UNIVERSITY OF TECHNOLOGY SYDNEY

Dual-Class Share Structures versus Staggered Boards

by Shu Yang

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Finance Discipline Group, UTS Business School

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Certificate

I, Shu Yang, declare that this thesis is submitted in fulfilment of the requirements for the award of the Degree of Doctor of Philosophy, in the Business School/Finance Discipline Group at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Abstract

This thesis contributes to the ongoing debate around the tradeoffs arising from antitakeover provisions, by presenting a comparative analysis using more comprehensive and accurate dual-class and staggered boards indicator variables. In particular, we find that R&D activity has a positive effect on firm valuations for dual-class firms, but a negative effect for staggered board firms. We find that dual-class firms have a strong propensity to fund R&D by issuing new equity, whereas there is no evidence that staggered board firms use equity to fund their R&D activities. With respect to debt maturity, we observe a higher propensity among dual-class firms to fund themselves with short-maturity debt, while staggered board firms show a preference for long-maturity debt. We also find that the preference for short-maturity debt is less pronounced among innovative dual-class firms, while the situation is reversed among innovative staggered board firms. When it comes to institutional ownership, we observe that staggered board firms appear to be quite attractive to institutional investors, whereas dual-class firms seem especially unattractive to them. We also find that institutional investor aversion to dual-class firms is intensified by R&D investments, whereas R&D activity seems to have no impact on their willingness to invest in staggered board firms.

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CHAPTER 1

Introduction

Antitakeover provisions provide firms with a defence against acquisitions that shields managers from outside challenges. There is an ongoing debate on the tradeoffs of antitakeover provisions. On the one hand, they free managers from myopic market pressure, giving them a chance to implement their unique abilities and insights, and allowing them to pursue long-term and speculative projects. On the other hand, managerial entrenchment in firms with antitakeover provisions gives managers greater opportunities to extract private benefits, resulting in higher agency costs. Since shareholders are aware of the agency costs of managerial entrenchment, they should discount the cash flows of firms with antitakeover provisions, resulting in lower valuations. In response, and in order to reduce their cost of equity and attract outside shareholders, firms with antitakeover provisions may implement shareholder protections and allocate a greater proportion of their free cash flows to outside shareholders.

The research presented in this thesis focuses on dual-class share structures and staggered boards, which are two common, widely studied antitakeover provisions. A significant empirical contribution is that we use new dual-class and staggered board indicator variables in all tests, which are more comprehensive and accurate than the indicator variables currently used in the literature. We also contribute to previous research on the tradeoffs of antitakeover provisions by focusing on the differences and similarities between these two structures. Since dual-class share structures and staggered boards have not previously been compared side-by-side in the academic literature, this aspect of our research is an innovation.

1. Thesis Structure

This thesis consists of three independent papers that compare dual-class share structures and staggered boards, and examine the differences between them. The first paper, in Chapter 2, considers the impact of dual-class share structures and staggered boards on firm values, taking into account the effect of R&D activity and the financing of R&D investments. The second paper, in Chapter 3, focuses on the debt maturity structures of dual-class firms and staggered board firms. Finally, the third paper, in Chapter 4, investigates the impact of dual-class share structures and staggered boards on institutional ownership.

1.1. Antitakeover Provisions and Financing Innovation

Chapter 2 presents a comparative analysis of dual-class shares and staggered boards, focusing on how these two antitakeover protections affect firm values and R&D funding. Consistent with previous literature, we find that dual-class share structures and staggered boards reduce firm values, overall. However, dual-class share structures appear to enhance valuations for firms with intensive R&D programs, while the same is not true for firms with staggered boards. We also document an interesting difference between the financing channels for R&D investment among dual-class firms and staggered board firms. New equity seems to be the preferred R&D financing channel for dual-class firms, while firms with staggered boards do not appear to fund R&D by issuing equity.

1.2. Antitakeover Provisions and Debt Maturity Structure

Chapter 3 examines the impact of dual-class share structures and staggered boards on the maturity structure of corporate debt. We observe that dual-class firms maintain significantly higher levels of debt than single-class firms, while staggered board firms maintain lower levels of debt than unitary board firms. With respect to debt maturity, we document a greater propensity among dual-class firms to fund themselves with shorter maturity debt, while staggered board firms show a preference for longer maturity debt. However, the picture changes when we examine research-intensive firms. The preference for shorter-term debt is less pronounced in dual-class firms with high R&D intensities, since the textbook maturity matching hypothesis that firms should match the maturities of their liabilities with the maturities of their assets. By contrast, staggered board firms appear to have a reduction in debt maturities as R&D increases, since the information asymmetry hypothesis that R&D should reduce debt maturities because it contributes to information asymmetry.

1.3. Antitakeover Provisions and Institutional Ownership

Chapter 4 studies the institutional ownership of dual-class firms and staggered board firms. Although dual-class share structures and staggered boards are common antitakeover measures that share several features in common, we find that institutional investors react quite differently to them. In particular, firms with staggered boards appear to be quite attractive to institutional investors, whereas firms with dual-class share structures seem especially unattractive to them. We also find that institutional investor aversion to dual-class firms is intensified by

R&D investment, whereas R&D activity seems to have no impact on their attraction to staggered board firms. When examining the impact of institutional ownership on firm values, we find that staggered board firms with long-term institutional investors enjoy higher valuations, whereas the duration of institutional ownership appears to have no impact on valuations for firms with dual-class shares.

2. Literature Survey

2.1. An Overview of Dual-Class Share Structures and Staggered Boards

Dual-class shares allow a firm to separate the voting rights of its shareholders from their cash flow rights by issuing (at least) two classes of equity with the same cash flow rights but different voting rights. Among other things, this gives founders the opportunity to raise equity capital without relinquishing control of their companies. Facebook (now called Meta Platforms) is a good example of a firm where a dual-class share structure has been used for this purpose. In October 2021, the company's equity consisted of 2.4 billion class A shares, which granted their owners one vote per share, together with 440 million class B shares, which conferred ten votes per share to their owners. At the time, Facebook's founder, Mark Zuckerberg, who was also its CEO and the chairman of its board, owned 360 million class B shares and had indirect control over a further 32 million class B shares, giving him effective control over 58% of the company's shareholders votes.[1]

The possibility of selling equity in a firm while maintaining control of its strategy has made dual-class share structures increasingly attractive to founders and entrepreneurs, especially in the technology sector. According to Jay Ritter's website, dual-class issues accounted for 31.7% of all IPOs in 2021 and 46.2%

[1] `https://www.morningstar.com/articles/1061237/how-facebook-silences-its-investors`.

of all tech IPOs, while in 2010 the corresponding percentages were 9.9% and 6.1%, respectively.[2] Aggarwal, Eldar, Hochberg, and Litov (2022) documented the dramatic increase in firms going public with dual-class shares in recent years. They found that founder-led firms are playing an important role in the rise of dual-class IPOs.

The growing demand for dual-class listings from issuers has forced several stock exchanges that previously insisted on traditional one-share one-vote listings to revise their policies, in order to stay competitive. In 2018, the Hong Kong Stock Exchange and the Singapore Stock Exchange changed their listing rules to accommodate dual-class firms, while in 2019 the Shanghai Stock Exchange launched a new board that permitted firms with dual-class share structures. Finally, in 2021, the London Stock Exchange announced that dual-class listings would be permissible under certain conditions.

The rapid increase in dual-class listings has drawn criticism from institutional investor groups, who are concerned about the perceived governance problems associated with dual-class firms. In 2018, the Investor Stewardship Group (ISG), which oversaw $22 trillion in assets at the time, demanded a total elimination of dual-class shares, while the Council of Institutional Investors (CII), representing managers of assets worth $25 trillion, suggested that dual-class share structures should be limited to seven years.[3] At the same time, the CFA Institute published a largely critical report on the use of dual-class equity (Leung and Tung (2018)).

Much of the academic literature on dual-class firms focuses on the governance angle. Dual-class share structures are especially robust anti-takeover defences that inoculate a firm's insiders against shareholder discipline and the market for

[2] `https://site.warrington.ufl.edu/ritter/ipo-data/`.
[3] `https://hbr.org/2018/12/should-dual-class-shares-be-banned`.

corporate control. Since outside shareholders in dual-class firms are powerless to prevent the entrenchment of insiders, dual-class firms are particularly vulnerable to the agency problems associated with managerial entrenchments, such as empire-building and the extraction of private benefits (Masulis, Wang, and Xie (2009)). Anticipating these problems, shareholders should impose a discount on dual-class stock, to compensate for the associated agency costs (Gompers, Ishii, and Metrick (2010) and Baulkaran (2014)).

Despite the agency problems mentioned above, dual-class equity seems to be an ideal source of capital under certain conditions. For example, the retention of control is an important consideration in the decision to go public when founders possess private information that produces higher internal valuations than the valuations of less informed external investors (DeAngelo and DeAngelo (1985) and Bebchuk (1993)). Dual-class share structures may also encourage skilled managers to create value by investing in risky long-term projects, since they are not threatened with a loss of control when temporary difficulties are encountered (Banerjee (2006) and Chemmanur and Jiao (2012)). In a similar vein, dual-class share structures may allow managers to pursue long-term projects, by shielding them from myopic external investors (Stein (1988) and Jordan, Kim, and Liu (2016)). In addition, dual-class shares seem to play an important role in facilitating and encouraging innovation (Baran, Forst, and Via (2019)).

The tradeoff between the positive and negative effects of dual-class shares seems to vary over time, with dual-class structures positively affecting firm valuations for the first five years after going public, while the valuations of older firms are negatively affected by dual-class share structures (Bebchuk and Kastiel (2017) and Cremers, Lauterbach, and Pajuste (2020)). This supports the idea that dual-class share structures should be constrained by a sunset clause (Bebchuk and Kastiel (2017) and Leung and Tung (2018)).

While dual-class shares separate voting rights and cash flow rights, staggered boards separate the board of directors of a firm into different cohorts, which serve different terms. Staggered boards make it more difficult for activist shareholders to gain control of a firm's board, which reduces the likelihood of takeovers and increases managerial entrenchment. Consequently, managers of staggered board firms face less market discipline (Jiraporn and Chintrakarn (2009), Jiraporn, Chintrakarn, and Kim (2012), Johnson, Karpoff, and Yi (2015), and Cremers, Litov, and Sepe (2017)).

Recently, there has been a *destaggering* trend, which has seen staggered boards convert to unitary boards. Faleye (2007) and Zhao and Chen (2008) attribute this trend to the negative association between staggered boards and firm values, while Guo, Kruse, and Nohel (2008) claimed that outside shareholders are driving the destaggering process. Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022) recently constructed a comprehensive staggered board indicator variable that includes firms outside the S&P1500. They found that S&P1500 firms with staggered boards decreased from 58% to 30% from 1996 to 2020, while staggered board firms outside the S&P1500 increased from 40% to 53% over the same period. Compared with dual-class share structures, which are quite sticky, firms have considerable flexibility in switching between staggered boards and unitary boards, which makes destaggering easy.

The benefits of staggered boards have two sources. First, they seem to provide a defence against shareholder myopia. The theoretical logic for this argument was provided by Stein (1988) and Stein (1989), who suggested that antitakeover provisions could mitigate market pressure from myopic outside investors, thereby reducing managers' incentives to pursue short-term value. Duru, Wang, and Zhao (2013) provided empirical support for this idea, documenting that staggered boards are helpful for reducing shareholder myopia in opaque firms. They found that opaque firms with staggered boards enjoy higher valuations than opaque firms with unitary boards, and invest more in R&D. Similarly, Cremers, Litov, and Sepe (2017) found that staggered boards alleviate pressure from short-term myopic investors and that firms benefit more from staggered boards if they invest more in R&D. Their evidence also suggested that staggered boards could help firms create value by encouraging them to undertake long-term projects.

The second apparent benefit of staggered boards concerns bonding between stakeholders and managers. By reducing the likelihood of takeovers, staggered boards reduce takeover-related costs and make it harder for outside shareholders to alter managerial strategies, both of which improve the relationships between managers and (non-shareholder) stakeholders (Knoeber (1986) and Shleifer and Summers (1988)). Johnson, Karpoff, and Yi (2015) and Cen, Dasgupta, and Sen (2016) found that firms install staggered boards (and other antitakeover provisions) when they go public, if they wish to protect their relationship with an important business partner. Moreover, post-IPO performance is positively associated with the use of staggered boards by firms with important business partners. A consistent management strategy followed by managers who are protected from shareholder short-termism enhances bonding with important stakeholders, which in turn improves operating performance and firm valuations. However, Johnson, Karpoff, and Yi (2016) also reported that the cost of entrenchment increases over time, ultimately dominating the benefits of bonding. They documented a positive relationship between firm values and staggered boards overall, but also showed that the benefit of staggered boards decreases over time.

There is also a downside to staggered boards, due to the positive relationship between managerial entrenchment and agency costs. Bebchuk and Cohen (2005) discovered that staggered boards have a significant negative effect on firm values. They pointed out that the reduction in firm values is more pronounced when staggered boards are established by corporate charters, rather than company by-laws, because corporate charters cannot be amended easily. This suggests that the negative relationship between firm values and staggered boards is due to entrenchment costs. Faleye (2007) attributed the reduction in firm values associated with staggered boards to ineffective directors. He argued that staggered boards reduce firm values because entrenched managers weaken board governance. Bebchuk, Cohen, and Ferrell (2009) constructed an entrenchment index, based on staggered boards and other antitakeover provisions, and found that it has an economically significant negative association with the firm values.

2.2. Similarities Between Dual-Class Share Structures and Staggered Boards

Both dual-class share structures and staggered boards shield managers from market discipline, weaken governance and increase agency costs. In the early theoretical model of Grossman and Hart (1988), the one-share-one-vote rule maximises benefits for outside shareholders. This set the agenda for subsequent empirical research on dual-class share structures. Masulis, Wang, and Xie (2009) set the ball rolling by relating the size of the *wedge* between voting rights and cash flow rights in dual-class firms to the extraction of private benefits by insiders. They reported that agency problems intensify as the wedge increases. They also found that insiders in dual-class firms receive higher compensation and make decisions that contribute less to outside shareholder value. Their evidence suggests that concentrated control by entrenched insiders reduces value for outside shareholders in dual-class firms. In another influential study, Gompers, Ishii, and Metrick (2010) presented evidence on the negative effect of entrenchment on firm values for dual-class firms. They documented that the size of the wedge between voting rights and cash flow rights is negatively related to firm value. Amoako-Adu, Baulkaran, and Smith (2011) found that firms with concentrated control are vulnerable to agency problems and that dual-class firms have additional agency problems, when compared with single-class firms with concentrated control. Specifically, they documented that founder CEOs in dual-class firms are paid significantly more than founder CEOs in single-class firms with concentrated control, especially in terms of incentive-based compensation. Finally, Baulkaran (2014) found that managers in dual-class firms enjoy longer tenures, compared with managers in single-class firms, even when their performance is poor.

With respect to staggered boards, Bebchuk and Cohen (2005) documented that they have a significant negative effect on firm values. This effect is stronger for firms where staggered boards were established in corporate charters rather than company bylaws. Since corporate charters are harder to amend than company bylaws, this evidence suggests that the reduction in firm values for staggered board firms is an entrenchment cost. Faleye (2007) attributed the reduction in firm values associated with staggered boards to ineffective directors. In this view, managerial entrenchment reduces market discipline, which in turn weakens board governance. Finally, Cohen and Wang (2013) identified the negative impact of staggered boards on firm values via a natural experiment. Their evidence once again indicates that the reduction in firm values for staggered board firms is related to weaker governance.

On the plus side, dual-class share structures and staggered boards are known to shield managers from myopic shareholder pressure, which allows them to pursue innovative value-enhancing long-term projects. Jordan, Kim, and Liu (2016) presented evidence for this in the case of dual-class firms. They reported that dual-class share structures reduce short-term market pressure and that dual-class firms have more growth opportunities than otherwise identical single-class firms. Moreover, they found that dual-class firms with more growth opportunities enjoy higher valuations. Baran, Forst, and Via (2019) found that dual-class share structures provide a positive environment for innovation. They documented that patent output, R&D efficiency, and innovative risk-taking are positively associated with concentrated control in dual-class firms.

Similar results have been reported for staggered board firms. Duru, Wang, and Zhao (2013) pointed out that staggered boards are helpful for reducing shareholder myopia in opaque firms. As a result, opaque firms with staggered boards enjoy higher valuations than those without, and invest more in R&D. In a similar vein, Cremers, Litov, and Sepe (2017) documented that staggered boards reduce the pressure from short-term myopic investors and that R&D-intensive firms benefit from having staggered boards. They argued that staggered boards help firms create value by making it easier to undertake long-term projects. Finally, Nguyen, Vu, and Yin (2021) examined the effect of staggered boards on corporate innovation. They found that staggered boards increase the risk tolerance of managers by reducing managerial career concerns. As a result, managers in staggered board firms are more willing to undertake risky innovative projects.

2.3. Differences Between Dual-Class Share Structure and Staggered Boards

The most important difference between dual-class shares and staggered boards concerns the mechanism by which they limit the influence of outside shareholders. Dual-class share structures achieve this directly, by ensuring that control of a firm rests with insiders, who own all the voting rights. Staggered boards, on the other hand, do it indirectly, by making it harder for outside shareholders to gain control of a company's board of directors. An important consequence of this difference is that controlling shareholders in dual-class firms can raise additional equity without relinquishing control, while the same is not true for staggered board firms. As noted by Baulkaran (2014), this means that founders of dual-class companies are often quite enthusiastic about selling new (non-voting) shares, if an opportunity presents itself.

Another important difference between dual-class firms and staggered board firms revolves around information asymmetry and analyst coverage. O'Brien and Bhushan (1990) and Lang and Lundholm (1996) found that analysts tend to follow firms in regulated industries with strong disclosure requirements and that they prefer firms with good information environments. Similarly, Healy, Hutton, and Palepu (1999) showed that analysts are more likely to follow firms with better disclosure, while Lang, Lins, and Miller (2004) found that they tend to follow firms without incentives to withhold or manipulate information. Jiraporn, Chintrakarn, and Kim (2012) documented a significant positive relationship between staggered boards and analyst coverage, which they explained by arguing that managers of staggered board firms are well-protected and thus less concerned about the consequences of disclosure.

By contrast, dual-class firms are less transparent than single-class firms, and have lower levels of analyst coverage. Banerjee (2006) and Chemmanur and Jiao (2012) argued that since managers of dual-class firms are immune to pressure from outside shareholders, they are less inclined to communicate their strategies to external shareholders. As a result, outside shareholders may struggle to comprehend their decisions. In support of this reasoning, Lim (2016) found that information asymmetry is higher in firms with dual-class structures, compared with single-class firms. Interestingly, that study also found that dual-class firms improve information disclosure when they need additional external financing. Consistent with the negative relationship between information asymmetry and analyst coverage, Jordan, Kim, and Liu (2016) reported that dual-class firms are followed by fewer analysts than single-class firms.

There is also a significant difference in payout policies between dual-class firms and staggered board firms. Grossman and Hart (1980), Easterbrook (1984), and Jensen (1986) highlighted the fact that dividend payouts mitigate agency conflicts between insiders and outside shareholders, since they reduce the free cash flows available to insiders. Since antitakeover provisions weaken governance and increase agency problems, in general, firms with antitakeover provisions might be expected to maintain higher dividend payout ratios in order to manage agency problems. Jiraporn and Chintrakarn (2009) provided empirical support for this idea, by showing that staggered board firms are more likely to make dividend payments than unitary board firms, and that they make larger payments when they do pay dividends.

The picture is somewhat different for dual-class firms. Amoako-Adu, Baulkaran, and Smith (2014) found that dividend payments are lower among dual-class firms than single-class firms, and that dual-class firms are less likely to engage in share repurchases. Offsetting this finding, Jordan, Liu, and Wu (2014) documented that dual-class firms pay more in terms of regular cash dividends than special dividends, compared with single-class firms, and that this is more significant for dual-class firms with higher free cash flows and/or fewer growth opportunities. This provides some support for the idea that dual-class firms use payout policy as a precommitment device to alleviate agency conflicts between insiders and outside shareholders.

Finally, there is contrasting evidence on the use of leverage by dual-class firms and staggered board firms. Several studies have noted that debt acts as a source of external monitoring that can mitigate agency problems and reduce agency costs. For example, Jensen (1986) argued that debt acts as a governance mechanism that reduces the consumption of private benefits by insiders, thereby providing a benefit to outside shareholders as well. In line with this argument, Harvey, Lins, and Roper (2004) found that debt increases shareholder value for companies with higher expected agency costs. Their evidence shows that shareholders in firms with high levels of information asymmetry benefit from the monitoring feature of debt, since the firm's creditors scrutinise its decisions carefully due to their strong interest in avoiding financial distress and bankruptcy.

Dey, Nikolaev, and Wang (2016) documented that dual-class firms have more leverage than single-class firms, and are more likely to issue private debt. They also showed that this pattern is more pronounced among dual-class firms with more intense agency conflicts. They argued that dual-class firms issue debt partly because its monitoring feature helps discipline managers, which in turn mitigates agency conflicts with external shareholders. By contrast, Jiraporn and Lee (2018) found that staggered board firms maintain lower levels of leverage than unitary board firms. They argued that managers of staggered board firms issue less debt because they wish to avoid the extra governance associated with it.

CHAPTER 2

Antitakeover Provisions and Financing Innovation

This study presents a comparative analysis of dual-class shares and staggered boards, focusing on how these two antitakeover protections affect firm valuations and R&D funding. Consistent with previous literature, we find that dual-class share structures and staggered boards both reduce firm valuations, in general. However, dual-class share structures appear to enhance valuations for firms with intensive R&D programs, while the same is not true for firms with staggered boards. We also document an interesting difference between the financing channels for R&D investment among dual-class firms and staggered board firms. New equity seems to be the preferred R&D financing channel for dual-class firms, while firms with staggered boards do not appear to fund R&D by issuing equity.

1. Introduction

Dual-class share structures and staggered boards are common antitakeover defences. Dual-class shares structures separate the voting rights and cash flow rights of shareholders, with the superior voting shares typically held by insiders, which gives them control of the company. Staggered boards partition a firm's board of directors into different cohorts that serve different terms, which makes it harder for a block of shareholders to gain sufficient control of the board to push a transformation agenda. As with all antitakeover measures, the desirability of dual-class share structures and staggered boards depends on a tradeoff between the efficiency and growth benefits of increased managerial autonomy and the agency costs of increased managerial entrenchment.

In terms of benefits, both structures shield managers from myopic shareholder pressure, which allows them to pursue potentially value-enhancing long-term projects. For example, Jordan, Kim, and Liu (2016) found that innovative dual-class firms enjoy higher valuations, which they interpreted as evidence that dual-class share structures encourage long-term growth and investment by mitigating the pressure from short-term investors. Along similar lines, Baran, Forst, and Via (2019) showed that dual-class share structures benefit firms by creating a positive environment for corporate innovation. In particular, they documented that the concentrated control in dual-class firms improves the quality of patents and the efficiency of R&D spending.

Analogous results have been reported for staggered board firms. For example, Duru, Wang, and Zhao (2013) observed that staggered boards are helpful for reducing shareholder myopia in opaque firms. They reported that opaque firms with staggered boards enjoy higher valuations than those without, and that opaque firms with staggered boards invest more in R&D. In a similar vein, Cremers, Litov, and Sepe (2017) found that board unifications of staggered board firms have a significant negative impact on valuations. They also reported that firms with more long-term projects enjoy higher valuations after adopting a staggered board structure, although this result has been called into question by the recent evidence presented by Guernsey, Guo, Liu, and Serfling (2022).

The drawbacks of dual-class share structures and staggered boards stem from the reduced market discipline and increased agency costs of managerial entrenchment. For dual-class firms, Gompers, Ishii, and Metrick (2010) documented that the size of the *wedge* between voting rights and cash flow rights is negatively related to firm value. Similarly, Masulis, Wang, and Xie (2009) documented a positive relationship between the wedge and the extraction of private benefits by insiders in dual-class firms. They found that agency problems intensify as the wedge increases, with insiders receiving higher compensation and making decisions that contribute less to outside shareholder value.

With respect to the drawbacks of staggered boards, Bebchuk and Cohen (2005) documented that they have a significant negative effect on firm values. Interestingly, this effect is stronger when staggered boards are established by corporate charters than company bylaws. Since it is harder for shareholders to amend corporate charters than company bylaws, their findings suggest that the negative impact of staggered boards on firm values is indeed an entrenchment cost. Faleye (2007) connected the reduction in values for staggered board firms with ineffective directors, since the managerial entrenchment arising from staggered boards reduces market discipline and weakens board governance. Finally, Jiraporn and Chintrakarn (2009) found that firms with staggered boards are more likely to make dividend payments and that they make larger payments when they do pay dividends. Since dividends reduce agency conflicts, the authors argued that staggered board firms use dividend payouts to mitigate agency costs.

Using a comprehensive sample of U.S. company data for the period from 1991 to 2019, our paper documents the impact of dual-class shares structures and staggered boards on firm values, with the objective of identifying the comparative advantages and disadvantages of these two antitakeover provisions. An important contribution of our study is the construction of a more extensive and accurate dual-class indicator variable than the one used by Gompers, Ishii, and Metrick (2010) and much of the subsequent literature on dual-class shares. Our variable extends the sample period of the dual-class dummy variable in Gompers, Ishii, and Metrick (2010) and improves its accuracy where the sample periods overlap.[1] We also use a new comprehensive staggered board indicator variable recently constructed by Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022). Using these two updated indicator variables, we revisit questions about the role that dual-class shares and staggered boards play in facilitating corporate R&D and on how this affects firm values. We also analyse the impact of these two antitakeover provisions on the choices that firms make in financing their R&D activities.

Many studies document a negative overall relationship between firm values and antitakeover provisions.[2] Our findings are consistent with those results, suggesting that dual-class share structures and staggered boards reduce firm values, in general. We may interpret this as evidence that the agency costs of managerial entrenchment dominate the tradeoffs for dual-class shares and staggered boards, overall.

With respect to the impact of R&D investment on the relationship between firm values and the two antitakeover measures under consideration, our results are illustrated by Figure 1. First, Panel A shows that although valuations are generally lower for dual-class firms than single-class firms, research-intensive dual-class firms enjoy higher valuations than both single-class firms and dual-class firms that are not heavily engaged in R&D. This is consistent with the results of Jordan, Kim, and Liu (2016), who showed that dual-class firms tend to be

[1]See Panel B in Table 1 for a comparison of the two variables over the overlapping sample period.

[2]See Michael and William (1976), Grossman and Hart (1988), Core, Holthausen, and Larcker (1999), Nenova (2003), Da Silva, Goergen, and Renneboog (2004), Bebchuk and Cohen (2005), Faleye (2007), King and Santor (2008), Masulis, Wang, and Xie (2009), Bebchuk, Cohen, and Ferrell (2009),Jiraporn and Chintrakarn (2009), Gompers, Ishii, and Metrick (2010), Amoako-Adu, Baulkaran, and Smith (2011), Jiraporn, Chintrakarn, and Kim (2012), Duru, Wang, and Zhao (2013), Cohen and Wang (2013), Amoako-Adu, Baulkaran, and Smith (2014), Baulkaran (2014), Johnson, Karpoff, and Yi (2015), and Li and Zaiats (2018).

more research-intensive than single-class firms, since dual-class share structures mitigate short-term market pressure and allow managers to pursue long-term growth. That study also found that high-growth dual-class firms enjoy higher valuations than single-class firms. Interestingly, Panel A also suggests that the valuation benefits experienced by research-active dual-class firms became more pronounced in the second half of our sample period.

Our multivariate regression results are consistent with the picture painted by Panel A. In particular, we find that dual-class share structures reduce firm valuations in general, but that research-intensive dual-class firms enjoy higher valuations than their single-class counterparts. This is consistent with the argument that dual-class share structures foster innovative value-creation by shielding managers from shareholder myopia.

When it comes to staggered boards, Panel B of Figure 1 does not provide any evidence that staggered board firms enjoy higher valuations than unitary board firms, while the evidence on valuations of research-intensive staggered board firms is mixed. In some years, towards the end of the sample period, staggered board firms with high R&D intensities appeared to enjoy higher valuations than unitary board firms and staggered board firms with low R&D intensities. However, for long periods, valuations of research-intensive staggered board firms languished below those of unitary board firms and even staggered board firms with low R&D intensities. This is somewhat at odds with the results of Cremers, Litov, and Sepe (2017), who found that firms enjoy higher valuations after adopting staggered boards. They also reported that firms with more long-term projects enjoy higher valuations after adopting a staggered board structure.

Recently, Guernsey, Guo, Liu, and Serfling (2022) repeated the tests of Cremers, Litov, and Sepe (2017), using a more comprehensive staggered board indicator variable. They documented that staggered boards reduce firm values in the cross-section and have no impact on firm values in the time series. They also found no evidence that research-intensive staggered board firms enjoy higher valuations than unitary board firms. Overall, their results indicate that staggered boards are negatively associated with firm values. Our regression results confirm that staggered boards reduce firm valuations overall. Moreover, we find that R&D-intensive staggered board firms suffer from even lower valuations than staggered board firms overall.

Myers (1977) and Johnson (2003) pointed out that firms should match the maturities of asset financing with the terms of their investments, in order to reduce liquidity risk. This warning is particularly salient when it comes to R&D projects, whose payoffs are usually long-dated and uncertain.[3] Consequently, firms should ideally use either internal or external equity to fund R&D projects. Bond and Meghir (1994), Brown, Fazzari, and Petersen (2009), and Brown, Martinsson, and Petersen (2012) pioneered the use of *generalised method of moments (GMM)* regressions to probe the financing channels for R&D projects. Consistent with theoretical predictions, Brown, Fazzari, and Petersen (2009) found that U.S. firms prefer to use internal and external equity to finance R&D investments, with the results being more pronounced for young firms.

Baulkaran (2014) noted that dual-class firms can freely raise additional equity without insiders relinquishing control, since they continue to retain all the voting rights after new non-voting shares are issued. The same is not true for staggered

[3]For discussions of the uncertainty of R&D investments, see Stiglitz (1985), Bloom (2007), and Van Vo and Le (2017).

board firms, however, where new shares dilute the control of existing shareholders. These observations suggest that dual-class share structures allow firms to finance their R&D activities more freely with equity than staggered boards. Following the studies cited above, we employ several GMM models to examine the financing channel of R&D investment in dual-class firms and staggered board firms. As predicted, our results confirm that dual-class firms prefer to finance R&D with new equity, while staggered board firms do not appear to issue equity to fund R&D projects.

The remainder of the paper is organised as follows. Section 2 surveys the relevant literature on dual-class share structures and staggered boards, the tradeoffs of antitakeover provisions, and the financing channels for R&D. Section 3 develops our hypotheses. Section 4 covers the topics of variable construction, sample selection and empirical methodology. In this regard, an important contribution of our study is the construction of the most comprehensive dual-class dummy variable available in the literature, based on exhaustive textual analysis and manual checks. Section 5 presents and discusses our empirical results, while Section 6 concludes.

2. Literature Survey

Dual-class shares allow a firm to separate the voting rights of its shareholders from their cash flow rights by issuing two classes of equity with the same cash flow rights but different voting rights. Among other things, this gives founders the opportunity to raise equity capital without relinquishing control of their companies. This has made dual-class share structures increasingly attractive to founders and entrepreneurs, especially in the technology sector.[4] According to Jay Ritter's website, dual-class issues accounted for 31.7% of all IPOs in 2021 and 46.2% of all tech IPOs, while in 2010 the corresponding percentages were 9.9% and 6.1%, respectively.[5] However, the advantages of dual-class shares for founders come at the expense of increased managerial entrenchment and higher agency costs.

While dual-class shares separate voting rights and cash flow rights, staggered boards separate a firm's board of directors into different cohorts that serve different terms. This makes it more difficult for activist shareholders to gain control of the board, which reduces the likelihood of takeovers but also increases managerial entrenchment and the associated agency costs. However, unlike the rise in popularity of dual-class share structures, the use of staggered boards has been in steady decline for several years, in a process known as *destaggering*. Faleye (2007) and Zhao and Chen (2008) linked this phenomenon to the negative association between staggered boards and firm values. Recently, Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022) constructed a comprehensive staggered board indicator variable that includes firms outside the S&P 1500. They found that the fraction of S&P 1500 firms with staggered boards decreased from 58% to 30% over the period from 1996 to 2020. However, the fraction of staggered board firms outside the S&P 1500 increased from 40% to 53% over the same period.

In one of the first papers to consider the advantages of dual-class share structures, DeAngelo and DeAngelo (1985) argued that they reduce the incentive for

[4]Aggarwal, Eldar, Hochberg, and Litov (2022) examined the dramatic increase in firms going public with dual-class shares in recent years. They found that founder-led firms have played an important role in the rise of dual-class IPOs.

[5]See `https://site.warrington.ufl.edu/ritter/ipo-data/`.

managers to pursue unprofitable projects in order to attract outside shareholders. They also noted that dual-class shares give informed insiders the flexibility to make decisions without explaining them to outside shareholders. The theoretical paper of Stein (1988) demonstrated that takeover threats could drive myopic investment behaviour, impeding growth in the process. The model in that paper predicted that managers will abandon long-term projects in order to boost short-term earnings when faced with takeover threats. In a similar vein, the subsequent study by Stein (1989) developed a model in which it is optimal for managers to fool the market by behaving myopically and abandoning valuable investments in favour of short-term earnings, even in rational and efficient markets. Finally, Atanassov, Hong, Kalcheva, and Ryou (2016) and Baran, Forst, and Via (2019) highlighted the fact that dual-class shares give firms access to equity capital via public ownership, while allowing them to maintain a tolerance for failed innovation typical of private ownership. All in all, external pressure from capital markets, such as takeover threats, affects the ability of managers to pursue long-term projects and causes them to focus on short-term projects and current earnings, at the expense of long-term growth. Dual-class shares help to mitigate this problem.

Inspired by the theoretical work above, several empirical studies paint a positive picture of the role of dual-class share structures in mitigating short-term market pressure and allowing managers to implement long-term strategies. Jordan, Kim, and Liu (2016) found that dual-class firms tend to be less exposed to myopic market pressure than single-class firms and that innovative dual-class firms enjoy better growth opportunities and higher valuations. Moreover, when dual-class firms convert their equity to a single-class, short-term market pressure increases and growth opportunities decrease in the newly formed single-class firms. The authors interpreted their findings as support for the hypothesis that dual-class share structures shield managers from shareholder myopia and allow them to follow long-term strategies, which produces better growth opportunities and higher valuations. The recent results documented by Baran, Forst, and Via (2019) support this idea. They provide detailed evidence that the concentrated control in dual-class firms has a positive effect on innovation—specifically, the quality of patents and the efficiency of R&D spending. Although the advantage of dual-class share structures in fostering innovation seems to dissipate 10 years after going public, the authors argue that dual-class shares create a positive environment for corporate innovation.

With respect to the benefits of staggered boards, Duru, Wang, and Zhao (2013) suggested that they play a constructive role in reducing takeover pressure and managerial myopia in opaque firms. Consequently, opaque firms with staggered boards enjoy higher valuations than those without. The authors also showed that opaque firms with staggered boards invest more in R&D and exhibit higher pay-performance sensitivities than opaque unitary board firms. Related results were obtained by Cremers, Litov, and Sepe (2017), who found that board unifications of staggered board firms have a significant negative impact on valuations. They also reported that firms with more long-term projects benefit from higher valuations after adopting a staggered board structure. However, those findings were recently disputed by Guernsey, Guo, Liu, and Serfling (2022), who attempted to replicate them using a longer sample period and a more accurate staggered board dummy variable. Instead, they reported a negative cross-sectional relationship between staggered boards and firm values. Moreover, they found no evidence that staggered board firms with more long-term projects enjoy higher valuations.

Recently, Nguyen, Vu, and Yin (2021) investigated the effect of staggered boards on corporate innovation. They found that CEO pay and performance attract less attention at staggered board firms. Based on this, they argued that staggered boards increase the risk tolerance of managers and their willingness to innovate, by reducing their career concerns. As a result, staggered boards play a positive role in fostering innovation.

The negative consequences of antitakeover provisions are well-understood. By facilitating managerial entrenchment, they increase agency costs and reduce firm values. The famous theoretical study by Michael and William (1976) shows that agency costs are inherent in the modern corporation and that the costs associated with separating ownership and control in modern companies cannot be avoided. However, the size of agency costs depends on the law and the stringency of contract enforcement. The authors also point out that monitoring and bonding activities play an important role in reducing agency costs.

Agency costs in dual-class firms have received considerable attention. Masulis, Wang, and Xie (2009) showed that agency problems in dual-class firms intensify as the *wedge* between shareholders' voting rights and cash flow rights increases. In particular, they found that insiders receive higher compensation and make decisions that contribute less to outside shareholder value as the wedge increases. The authors argued that concentrated control by entrenched insiders in dual-class firms leads to the extraction of private benefits and a reduction in firm values. In support of this argument, they documented that the size of the wedge between voting rights and cash flow rights is negatively related to firm value for dual-class firms. Similar results were obtained by Gompers, Ishii, and Metrick (2010), who reported that firm values for dual-class firms are positively related to insiders' cash flow rights but negatively related to their voting rights.

Amoako-Adu, Baulkaran, and Smith (2011) and Amoako-Adu, Baulkaran, and Smith (2014) found that founder CEOs in dual-class firms are paid significantly more than founder CEOs in single-class firms with concentrated control (especially in terms of incentive-based compensation). Moreover, firms with dual-class shares distribute less to shareholders via dividends and share repurchases. Finally, Li and Zaiats (2018) recently reported that dual-class firms offer more shareholder rights protections than single-class firms, but have less board independence. However, shareholder rights decrease as the size of the wedge between voting rights and cash flow rights increases. The authors also found that firm value is negatively related to the wedge but positively related to shareholder protections in dual-class firms.

The drawbacks of staggered boards have also been explored. For example, Bebchuk and Cohen (2005) found that staggered boards have a significant negative effect on firm values. Importantly, the reduction in firm values is more pronounced for staggered boards that were established by corporate charters than company bylaws, which is consistent with the fact that corporate charters are harder to amend than company bylaws. This suggests that the reduction in value for staggered board firms is higher when entrenchment is more severe. Faleye (2007) associated the reduction in firm value for staggered board firms with ineffective directors. That study found that it is harder for staggered board firms to fire their

CEOs, even when they perform poorly, and that CEOs of staggered board firms are well remunerated, irrespective of performance. Zhao and Chen (2008) also documented a reduction in firm values for staggered board firms. They argued that staggered boards encourage managers to lead a “quiet life”, which reduces their incentive to take risks and increase earnings. Finally, Bebchuk, Cohen, and Ferrell (2009) constructed an entrenchment index, based on staggered boards and other antitakeover provisions. They reported that the index has an economically significant negative association with firm values, which they explained in terms of the weakened governance.

Several studies have investigated the financing channel for R&D investments. In an early theoretical paper, Myers (1977) argued that firms should match their asset financing needs with a debt repayment schedule that minimises liquidity risk. This point was echoed by Johnson (2003), who warned that although short-term debt could alleviate the cost of underinvestment, it may also increase liquidity risk. This warning is particularly salient when it comes to R&D projects, whose payoffs are typically very long-dated and uncertain.[6] Based on these considerations, firms should prefer equity as the financing channel for R&D projects. This has been confirmed empirically by Bond and Meghir (1994), Brown, Martinsson, and Petersen (2012), and Brown, Fazzari, and Petersen (2009), who used dynamic GMM models to examine the financing channel for R&D projects. Those papers found that firms prefer to use internal and external equity to finance their R&D investments, with the result being more pronounced for young firms. Similarly, Lewis and Tan (2016) documented that firms issue equity rather than debt when they have long-term growth prospects, such as R&D projects.

[6]For discussions of the uncertainty of R&D investments, see Stiglitz (1985), Bloom (2007), and Van Vo and Le (2017).

3. Hypothesis Development

Managerial entrenchment and weak governance are associated with reductions in firm value, since insiders have an opportunity to extract private benefits from free cash flows when market discipline is weak.[7] Dual-class share structures and staggered boards facilitate managerial entrenchment and weaken market discipline.[8] Consequently, we expect them to be negatively associated with firm values, overall.

Hypothesis 1. *Dual-class share structures and staggered boards are negatively related to firm values.*

Jordan, Kim, and Liu (2016) found that dual-class firms face less short-term market pressure and that innovative dual-class firms enjoy higher valuations. Related results were obtained by Baran, Forst, and Via (2019), who reported that dual-class firms are more efficient innovators. All in all, the literature suggests that dual-class share structures exert a positive influence on valuations for innovative firms.

With respect to staggered boards, Duru, Wang, and Zhao (2013) found that they reduce managerial myopia in opaque firms, while Cremers, Litov, and Sepe (2017) documented a positive impact of staggered boards on valuations among innovative firms. In a similar vein, Nguyen, Vu, and Yin (2021) identified the positive role of staggered boards in fostering corporate innovation. However,

[7]See Core, Holthausen, and Larcker (1999), Bebchuk and Cohen (2005), Faleye (2007), Masulis, Wang, and Xie (2009), Bebchuk, Cohen, and Ferrell (2009), Cohen and Wang (2013), and Amoako-Adu, Baulkaran, and Smith (2014).

[8]See Jiraporn and Chintrakarn (2009), Gompers, Ishii, and Metrick (2010), Jiraporn, Chintrakarn, and Kim (2012), Duru, Wang, and Zhao (2013), Johnson, Karpoff, and Yi (2015), Jordan, Kim, and Liu (2016), Cremers, Litov, and Sepe (2017), and Baran, Forst, and Via (2019).

Guernsey, Guo, Liu, and Serfling (2022) recently reported a negative association between staggered boards and firm values. They also found no evidence that research-intensive staggered board firms enjoy higher valuations than unitary board firms. In conclusion, there is some uncertainty about the impact of staggered boards on firm valuations.

In summary, by alleviating pressure from myopic and earnings-focused shareholders, dual-class share structures and staggered boards appear to give managers the freedom to innovate and pursue in long-term projects. However, dual-class share structures appear to have a more robust beneficial impact on valuations for innovative firms than staggered boards.

HYPOTHESIS 2. *Among R&D-intensive firms, dual-class share structures have a stronger positive impact on valuations than staggered boards.*

Protection from shareholder myopia isn't the only ingredient for corporate innovation—capital is also required. While several of the previously surveyed articles link dual-class share structures and staggered boards with corporate innovation, by highlighting their role in alleviating shareholder pressure, the literature is silent on the question of whether these antitakeover provisions give firms an advantage in terms of raising the right type of capital to fund innovative projects.

Due to the long-term and uncertain nature of R&D investments, equity is the best source of funds for R&D projects. For example, Brown, Martinsson, and Petersen (2012) and Brown, Fazzari, and Petersen (2009) found that equity issuance plays an important role in financing corporate R&D, especially in the case of young firms and tech companies. Similarly, Chang and Song (2014) reported that research-intensive firms issue more equity and less debt. Moreover, innovative firms tend to issue equity rather than debt for external financing, even if they are not credit-constrained and can issue debt.

Although equity is the appropriate source of capital to finance R&D projects, equity issuance generally has the drawback of diluting control of a firm. However, as noted by Baulkaran (2014), dual-class share structures offer founders and controlling insiders the protection of being able to raise additional (non-voting) equity without losing control of their companies. Based on this comparative advantage, we expect research-intensive dual-class firms to be more enthusiastic issuers of new equity to than research-intensive staggered board firms.

Hypothesis 3. *Dual-class firms are more reliant on external equity to finance R&D investments than staggered board firms.*

4. Data and Empirical Methodology

4.1. Antitakeover Provision Dummy Variables

Currently, the empirical literature on dual-class share structures relies exclusively on the dual-class dummy variable published by Gompers, Ishii, and Metrick (2010). The first important contribution of our study is the construction of a more comprehensive dual-class indicator variable that extends the sample period of their variable and improves on its accuracy over the overlapping sample period.

The variable construction methodology employed by Gompers, Ishii, and Metrick (2010) used two steps to identify dual-class firms. First, candidate dual-class firms were identified as those with more than a 1% difference in shares outstanding between Compustat and CRSP. Second, manual textual analysis of the 10-K filings of the candidate companies was performed to confirm whether they truly had dual-class share structures. Our dual-class indicator variable (*DCS*) was constructed as follows:

(1) We generated a temporary firm-year level indicator variable (*Diff_True*) to identify candidate dual-class companies as those with more than a 1% difference in shares outstanding between Compustat and CRSP.

(2) We downloaded the entire 10-K filings of all firms in our sample from SEC Edgar and performed an exhaustive textual analysis on them. This allowed us to construct a second temporary firm-year level indicator variable (*10k_True*), which identified all firms whose 10-K filings contained the terms "class a", "class b", "class c" or "class d".

(3) Since dual-class share structures are sticky, we manually checked all available 10-K filings of companies for which *Diff_True* changed more than once, to confirm their dual-class status.

(4) For companies for which *Diff_True* remained constant, we manually checked all available 10-K filings, if *Diff_True* differed from *10K_True*.

(5) Finally, we double-checked all available 10-K filings of companies for which *Diff_True* did not equal *10K_True* in any year of its life.

After all the checks above, our dual-class indicator variable (*DCS*) was set equal to *Diff_True*. It improves on the dual-class dummy variable used by Gompers, Ishii, and Metrick (2010) for several reasons.

- First, by downloading the entire 10-K filings from SEC Edgar, we performed textual analysis on all companies, rather than only the candidate companies identified by comparing the numbers of shares outstanding in Compustat and CRSP. This allowed us to identify the dual-class companies with no obvious differences in outstanding shares between Compustat and CRSP.

- Second, in order to identify a candidate dual-class firm based on a disparity between its number of outstanding shares recorded by CRSP and Compustat, we checked its entire time series in those two databases, rather than only comparing the number of outstanding shares in a given year. We included a company in our universe of candidate dual-class firms if the difference in shares outstanding between Compustat and CRSP exceeded 1% for at least one year.
- Finally, we manually checked a large sample of 10-K filings to verify the results of the automated textual analysis. This assured us about the correctness of our variable construction process.

In addition to constructing a more reliable dual-class dummy variable than Gompers, Ishii, and Metrick (2010), we extended the sample period of their variable from 1995–2002 to 1990–2019. Over that period we identified 310.4 dual-class firms each year, on average, with a maximum of 408 in 1999 and a minimum of 159 in 2019. Panel A in Table 1 illustrates the distribution of dual-class and single-class firms for each year in our sample, while Panel B compares our dual-class indicator variable with the one used by Gompers, Ishii, and Metrick (2010), over the overlapping sample period. During the entirety of that period we identified 551 firm-year instances of dual-class companies that were missed by Gompers, Ishii, and Metrick (2010), while 219 instances of dual-class companies recorded by their variable were rejected by our identification process.

To identify firms with staggered boards, the identifier provided by the Institutional Shareholder Services (ISS) Corporate Governance database provides the most widely used staggered board indicator variable.[9] However, the ISS database

[9]It has been used by Zhao and Chen (2008), Jiraporn and Chintrakarn (2009), Jiraporn, Chintrakarn, and Kim (2012), Cohen and Wang (2013), Duru, Wang, and Zhao (2013) and Cremers, Litov, and Sepe (2017).

has two important deficiencies. First, it only includes firms in the S&P 1500 index and it does not provide data for the years before and after a firm belonged to the index. Second, ISS only collected data every two or three years between 1990 and 2006.

Recently, Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022) constructed a more comprehensive staggered board dummy variable covering the period from 1996 to 2020, by combining machine learning with textual analysis and manual inspection. We use their staggered board indicator variable (*SB*) in this paper.

4.2. Sample Selection for Multivariate Regressions

The main data sample comes from Compustat and CRSP, for the period from 1990 to 2019. The primary dependent variable is firm value (*FIRMVAL*), which is measured by Tobin's Q. Following Fama and French (1992), Tobin's Q is calculated as the fraction of the market value of a firm divided by the book value of its assets from Compustat. Apart from the dual-class and staggered board dummy variables, the two most important independent variables are R&D intensity (*R&D*) and net equity issuance (*NEI*). R&D intensity is obtained from Compustat and is defined as the R&D expenditure of a firm divided by the total value of its assets in the current year. Following Fama and French (2005) and Fried and Wang (2018), net equity issuance is obtained from CRSP and is defined as the change in shares outstanding between the prior month and the current month multiplied by the average daily share price during the current month. This gives a measure of monthly net equity issuance, which is averaged over the year to obtain an annual variable.

We also included several common control variables in our regressions. The following control variables were obtained from Compustat.

- Firm size (*SIZE*), measured as the natural logarithm of a firm's total assets.
- Return on assets (*ROA*), measured as a firm's EBITDA divided by its total assets.
- Capital expenditure (*CAPEX*), measured as a firm's capital expenditure divided by its total assets.
- Cash holdings (*CASH*), measured as a firm's cash holdings divided by its total assets.

Finally, to understand how research activity and equity issuance affect the relationship between firm value and the antitakeover dummies, we constructed the interaction variables *DCS* × *R&D*, *SB* × *R&D*, *DCS* × *NEI* and *SB* × *NEI*.

After constructing the variables described above, we refined the data sample as follows:

- We excluded certificates, ADRs, unit trusts, closed-end funds and REITs from the sample, and retained only firms with ordinary common stock listed in the U.S.
- We excluded firms with SIC codes in the ranges 6000–6999 (financial firms) and 4900–4999 (utilities).
- We excluded firms with fewer than three observations and winsorized all continuous variables at the 2% level in both tails.

Panel A in Table 2 presents the summary statistics for all variables. The average value of Tobin's Q is 2.05, with a standard deviation of 1.34, while net equity issuance is 0.01 million dollars on average, with a standard deviation of 0.05 million dollars. The mean value of R&D intensity is 0.09, with a standard deviation of 0.12.

4.3. Sample Selection for Dynamic GMM Regressions

The sample for the dynamic GMM regressions is similar to the main sample for the multivariate regressions. However, given that R&D intensity is the dependent variable in these regressions, we had to contend with the problem of unreported and sporadically reported research expenditures.[10] Some research-active firms do not report R&D expenses, resulting in research intensities that are incorrectly recorded as zero. Even worse, some research-active firms report their research expenditures intermittently, resulting in recorded research intensities that vary incorrectly between zero and relatively large values. To reduce the misleading noise created by unreported and sporadically reported research spending, we eliminated all firms in the bottom quartile of average R&D intensity over the sample period.

Finally, the sample was extended through the inclusion of the following additional variables from Compustat:

- Sales (*SALES*), defined as the ratio of sales to total assets.
- Cash flow (*CF*), defined as the sum of EBITDA and R&D expenses divided by total assets.
- Capital raised by issuing equity (*EQUITY*), defined as the difference between sales and purchases of common and preferred stock divided by total assets.

Panel B in Table 2 presents summary statistics for the variables used in the dynamic GMM regressions. We observe that average R&D intensity was 0.082

[10] See Koh, Reeb, Sojli, Tham, and Wang (2022) for a careful analysis of this problem.

for dual-class firms and 0.128 for single-class firms, while average capital raised from issuing equity was 0.012 for dual-class firms and 0.039 for single-class firms. With respect to the staggered board and unitary board samples, the average R&D intensity was 0.13 for staggered board firms and unitary board firms, and the average capital raised by issuing equity was 0.03 for both staggered board and unitary board firms.

4.4. Empirical Methodology

To test our first two hypotheses, we employ multivariate panel regressions in the spirit of Gompers, Ishii, and Metrick (2010), Jordan, Kim, and Liu (2016) and Cremers, Litov, and Sepe (2017). For Hypothesis 1, we examine the dependence of firm value on the two antitakeover dummy variables, while controlling for firm size, return on assets, capital expenditure and cash holdings. This gives rise to the model

$$\begin{aligned} FIRMVAL_t = &\beta_0 + \beta_1 ATP_{t-1} + \beta_2 R\&D_{t-1} + \beta_3 NEI_{t-1} + \beta_4 SIZE_{t-1} \\ &+ \beta_5 ROA_{t-1} + \beta_6 CAPEX_{t-1} + \beta_7 CASH_{t-1} + \epsilon_t, \end{aligned} \tag{1}$$

where the indicator variable ATP is either DCS or SB. If Hypothesis 1 is true, the coefficient β_1 in equation (1) should be negative for both antitakeover dummy variables.

To test Hypothesis 2, we extend the base model by including the interaction variables $DCS \times R\&D$ and $SB \times R\&D$. The resulting model is

$$\begin{aligned} FIRMVAL_t = &\beta_0 + \beta_1 ATP_{t-1} + \beta_2 ATP_{t-1} \times R\&D_{t-1} + \beta_3 R\&D_{t-1} \\ &+ \beta_4 NEI_{t-1} + \beta_5 SIZE_{t-1} + \beta_6 ROA_{t-1} + \beta_7 CAPEX_{t-1} \\ &+ \beta_8 CASH_{t-1} + \epsilon_t. \end{aligned} \tag{2}$$

where the indicator variable *ATP* is either *DCS* or *SB*. If Hypothesis 2 is true, the coefficient β_2 in equation (2) should be positive if *ATP* is the dual-class dummy variable and larger and more significant than the corresponding coefficient if *ATP* is the staggered board dummy variable.

We also consider the effect of net equity issuance on the relationship between the two antitakeover provisions and firm value, by extending the base model in a different direction via the inclusion of the interaction variables $DCS \times NEI$ and $SB \times NEI$. The resulting model is

$$\begin{aligned} FIRMVAL_t = & \beta_0 + \beta_1 ATP_{t-1} + \beta_2 ATP_{t-1} \times NEI_{t-1} + \beta_3 NEI_{t-1} \\ & + \beta_4 R\&D_{t-1} + \beta_5 SIZE_{t-1} + \beta_6 ROA_{t-1} + \beta_7 CAPEX_{t-1} \\ & + \beta_8 CASH_{t-1} + \epsilon_t, \end{aligned} \tag{3}$$

where the indicator variable *ATP* is either *DCS* or *SB*.

In the multivariate regressions, we control for industry- and year-fixed effects and all *t*-statistics are based on standard errors clustered at the firm level. Industry fixed effects are controlled by using two-digit SIC codes. We do not use four-digit SIC codes for this purpose because they encode too many subdivisions within industries. Indeed, since dual-class share structures are sticky, the industry dummy variable would behave very similarly to the dual-class indicator variable, if the former captured too many subdivisions within industries. We do not control for firm-fixed effects for the same reason, since the firm dummy variable would behave just like the dual-class dummy.

To test Hypothesis 3, we follow Bond and Meghir (1994), Brown, Martinsson, and Petersen (2012) and Brown, Fazzari, and Petersen (2009), by using dynamic GMM models to explore the dependence of R&D intensity on equity issuance.

Specifically, we use dynamic GMM regressions to estimate the following model for dual-class and single-class firms, and for staggered board and unitary board firms:

$$\begin{aligned} R\&D_t = &\beta_0 + \beta_1 R\&D_{t-1} + \beta_2 R\&D^2_{t-1} + \beta_3 SALES_t + \beta_4 SALES_{t-1} \\ &+ \beta_5 CF_{t-1} + \beta_6 CF_{t-1} + \beta_7 EQUITY_t + \beta_8 EQUITY_{t-1} + v_t, \end{aligned} \tag{4}$$

We include a year dummy in this model to control for time-fixed effects, and standard errors are robust to heteroskedasticity and within-firm serial correlation.

Due to the small size of the sample of dual-class firms, we use one-step dynamic GMM regressions to estimate equation (4) for dual-class firms and single-class firms, rather than two-step regressions.[11] However, since there are roughly the same number of observations for staggered board firms and unitary board firms, two-step regressions are used to estimate the model for those samples. We considered all independent variables as potential endogenous and applied level variables dated $t-3$ to $t-5$ as instruments. Following Bond, Elston, Mairesse, and Mulkay (2003), Brown, Fazzari, and Petersen (2009), and Brown, Martinsson, and Petersen (2012), the instruments must be lagged for at least three periods if the errors follow a firm-specific MA(1) process in the dynamic GMM model.

If Hypothesis 3 is true, we expect a positive value for the coefficient β_7 for contemporaneous equity issuance in equation (4), in the case of the dual-class sample. We also expect the coefficient to be larger and more significant than the corresponding coefficient for the staggered board sample. This would imply that

[11] Arellano and Bond (1991) considered the estimation of dynamic models with GMM. They compared the results from one-step and two-step GMM estimation, using a firm-year panel dataset, and found a downward bias in standard errors for small unbalanced samples when using two-step GMM.

dual-class firms rely on external equity to finance their research activities, and that they do so to a greater extent than staggered board firms.

5. Empirical Results

5.1. Univariate Tests

Table 3 presents the results of two-sample t-tests for all variables, where the samples are determined by the dual-class and staggered board dummy variables. According to the results in Panel A, we observe significant differences between the values of all variables, when comparing dual-class firms with single-class firms. Dual-class firms have lower firm values (*FIRMVAL*) than single-class firms, which is consistent with Hypothesis 1. This finding also agrees with the evidence from previous studies, such as Masulis, Wang, and Xie (2009), Gompers, Ishii, and Metrick (2010) and Amoako-Adu, Baulkaran, and Smith (2011).

Panel A also indicates that dual-class firms have lower R&D intensities (*R&D*) than their single-class counterparts. This finding agrees with the results of Dey, Nikolaev, and Wang (2016). However, it is inconsistent with the evidence presented by Jordan, Kim, and Liu (2016), whose two-sample t-tests, based on a 1994–2011 sample period, suggested that R&D intensities were higher in dual-class firms.

Baulkaran (2014), Atanassov, Hong, Kalcheva, and Ryou (2016) and Baran, Forst, and Via (2019) highlighted the fact that dual-class shares give founders access to equity capital via public ownership, without requiring them to relinquish control of their companies. This resonates with the fact that net equity issuance (*NEI*) in Panel A is higher for dual-class firms than single-class firms. Finally, we observe that dual-class firms are generally larger (*SIZE*) than single-class firms, with higher returns on assets (*ROA*), higher capital expenditures (*CAPEX*) and lower cash holdings (*CASH*). The univariate tests in previous studies, such as Gompers, Ishii, and Metrick (2010), Jordan, Kim, and Liu (2016) and Baran, Forst, and Via (2019), obtained differing results for these variables, which points to the vagaries of sample selection.

The results of two-sample t-test for firms separated by the staggered board dummy variable are presented in Panel B of Table 3. We observe that firm values (*FIRMVAL*) are lower for staggered board firms than unitary board firms, which is once again consistent with Hypothesis 1. It also resonates with the empirical evidence presented by Bebchuk and Cohen (2005), Faleye (2007) and Guernsey, Guo, Liu, and Serfling (2022).

When comparing R&D intensities (*R&D*) of staggered board firms with R&D intensities of unitary board firms in Panel B, we see that staggered board firms appear to be more engaged in research. This is consistent with the argument advanced by Duru, Wang, and Zhao (2013), Cremers, Litov, and Sepe (2017) and Nguyen, Vu, and Yin (2021) that staggered boards foster corporate innovation by reducing shareholder myopia. Finally, Panel B indicates that staggered board firms are generally larger (*SIZE*) than unitary board firms, and they incur higher capital expenditures (*CAPEX*) and hold more cash (*CASH*).

5.2. Graphical Evidence

In order to develop our intuition concerning the hypotheses formulated in Section 3, we plotted several graphs to illustrate the joint impact of the two antitakeover provisions under consideration and R&D intensity on firm values and net equity issuance. The resulting graphs are displayed in Figures 1 and 2.

We briefly outline the methodology for their construction in this section, before analysing them in light of the above-mentioned hypotheses.

Our univariate tests in Table 2 uncover a substantial difference between dual-class firms and single-class firms in terms of firm size (*SIZE*). Indeed, the average value of this variable for dual-class firms exceeds the average for single-class firms by 0.118, with the difference being statistically significant at the 1% level. Similarly, staggered board firms are significantly larger than unitary board firms in our sample, with the average firm size (*SIZE*) for staggered board firms exceeding the average for unitary boards by 0.237, with the difference also statistically significant at the 1% level. So, to compare the valuations of firms with either of these antitakeover provisions to the valuations of firms without them, we must control for firm size.

To eliminate the effect of firm size and make the firms in our subsamples comparable, we first constructed a year-percentile panel for all observations. For each year, we ranked the observations by firm size and generated a dummy variable indicating the size percentile of each firm. Next, we calculated the average firm value (*FIRMVAL*) of all single-class firms and unitary board firms in the year-percentile panel. Then we demeaned the firm values of all firms in the year-percentile panel by subtracting the average firm value for single-class firms or unitary board firms in the matched year-percentile panel. To compare valuations for dual-class firms with high and low R&D intensities, we generated two subgroups of dual-class firms with above- and below median R&D intensities. Finally, for each year we calculated the average demeaned firm value for single-class firms (which is necessarily zero because of the demeaning process), all dual-class firms, research-active dual-class firms, and research-inactive dual-class firms. Similarly, we split staggered board firms into two groups with high and low R&D intensities, and calculated the average demeaned firm value for unitary board firms (again equal to zero), all staggered board firms, research-active staggered board firms, and research-inactive staggered board firms.

Panel A in Figure 1 plots the time series for yearly average of demeaned firm value (*FIRMVAL*) for single-class firms (equal to zero), all dual-class firms, and dual-class firms with above- and below-median R&D intensities, over the 1991–2019 sample period. We observe that firm values for dual-class firms with low R&D expenditures were lower than the baseline for single-class firms in all years during the sample period. Firm values for dual-class firms with high R&D expenditures were lower than the baseline in most years before 2010, but were consistently above the baseline after 2010. Moreover, firm values for dual-class firms with high R&D intensities exceeded firm values for dual-class firms with low R&D intensities in most years. Importantly, there is a clear divergence in firm values between dual-class firms with high and low R&D expenditures after 2005, and it increased dramatically after 2008.

Panel B in Figure 1 plots the time-series for yearly average of demeaned firm value (*FIRMVAL*) for unitary board firms (equal to zero), all staggered board firms, and staggered board firms with high- and low R&D intensities, over the sample period from 1996 to 2019. Compared with the clear trend in Panel A, the evidence in Panel B is less conclusive. In particular, there is no clear evidence that staggered board firms have higher valuations than unitary firms or that staggered board firms with high R&D intensities enjoy higher valuations than staggered board firms with low R&D intensities or unitary board firms. In conclusion, we do not see a clear effect of R&D investment on firm values for staggered board firms.

The evidence in Figure 1 is broadly consistent with Jordan, Kim, and Liu (2016). In particular, it suggests that dual-class share structures reduce firm values overall, but that research-intensive dual-class firms benefit from higher valuations than single-class firms. However, for staggered boards, Figure 1 does not provide convincing evidence to support the claims by Duru, Wang, and Zhao (2013) and Cremers, Litov, and Sepe (2017) that they create value for the firms that invest in long-term projects. In conclusion, Figure 1 offers tentative support for Hypotheses 1 and 2.

Figure 2 presents graphical evidence on the financing channel for R&D investments for dual-class firms and staggered board firms. The methodology for generating the graphs is the same as for the graphs in Figure 1, except that the vertical axis measures demeaned net equity issuance (*NEI*), rather than demeaned firm value (*FIRMVAL*).

Panel A plots average demeaned net equity issuance (*NEI*) for single-class firms (equal to zero) and dual-class firms with above- and below-median R&D intensities, over the 1991–2019 sample period. We observe that dual-class firms with low R&D intensities issued similar amounts of new equity (relative to firm size) as single-class firms over that period (a bit less in the first half and a bit more in the second half). The same is true for research-intensive dual-class firms, prior to the midpoint in 2005. Thereafter, equity issuance accelerated dramatically for research-intensive dual-class firms, while dual-class firms with low R&D intensities continued to issue about the same amount of equity as single-class firms. Note that this pattern corresponds with the dramatic increase in firm values for research-intensive dual-class firms in the second half of the sample period in Panel A of Figure 1.

Panel B plots average demeaned net equity issuance (*NEI*) for unitary board firms (equal to zero) and staggered board firms with above- and below-meadian R&D. There we see that staggered board firms with low R&D intensities issued slightly less equity than unitary board firms, especially in the first half of the sample period. However, staggered board firms with high R&D intensities issued more equity than unitary board firms over the entire sample period, especially in the second half. Comparing the vertical scales of the graphs in Panels A and B, we note that research intensive dual-class firms issued substantially more equity, on average, than research-intensive staggered board firms in the second half of the sample period, and that this corresponded with a valuation boom for dual-class firms with high research intensities.

Overall, the graphs in Figure 2 indicate that research expenditure stimulates equity issuance for dual-class firms and staggered board firms. However, they do not provide good evidence on whether dual-class firms with high R&D intensities issue more equity than staggered board firms with high R&D intensities. As such, they do not shed much light in Hypothesis 3.

5.3. Results on Firm Value

We begin by estimating the baseline model (1), where the antitakeover dummy variable *ATP* is either *DCS* or *SB*. Columns (1), (4) and (7) in Tables 4 and 5 present the results of these regressions for the case of the dual-class dummy variable (*DCS*) and the staggered board dummy variable (*SB*), respectively. Column (1) in both tables corresponds to the full sample period 1991–2019, while columns (4) and (7) correspond to the subperiods 1991–2005 and 2006–2019. We find negative but insignificant coefficients on *DCS* in Table 4, while the coefficients on *SB* in Table 5 are negative and significant. These results agree with the literature that both dual-class share structures and staggered boards have a negative impact on firm values, in line with Hypothesis 1.[12]

To examine the impact of R&D activity on the relationship between dual-class share structures and firm values, we estimate the extended model (2), where the antitakeover dummy *ATP* is the dual-class indicator variable *DCS*. The results of these regressions are presented in columns (2), (5) and (8) in Table 4, for the sample periods 1991–2019, 1991–2005 and 2006–2019, respectively. For all three sample periods, the coefficients on the dual-class dummy variable are negative and significant, while the coefficients on R&D intensity are positive and significant. This indicates that dual-class share structures alone exert a negative impact on firm values, while R&D expenditure has a positive impact. However, the coefficients on the interaction variable $DCS \times R\&D$ are positive in all three columns and significant in columns (2) and (8).

To quantify the impact of R&D expenditure on firm values for dual-class firms, we consider the results for the full sample period in column (2). Interpreting the coefficients there, it follows that a one standard deviation increase in R&D intensity is expected to increase the firm value of a dual-class firm with average R&D intensity by $1.598 \times {}^{0.12}/_{2.05} = 9.4\%$.[13] In summary, the positive coefficients on the interaction variable in columns (2), (5) and (8) of Table 4 demonstrate that research-intensive dual-class firms benefit from higher valuations, consistent with

[12] See Core, Holthausen, and Larcker (1999), Bebchuk and Cohen (2005), Faleye (2007), Masulis, Wang, and Xie (2009), Bebchuk, Cohen, and Ferrell (2009), Cohen and Wang (2013), and Amoako-Adu, Baulkaran, and Smith (2014).

[13] From Table 2, mean firm value (*FIRMVAL*) is 2.05 and the standard deviation of R&D intensity (*R&D*) is 0.12.

the evidence presented by Jordan, Kim, and Liu (2016). Moreover, this effect is stronger in the second half of our sample period (2006–2019), as illustrated in Panel A of Figure 1.

Next, we investigate the impact of R&D activity on the relationship between staggered boards and firm values. To do so, we estimate model (2) once again, with the antitakeover dummy *ATP* equal to the staggered board indicator variable *SB*. The results of these regressions are reported in columuns (2), (5) and (8) of Table 5, for the sample periods 1991–2019, 1991–2005 and 2006–2019. For all three sample periods, the coefficients on the staggered board dummy variable (*SB*) are insignificant, while the coefficients on R&D intensity (*R&D*) are positive and significant. Crucially, however, the coefficients on the interaction variable $SB \times R\&D$ are negative and significant for all three sample periods. So, as opposed to the case for dual-class firms, R&D activity leads to lower valuations for staggered board firms. Specifically, for the full sample period in column (2), a one-standard deviation increase in R&D intensity is expected to decrease the firm value of a staggered board firm with average R&D intensity by $1.237 \times {}^{0.12}/_{2.05} = 7.2\%$.[14] This result is inconsistent with the claim in Cremers, Litov, and Sepe (2017) that staggered boards increase valuations for firms with long-term projects. However, it is consistent with the evidence in Guernsey, Guo, Liu, and Serfling (2022) that staggered boards reduce firm values, even for firms with long-term investments.

In summary, the results presented above provide support for Hypothesis 2. Table 4 shows that research activity increases valuations for dual-class firms,

[14]From Table 2, mean firm value (*FIRMVAL*) is 2.05 and the standard deviation of R&D intensity (*R&D*) is 0.12.

while Table 5 shows that it decreases valuations for staggered board firms. Consequently, among research-intensive firms, dual-class share structures have a more positive effect on valuations than staggered boards.

5.4. Results on the Financing Channel for R&D

We begin by estimating the dynamic regression model (4) for dual-class firms, single-class firms and all firms in the sample. The results are reported in Table 6, with columns (1) and (2) corresponding to the samples of dual-class firms and single-class firms, respectively, while column (3) corresponds to the full sample. We note that the coefficient (0.519) on contemporary equity issuance ($EQUITY$) in column (1) is positive and statistically significant, while the corresponding coefficient (0.100) in column (2) is much smaller and statistically insignificant. This indicates that dual-class firms issue equity to fund R&D projects, while the same is not true for single-class firms.

Columns (1), (2) and (3) of Table 7 present the results from estimating the dynamic regression model (4) for staggered board firms, unitary board firms and the full sample of firms, respectively. The coefficient (0.018) on equity issuance ($EQUITY$) in column (1) is small and statistically insignificant. This indicates that staggered board firms do not tend to fund their R&D investments by issuing equity.

In summary, our empirical findings support Hypothesis 3 that dual-class firms are more reliant on external equity to finance R&D expenditures. As such, they contribute to previous studies on the financing channel for investments, such as Brown, Fazzari, and Petersen (2009), Brown, Martinsson, and Petersen (2012), and Chang and Song (2014).

6. Conclusion

This paper begins by revisiting the question of how dual-class share structures and staggered boards affect firm values. A significant empirical contribution is that we rerun previous tests using new comprehensive indicator variables that identify dual-class firms and staggered board firms more accurately than widely used dummy variables in the literature. A second novel contribution is that our study is comparative by nature. Existing studies of dual-class share structures and staggered boards examine one of them in isolation. Running empirical tests on dual-class firms and staggered board firms side-by-side sheds more light on the economic features of these two antitakeover provisions.

Our baseline results show that dual-class share structures and staggered boards generally contribute to reductions in firm value. This is consistent with much of the literature. For example, the widely cited study of Gompers, Ishii, and Metrick (2010) documented a similar result for dual-class firms, while Bebchuk and Cohen (2005) did the same for staggered board firms.

More recent studies have focused on the positive aspects of dual-class share structures and staggered boards, which hinge on the idea that by shielding managers from myopic shareholder pressure, these antitakeover provisions allow them to pursue innovative and value-creating projects. Versions of this hypothesis have been tested for dual-class firms by Jordan, Kim, and Liu (2016) and Baran, Forst, and Via (2019) and for staggered board firms by Duru, Wang, and Zhao (2013), Cremers, Litov, and Sepe (2017) and Nguyen, Vu, and Yin (2021), with positive results. We test a version of this hypothesis well, by examining how R&D activity affects the negative impact of dual-class share structures and staggered boards on firm values. We find that R&D activity has a stronger positive impact on firm values for dual-class firms than staggered board firms.

A significant difference between dual-class firms and staggered board firms concerns their willingness to issue new equity. Baulkaran (2014) pointed out that since dual-class firms can issue shares without compromising the voting rights of controlling shareholders, they are likely more willing to do so than single-class firms, which includes the vast majority of staggered board firms. Since equity is the ideal source of capital to fund R&D, it follows that dual-class firms are more likely to issue shares to fund their R&D projects than staggered board firms. Following the Brown, Fazzari, and Petersen (2009) and Brown, Martinsson, and Petersen (2012), who pioneered the use of dynamic GMM regressions to probe the funding channel for R&D, we test whether dual-class firms and staggered board firms issue equity to fund their R&D projects. As expected, based on their preferences for issuing equity, we find that equity is indeed the funding channel for R&D among dual-class firms, but not among staggered board firms. This evidence on the difference between the funding choices of dual-class firms and staggered board firms is a novel contribution.

Table 1

The Dual-Class Indicator Variable

Panel A presents the distribution of dual-class and single-class firms for each year of our sample period 1991–2019. Panel B compares our dual-class dummy variable (DCS) with the dual-class dummy variable ($DCS^{\dagger}$) constructed by Gompers, Ishii, and Metrick (2010).

Panel A: Distribution of Dual-Class and Single-Class Firms

Year	$DCS = 1$	$DCS = 0$
1991	245	3364
1992	269	3704
1993	287	4015
1994	327	4232
1995	346	4380
1996	386	4618
1997	400	4657
1998	398	4424
1999	408	4225
2000	399	4091
2001	359	3777
2002	337	3540
2003	316	3331
2004	305	3275
2005	282	3189
2006	266	3097
2007	251	2997
2008	239	2843
2009	221	2709
2010	220	2623
2011	218	2524
2012	216	2443
2013	219	2441
2014	223	2510
2015	228	2473
2016	225	2408
2017	213	2273
2018	206	2138
2019	159	1758
Total	8168	94059

Panel B: Comparison of DCS and $DCS^{\dagger}$

Year	$DCS = 1$	$DCS^{\dagger} = 1$	$DCS = 1$ & $DCS^{\dagger} = 0$	$DCS = 0$ & $DCS^{\dagger} = 1$
1995	346	318	61	30
1996	386	335	82	28
1997	400	361	71	30
1998	398	368	66	35
1999	408	360	77	29
2000	399	357	66	24
2001	359	324	61	26
2002	337	287	67	17
Total	3033	2710	551	219

Table 2
Descriptive Statistics

This table presents descriptive statistics for the dependent and independent variables in our sample from 1991 to 2019. Panel A reports on the variables used in the multivariate regressions, while Panel B reports on the variables used in the GMM regressions. All continuous variables are winsorized at the 2% level in both tails.

Panel A: Multivariate Regressions

				Percentiles				
	Obs	Mean	Std. Dev.	Min	5%	Median	95%	Max
FIRMVAL	102323	2.05	1.34	0.79	0.79	0.80	1.56	5.81
NEI	102671	0.01	0.05	-0.10	-0.10	-0.10	0.00	0.16
SIZE	102565	7.13	7.78	2.19	2.19	2.25	5.40	9.14
ROA	102235	0.05	0.19	-0.49	-0.49	-0.49	0.10	0.27
CAPEX	101621	0.05	0.05	0.00	0.00	0.00	0.04	0.19
R&D	64697	0.09	0.12	0.00	0.00	0.00	0.04	0.42
CASH	102533	0.20	0.22	0.00	0.00	0.00	0.11	0.70

Panel B: GMM Regressions

	Dual Class	Single Class	SBs	Unitary Board	All Firms
			R&D		
Mean	0.08	0.13	0.13	0.13	0.13
Median	0.04	0.08	0.08	0.08	0.08
SD	0.10	0.13	0.13	0.12	0.13
			SALES		
Mean	1.08	1.10	1.04	1.08	1.10
Median	0.97	0.99	0.94	0.95	0.99
SD	0.69	0.74	0.69	0.73	0.73
			CF		
Mean	0.11	0.09	0.09	0.09	0.09
Median	0.12	0.12	0.12	0.13	0.12
SD	0.16	0.19	0.18	0.20	0.19
			EQUITY		
Mean	0.01	0.04	0.03	0.03	0.04
Median	0.00	0.00	0.00	0.00	0.00
SD	0.08	0.12	0.12	0.12	0.12

Table 3
Univariate Tests for All Variables by Antitakeover Provision Dummies

This table presents the results of two-sample t-tests for all variables, where the samples are determined by the dual-class indicator variable (*DCS*) or the staggered board indicator variable (*SB*). Statistical significance for the differences is indicated at the 1%, 5% and 10% levels by ***, **, and *, respectively.

Variables	Obs.(0)	Mean(0)	Obs.(1)	Mean(1)	Diff.(0-1)	t-value
Panel A: Dual-Class Dummy						
FIRMVAL	60089	2.283	3981	2.037	0.246***	10.411
SIZE	60089	7.068	3981	7.186	-0.118***	-3.793
ROA	60089	0.018	3981	0.072	-0.054***	-15.532
CAPEX	60089	0.046	3981	0.049	-0.002***	-3.344
R&D	60089	0.095	3981	0.055	0.040***	21.065
CASH	60089	0.257	3981	0.194	0.063***	15.932
NEI	60089	0.013	3981	0.018	-0.005***	-5.230
Panel B: Staggered Board Dummy						
FIRMVAL	21928	2.250	21615	2.191	0.059***	4.429
SIZE	21928	5.332	21615	5.569	-0.237***	-12.651
ROA	21928	0.029	21615	0.026	0.003	1.254
CAPEX	21928	0.045	21615	0.046	-0.002***	-3.780
R&D	21928	0.090	21615	0.093	-0.003***	-2.740
CASH	21928	0.252	21615	0.270	-0.017***	-7.472
NEI	21928	0.011	21615	0.018	-0.008***	-14.389

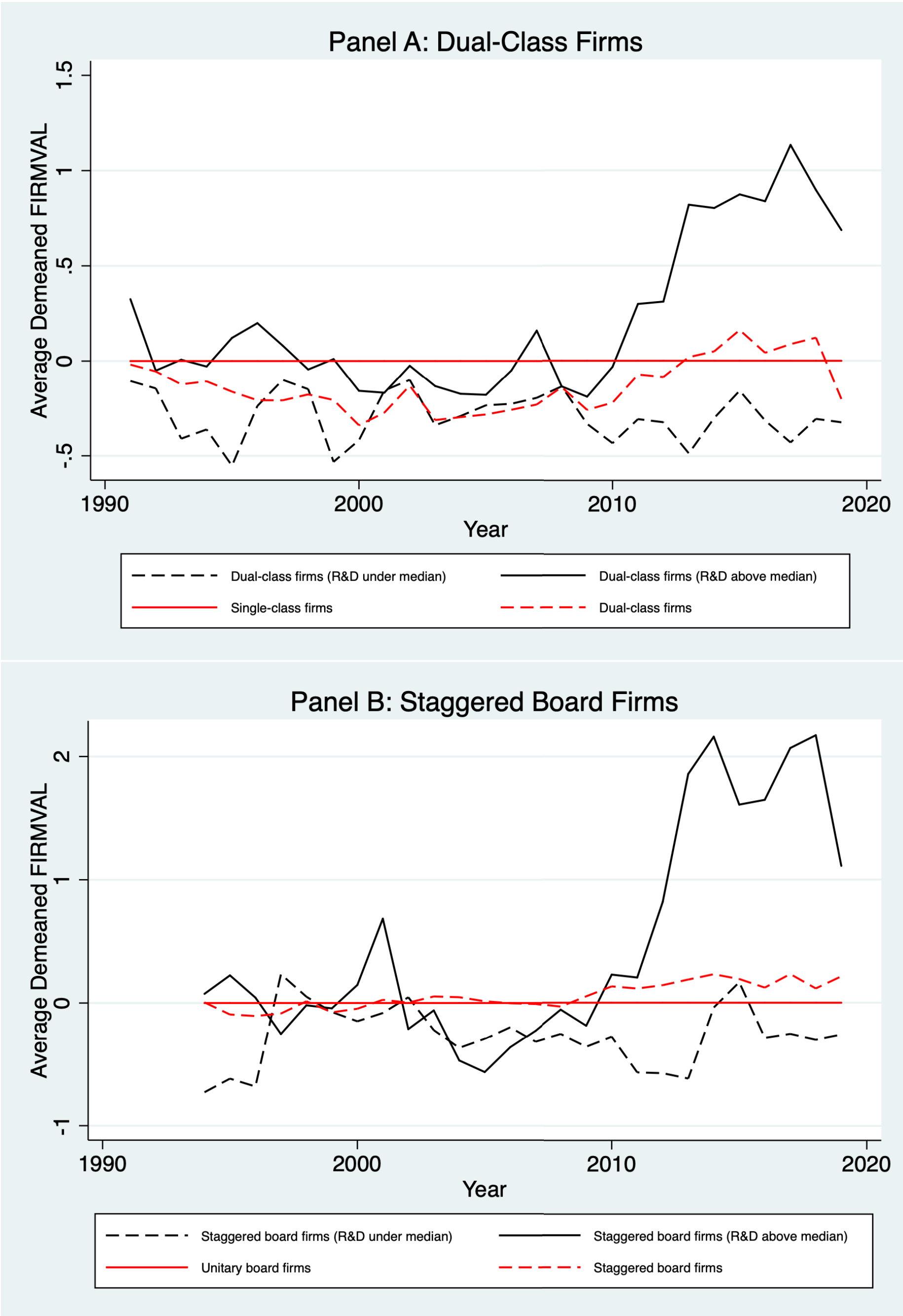

Figure 1. The impact of antitakeover provisions and R&D expenditure on firm value

This figure illustrates the joint impact of antitakeover provisions and R&D activity on firm value. For each year, we rank the observations according to firm size (*SIZE*) and generate an indicator variable that identifies each firm's size percentile. Then we calculate the average firm value (*FIRMVAL*) of all single-class firms (Panel A) and unitary board firms (Panel B) in each year-percentile panel. Next, we demean the firm values (*FIRMVAL*) of all firms in each year-percentile panel by subtracting the average firm value (*FIRMVAL*) of the single-class firms (Panel A) and unitary board firms (Panel B) in the matched year-percentile panel. To illustrate the dependence of firm values on R&D expenditure for dual-class firms and staggered board firms, we create two subgroups of those firms separated by median R&D intensity (*R&D*). This leaves us with four subsamples: (i) single-class firms (Panel A) and unitary board firms (Panel B); (ii) dual-class firms (Panel A) and staggered board firms (Panel B); (iii) above-median R&D-intensity dual-class firms (Panel A) and above-median R&D-intensity staggered board firms (Panel B); (iv) below-median R&D-intensity dual-class firms (Panel A) and below-median R&D-intensity staggered board firms (Panel B). Finally, we calculate the average demeaned firm value (*FIRMVAL*) for the four subsamples in each year and plot the results.

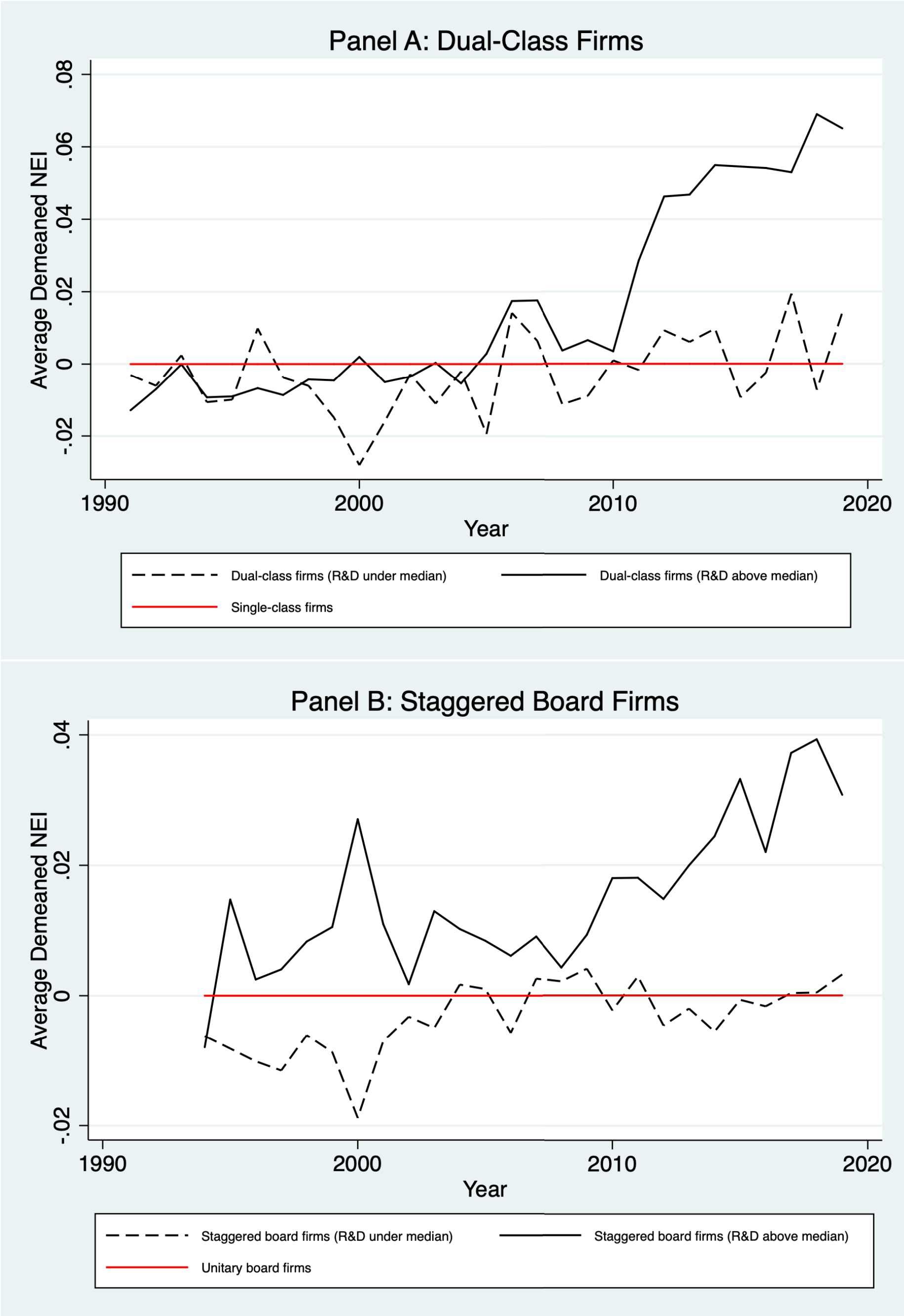

Figure 2. The impact of antitakeover provisions and R&D expenditure on net equity issuance

This figure illustrates the joint impact of antitakeover provisions and R&D activity on net equity issuance. For each year, we rank the observations according to firm size (*SIZE*) and generate an indicator variable that identifies each firm's size percentile. Then we calculate the average net equity issuance (*NEI*) of all single-class firms (Panel A) and unitary board firms (Panel B) in each year-percentile panel. Next, we demean the firm values (*NEI*) of all firms in each year-percentile panel by subtracting the average net equity issuance (*NEI*) of the single-class firms (Panel A) and unitary board firms (Panel B) in the matched year-percentile panel. To illustrate the dependence of firm values on R&D expenditure for dual-class firms and staggered board firms, we create two subgroups of those firms separated by median R&D intensity (*R&D*). This leaves us with four subsamples: (i) single-class firms (Panel A) and unitary board firms (Panel B); (ii) dual-class firms (Panel A) and staggered board firms (Panel B); (iii) above-median R&D-intensity dual-class firms (Panel A) and above-median R&D-intensity staggered board firms (Panel B); (iv) below-median R&D-intensity dual-class firms (Panel A) and below-median R&D-intensity staggered board firms (Panel B). Finally, we calculate the average demeaned net equity issuance (*NEI*) for the four subsamples in each year and plot the results.

Table 4
The Impact of Dual-Class Share Structures on Firm Values

This table presents the results of panel regressions of firm value against the dual-class dummy variable (*DCS)* and other firm characteristic variables. The dependent variable is firm value (*FIRMVAL*) and all independent variables are lagged by one year. Columns(1)–(3) report the results for the full sample period 1991–2019, while columns(4)–(6) and columns (7)–(9) report the results for the subperiods 1991–2005 and 2006–2019, respectively. We control for industry- and year-fixed effects in all regressions. Standard errors are clustered at the firm level and statistical significance at the 1%, 5% and 10% levels are signified by ***, **, and *, respectively.

Variables	(1) $FIRMVAL_{[t]}$	(2) $FIRMVAL_{[t]}$	(3) $FIRMVAL_{[t]}$	(4) $FIRMVAL_{[t]}$	(5) $FIRMVAL_{[t]}$	(6) $FIRMVAL_{[t]}$	(7) $FIRMVAL_{[t]}$	(8) $FIRMVAL_{[t]}$	(9) $FIRMVAL_{[t]}$
		1991-2019			1991-2005			2006-2019	
DCS_{t-1}	-0.012	-0.102*	-0.041	0.004	-0.02	0.015	-0.051	-0.191***	-0.111*
	(-0.26)	(-1.89)	(-0.79)	(0.07)	(-0.33)	(0.26)	(-0.77)	(-2.75)	(-1.65)
$R\&D_{t-1}$	3.263***	3.202***	3.261***	3.238***	3.223***	3.237***	3.702***	3.587***	3.687***
	(20.20)	(19.73)	(20.20)	(17.13)	(16.94)	(17.12)	(14.27)	(13.83)	(14.23)
$DCS_{t-1} \times R\&D_{t-1}$		1.598***			0.434			2.458***	
		(2.85)			(0.69)			(2.79)	
NEI_{t-1}	1.051***	1.035***	0.923***	2.120***	2.117***	2.179***	0.928***	0.889***	0.706***
	(5.96)	(5.89)	(5.06)	(8.36)	(8.36)	(8.32)	(4.25)	(4.08)	(3.11)
$DCS_{t-1} \times NEI_{t-1}$			1.698**			-0.834			2.750***
			(2.39)			(-0.90)			(3.15)
$SIZE_{t-1}$	-0.007	-0.007	-0.007	-0.038***	-0.038***	-0.038***	0.020*	0.019*	0.018*
	(-0.89)	(-0.85)	(-0.89)	(-4.10)	(-4.08)	(-4.12)	(1.79)	(1.75)	(1.69)
ROA_{t-1}	0.510***	0.507***	0.508***	0.094	0.095	0.094	1.294***	1.274***	1.285***
	(5.21)	(5.18)	(5.19)	(0.89)	(0.89)	(0.89)	(8.18)	(8.06)	(8.14)
$CAPEX_{t-1}$	3.072***	3.064***	3.069***	3.093***	3.092***	3.093***	2.867***	2.841***	2.848***
	(12.35)	(12.32)	(12.33)	(11.50)	(11.49)	(11.51)	(6.57)	(6.51)	(6.54)
$CASH_{t-1}$	1.370***	1.375***	1.370***	1.298***	1.300***	1.298***	1.535***	1.541***	1.531***
	(20.97)	(21.04)	(20.97)	(17.37)	(17.38)	(17.37)	(15.07)	(15.22)	(15.08)
N	59,440	59,440	59,440	35,284	35,284	35,284	24,156	24,156	24,156
Adjusted R^2	0.261	0.262	0.261	0.277	0.277	0.277	0.272	0.274	0.273
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster at the Firm Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5
The Impact of Staggered Boards on Firm Values

This table presents the results of panel regressions of firm value against the staggered booard dummy variable (*SB)* and other firm characteristic variables. The dependent variable is firm value (*FIRMVAL*) and all independent variables are lagged by one year. Columns(1)–(3) report the results for the full sample period 1991–2019, while columns(4)–(6) and columns (7)–(9) report the results for the sub-periods 1991–2005 and 2006–2019, respectively. We control for industry- and year-fixed effects in all regressions. Standard errors are clustered at the firm level and statistical significance at the 1%, 5% and 10% levels are signified by ***, **, and *, respectively.

Variables	(1) $FIRMVAL_{[t]}$	(2) $FIRMVAL_{[t]}$	(3) $FIRMVAL_{[t]}$	(4) $FIRMVAL_{[t]}$	(5) $FIRMVAL_{[t]}$	(6) $FIRMVAL_{[t]}$	(7) $FIRMVAL_{[t]}$	(8) $FIRMVAL_{[t]}$	(9) $FIRMVAL_{[t]}$
		1996-2019			1996-2005			2006-2019	
SB_{t-1}	-0.124***	-0.011	-0.132***	-0.138***	-0.025	-0.126***	-0.091***	0.021	-0.104***
	(-4.70)	(-0.37)	(-4.88)	(-4.24)	(-0.68)	(-3.74)	(-2.67)	(0.57)	(-3.07)
$R\&D_{t-1}$	3.803***	4.397***	3.803***	3.982***	4.559***	3.979***	3.749***	4.346***	3.746***
	-19.62	-19.35	-19.62	-16.78	-16.31	-16.77	-13.7	-13.78	-13.7
$SB_{t-1} \times R\&D_{t-1}$		-1.237***			-1.265***			-1.189***	
		(-5.46)			(-4.36)			(-3.95)	
NEI_{t-1}	1.225***	1.230***	0.962***	1.958***	1.964***	2.318***	1.080***	1.086***	0.479
	(6.46)	(6.48)	(3.69)	(6.78)	(6.81)	(5.77)	(4.75)	(4.77)	(1.59)
$SB_{t-1} \times NEI_{t-1}$			0.534			-0.68			1.263***
			(1.50)			(-1.24)			(2.88)
$SIZE_{t-1}$	0.011	0.012	0.011	-0.007	-0.008	-0.008	0.018	0.020*	0.016
	(1.23)	(1.31)	(1.19)	(-0.63)	(-0.71)	(-0.68)	(1.50)	(1.69)	(1.31)
ROA_{t-1}	0.781***	0.781***	0.783***	0.445***	0.446***	0.444***	1.139***	1.138***	1.143***
	(6.55)	(6.55)	(6.56)	(3.32)	(3.33)	(3.31)	(6.68)	(6.68)	(6.71)
$CAPEX_{t-1}$	3.226***	3.193***	3.227***	3.721***	3.697***	3.720***	2.517***	2.480***	2.506***
	(10.45)	(10.39)	(10.46)	(10.45)	(10.42)	(10.44)	(5.52)	(5.47)	(5.52)
$CASH_{t-1}$	1.366***	1.388***	1.365***	1.246***	1.266***	1.246***	1.509***	1.533***	1.500***
	(18.04)	(18.33)	(18.01)	(13.49)	(13.66)	(13.49)	(14.47)	(14.75)	(14.38)
N	39,938	39,938	39,938	19,343	19,343	19,343	20,593	20,593	20,593
Adjusted R^2	0.263	0.265	0.263	0.27	0.273	0.27	0.273	0.276	0.274
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster at the Firm Level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6
Dynamic R&D Regressions for Dual-Class and Single-Class Firms

This table presents the one-step GMM in the first difference. The companies in this sample are selected by the average R&D intensity during the sample period, and all companies in the sample have a mean R&D intensity above the quartile R&D intensity of all companies. The dependent variable is R&D. Level variables dated t-3, t-4 and t-5 are used as instruments. Year dummies are included in all regressions to control the time fixed effects. Standard errors robust to heteroskedasticity and within-firm serial correlation, and statistical significance at the 1%, 5% and 10% are indicated by ***, **, and *, respectively. Sample period: 1991-2019.

Variables	(1) Dual Class Firms *R&D*	(2) Single Class Firms *R&D*	(3) Full Sample *R&D*
L.R&D	0.109	0.542**	0.580**
	(0.903)	(0.028)	(0.015)
L.R&D^2	0.888	0.413	0.348
	(0.644)	(0.297)	(0.371)
SALES	0.168*	0.001	-0.004
	(0.081)	(0.970)	(0.848)
L.SALES	-0.087*	-0.028**	-0.026**
	(0.066)	(0.029)	(0.039)
CF	-0.082	0.059	0.062
	(0.688)	(0.664)	(0.635)
L.CF	0.078	0.013	0.014
	(0.363)	(0.695)	(0.669)
EQUITY	0.519**	0.100	0.104*
	(0.026)	(0.121)	(0.095)
L.EQUITY	-0.065	-0.099***	-0.099***
	(0.485)	(0.000)	(0.000)
Observations	1,994	33,547	35,658
M(2)	0.606	0.001	0.001
J-test	0.633	0.659	0.660

Table 7
Dynamic R&D Regressions for Staggered and Unitary Board Firms

This table presents the two-step GMM in the first difference. The companies in this sample are selected by the average R&D intensity during the sample period, and all companies in the sample have a mean R&D intensity above the quartile R&D intensity of all companies. The dependent variable is R&D. Level variables dated t-3, t-4 and t-5 are used as instruments. Year dummies are included in all regressions to control the time-fixed effects. Standard errors robust to heteroskedasticity and within-firm serial correlation, and statistical significance at the 1%, 5% and 10% are indicated by ***, **, and *, respectively. Sample period: 1996-2019.

	(1)	(2)	(3)
	Staggered Boards Firms	Unitary Board Firms	Full Sample
Variables	*R&D*	*R&D*	*R&D*
L.R&D	0.283	0.991**	0.632***
	(0.380)	(0.012)	(0.008)
L.R&D^2	0.577	-0.662	0.262
	(0.331)	(0.318)	(0.500)
SALES	0.006	0.02	-0.002
	(0.851)	(0.671)	(0.925)
L.SALES	-0.021	-0.042*	-0.026**
	(0.271)	(0.088)	(0.039)
CF	0.207*	0.044	0.041
	(0.092)	(0.816)	(0.747)
L.CF	-0.046	0.022	0.018
	(0.215)	(0.639)	(0.571)
EQUITY	0.018	0.142	0.097
	(0.845)	(0.160)	(0.121)
L.EQUITY	-0.063**	-0.069***	-0.100***
	(0.011)	(0.001)	0.000
Observations	13,244	13,336	35,658
M(2)	0.495	0.781	0.001
J-test	0.958	0.588	0.696

CHAPTER 3

Antitakeover Provisions and Debt Maturity Structure

Using a comprehensive sample of dual-class firms and staggered board firms spanning the period from 2000 to 2019, we examine the impact of dual-class share structures and staggered boards on the maturity structure of corporate debt. We observe that dual-class firms maintain significantly higher levels of debt than single-class firms, while staggered board firms maintain lower levels of debt than unitary board firms. With respect to debt maturity, we document a greater propensity among dual-class firms to fund themselves with shorter maturity debt, while staggered board firms show a preference for longer maturity debt. However, the picture changes when we examine research-intensive firms. The preference for shorter-term debt is less pronounced in dual-class firms with high R&D intensities, since the textbook maturity matching hypothesis that firms should match the maturities of their liabilities with the maturities of their assets. By contrast, staggered board firms appear to have a reduction in debt maturities as R&D increases, since the information asymmetry hypothesis that R&D should reduce debt maturities because it contributes to information asymmetry.

1. Introduction

Dual-class share structures and staggered boards are common antitakeover defences that encourage the pursuit of long-term growth strategies by shielding managers from short-term shareholder pressure. However, in both cases, this benefit comes at the cost of weaker governance, increased managerial entrenchment and higher agency costs. But there are also important differences between dual-class share structures and staggered boards.

The most important difference concerns the mechanism by which insiders are shielded from outside shareholder pressure. Dual-class share structures do it by separating the voting rights and cash flow rights of shareholders, with insiders typically holding superior voting shares. Consequently, outside shareholders, with inferior voting shares, cannot exert meaningful pressure on insiders. By contrast, staggered boards protect insiders from outside shareholder pressure by partitioning a firm's board of directors into different cohorts that serve different terms. This makes it harder for a block of shareholders to gain sufficient control of the board to advance their agenda.

Another crucial difference between dual-class share structures and staggered boards concerns information asymmetry and analyst following. It is widely accepted that information asymmetry and analyst following are related. For example, O'Brien and Bhushan (1990) and Lang and Lundholm (1996) found that analysts tend to follow firms in regulated industries that require good information disclosure and they prefer to follow firms with sound corporate disclosure policies. Similarly, Healy, Hutton, and Palepu (1999) found that analysts are attracted to firms with better disclosure, while the evidence in Lang, Lins, and Miller (2004) established that they tend to follow firms without incentives to withhold or manipulate information.

With respect to information asymmetry, dual-class firms are widely considered to lack transparency. Banerjee (2006) suggested that this feature helps them reduce the cost of underinvestment. Based on a theoretical model, he argued that fully revealing information about investments to outside shareholders is costly and inefficient. The model suggests that dual-class share structures allow managers to make investment decisions without communicating all information to shareholders, thereby improving the efficiency of investment decision-making. Lim (2016) examined the effect of dual-class share structures on information disclosure and found that information asymmetry is higher in dual-class firms than in single-class firms. That study also showed that dual-class firms improve disclosure when they need external financing. Consistent with the evidence that dual-class firms have poorer information environments than single-class firms, Jordan, Kim, and Liu (2016) found that they have lower analyst followings.

Jiraporn, Chintrakarn, and Kim (2012) considered the impact of staggered boards on information environments and analyst coverage. Compared with unitary board firms, they found that firms with staggered boards have significantly higher levels of analyst coverage and less information asymmetry. They interpreted this finding by arguing that staggered boards shield managers from takeover threats, which reduces their career concerns about the consequences of information disclosure. Better information disclosure, in turn, means that staggered board firms attract more analysts. Jiraporn, Chintrakarn, and Kim (2012) also documented that staggered board firms with higher analyst followings enjoy higher valuations, since analysts mitigate agency problems by reducing information asymmetry.

Several studies point to a negative relationship between information asymmetry and debt maturity. This was predicted by the theoretical models of Flannery (1986) and Diamond (1991a), but it has also been established empirically. For example, Barclay and Smith (1995) examined the determinants of corporate debt maturity and reported that large and highly regulated firms are more likely to issue long-term debt. They also found that firms with more information asymmetry issue shorter-term debt. Along similar lines, Berger, Espinosa-Vega, Frame, and Miller (2005) showed that low-risk firms are more likely to issue short-term debt when information asymmetry is high and that debt maturity increases in low-risk firms as information asymmetry decreases.

In this paper we examine the debt maturity structures of dual-class firms and staggered board firms. Our first contribution is to compare the debt maturities of firms with these two antitakeover provisions in light of the differences in their information environments. Consistent with the high levels of information asymmetry in dual-class firms, we find that they issue shorter-term debt than single-class firms. By contrast, staggered board firms, which generally have better information environments than their unified board counterparts, issue less short-term debt.

Our second contribution is to uncover the impact of R&D expenditure on the debt maturity structures of dual-class firms and staggered board firms. Here we have to deal with two competing hypotheses. First, based on well-established theoretical arguments by Myers (1977), Jensen (1986), and Diamond (1991b), firms should try to match the maturity structures of their debt with the maturities of their investments, in order to manage liquidity risk. Applying this principle to R&D projects, which are generally very long-term investments with uncertain payoffs, we expect research-intensive firms to be less reliant on short-term debt. On other other hand, R&D increases information asymmetry, as documented by Aboody and Lev (2000) and Barron, Byard, Kile, and Riedl (2002), for example. Hence, the negative relationship between information asymmetry and debt maturity implies that increased R&D expenditures may in fact reduce debt maturities. We find that although dual-class firms generally fund themselves with more short-term debt than long-term debt, this pattern is more pronounced in dual-class firms with fewer R&D investments, consistent with the maturity matching hypothesis. For staggered board firms, we find that R&D investments are associated with higher levels of debt in aggregate, but without a significant change in debt maturities.

The remainder of the paper is organised as follows. Section 2 discusses the relevant literature on dual-class shares, staggered boards, information asymmetry, analyst coverage, and debt maturity, while Section 3 uses that literature to extract our hypotheses. In Section 4 we delve into sample selection, variable construction, and empirical methodology. Section 5 presents our empirical results, and Section 6 concludes.

2. Literature Survey

Dual-class shares are common stock with different levels of voting rights for different share classes. The owners of so-called superior shares have greater voting rights than the owners of other classes of shares. Dual-class share structures are frequently used in founder-led companies, where the superior voting shares are usually held by company founders. This allows them to maintain control of their firms, even if they sell the majority of the cash flow rights to outside shareholders.

Gompers, Ishii, and Metrick (2010) drew attention to the *wedge* between shareholders' voting rights and cash-flow rights in dual-class firms, by showing that it weakens governance and leads to managerial entrenchment and agency problems. Along similar lines, Li and Zaiats (2018) found that dual-class firms tend to introduce more shareholder rights protections and have less board independence than single-class firms, and shareholder rights in dual-class firms decrease with the size the wedge. Furthermore, they showed that firm value is negatively related to the size of the wedge, but positively related to shareholder protections in dual-class firms.

The weaker governance in dual-class firms leads to higher agency costs. For example, Amoako-Adu, Baulkaran, and Smith (2011) examined the impact of dual-class share structures on managerial compensation. Compared to single-class firms with matching levels of control concentration, they found that dual-class firms pay more in terms of executive compensation. They attributed the agency problems in dual-class firms to unbalanced voting rights. In a study of the dividend policies of dual-class firms, Amoako-Adu, Baulkaran, and Smith (2014) found that the wedge between voting rights and cash flow rights in dual-class forms has a negative effect on cash distributions to shareholders via dividend payments and share repurchases.

While dual-class shares separate voting rights and cash flow rights, staggered boards separate the board of directors of a firm into different cohorts that serve different terms. This makes it more difficult for a block of shareholders to gain control of the firm's board, which in turn reduces the likelihood of a takeover. Compared with dual-class share structures, which are quite sticky, firms can easily switch between staggered boards and unitary boards, with the recent trend being away from staggered boards.[1] Guo, Kruse, and Nohel (2008) claim that

[1]Several studies mention the decline of staggered boards in recent decades, due to the negative association with firm values (see e.g. Faleye (2007) and Zhao and Chen (2008)). Recently, Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022) constructed a comprehensive staggered board indicator variable that includes firms outside the S&P 1500. They found that the fraction of S&P 1500 firms with staggered boards decreased from 58% to 30% over the period from 1996 to 2020, while the fraction of staggered board firms outside the S&P 1500 increased from 40% to 53% over the same period.

outside shareholders play an important role in driving this *destaggering* process, motivated by the negative impact of staggered boards on firm values.

Like dual-class share structures, staggered boards also weaken governance and facilitate entrenchment. Bebchuk and Cohen (2005) reported that staggered board firms have significantly lower firm values than unitary board firms. Moreover, the reduction in firm values is more pronounced when staggered boards are established by corporate charters rather than company bylaws, since corporate charters are harder to amend. They interpreted the lower firm values of staggered board firms as an entrenchment cost. Faleye (2007) argued that staggered boards reduce firm values because entrenchment decreases managerial efficiency. That study confirmed that staggered board firms have significantly lower firm values than unitary board firms, and found that managers of staggered board firms experience less market discipline. Finally, Jiraporn and Chintrakarn (2009) observed that managerial entrenchment and agency problems are prominent in staggered board firms. They argued that staggered board firms pay larger dividends in order to mitigate agency conflicts with outside shareholders.

On the plus side, dual-class share structures and staggered boards are known to shield managers from myopic shareholders and allow them to pursue long-term projects. For example, Jordan, Kim, and Liu (2016) found that, compared with single-class firms, dual-class firms face less myopic market pressure, have better growth opportunities, and enjoy higher valuations. Moreover, after unifications of dual-class shares, myopic market pressure increases and growth opportunities decrease in the newly minted single-class firms. Related results were reported by Baran, Forst, and Via (2019), who suggested that dual-class firms provide an ideal environment for innovation. They presented detailed evidence showing that the concentrated control in dual-class firms has a positive effect on the quality of patents and the efficiency of R&D spending.

Similar results have been obtained for staggered board firms. For example, Duru, Wang, and Zhao (2013) found that staggered boards are helpful for reducing takeover pressure and managerial myopia in opaque firms. As a result, opaque firms with staggered boards enjoy higher valuations than opaque firms with unitary boards. Moreover, firms with staggered boards invest more in R&D and enjoy higher pay-performance sensitivities than unitary board firms. Cremers, Litov, and Sepe (2017) argued that staggered boards alleviate pressure from short-term myopic investors and allow firms to invest more in long-term projects. They found that staggered boards increase firm values by encouraging firms to undertake long-term projects.

Despite their similarities in terms of facilitating managerial entrenchment and increasing agency costs, on the one hand, and mitigating shareholder myopia and encouraging long-term investment, on the other hand, there are important differences between dual-class share structures and staggered boards, with information asymmetry and analyst coverage being two prominent examples. Jiraporn, Chintrakarn, and Kim (2012) documented a significant positive relationship between staggered boards and analyst coverage. They interpreted this result by arguing that managers of staggered board firms are protected from shareholder discipline and thus less likely to worry about information disclosure. This in turn makes staggered board firms more attractive to analysts and reduces information asymmetry.

By contrast, dual-class firms exhibit higher levels of information asymmetry and are followed by fewer analysts than single-class firms. Banerjee (2006) argued that fully revealing investment information to outside shareholders is costly and inefficient. In his theoretical model, the efficiency of investment decision-making is improved by dual-class share structures because managers are not compelled to disclose as much information to external shareholders. From an empirical perspective, Lim (2016) found that information asymmetry is higher in dual-class firms than single-class firms, and that dual-class firms only improve disclosure when they need external financing. Finally, the empirical evidence in Jordan, Kim, and Liu (2016) shows that dual-class firms are followed by fewer analysts than single-class firms.

The information environment of a firm plays an important role in determining its cost of debt and its debt maturity structure. Since information asymmetry increases uncertainty about default risk, lenders are cautious about the long-term debt of firms with poor information environments. The relationship between debt maturity and information asymmetry has been explored in several theoretical and empirical papers. In the signalling model of Flannery (1986), firms have private information about their quality that prevents investors from distinguishing between good firms and bad firms. As a result, good firms will consider their long-term debt to be underpriced and will prefer to issue short-term debt. Conversely, bad firms will prefer to sell long-term debt, which they consider to be overpriced. Rational investors are aware of these incentives and price risky corporate debt accordingly. In the pooling equilibrium without transaction costs, both good and bad firms end up issuing short-term debt. In a related theoretical study, Diamond (1991a) considered that debt maturity is not a monotonic function of credit ratings, but also depends on private information. In his model, borrowers with private information favour short-maturity debt.

The empirical study of Barclay and Smith (1995) examined the determinants of debt maturity. They found that large, low-growth, highly regulated firms issue debt with longer maturities. Such firms naturally exhibit low levels of information asymmetry. Berger, Espinosa-Vega, Frame, and Miller (2005) examined the impact of information asymmetry on the choice of debt maturity and found that low-risk firms with high information asymmetry are significantly more likely to issue short-term debt and that debt maturities increase significantly as information asymmetry decreases. Wittenberg Moerman (2009) investigated the impact of information asymmetry on the cost of debt and the choice of debt maturity. She found that information asymmetry increases the cost of debt and reduces debt maturity. Finally, Daniels, Diro Ejara, and Vijayakumar (2010) studied the determinants of municipal debt maturity. As is the case for corporate bonds, they established that municipal bond maturities are positively related to credit quality and negatively related to information asymmetry.

The relationship between information asymmetry and the cost of debt has also been studied extensively. Sengupta (1998) found that firms with better disclosure and lower information asymmetry enjoy a lower cost of debt because detailed disclosure reduces a lender's assessment of default risk. Similarly, Mansi, Maxwell, and Miller (2011) found that increased analyst coverage reduces a firm's cost of debt. Finally, Derrien, Kecskés, and Mansi (2016) observed that increased information asymmetry is associated with a higher cost of debt and a higher rate of credit events. They argued that information asymmetry should be recognised as a risk factor for debt holders.

Overall, the literature agrees that firms with high levels of information asymmetry and poor information disclosure have a higher cost of debt and shorter debt maturities, since lenders are less inclined to invest in the long-term debt of such firms. Since dual-class firms have higher levels of information asymmetry and lower levels of analyst coverage than single-class firms, while staggered board firms are more transparent than unitary board firms, with higher levels of analyst coverage, we expect to see different debt maturity structures for dual-class firms and staggered board firms, with the latter issuing more long-term debt and the former relying more on short-term debt.

Another interesting aspect of debt is that it can serve as an additional source of external monitoring. Since dual-class share structures and staggered boards are associated with higher agency costs, due to increased managerial entrenchment, firms with these two antitakeover defences may issue debt in order to improve external monitoring. The literature offers some support for this idea, showing that the monitoring power of debt can reduce agency costs and benefit shareholders. In an early theoretical study, Diamond (1991b) explored the idea that borrowers can exploit the monitoring role of debt to acquire a good reputation when moral hazard is widespread. In his model, borrowers seek external monitoring to obtain favourable records that will be useful for predicting future actions without monitoring.

The monitoring role of debt has been investigated empirically. Harvey, Lins, and Roper (2004) examined whether debt, regarded as an additional source of monitoring, can mitigate agency conflicts. They found that debt creates incremental benefits for firms with agency problems and increases shareholder value in companies with higher expected agency costs. Moreover, shareholders benefit from the monitoring feature of debt when information asymmetry is significant, since debt holders monitor the behaviour of a firm's managers to limit default risk. This results in better investment decisions, especially for firms in financial distress. Jensen (1986) argued that debt acts as a governance mechanism that could reduce the extraction of private benefits by insiders. In this regard, short-term debt is more effective. Myers (1977) described how short-term debt could alleviate the underinvestment problem for firms with high agency costs. Along similar lines, Stulz (2000) argued that short maturity debt is an effective device for monitoring managerial decisions and disciplining managers. Finally, the recent paper by Dey, Nikolaev, and Wang (2016) investigated the role of debt in dual-class firms. They found that dual-class firms are more leveraged and more likely to issue private debt than single-class firms. This result was more significant for dual-class firms with higher agency conflicts. They argued that debt acts as a supplementary governance mechanism to discipline the managers of dual-class firms, and that it helps mitigate agency conflicts between managers and outside shareholders.

Some studies suggest that analyst coverage or institutional ownership could substitute for the monitoring role of debt for firms with high agency costs. For example, Chang, Dasgupta, and Hilary (2006) found that a higher level of analyst following decreases the likelihood of issuing debt, while Knyazeva (2007) suggested that analyst following can replace other forms of monitoring. The same is true for the monitoring role of institutional ownership. Bathala, Moon, and Rao (1994), Grier and Zychowicz (1994), and Chung and Wang (2014) found that higher levels of institutional ownership are associated with lower levels of debt, since institutional ownership plays a similar monitoring role as debt, in terms of mitigating agency conflicts.

Considering that dual-class firms have lower levels of analyst following and institutional ownership than single-class firms, while staggered board firms have higher levels of analyst coverage than unitary board firms, higher levels of short-term debt among dual-class firms is consistent with the idea that they use short-term debt to mitigate agency conflicts. By contrast, staggered board firms, with their higher levels of analyst coverage, already enjoy better external monitoring and do not need to issue debt for this purpose.

3. Hypothesis Development

The theoretical models of Flannery (1986) and Diamond (1991a) highlight the role of information asymmetry as a determinant of debt maturity, predicting that firms with poorer information environments should be more reliant on short-maturity debt. In a similar vein, the theoretical model of Diamond and Verrecchia (1991) shows that better disclosure reduces liquidity risk, which allows firms to issue debt with longer maturities.

The relationship between information asymmetry and debt maturity has been tested extensively. Barclay and Smith (1995) presented evidence that information asymmetry affects debt maturity choices, with higher levels of information asymmetry associated with shorter debt maturities. Guedes and Opler (1996) found that firm size and bond rating play an important role in the issuance of long-dated debt. Since disclosure is generally better for large firms with sound bond ratings, this finding links improved disclosure with longer debt maturities. Finally, Berger, Espinosa-Vega, Frame, and Miller (2005) found that information asymmetry plays an important role in explaining a firm's debt maturity, especially for firms with low risk. Other empirical studies documenting a negative relationship between information asymmetry and debt maturity include Goswami

(2000), Danisevska (2002), Wittenberg Moerman (2009) and Daniels, Diro Ejara, and Vijayakumar (2010).

Analyst coverage also has an impact on debt maturity, although it may be mediated by information asymmetry because analysts tend to follow firms with better information environments. Khoo and Adrian (2022) investigated the relationship between managerial ability and debt maturity choice. They reported that firms with high-ability managers tend to issue debt with shorter maturities, with the effect intensifying as information asymmetry increases. They also observed that high-ability managers reduce the use of short-maturity debt as analyst coverage increases, which can be interpreted as a consequence of the negative relationship between analyst coverage and information asymmetry.

Dual-class firms have higher levels of information asymmetry and are followed by fewer analysts than single-class firms. For example, Lim (2016) documented that information environments are poorer in dual-class firms than single-class firms, while Jordan, Kim, and Liu (2016) reported that fewer analysts follow dual-class firms. Consequently, the results cited above suggest that dual-class firms should issue debt with shorter maturities. By contrast, Jiraporn, Chintrakarn, and Kim (2012) documented that staggered board firms are more transparent than unitary board firms and enjoy greater analyst coverage. Hence, staggered board firms should issue longer maturity debt, all else being equal. Putting these observations together, we expect the debt of dual-class firms to be significantly shorter dated than the debt of staggered board firms.

Hypothesis 4. *The debt maturities of dual-class firms are shorter than those of staggered board firms.*

Aboody and Lev (2000) found that insider trading gains are higher for R&D-intensive firms than for firms that do not engage in R&D investments. They interpreted this to mean that R&D increases information asymmetry. Empirical evidence from the analyst literature, such as Barron, Byard, Kile, and Riedl (2002) and Jones (2007), also identifies R&D as a source of information asymmetry. Due to the well-established negative relationship between information asymmetry and debt maturity, it follows that R&D-intensive firms should exhibit shorter debt maturities. We shall refer to this as the information asymmetry hypothesis.

On the other hand, short-maturity debt is not an ideal source of funds for R&D. Stohs and Mauer (1996) found strong evidence in favour of the textbook maturity matching principle, which asserts that firms should match the maturities of their liabilities with the maturities of their assets in order to reduce liquidity risk. Myers (1977) also argued that firms should match the maturities of their assets and liabilities in order to manage the agency cost of conflicts between shareholders and debt holders. Since R&D payoffs are typically long-dated and uncertain, the maturity matching principle suggests that R&D projects should be funded with long-term debt or equity. We shall refer to this as the maturity matching hypothesis.

In summary, although R&D-active firms should be more reliant on short-term debt, since R&D increases information asymmetry, short-term debt is an inappropriate source of funds for R&D investments because it violates the maturity matching principle. Taking the different information environments of dual-class firms and staggered board firms into account, it is hard to assess the tradeoff between these competing hypotheses when considering the differential effect of

R&D intensity on debt maturity for dual-class firms and staggered board firms. So, based on the strong empirical evidence supporting the information asymmetry hypothesis in the previously cited literature, we surmise that it dominates the maturity matching hypothesis, when it comes to the impact of R&D expenditure on debt maturity. This leads us to formulate the following tentative hypothesis.

HYPOTHESIS 5. *R&D intensity is negatively related to debt maturity for dual-class firms and staggered board firms.*

4. Data and Empirical Methodology

The main objective of our research is to investigate how dual-class share structures and staggered boards affect the debt maturity structures of firms. For this purpose, we constructed a new comprehensive indicator variable to identify firms with dual-class shares. We also used a new comprehensive staggered board indicator variable recently introduced by Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022). The variables describing the debt maturity structures and other characteristics of the firms in our sample were downloaded from *Compustat* and *CRSP*. Since *Compustat* does not provide debt maturities for financial firms, we limited our sample to firms with SIC codes in the range 2000–5999. We did not winsorize the dataset, since the results were not affected by winsorization. The sample period for our study is 2000–2019.

4.1. Antitakeover Provision Dummy Variables

The first important contribution of our study is the construction of a more comprehensive and accurate dual-class indicator variable than the one used by other empirical studies on dual-class share structures, which rely exclusively on the dual-class dummy variable published by Gompers, Ishii, and Metrick (2010).

Our dual-class indicator variable extends the sample period of their variable and improves its accuracy over the overlapping sample period.

The variable construction methodology employed by Gompers, Ishii, and Metrick (2010) used two steps to identify dual-class firms. First, candidate dual-class firms were identified as those with more than a 1% difference in shares outstanding between Compustat and CRSP. Second, manual textual analysis of the 10-K filings of the candidate companies was performed to confirm whether they truly had dual-class share structures. Our dual-class indicator variable (*DCS*) was constructed as follows:

(1) We generated a temporary firm-year level indicator variable (*Diff_True*) to identify candidate dual-class companies as those with more than a 1% difference in shares outstanding between Compustat and CRSP.

(2) We downloaded the entire 10-K filings of all firms in our sample from SEC Edgar and performed an exhaustive textual analysis on them. This allowed us to construct a second temporary firm-year level indicator variable (*10k_True*), which identified all firms whose 10-K filings contained the terms "class a", "class b", "class c" or "class d".

(3) Since dual-class share structures are sticky, we manually checked all available 10-K filings of companies for which *Diff_True* changed more than once, to confirm their dual-class status.

(4) For companies for which *Diff_True* remained constant, we manually checked all available 10-K filings, if *Diff_True* differed from *10K_True*.

(5) Finally, we double-checked all available 10-K filings of companies for which *Diff_True* did not equal *10K_True* in any year of its life.

After all the checks above, our dual-class indicator variable (*DCS*) was set equal to *Diff_True*. It improves on the dual-class dummy variable used by Gompers, Ishii, and Metrick (2010) for several reasons.

- First, by downloading the entire 10-K filings from SEC Edgar, we performed textual analysis on all companies, rather than only the candidate companies identified by comparing the numbers of shares outstanding in Compustat and CRSP. This allowed us to identify the dual-class companies with no obvious differences in outstanding shares between Compustat and CRSP.
- Second, in order to identify a candidate dual-class firm based on a disparity between its number of outstanding shares recorded by CRSP and Compustat, we checked its entire time series in those two databases, rather than only comparing the number of outstanding shares in a given year. We included a company in our universe of candidate dual-class firms if the difference in shares outstanding between Compustat and CRSP exceeded 1% for at least one year.
- Finally, we manually checked a large sample of 10-K filings to verify the results of the automated textual analysis. This assured us about the correctness of our variable construction process.

In addition to constructing a more reliable dual-class dummy variable than Gompers, Ishii, and Metrick (2010), we extended the sample period of their variable from 1995–2002 to 1990–2019. Over that period we identified 310.4 dual-class firms each year, on average, with a maximum of 408 in 1999 and a minimum of 159 in 2019. Panel A in Table 1 illustrates the distribution of dual-class and single-class firms for each year in our sample, while Panel B compares our dual-class indicator variable with the one used by Gompers, Ishii, and Metrick (2010), over the overlapping sample period. During the entirety of that period we identified

551 firm-year instances of dual-class companies that were missed by Gompers, Ishii, and Metrick (2010), while 219 instances of dual-class companies recorded by their variable were rejected by our identification process.

To identify firms with staggered boards, the identifier provided by the Institutional Shareholder Services (ISS) Corporate Governance database provides the most widely used staggered board indicator variable.[2] However, the ISS database has two important deficiencies. First, it only includes firms in the S&P 1500 index and it does not provide data for the years before and after a firm belonged to the index. Second, ISS only collected data every two or three years between 1990 and 2006.

Recently, Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022) constructed a more comprehensive staggered board dummy variable covering the period from 1996 to 2020, by combining machine learning with textual analysis and manual inspection. We use their staggered board indicator variable (*SB*) in this paper.

4.2. Debt Maturity Variables

The dependent variables in our study describe the debt maturities of the firms in our sample. Barclay and Smith (1995) and Datta, Iskandar-Datta, and Raman (2005) constructed debt maturity variables that measure the percentage of a firm's total debt maturing in more than 1 through 5 years, while Brockman, Martin, and Unlu (2010) used the complements of those variables. We followed the latter approach, by constructing debt maturity variables that quantify a firm's debt maturing in less than 1 through 5 years. We constructed two sets of variables

[2] It has been used by Zhao and Chen (2008), Jiraporn and Chintrakarn (2009), Jiraporn, Chintrakarn, and Kim (2012), Cohen and Wang (2013), Duru, Wang, and Zhao (2013) and Cremers, Litov, and Sepe (2017).

of this type. First, *DMD_1–DMD_5* were calculated as current liabilities plus all debt maturing within the corresponding number of years, divided by current liabilities plus total long-term debt. Second, *DMA_1–DMA_5* were calculated as current liabilities plus all debt maturing within the corresponding number of years, divided by total assets. The data used to construct these variables was downloaded from Compustat, but we excluded all observations for which Compustat erroneously recorded a value for debt maturing within some number of years that was negative or exceeded the total debt of the firm.

Panels A and B in Table 2 present summary statistics for *DMD_1–DMD_5* and *DMA_1–DMA_5*. According to Panel A, 26% of the debt issued by firms in our sample matured within one year, on average, while 49% matured within three years, and 68% matured within five years. Compared with Datta, Iskandar-Datta, and Raman (2005), our summary statistics indicate that average debt maturities have reduced since 2000. In their sample, covering the period from 1992 to 1999, 22%, 39% and 57% of corporate debt matured within one, three and five years, respectively. For comparison, 40% of the debt issued by firms in the sample of Brockman, Martin, and Unlu (2010) matured within three years, while 58% matured within five years, over the period from 1992 to 2005.

4.3. Variables Describing Firm Characteristics

The following variables were obtained from CRSP, Compustat and FRED, for our sample period from 2000 to 2019:

- Leverage (*LEVMK*), measured as total long-term debt divided by the market value of equity.
- Firm size (*SIZE*), measured as the market value of equity plus the book value of total assets minus the book value of equity.

- Market-to-book ratio (*MTB*), defined as firm size divided by the book value of total assets.
- Abnormal earnings (*ABEARN*), calculated as the change in earnings between the current year and the previous year divided by the market value of equity.
- Fixed assets ratio (*FIXAT*), defined as net property, plant and equipment divided by total assets.
- Asset return standard deviation (*ARSTD*), defined as the standard deviation of monthly stock returns over the fiscal year multiplied by the ratio of the market value of equity to the market value of assets.
- Profitability (*PROFIT*), measured as operating income before depreciation divided by total assets.
- Asset maturity (*ATMAT*), defined by the formula

$$ATMAT = \frac{PPEGT}{AT} \times \frac{PPEGT}{DP} + \frac{ACT}{AT} \times \frac{ACT}{COGS},$$

  where *PPEGT* is gross property, plant and equipment, *AT* is total assets, *DP* is depreciation and amortisation, *ACT* is total current assets, and *COGS* is cost of goods sold. (These auxiliary variables were all downloaded from Compustat.)
- Term structure (*TERMSTR*), measured as the average monthly spread between the yields on 10-year and 6-month government bonds.
- Operating loss carryforward dummy variable (*OLC*), taking the value 1 if a firm has operating loss carryforwards, and 0 otherwise.
- Investment tax credit dummy variable (*ITC*), taking the value 1 if a firm has an investment tax credit, and 0 otherwise

- Z-score dummy variable (*ZSCORE*), taking the value 1 if Altman's Z-score exceeds 1.81, and 0 otherwise. Altman's Z-score is given by

$$\textit{Z-score} = 3.3 \times \frac{OIADP}{AT} + 1.2 \times \frac{ACT - LCT}{AT} + 0.6 \times \frac{PRCC\_F \times CSHO}{DLTT + DLC} + 1.4 \times \frac{RE}{AT},$$

  where *OIADP* is operating income after depreciation, *AT* is total assets, *ACT* is total current assets, *LCT* is current liabilities, *PRCC_F* is the closing stock price at the end of the fiscal year, *CSHO* is the number of common shares outstanding, *DLTT* is long-term debt, *DLC* is total debt in current liabilities, and *RE* is retained earnings. (These auxiliary variables were all downloaded from Compustat.)
- R&D intensity (*R&D*), measured as the fraction of R&D expenditure divided by total assets.
- Debt-to-equity ratio (*D/E*), measured as book value of debt divided by the book value of equity.

Finally, to capture the impact of research expenditure on the debt maturity structure of dual-class firms and staggered board firms, we constructed the interaction variables $DCS \times R\&D$ and $SB \times R\&D$.

Panel C in Table 2 presents summary statistics of the variables described above for our sample. Average firm size was 6.72, with a standard deviation of 2.28, while average R&D intensity was 0.10, with a standard deviation of 0.16. In addition, the average market-to-book ratio for the firms in our sample was 2.03, the average asset maturity was 10.3, and the mean value of the term structure variable was 1.63. Compared with the samples in Datta, Iskandar-Datta, and Raman (2005) and Brockman, Martin, and Unlu (2010), the firms in our sample had higher market-to-book ratios and shorter asset maturities. Moreover, it is evident that spreads between the yields on 10-year and 6-month government bonds widened after 2000.

4.4. Empirical Methodology

Stohs and Mauer (1996) noted that leverage is identified as an important determinant of debt maturity structure by several theories of capital structure. Barclay, Marx, and Smith Jr (2003) recognised that this introduces an econometric problem, however, since the leverage and debt maturity of a firm are jointly determined by the same financing decisions. This implies that leverage is endogenous to debt maturity, which means that OLS regressions of debt maturity against leverage (and other variables) will produce biased coefficients on leverage.

To overcome this problem, Datta, Iskandar-Datta, and Raman (2005) and Brockman, Martin, and Unlu (2010) estimated two-stage least squares (2SLS) regression models for debt maturity, in which leverage is treated as an endogenous variable. In the first stage, leverage is regressed against variables controlling for firm characteristics, while in the second stage, debt maturity is regressed against predicted leverage from the first stage and variables controlling for other firm characteristics. We follow their approach, by estimating the 2SLS model

$$\begin{aligned} LEVMK_t = & \alpha_0 + \alpha_1 ATP_t + \alpha_2 SIZE_t + \alpha_3 MTB_t + \alpha_4 ABEARN_t \\ & + \alpha_5 FIXAT_t + \alpha_6 ARSTD_t + \alpha_7 PROFIT_t + \alpha_8 OLC_t \\ & + \alpha_9 ITC_t + \epsilon_t \end{aligned} \tag{5}$$

$$\begin{aligned} DMD_t = &\beta_0 + \beta_1 ATP_t + \beta_2 LEVMK_t + \beta_3 SIZE_t + \beta_4 SIZE_t^2 \\ &+ \beta_5 ATMAT_t + \beta_6 MTB_t + \beta_7 TERMSTR_t + \beta_8 ABEARN_t \\ &+ \beta_9 ARSTD_t + \beta_{10} ZSCORE_t + \delta_t, \end{aligned} \quad (6)$$

where the debt maturity measures *DMD_1*–*DMD_5* are the dependent variables in equation (6) and the antitakeover provision indicator variable *ATP* is either *DCS* or *SB*. Statistical significance for the second-stage coefficient estimates is based on White (1980) heteroskedasticity-consistent z-statistics.

Consistent with Brockman, Martin, and Unlu (2010), Datta, Iskandar-Datta, and Raman (2005) and Barclay and Smith (1995), we expect a negative relationship between leverage (*LEVMK*) and debt maturity (*DMD*). Following Myers (1977), Stohs and Mauer (1996), and Johnson (2003), we expect a positive relationship between asset maturity (*ATMAT*) and debt maturity (*DMD*), based on the maturity matching hypothesis that firms match the maturities of their assets liabilities. We also expect a positive relationship between market-to-book ratios (*MTB*) and debt maturity (*DMD*).

If information asymmetry is indeed an important determinant of debt maturity, we expect the β_1 coefficients in equation (6) to be positive and decreasing as the dependent variable ranges through *DMD_1*–*DMD_5* when *ATP* is the dual-class dummy variable *DCS*, due to the high levels of information asymmetry in dual-class firms. Moreover, if Hypothesis 4 is true, we expect the β_1 coefficients to be larger when *ATP* is the dual-class dummy variable *DCS* than when it is the staggered board dummy variable *SB*. This would be consistent with our prediction that since dual-class firms have poorer information environments than staggered board firms, a greater proportion of their debt has short maturities.

Since the debt maturity variables *DMD_1–DMD_5* describe the proportions of a firm's total debt that matures within 1–5 years, they are indifferent to the proportion of equity on its balance sheet. The debt maturity variables *DMA_1–DMA_5* get around this problem to some extent, by including the effect of (the book value of) equity in the measurement of debt maturity. As an alternative to the model specified by equations (5)–(6), use these variables as the second-stage dependent variables for the 2SLS model

$$\begin{aligned} LEVMK_t =& \alpha_0 + \alpha_1 DCS_t + \alpha_2 SIZE_t + \alpha_3 MTB_t + \alpha_4 ABEARN_t \\ & + \alpha_5 FIXAT_t + \alpha_6 ARSTD_t + \alpha_7 PROFIT_t + \alpha_8 OLC_t \\ & + \alpha_9 ITC_t + \epsilon_t \end{aligned} \tag{7}$$

$$\begin{aligned} DMA_t =& \beta_0 + \beta_1 DCS_t + \beta_2 LEVMK_t + \beta_3 SIZE_t + \beta_4 SIZE_t^2 \\ & + \beta_5 ATMAT_t + \beta_6 MTB_t + \beta_7 TERMSTR_t + \beta_8 ABEARN_t \\ & + \beta_9 ARSTD_t + \beta_{10} ZSCORE_t + \delta_t. \end{aligned} \tag{8}$$

Statistical significance is once again determined by White (1980) heteroskedasticity-consistent z-statistics. Based on Hypothesis 4, we expect the coefficient β_1 in equation (8) to be negative, implying that dual-class firms issue shorter-term debt.

To test Hypothesis 5, we extend the model (6)–(6) by including the interaction variables $DCS \times R\&D$ and $SB \times R\&D$. The resulting model is

$$\begin{aligned} LEVMK_t =& \alpha_0 + \alpha_1 ATP_t + \alpha_2 SIZE_t + \alpha_3 MTB_t + \alpha_4 ABEARN_t \\ & + \alpha_5 FIXAT_t + \alpha_6 ARSTD_t + \alpha_7 PROFIT_t + \alpha_8 OLC_t \\ & + \alpha_9 ITC + \epsilon_t \end{aligned} \tag{9}$$

$$\begin{aligned} DMD_t = & \beta_0 + \beta_1 ATP_t + \beta_2 ATP_t \times R\&D_t + \beta_3 R\&D_t + \beta_4 LEVMK_t \\ & + \beta_5 SIZE_t + \beta_6 SIZE_t^2 + \beta_7 ATMAT_t + \beta_8 MTB_t \\ & + \beta_9 TERMSTR_t + \beta_{10} ABEARN_t + \beta_{11} ARSTD_t \\ & + \beta_{12} ZSCORE_t + \delta_t, \end{aligned} \tag{10}$$

where the dependent variables in equation (6) are *DMD_1*–*DMD_5* and the antitakeover provision indicator variable *ATP* is either *DCS* or *SB*. As before, statistical significance is based on White (1980) heteroskedasticity-consistent z-statistics. If Hypothesis 5 is true, the coefficient β_2 in equation (6) should be negative for both antitakeover dummy variables.

5. Empirical Results

5.1. Univariate Test Results

Table 3 presents the results of two-sample *t*-tests for all variables, where the samples are determined by the dual-class and staggered board dummy variables. According to the results in Panel A, dual-class firms have higher leverage (*LEVMK*) than single-class firms, which agrees with the evidence presented by Dey, Nikolaev, and Wang (2016), Baran, Forst, and Via (2019), and Gompers, Ishii, and Metrick (2010). We also see that dual-class firms have lower R&D intensities (*R&D*) than their single-class counterparts. This agrees with the results of Dey, Nikolaev, and Wang (2016). However, it is inconsistent with the evidence presented by Jordan, Kim, and Liu (2016), whose two-sample *t*-tests indicated that R&D intensities were higher in dual-class firms, based on their 1994–2011 sample.

Dual-class firms are generally larger (*SIZE*) than single-class firms in our sample, with a lower average market-to-book ratio (*MTB*), consistent with the results in Gompers, Ishii, and Metrick (2010) and Jordan, Kim, and Liu (2016). We also observe a higher average asset maturity ratio (*ATMAT*), a higher average fixed assets ratio (*FIXAT*), and a higher average profitability ratio (*PROFIT*) among dual-class firms.

Two-sample t-test results for firms separated by the staggered board dummy variable are presented in Panel B of Table 3. We do not see a significant difference between staggered board firms and unitary board firms with respect to leverage (*LEVMK*). However, staggered board firms are generally larger than unitary board firms (*SIZE*), which agrees with the evidence in Bebchuk and Cohen (2005), Faleye (2007), and Guernsey, Guo, Liu, and Serfling (2022).

Average R&D intensities (*R&D*) for staggered boards are higher than those for unitary board firms, but the difference is not significant. This provides lukewarm support for the argument in Duru, Wang, and Zhao (2013), Cremers, Litov, and Sepe (2017), and Nguyen, Vu, and Yin (2021) that staggered boards encourage corporate innovation by reducing pressure from myopic shareholders. Finally, we note that staggered board firms have lower average market-to-book ratios (*MTB*) and fixed asset ratios (*FIXAT*) than unitary board firms, but average profitability ratios (*PROFIT*) are higher.

5.2. Results on Debt Maturity

To examine Hypothesis 4, we first estimate the 2SLS model (5)–(6) for dual-class firms, by setting *ATP* equal to *DCS*. Predicted leverage (*LEVMK*) is determined in the first stage regression by estimating equation (5). It is then used to estimate equation (6) in the second stage regression, where the dependent variables *DMD_1*–*DMD_5* are the fractions of a firm's total debt maturing in 1–5 years.

The coefficients β_1 on the dual-class indicator variable (*DCS*) are used to evaluate Hypothesis 4. Based on that hypothesis, we expect those coefficients to be positive and larger for shorter term debt maturities, indicating that dual-class firms are more likely to issue shorter-term debt when they do issue debt. Following Smith and Watts (1992) and Barclay and Smith (1995), we also expect the coefficient β_2 on predicted leverage (*LEVMK*) to be negative. Stohs and Mauer (1996) found that larger firms with lower risk favour debt with longer maturities. Consequently, we expect the coefficient β_3 on firm size (*SIZE*) to be negative. With reference to the reasoning and evidence in Myers (1977) and Johnson (2003), we expect the coefficient β_5 on asset maturity (*ATMAT*) to be positive, indicating that firms match the maturities of their debt with the maturities of their assets. We also expect the coefficient β_6 on market-to-book ratios (*MTB*) to be positive, based on the evidence in Brockman, Martin, and Unlu (2010) and Datta, Iskandar-Datta, and Raman (2005) that firms use short-term debt to alleviate the underinvestment problem.

Table 4 presents the second-stage regression results from estimating equation 6. In each of columns (1)–(5) the corresponding debt maturity variable *DMD_1*–*DMD_5* is the dependent variable. We observe that the coefficients on *DCS* are positive and monotonically decreasing as we run from column (1) to column (5), and are statistically significant in the first three columns. This is consistent with Hypothesis 4. In particular, it suggests that a significantly larger portion of the debt issued by dual-class firms matures in less than three years, than is the case for single-class firms.

The coefficient on *DCS* in column (1) is 0.063 and is significant at the 1% level. This can be interpreted to mean that dual-class firms have about 6.3% more debt (expressed as a fraction of total debt) maturing in less than 1 year, compared with single-class firms. Similarly, the coefficient on *DCS* in column (2) implies that dual-class firms have about 4.5% more debt maturing in less than 2 years, compared with single-class firms. As we move to the right along the columns, the coefficient on *DCS* becomes progressively insignificant, both economically and statistically. For example, when we consider the fraction of total debt maturing within five years, there is essentially no difference between dual-class firms and single-class firms. The fact that the coefficient on *DCS* decreases monotonically from column (1) to column (5) is very suggestive, because it points to a real economic effect rather than a vagary in the data.

So far we have provided evidence on half of Hypothesis 4, by showing that dual-class firms exhibit lower debt maturities than firms in the overall sample. For the other half of the hypothesis, it is sufficient to demonstrate that debt maturities are higher among staggered board firms than firms in the overall sample. Once again, we estimate the 2SLS model (5)–(6), but this time the dummy variable *ATP* is set to *SB*. As before, predicted leverage (*LEVMK*) is determined in the first-stage regression by estimating equation (5). That variable is then used in the second stage regression to estimate equation (6), with dependent variables *DMD_1*–*DMD_5*.

Table 5 presents the second-stage regression results from estimating equation (6). The dependent variables in columns (1)–(5) are the fractions *DMD_1*–*DMD_5* of total debt maturing in 1–5 years. We begin by observing that the coefficients on *SB* are negative and statistically significant at the 1% level in all columns. For example, the coefficient -0.02 in column (1) indicates that staggered board firms issue about 2% less debt (measured as a fraction of total debt) maturing within 1 year than unitary board firms. This pattern holds for all maturities up to 5 years, indicating that staggered board firms generally issue longer-maturity debt (as a fraction of total debt) than unitary board firms. Combining this with the evidence in Table 4 showing that dual-class firms have shorter debt maturities than single-class firms, and bearing in mind that there is minimal overlap between dual-class firms and staggered board firms, we conclude that the debt maturities of dual-class firms are generally shorter than those of staggered board firms, in line with Hypothesis 4.

In terms of control variables, our coefficients broadly agree with previous literature, such as Barclay and Smith (1995), Datta, Iskandar-Datta, and Raman (2005), and Brockman, Martin, and Unlu (2010). Consistent with those studies, we observe negative coefficients on leverage (*LEVMK*) in table 4 and 5. In accordance with the literature, we also obtain negative coefficients on firm size (*SIZE*) in both tables. This result agrees with the theoretical prediction of Diamond (1991a) that firm size and debt maturity should be positively correlated. Consistent with Myers (1977), who argued that firms should match the maturities of their assets and liabilities, we obtain negative coefficients on *ATMAT*. The positive coefficients on *MTB* also agree with the literature, since firms with more growth opportunities have higher levels of information asymmetry, which implies that they should issue debt with shorter maturities. With respect to term structure, our results are consistent with the evidence presented in Barclay and Smith (1995), Datta, Iskandar-Datta, and Raman (2005), and Brockman, Martin, and Unlu (2010), since the coefficients on *TERMSTR* are positive.[3]

[3]Barclay and Smith (1995) noted that their results on the impact of term structure on debt maturity do not support the tax hypothesis of Brick and Ravid (1991), but agree instead with the prediction by Lewis (1990) that tax is irrelevant for debt maturity. The tax hypothesis of Brick and Ravid (1991) claims that firms should issue longer maturity debt when the term structure has an upward slope, in order to reduce their excepted tax liabilities. Lewis (1990),

The results in Tables 4 and 5 lend additional empirical support to the importance of information asymmetry as a determinant of debt maturity. The theoretical models of Flannery (1986) and Diamond (1991a) predict that debt maturities should decrease as information asymmetry increases, since poor information environments increase concerns about default risk among lenders, which reduces their willingness to invest in long-dated debt. A negative relationship between debt maturity and information asymmetry has been established empirically by several studies, including Barclay and Smith (1995), Guedes and Opler (1996), Goswami (2000), Danisevska (2002), Berger, Espinosa-Vega, Frame, and Miller (2005), Wittenberg Moerman (2009), and Daniels, Diro Ejara, and Vijayakumar (2010).[4] Our results provide interesting new evidence for this relationship. To begin with, the empirical evidence presented by Lim (2016), Jordan, Kim, and Liu (2016), and Li and Zaiats (2018) shows that dual-class firms exhibit high levels of information asymmetry. By contrast, Jiraporn, Chintrakarn, and Kim (2012) showed that staggered board firms provide good information environments. We may therefore interpret the lower debt maturities of dual-class firms in Table 4 and the higher debt maturities of staggered board firms in Table 5 as novel evidence on the importance of information asymmetry as a determinant of debt maturity.

Baulkaran (2014) noted that equity is likely a more attractive source of external funding for dual-class firms than single-class firms, because controlling shareholders can maintain a voting block of superior voting shares. This resonates with the evidence in Casavecchia, Hulley, and Yang (2022) that dual-class firms

on the other hand, predicted that taxes do not affect debt maturities because firms make their leverage decisions before they decide on debt maturity.

[4]See also the related empirical evidence presented by Sengupta (1998), Mansi, Maxwell, and Miller (2011), and Derrien, Kecskés, and Mansi (2016), who documented a negative association between information asymmetry and cost of debt.

appear to fund R&D projects by issuing equity, while the same is not true for single-class firms. Given the apparent difference in appetite for equity financing between dual-class firms and single-class firms, we introduced the debt maturity variables *DMA_1*–*DMA_5*, which scale debt maturing within 1–5 years by a firm's total assets.

To assess the impact of dual-class share structures on these measures of debt maturity, we estimate the 2SLS model (7)–(8). As before, predicted leverage (*LEVMK*) is determined in the first stage regression by estimating equation (7). It is then used to estimate equation (8) in the second-stage regression, where the equity-inclusive debt-maturity variables *DMA_1*–*DMA_5* are the dependent variables. The results of the second-stage regression are presented in Table 6. The coefficients on the dual-class dummy variable *DCS* are negative and significant in all columns and increase monotonically from column (2) to column (5).

When comparing Tables 4 and 6, we observe that the signs of the coefficients on *DCS* change from negative to positive. Since the same independent variables are present in equations (6) and (8), this change of sign is entirely due to the change in the scaling factor (i.e. the denomintor) in the definition of the debt maturity variables used in the two tables, from total debt to total assets (which is the same as total debt plus equity). The new scaling factor sheds light on the debt-maturity preferences of dual-class firms in a way that takes their overall debt-to-equity ratios into account. For example, the coefficient on *DCS* in column (1) of Table 6 indicates that dual-class firms issue 1% less debt maturing in under one year, expressed as a fraction of total assets, than single-class firms. By contrast, our analysis of Table 4 showed that dual-class firms issue 6.3% more debt maturing in under one year, expressed as a fraction of total debt, than single-class firms. The apparent contradiction is resolved by the evidence on debt-to-equity ratios in Panel A of Table 3, which suggests that dual-class firms have substantially higher proportions of equity in their capital structures than single-class firms.[5] Consequently, short-term debt can be a larger proportion of total debt for dual-class firms (according to Table 4), even if it is a smaller proportion of total capital (according to Table 6).

In summary, our results indicate that dual-class firms tend to issue shorter maturity debt than single-class firms when they issue debt, but they appear to issue less debt overall. We also see that dual-class firms issue more short maturity debt than staggered board firms, as a fraction of total debt, in line with Hypothesis 4.

5.3. Results on the Impact of R&D on Debt Maturity

To examine the effect of R&D on the debt-maturity structures of dual-class firms and staggered board firms, we use 2SLS regression to estimate equations (9)–(10), where the antitakeover dummy variable *ATP* is either the dual-class indicator variable *DCS* or the staggered board indicator variable *SB*. Table 7 presents the results of the second-stage regression, for the case of dual-class firms. We observe that the coefficients on the dual-class dummy variable (*DCS*) are positive and significant in all columns, while the coefficients on the interaction variable ($DCS \times R\&D$) are negative and significant in columns (2)–(5). These results show that although dual-class firms generally issue more short-term debt than single-class firms (expressed as a fraction of total debt), the debt maturities of

[5] According to Table 3, the economic difference between the debt-to-equity ratios of dual-class firms and single-class firms is massive, with dual-class firms having half as much debt as equity on their balance sheets, on average, and single-class firms having almost twice as much debt as equity. However, we do note that the difference is statistically insignificant.

dual-class firms increase as their R&D intensities increase. According to column (2), for example, a one standard deviation increase in R&D intensity corresponds with a reduction in the expected fraction of debt maturing within 2 years of $0.386 \times {}^{0.16}/_{0.39} = 15.8\%$, for a dual-class firm with average R&D intensity.[6]

Table 8 presents the second-stage regression results from estimating equations (9)–(10) for staggered board firms. The coefficients on the staggered board dummy variable (*SB*) are negative and significant in all columns, while the coefficients on the interaction variable ($SB \times R\&D$) are positive and significant in all columns. This indicates that although staggered board firms tend to issue less short-maturity debt than unitary board firms (expressed as a fraction of total debt), their debt maturities decrease as spend more on R&D. According to column (2), for example, a one-standard deviation increase in R&D intensity is associated with an increase in debt maturing within 2 years of $0.122 \times {}^{0.16}/_{0.39} = 5.0\%$, for a staggered boars firm with average R&D intensity.[7]

With respect to the reaction of a firm's debt maturity to an increase in R&D expenditure, we recall that there are two competing hypotheses. Under the information asymmetry hypothesis, R&D increases information asymmetry, which reduces debt maturities. On the other hand, since R&D projects are long-term investments, an increase in R&D expenditure should increase debt maturity, according to the maturity matching hypothesis. The results in Table 7 suggest that the maturity matching hypothesis applies to dual-class firms, while the results in Table 8 show that the information asymmetry hypothesis is more appropriate for staggered board firms.

[6] In Table 2 we see that the average fraction of debt maturing in less than 2 years (*DMD_2*) is 0.39 and the standard deviation of R&D intensity (*R&D*) is 0.16.

[7] In Table 2 we see that the average fraction of debt maturing in less than 2 years (*DMD_2*) is 0.39 and the standard deviation of R&D intensity (*R&D*) is 0.16.

6. Conclusion

This paper examines how dual-class share structures and staggered boards affect corporate debt maturities. A significant empirical contribution is that we use new dual-class and staggered board indicator variables that are more comprehensive and more accurate than the widely-used dummy variables in the existing literature. Another important contribution is that we run side-by-side tests on dual-class firms and staggered board firms. This facilitates a unique direct comparison of the debt maturity structures of firms with these two antitakeover provisions.

Although dual-class share structures and staggered boards share many features in common, they differ substantially with respect to information asymmetry and analyst coverage. In particular, dual-class firms exhibit much higher levels of information asymmetry than staggered board firms, but tend to be followed by fewer analysts. This has significant implications for the debt maturity structures of dual-class firms and staggered board firms, due to the well-established negative relationship between information asymmetry and debt maturity. In particular, it implies that the debt of dual-class firms should be biased towards shorter maturities, compared with the debt of staggered board firms. Our empirical tests confirm this prediction.

Another contribution of this paper is to document the differential impact of R&D investment on the debt maturities of dual-class firms and staggered board firms. Here we obtain mixed results. For dual-class firms, we find that debt maturities increase as R&D expenditure increases. Given the long-term nature of R&D investments, this is consistent with the textbook maturity matching hypothesis that firms should match the maturities of their liabilities with the maturities of their assets. By contrast, for staggered board firms, we observe a reduction in debt maturities as R&D expenditure increases. This agrees with the information asymmetry hypothesis that R&D should reduce debt maturities because it contributes to information asymmetry.

The previous result raises an interesting question: Is the reduction in short-maturity debt among R&D-active dual-class firms driven by the substitution of short-term debt for equity, or are such firms genuinely shifting their debt maturity structures by switching from short-term debt into long-term debt? This is an intriguing question, because in Casavecchia, Hulley, and Yang (2022) we already establish that dual-class firms use equity as the primary financing channel for R&D projects. We propose to investigate this question in future research.

Table 1

The Dual-Class Indicator Variable

Panel A presents the distribution of dual-class and single-class firms for each year of our sample period 1991–2019. Panel B compares our dual-class dummy variable (DCS) with the dual-class dummy variable ($DCS^{\dagger}$) constructed by Gompers, Ishii, and Metrick (2010).

Panel A: Distribution of Dual-Class and Single-Class Firms

Year	$DCS = 1$	$DCS = 0$
1991	245	3364
1992	269	3704
1993	287	4015
1994	327	4232
1995	346	4380
1996	386	4618
1997	400	4657
1998	398	4424
1999	408	4225
2000	399	4091
2001	359	3777
2002	337	3540
2003	316	3331
2004	305	3275
2005	282	3189
2006	266	3097
2007	251	2997
2008	239	2843
2009	221	2709
2010	220	2623
2011	218	2524
2012	216	2443
2013	219	2441
2014	223	2510
2015	228	2473
2016	225	2408
2017	213	2273
2018	206	2138
2019	159	1758
Total	8168	94059

Panel B: Comparison of DCS and $DCS^{\dagger}$

Year	$DCS = 1$	$DCS^{\dagger} = 1$	$DCS = 1$ & $DCS^{\dagger} = 0$	$DCS = 0$ & $DCS^{\dagger} = 1$
1995	346	318	61	30
1996	386	335	82	28
1997	400	361	71	30
1998	398	368	66	35
1999	408	360	77	29
2000	399	357	66	24
2001	359	324	61	26
2002	337	287	67	17
Total	3033	2710	551	219

Table 2
Descriptive Statistics

This table describes the descriptive statistics for dependent and main independent variables in our sample from 2000 to 2019. The variable descriptions are listed in Section 4. Panel A illustrates the debt maturities scaled by total liability, Panel B shows the debt maturities scaled by total asset, and Panel C list all main independent variables.

	Obs	Mean	Std. Dev.	1%	5%	Median	95%	99%
Panel A: Scaled by Total Liability								
DMD_1	47213	0.26	0.32	0.00	0.00	0.12	1.00	1.00
DMD_2	39466	0.39	0.36	0.00	0.00	0.26	1.00	1.00
DMD_3	38071	0.49	0.36	0.00	0.00	0.41	1.00	1.00
DMD_4	36644	0.58	0.35	0.00	0.01	0.58	1.00	1.00
DMD_5	34616	0.68	0.32	0.00	0.06	0.77	1.00	1.00
Panel B: Scaled by Total Asset								
	Obs	Mean	Std. Dev.	1%	5%	Median	95%	99%
DMA_1	56929	0.04	0.09	0.00	0.00	0.01	0.20	0.44
DMA_2	49377	0.07	0.11	0.00	0.00	0.02	0.28	0.50
DMA_3	49050	0.09	0.13	0.00	0.00	0.04	0.35	0.59
DMA_4	48775	0.12	0.15	0.00	0.00	0.07	0.41	0.65
DMA_5	47884	0.14	0.16	0.00	0.00	0.09	0.47	0.72
Panel C: Firm Character Variables								
	Obs	Mean	Std. Dev.	1%	5%	Median	95%	99%
DCS	44590	0.09	0.28	0.00	0.00	0.00	1.00	1.00
LEVMK	56802	0.46	1.05	0.00	0.00	0.12	2.02	7.37
SIZE	56908	6.72	2.28	2.14	3.13	6.65	10.66	12.03
MTB	56905	2.03	1.62	0.52	0.76	1.48	5.23	10.32
ATMAT	54706	10.30	11.07	0.41	0.99	6.29	33.67	59.94
TERMSTR	57080	1.63	1.11	-0.20	-0.20	1.67	2.97	3.02
ABEARN	53864	0.02	0.30	-1.07	-0.29	0.00	0.35	1.79
FIXAT	57024	0.26	0.23	0.00	0.01	0.19	0.75	0.88
ARSTD	55981	0.09	0.09	0.01	0.02	0.07	0.25	0.43
PROFIT	56934	0.01	0.30	-1.51	-0.61	0.10	0.26	0.37
R&D	38824	0.10	0.16	0.00	0.00	0.04	0.41	0.73

Table 3
Univariate Tests for All Variables by Antitakeover Provision Dummies

This table presents two-sample *t*-tests for all variables, where the samples are determined by the dual-class indicator variable (*DCS*) or staggered board indicator variable (*SB*). Statistical significance for the differences is signified at the 1%, 5% and 10% levels by ***, **, and *, respectively.

Variables	Obs.(0)	Mean(0)	Obs.(1)	Mean(1)	Diff.(0-1)	*t*-value
Panel A: Dual-Class Dummy						
LEVMK	27992	0.277	1753	0.427	-0.150***	-8.029
SIZE	27992	6.418	1753	6.912	-0.494***	-9.202
MTB	27992	2.245	1753	1.873	0.373***	9.005
ATMAT	27992	7.958	1753	9.147	-1.189***	-5.573
TERMSTR	27992	1.650	1753	1.626	0.023	0.845
ABEARN	27992	0.018	1753	0.019	-0.001	-0.143
FIXAT	27992	0.194	1753	0.247	-0.052***	-12.498
ARSTD	27992	0.108	1753	0.083	0.025***	11.056
PROFIT	27992	-0.014	1753	0.092	-0.105***	-13.780
R&D	27992	0.096	1753	0.043	0.053***	14.933
D/E	27992	1.897	1753	0.531	1.366	0.386
Panel B: Staggered Board Dummy						
LEVMK	17782	0.343	16967	0.328	0.014	0.87
SIZE	17782	6.17	16967	6.331	-0.161***	-6.878
MTB	17782	2.355	16967	2.225	0.129***	5.321
ATMAT	17782	9.104	16967	9.556	-0.451	-0.616
TERMSTR	17782	1.448	16967	1.468	-0.020*	-1.78
ABEARN	17782	0.024	16967	0.027	-0.003	-0.407
FIXAT	17782	0.208	16967	0.216	-0.008***	-4.324
ARSTD	17782	0.11	16967	0.106	0.004***	3.959
PROFIT	17782	-0.006	16967	-0.005	-0.002	-0.320
R&D	17782	0.088	16967	0.09	-0.002	-1.140
D/E	17782	3.816	16967	0.621	3.195	1.131

Table 4
Second Stage Regression Coefficients for the Percentage of Total Debt Maturing in 1–5 Years, for Dual-Class Firms

This table presents the results from the second-stage regression model (6). The dependent variables *DMD_1*—*DMD_5* are the fractions of total debt maturing in 1–5 years. The dual-class dummy variable (*DCS*) is the primary independent variable of interest. Predicted leverage (*LEVMK*) is obtained from the first-stage regression (5), where it is the dependent variable. Statistical significance is based on White (1980) heteroskedasticity-consistent z-statistics and is signified at the 1%, 5% and 10% levels by ***, **, and *, respectively.

Variables	(1) *DMD_1*	(2) *DMD_2*	(3) *DMD_3*	(4) *DMD_4*	(5) *DMD_5*
DCS	0.063**	0.045***	0.027**	0.014	0.004
	(2.52)	(2.92)	(2.07)	(1.21)	(0.38)
LEVMK	-0.118***	-0.156***	-0.118***	-0.103***	-0.099***
	(-7.73)	(-7.47)	(-6.81)	(-6.37)	(-6.42)
SIZE	-0.119***	-0.142***	-0.146***	-0.100***	-0.030***
	(-12.11)	(-14.12)	(-16.94)	(-12.30)	(-3.86)
$SIZE^2$	0.005***	0.005***	0.005***	0.002***	-0.002***
	(6.59)	(7.29)	(8.29)	(3.58)	(-3.90)
ATMAT	-0.000*	0.000	-0.001***	-0.001***	-0.001***
	(-1.93)	(-1.36)	(-4.46)	(-4.12)	(-4.02)
MTB	0.003*	0.006***	0.007***	0.007***	0.005***
	(1.90)	(3.00)	(4.47)	(4.24)	(3.22)
TERMSTR	0.000	0.005*	0.011***	0.013***	0.011***
	(0.05)	(1.77)	(4.70)	(5.74)	(5.14)
ABEARN	-0.001	-0.001	0.000	0.000	0.000
	(-0.96)	(-0.91)	(-0.86)	(-0.31)	(-0.48)
ARSTD	-0.126**	-0.130	-0.115	-0.173**	-0.244***
	(-1.98)	(-1.61)	(-1.52)	(-2.42)	(-3.59)
ZSCORE	-0.161***	-0.191***	-0.121***	-0.103***	-0.116***
	(-6.95)	(-5.70)	(-4.15)	(-3.71)	(-4.36)
Observations	33,361	28,638	27,720	26,675	25,222

Table 5
Second Stage Regression Coefficients for the Percentage of Total Debt Maturing in 1–5 Years, for Staggered Board Firms

This table presents the results from the second-stage regression model (6). The dependent variables *DMD_1*—*DMD_5* are the fractions of total debt maturing in 1–5 years. The staggered board dummy variable (*SB*) is the primary independent variable of interest. Predicted leverage (*LEVMK*) is obtained from the first-stage regression (5), where it is the dependent variable. Statistical significance is based on White (1980) heteroskedasticity-consistent z-statistics and is signified at the 1%, 5% and 10% levels by ***, **, and *, respectively.

Variables	(1) *DMD_1*	(2) *DMD_2*	(3) *DMD_3*	(4) *DMD_4*	(5) *DMD_5*
SB	-0.020***	-0.025***	-0.023***	-0.022***	-0.020***
	(-4.14)	(-4.14)	(-4.09)	(-4.37)	(-4.40)
LEVMK	-0.059***	-0.126***	-0.098***	-0.076***	-0.050***
	(-3.72)	(-5.43)	(-4.59)	(-4.45)	(-3.49)
SIZE	-0.137***	-0.153***	-0.154***	-0.116***	-0.062***
	(-16.10)	(-13.06)	(-14.45)	(-13.01)	(-7.75)
$SIZE^2$	0.006***	0.006***	0.006***	0.003***	0.000
	(10.61)	(7.14)	(7.41)	(4.92)	(-0.14)
ATMAT	-0.000***	0.000	0.000	0.000	0.000
	(-3.18)	(-1.33)	(-1.20)	(-1.26)	(-1.37)
MTB	0.006***	0.007***	0.009***	0.010***	0.010***
	(3.66)	(3.23)	(4.80)	(5.46)	(6.04)
TERMSTR	0.003*	0.007***	0.013***	0.015***	0.012***
	(1.86)	(3.27)	(6.14)	(7.30)	(6.58)
ABEARN	-0.021*	-0.034	-0.023	-0.016	-0.014
	(-1.80)	(-1.43)	(-1.24)	(-1.11)	(-1.04)
ARSTD	0.126*	0.016	0.014	0.006	0.050
	(1.84)	(0.18)	(0.16)	(0.08)	(0.77)
ZSCORE	-0.050*	-0.123***	-0.064**	-0.029	0.006
	(-1.86)	(-3.62)	(-2.01)	(-1.13)	(0.26)
Observations	31,972	27,642	26,831	25,908	24,569

Table 6
Second Stage Regression Coefficients for Debt Maturing in 1–5 Years Scaled by Total Assets, for Dual-Class Firms

This table presents the results from the second-stage regression model (6). The dependent variables *DMA_1*—*DMA_5* are the ratios of debt maturing in 1–5 years relative to total assets. The dual-class dummy variable (*DCS*) is the primary independent variable of interest. Predicted leverage (*LEVMK*) is obtained from the first-stage regression (5), where it is the dependent variable. Statistical significance is based on White (1980) heteroskedasticity-consistent z-statistics and is signified at the 1%, 5% and 10% levels by ***, **, and *, respectively.

Variables	(1) *DMA_1*	(2) *DMA_2*	(3) *DMA_3*	(4) *DMA_4*	(5) *DMA_5*
DCS	-0.010**	-0.010**	-0.015***	-0.019***	-0.025***
	(-2.07)	(-2.54)	(-2.99)	(-3.22)	(-3.45)
LEVMK	0.021***	0.043***	0.061***	0.082***	0.101***
	(9.53)	(10.63)	(11.43)	(11.87)	(12.06)
SIZE	-0.031***	-0.041***	-0.039***	-0.029***	-0.015***
	(-20.01)	(-21.14)	(-16.77)	(-10.70)	(-4.81)
$SIZE^2$	0.002***	0.002***	0.002***	0.002***	0.001***
	(14.49)	(17.29)	(13.01)	(7.75)	(3.29)
ATMAT	-0.000**	0.000	0.000	0.000	0.000
	(-2.18)	(-0.57)	(-0.14)	(0.13)	(0.28)
MTB	0.002***	0.004***	0.004***	0.005***	0.004***
	(3.73)	(3.44)	(3.34)	(3.25)	(3.10)
TERMSTR	-0.001**	-0.001*	-0.001	-0.001	-0.002
	(-2.47)	(-1.82)	(-0.77)	(-0.94)	(-1.51)
ABEARN	0.000	0.000	0.000	0.001	0.001
	(0.77)	(0.63)	(0.88)	(1.23)	(1.18)
ARSTD	-0.046***	-0.033**	-0.044***	-0.049**	-0.052**
	(-4.49)	(-2.44)	(-2.61)	(-2.41)	(-2.22)
ZSCORE	0.018***	0.038***	0.052***	0.062***	0.071***
	(8.29)	(13.57)	(14.59)	(14.90)	(14.62)
Observations	40,470	35,992	35,896	35,734	35,177

Table 7
Second Stage Regression Coefficients for the Percentage of Total Debt Maturing in 1–5 Years with Interaction Effect, for Dual-Class Firms

This table presents the results from the second-stage regression model (10). The dependent variables *DMD_1—DMD_5* are the fractions of total debt maturing in 1–5 years. The variable *DCS* × *R&D* interacting the dual-class dummy variable (*DCS*) with R&D intensity (*R&D*) is the primary independent variable of interest. Predicted leverage (*LEVMK*) is obtained from the first-stage regression (9), where it is the dependent variable. Statistical significance is based on White (1980) heteroskedasticity-consistent z-statistics and is signified at the 1%, 5% and 10% levels by ***, **, and *, respectively.

Variables	(1) *DMD_1*	(2) *DMD_2*	(3) *DMD_3*	(4) *DMD_4*	(5) *DMD_5*
DCS	0.045***	0.072***	0.064***	0.052***	0.049**
	(2.74)	(3.19)	(3.11)	(2.63)	(2.50)
DCS × *R&D*	-0.200	-0.386**	-0.493***	-0.384**	-0.357*
	(-1.46)	(-2.09)	(-2.75)	(-2.07)	(-1.96)
R&D	-0.100***	-0.034	-0.042	-0.082**	-0.140***
	(-2.94)	(-0.81)	(-1.06)	(-2.04)	(-3.73)
LEVMK	-0.186***	-0.225***	-0.188***	-0.172***	-0.165***
	(-7.19)	(-6.54)	(-6.24)	(-5.72)	(-5.80)
SIZE	-0.115***	-0.145***	-0.143***	-0.097***	-0.031***
	(-15.00)	(-15.36)	(-16.57)	(-11.18)	(-3.78)
$SIZE^2$	0.004***	0.005***	0.005***	0.002***	-0.002***
	(8.86)	(8.66)	(8.48)	(3.27)	(-3.74)
ATMAT	-0.000**	0.000	-0.001***	-0.001***	-0.000***
	(-2.31)	(-1.21)	(-2.97)	(-2.59)	(-2.62)
MTB	0.002	0.004**	0.006***	0.005***	0.004***
	(1.24)	(2.25)	(3.58)	(3.36)	(2.87)
TERMSTR	-0.002	0.003	0.008**	0.010***	0.010***
	(-0.76)	(0.76)	(2.51)	(3.16)	(3.35)
ABEARN	0.000	0.000	0.000	0.000	0.000
	(-0.68)	(-0.83)	(-0.76)	(-0.71)	(-0.89)
ARSTD	-0.049	-0.032	-0.063	-0.140**	-0.179***
	(-0.96)	(-0.55)	(-1.01)	(-2.26)	(-3.19)
ZSCORE	-0.124***	-0.143***	-0.110***	-0.116***	-0.136***
	(-4.18)	(-3.52)	(-3.02)	(-3.15)	(-3.92)
Observations	23,551	19,947	19,202	18,397	17,404

Table 8
Second Stage Regression Coefficients for the Percentage of Total Debt Maturing in 1–5 Years with Interaction Effect, for Staggered Board Firms

This table presents the results from the second-stage regression model (10). The dependent variables *DMD_1*—*DMD_5* are the fractions of total debt maturing in 1–5 years. The variable *SB* × *R&D* interacting the staggered board dummy variable (*SB*) with R&D intensity (*R&D*) is the primary independent variable of interest. Predicted leverage (*LEVMK*) is obtained from the first-stage regression (9), where it is the dependent variable. Statistical significance is based on White (1980) heteroskedasticity-consistent z-statistics and is signified at the 1%, 5% and 10% levels by ***, **, and *, respectively.

Variables	(1) *DMD_1*	(2) *DMD_2*	(3) *DMD_3*	(4) *DMD_4*	(5) *DMD_5*
SB	-0.032***	-0.032***	-0.028***	-0.026***	-0.024***
	(-4.70)	(-3.92)	(-3.56)	(-3.49)	(-3.41)
SB × *R&D*	0.127***	0.122**	0.107**	0.118**	0.095**
	(3.03)	(2.57)	(2.34)	(2.57)	(2.24)
R&D	-0.170***	-0.119***	-0.118***	-0.143***	-0.181***
	(-4.58)	(-2.59)	(-2.74)	(-3.29)	(-4.55)
LEVMK	-0.180***	-0.212***	-0.175***	-0.150***	-0.135***
	(-6.91)	(-6.22)	(-5.91)	(-5.28)	(-5.30)
SIZE	-0.108***	-0.144***	-0.143***	-0.101***	-0.038***
	(-13.33)	(-14.62)	(-15.76)	(-11.24)	(-4.65)
$SIZE^2$	0.004***	0.005***	0.005***	0.002***	-0.002***
	(7.54)	(8.13)	(7.93)	(3.52)	(-2.76)
ATMAT	-0.000**	0.000	-0.000**	-0.000**	-0.000**
	(-2.15)	(-1.08)	(-2.41)	(-2.20)	(-2.37)
MTB	0.001	0.004**	0.007***	0.007***	0.006***
	(0.75)	(2.06)	(3.91)	(3.97)	(3.99)
TERMSTR	0.001	0.006	0.011***	0.013***	0.012***
	(0.26)	(1.58)	(3.13)	(3.95)	(3.96)
ABEARN	-0.032	-0.048	-0.042	-0.025	-0.026
	(-1.29)	(-1.27)	(-1.29)	(-0.88)	(-0.96)
ARSTD	-0.022	-0.009	-0.048	-0.102	-0.127**
	(-0.39)	(-0.13)	(-0.72)	(-1.58)	(-2.20)
ZSCORE	-0.116***	-0.128***	-0.090**	-0.085**	-0.100***
	(-3.84)	(-3.16)	(-2.52)	(-2.46)	(-3.19)
Observations	21,027	17,855	17,195	16,484	15,596

CHAPTER 4

Antitakeover Provisions and Institutional Ownership

Although dual-class share structures and staggered boards are common antitakeover measures, we find that institutional investors react quite differently to them. In particular, firms with staggered boards appear to be quite attractive to institutional investors, whereas firms with dual-class shares seem especially unattractive to them. We also find that institutional investor aversion to firms with dual-class share structures is intensified by R&D investment, whereas R&D activity seems to have no impact on their attraction to firms with staggered boards. When examining the impact of institutional ownership on firm valuations, we find that staggered board firms with long-term institutional investors enjoy higher valuations, whereas the duration of institutional ownership appears to have no impact on valuations for firms with dual-class shares.

1. Introduction

Dual-class share structures separate the voting rights and cash flow rights of a firm's shares, with the superior voting shares usually held by company founders and insiders, who gain control of the firm. Staggered boards split a firm's board of directors into different cohorts that serve different terms, which makes it harder for a block of shareholders to gain sufficient control of the board to advance an agenda. In this paper we study the relationship between institutional ownership and these two antitakeover provisions. We also examine the impact of R&D investment on this relationship and explore the impact of short-term institutional ownership on valuations for firms with dual-class share structures and staggered boards.

Dual-class share structures and staggered boards share several features in common. To begin with, weaker governance, greater managerial entrenchment and increased agency costs are common drawbacks of both. For example, Masulis, Wang, and Xie (2009) found that a larger divergence between voting rights and cash flow rights in dual-class firms results in higher compensation for managers and reduced value for outside shareholders. Gompers, Ishii, and Metrick (2010) examined the negative effect of managerial entrenchment on firm value for dual-class firms. They documented that the size of the *wedge* between voting rights and cash flow rights is negatively associated with firm value. Amoako-Adu, Baulkaran, and Smith (2011) reasoned that the unbalanced voting rights of dual-class share structures weaken governance in dual-class firms, which introduces additional agency problems. Recently, Li and Zaiats (2018) reported that firm values for dual-class firms decrease as the size of the wedge between voting rights and cash flow rights increases, and increase as shareholder rights and board provisions increase.

Similar results have been obtained for staggered boards. Bebchuk and Cohen (2005) documented that staggered boards are negatively related to firm value, especially when they are established by corporate charters rather than company bylaws. Faleye (2007) found that staggered board firms have lower firm values, since entrenched managers face less market discipline and are less efficient. Finally, Jiraporn and Chintrakarn (2009) revealed that staggered board firms pay higher dividends than unitary board firms. Since dividends play a role in mitigating agency conflicts, they interpreted this result as evidence that staggered board firms face more severe agency problems.

On the bright side, there is evidence that dual-class share structures and staggered boards encourage innovation and long-term investment, by reducing pressure from myopic shareholders. The evidence in Jordan, Kim, and Liu (2016) suggests that dual-class share structures shield managers from short-term market pressure and allow them to pursue long-term growth opportunities, while Baran, Forst, and Via (2019) found that dual-class shares improve the quality and efficiency of innovation. Regarding staggered boards, Duru, Wang, and Zhao (2013) found that they improve firm values for opaque firms. Moreover, for opaque firms, staggered boards have a positive impact on R&D and CEO pay-performance sensitivity. Finally, Cremers, Litov, and Sepe (2017) found that staggered boards allow firms to undertake long-term projects and that staggered board firms enjoy higher valuations when they have more long-term projects.

Despite the similarities described above, dual-class share structures and staggered boards differ with respect to two characteristics that are particularly important to institutional investors, namely information asymmetry and analyst coverage. Dual-class firms exhibit high levels of information asymmetry and low levels of analyst coverage. In the theoretical model of Banerjee (2006), the full revelation of investment information to outside investors is costly and inefficient. The model showed that dual-class share structures allow managers to make investment decisions more efficiently because they can communicate less information to outside shareholders. The empirical study of Lim (2016) found that information asymmetry is higher in dual-class firms than in single-class firms. Finally, Jordan, Kim, and Liu (2016) showed that dual-class firms are followed by fewer analysts than single-class firms.

By contrast, staggered board firms have low levels of information asymmetry and enjoy extensive analyst coverage, as documented by Jiraporn, Chintrakarn, and Kim (2012), for example. They interpreted their findings by arguing that managers of staggered board firms are less concerned about the consequences of information disclosure, because they are protected from shareholder activism. As a result, they provide better information environments, which attract more analysts.

It is well-documented that information disclosure is important to institutional investors. For example, Bushee and Noe (2000) noted that firms with high disclosure rankings attract more institutional investors. In a similar vein, Ajinkya, Bhojraj, and Sengupta (2005) documented that institutional investors favour firms with frequent and accurate voluntary disclosure. Finally, Bird and Karolyi (2016) found that firms enjoy higher levels of institutional ownership when they improve the quality of their disclosure.

There is also evidence of a positive relationship between analyst coverage and institutional ownership, as documented by O'Brien and Bhushan (1990). Similarly, Hussain (2000) obtained a positive association between analyst following and institutional ownership for a U.K. sample, while Boone and White (2015) presented similar evidence using U.S. data.

The evidence in the literature cited above suggests that staggered board firms should enjoy higher levels of institutional ownership than dual-class firms. This is confirmed by our first set of results, which establish a negative correspondence between institutional ownership and dual-class shares structures, on the one hand, and a positive correspondence between institutional ownership and staggered boards, on the other hand.

Next, we turn our attention to the impact of R&D expenditure on institutional ownership for dual-class firms and staggered board firms. We begin by noting that R&D increases information asymmetry. This has been established in the analyst literature by Barron, Byard, Kile, and Riedl (2002), who demonstrated that higher levels of R&D spending are associated with larger disparities between analyst forecasts and a greater reliance on private information by analysts. It has also been established in the insider trading literature, where Aboody and Lev (2000) found that insider gains in R&D-intensive firms are substantially larger than insider gains in firms that do not engage in R&D. They attributed this to R&D being a major contributor to information asymmetry.

The evidence above indicates that R&D should reduce the appetite of institutional investors, all else being equal. This implies that R&D-intensive dual-class firms should be especially unattractive to institutional investors. This is confirmed by our second set of empirical results, which show that dual-class firms with high R&D intensities have significantly lower levels of institutional ownership than dual-class firms in general. Curiously, however, R&D intensity does not appear to affect the institutional ownership of staggered board firms.

Overall, our paper contributes to the literature on the determinants of institutional ownership, by comparing the institutional ownership of dual-class firms and staggered board firms. An important related study is Li, Ortiz-Molina, and Zhao (2008), which focuses exclusively on the institutional ownership of dual-class firms. They documented significantly lower levels of institutional ownership for dual-class firms than single-class firms, which they interpreted to mean that voting rights are an important determinant of institutional investment decisions. By contrast, we view the difference in institutional ownership between dual-class firms and single-class firms in light of differences in information asymmetry and analyst coverage.

The remainder of the paper is organised as follows. Section 2 surveys the relevant literature on dual-class share structures, staggered boards, information asymmetry, analyst coverage and institutional ownership, while Section 3 uses that literature to extract our hypotheses. Section 4 covers the topics of sample selection, variable construction and empirical methodology. Finally, Section 5 presents our empirical results and Section 6 concludes.

2. Literature Survey

Dual-class share structures and staggered boards are widely-used antitakeover measures that employ very different strategies. In a dual-class firm, the common stock is partitioned into different classes with different voting rights. In most cases, there are only two classes of shares—one with voting rights and one without. This arrangement allows controlling shareholders (typically company founders) who own the majority of the voting shares to maintain control of a company, even as it continues to issue new (non-voting) shares. In a staggered board firm, by contrast, the board of directors is partitioned into different groups that serve different terms and come up for re-election at different times. This makes it difficult for a block of shareholders to gain sufficient control of the board to force their agenda. In particular, the likelihood of a takeover is greatly reduced.

A remarkable difference between dual-class share structures and staggered boards is the growing popularity of the former and the waning popularity of the latter. Jay Ritter's website reveals that dual-class IPOs accounted for 31.7% of all

IPOs in 2021 and 46.2% of all tech IPOs, while in 2010 the corresponding figures were 9.9% and 6.1%, respectively.[1] Similar evidence was presented by Aggarwal, Eldar, Hochberg, and Litov (2022), who documented a dramatic increase in the number of firms going public with dual-class shares over the past few years. They noted that founder-led firms seem to play an important role in the rise of dual-class IPOs and observed that founders with more bargaining power are able to negotiate a larger *wedge* between voting rights and cash flow rights in dual-class IPOs. They also speculated that the rise in dual-class IPOs may be because they give founders better access to private capital.

The recent trend in the case of staggered boards is quite different, with many staggered board firms adopting unitary boards in a process known as *destaggering*. This has been attributed to the negative association between staggered boards and firm values highlighted by Faleye (2007) and Zhao and Chen (2008). For example, Guo, Kruse, and Nohel (2008) found that converting staggered boards to unified boards enhances firm values and that the destaggering trend is driven by shareholders who are aware of this. Recently, Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022) constructed the most comprehensive staggered board indicator variable to date, which includes firms outside the S&P1500. They reported that the percentage of staggered board firms in the S&P1500 has decreased from 58% to 30% from 1996 to 2020. However, the percentage of staggered board firms outside the index has increased from 40% to 53% over the same period.

As with most antitakeover measures, dual-class share structures and staggered boards are associated with weaker governance, greater managerial entrenchment, and higher agency costs. For example, Masulis, Wang, and Xie (2009) reported

[1] See `https://site.warrington.ufl.edu/ritter/ipo-data/`.

that managers extract larger private benefits as the wedge between voting rights and cash flow rights in dual-class firms increases, resulting in lower firm values. Similarly, Gompers, Ishii, and Metrick (2010) showed that governance in dual-class firms weakens as the wedge increases, leading to managerial entrenchment and agency problems. They also documented a negative relationship between firm values and the wedge.

In a study of the valuation effects of managerial entrenchment, Baulkaran (2014) found that investors apply a discount to the price of (non-voting) shares in a dual-class firm, relative to the share price of a comparable single-class firm, to compensate for entrenchment-related agency costs. He observed that the discount increases with the size of the wedge between voting rights and cash flow rights, and is more pronounced for founder-led dual-class firms. Recently, Li and Zaiats (2018) also documented that entrenchment increases with the size of the wedge in dual-class firms. In addition, they found that dual-class firms introduce more shareholder rights protections than single-class firms, but have less independent boards. However, shareholder rights decrease as the size of the wedge increases. Finally, they reported that firm values for dual-class firms are negatively related to the wedge, but positively related to shareholder protections.

Similar results have been obtained for staggered boards. Bebchuk and Cohen (2005) observed that staggered board firms have significantly lower firm values than unitary board firms. Interestingly, the reduction in firm values is more pronounced for staggered boards established by corporate charters than company bylaws, since corporate charters are harder to amend. Bebchuk and Cohen (2005) also found that firm values decrease as managerial entrenchment increases in staggered board firms. Along similar lines, Faleye (2007) found that staggered boards reduce firm values, since entrenchment lowers managerial efficiency. In addition, that study shows that firm values are significantly lower for staggered board firms than unitary board firms.

Some recent papers have focused on the beneficial features of dual-class share structures and staggered boards. Jordan, Kim, and Liu (2016) found that dual-class share structures shield managers from myopic shareholders, thereby allowing them to invest in innovative projects and pursue long-term growth opportunities. They also claimed that firms with high growth opportunities enjoy higher valuations if they have dual-class share structures. Similarly, Baran, Forst, and Via (2019) presented evidence showing that dual-class share structures create a positive environment for innovation, resulting in higher quality patents and more efficient research spending. However, they noted that this advantage dissipates 10 years after going public. For staggered board firms, Cremers, Litov, and Sepe (2017) reported that board unifications have a significant negative impact on valuations. They also found that firms with more long-term projects benefit from higher valuations after adopting a staggered board structure.

Dual-class share structures and staggered boards differ from each other with respect to two characteristics that are particularly important to institutional investors, namely information asymmetry and analyst coverage. In the theoretical model of Banerjee (2006), managers of dual-class firms are able to make investment decisions without communicating all the information to shareholders. This has the advantage of improving the efficiency of investment decision-making and reducing the underinvestment problem, since fully revealing private investment information to outside shareholders is costly and often counterproductive. However, it also has the disadvantage of increasing information asymmetry. This was confirmed empirically by Lim (2016), who examined the impact of dual-class share structures on corporate disclosure and found that information asymmetry is higher in dual-class firms than in single-class firms. Finally, the recent empirical study by Jordan, Kim, and Liu (2016) documented that firms with dual-class share structures are followed by fewer analysts than single-class firms. By contrast, Jiraporn, Chintrakarn, and Kim (2012) found that staggered board firms have significantly higher levels of analyst following and lower levels of information asymmetry than unitary board firms. They interpreted their results by arguing that staggered boards shield managers from takeover threats, which makes them less concerned about the consequences of information disclosure and therefore more popular with analysts.

The dependence of institutional ownership on information asymmetry and analyst coverage is a central theme of our work. Information asymmetry has a well-established negative association with institutional ownership. Bushee and Noe (2000) investigated the relationship between corporate transparency and institutional ownership. They found that firms with higher disclosure rankings attract more institutional investors. Moreover, improvements in disclosure rankings are accompanied by increased institutional ownership, especially among so-called *transient* institutions that trade aggressively and rely on short-term trading strategies. Ajinkya, Bhojraj, and Sengupta (2005) studied the relationship between institutional ownership and voluntary disclosure. They found that concentrated institutional ownership is associated with more frequent and accurate voluntary disclosure, while managerial optimism reduces institutional ownership. They argued that the monitoring role of institutional ownership improves the quality of information disclosure and concentrated institutional ownership improves corporate transparency.

There is also a positive relationship between analyst coverage and institutional ownership, which is mediated by disclosure quality and firm size. O'Brien and Bhushan (1990) found that analysts tend to follow the same firms that attract institutional investors. They attributed this to the fact that information disclosure is important to both analysts and institutions. Since disclosure tends to improve with firm size, both analysts and institutions tend to focus their attention on larger firms. More recently, Boone and White (2015) studied the impact of institutional ownership on firm transparency and information production. They found that institutional ownership is positively related to management disclosure, analyst following and liquidity, and that it reduces information asymmetry.

The impact of R&D activities on information asymmetry is another important topic in our work, with the prevailing evidence indicating that R&D increases information asymmetry. For example, Barron, Byard, Kile, and Riedl (2002) observed that analyst consensus is low for high-tech manufacturing firms, which they attributed to the high levels of R&D activity in such firms. Similarly, Jones (2007) noted that analysts struggle to predict whether R&D investments will benefit a firm, due to the uncertain nature of R&D projects. She found that analyst error and the dispersion of analyst forecasts decrease when firms provide more voluntary disclosure about their R&D projects. The literature on insider trading sheds additional light on the impact of R&D on information asymmetry. Aboody and Lev (2000) documented that insider gains in R&D-intensive firms are substantially larger than is the case for firms that do not engage in R&D, which implies that R&D contributes significantly to information asymmetry.

By comparing the institutional holdings of dual-class firms and staggered board firms, our paper contributes to the literature on the determinants of institutional ownership. In this regard, the most relevant paper is Li, Ortiz-Molina, and Zhao (2008), which studied the impact of shareholder voting rights on institutional investment decisions, by focusing on dual-class firms. They found that institutional ownership of dual-class firms is significantly lower than institutional ownership of single-class firms, which they took as evidence that voting rights are important for institutional investment decisions. Other relevant studies include Chung and Zhang (2011), Bushee, Carter, and Gerakos (2014) and Chung and Lee (2020), which focus on the importance of governance for institutional investors.

3. Hypothesis Development

Our first hypothesis combines three straightforward observations. First, numerous studies, including Bushee and Noe (2000), Ajinkya, Bhojraj, and Sengupta (2005), Boone and White (2015) and Bird and Karolyi (2016), show that institutional ownership is inversely related to information asymmetry and analyst coverage. Second, Jordan, Kim, and Liu (2016) and Lim (2016) have established that dual-class firms exhibit higher levels of information asymmetry and lower levels of analyst coverage than single-class firms. Third, Jiraporn, Chintrakarn, and Kim (2012) have shown that staggered board firms have larger analyst followings than unitary board firms. Based on these observations, we expect dual-class firms to have fewer institutional investors than single-class firms and staggered board firms to have more institutional investors than unitary board firms. We formulate a slightly weaker version of this hypothesis below.

HYPOTHESIS 6. *Staggered board firms have higher levels of institutional ownership than dual-class firms.*

Next, we consider the impact of R&D on institutional ownership of dual-class firms and staggered board firms. Empirical evidence from the analyst literature, such as Jones (2007) and Barron, Byard, Kile, and Riedl (2002), identifies R&D as a source of information asymmetry. Similarly, Aboody and Lev (2000) found that R&D contributes to information asymmetry in their study of the gains from insider trading. So, all things being equal, we expect R&D intensity to have a negative effect on institutional ownership. Whether there should be a differential effect for dual-class firms versus staggered board firms is unclear, so we formulate the following tentative hypothesis.

HYPOTHESIS 7. *R&D intensity is negatively related to institutional ownership for dual-class firms and staggered board firms.*

One of the claimed benefits of dual-class share structures and staggered boards is that they shield managers from myopic market pressure. Jordan, Kim, and Liu (2016) and Baran, Forst, and Via (2019) presented evidence to support this claim for dual-class firms, while Duru, Wang, and Zhao (2013) and Cremers, Litov, and Sepe (2017) did the same for staggered board firms. It is natural to wonder which of these two antitakeover provisions performs this function more effectively.

We surmise that dual-class share structures are more effective in shielding managers from short-term shareholder pressure. We can think of two arguments that justify this claim. First, by separating voting rights from cash flow rights, dual-class share structures are objectively more extreme, since insiders can gain complete control of a firm even if they own a small minority of the total number of shares outstanding. This leaves external shareholders completely powerless and unable to influence strategy.[2] Second, Aggarwal, Eldar, Hochberg, and Litov (2022) noted that the dramatic rise in dual-class IPOs in recent years has been driven by founder-controlled firms. Since founders are naturally anxious to maintain control of their firms, their preference for dual-class share structures provides implicit evidence that they are effective in this regard.

HYPOTHESIS 8. *Dual-class share structures shield firms from myopic shareholder pressure more effectively than staggered boards.*

4. Data and Empirical Methodology

4.1. Antitakeover Provision Dummy Variables

Currently, the empirical literature on dual-class share structures relies exclusively on the dual-class dummy variable published by Gompers, Ishii, and Metrick (2010). The first important contribution of our study is the construction of a more comprehensive dual-class indicator variable that extends the sample period of their variable and improves on its accuracy over the overlapping sample period.

The variable construction methodology employed by Gompers, Ishii, and Metrick (2010) used two steps to identify dual-class firms. First, candidate dual-class firms were identified as those with more than a 1% difference in shares outstanding between Compustat and CRSP. Second, manual textual analysis of the 10-K

[2]Meta (formerly Facebook) illustrates this point well. As of 2022, the company's equity comprised 2.3 billion publicly traded class A shares, with one vote per share, and 412.86 million non-publicly traded class B shares, with ten votes per share. At the time, Mark Zuckerberg, the CEO and founder, owned or controlled the majority of the class B shares, giving him control of 57% of the votes despite owning only 13.6% of the shares in Meta. As a result, he has been able to engage in a single-minded pursuit of the expensive and unpopular Metaverse virtual reality strategy, even though the majority of the company's shareholders are vehemently opposed to it. So far, it has cost Meta more than $39 billion, without generating any revenue.

filings of the candidate companies was performed to confirm whether they truly had dual-class share structures. Our dual-class indicator variable (*DCS*) was constructed as follows:

(1) We generated a temporary firm-year level indicator variable (*Diff_True*) to identify candidate dual-class companies as those with more than a 1% difference in shares outstanding between Compustat and CRSP.

(2) We downloaded the entire 10-K filings of all firms in our sample from SEC Edgar and performed an exhaustive textual analysis on them. This allowed us to construct a second temporary firm-year level indicator variable (*10k_True*), which identified all firms whose 10-K filings contained the terms "class a", "class b", "class c" or "class d".

(3) Since dual-class share structures are sticky, we manually checked all available 10-K filings of companies for which *Diff_True* changed more than once, to confirm their dual-class status.

(4) For companies for which *Diff_True* remained constant, we manually checked all available 10-K filings, if *Diff_True* differed from *10K_True*.

(5) Finally, we double-checked all available 10-K filings of companies for which *Diff_True* did not equal *10K_True* in any year of its life.

After all the checks above, our dual-class indicator variable (*DCS*) was set equal to *Diff_True*. It improves on the dual-class dummy variable used by Gompers, Ishii, and Metrick (2010) for several reasons.

- First, by downloading the entire 10-K filings from SEC Edgar, we performed textual analysis on all companies, rather than only the candidate companies identified by comparing the numbers of shares outstanding in Compustat and

CRSP. This allowed us to identify the dual-class companies with no obvious differences in outstanding shares between Compustat and CRSP.

- Second, in order to identify a candidate dual-class firm based on a disparity between its number of outstanding shares recorded by CRSP and Compustat, we checked its entire time series in those two databases, rather than only comparing the number of outstanding shares in a given year. We included a company in our universe of candidate dual-class firms if the difference in shares outstanding between Compustat and CRSP exceeded 1% for at least one year.
- Finally, we manually checked a large sample of 10-K filings to verify the results of the automated textual analysis. This assured us about the correctness of our variable construction process.

In addition to constructing a more reliable dual-class dummy variable than Gompers, Ishii, and Metrick (2010), we extended the sample period of their variable from 1995–2002 to 1990–2019. Over that period we identified 310.4 dual-class firms each year, on average, with a maximum of 408 in 1999 and a minimum of 159 in 2019. Panel A in Table 1 illustrates the distribution of dual-class and single-class firms for each year in our sample, while Panel B compares our dual-class indicator variable with the one used by Gompers, Ishii, and Metrick (2010), over the overlapping sample period. During the entirety of that period we identified 551 firm-year instances of dual-class companies that were missed by Gompers, Ishii, and Metrick (2010), while 219 instances of dual-class companies recorded by their variable were rejected by our identification process.

To identify firms with staggered boards, the identifier provided by the Institutional Shareholder Services (ISS) Corporate Governance database provides the most widely used staggered board indicator variable.[3] However, the ISS database has two important deficiencies. First, it only includes firms in the S&P 1500 index, and it does not provide data for the years before and after a firm belonged to the index. Second, ISS only collected data every two or three years between 1990 and 2006.

Recently, Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022) constructed a more comprehensive staggered board dummy variable covering the period from 1996 to 2020, by combining machine learning with textual analysis and manual inspection. We use their staggered board indicator variable (*SB*) in this paper.

4.2. Sample Selection for Multivariate Regressions

Our main data sample comes from Compustat, CRSP and Thomson Reuters, covering the period from 1991 to 2019. Following Bushee (2001), Li, Ortiz-Molina, and Zhao (2008), Chung and Zhang (2011), Bushee, Carter, and Gerakos (2014), Jordan, Kim, and Liu (2016), Cremers, Litov, and Sepe (2017) and Chung and Lee (2020), we used the institutional holdings data from Thomson Reuters and the classification of institutional ownership from Bushee (1998) to construct the following variables.

(1) Institutional ownership (*IO*), measured as the number of shares held by institutional investors divided by the total number of shares outstanding.
(2) Non-transient institutional ownership (*NONTIO*), measured as the number of shares held by non-transient institutional investors divided by the total number of shares outstanding.

[3]It has been used by Zhao and Chen (2008), Jiraporn and Chintrakarn (2009), Jiraporn, Chintrakarn, and Kim (2012), Cohen and Wang (2013), Duru, Wang, and Zhao (2013) and Cremers, Litov, and Sepe (2017).

(3) Transient institutional ownership (*TIO*), measured as the number of shares held by transient investors divided by the total number of shares outstanding.

(4) Percentage of transient institutional owners (*TIOIO*), measured as transient institutional ownership (*TIO*) divided by institutional ownership (*IO*).

(5) Duration of institutional ownership (*IODUR*), measured as the average length of time for which institutional investors held a firm's shares.

To investigate the relationship between institutional ownership and the anti-takeover provision dummy variables, we use several variables that describe firm characteristics. The following variables were obtained from Compustat and CRSP:

- Market capitalization (*MC*), calculated by the natural logarithm of the dollar value of shares outstanding at the end of the year.
- Annual average return (*RETURN*), measured as the average monthly value-weighted return of a firm's public-traded shares over a year (obtained from the CRSP monthly stock files).
- Dividend yield (*DIDYLD*), measured as a firm's total dividend payout over a year divided by its closing stock price at the end of the year.
- Firm value (*FIRMVAL*), measured as the fraction of the market value of a firm divided by its total assets.
- Firm size (*SIZE*), measured as the natural logarithm of a firm's total assets.
- Return on assets (*ROA*), measured as a firm's EBITDA divided by its total assets.
- Capital expenditure (*CAPEX*), measured as a firm's capital expenditure divided by its total assets.
- R&D intensity (*R&D*), measured as the R&D expenditure of a firm divided by its total assets.

After constructing the variables above, we refined our data sample as follows:

- We excluded certificates, ADRs, units trusts, closed-end funds and REITs from the sample, and retained only firms with ordinary common stock listed in the U.S.
- We excluded firms with SIC codes in the ranges 6000-6999 (financial firms) and 4900-4999 (utilities).
- We winsorized all continuous variables at the 2.5% level in both tails.

Table 2 presents summary statistics for all the variables in our sample. Average institutional ownership (*IO*) was 0.45, with a standard deviation of 0.31. Average non-transient institutional ownership (*NONTIO*) and percentage of transient institutional owners (*TIOIO*) were 0.34 and 0.26, respectively, with standard deviations of 0.25 and 0.19. The average duration of institutional ownership (*IO-DUR*) for the firms in our sample was 9.79 years, with a standard deviation of 6.16. With respect to the firm characteristic variables, average firm value (*FIRMVAL*) was 2.11, with a standard deviation of 1.55, while average R&D intensity (*R&D*) was 0.36, with a standard deviation of 1.07. In addition, the mean average annual stock return (*RETURN*) for the firms in the sample was 0.01, and the average dividend yield (*DIDYLD*) was 0.02.

Compared with the samples in Li, Ortiz-Molina, and Zhao (2008), Chung and Zhang (2011), Bushee, Carter, and Gerakos (2014), Jordan, Kim, and Liu (2016) and Cremers, Litov, and Sepe (2017), institutional ownership for our sample was lower, on average, but transient institutional ownership was higher. The average duration of institutional ownership for our sample was longer than for the sample used by Cremers, Litov, and Sepe (2017). In addition, the firms in our sample exhibited higher firm values, lower annual average returns, and higher dividend yields than the firms in that sample.

4.3. Empirical Methodology

To test Hypothesis 6, we employ multivariate panel regressions in the spirit of Li, Ortiz-Molina, and Zhao (2008), Chung and Zhang (2011), Bushee, Carter, and Gerakos (2014), and Chung and Lee (2020). To test the dependence of the institutional ownership (*IO*) on the two antitakeover dummy variables we use the model

$$IO_t = \beta_0 + \beta_1 ATP_{t-1} + \beta_2 MC_{t-1} + \beta_3 DIDYLD_{t-1} + \beta_4 RETURN_{t-1} + \epsilon_t, \quad (11)$$

where the antitakeover indicator variable *ATP* is either *DCS* or *SB*. If Hypothesis 6 is true, the coefficient β_1 in equation (11) should be negative when *ATP* is the dual-class dummy variable *DCS*, and positive when *ATP* is the staggered board dummy variable *SB*.

To test Hypothesis 7, we extend the base model (11) by including the interaction variables $DCS \times R\&D$ and $SB \times R\&D$. The resulting model is

$$\begin{aligned} IO_t = {} & \beta_0 + \beta_1 ATP_{t-1} + \beta_2 ATP_{t-1} \times R\&D_{t-1} + \beta_3 R\&D_{t-1} + \beta_4 MC_{t-1} \\ & + \beta_5 DIDYLD_{t-1} + \beta_6 RETURN_{t-1} + \epsilon_t, \end{aligned} \quad (12)$$

where the antitakeover indicator variable *ATP* is either *DCS* or *SB*. If Hypothesis 7 is true, we expect a negative coefficient for β_2 in equation (12), irrespective of whether *ATP* is the dual-class dummy variable *DCS* or the staggered board dummy variable *SB*.

When estimating models (11) and (12), we control for industry- and year-fixed effects, and all t-statistics are based on standard errors clustered at the firm level. We control for industry-fixed effects using the Fama-French 48 industry classification. We do not use four-digit SIC codes for this purpose, because they encode too many subdivisions within industries. Since dual-class share structures are very sticky, the industry dummy variable would behave a lot like the dual-class indicator variable, if the former captured too many subdivisions within industries. We do not control for firm-fixed effects for the same reason, since the firm dummy variable would behave like the dual-class indicator variable.

Hypothesis 8 asserts that dual-class share structures provide firms with better protection against market myopia than staggered boards. We test it using a model specification similar to the one used by Cremers, Litov, and Sepe (2017, Table 11):

$$\begin{aligned} \mathit{FIRMVAL}_t = & \beta_0 + \beta_1 \mathit{ATP}_{t-1} + \beta_2 \mathit{ATP}_{t-1} \times \mathit{PRESSURE}_{t-1} \\ & + \beta_3 \mathit{PRESSURE}_{t-1} + \beta_4 \mathit{SIZE}_{t-1} + \beta_5 \mathit{ROA}_{t-1} \\ & + \beta_6 \mathit{CAPEX}_{t-1} + \beta_7 \mathit{R\&D}_{t-1} + \epsilon_t, \end{aligned} \tag{13}$$

where the antitakeover indicator variable *ATP* is either *DCS* or *SB* and *PRESSURE* is either *TIOIO* or *IODUR*. As before, we control for firm- and year-fixed effects and all t-statistics are based on standard errors clustered at the firm level.

To understand the logic behind equation (13), note that the percentage of transient institutional owners (*TIOIO*) and the duration of institutional ownership (*IODUR*) are measures of pressure from short-term institutional investors. (The first variable measures the fraction of a firm's institutional investors who follow short-term trading strategies, while the second variable measures the average holding period of the firm's institutional investors.) In particular, a higher value for the percentage of transient institutional owners (*TIOIO*) and/or a lower value for the duration of institutional ownership implies that there is more pressure from short-term institutional investors. To evaluate Hypothesis 8, we need to focus on the coefficient β_2 on the variable $ATP \times PRESSURE$ that interacts the antitakeover dummy variable (*ATP*) with short-term institutional shareholder pressure (*PRESSURE*).

5. Empirical Results

5.1. Univariate Tests

Table 3 presents the results of two-sample t-tests for all variables, where the samples are determined by the dual-class and staggered board dummy variables. According to the results in Panel A, we observe significant differences between the values of all variables, when comparing dual-class firms with single-class firms. Panel A indicates that dual-class firms have lower institutional ownership (*IO*) than single-class firms, which is consistent with Hypothesis 6. We also observe that dual-class firms have a significantly lower percentage of transient institutional owners (*TIOIO*) than single-class firms. These findings agree with the evidence in Li, Ortiz-Molina, and Zhao (2008) and Jordan, Kim, and Liu (2016).

Panel A also indicates that dual-class firms have lower firm values (*FIRMVAL*) than single-class firms. This finding also agrees with the evidence from previous studies, such as Masulis, Wang, and Xie (2009), Gompers, Ishii, and Metrick (2010) and Amoako-Adu, Baulkaran, and Smith (2011). Dual-class firms also have lower R&D intensities (*R&D*) than their single-class counterparts. This finding agrees with the results of Dey, Nikolaev, and Wang (2016). However, it is inconsistent with the evidence presented by Jordan, Kim, and Liu (2016), whose two-sample t-tests, based on a 1994–2011 sample period, suggested that R&D intensities were higher for dual-class firms.

Finally, we observe that dual-class firms are generally larger (*SIZE*) than single-class firms, with higher returns on assets (*ROA*), lower capital expenditures (*CAPEX*), higher dividend yields (*DIDYLD*) and longer durations of institutional ownership (*IODUR*). The univariate tests in previous studies, such as Li, Ortiz-Molina, and Zhao (2008), Gompers, Ishii, and Metrick (2010), Jordan, Kim, and Liu (2016) and Baran, Forst, and Via (2019), produced different results for these variables, which points to the vagaries of sample selection.

The results for the two-sample t-test for firms separated by the staggered board dummy variable are presented in Panel B of Table 3. We observe that staggered board firms have higher institutional ownership (*IO*) than their unitary board counterparts as well as dual-class firms, which is consistent with Hypothesis 6. We also observe that firm values (*FIRMVAL*) are lower for staggered board firms than unitary board firms. This resonates with the empirical evidence presented by Bebchuk and Cohen (2005), Faleye (2007) and Guernsey, Guo, Liu, and Serfling (2022).

When comparing R&D intensities (*R&D*) of staggered board firms with those of unitary board firms in Panel B, we see that staggered board firms appear to be more engaged in R&D. This is consistent with the argument advanced by Duru, Wang, and Zhao (2013), Cremers, Litov, and Sepe (2017) and Nguyen, Vu, and Yin (2021) that staggered boards foster corporate innovation by reducing shareholder myopia. Finally, Panel B indicates that staggered board firms have shorter durations of institutional ownership (*IODUR*), higher capital expenditures (*CAPEX*), and lower average annual returns (*RETURN*) than unitary board firms.

5.2. Results on Institutional Ownership

To examine Hypothesis 6, we estimate the baseline model (11), where the antitakeover dummy variable *ATP* is either *DCS* or *SB*. The results are presented in columns (1) and (3) of Table 4. We observe that the coefficient on the dual-class dummy variable (*DCS*) in column (1) is negative and significant, while the coefficient on the staggered board dummy variable (*SB*) in column (3) is positive and significant. This indicates that dual-class share structures are negatively related to institutional ownership, while staggered boards are positively related to institutional ownership. All in all, the evidence in columns (1) and (3) is consistent with Hypothesis 6 that institutional investors prefer staggered board firms to dual-class firms.

We remark that the coefficients in columns (1) and (3) of Table 4 are not only statistically significant, but also economically important. The coefficient on the dual-class dummy variable in column (1) implies that institutional ownership is 5.9% lower for dual-class firms than single-class firms. Given that the average percentage of institutional holdings for all firms in the sample is about 45%, according to Table 3, it follows that $0.059 \times 0.45 = 2.66\%$ fewer shares in dual-class firms are held by institutions than is the case for single-class firms. By contrast, the coefficient on the staggered board dummy variable in column (3) indicates that institutional ownership is 5% higher for staggered board firms than unitary board firms. This implies that $0.05 \times 0.45 = 2.25\%$ more of the shares in staggered board firms are held by institutions than is the case for unitary board firms.

Table 4 also presents significant positive coefficients on market capitalisation (*MC*), as well as significant negative coefficients on average annual return (*RETURN*) and dividend yield (*DIDYLD*). These results agree with the results in Li, Ortiz-Molina, and Zhao (2008), Bushee, Carter, and Gerakos (2014), and Chung and Zhang (2011) that larger firms, as well as firms with lower average annual returns and lower dividend yields, attract more institutional investors.

5.3. Results on the Impact of R&D on Institutional Ownership

To investigate Hypothesis 7, we estimate equation (12), where the antitakeover dummy variable *ATP* is once again either *DCS* or *SB*. The results are presented in columns (2) and (4) of Table 4. We observe that the coefficient on the interaction variable in column (2) is negative and significant, while the coefficient on the interaction variable in column (4) is insignificant. This indicates R&D intensity has a significant negative impact on institutional ownership for dual-class firms, but the impact is insignificant in the case of staggered board firms. If we interpret the coefficient in column (2), we see that a one-standard deviation increase in R&D intensity corresponds with a decrease in expected institutional ownership of $1.791 \times {}^{1.07}/_{45} = 4.26\%$, for a dual-class firm with average R&D intensity.[4]

Overall, the evidence in columns (2) and (4) provides a mixed verdict on Hypothesis 7. For dual-class firms, R&D certainly seems to have the predicted negative effect on institutional ownership. However, R&D does not appear to affect institutional ownership for staggered board firms. The explanation may have something to do with the transparency of staggered board firms. We note

[4]In Table 2 we see that average institutional ownership (*IO*) is 45 and the standard deviation of R&D intensity (*R&D*) is 1.07.

that Jiraporn, Chintrakarn, and Kim (2012) found that staggered board firms provide better disclosure than unitary board firms, while Jones (2007) showed that they provide more voluntary disclosure. We speculate that the improved disclosure by staggered board firms may effectively counteract the information asymmetry problems created by R&D.

5.4. A Robustness Test

Bushee (1998) first described institutional investors with well-diversified portfolios and high portfolio turnovers as *transient institutional investors*. Such investors behave more like traders than traditional long-term investors, in the sense that they frequently churn their investments. As such, they may be characterised as investors with high portfolio turnovers and momentum strategies.

Chan, Zhang, and Zhang (2013) documented a significant positive relationship between transient institutional ownership and analyst coverage. The natural interpretation is that since transient investors focus on short-term earnings, they rely heavily on analyst coverage and the accuracy of analyst forecasts. This suggests that transient institutional investors should note be attracted to R&D-intensive firms because information asymmetry is higher for such firms, which implies that analyst coverage is lower and analyst forecasts are less accurate.

The reasoning above raises the possibility that the results in Table 4 may be driven by the sensitivity of transient institutional investors to information asymmetry. To overcome this problem, we repeat the regressions in Table 4, using non-transient institutional ownership (*NONTIO*) as the dependent variable. In particular, we estimate the models

$$\begin{aligned} NONTIO_t = &\beta_0 + \beta_1 ATP_{t-1} + \beta_2 MC_{t-1} + \beta_3 DIDYLD_{t-1} \\ &+ \beta_4 RETURN_{t-1} + \epsilon_t. \end{aligned} \tag{14}$$

$$\begin{aligned} NONTIO_t = &\beta_0 + \beta_1 ATP_{t-1} + \beta_2 ATP_{t-1} \times R\&D_{t-1} + \beta_3 R\&D_{t-1} \\ &+ \beta_4 MC_{t-1} + \beta_5 DIDYLD_{t-1} + \beta_6 RETURN_{t-1} + \epsilon_t. \end{aligned} \tag{15}$$

where the antitakeover indicator variable *ATP* is either *DCS* or *SB*.

The results from estimating these models are displayed in Table 5, with columns (1) and (3) presenting the estimated coefficients for equation (14) and columns (2) and (4) presenting the estimated coefficients for equation (15). We observe that the results in Table 4 continue to hold, even with non-transient institutional ownership (*NONTIO*) as the dependent variable. In particular, we still find a significant negative coefficient on the standalone dual-class dummy variable and a significant positive coefficient on the standalone staggered board dummy variable. In addition, the coefficient on the interaction variable between R&D intensity and the dual-class dummy variables is still negative and significant, while the coefficient of the interaction variable between R&D intensity and the staggered board dummy variables remains insignificant. Consequently, the results in Table 4 are not driven by the fact that R&D-intensive firms are probably less attractive to transient institutional investors.

5.5. Results on the Effect of Myopic Market Pressure

To test Hypothesis 8, we estimate equation (13), where the antitakeover dummy variable *ATP* is either the dual-class dummy variable *DCS* or the staggered board dummy variable *SB*. The model contains two measures of myopic institutional shareholder pressure, namely the percentage of transient institutional owners (*TIOIO*) and the duration of institutional ownership (*IODUR*). The results of estimating the model are displayed in Table 6. Columns (1)–(2) present the results for dual-class firms, while columns (3)–(4) present the results for staggered board firms.

We begin by observing that coefficients on the interaction variables in columns (1) and (2) are insignificant. Consequently, we find no evidence that short-term institutional investor pressure affects firm values for dual-class firms, irrespective of which measure of short-term institutional shareholder pressure we use. This is somewhat at odds with the findings in Jordan, Kim, and Liu (2016), who reported that dual-class share structures alleviate short-term market pressure.

With respect to staggered board firms, we see that the coefficient on the interaction variable in column (3) is also insignificant. However, the coefficient on the interaction variable in column (4) is negative and significant, which indicates that a decrease in the duration of institutional ownership reduces firm values for staggered board firms. That is to say, an increase in institutional shareholder pressure, in the form of a lower average holding period by institutional investors, reduces the values of staggered board firms.

In Table 3 we see that the standard deviation of the duration of institutional ownership (*IODUR*) is 5.419, while the average firm value (*FIRMVAL*) is 2.145. Hence, the coefficient in column (4) indicates that a one-standard deviation decrease in the duration of institutional ownership (*IODUR*) corresponds with a $0.017 \times {}^{5.419}/_{2.145} = 4.29\%$ decrease in firm value (*FIRMVAL*) for a staggered board firm with average duration of institutional onwnership.

We note that the regression model (13) is very similar to one of the models used by Cremers, Litov, and Sepe (2017). However, their test only applied to staggered board firms, their sample period was shorter, and they did not have access to the new staggered board indicator variable of Guernsey, Sepe, and Serfling (2022) and Guernsey, Guo, Liu, and Serfling (2022). Nevertheless, the values and statistical significance of the coefficients in columns (3) and (4) of Table 6 are broadly in line with the values and statistical significance of the corresponding coefficients in Cremers, Litov, and Sepe (2017, Table 11).

In summary, our results indicate that myopic market pressure does not affect firm values for dual-class firms. However, an increase in short-term shareholder pressure, in the form of a decrease in the average holding period of institutional investors, does have a significant negative impact on firm values for staggered board forms. This provides some support for Hypothesis 8.

6. Conclusion

This paper examines the impact of dual-class share structures and staggered boards on institutional ownership. We begin by observing that dual-class firms exhibit higher levels of information asymmetry and lower levels of analyst coverage than single-class firms. By contrast, staggered board firms exhibit lower levels of information asymmetry and are covered by more analysts than unitary board firms. Based on established results in the literature, showing that information asymmetry is negatively related to institutional ownership, we predict that institutional ownership should be higher for staggered board firms than dual-class firms. Our empirical tests confirm this prediction.

Next, we consider the impact of R&D expenditure on institutional ownership for dual-class firms and staggered board firms. We find the R&D intensity decreases institutional ownership for dual-class firms. However, institutional ownership of staggered board firms appears to be insensitive to R&D expenditure. We conjecture that this may have something to do with the high levels of disclosure at staggered board firms, which may offset the information asymmetry aspects of R&D.

Finally, we consider the proposition that dual-class share structures and staggered boards shield managers from shareholders. Jordan, Kim, and Liu (2016) found evidence for this claim, in the case of dual-class firms, while Cremers, Litov, and Sepe (2017) did the same, in the case of staggered board firms. We repeat the tests in Cremers, Litov, and Sepe (2017), applying them to both dual-class firms and staggered board firms. These tests examine the sensitivity of firm values to two measures of short-term investor pressure, namely the percentage of transient institutional investors holding a firm's shares and the average length of time the firm's shares are held by institutional investors. We find that the firm values of dual-class firms are insensitive to short-term shareholder pressure, irrespective of how it is measured, while a decrease in the duration of institutional holdings has a statistically significant negative impact on the firm values of staggered board firms.

Table 1
The Dual-Class Indicator Variable

Panel A presents the distribution of dual-class and single-class firms for each year of our sample period 1991–2019. Panel B compares our dual-class dummy variable (DCS) with the dual-class dummy variable ($DCS^{\dagger}$) constructed by Gompers, Ishii, and Metrick (2010).

Panel A: Distribution of Dual-Class and Single-Class Firms

Year	$DCS = 1$	$DCS = 0$
1991	245	3364
1992	269	3704
1993	287	4015
1994	327	4232
1995	346	4380
1996	386	4618
1997	400	4657
1998	398	4424
1999	408	4225
2000	399	4091
2001	359	3777
2002	337	3540
2003	316	3331
2004	305	3275
2005	282	3189
2006	266	3097
2007	251	2997
2008	239	2843
2009	221	2709
2010	220	2623
2011	218	2524
2012	216	2443
2013	219	2441
2014	223	2510
2015	228	2473
2016	225	2408
2017	213	2273
2018	206	2138
2019	159	1758
Total	8168	94059

Panel B: Comparison of DCS and $DCS^{\dagger}$

Year	$DCS = 1$	$DCS^{\dagger} = 1$	$DCS = 1$ & $DCS^{\dagger} = 0$	$DCS = 0$ & $DCS^{\dagger} = 1$
1995	346	318	61	30
1996	386	335	82	28
1997	400	361	71	30
1998	398	368	66	35
1999	408	360	77	29
2000	399	357	66	24
2001	359	324	61	26
2002	337	287	67	17
Total	3033	2710	551	219

Table 2
Descriptive Statistics

This table presents descriptive statistics for the dependent and firm characteristic variables in our sample from 1991 to 2019. All continuous variables are winsorized at the 2.5% level in both tails.

				Percentiles				
	Obs	Mean	Std. Dev.	1%	5%	Median	95%	99%
IO	76413	0.45	0.31	0.00	0.01	0.42	0.97	1.00
NONTIO	76054	0.34	0.25	0.00	0.01	0.30	0.79	0.83
TIOIO	73532	0.26	0.19	0.01	0.03	0.22	0.67	0.85
IODUR	76960	9.79	6.16	1.00	1.40	8.95	21.85	23.20
FIRMVAL	126232	2.11	1.55	0.69	0.78	1.55	5.88	7.51
SIZE	116726	5.51	2.21	1.19	2.04	5.37	9.49	10.60
ROA	116257	0.05	0.20	-0.61	-0.45	0.10	0.27	0.33
CAPEX	115393	0.06	0.06	0.00	0.00	0.04	0.20	0.28
R&D	69655	0.36	1.07	0.00	0.00	0.05	2.25	5.53
RETURN	103369	0.01	0.01	-0.04	-0.02	0.01	0.03	0.03
DIDYLD	116033	0.01	0.02	0.00	0.00	0.00	0.05	0.08

Table 3
Univariate Tests for All Variables by Antitakeover Provision Dummies

This table presents two-sample t-tests for all variables separated by the dual-class indicator variable (*DCS*) and the staggered board indicator variable (*SB*). Statistical significance for the differences at the 1%, 5%, and 10% levels is signified by ***, **, and *, respectively.

Variables	Obs.(0)	Mean(0)	Obs.(1)	Mean(1)	Diff.(0-1)	t-value
Panel A: Dual-class Dummy						
IO	62310	0.493	5761	0.474	0.019***	4.482
NONTIO	62090	0.376	5747	0.362	0.014***	4.000
TIOIO	59985	0.251	5635	0.243	0.008***	3.109
IODUR	62676	10.285	5764	10.751	-0.466***	-5.374
FIRMVAL	94031	2.096	8389	1.875	0.221***	12.762
SIZE	94312	5.291	8417	6.225	-0.935***	-38.711
ROA	94030	0.043	8390	0.087	-0.045***	-18.971
CAPEX	93471	0.056	8321	0.053	0.003***	4.443
R&D	59044	0.403	4036	0.187	0.217***	11.885
RETURN	84223	0.009	7543	0.009	0.000	0.763
DIDYLD	94046	0.005	8370	0.009	-0.003***	-20.750
Panel B: Staggered Board Dummy						
IO	14604	0.535	15402	0.593	-0.058***	-16.892
NONTIO	14604	0.403	15402	0.442	-0.039***	-13.577
TIOIO	14604	0.259	15402	0.262	-0.003	-1.525
IODUR	14604	11.616	15402	10.976	0.640***	9.040
FIRMVAL	14604	2.256	15402	2.218	0.038**	2.167
SIZE	14604	5.893	15402	5.918	-0.025	-1.081
ROA	14604	0.068	15402	0.058	0.010***	4.799
CAPEX	14604	0.046	15402	0.047	-0.001**	-2.046
R&D	14604	0.269	15402	0.329	-0.060***	-5.427
RETURN	14604	0.008	15402	0.007	0.001***	6.361
DIDYLD	14604	0.006	15402	0.006	0.000	0.169

Table 4
Institutional Ownership and Antitakeover Provisions

This table presents the panel regression of Institutional Ownership and Antitakeover Provisions. Sample period: 1991-2019 for Dual-class Share Structure Regressions and 1996-2019 for Staggered Boards Regressions. The dependent variable for all models is *IO*. *DCS* is a dummy variable that equals 1 indicating dual-class firms. *SB* is a dummy variable that equals 1 indicating that firms have staggered boards. We include control variables for all models: *SIZE*, *RETURN*, and *DIDYLD*. We have include an interaction variable, $DCS_{t-1} \times R\&D_{t-1}$, in model (2); and an interaction variable, $SB_{t-1} \times R\&D_{t-1}$, in model (4). All independent variables are one year lagged to the dependent variable. All regressions have controlled the industry- and year-fixed effects. Industry fixed effects are controlled by the Fama and French 48 industries classification. Standard errors are clustered at the firm level, and statistical significance at the 1%, 5% and 10% are indicated by ***, **, and *, respectively.

Variables	(1) $IO_{[t]}$	(2) $IO_{[t]}$	(3) $IO_{[t]}$	(4) $IO_{[t]}$
DCS_{t-1}	-5.905***	-6.522***		
	(-5.82)	(-4.65)		
$DCS_{t-1} \times R\&D$		-1.791**		
		(-2.42)		
SB_{t-1}			5.044***	5.565***
			(8.47)	(7.32)
$SB_{t-1} \times R\&D$				0.232
				(0.55)
$R\&D_{t-1}$		-0.803***		-0.895***
		(-3.81)		(-2.76)
MC_{t-1}	9.683***	9.493***	9.829***	9.645***
	(52.65)	(40.46)	(45.79)	(36.11)
$RETURN_{t-1}$	-0.018***	-0.017***	-0.005	0.023
	(-4.11)	(-3.04)	(-0.29)	(1.48)
$DIDYLD_{t-1}$	-0.309***	-0.286***	-0.293***	-0.265***
	(-3.83)	(-3.45)	(-3.70)	(-3.37)
N	67,043	42,672	47,136	30,371
Adjusted R^2	0.561	0.563	0.528	0.530
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Clustered at the Firm Level	Yes	Yes	Yes	Yes

Table 5
Non-Transient Ownership and Antitakeover Provisions

This table presents the panel regression of Institutional Ownership and Antitakeover Provisions. Sample period: 1991-2019 for Dual-class Share Structure Regressions and 1996-2019 for Staggered Boards Regressions. The dependent variable for all models is Non-Transient Ownership *NONTIO*. *DCS* is a dummy variable that equals 1 indicating dual-class firms. *SB* is a dummy variable that equals 1 indicating that firms have staggered boards. We include control variables for all models:*SIZE*, *RETURN*, and *DIDYLD*. We have include an interaction variable, $DCS_{t-1} \times R\&D_{t-1}$, in model (2); and an interaction variable, $SB_{t-1} \times R\&D_{t-1}$, in model (4). All independent variables are one year lagged to the dependent variable. All regressions have controlled the industry- and year-fixed effects. Industry fixed effects are controlled by the Fama and French 48 industries classification. Standard errors are clustered at the firm level, and statistical significance at the 1%, 5% and 10% are indicated by ***, **, and *, respectively.

Variables	(1) $NONTIO_{[t]}$	(2) $NONTIO_{[t]}$	(3) $NONTIO_{[t]}$	(4) $NONTIO_{[t]}$
DCS_{t-1}	-4.599***	-5.165***		
	(-5.94)	(-4.90)		
$DCS_{t-1} \times R\&D$		-1.507**		
		(-2.25)		
SB_{t-1}			3.703***	4.018***
			(8.31)	(7.12)
$SB_{t-1} \times R\&D$				0.208
				(0.69)
$R\&D_{t-1}$		-0.776***		-0.838***
		(-5.08)		(-3.61)
MC_{t-1}	7.392***	7.207***	7.477***	7.307***
	(57.30)	(44.25)	(50.20)	(39.78)
$RETURN_{t-1}$	-0.018***	-0.017***	-0.013	-0.001
	(-5.39)	(-3.89)	(-1.17)	(-0.12)
$DIDYLD_{t-1}$	-0.198***	-0.183***	-0.188***	-0.170***
	(-3.87)	(-3.45)	(-3.73)	(-3.36)
N	66,811	42,551	47,014	30,306
Adjusted R^2	0.567	0.579	0.554	0.564
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Clustered at the Firm Level	Yes	Yes	Yes	Yes

Table 6
Short-term Market Pressure and Antitakeover Provisions

This table presents the panel regression of growth opportunities and antitakeover provisions associated with short-term market pressure. Sample period: 1991-2019 for Dual-class Share Structure Regressions and 1996-2019 for Staggered Boards Regressions. The dependent variable for all models is *FIRMVAL*. *DCS* is a dummy variable that equals 1 indicating dual-class firms. *SB* is a dummy variable that equals 1 indicating that firms have staggered boards. We include control variables for all models:*SIZE*, *ROA*, *CAPEX*, and *R&D*. We apply two measures of short-term market pressure in this table: *TIOIO* in models (1) and (3) and *IODUR* in models (2) and (4). We include interaction variables: $DCS_{t-1} \times TIOIO_{t-1}$, $DCS_{t-1} \times IODUR_{t-1}$, $SB_{t-1} \times TIOIO_{t-1}$, and $SB_{t-1} \times IODUR_{t-1}$. All independent variables are one year lagged to the dependent variable. All regressions have controlled the firm- and year-fixed effects. Industry fixed effects are controlled by the Fama and French 48 industries classification. Standard errors are clustered at the firm level, and statistical significance at the 1%, 5% and 10% are indicated by ***, **, and *, respectively.

Variables	(1) $FIRMVAL_{[t]}$	(2) $FIRMVAL_{[t]}$	(3) $FIRMVAL_{[t]}$	(4) $FIRMVAL_{[t]}$
DCS_{t-1}	0.130	0.206		
	(0.89)	(1.46)		
SB_{t-1}			0.058	-0.158**
			(1.07)	(-1.98)
$TIOIO_{t-1}$	0.413***		0.380***	
	(6.93)		(4.51)	
$DCS_{t-1} \times TIOIO_{t-1}$	-0.062			
	(-0.33)			
$SB_{t-1} \times TIOIO_{t-1}$			-0.057	
			(-0.55)	
$IODUR_{t-1}$		-0.055***		-0.065***
		(-14.86)		(-12.74)
$DCS_{t-1} \times IODUR_{t-1}$		-0.008		
		(-0.94)		
$SB_{t-1} \times IODUR_{t-1}$				0.017***
				(3.34)
$SIZE_{t-1}$	-0.577***	-0.583***	-0.611***	-0.632***
	(-23.93)	(-24.71)	(-20.04)	(-20.29)
ROA_{t-1}	1.034***	0.733***	1.087***	0.807***
	(8.32)	(6.33)	(7.39)	(5.61)
$CAPEX_{t-1}$	0.632***	0.246	0.47	0.085
	(2.63)	(1.10)	(1.57)	(0.30)
$R\&D_{t-1}$	0.055*	0.042	0.074**	0.061**
	(1.93)	(1.54)	(2.44)	(2.04)
N	39,354	40,856	28,212	28,702
Adjusted R-squared	0.605	0.616	0.619	0.628
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Clustered at the Firm Level	Yes	Yes	Yes	Yes

CHAPTER 5

Conclusion

There is an ongoing debate on the tradeoff of undertaking antitakeover provisions. Several research works studied two antitakeover provisions, namely dual-class structure and staggered boards. On the one hand, antitakeover provisions free entrenched managers from myopic market pressure and allow managers to implement their unique ability and insight. On the other hand, entrenchment in firms with antitakeover provisions weakens monitor of managers, and entrenched managers have opportunities to extract private benefits, which results in higher agency costs and lower firm value. Moreover, shareholders are aware of the extraction of free cash flow by entrenched managers and would discount the valuation of firms with antitakeover provisions.

Dual-class share structure and staggered boards share much in common. Both structures free managers from myopic shareholder pressures and foster innovation, resulting in higher firm valuation. Jordan, Kim, and Liu (2016) and Baran, Forst, and Via (2019) documented this result for dual-class firms, the same result for staggered board firms can be found in Duru, Wang, and Zhao (2013), Cremers, Litov, and Sepe (2017) and Nguyen, Vu, and Yin (2021). Other studies documented the reduction of these firms' valuations since weak governance in these firms leads to agency problems. For example, the issue has been discovered in Gompers, Ishii, and Metrick (2010), Masulis, Wang, and Xie (2009), Amoako-Adu, Baulkaran, and Smith (2011), and Amoako-Adu, Baulkaran, and Smith (2014). A similar feature of staggered boards has been revealed in Bebchuk and

Cohen (2005) and Jiraporn and Chintrakarn (2009). The two structures also have some differences with respect to information asymmetry and analyst coverage. Dual-class firms have higher information asymmetry and lower analyst following (Lim (2016) and Jordan, Kim, and Liu (2016)), while staggered board firms have better information environments and higher analyst following (Jiraporn, Chintrakarn, and Kim (2012)).

Existing studies individually documented several economic features of dual-class share structures and staggered boards. A meaningful novel contribution of this thesis is that the thesis runs empirical tests on dual-class and staggered board firms side-by-side, which sheds more light on the economic features of these two antitakeover provisions. Another significant contribution of this thesis concern the dual-class and staggered boards indicator variables used for empirical tests. This thesis investigates the two structures using new comprehensive and more accurate dual-class and staggered boards indicator variables than widely used dummy variables in the literature.

1. Antitakeover Provisions and Financing Innovation

Chapter 2 begins by revisiting the question of how dual-class share structures and staggered boards affect firm values using more comprehensive and accurate dual-class and staggered boards indicator variables. Our baseline results illustrate that both structures reduce firm value. The results are consistent with the widely cited study of Gompers, Ishii, and Metrick (2010) documented a similar result for dual-class firms and the same for staggered board firms in Bebchuk and Cohen (2005).

Some recent studies saw the bright side of dual-class share structures and staggered boards in shielding managers from short-term market pressure and creating value through pursuing innovative projects. Versions of this hypothesis have been tested for dual-class firms by Jordan, Kim, and Liu (2016) and Baran, Forst, and Via (2019) and for staggered board firms by Duru, Wang, and Zhao (2013), Cremers, Litov, and Sepe (2017) and Nguyen, Vu, and Yin (2021), with positive results. This study tests a version of this hypothesis well by examining how R&D activity affects the negative impact of dual-class share structures and staggered boards on firm values. The thesis finds that R&D activity has a stronger positive impact on firm values for dual-class firms than staggered board firms.

A significant difference between dual-class firms and staggered board firms concerns their willingness to issue new equity. Baulkaran (2014) pointed out that since dual-class firms can issue shares without compromising the voting rights of controlling shareholders, they are likely more willing to do so than single-class firms, which includes the vast majority of staggered board firms. Since equity is the ideal source of capital to fund R&D, it follows that dual-class firms are more likely to issue shares to fund their R&D projects than staggered board firms. Following the Brown, Fazzari, and Petersen (2009) and Brown, Martinsson, and Petersen (2012), who pioneered the use of dynamic GMM regressions to probe the funding channel for R&D, the thesis tests whether dual-class firms and staggered board firms issue equity to fund their R&D projects. As expected, based on their preferences for issuing equity, the thesis finds that equity is indeed the funding channel for R&D among dual-class firms, but not among staggered board firms. This evidence on the difference between the funding choices of dual-class firms and staggered board firms is a novel contribution.

2. Antitakeover Provisions and Debt Maturity Structure

Chapter 3 examines how dual-class share structure and staggered boards affect the debt maturity choice. It is well-documented that dual-class and staggered board firms have different information environments. Lim (2016) revealed the higher information asymmetry in dual-class firms than in single-class firms, while Jiraporn, Chintrakarn, and Kim (2012) found that staggered board firms are more transparent than unitary board firms. Many studies documented that information asymmetry negatively affects debt maturity choice, such as Flannery (1986), Diamond (1991a), Barclay and Smith (1995); Danisevska (2002); and Berger, Espinosa-Vega, Frame, and Miller (2005). Contributing to these studies, we find that dual-class firms issue more short-term debt than staggered board firms. We also find that dual-class firms issue less debt, but dual-class firms tend to issue shorter-term debt than single-class firms when they raise the debt.

Another novel contribution in this study is that we document the joint effect of R&D investments and antitakeover provisions on debt maturity. We find mixed results for dual-class firms and staggered board firms. Dual-class firms have relevantly less debt that matures in less than 5 years when they engage in R&D, in line with the maturity matching hypothesis in literature such as Myers (1977),Stohs and Mauer (1996), and Johnson (2003). By contrast, the information asymmetry hypothesis dominates in staggered board firms. R&D-active staggered board firms rely more on debt that matures in less than 5 years, consistent with the literature such as Aboody and Lev (2000), Barron, Byard, Kile, and Riedl (2002), and Jones (2007). This novel contribution also raises concerns about the reduction in short-maturity debts for R&D-active dual-class firms, and our future studies should focus on whether it is substituted by long-term debt or equity.

3. Antitakeover Provisions and Institutional Ownership

Chapter 4 investigates how dual-class share structure and staggered boards affect institutions' choices. This study revisits the relationship between dual-class share structure and institutional ownership and expands the test to the relationship between staggered boards and institutional ownership. It is well-documented in the literature that institutional investors are more likely to invest in firms with better information disclosure, such as Bushee and Noe (2000), Ajinkya, Bhojraj, and Sengupta (2005), and Bird and Karolyi (2016). Dual-class firms have a higher level of information asymmetry while transparency staggered boards companies have a higher level of analyst following (Jiraporn, Chintrakarn, and Kim (2012); Lim (2016); Jordan, Kim, and Liu (2016)). The baseline results present that compared with the significant negative relationship between institutional ownership and the dual-class dummy, firms with staggered boards show a significant positive relationship with institutional investors.

Several studies discovered that dual-class share structure and staggered boards mitigate shareholder myopia and encourage firms to pursue innovative projects (Duru, Wang, and Zhao (2013), Jordan, Kim, and Liu (2016), Cremers, Litov, and Sepe (2017), and Baran, Forst, and Via (2019)). Due to the uncertain nature of R&D investments, it is hard to assess whether the outcome of those investments would benefit firms (Barron, Byard, Kile, and Riedl (2002)). This chapter further tests whether R&D intensity would affect institutions' choices of firms with the two structures. The results illustrate that R&D intensity significantly negatively affects the relationship between the dual-class dummy and institutional ownership, while there is no such effect on staggered boards.

Using the new indicator variables, this chapter further revisits whether the myopic market pressure would affect the relationship between both two structures and firm valuation by testing how transient institutional ownership and duration of institutional ownership would affect the firm value of firms with both structures. The results show that institutional investors with shorter duration significantly negatively affect the value of staggered board firms. Still, there is no such effect of myopic market pressure on the value of dual-class firms. This is consistent with the arguments of Jordan, Kim, and Liu (2016) that the dual-class share structure could shield against myopic market pressure. However, the result for staggered board firms is inconsistent with Cremers, Litov, and Sepe (2017), the thesis finds staggered boards reduce firm valuation, and firm valuation is higher for staggered board companies with a longer duration of institutional ownership.

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