2) Although the holders of shares of listed non-voting common stock are not entitled to vote generally on matters submitted for shareholder action, holders of any listed non-voting common stock must receive all communications, including proxy material, sent generally to the holders of the voting securities of the listed company."

Appendix C: The Coefficients of the Year and the Industry Dummies in Chapter 4

The Year Dummies Explaining Post-IPO Performance

This Table reports the coefficients of the year dummies and the corresponding p-values in table 4.8. All the settings in this table are the same as those in table 4.8. Respectively, ***, **, and * denote significant difference from zero at 1, 5, and 10 percent.

	Style-Adjusted			CRSP-Adjusted			Industry-Adjusted		
Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
1995	-0.084	-0.166	-0.301	-0.081	-0.252	0.006	-0.054	-0.139	-0.419*
	(0.31)	(0.37)	(0.16)	(0.33)	(0.17)	(0.97)	(0.50)	(0.44)	(0.05)
1996	-0.189**	-0.052	0.027	-0.256***	-0.110	0.066	-0.135*	-0.128	0.278
	(0.01)	(0.76)	(0.88)	(0.00)	(0.50)	(0.72)	(0.06)	(0.43)	(0.14)
1997	-0.052	-0.238	-0.074	-0.101	-0.130	0.046	-0.057	-0.421**	0.253
	(0.51)	(0.18)	(0.72)	(0.20)	(0.46)	(0.81)	(0.47)	(0.01)	(0.21)
1998	0.180*	0.069	-0.195	0.156*	0.151	0.120	0.058	0.207	0.339
	(0.05)	(0.74)	(0.43)	(0.09)	(0.47)	(0.61)	(0.53)	(0.32)	(0.16)
1999	-0.450***	-0.721***	-1.167***	-0.311***	-0.825***	-1.228***	-0.433***	-0.435***	-0.639***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
2000	-0.478***	-0.693***	-0.859***	-0.588***	-0.961***	-1.168***	-0.281***	-0.536***	-0.351***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
2001	-0.268*	-0.012	-0.293	-0.329**	-0.226	-0.402	-0.247	-0.257	-0.329

	(0.07)	(0.97)	(0.46)	(0.03)	(0.50)	(0.28)	(0.10)	(0.44)	(0.395)
2002	-0.213	-0.053	-0.404	-0.258*	-0.176	-0.385	-0.213	-0.215	-0.412
	(0.11)	(0.86)	(0.24)	(0.05)	(0.55)	(0.24)	(0.10)	(0.46)	(0.22)
2003	-0.108	-0.296	0.306	-0.202	-0.438	0.150	-0.192	-0.436	0.326
	(0.44)	(0.35)	(0.40)	(0.14)	(0.15)	(0.66)	(0.15)	(0.14)	(0.34)
2004	-0.070	-0.051	0.412	-0.155	-0.163	0.217	-0.086	-0.090	0.379
	(0.48)	(0.82)	(0.11)	(0.11)	(0.46)	(0.38)	(0.38)	(0.67)	(0.13)
2005	-0.077	0.180	0.260	-0.086	0.052	0.113	-0.046	0.070	0.138
	(0.49)	(0.47)	(0.37)	(0.41)	(0.82)	(0.66)	(0.66)	(0.76)	(0.60)
2006	-0.058	0.003	0.226	-0.023	-0.181	0.071	-0.001	-0.189	0.080
	(0.60)	(0.99)	(0.43)	(0.82)	(0.43)	(0.78)	(0.99)	(0.40)	(0.76)
2007	-0.120	-0.045	0.576**	-0.198**	-0.258	0.275	-0.133	-0.277	0.388
	(0.26)	(0.85)	(0.03)	(0.05)	(0.26)	(0.29)	(0.19)	(0.22)	(0.14)
2008	-0.187	-0.221	0.047	-0.277	-0.379	-0.089	-0.232	-0.483	-0.226
	(-0.43)	(-0.68)	(-0.93)	(0.24)	(0.47)	(0.88)	(0.32)	(0.35)	(0.70)

The Year Dummies Explaining Post-IPO Performance

This Table reports the coefficients of the industry dummies in table 4.8. Due to the length of the table, the corresponding p-values are not reported. All the settings in this table are the same as those in table 4.8. Respectively, ***, **, and * denote significant difference from zero at 1, 5, and 10 percent.

	Style-Adjusted			CRSP-Adjusted			Industry-Adjusted		
Industry	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
Food Products	0.222	0.435	-0.019	0.124	0.105	-0.243	0.105	-0.198	-0.919
Candy & Soda	0.308	0.751	0.637	-0.162	0.485	0.353	0.164	0.087	-0.454
Beer & Liquor	-0.323	0.372	-0.464	-0.316	0.288	-0.377	-0.192	0.012	-0.788
Tobacco Products	-0.133	-0.881	-0.881	-0.174	-0.649	-1.032	-0.141	-0.564	-2.155
Recreation	0.290	0.583	0.104	0.175	0.128	-0.535	0.293	0.181	-0.562
Entertainment	0.115	0.525	-0.069	0.043	0.198	-0.369	0.136	0.082	-0.602
Printing and Publishing	0.161	0.955	0.455	0.117	0.750	0.353	0.114	0.561	-0.088
Consumer Goods	0.149	0.154	-0.579	0.088	-0.077	-0.667	0.075	-0.263	-0.937
Apparel	0.132	0.784	0.171	0.073	0.458	-0.104	0.112	0.383	-0.177
Healthcare	0.342	0.575	-0.075	0.298	0.331	-0.302	0.277	0.176	-0.702
Medical Equipment	0.351	0.680	0.354	0.323	0.414	0.061	0.255	0.106	-0.725

Pharmaceutical Products	0.515	0.966	0.840	0.478	0.705	0.577	0.413	0.233	-0.427
Chemicals	0.201	1.024	0.549	0.144	0.731	0.347	0.077	0.384	-0.282
Rubber and Plastic Products	-0.094	-0.139	-0.454	-0.137	-0.247	-0.528	-0.037	-0.346	-0.807
Textiles	-0.124	-0.242	-1.214	-0.082	-0.521	-0.999	0.018	0.007	-0.832
Construction Materials	0.201	0.599	0.186	0.095	0.317	-0.044	0.134	0.180	-0.398
Construction	0.104	0.651	-0.067	0.135	0.292	-0.229	0.077	0.048	-0.932
Steel Works Etc	0.100	0.289	-0.432	0.042	-0.065	-0.571	0.019	-0.141	-0.782
Fabricated Products	0.120	0.180	0.012	0.243	0.150	0.301	-0.058	-0.175	-0.498
Machinery	0.368	0.734	0.376	0.321	0.539	0.172	0.248	0.255	-0.467
Electrical Equipment	0.298	2.508**	1.425	0.296	2.217**	1.043	0.290	1.908**	0.595
Automobiles and Trucks	0.123	0.395	-0.097	0.062	0.055	-0.442	0.156	0.077	-0.575
Aircraft	0.450	0.723	0.500	0.404	0.576	0.603	0.190	0.288	-0.331
Shipbuilding, Railroad Equipment	1.074**	0.380	0.053	1.036**	0.157	-0.219	0.824*	-0.060	-0.959
Defense	0.785	1.546	2.518	0.659	0.936	1.885	0.512	-1.799	-0.525
Precious Metals	-0.252	-0.187	-1.890	-0.275	-0.362	-0.809	-0.164	0.023	0.143
Industrial Metal Mining	0.597	-0.411	-1.685	0.232	0.149	-0.427	0.737	-0.500	-1.617

Coal	0.243	0.825	-0.384	0.254	0.845	0.148	0.306	0.483	-0.388
Petroleum and Natural Gas	0.368	0.903	0.546	0.312	0.587	0.396	0.139	0.218	-0.576
Utilities	0.557	1.406	0.956	0.544	1.298	1.165	0.448	0.883	0.264
Communication	0.276	0.538	0.110	0.262	0.342	-0.052	0.285	-0.002	-0.474
Personal Services	0.411	0.613	0.533	0.361	0.355	0.412	0.344	0.172	-0.032
Business Services	0.376	0.822	0.445	0.338	0.603	0.264	0.336	0.271	-0.271
Computer Hardware	0.382	0.758	0.211	0.356	0.565	0.119	0.295	0.124	-0.676
Computer Software	0.454	1.075	0.541	0.423	0.851	0.368	0.349	0.420	-0.284
Electronic Equipment	0.390	0.955	0.492	0.367	0.745	0.366	0.218	0.150	-0.782
Measuring and Control Equipment	0.251	1.003	0.756	0.204	0.728	0.444	0.053	-0.040	-1.123
Business Supplies	0.078	0.699	0.396	0.046	0.411	0.007	0.081	0.221	-0.087
Shipping Containers	0.062	0.160	-0.275	0.022	-0.352	-0.588	0.065	-0.113	-1.641
Transportation	0.209	0.601	0.094	0.181	0.392	0.045	0.160	0.131	-0.537
Wholesale	0.178	0.289	-0.103	0.152	0.061	-0.355	0.176	-0.121	-0.874
Retail	0.253	0.571	0.055	0.228	0.329	-0.115	0.276	0.144	-0.572
Restaraunts, Hotels, Motels	0.320	0.622	0.342	0.267	0.340	0.063	0.318	0.379	-0.037

Insurance	0.306	0.929	0.617	0.141	0.468	0.341	0.163	0.200	-0.033
Real Estate	0.348	0.941	0.244	0.299	0.638	0.116	0.360	0.427	-0.280
Trading	0.152	0.333	-0.205	0.162	0.219	-0.184	0.158	-0.039	-0.798
Almost Nothing	0.326	0.216	0.077	0.277	-0.123	-0.322	0.260	-0.226	-0.731

Appendix D: The Single Destination Model in Chapter 5

This table presents the coefficients of the corresponding covariates from running a basic Cox proportional hazards model with takeover exits constituting a single failure event. The estimates are based on 12448 firms with 4537 failures from 1994 to 2013. The robust t-statistics, clustered on firm, are reported in the parentheses. Variable definitions are provided in Table 6.4. Significance levels: ***, **, * are 0.01, 0.05, and 0.10 respectively.

Variable	(1)	(2)	(3)
Dual	0.849**		0.809***
	(-2.42)		(-2.94)
Size		1.020***	1.022***
		(2.59)	(2.91)
Profitability		1.092*	1.092*
		(1.71)	(1.70)
Tangibility		0.840**	0.836**
		(-2.35)	(-2.41)
Tobin's q		0.951***	0.949***
		(-4.89)	(-4.96)
Cash		1.610***	1.598***
		(5.16)	(5.07)
Leverage		1.030***	1.032***
		(3.15)	(3.37)
Asset Growth		0.944***	0.944***
		(-3.68)	(-3.71)
Wald (χ^2)	408.5	310.0	316.9
N	108914	86482	86482
No. Firms	12432	10972	10972
No. Failures	4537	4158	4158