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The Life-Cycle of Dual Class Firm Valuation

Finance Working Paper N° 550/2018
October 2020

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ECGI Working Paper Series in Finance

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Keywords: Dual class shares, life cycle, anti-takeover defenses, unifications, sunset provisions

JEL Classifications: G32, G34

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by

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1. Introduction

IPOs of dual class shares have become relatively popular in the recent decade (see our Table 1), following the example of some technological "superstars" such as Google and Facebook. Firms adopting the dual class equity structure have at least two classes of common shares: high-voting-power shares, owned primarily by firm founders or controlling shareholders, and low-voting-power shares, held typically by non-controlling or outsider shareholders.

Dual class structures generate a debate. On one hand, they grant the controlling shareholders, who own primarily high-voting-power shares, voting power above their equity stake. Thus, the agency problems associated with controlling shareholders (self-serving behavior and tunneling, for example) may aggravate at dual class firms (relative to single class firms). Existing literature documents lower mean valuations of dual class firms relative to single class firms (Gompers, Ishii and Metrick, 2010; Masulis, Wang and Xie, 2009; Smart, Thirumalai and Zutter, 2008), and attributes this discount to dual class firms' larger agency problems.

On the other hand, there is a strand of research identifying some potential benefits in controlling shareholders and dual class structures (Lehn, Netter and Poulsen, 1990; Bebchuk, 2003). Benefits accrue especially when outsider public shareholders are less informed than the controlling shareholders (Alchian and Demsetz, 1972) or overly concerned about short-term performance (Stein, 1988; 1989). Controlling shareholders may also promote the firm's ability to commit to strong relationships with other stakeholders (Laffont and Tirole, 1988; Shleifer and Summers, 1988), and make long-term firm-specific investments (DeAngelo and DeAngelo, 1985). In sum, dual class structures could be beneficial because they isolate the entrepreneurs from the pressure of less-informed (and perhaps myopic) public investors, allowing the entrepreneurs to better pursue their idiosyncratic business vision (Lehn, Netter and Poulsen, 1990; Bebchuk, 2003).

More recently, Bebchuk and Kastiel (2017) argue that the costs and benefits of dual class structures vary along the life cycle of these firms. Initially, at the IPO, it may be value-increasing to grant control to the visionary founders. However, the initial benefits of founders' vision and leadership dissipate over time (as the vision is accomplished and firm matures). In contrast, the agency costs of dual class structures tend to intensify over time, as controlling shareholders typically dilute their holdings in firm equity after the IPO. Bebchuk and Kastiel (2017) conclude that the decreasing benefits and increasing costs of dual class structures in the years after the IPO, make dual class firms more inefficient as the firm ages.

As a remedy, Bebchuk and Kastiel (2017) propose a sunset clause for dual class firms. The sunset clause would require the "non-interested" public shareholders of the firm to vote on whether or not to extend the dual class structure, a vote scheduled some pre-determined number of years after the IPO. If the extension proposal is declined, firms would unify the low- and high-vote shares, i.e., convert all shares into a single class of shares with "one share one vote".

In this paper, we examine empirically how the costs and benefits of dual class structures vary over their life-cycle. First, using an extensive sample of single- and dual-class firms in 1980-2017, we find substantial variation in the relative valuation of dual class firms (i.e., compared to matched single class firms) over their life cycle. At the IPO year-end, the mean Tobin's Q of dual class firms is 13% higher than that of the matched single class firms. However, this initial valuation premium of dual class firm dissipates in the years after the IPO, and on average dual class firms appear to start trading at a discount relative to comparable single class firms about six to nine years after the IPO (which discount is occasionally statistically significant). The results appear robust in various tests, and are consistent with the predictions of Bebchuk and Kastiel (2017).

Second, we explore the potential reasons for the life cycle of dual class firms' relative valuations. Regarding the agency perspective, we show that the difference between the voting and equity stakes of the controlling shareholders (the "wedge") tends to increase as the dual class firm ages. Wider wedges are associated theoretically and empirically with aggravated dual class agency problems – see Masulis et al. (2009). Our results confirm that an increase in wedge is associated with decreasing dual class firms' market valuations. This lends support to the proposition that dual class firms' potential agency problems worsen as these firms mature, and that this agency problems intensification contributes to the observed dual class firms' relative valuation deterioration. Kim and Michaely (2019) also provide evidence consistent with the hypothesis that dual class firms' agency behavior worsens with firm's age. They find, in the sub-sample of dual-class firms with both share classes listed, that voting premiums increase with firm age.

We also offer novel evidence on dual class structure benefits and how these change over time. We focus on founder-directors, i.e., founders who retain some management position in the firm (i.e., as CEO, Chair of the Board or director). Founders are more likely to serve as a director in the IPO year for dual class firms (51%) than for single class firms (40%). In addition, we find that the IPO year valuation premium of dual class firms relative to their matched single class firms is higher when the founder has a board seat (typically as CEO or Chair of the Board) at the time of the IPO, but only for young firms (firms with an IPO less than ten years since their inception), and especially for young (below median age) founders. Together, these results suggest that founders tend to have a unique value that helps explain the observed significantly higher valuation premium of founder-director dual class firms at the IPO. We also find that the decline in Tobin's Q with firm age is sharper when founders (or their family members) dilute their holdings in the firm (i.e., sell shares in the years after the IPO). If founders' dilution emanates, partly or at least in

some of the firms, from founders' diminished interest in the firm (as their vision is accomplished), it can be argued that in the post-IPO years, as founder-director interest in dual class firms gradually dissipates, dual class firms lose their valuation premium. Selling by founders also typically increases the wedge which contributes to the gradual dissipation of the relative valuation premium of dual class firms.

Finally, we examine voluntary firm-initiated dual class share unifications (i.e., recapitalizations into a single class structure). Voluntary firm-initiated unifications may be considered as an efficient self-correcting mechanism by the firm itself, when the board finds that the benefits of the dual class structure have been exhausted. We find that only about 20% of the dual class firms unify their shares, and that unification frequency initially increases and then decreases with firm listing age. Firms whose wedge is higher are significantly more reluctant to unify their dual class shares, suggesting that in some dual class firms controlling shareholder strive to preserve their private benefits and agency behavior. Apparently, some stale dual class structures may persist, which raises the question of regulatory intervention.

This paper contributes to the literature on the benefits and costs of dual class financing (e.g., Burkart and Lee, 2008; Adams and Ferreira, 2008; Bebchuk and Kastiel, 2017) by providing empirical evidence on the relative valuation of dual class shares over the firm life cycle. A concurrent study by Kim and Michaely (2019) also documents a valuation premium of young dual class firms, which disappears for mature (older than 12 public years) dual class firms. Our papers are complementary, where we focus more on what drives this life cycle of relative valuation differences, including the role of firm founders and the "wedge". We also describe the life cycle phenomenon in more detail.

Section 2 provides a concise background of the literature on dual class financing and presents the hypotheses. Section 3 describes the sample and data. Sections 4 and 5 report our basic results, and Section 6 and 7 expand them by inquiring potential determinants of the observed behavior and dual class shares unifications. Last, Section 8 concludes.

2. Dual class stocks' life cycle

2.1. Some background

A significant minority of publicly traded firms have dual class structures. In 2015, about 8% of the S&P 500 and 9% of the Russell 3000 firms were dual class (Mattheus, 2016). Dual class financing is also wide-spread in Europe, accounting for over 20% of the traded firms (Bennedsen and Nielsen, 2010). The history of dual class firms is reviewed in Howell (2017).

The dual class structure has been advocated as a solution to two economic inefficiencies of publicly traded firms. First, outsider shareholders may be less informed than insiders (Alchian and Demsetz, 1972), and, second, they may be overly concerned about short-term performance (Stein, 1988; 1989). These potential deficiencies of public shareholding may be particularly problematic for firms at the early stage of their lives, such as the first few years following the IPO. Lehn, Netter and Poulsen (1990) argue that at the IPO stage, characterized by fast-growth of the firm, the insiders managing the firm have to invest substantial and largely firm-specific human capital resources in the firm, in order to advance firm's long-term potential and goals. Thus, for a few years following the IPO date, it may be more efficient to give these insiders sole control and isolate them from outside pressures. Consistent with this view, Jordan, Kim and Liu (2016) show that dual class firms face lower short-term market pressures (for example, have fewer transient short-term institutional investors), and Field and Lowry (2019) find that hedge funds are less likely to

take a position in dual class firms. It is noteworthy that public shareholders may rationally agree to acquire inferior-vote shares and grant the entrepreneurs disproportionate power if at the IPO and later years the entrepreneurs' leadership and vision offer a unique value to the firm.

Bebchuk (2003) highlights the entrepreneur's perspective,[1] showing theoretically that if an entrepreneur possesses substantial private information that cannot be disclosed to the public at the IPO, this may result in a higher private valuation of the corporation than the valuation estimated by the less-informed outside shareholders. Such a discrepancy in valuation renders the entrepreneur reluctant to issue shares. Dual class financing, through an IPO of inferior-vote shares, alleviates the asymmetric information problem because it reassures the entrepreneurs that they would not lose control, and that all of their private information and plans would be utilized and implemented. In short, the dual class structure may be necessary to convince the entrepreneurs to go public.

Finally, dual class financing may be reassuring for some firm stakeholders, such as its large customers or its partners in joint ventures, who may prefer stable firms and stable relationships (Johnson, Karpoff and Yi, 2018). Therefore, the preservation of control afforded by dual class stock fortifies the stability and credibility of the firm in the eyes of its trading partners.

Opponents of the dual class stock structure argue that it constitutes an extreme example of antitakeover provisions. The insiders owning high-voting-power shares generally have sufficient control to prevent any unwanted takeover or other shareholder discipline. Gompers, Ishii and Metrick (2010) and Masulis, Wang and Xie (2009) argue that this excess power affords encourages private benefit extraction by entrenched insiders and results in lower firm valuations.

[1] Bebchuk (2003) discusses antitakeover arrangements in general rather than dual class structure in particular. However, given that dual class financing is a potent takeover deterrent as well, we employ this logic to our case.

The costs and benefits of dual class shares can be summarized as follows:

(1) $Q_{dual} = Q_{single} + \Delta Q_{LV} + \Delta Q_{Agency}$,

where Q_{dual} is the relative valuation (e.g., Tobin's Q) of a dual class firm, Q_{single} is the relative valuation of an otherwise comparable firm that has one class of shares only; ΔQ_{LV} is the unique value contribution of the dual class firm's entrepreneurs attributed to their leadership and vision (This vulnerable special contribution requires a dual class structure to protect it from outside pressure.); and ΔQ_{Agency} is the contribution of additional agency problems (arising from having the dual class structure) to firm valuation.

The discussion above suggests that ΔQ_{LV} is positive, while ΔQ_{Agency} is negative. Further, equation (1) also illustrates that dual class financing can be optimal for young firms. In particular, on the IPO date, the market valuation of the dual class firm (Q_{dual}) may exceed that of the single class firm (Q_{single}) if $|\Delta Q_{LV}| > |\Delta Q_{Agency}|$.

2.2. The life cycle of dual class firm valuations

It is well known that firm's valuation tends to change with firm age. Loderer, Stulz and Waelchli (2017) use an extensive sample of U.S. firms in 1978-2013 to document a significant deterioration of firm's Q with "listing age" (i.e., with time since the IPO). They argue that firm rigidities develop over time, making firms more focused on managing assets in place and less successful in generating growth opportunities. This implies in our framework that $\partial Q_{single}/\partial T < 0$, where T is the firm's listing age.

2.2.1. The life cycle of entrepreneur's special value

According to Rajan (2012), entrepreneurs stand out in their differentiation ability, the talent to introduce a new product or service that disrupts or at least elaborates existing ones. To reach

markets the entrepreneurs need financing and hence render some control rights to outside shareholders, venture capital funds and other seed investors, who believe in them and in their vision. This is the beginning of the process of standardization, progressing the startup halfway in the direction of a public firm. In this stage of a venture capital-backed firm, the firm grows, up to a point where the general public and institutional investors can consider it a legitimate-investment firm. The IPO then affords exit of venture capitalists and others who are mainly interested in the high returns from advancing a startup firm to a public firm.

The entrepreneur's or founder's role in this process varies according to her skills. Some founding entrepreneurs are relatively incompetent in running businesses and are replaced in the VC-backed stage.[2] However, there also exist founders who possess excellent general-management skills. These skillful founder-managers are value enhancing for the firm even long after the IPO – see Fahlenbrach (2009)[3], hence they keep a managerial position at the IPO and later on.

In recent decades firms began issuing even before the maturity needed for a public IPO. Sometimes the entrepreneurial VC-backed firm is so promising that capital markets are willing to provide funding to it even before it stabilizes as a business. In other cases, the amount of funds needed to bring the firm to adequate maturity is beyond venture-capital's capabilities or financing standards, hence an IPO is sought. Thus, "early" IPOs exist, where a visionary founder's continuing leadership and contribution may count more (i.e., are more crucial for firm's eventual

[2] Finding the right leadership team for the startup is in fact one of the expertizes and main contributions of venture capitalists to the value of the rapidly-growing firm. Ewens and Marx (2018) show that replacements of the founders during the VC-backed stage improves startup performance and increases the likelihood of a successful exit (public IPO or acquisition of the startup firm).

[3] Fahlenbrach (2009) reports that many large public firms in the U.S. still have a founder-CEO, and that these firms provide abnormal returns to their investors.

success) than general management skills.[4] It is plausible that young founders are especially disruptive in their ideas, making their firm's success more dependent on their vision and leadership. Thus, young founder-managers at early IPO firms are, in our opinion, an important source for the positive ΔQ_{LV} that we posit in equation (1) above. The dual class structure affords higher ΔQ_{LV} because it isolates the uniquely-talented entrepreneur whose vision has yet to be accomplished from the pressure and attrition of public investors.

Bebchuk and Kastiel (2017) propose that ΔQ_{LV} is a function of firm age. ΔQ_{LV}, the valuation benefits due to the entrepreneurs' leadership, vision and special skills that cannot be protected unless a dual class firm is formed, erodes over time as the firm scale and attributes and the general economic environment change. In the years after the IPO, the vision of the founders is largely fulfilled and the special skills of the founders may no longer be necessary. This suggests that $\partial \Delta Q_{LV}/\partial T < 0$.

2.2.2. The life cycle of entrepreneur's agency problems

As the controlling shareholder or member of the control group, the founder may extract some private benefits. Such pecuniary and non-pecuniary private benefits are probably restrained in the pre-IPO period by venture capitalists. Furthermore, in young firms the founder strives for firm success and moderates her agency behavior, as the future pecuniary and non-pecuniary benefits are much larger (DeMarzo and Fishman, 2007). In the years after the IPO, monitoring by VCs dwindles as most of them exit, and founder entrepreneurs start diluting their holdings in the firm (i.e., sell shares), possibly because of wealth diversification considerations. Thus, as firms mature, the forces and barriers mitigating agency behavior weaken.

[4] A visionary founder may not be able or may be reluctant to fully convey her ideas and information to a "better" manager-type executive, i.e., an asymmetric information situation exists where founder's leadership is irreplaceable.

According to Bebchuk et al. (2017), the decrease in entrepreneur's holdings aggravate agency problems because it decreases the entrepreneur's marginal cost of consuming private benefits. There also exist at least two other reasons for the aggravation of agency problems with listing age (time after the IPO). First, as mentioned above, venture capitalists tend to exit (sell shares) earlier and more vigorously than founders. Hence, founders become entrenched as sole controlling shareholders. Second, it is plausible that as time passes and vision is fulfilled, the founder tires up and diverts attention to the personal rewards she can extract from the successful firm she built. In other words, while at the beginning private benefits may not be at the focus of entrepreneurs, with time they become.

Agency problems aggravation is probably more extreme in dual class firms as in such firms the founder typically loses less control upon share dilution. In dual class firms founders may sell primarily their inferior-vote shares, preserving their tight control over vote. Such tight control may induce worse agency behavior of dual class firms, as evidenced by Masulis et al. (2009). The conclusion that agency problems worsen with dual class firm's age more than they worsen at a regular comparable single class firm, implies an increase in the agency-induced value discount of dual class firms with firm age. In terms of our basic valuation equation, equation (1), the prediction is that $\partial \Delta Q_{Agency}/\partial T < 0$.

2.2.3. Summing the unique life cycle effects of dual class firms

If both $\partial \Delta Q_{Agency}/\partial T < 0$ and $\partial \Delta Q_{LV}/\partial T < 0$, i.e., the value gain from entrepreneur's leadership decreases over time and the costs of her agency behavior increase over time, it becomes clear that at some point of time (a few years after the IPO) the dual class structure becomes on average detrimental to firm's market value. Thus, even if at the IPO the entrepreneurs' unique value contribution that must be protected from shareholder interference, ΔQ_{LV}, outweighs the

agency-induced discount, ΔQ_{Agency}, the changes of benefits and costs over the post-IPO years may turn a veteran dual class structure inefficient in terms of market valuation ($Q_{dual} < Q_{single}$).

Interestingly, Bebchuk and Kastiel (2017) also argue that dual class firms are unlikely to voluntarily unify their shares (i.e., transform all shares into a single class with one vote per share) even when Q_{single} exceeds Q_{dual} because for the controlling shareholder it is not optimal to do so. Controlling shareholders would typically lose considerable voting power upon unification while gaining only a fraction (equal to their equity stake) of firm's market value increase. Hence, the potential market value gain has to be relatively large before the controlling shareholders agree to give up their superior voting power and unify all firm shares, especially if there are significant private benefits associated with having voting control. This is the basis of Bebchuk and Kastiel's proposition to add a sunset provision to dual class share IPOs, a provision that would mandate a binding shareholder vote to unify or continue the dual class structure, a pre-specified number of years after the IPO.

2.3. Hypotheses

We seek to provide evidence on the life cycle of dual class firm valuations.[5] Our basic valuation model is equation (1), postulating that $Q_{dual} = Q_{single} + \Delta Q_{LV} + \Delta Q_{Agency}$, and the discussion of various life cycle aspects in the previous section leads us to hypothesize that both $\partial \Delta Q_{Agency}/\partial T < 0$ and $\partial \Delta Q_{LV}/\partial T < 0$. Hence, our basic testable hypotheses is

[5] Previous dual class firms' life cycle literature examines mainly the hypothesis that dual class firm structures prolong their public life relative to single class firms by deterring hostile takeover attempts. Smart and Zutter (2003) study a sample of IPOs between 1990 and 1998 and show that dual class firms experience fewer control events. Jordan, Kim and Liu (2016) extend the sample to 1991-2011, and compare takeover activity of matched samples of single and dual class firms. They also find that dual class firms have a lower probability of being taken over.

Hypothesis 1: The relative valuation of dual- vs. comparable single-class firms, Q_{dual} minus Q_{single}, decreases with a firm's listing age.

We can further conceive some cross-sectional hypotheses based on the relative size of ΔQ_{LV} and ΔQ_{Agency}, and on their variation with firm listing age, $\partial \Delta Q_{LV}/\partial T$ and $\partial \Delta Q_{Agency}/\partial T$.

2.3.1 Hypotheses on entrepreneur's skills and contribution

In the previous section we have alluded to the special value of founder-directors, and to the existence of "early" IPO firms and young founders where founder's vision and continuous leadership is still needed after the IPO. This implies

Hypothesis 2: Founder-directors increase dual class firm valuations at the IPO, and their beneficial effect is particularly strong when the firm and/or its founder are relatively young ("early" IPOs and/or young founders).

We also propose that the unique value contribution of founder-directors at the IPO diminishes over time, and especially when the founder leaves the executive position or dilutes her holdings (sells shares). This suggests

Hypothesis 3: Dual class firms' valuation is negatively affected by founder-directors leaving their post or diluting their holdings.

2.3.2. Hypotheses on the agency problem dynamics and its associated discount

According to our base hypothesis (Hypothesis 1), a key trigger of dual class firm valuation decline over the life cycle is the dilution of controlling shareholders' equity holdings as firm matures. In this context we focus on the wedge, defined as the difference between controlling shareholders' voting rights and their cash flow rights in a firm. In single class firms, controlling shareholder have the same voting and equity proportion in the firm, hence the wedge is zero, while

in dual class firms the wedge is positive, as controlling shareholders hold primarily or even solely high-vote shares.

The wedge measures the temptation for agency behavior. Consider, for example, two dual class firms that differ only in their wedge. Controlling shareholders in firm A have 45% voting rights and a 25% equity share, while those in firm B have 45% voting rights and a 20% equity share. Firm A and firm B controlling shareholders have the same private benefits extraction power, as their control power is equal (both have the same vote proportion). However, extracting private benefits is less costly for the controlling shareholders in firm B. They lose (in dividends or market value) 0.2 Dollars for each 1 Dollar they consume as private benefits, while their counterparts in firm A lose 0.25 Dollars for each Dollar they consume as private benefits. The lower costs of private benefits consumption tempts firm B controlling shareholders into a more expropriating agency behavior at the expense of public shareholders. We can construct an example where controlling shareholders in two otherwise identical dual class firms have the same equity stakes yet different voting power, and conclude that in the firm with the wider wedge controlling shareholders have more control power and are probably tempted to extract larger private benefits.

If wedge correlates with the extent of potential agency problems in dual class firms, then it should affect market valuation, and

Hypothesis 4*:* Dual class firms' valuations are negatively correlated with the wedge.

We further propose that wedge is a particularly suitable measure for the purpose of our study because it is positive only in dual class firms, hence it is a specific measure of the incentives for agency behavior in dual class firms. Since the wedge of single class firms is zero, the wedge may represent the incremental agency behavior potential of dual class firms, and it is most probably related to ΔQ_{Agency} of equation (1) which is the contribution of the additional agency problems

(arising from having the dual class structure) to firm valuation. The higher is the wedge, the larger are the potential agency problems, and the deeper is the agency-induced valuation discount of dual class relative to single class firms.

After the IPO, the average wedge of dual class firms is likely to widen because: 1) many controlling shareholders in dual class firms (similarly to controlling shareholders in single class firms) dilute their shareholdings after the IPO (for diversification or other reasons)[6]; 2) other high-vote shareholders (primarily venture capitalists) also sell their high-vote shares in the post-IPO years (by first converting them to low-vote shares); and 3) in the post-IPO years, many firms raise additional capital via new low-vote share offerings. It can be shown that each of the above actions widens the wedge. This implies

Hypothesis 5*:* The stake of controlling shareholders in dual class firm's equity tends to decrease with firm's listing age, and the wedge tends to increase.

If Hypotheses 4 and 5 are confirmed, then the indication is that $\partial \Delta Q_{Agency}/\partial T < 0$; the agency induced valuation discount of dual class firms relative to comparable single class firms increases with listing age (years from the IPO).

2.3.3. An hypothesis on dual class share unifications

Voluntary dual class share unifications are an interesting "self-correct" mechanism initiated by the firm itself when it senses that the dual class structure has become stale and counterproductive. Bebchuk and Kastiel (2017) propose that unifications are rare, i.e., that dual class structures persist longer than they should, even when they decrease market valuation.

[6] Typically controlling shareholders cash out by first converting some high-vote (unlisted) shares into low-vote (listed) shares (such a conversion is permitted any time at the discretion of high-vote shareholders). Then, these low-vote shares are sold on the market. The converted high-vote shares are permanently eliminated.

Controlling shareholders oppose unifications because in many cases unifications can hurt them. Upon unification, controlling shareholders typically lose considerable voting power and thus considerable private benefits, while they receive only a fraction of the market valuation gain (equal to their equity stake). Furthermore, if controlling shareholders' equity stake declines over time, their potential gain upon unification diminishes with firm age, which should further reduce unification frequency in mature dual class firms. Hence, regarding unifications, we will test

Hypothesis 6*:* Voluntary firm-initiated dual class share unifications are rare, and their frequency declines with firm listing age.

2.4. Contribution and relation to previous research

We contribute to the long academic debate about the merit of dual class financing. Burkart and Lee (2008) summarize some theoretical arguments, and Adams and Ferreira (2008) summarize the mixed empirical results on the economic desirability and consequences of dual class financing. Our first contribution is showing that the merit and relative valuation of dual- vs. single-class firms depend critically on firm's age. We test on one hand the proposition that dual class financing is beneficial at the IPO and first-few public years, and on the other hand Bebchuk and Kastiel (2017)'s proportions that the efficiency of dual class structures declines with firm age and that eventually a dual class structure hurts firm's value.

We also examine possible sources of an initial value premium and eventual value discount of dual class firms. We study the wedge, a specific potential agency problems indicator in dual class firms, to see if it affects dual class firm valuation and if its changes over firm's life cycle. This examines the proposition that dual class firms' agency-induced valuation-discounts increase with firm's age. Regarding the possible initial premiums of dual class firms, we test how the

presumed uniqueness of firm controlling shareholders at the IPO affects the relative valuations of dual class firms at the IPO. (In this context we study the marginal value-effect of founder-directors, founder-directors in young firms, and young founder-directors.) We also test whether indicators of a decline in founders' interest in the firm (selling shares or leaving the executive post) affect dual class firm valuation. This may provide further evidence that the entrepreneur has unique skills and contribution to dual class firm value. All our above-suggested examinations are novel.

We also contribute to the life-cycle and governance literatures the observation that the efficacy of various governance structures such as the dual class structure changes over the life cycle. In a related paper, Johnson, Karpoff and Yi (2018) find that takeover defenses – such as staggered boards and voting supermajority requirements – tend to enhance firm value at the IPO, yet become less efficient over time. Both their and our studies indicate that the impact of various governance arrangements changes along firms' life cycle.

Finally, it is important to distinguish our research from the concurrent study by Kim and Michaely (2019). Kim and Michaely (2019) study the dynamic aspects of dual class firm valuations, distinguishing between dual class firms that are younger than 12 years (the median in their sample) and dual class firms that are older than 12 years. Our paper studies the life cycle aspect in greater detail, as we provide finer age screens (1-3, 4-5, 6-8, and 9+ years after the IPO), which affords a more precise description of how the dual class firms' valuation premium changes along their life cycle. Furthermore, we also provide evidence on possible drivers of dual class firms' relative valuation, analyzing founder's uniqueness and the wedge between voting and equity rights, for example. Such evidence does not exist in Kim and Michaely (2019).

Nevertheless, Kim and Michaely (2019) and our paper may be perceived as complementary. Kim and Michaely (2019) do not research the drivers of the relative valuation of

dual- and single-class firms, yet they add evidence on the life cycle of the price premium of the high-vote class of shares (when both the single and dual class shares of the same firm are traded on the market), and examine stock price reactions to unifications (a switch from dual-class to single class) and dual-class recapitalizations (from single-class to dual-class) announcements conditional on firm maturity. They also present some tests on various operational characteristics of single- and dual-class firms. Their evidence further illuminates the importance of firm age in the discussion of dual class structures.

3. Sample

We study life-cycle phenomena in dual-class firms using two samples, denoted as the "full sample" and the "matched sample", respectively. The full sample comprises of 9,414 U.S. companies, listed on the NYSE, NYSE MKT or NASDAQ, that had an initial public offering (IPO) during 1980-2017. A subset of the full sample, the matched sample, includes 538 dual- and 538 single-class firms that are matched in the IPO year according to several key characteristics. The sample starts in 1980, as our information on dual-class IPOs commences on that year.

3.1. The full sample

To construct a sample of dual-class firms, we employ several sources. First, we use Gompers, Ishii and Metrick (2010, henceforth GIM)'s comprehensive list of dual-class firms spanning 1994 – 2002. GIM's sample includes dual-class IPOs during 1994-2002, as well as the firms that went public earlier but retained dual-class share structure during this time period.[7] As our focus is on the life cycle of dual class firms, we only consider dual class firms that had a dual class structure at their IPO, thus excluding a small number of firms that recapitalize into the dual

[7] We are grateful to Andrew Metrick for making this data available on his website.

class structure subsequent to their IPO. (We identify which firms in GIM's list had dual class IPOs with the help of Ritter's comprehensive list of IPOs.) From the GIM sample we also exclude firms that went public before 1980 (because we could not reliably trace their IPO share structure). Second, for the more recent period, 2003-2017, we use Ritter (2018)'s comprehensive list of dual-class IPOs.[8]

We next construct a sample of single-class firms from the universe of CRSP/Compustat merged firms listed on the NYSE, AMEX or NASDAQ that had their IPO without a dual class structure during 1980-2017. This procedure generates our 'full sample' of 8,700 single-class firms. Altogether, our sample comprises 9,414 firms that went public during 1980-2017, out of which 714 (7.6%) had a dual-class share structure at their IPO.

3.2. The matched sample and the matching procedure

We seek the best single-class match for each dual-class firm in our full sample. The matching parameters employed are:

1) Firm industry. The matched single and dual class firms must be in the same Fama and French (1997, henceforth FF) industry group. Following the previous literature, we exclude all firms in the banking and insurance sector firms (FF industry groups 45 and 46) and in regulated sectors (FF industry group 31), leaving us with forty-five industry groups. This reduces sample size to 8,042 firms, of which 8.1% (653 firms) had dual class structures.

[8] Following previous studies we include in our sample dual-class structures that grant different voting rights for different share classes, as well as firms that grant different voting rights only on directors' elections and a few firms in which the number of votes of a stock class differs from year to year (based on, for example, the number of units in a limited liability company). In contrast, dual share structures that do not have any disproportional voting rights for different share classes (for example, those that are set up for tax purposes) are excluded.

2) IPO date. The single class firm must have an IPO not more than twenty-four months apart from its matched dual-class IPO.
3) Firm size. The matched firms must be similar in size on the eve of the IPO, i.e., the total assets of the single class match must be between 50% and 200% of that of its dual-class match.
4) ROA. After satisfying the above screens, and in case there is more than one single class matching candidate, we choose the single class firm whose Return on Assets (ROA) prior to the IPO is closest to that of the dual class firm. All data are based on annual data at the end of the fiscal year. In almost all cases, we match on the ROA at the fiscal year-end preceding the IPO, though if that is missing, we match in a few cases on the ROA from the fiscal year prior to that.

We consider the above criteria as presenting only the minimum requirements for the control firms to be reasonably comparable to the dual class firms. We will examine later to what extent various other firm characteristics at the time of the IPO are comparable across our matched dual- and single-class firms, and also offer some robustness tests. We hope that the four matching criteria outlined are a reasonable compromise between having fewer matching criteria but a larger sample of dual class firms, and having more extensive and tighter matching criteria but a significantly smaller sample of dual class firms (thereby rendering our sample less representative of dual class firms in general). It is also noteworthy that the selected procedure enables us to prioritize firm listing age (IPO date proximity) that is the key focus of our life cycle analysis, and that previously employed matching procedures such as the propensity score matching procedure of Gompers et al. (2010) ignore.

The final matched sample comprises of 538 dual-class firms and 538 matched single-class firms.[9] Given that we have 653 non-financial dual class firms in the full sample, our matched sample size of 538 firms implies that for 115 dual class IPOs (about 18% of the initial sample) we cannot find a proper match using the criteria above. The absence of a match is primarily due to the size criterion, as single class firms are on average smaller at the IPO – see our analysis on the next section. As a precaution, when possible, we run and report test results in the full sample as well.

4. Differences between Single and Dual Class Firms

Table 2 explores differences in several key characteristics between single and dual class firms in our full sample. We provide the medians of various firm characteristics for the samples of single and dual class firms separately, as well as the p-values for whether the medians are statistically different across the samples at those particular snapshots in time. This provides a first look at how these firm characteristics vary over time, and how stable any differences between single and dual class firms are. All variables and their data sources are detailed in Appendix A.

Dual class firms have significantly larger total book value of assets than single class firms. Dual class firms are also significantly more levered and more profitable, both in terms of return on assets (ROA) and return on equity (ROE). However, consistent with previous literature such as Gompers et al. (2010), we find that their firm valuations, as reflected by Tobin's Q, tend to be lower than those of single class firms. We also find insignificant differences in sales growth and capital expenditures between single and dual-class firms. However, single class firm tend to invest more in R&D.

[9] Each single class firm is chosen as a match for only one dual class firm, which guarantees that our matched sample includes the same number of dual and single class firms.

(Insert Table 2 about here)

Table 3 reports the medians of various firm characteristics at the end of the fiscal year right after the IPO. We distinguish between single- and dual-class firms, and present statistics for both the full sample and the matched subsample. In the full sample, most of the differences between single and dual class firms noted above (and shown in Table 2) occur already at the time of the IPO. For example, dual class firms tend to be larger and more leveraged than single class firms, though with lower R&D expenditures, at the time of the IPO. It is also interesting that dual class firms are older at the IPO (median of 11 years since incorporation compared to 7 years of single-class firms). This suggests that dual class firms postpone their going public, and utilize debt financing prior to the IPO. Finally, there is an insignificant difference in issue size between single- and dual-class firms: in single (dual) class IPOs, the new shares account for about 29% (30% respectively) of all shares outstanding after the IPO.

However, once we match dual class firms at the time of their IPO with single class firms whose IPO occurred around the same time and that are in the same industry group with similar book value of assets and similar profitability at the time of their IPO, we find that single and dual class firms appear to have similar characteristics at the time of their IPO. Specifically, in the resulting matched sample, the characteristics of single and dual class firms are not significantly different not only for the two characteristics that are used in the matching procedure (total assets and ROA) but also for the other firm characteristics considered such as sales growth and R&D intensity. This provides some reassurance regarding our matching procedure.

(Insert Table 3 about here)

5. Dual Class Firms' Relative Valuation Changes over Their Life Cycle

5.1. Valuation premiums and discounts over the life cycle

This section examines how firm value, approximated by Tobin's Q, is affected by (or at least associated with) having a dual class structure, and how any such effect (or association) depends on firm's listing age. Table 4 reports the mean Tobin's Q in separate samples of single and dual class firms as a function of firm's listing age (the number of years from the IPO). In the full sample, the relative valuation (Q) of dual class firms is on average significantly lower than that of single class firms, both at the time of the IPO and in all of the following years. This finding is consistent with previous classic evidence such as Gompers, Ishii and Metrick (2010) in the U.S., and Bennedsen and Nielsen (2010) in Europe.

(Insert Table 4 about here)

Our matched sample analysis in Panel B discloses the more intricate picture – see also Figure 1. When we compare dual class firms to ex-ante similar matched single-class firms (where matching is based on industry, IPO date, firm size and firm ROA, as explained above), we find a valuation premium for dual class firms around the time of their IPO. Specifically, at the end of the first fiscal year following the IPO, the mean Tobin's Q of dual class IPOs (3.12) exceeds that of single class firms (2.76) by about 13%, which difference is statistically significant at the 5% level.

(Insert Figure 1 about here)

Table 4 also shows that the values (Tobin Qs) of both single and dual class firms tend to decrease significantly in the years after the IPO. This is the classic life cycle effect – see, for example, Loderer et al. (2017). However, this life cycle effect is particularly strong for firms with dual class structures. Specifically, while firms with dual class structures have on average a higher

valuation than their matched single class firms shortly after the IPO, four years afterwards the valuation premium of dual class firms relative to matched single class firms disappears, and six years after the IPO, dual class firms start trading at a significantly lower mean Tobin's Q.

The number of dual class firms in our sample decreases sharply in the years after the IPO – see a concise survival report and analysis in Appendix B. Looking at our matched sample, we start with 533 dual class firms for which we are able to compute Tobin's Q at the end of the IPO year, yet when we reach eight years after the IPO only 197 of these dual class firms are still traded on the exchange. The severely unbalanced samples used in Panels A and B render our above observations on the life-cycle of dual class valuations as only suggestive.

Panel C and D offer balanced-sample comparisons of matched single- and dual-class firms. Panel C presents the valuation of 123 pairs of matched single and dual class firms that survived at least up to six years after the IPO while Panel D reports the same analysis for 76 pairs that survived at least nine years after the IPO. In general, the matched balanced samples' results are similar to the unbalanced ones. In the first three years after the IPO dual class firms have a valuation premium relative to single-class firms, and this premium dissipates and becomes a valuation discount starting about six years after the IPO. However, conclusions must await a more controlled analysis.

Table 5 examines the relative valuation of dual versus single class structures in multivariate regressions using the full and matched sample. We run pooled panel regressions of Tobin's Q on various control variables previously demonstrated in the literature as being associated with Tobin's Q, adding to the list of explanatory variables a dual class dummy variable.

We first run these regressions combining all observations of the full sample. Then, we use separate subsamples of cohorts of firms, progressing along firm's life cycle. This approach follows Johnson et al. (2018), who study antitakeover provisions for single class firms over the life cycle.

The four life cycle cohorts suggested by the matched sample results in Figure 1 are the 1 – 3 years cohort, the 4 – 5 years cohort, the 6 – 8 years cohort, and the > 8 years cohort (or 9+ years' cohort) after the end of the fiscal year of the IPO.[10]

(Insert Table 5 about here)

In column 1 of Panel A, we combine all firm-year observations across the firms' life cycle, and find no evidence that, on average, dual class firms and single class firms have a different Tobin's Q. The coefficient on the dual class dummy equals 0.004 with a t-statistic of 0.08. Interestingly though, when we run our regressions on Gompers et al. (2010)'s sample that includes more mature firms (with pre-1980 IPOs) during their sample years (1995-2002), the coefficient of the dual class dummy turns negative (-0.024) and statistically insignificant, which parallels and is consistent with Gompers et al. (2010)'s results in their Table 6. Possibly, there have been some changes over (calendar) time in the relative valuation of single and dual class firms, changes whose review and analysis are beyond the scope of this paper.

In column 2, using only observations for firms from the 1 – 3 years cohort, the coefficient of the dual class dummy equals 0.24, suggesting that dual class firms have a Tobin's Q that is about 10% higher than that of comparable single class firms (=0.24/2.47, where 2.47 is the average Q of single class firms in the full sample in years 1 – 3 after the IPO year - see Table 4). This first three years' valuation premium of dual class firms is statistically significant at the 1% level.

However, on average, the initial dual class valuation premium tends to decline as firms mature. In the 4 – 5 years cohort, the dual class premium is only slightly positive and statistically insignificant, and for the two later life cycle cohorts it becomes significantly negative. For

[10] Within each of these firm age cohorts, the mean valuation premium of dual versus single class firms appears similar – see Figure 1. The results hold when we use different age cohorts – see our robustness test results in Table 6.

example, using the sample of firms that are nine years or more after the IPO, the dual class dummy has a coefficient of -0.22, suggesting that those dual class firms have a Tobin's Q that is on average about 10% (=0.22/2.11) lower than that of single class firms.

Last, it appears important to note the differences between the full sample results in our controlled tests (in Panel A of Table 5) and the full sample results in our preliminary uncontrolled tests (in Panel A of Table 4). Simple uncontrolled tests such as those in Table 4 may lead to a conclusion that dual class firms suffer a valuation discount regardless of their listing age (years from IPO), a conclusion that a more careful and controlled analysis nullifies. Thus, controlling for differences between dual- and single-class firms, as we do in Table 5, appears essential for reliable inference.[11]

In Panel B of Table 5, we document results for the matched sample. The picture is almost identical, albeit with weaker statistical significance. In the first three years after the IPO year, dual class firms have on average a 0.22 higher Tobin's Q than single-class firms (compared to 0.24 in the full sample), and this premium turns into a discount in Q of 0.17 nine years or more after the IPO year (compared to a discount of 0.22 in Panel A).

In sum, the valuation evidence in this section supports our Hypothesis 1. At the IPO, dual class firms tend to have a valuation premium relative to comparable single class firms. However, this premium tends to dissipate over the following years, until, on average, six years after the IPO, dual class firms drop into a valuation discount. Relative to the prior literature, we add the observation that the relative valuation of dual- and single-class firms changes along firms' life cycle, with a valuation premium for dual class firms in the early years after the IPO, and a valuation

[11] One can research which control generates the difference between the full sample results in tables 4 and 5. Such a task is beyond the scope of the paper.

discount for dual class firms starting about six years after the IPO. The statistical significance of the initial valuation premium of dual class firms is stronger than that of the eventual valuation discount, a finding that is recurring in our later tests. A concurrent study, Kim and Michaely (2019), also finds that young dual class firms have a valuation premium over young single class firms, a premium that is not present when they compare dual- and single-class firms that are older than 12 years. Thus, the dissipation of the initial valuation premium of dual class firms appears robust.

In terms of our basic model in equation (1), $Q_{dual} = Q_{single} + \Delta Q_{LV} + \Delta Q_{Agency}$, the results imply that $\Delta Q_{LV} > \Delta Q_{Agency}$ for firms at the beginning of their life cycle as publicly traded firms. Apparently, on average, in the first public years of the dual class firm, the valuation premium due to founders' vision and leadership more than offsets the discount caused by any higher agency problems associated with dual class structures. In a study of firm innovativeness, Baran, Forst, and Via (2019) find that in the first five post-IPO years dual class firms exhibit superior patent output (relative to matched single class firms), a finding suggesting that there are some benefits from keeping the entrepreneurs in control.

However, our above interpretation should be accompanied with caution because the choice of a dual class structure at the IPO may be an endogenous decision. For example, private firms with particularly strong growth opportunities may be more likely to choose a dual class structure when they first sell shares in public markets. This alternative interpretation reverses the causality by arguing that an initially higher Tobin's Q (capturing superior future growth opportunities) triggers firm's choice of the dual class structure.

We argue that our basic empirical design of constructing a matched sample of single and dual class firms with similar ex-ante characteristics (see Table 3) and similar issue dates minimizes

the likelihood of a substantial initial difference between single and dual class firms, mitigating the influence of selection effects at the IPO. In our matching procedure we observe that characteristics of matched dual and single class firms that are not used as a criterion for matching are also similar (see, for example, "capital expenditures" and "sales growth" in Table 3).

We further examine the matched sample firms' sales growth in the first three years after the IPO. In these years, our matched sample dual class firms demonstrate a mean sales growth rate of 44.7% per year. In comparison, our single class matched firms mean annual sales growth rate in the first three years after the IPO, 43.4%, is also impressive and insignificantly different from that of dual class firms. Thus, while we cannot rule out selection issues, our matched sample results are likely to moderate them considerably.

5.2. Robustness tests

In our first robustness test, we examine the effect of using different age cohorts. Some readers may ponder about our choices: 1) to include year IPO+3 in the 1-3 years cohort (and not in the 4-5 years cohort); 2) to lump together years 9+ (that is firms with listing age larger than eight years); and 3) to exclude the IPO year. In response, we rerun the Tobin's Q regressions in the matched sample on the following listing age cohorts: 0-2, 3-5, 6-8, 9-11, and 12+ years. This alternative cohort division is attractive also because it employs fixed three-year cohorts up until a listing age of 12 years.

Panel A of Table 6 presents the results of Tobin's Q regressions in the matched sample using the alternative cohorts. The findings are similar to the matched sample results reported in Panel B of Table 5. Up to 5 years after the IPO, dual class firms exhibit a valuation premium over matched single class firms. Then, starting six years after the IPO, dual class firms trade at a

discount. Further, the observed dual class discount does not appear to deepen for firms with listing age larger than 9 years. In sum, the conclusions remain intact when alternative cohort choices are examined.

(Insert Table 6 about here)

Our second robustness test employs Total Q as an alternative proxy for firm valuation. Peters and Taylor (2017) introduce Total Q, which scales firm's market value by the sum of physical and intangible capital, whereas the standard proxy for Tobin's Q scales it by the book value of total assets. As explained by Peters and Taylor (2017), Total Q may better capture the firm's assets in place for firms where intangible capital is more important.

The evidence using Total Q is summarized in Panel B of Table 6. In the first five full calendar years after the IPO dual class firms have a statistically significant valuation premium which turns into a discount only 9 years from the IPO. Thus, relative to our benchmark findings, reported in Panel B of Table 5, the Total Q matched sample results somewhat favor dual class firms and suggest that on average dual class structures may not be detrimental even eight years after the IPO.

The third robustness test explores tightening the matching criteria by considering only pairs of single- and dual-class firms that issued within 12 months of each other. An ideal life-cycle experiment would compare single-and dual-class firms that issued on the same month, yet in order to increase the sample size we allow in all our empirical tests (but this robustness test) up to a 24 months difference between single- and dual-class firms' IPO dates. Narrowing the maximum

difference between single- and dual-class firms IPO dates to 12 months is thus a step towards the ideal setting (of no difference in IPO dates).[12]

Cutting the allowed difference in matched firms' IPO dates from 24 months to 12 months decreases sample size by about a half, from 538 pairs to 281 pairs. However, the findings and conclusions remain the same as in our main extended sample. Panel C of Table 6 documents the results of the life-cycle clusters' regressions in the tighter-match subsample. In the first five post-IPO years, dual-class firms yield a 0.24 to 0.36 mean Tobin's Q premium over matched single class firms, and this mean valuation premium is statistically significant at the 10% level. Interestingly, in the 6-8 years' listing-age cohort dual class firms also achieve an higher Tobin's Q than their single-class firm counterparts, and in the 9+ years' cohort the mean Q discount of dual-class firms shrinks to a statistically insignificant -0.07 only. It appears that this robustness test favors dual class firms, indicating that on average dual class structures discount firm value (slightly and insignificantly) only 9 years or more after the IPO.

Panel D adds a matched and balanced sample analysis. The regressions in Table 5 examine a sample of dual-and single-class firms that are matched at their IPO. As time progresses, single- and dual-class firms drop out – see Appendix B, and the sample becomes unbalanced. A balanced analysis uses only the 76 pairs of single and dual-class firms that remain listed on the exchange for at least nine years after their IPO. The matched and balanced analysis in Panel D reveals the same dual class firms' life cycle valuation patterns as Table 5. Statistical significance is however lost, because of the small sample size.

[12] It is noteworthy that in our main matched sample the mean difference between dual- and single-class firms' IPO dates is 0.52 months, very close to zero. This implies that dual-class firms in our matched sample are not systematically older or younger (in terms of years listed on the exchange) than their matched single-class firms. However, the mean absolute difference in listing age in our main matched sample is 11.94 months, and it is cut to 6.14 months in the within 12-months subsample (our robustness test sample).

Last, McConnell and Servaes (1990) report a humped-shaped relation between Tobin's Q and controlling shareholders' holdings. Thus, it appears appropriate to add control group equity holdings (and its square) to the list of explanatory variables in our Tobin's Q regressions. Such an addition is important not only for reducing residual noise. There might also exist differences in controlling shareholders' equity holdings between our matched single and dual class firms, differences that might impact our measurement of the valuation premium or discount of dual class shares. We have not used control group holdings as an explanatory variable in our baseline Table 5 regressions because ownership data is available only since 1995, which reduces the sample size considerably.

Panel E reports the results of Tobin's Q regressions in the matched sample when controlling shareholders equity stake and its square are added as explanatory variables to the valuation regressions of Table 5 Panel B. The results and conclusions do not change. Dual class firms exhibit a statistically significant valuation premium up to five years after the IPO, and an insignificant valuation discount is observed only 9 years and more after the IPO. Interestingly, much alike most of the above-reviewed robustness tests, the only new indication of this robustness test is that the discount in dual class firm valuation is statistically insignificant and starts later than observed in the main tests. It appears that our main-analysis conclusions may be a bit conservative or impatient regarding the prudent life expectancy of dual class structures.

Additional unreported tests reveal that the life cycle valuation results hold when we exclude the dual-class firms that grant lower or no dividend rights to the superior vote class (15% of the sample), and when we exclude IPOs related to spin-offs (25% of the sample). Using the natural logarithm of Q as the dependent variable, a common transformation in previous research, also yields similar results and identical conclusions.

6. Some Presumed Causes of the Life Cycle of Dual Class Firms' Valuations

6.1. Evidence on factors driving the benefits of the dual class firms

Table 7 examines our hypothesis regarding possible causes of a dual class structure valuation premium. Hypothesis 2 emphasizes the potential contribution of founders when they stay at a leadership position at the IPO, especially when the issuing firm and the founder are relatively young (hence founder's skills and visionary leadership are still essential).

For testing Hypothesis 2 we need to identify firm founders. We collect information about the founders from the IPO prospectus, available on EDGAR. As a precaution against "temporary" IPOs, we also eliminate firms that survived for less than two years after their IPO. The resulting matched sample comprises 291 dual- and 291 single-class firms in 1995-2015. Panel A describes the sample, denoted henceforth the founders' sample. The frequency of founder-directors at firm's IPO is significantly higher among dual-class firms (51%) compared to their matched single-class firms (40%). Apparently, founders' power and continuous impact is larger at dual class firm IPOs. Possibly, founder's relatively strong power within the firm is a factor driving the choice of a dual-class IPO structure.

We have examined the founders sample and find that it exhibits similar valuation patterns as our overall sample. The mean Tobin's Q differences between dual- and their matched single-class firms are 0.20, -0.01, -0.26, and -0.29, in years 1-3, 4-5, 6-8 and 9+ after the IPO, respectively. The initial valuation premium and eventual valuation discount of dual class firms are significantly different from zero at the 5% level.

(Insert Table 7 about here)

Panel B of Table 7 examines Hypothesis 2 regarding dual class founders' unique value contribution ($\Delta Q_{LV}>0$). The three first columns in Panel B summarize regressions that assess the impact of dual class structures, founder-directors and early IPOs separately. Each of these factors has a positive effect on Tobin's Q at the IPO. Nonetheless, only the effect of the dual class structure is statistically significant at the 10% level.

Column (4) examines the eight possible combinations of IPO structure (dual- or single-class), founder status (stayed, i.e., founder-director or left by the IPO), and firm maturity at the IPO (early or mature IPO). The reference group (embedded in the intercept) comprises mature single class IPOs with non-founder directors. The main finding in column (4) is that the combination of a dual class structure an early IPO and a founder that maintains her executive position (founder-director), yields a statistically and economically significant valuation premium – increases Tobin's Q at the IPO by 0.68. In fact, column (4) suggests that each of the above three factors (dual class, early IPO and founder-director) offers a positive (yet statistically insignificant) valuation premium at the IPO. However, only the combination of all three factors is a clear "winner".

Column (5) of Panel B presents regressions where the reference group consists of all single class IPOs (that are included in the sample that we use in Table 7). Regarding the results in column (5) it appears that dual class IPOs offer a positive valuation premium at the IPO (relative to single-class IPOs) and that this valuation premium is particularly high and statistically significant only for the select group of firms with early dual-class IPOs and a founder-director.

In Panel C of Table 7 we examine the effect of founder's age at the IPO. Founder's age is available to us only for founder-directors (whose age we collect from the prospectus). As reported in Panel A there are a total of 265 firms with founder-directors (149 dual- and 116 single-class

firms). In this 265 firms sample founder's age and firm's valuation (Tobin's Q) at the IPO are negatively correlated – see the regression summarized in column (1). Market appears to favor IPOs of firms with relatively young founders who continue with the firm at the IPO. However, as shown in columns (2) and (3), the effect is much stronger and statistically significant only in the subsample of dual class firms. Consistent with Hypothesis 2, young visionary founders who stay in the firm leadership team appear particularly value-enhancing in IPOs of dual class firms.

Next, we attempt integrating the young-founder result with our previous founder-director and early-IPO results reported in Panel B. We build a dummy variable, Young_founder-director, that equals 1 when the founder-director is part of firm's executive team at the IPO and is younger than 49 years (at the IPO). Note that Young_founder-director equals 0 for older than 49 founder-directors as well as for all non-founder directors. Similarly, we construct Non-Young_founder-director, a dummy variable that equals 1 only for founder-directors older than 49 years at the IPO.

Column (4) presents regression results in the overall founders sample (of 291 dual- and 291 matched single-class firms). The reference group is all single class firms. The valuation effect of dual class IPOs with non-founder IPOs appears positive (0.23) yet is statistically insignificant. Dual class IPOs with founder-directors at the IPO are divided into four groups representing the possible interactions of founder's age and firm maturity at the IPO. The most prominent, and perhaps even striking finding is the large positive and statistically significant valuation (Tobin's Q) premium of 1.2 in the subgroup of early IPOs of dual class firms with young founder-directors. Apparently, the IPO valuation premium is concentrated in dual class IPOs of firms that are still young and that are led by their still young founders. This finding supports our Hypothesis 2 suggesting that when young founder's special skills and visionary (disruptive?) leadership are still

essential for firm's success at the time of the IPO, dual class IPOs are "efficient" as they effectively protect the young founder from market distractions.

According to Hypothesis 3, the positive valuation premium of a founder-director in a dual class firm evaporates in the years after the IPO as her leadership becomes less essential. Hypothesis 3 views in particular events manifesting founder's decreased interest in the firm – departures from the leadership team or share-selling. Table 8 examines Hypothesis 3. Our baseline evidence in Table 5 suggests a value premium for dual class firms up to five years after the IPO. Thus, we examine the special-value dissipation hypothesis in the subsample of 95 dual class firms with a founder-director at the time of the IPO that survived till the end of year IPO+5.

The dependent variable in Table 8 regressions is the change in dual class firm's Tobin's Q from the IPO till year IPO+5 (Q at year IPO+5 minus Q at year IPO), and the independent variables are the ones obtained from differencing our baseline regression of Table 5 and two new explanatory variables representing decreases in founder's interest in the firm. We find that when founders and their families sell shares between the IPO and year IPO+5, hence their interest and incentive to promote firm value decreases, their firm valuation deterioration in these first post-IPO years is significantly sharper. The coefficients of Founder & Family net disposals, measured either in million dollars or as a dummy variable, are negative and statistically significant.

(Insert Table 8 about here)

Less successful is our dummy variable marking firms where founder-director leaves during the five first public years. When a founder-director leaves, her special contribution is nullified, thus we expect firm's Q to be hurt. As expected, we find a negative value impact (coefficient) for the firms where founder-director leaves. Nevertheless, this coefficient is statistically insignificant,

perhaps due to the small subsample of only ten founder-directors that leave office during the first five public years.

6.2. Evidence on factors driving the agency costs of dual class firms

Our Hypotheses 4 and 5 refer to the extra agency problems of dual class (relative to single class) firms. The unique dual class property that aggravates controlling shareholders' agency behavior is the difference between controlling shareholders' vote and equity percentage, commonly referred to as the wedge. The wedge is essentially the divergence between controlling shareholders' control rights and cash-flow rights, and it reduces the costs of private benefits extraction by controlling shareholders and temps them to consume more private benefits. Masulis et al. (2009) show that as the wedge widens, firm efficiency hurts, as evidenced by less successful acquisitions and higher CEO compensation, for example. In short, the wedge correlates with the relative inefficiency and probable agency-induced valuation discount of dual class firms.

Table 9 examines the wedge effect on dual class firms Tobin's Q. Controlling shareholders' holding data is available on Edgar only since 1995, hence sample size is somewhat reduced. In column (1) we further restrict the sample to be balanced, i.e., with a complete set of Tobin's Q and explanatory variables in years IPO through IPO+5. We also employ firm fixed effects and a dummy variable for each post-IPO year.

The balanced-sample regressions in column (1) document that the wedge has a negative effect on dual class firm valuation. According to our findings, as the wedge increases by 0.10 (from 0.2, for example, to 0.3) dual class firm's Tobin's Q decreases by 0.095 on average, which is an economically significant effect. Statistically though, the wedge effect is insignificant, with a p-value of 0.11 only.

(Insert Table 9 about here)

The rest of the columns in Table 9 summarize attempts to sharpen the inference regarding the wedge valuation impact. In column (2) we increase sample size by using an unbalanced sample comprising all dual class firm observations in the years IPO through IPO+5. The wedge effect on Tobin's Q becomes negative and significant at the 10% level.

Columns (3) and (4) employ the wedge of high vote shares. This wedge measure, denoted wedge (high vote), focuses on the high-vote class of shares, and is defined as the difference between the high-vote shares' total vote percentage and their total equity percentage. The advantage of wedge (high vote) is that it can be computed in all our sample period. Notably, in the subsample where controlling shareholders' wedge can be computed, the correlation between wedge (high vote) and controlling shareholders wedge is 0.74.

Column (3) regressions employ a balanced sample of dual class firms in years IPO+1 through IPO+5, and documents a negative effect of wedge (high vote) on firm valuation that is significant at the 10% level. Somewhat better results are obtained when we exclude from the balanced sample of column (3) dual class firms that unified their shares (converted all shares to one class with "one share one vote"). Employing such an exclusion in column (4) regressions, the wedge (high vote) negative valuation effect becomes statistically significant at the 5% level.

In sum, the evidence in Table 9 is consistent with our Hypothesis 4 proposal that the wedge hurts a dual class firm's market valuation. Given that the wedge tempts controlling shareholders into an agency behavior (private benefits consumption), and given that the wedge is the key difference between similar (or matched) single- and dual-class firms, we view the wedge as a central trigger of the incremental agency-induced valuation effect of dual class firms - $\Delta Q_{Agency,}$ in our notations. Further, since single class firms have by definition a zero wedge, our evidence in

Table 9 on the negative valuation effect of the wedge supports the contention that dual class firms incur an agency-induced valuation discount relative to similar single class firms, i.e., $\Delta Q_{Agency} < 0$.

Table 10 reviews the evolution of dual class firms' controlling shareholders' holdings and wedge in the years following the IPO. In Panel A, the full sample is examined. One year after the IPO, the mean equity ownership of the controlling shareholders amounts to 49.9% of total firm's equity. In subsequent years, these holdings sharply drop, such that five years after the IPO the mean ownership of controlling shareholders in dual class firms equals 37.1%. After this, the equity ownership of the controlling shareholders is fairly stable, and nine years after the IPO the mean equity ownership of the controlling shareholders in surviving dual class firms equals 38.1%.

(Insert Table 10 about here)

For dual class firms, the decrease in the equity holdings of controlling shareholders is accompanied by an increase in the wedge between their voting and equity stakes. Table 10 reports that the mean wedge increases from 16.2% one year after the IPO to 22.0% five years after the IPO, and to 26.4% nine years after the IPO. The increase in the wedge subsequent to the IPO is caused either by controlling shareholders or venture capitalists selling some of their shares in the years after the IPO,[13] or by a firm's secondary equity offering, issuing more inferior vote equity.[14]

The number of dual class firms in our sample decreases sharply in the years after the IPO – see a concise survival analysis in Appendix B. We start with 358 dual class firms for which we are able to find insider ownership data, yet nine years after the IPO only 151 dual class firms

[13] Typically, superior vote shares are converted into low-vote shares (at a one to one ratio) before they are sold on the market.

[14] Notably, some dual class firms split their shares by distributing non-voting shares to all shareholders (for example, Google class C). This affords controlling shareholders to "cash in" (sell some of their non-voting shares) without conceding voting power. Such actions also increase the wedge.

remain. This raises the possibility that the life cycle variation documented in Table 10 – the decline in controlling shareholders' equity ownership and the increase in the wedge – is biased by survivorship factors. For example, if surviving dual class firms already had lower insider ownership and a higher wedge from the time of their IPO, then the decrease in equity proportion and increase in wedge documented in Panel A are exaggerated or even spurious.

As a robustness test, we focus on the 149 dual class firms for which we have complete holdings data for the first five years after the IPO (see Panel B in Table 10). The mean controlling shareholders' equity stake decreases from 53.2% on year IPO+1 to 38.1% on year IPO+5, and the mean wedge increases from 19.3% on IPO+1 year-end to 22.5% on IPO+5 year end. The decrease in holdings and the increase in wedge are statistically significant at the 1% level. This indicates that the equity stake dilution and wedge widening are robust post-IPO phenomena in dual-class firms, consistent with Hypothesis 5. It is noteworthy that the empirical support of Hypothesis 4 (negative valuation effects of the wedge) in Table 9 and Hypothesis 5 (wedge increase in post-IPO years) in Table 10, imply that the unique agency valuation discount of dual class firms deepens with firm's public life, or succinctly that $\partial \Delta Q_{Agency}/\partial T < 0$.

A larger balanced sample is available for wedge (high-vote), where we are able to employ pre-1995 data as well. Panel C presents the wedge (high-vote) results. Sample size increases to 271 dual class firms, yet the conclusions are identical to those in Panel B: in the post-IPO years the wedge widens.

The wedge-widening phenomenon is troubling also because it does not have an effective cap. Bebchuk and Kastiel (2019) show that 96.7% of the dual class firms in the S&P 1500 have controllers who currently own less than 50% of firm's equity and 21.3% have controllers that currently own less than 15% of firm equity. Further, analyzing company charter provisions they

report that in 91.8% of the S&P 1500 dual class firms the controllers can decrease their equity holdings to below 15% without losing control (50% of the vote). The combination of low ownership and a wide wedge aggravates the potential controllers' agency problems considerably. Thus, Bebchuk and Kastiel (2019) advocate promoting transparency about the equity and vote stakes of controlling shareholders and discuss possible regulatory interventions that would limit the wedge. We believe that explicit wedge caps should be considered. That is, a sunset provision based on the wedge might be useful.

In another study, Bebchuk and Kastiel (2017) propose age-based sunset provisions. Our evidence on the eventual discount of dual class firms within a period of 6 or 9 years after the IPO (see Tables 5 and 6) can be interpreted as supporting age-based sunset provision (although the mean eventual discount is sometimes statistically insignificant – see Table 6). However, a preliminary question is: Do dual class firms voluntarily dismantle the dual class structure when it becomes stale? This question is examined next.

7. Dual class share unifications

If the dual class structure becomes less efficient as firm matures, a natural solution is dual class share unification, in which all share classes are transformed into "one share one vote". The availability of a "self-correct" mechanism, namely the option that firm controlling shareholders initiate and pass a resolution to unify all share classes, raises the question of whether dual class firms eliminate stale and inefficient dual class structures by themselves. In this section, we examine our Hypothesis 6 that voluntary "self-correcting" firm-initiated dual class unifications are rare and more so when the firm is more mature.

Figure 2 depicts the frequency of unifications by the number of years from the IPO. Unification frequency increases in the first few years after the IPO, reaches a peak at about 3 – 5 years after the IPO, and then decreases. All of these unifications are voluntary firm-initiated unifications, and except for very few cases, controlling shareholders in these firms do not receive any compensation from the firm or other shareholders for giving up their extra voting power. The occurrence of unifications illustrates that some firms and controlling shareholders recognize that the dual class structure becomes less efficient over time and decide to opt out.

(Insert Figure 2 about here)

We also estimate firm's valuation response to unifications (not tabulated). The mean (median) change in firm's Tobin's Q in the unification year, from the pre-unification year-end to the unification year-end, is 0.15 (0.095), and it is statistically significant. Further, in the subsample of matched firms, we compute Tobin's Q of the unifying dual-class firm minus Tobin's Q of its matched single-class firm, and find that this valuation difference increased on average by 0.15 over the unification year. Evidently, unifying firms' market valuation gain is robust. Lauterbach and Pajuste (2015) estimate a mean long-term Q increase of 0.15 for unifying dual class firms in Europe.

In Figure 2 the peak period of unifications is 3 – 5 years after the IPO, which is also the period when the initial valuation premium of dual class firms at the IPO becomes insignificant – see Figure 1. Perhaps firms that unify their shares during this period see the vanishing dual class valuation premium, and facing a possible upcoming valuation discount, they decide to eliminate the dual class structure.

We examine which firms decide to unify their share classes. Are these dual class firms that are already discounted and wish to eliminate their discount, or firms that still exhibit a dual class

premium relative to their matched single-class firms? Examining all unifying firms with a matched single class firm, 97 dual class firms in total, we find an average dual class valuation premium of 0.54 at the end of the year preceding the unification, statistically significant at the 5% level. This finding illustrates that unifying firms are typically not in poor shape (lower valuations than their matched single-class firms) prior to unifications.

However, the key unification statistic is that only about 20% of the dual class firms in our sample unify their shares within nine years after the IPO. Most of the dual class firms elect to retain a dual class structure, perhaps because it is not in the interest of their controlling shareholders to unify. Upon unification, controlling shareholders lose significant voting control and nontrivial amounts of private benefits, and gain in return a fraction (equal to their equity stake) of the market valuation increase. It appears that in most dual class firms the market valuation increase upon unification is not big enough to entice the controlling shareholders to initiate a unification process.

Figure 2 also displays a decline in the frequency of unifications starting about five years after the IPO. This dwindling unification rate may emanate from the decline in controlling shareholders' equity position in the years after the IPO – see Table 10. This equity holdings' decline shrinks controlling shareholders' gains from the potential market value increase upon unification. Hence, unifications become less attractive to controlling shareholders and rarer as the firm ages.

Table 11 examines the listing age effect on the probability of unifications using Probit regressions that predict unifications in the following fiscal year for our matched sample of dual class firms in 1995-2017. (We start on 1995 because some of our explanatory variables such as the wedge are available to us only since that date.) The set of explanatory variables is based on

previous literature, with the addition of our new variables: Ln Years from IPO (together with its square), designed to capture life cycle effects.

(Insert Table 11 about here)

The Probit analysis results are generally consistent with previous literature. For example, the coefficient of the wedge (the vote minus the equity stake of controlling shareholders) is negative and statistically significant. Upon unification controlling shareholders lose their extra voting power. This extra voting power, approximated by the wedge, represents the cost of unification from the perspective of controlling shareholders. Thus, when the wedge is relatively wide, unifications are more costly to controlling shareholders; and thus their firms are less likely to initiate unifications. Previous studies, such as Maury and Pajuste (2011), also document a negative impact of the wedge on the probability of a dual class share unification.

Other standard variables in unification analysis are industry growth opportunities and pending seasoned equity offers. Firms that plan seasoned equity offers or are growing rapidly and need frequent access to market financing, suffer from the price discount of the low-voting shares. For such firms, the dual class structure may be relatively inefficient, such that they are more likely to unify their share classes.[15] Consistent with this hypothesis and with findings in previous literature, Table 11 shows that better growth opportunities and pending equity offerings are strongly positively associated with the probability of unifications.

However, our main interest is in the life cycle effects, represented by the coefficient of the log of number of years from the IPO. Using only this variable in column (1) of Table 11, we find a negative association between the number of years since the IPO and the likelihood to unify.

[15] Abolishing the dual class structure ahead of an equity offering also helps create a public relations hype that generates relatively high share prices ahead of the offering – see Lauterbach and Pajuste (2015).

Using the square of the log number of years as well, in columns (2) and (3), we find a non-linear association, where the coefficient of the log number of years from the IPO is positive and the coefficient of its square is negative (and statistically significant). The fitted parabolic relation is consistent with Hypothesis 6. After a wave of self-correcting unifications in the first five post-IPO years, the unification tendency wanes, and some stale inefficient dual class structures persist. The apparent existence of stale dual class structures resurfaces the issue of the efficacy of age-based sunset provisions.

A final comment regards the variable used for best capturing the controlling shareholders' reluctance to opt out of the dual class structure and unify the share classes. Bebchuk and Kastiel (2017) propose that the overall equity holdings of controlling shareholders are the key variable, which we use in column (3) of Table 11, as an alternative to the wedge used in columns (1) and (2). The coefficient of equity holdings is negative, as expected, yet it is statistically insignificant. Thus, the wedge between the controlling shareholders' vote and equity proportions in the firm appears more relevant for abolishing the dual class structure, perhaps because it represents more precisely the costs of unifications to controlling shareholders.

8. Summary and Conclusions

We employ an extensive dataset of single- and dual-class U.S. firms in the 1980-2017 period to examine life cycle effects in dual class firms. We find that dual class firms exhibit a valuation premium over comparable single class firms at the IPO, which is maintained for 6 to 9 years afterwards. In our sample, mature (older than eight years) dual class firms tend to have statistically insignificant lower valuations compared to single class firms.

We examine potential sources of the initial valuation premium and eventual statistically insignificant valuation discount of dual class firms (relative to matched single class firms). Consistent with our hypothesis that the initial premium can be attributed to firm founders' visionary leadership and special skills, we show that when founder remains in a leadership position at the IPO, the initial valuation premium of dual class firms is higher. The IPO valuation premium of dual class firms is particularly high when the firm and its founder-director are young, that is when the founder's skills and vision are still needed and must be protected at the time of the IPO. We also document that in the first five post-IPO years, the dual class firm valuation premium tends to decrease more sharply in firms where founders (or their family members) dilute their holdings (sell shares). This is consistent with diminished interest and contribution of founders to their firm values after diluting their holdings.

The eventual valuation discount of dual class firms (relative to single class firms) is commonly attributed to their extra agency problems. These extra problems are afforded by the wedge (difference between controlling shareholders' vote and equity stake), granting controlling shareholders full control over the firm despite their relatively low cash flow rights (low equity proportion). We document the dual class firms' wedge increases in the years after the IPO, and show that such wedge increases hurt dual class firms' valuations.

Interestingly, the mature-age valuation discount does not spur most dual class firms to abolish the dual class structure and unify all share classes (i.e. convert all shares to "one share one vote"). Some stale dual class structures that appear to depress market valuations persist, perhaps because they serve well their controlling shareholders' interests. Some controlling shareholders shy away from unifications because they are reluctant to give up their superior voting power (and the associated private benefits).

As a remedy to stale dual class structures, Bebchuk and Kastiel (2017) propose to adopt an age-based sunset provision for dual class structures. The proposed sunset clause would allow public shareholders to eliminate the dual class structure (i.e., force unification of all share classes) a pre-specified number of years after the IPO. Our empirical evidence illustrates that, on average, public shareholders with an inferior vote may benefit from or not be harmed by a dual class structure in at least the first five years after the IPO. Thus, given other considerations as well, an age-based sunset provision should not set in until at least six years after the IPO.[16,17] For an opinion opposing an age-based sunset provision, despite our evidence, see Fisch and Davidoff Solomon (2019). We also call attention to our finding that in our sample the eventual valuation discount of dual class firms is statistically insignificant in most of our tests.

Finally, throughout the paper we mention issues that deserve further research. Future studies should also verify our findings using other tests and samples, and should address the remaining endogeneity and selection issues in our empirical methodology. The ritual call for further research is reiterated.

[16] Interestingly, the Council of Institutional Investors' (2018) "Summary of Key Academic Literature on Multi-Class Structures and Firm Value" notes (on page 2) that our results support a time-based sunset of 6 to 9 years, explaining that this time frame includes "*the common 7 years sunset"* (italics added by us). On October 24, 2018, CII sent a letter to NASDAQ and NYSE demanding that newly listed companies with dual class shares have time-based sunsets no more than 7 years after the IPO.

[17] Our empirical tests highlight also the increase in the wedge between controlling shareholders' voting and equity stakes as dual class firms mature. Since the wedge encourages agency behavior (see Masulis et al., 2009) and depresses dual class firm valuations (see our Table 8), a regulatory cap on this wedge may also be considered (see also Bebchuk and Kastiel, 2019).

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Appendix A. Variable definitions

Age	Defined as the fiscal year minus the year of founding. The founding year data are from Ritter (2018) https://site.warrington.ufl.edu/ritter/ipo-data/ or companies' web-sites.
$Assets_t$	Total Assets measured in millions of dollars at the end of fiscal year *t*. Source: Compustat (item AT).
Capital $expenditures_t$	The ratio of capital expenditures (CAPX) in year *t* to total assets (AT) at the end of *t*. Source: Compustat.
Cash $balance_t$	The ratio of cash and short-term investments (CHE) to total assets (AT) at the end of fiscal year *t*. Source: Compustat.
Equity issue $dummy_t$	Equals one if the company had sales of common or preferred stock (SSTK) greater than zero in year *t*; otherwise the variable is equal to zero. Source: Compustat.
Equity $stake_t$	The fraction of cash flow rights held by the insiders, i.e. directors and executive officers as a group. The voting and equity rights are calculated from the share holdings of insiders on the record date closest to the end of fiscal year *t*. For years 1995-2002, we use the dataset kindly provided by Andrew Metrick. For later years we follow GIM's methodology, and calculate the aggregate holdings (owned either directly or through beneficiaries) of all executive officers and directors. Source: GIM (2010) and EDGAR (DEF 14A or 10-K).
Founder-director dummy	A dummy variable that equals one if the firm has a founder that is a human (not a firm or an organization) and s/he is one of the directors and executive officers at the IPO. Founders' names are retrieved from the IPO prospectuses (S-1) by searching phrases 'founder', 'co-founder' or 'founded'. If the IPO prospectus does not mention a founder, Google search is performed using a phrase "Company name AND founder". Source: EDGAR (S-1, DEF 14A) and Google Search.
Founder & family net disposals	The sum of all the (non-derivative) share disposals (in million dollars) by founders and their family members from the IPO to five years after the IPO, deducting the sum of all the acquisitions (in million dollars) during the same period. Family is defined as all the persons with the same surname as the founder, including family trusts. Each transaction value (in million dollars) is calculated as shares traded times the transaction price. Source: Thomson Reuters (insider transaction data from SEC Form 4).
Growth $opportunities_t$	The median Tobin's Q ratio of single-class firms in the respective 48 Fama and French (1997) industry group.
Industry dummies	Dummy variables for each of the 48 Fama and French (1997) industry groups.
$Leverage_t$	The ratio of long-term debt (DLTT) to total assets (AT) at the end of fiscal year *t*. Source: Compustat.
Ln years from IPO	Natural logarithm of the number of years from IPO. Years from IPO are calculated from monthly data, i.e. 6-17 months are rounded to 1 year from IPO, 18-29 months—to 2 years from IPO, etc.
Media dummy	Media industries are defined as SIC Codes 2710-11, 2720-21, 2730-31, 4830, 4832-33, 4840-41, 7810, 7812, and 7820. Source: Compustat.
PPE_t	The ratio of property, plant, and equipment (PPE) to total assets (AT) at the end of fiscal year *t*. Source: Compustat.
Research and $development_t$	The ratio of research and development expense (XRD) in year *t* to total assets (AT) at the end of *t*. The variable is set to zero when research and development expense is missing. Source: Compustat.
ROA_t	Return on assets; net income (NI) in year *t* to total assets (AT) at the end of fiscal year *t*. Source: Compustat.
ROE_t	Return on equity; net income (NI) in year *t* to book value of common stock (CEQ) at the end of fiscal year *t*. Source: Compustat.
Sales $growth_t$	Percentage change in revenues (REVT) from year *t-1* to year *t*. Source: Compustat.
Size	Natural logarithm of assets (in MUSD).
Tobin's Q_t	The ratio of the book value of assets (AT) plus the market value of common stock (=number of shares outstanding (CSHO) times share price (PRCC-F)) less the book value of common stock (CEQ) and deferred taxes (TXDB) to book value of assets (AT). When assessing the market value of dual class firms, we follow Villalonga and Amit (2006), and assume that the market value of any non-trading high-vote share is equal to the price of the trading low vote share. All figures come from the end of fiscal year *t*. Source: Compustat.
Total Q_t	The total q measure as defined by Peters and Taylor (2017). Total q is measured by scaling firm value by the sum of physical and intangible capital. The firm's market value (the numerator) is measured by the market value of common stock (=number of shares outstanding (CSHO) times share price (PRCC-F)), plus the book value of debt (DLTT + DLC), minus the firm's current assets (ACT). The denominator is the replacement cost of physical capital, i.e. the book value of property, plant, and equipment (PPEGT), plus the replacement cost of intangible capital. The replacement cost of intangible capital is the externally purchased intangible capital (INTAN), plus the internally created intangible capital consisting of the knowledge capital (the capitalized R&D expense) and the organizational capital (the capitalized 30% of SG&A expenses).
Voting $stake_t$	The fraction of voting rights held by the insiders. (See also Equity stake.)
Wedge (insiders) = Vote minus $equity_t$	The voting stake minus equity stake held by the insiders. (See also Equity stake.)
Wedge (high-vote shares)	The difference between the total vote percentage of high-vote shares (as a group) and their total equity percentage (i.e. the maximum possible wedge if one holds all high-vote shares). Source: EDGAR (S-1, DEF 14A, 10-k), CRSP.

Appendix B: Survival of single- and dual-class firms

Table B1. Survival differences between dual- and single-class firms: Cumulative dropouts' analysis

Panel A reports the total number of dropouts for a matched sample of dual- and single-class firms in years relative to the IPO. Dropouts (or delistings) are firms that do not survive as stand-alone entities on CRSP. In panels B, C and D, we break out three different reasons for non-survival, based on the delisting codes on CRSP. Panel B reports the number of mergers, Panel C - the number of delistings due to distress, and Panel D - the number of delistings due to other reasons. In this table we use a matched sample of 450 dual and 450 single-class firms that had an IPO in the year 2008 or earlier, i.e. firms that could have lived for 9 years (by the end of 2017) after the IPO. Firms are matched in the IPO year according to the 48 Fama and French (1997) industry groups, firm size (assets), and ROA.

Panel A. Cumulative number of total dropouts

	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5	IPO+6	IPO+7	IPO+8	IPO+9
Dual class firms (N)	8	38	78	110	135	154	173	194	211
Single class firms (N)	23	66	115	154	180	211	229	246	268
Dual class firms (% of total)	1.8%	8.4%	17.3%	24.4%	30.0%	34.2%	38.4%	43.1%	46.9%
Single class firms (% of total)	5.1%	14.7%	25.6%	34.2%	40.0%	46.9%	50.9%	54.7%	59.6%
p-value of difference	*0.006*	*0.003*	*0.003*	*0.001*	*0.002*	*0.000*	*0.000*	*0.001*	*0.000*

Panel B: Cumulative number of mergers

	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5	IPO+6	IPO+7	IPO+8	IPO+9
Dual class firms (N)	7	25	46	64	77	86	99	113	121
Single class firms (N)	15	42	73	97	116	132	143	149	162
Dual class firms (% of total)	1.6%	5.6%	10.2%	14.2%	17.1%	19.1%	22.0%	25.1%	26.9%
Single class firms (% of total)	3.3%	9.3%	16.2%	21.6%	25.8%	29.3%	31.8%	33.1%	36.0%
p-value of difference	*0.084*	*0.031*	*0.008*	*0.004*	*0.002*	*0.000*	*0.001*	*0.008*	*0.003*

Panel C. Cumulative number of delistings due to distress

	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5	IPO+6	IPO+7	IPO+8	IPO+9
Dual class firms (N)	0	3	7	10	16	23	25	29	30
Single class firms (N)	4	14	25	31	36	44	48	53	57
Dual class firms (% of total)	0.0%	0.7%	1.6%	2.2%	3.6%	5.1%	5.6%	6.4%	6.7%
Single class firms (% of total)	0.9%	3.1%	5.6%	6.9%	8.0%	9.8%	10.7%	11.8%	12.7%
p-value of difference	*0.045*	*0.007*	*0.001*	*0.001*	*0.004*	*0.008*	*0.005*	*0.005*	*0.002*

Panel D. Cumulative number of other dropouts (typically non-compliance with listing rules)

	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5	IPO+6	IPO+7	IPO+8	IPO+9
Dual class firms (N)	1	10	25	36	42	45	49	52	60
Single class firms (N)	4	10	17	26	28	35	38	44	49
Dual class firms (% of total)	0.2%	2.2%	5.6%	8.0%	9.3%	10.0%	10.9%	11.6%	13.3%
Single class firms (% of total)	0.9%	2.2%	3.8%	5.8%	6.2%	7.8%	8.4%	9.8%	10.9%
p-value of difference	*0.179*	*1.000*	*0.207*	*0.189*	*0.082*	*0.242*	*0.215*	*0.440*	*0.338*

Table 1. Historical changes in the popularity of dual class IPOs: 1980-2017

The table reports the total number of initial public offerings (IPOs) in the U.S. (IPOs of firms listed on the NYSE, NYSE MKT or NASDAQ) during various sub-periods of 1980-2017, and the number and proportion of dual-class IPOs in each of these sub-periods.

Decade	Total number of IPOs	Number of dual-class IPOs	Proportion of dual-class IPOs
1980-1990	2030	86	4.24%
1991-2000	4408	379	8.60%
2001-2010	851	75	8.81%
2011-2017	785	120	15.29%

Table 2. Differences between dual- and single-class firms: Snapshots 1985-2015

The table presents medians of several financial variables for dual- and single-class firms in different calendar years. For one variable—*Research and development*—means are reported instead of medians because the medians equal zero. The full sample of dual- and single- class firms is used over the period 1985-2015. *Assets* is total assets measured in millions of dollars. *Capital expenditures* is the ratio of capital expenditures to total assets. *Leverage* is the ratio of book value of long-term debt to total assets. *Research and development* is the ratio of research and development expenditures to total assets. *Return on assets* is the ratio of net income to total assets. *Return on equity* is the ratio of net income in year *t* to book value of common stock at the end of year *t*. *Sales growth is* the percentage change in revenues from year *t-1* to year *t. Tobin's Q* is measured as the market-to-book ratio of the firm. For further details on the variables see Appendix A. Equality of medians is tested using the Pearson's chi-squared test (and equality of means is tested using the two-sided t-test).

	1985	1991	1997	2003	2009	2015
Assets (in million dollars)						
Dual class	67.5	169.4	238.6	784.7	846.7	1490.9
Single class	27.7	44.1	63.8	143.1	276.7	409.2
p-value of median equality test	*0.005*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Capital expenditures						
Dual class	7.36%	4.96%	4.73%	3.11%	2.07%	3.05%
Single class	6.93%	4.09%	4.77%	2.33%	1.99%	2.30%
p-value of median equality test	*0.726*	*0.344*	*0.901*	*0.002*	*0.490*	*0.015*
Leverage						
Dual class	13.9%	24.2%	22.5%	19.6%	15.1%	18.8%
Single class	7.2%	5.7%	4.9%	3.9%	3.3%	12.5%
p-value of median equality test	*0.036*	*0.000*	*0.000*	*0.000*	*0.000*	*0.061*
Research and development (means)						
Dual class	3.05%	2.80%	3.07%	2.57%	3.11%	3.12%
Single class	5.93%	6.34%	8.83%	8.53%	9.16%	10.25%
p-value of mean equality test	*0.141*	*0.002*	*0.000*	*0.000*	*0.000*	*0.000*
Return on assets						
Dual class	6.21%	3.05%	2.76%	2.04%	1.66%	2.60%
Single class	3.04%	2.47%	1.49%	0.91%	0.84%	0.03%
p-value of median equality test	*0.002*	*0.403*	*0.023*	*0.062*	*0.024*	*0.000*
Return on equity						
Dual class	14.2%	8.2%	6.9%	6.8%	6.2%	7.8%
Single class	6.4%	6.1%	4.0%	2.3%	2.0%	0.5%
p-value of median equality test	*0.000*	*0.080*	*0.010*	*0.010*	*0.003*	*0.000*
Sales growth						
Dual class	21.0%	9.5%	21.4%	5.8%	-7.3%	6.3%
Single class	20.1%	11.0%	20.7%	8.7%	-4.6%	5.2%
p-value of median equality test	*1.000*	*0.752*	*0.711*	*0.032*	*0.263*	*0.865*
Tobin's Q						
Dual class	1.60	1.43	1.61	1.37	1.27	1.54
Single class	1.67	1.57	1.87	1.87	1.51	1.71
p-value of median equality test	*0.484*	*0.344*	*0.000*	*0.000*	*0.000*	*0.035*
Number of observations (median across the above descriptive variables; actual is within 5% of the median)						
Dual class	34	97	290	214	146	168
Single class	835	1345	3142	2191	1668	1567

Table 3. Key statistics of single and dual-class firms at the IPO

The table presents medians of several financial variables for dual- and single-class firms at the fiscal year-end following the IPO. For one variable—Research and development—means are reported instead of medians because the medians equal zero. Both the full and matched samples of dual- and single-class firms are used over the period 1980-2017. The matched sample includes 538 dual- and 538 single-class firms that are matched according to their IPO date, the 48 Fama and French (1997) industry groups, firm size (assets), and ROA. *Age* is defined as the fiscal year minus the year of founding. *Assets* is total assets measured in millions of dollars. *Capital expenditures* is the ratio of capital expenditures to total assets. *Leverage* is the ratio of book value of long-term debt to total assets. *Research and development* is the ratio of research and development expenditures to total assets. *Return on assets* is the ratio of net income to total assets. *Return on equity* is the ratio of net income in year *t* to book value of common stock at the end of year *t. Sales growth is* a percentage change in revenues from year *t-1* to year *t*. Equality of medians is tested using the Pearson's chi-squared test (and equality of means—using the two-sided t-test).

	Full sample			Matched sample		
	Single class	Dual class	*p-value of difference*	Single class	Dual class	*p-value of difference*
Age	7	11	*0.000*	10	10	*0.597*
Assets (million dollars)	49.0	205.4	*0.000*	143.8	165.3	*0.292*
Capital expenditures	4.60%	4.47%	*0.563*	4.57%	4.47%	*0.926*
Leverage	2.28%	10.73%	*0.000*	9.59%	8.67%	*0.760*
Research and development (means)	7.19%	3.86%	*0.000*	3.75%	4.31%	*0.358*
Return on assets	1.75%	2.06%	*0.538*	1.78%	1.99%	*0.903*
Return on equity	3.48%	4.86%	*0.184*	4.39%	4.43%	*0.975*
Sales growth	39.76%	31.65%	*0.001*	33.01%	34.08%	*0.922*
IPO size (% of total post-IPO shares)	28.96	30.20	*0.221*	28.16	30.88	*0.075*

Table 4. The relative valuation of dual- and single-class firms and its change along the life cycle (Tobin's Q analysis)

Tobin's Q is measured as the market-to-book ratio of the firm (see Appendix A). We winsorize Tobin's Q at the 5 and 95 percentiles on each calendar year. Panel A shows Tobin's Q in years relative to the IPO for the full sample of dual- and single-class firms. Panels B through D show Tobin's Q in years relative to the IPO for the matched sample of 538 dual- and 538 single-class firms that are matched according to their IPO date, the 48 Fama and French (1997) industry groups, firm size (assets), and ROA. N is the number of firms. 'IPO' denotes the fiscal year end following the IPO. 'IPO+1' denotes the fiscal year end one year after the IPO, and so on till "9+" that reports an average of Q in year IPO+9 and later. (In column "9+" we compute first the average per firm and then the average across firms.) Equality of means is tested using the two-sided t-test.

Panel A: Full sample

Variable		IPO	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5	IPO+6	IPO+7	IPO+8	9+ (average)
Dual Tobin's Q (mean)		3.00	2.44	2.22	2.01	1.90	1.82	1.65	1.63	1.69	1.70
	N =	647	594	523	437	372	310	280	254	231	216
Single Tobin's Q (mean)		3.21	2.59	2.42	2.41	2.33	2.26	2.26	2.23	2.22	2.11
	N =	7185	6701	5908	5174	4466	3893	3421	3075	2773	2552
Dual class premium (in terms of Tobin's Q)		-0.21	-0.14	-0.20	-0.40	-0.42	-0.44	-0.60	-0.60	-0.52	-0.41
p-value of difference		*0.056*	*0.130*	*0.044*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*

Panel B: Matched sample

Variable		IPO	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5	IPO+6	IPO+7	IPO+8	9+ (average)
Dual Tobin's Q (mean)		3.12	2.51	2.28	2.03	1.90	1.82	1.64	1.61	1.69	1.68
	N =	533	497	439	369	314	267	239	216	197	183
Single Tobin's Q (mean)		2.76	2.34	2.16	1.99	1.90	1.83	1.95	1.94	2.05	1.86
	N =	532	489	435	371	314	278	242	224	203	185
Dual class premium (in terms of Tobin's Q)		0.36	0.17	0.12	0.04	0.00	-0.01	-0.31	-0.33	-0.36	-0.18
p-value of difference		*0.017*	*0.199*	*0.355*	*0.742*	*0.982*	*0.937*	*0.030*	*0.027*	*0.039*	*0.165*

Table 4 (continued)

Panel C: Matched and balanced sample up to 6 years after the IPO (N=123)

	IPO	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5	IPO+6
Dual Tobin's Q (mean)	3.06	2.65	2.39	2.10	1.80	1.83	1.76
Single Tobin's Q (mean)	2.57	2.23	2.05	1.89	1.75	1.74	1.89
Dual class premium (in terms of Tobin's Q)	0.49	0.42	0.34	0.21	0.05	0.09	-0.13
p-value of difference	*0.043*	*0.042*	*0.053*	*0.310*	*0.779*	*0.484*	*0.470*

Panel D: Matched and balanced sample up to 9 years after the IPO (N=76)

	IPO	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5	IPO+6	IPO+7	IPO+8	IPO+9
Dual Tobin's Q (mean)	3.30	2.91	2.61	2.22	1.95	1.92	1.89	1.79	1.94	1.96
Single Tobin's Q (mean)	2.67	2.39	2.19	1.99	1.99	1.95	2.18	2.22	2.29	2.21
Dual class premium (in terms of Tobin's Q)	0.63	0.52	0.42	0.23	-0.05	-0.04	-0.29	-0.43	-0.35	-0.25
p-value of difference	*0.066*	*0.075*	*0.069*	*0.438*	*0.854*	*0.841*	*0.286*	*0.117*	*0.258*	*0.374*

Table 5. Tobin's Q analysis of dual class firms' valuation premium by firms' listing age

The table reports the results of OLS regressions from different year-clusters relative to the IPO, where the dependent variable is Tobin's Q. *Tobin's Q* is measured as the market-to-book ratio of the firm (see Appendix A), and is winsorized at the 5 and 95 percentiles on each calendar year. Panel A (B) reports the results in the full (matched) sample of single and dual class firms. The matched sample of dual- and single-class firms is used over the period 1980-2017; matching is done are matched according to their IPO date, the 48 Fama and French (1997) industry groups, firm size (assets), and ROA. *Dual dummy* equals one if the company has a dual-class share structure at the respective fiscal year-end, otherwise the variable is equal to zero. *Size* is the natural logarithm of total assets in million US dollars (MUSD). *ROA* is return on assets, measured as the ratio of net income to total assets. *Capital expenditures* is the ratio of capital expenditures to total assets. *Research and development* is the ratio of research and development expenditures to total assets. *PPE* is the ratio of property, plant and equipment to total assets. *Cash balance* is the ratio of cash and short-term investments to total assets. *Leverage* is the ratio of book value of long-term debt to total assets. The first column reports the results from all the firm-years, column (2)—from 1-3 years relative to the IPO, etc. All specifications include year and 48 Fama-French industry groups fixed effects. T-statistics are based on robust standard errors clustered at the firm level and are given in parentheses. ***, **, and * refers to statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A. Full sample

		Years relative to the IPO			
	All	1-3	4-5	6-8	9+
Dual dummy	0.004	0.24***	0.068	-0.16**	-0.22***
	(0.08)	(3.58)	(0.82)	(-2.30)	(-2.90)
Size	-0.041***	-0.092***	-0.077***	-0.079***	0.017
	(-3.42)	(-5.61)	(-3.76)	(-3.74)	(0.98)
ROA	-0.38***	-0.29***	-0.61***	-0.50***	-0.21
	(-5.68)	(-3.59)	(-4.67)	(-3.36)	(-1.28)
Capital expenditures	0.042***	0.029***	0.041***	0.047***	0.059***
	(20.46)	(11.69)	(9.68)	(9.26)	(11.08)
Research and development	0.027***	0.025***	0.021***	0.025***	0.038***
	(12.60)	(9.99)	(5.58)	(5.52)	(8.91)
PPE	-0.95***	-0.66***	-0.90***	-0.79***	-1.17***
	(-10.73)	(-5.72)	(-5.84)	(-4.56)	(-7.59)
Cash balance	0.018***	0.015***	0.020***	0.015***	0.014***
	(22.12)	(12.59)	(11.20)	(7.66)	(8.70)
Leverage	0.21**	-0.17	0.10	0.39**	0.50***
	(2.21)	(-1.47)	(0.65)	(2.40)	(3.13)
Constant	1.77***	2.11***	1.84***	1.85***	1.34***
	(27.04)	(23.74)	(15.95)	(15.70)	(12.39)
Industry-year effects	Yes	Yes	Yes	Yes	Yes
Observations	68,681	19,000	8,862	9,859	23,267
Adjusted R-squared	0.266	0.233	0.252	0.241	0.281

Table 5 (continued)

Panel B. Matched sample

	Years relative to the IPO				
	All	1-3	4-5	6-8	9+
Dual dummy	-0.012	0.22**	0.21	-0.15	-0.17*
	(-0.18)	(2.08)	(1.60)	(-1.18)	(-1.67)
Size	-0.044	-0.066	-0.012	-0.066	-0.010
	(-1.54)	(-1.27)	(-0.24)	(-0.90)	(-0.25)
ROA	0.33*	0.59**	0.43	-0.005	0.30
	(1.76)	(2.39)	(1.14)	(-0.006)	(0.84)
Capital expenditures	0.037***	0.020***	0.024*	0.030***	0.039***
	(6.44)	(2.89)	(1.90)	(3.00)	(3.97)
Research and development	0.053***	0.035***	0.028*	0.051	0.075***
	(5.08)	(3.31)	(1.69)	(1.65)	(4.71)
PPE	-0.67***	-0.16	-0.12	-0.47	-0.84***
	(-3.05)	(-0.50)	(-0.38)	(-1.58)	(-2.81)
Cash balance	0.024***	0.029***	0.022***	0.022**	0.015***
	(9.28)	(5.87)	(4.24)	(2.23)	(4.21)
Leverage	0.52*	-0.18	0.003	0.90*	1.14***
	(1.92)	(-0.62)	(0.009)	(1.85)	(2.77)
Constant	1.51***	1.77***	1.25***	1.49***	1.23***
	(8.12)	(5.21)	(3.62)	(3.78)	(4.87)
Industry-year effects	Yes	Yes	Yes	Yes	Yes
Observations	9,151	2,544	1,146	1,304	3,114
Adjusted R-squared	0.309	0.263	0.325	0.405	0.416

Table 6. Robustness tests of the valuation life cycle findings

The table reports the results of valuation regressions in the matched sample. The basic regression specification is identical to that of Panel B in Table 5. Panel A examines the effect of choosing a different age cohorts' system. In Panel B, the dependent variable is Total Q instead of Tobin's Q. (*Total Q*, proposed by Peters and Taylor (2017), is measured by scaling firm market value by the sum of physical and intangible capital.) Panel C examines the effect of tighter matching by using only pairs of dual-and single-class firms whose IPO dates are not more than 12 months apart. (Our original analysis allows up to 24 months difference between IPO dates.) Last, Panel D examines the effect of controlling for ownership concentration. *Dual dummy* equals one if the company has a dual-class share structure at the respective fiscal year-end, otherwise the variable is equal to zero. *Equity stake of controlling shareholders* is the proportion of firm equity held by controlling shareholders. T-statistics are based on robust standard errors clustered at the firm level and are given in parentheses. ***, **, and * refers to statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A. The effect of different age cohorts

	Years relative to the IPO					
	All	0-2	3-5	6-8	9-11	12+
Dual dummy	-0.012	0.26**	0.24**	-0.15	-0.19	-0.19
	(-0.18)	(2.42)	(2.12)	(-1.18)	(-1.27)	(-1.54)
Explanatory variables and controls as in Table 5 Panel B	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,151	2,860	1,873	1,304	1,003	2,111
Adjusted R-squared	0.309	0.290	0.330	0.405	0.474	0.383

Panel B. The effect of using Total Q as the dependent variable

	Years relative to the IPO				
	All	1-3	4-5	6-8	9+
Dual dummy	0.13	0.59***	0.48**	0.071	-0.19
	(1.12)	(2.86)	(2.35)	(0.38)	(-1.41)
Explanatory variables and controls as in Table 5 Panel B	Yes	Yes	Yes	Yes	Yes
Observations	8,725	2,433	1,097	1,265	2,941
Adjusted R-squared	0.227	0.151	0.223	0.170	0.170

Panel C. The effect of restricting the maximum difference in matched firms' IPO dates to 12 months

	Years relative to the IPO				
	All	1-3	4-5	6-8	9+
Dual dummy	0.10	0.24*	0.36*	0.10	-0.073
	(1.10)	(1.74)	(1.95)	(0.65)	(-0.53)
Explanatory variables and controls as in Table 5 Panel B	Yes	Yes	Yes	Yes	Yes
Observations	4,634	1,312	578	640	1,561
Adjusted R-squared	0.303	0.240	0.439	0.397	0.526

Table 6 (continued)

Panel D. The effect of a balanced panel (76 pairs of single and dual-class firms that remain listed on the exchange for at least nine years after their IPO)

	Years relative to the IPO				
	All	1-3	4-5	6-8	9
Dual dummy	-0.043	0.34	0.026	-0.25	-0.24
	(-0.26)	(1.08)	(0.14)	(-1.05)	(-0.29)
Explanatory variables and controls as in Table 5 Panel B	Yes	Yes	Yes	Yes	Yes
Observations	1,368	456	304	456	152
Adjusted R-squared	0.379	0.317	0.597	0.506	0.402

Panel E. The effect of controlling for ownership concentration

	Years relative to the IPO				
	All	1-3	4-5	6-8	9+
Dual dummy	0.035	0.33*	0.37*	0.014	-0.16
	(0.34)	(1.84)	(1.69)	(0.073)	(-0.78)
Equity stake of controlling shareholders	-0.52	-0.069	-0.93	-1.19	-1.69**
	(-0.86)	(-0.058)	(-0.62)	(-1.14)	(-2.24)
Equity stake of controlling shareholders squared	0.80	0.29	1.48	1.31	1.76**
	(1.05)	(0.20)	(0.70)	(0.93)	(2.13)
Explanatory variables and controls as in Table 5 Panel B	Yes	Yes	Yes	Yes	Yes
Observations	4,710	1,385	724	880	1,441
Adjusted R-squared	0.302	0.206	0.190	0.328	0.524

Table 7. Factors affecting the benefits of dual class structures at the IPO

The sample is limited to IPOs in 1995-2015 with at least two years of post-IPO public life. It is a matched sample that comprises 291 dual-class and 291 single-class firms. Panel A describes the sample, while Panels B and C present the findings. In Panels B and C, the dependent variable is Tobin's Q at the end of the fiscal year of the IPO (Year 0). *Dual dummy* equals one if the company has a dual-class share structure at the IPO; otherwise the variable equals zero. *Founder-director* dummy equals one for firms that have a founder that is a human and s/he is one of the directors and executive officers at the IPO; otherwise the variable is zero. *Early IPO dummy* equals one if the number of years from firm founding till its IPO is below the median (10 years); IPOs that take place ten or more years after the founding are defined as *Mature IPO*s. *Founder age* is retrieved from the table of directors and officers in the IPO prospectus (SEC S-1 filing), and is limited to the sample of firms with founder-directors. Young Founder-director dummy equals one if the founder-director's age at the IPO is below the median (49 years); Non-young Founder-directors have equal or above median age at the IPO. The t-statistics are based on robust standard errors, and are reported in parentheses. ***, **, and * refers to statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A. The founders sample

	Dual-class firms		Single-class firms		Difference
	Mean	N	Mean	N	p-value
All sample firms	100%	291	100%	291	
Founder is a director at the IPO (Founder-director dummy=1)	51.2%	149	39.9%	116	*** *0.006*
incl. Founder is Chief Executive Officer (CEO)		110		78	
Founder is Chairman of the Board (but not CEO)		28		22	
Founder is a Director (but not CEO or COB)		11		16	
Founder's age at IPO in years (for founder-directors only)	51.9	149	49.1	116	** *0.038*

Table 7 (continued)

Panel B. The effect of founder-directors in early and mature IPOs

	(1)	(2)	(3)	(4)	(5)
Dual dummy	0.33*				
	(1.78)				
Founder-director dummy		0.13			
		(0.61)			
Early IPO dummy			0.29		
			(1.44)		
Non-Founder-director & Early IPO & Single class				0.13	
				(0.38)	
Founder-director & Mature IPO & Single class				-0.24	
				(-0.69)	
Founder-director & Early IPO & Single class				0.26	
				(0.65)	
Non-Founder-director & Mature IPO & Dual class				0.28	
				(1.05)	
Non-Founder-director & Early IPO & Dual class				0.30	
				(0.81)	
Founder-director & Mature IPO & Dual class				0.21	
				(0.70)	
Founder-director & Early IPO & Dual class				0.68**	0.62**
				(2.08)	(1.97)
Dual class (excluding Founder-director & Early IPO)					0.21
					(1.06)
Explanatory variables and controls as in Table 5 Panel B	Yes	Yes	Yes	Yes	Yes
Reference group (embedded in the intercept)	All Single class	All Non-Founder-directors	All Mature IPOs	Mature IPOs of single class firms with non-founder-directors	All Single class
Observations	582	582	582	582	582
Adjusted R-squared	0.239	0.235	0.237	0.235	0.240

Table 7 (continued)

Panel C. The effect of founder-director's age at IPO

	Firms with founder-directors			All founders sample
	All	Dual-class	Single-class	
	(1)	(2)	(3)	(4)
Founder's age at IPO	-0.035**	-0.059**	-0.022	
	(-1.99)	(-2.60)	(-0.64)	
Non-Founder-director & Dual-class				0.23
				(0.98)
Young Founder-director & Early IPO & Dual-class				1.20**
				(2.38)
Non-young Founder-director & Early IPO & Dual-class				-0.002
				(-0.007)
Young Founder-director & Mature IPO & Dual-class				-0.068
				(-0.12)
Non-young Founder-director & Mature IPO & Dual-class				0.26
				(0.87)
Explanatory variables and controls as in Table 5 Panel B	Yes	Yes	Yes	Yes
Observations	265	149	116	582
Adjusted R-squared	0.248	0.279	0.187	0.244

Table 8. The effect of a decline in founder-directors' interest in the firm

The table reports the results of cross-sectional difference regressions in the sample of 95 dual-class firms with founder-directors at the IPO and at least five years of post-IPO public life. The dependent variable is Tobin's Q at the end of year IPO+5 minus Tobin's Q at the end of the IPO year. *Founder-director* dummy equals one for firms that have a founder who is a natural person and s/he is one of the directors and executive officers at the IPO. *Founder-director leave (dummy)* equals one if there was a founder-director at the IPO but s/he left the Board of Directors by the end of year IPO+5. *Founder & family net disposals in MUSD* is calculated using insider transactions data (SEC Form 4) as the sum of all the share disposals by founders and their family members from the IPO to five years after the IPO, minus all their share acquisitions (in cash) during the same time period. Family includes all the persons with the same surname as the founder, including family trusts. *Founder & family net disposals (dummy)* equals one if *Founder & family net disposals* is larger than zero; otherwise the variable equals zero. The regressions include all the control variables as in Table 5 Panel B, but in the difference form (IPO+5 year minus IPO year). The t-statistics are based on robust standard errors, and are reported in parentheses. ***, **, and * refers to statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)
Founder-director leave (dummy)	-0.44			-0.63	-0.30
	(-0.63)			(-0.91)	(-0.42)
Founder & Family net disposals (in MUSD)		-0.0014***		-0.0015***	
		(-4.77)		(-4.80)	
Founder & Family net disposals (dummy)			-0.77*		-0.75*
			(-1.89)		(-1.80)
d_Size	-1.08***	-0.81**	-1.04***	-0.80**	-1.04***
	(-3.14)	(-2.53)	(-3.06)	(-2.53)	(-3.05)
d_ROA	0.80	0.83	0.79	0.76	0.76
	(1.48)	(1.62)	(1.63)	(1.35)	(1.49)
d_Capital expenditures	0.029	0.016	0.019	0.017	0.020
	(1.15)	(0.69)	(0.719)	(0.720)	(0.749)
d_PPE	-1.36	-0.93	-0.96	-0.68	-0.86
	(-0.55)	(-0.41)	(-0.37)	(-0.30)	(-0.33)
d_Research and development	0.009	0.040	0.006	0.039	0.005
	(0.18)	(0.92)	(0.12)	(0.87)	(0.11)
d_Cash balance	0.032*	0.022	0.031*	0.023	0.031*
	(1.73)	(1.28)	(1.74)	(1.30)	(1.75)
d_Leverage	-0.84	-1.12	-0.98	-1.13	-0.98
	(-1.10)	(-1.55)	(-1.41)	(-1.60)	(-1.42)
Constant	-0.16	-0.19	0.30	-0.12	0.31
	(-0.57)	(-0.68)	(0.86)	(-0.41)	(0.88)
Observations	95	95	95	95	95
Adjusted R-squared	0.172	0.305	0.195	0.305	0.187

Table 9. The effect of the wedge between voting and equity rights on dual class firm's valuation

The table reports the results of panel regressions using firm fixed effects in the years from IPO to IPO+5 (six years), where the dependent variable is Tobin's Q. *Tobin's Q* is measured as the market-to-book ratio of the firm (see Appendix A), and is winsorized at the 5 and 95 percentiles on each calendar year. *Wedge (insiders)* is the difference between voting and equity rights of all the directors and executive officers as a group. *Wedge (high-vote shares)* is the difference between high-vote shares' total vote percentage and their total equity percentage (i.e. the maximum possible wedge if one holds all high-vote shares). *Size* is the natural logarithm of total assets (in MUSD). *ROA* is return on assets, measured as the ratio of net income to total assets. *Capital expenditures* is the ratio of capital expenditures to total assets. *Research and development* is the ratio of research and development expenditures to total assets. *PPE* is the ratio of property, plant and equipment to total assets. *Cash balance* is the ratio of cash and short-term investments to total assets *Leverage* is the ratio of book value of long-term debt to total assets. Columns (1) and (2) report the results using insider wedge in a balanced and unbalanced post-1995 IPO dual-class firm sample, respectively. Columns (3) and (4) report the overall sample results, using the wedge of high vote shares in a balanced sample of dual class firms and in the same balanced sample excluding firms that unified their shares, respectively. All specifications include Years from IPO dummies. T-statistics are given in parentheses. ***, **, and * refers to statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
Wedge (insiders)	-0.95	-0.90*		
	(-1.60)	(-1.68)		
Wedge (high-vote shares)			-0.59*	-1.28**
			(-1.66)	(-2.47)
Size	-0.83***	-0.85***	-0.68***	-0.88***
	(-7.66)	(-8.81)	(-8.00)	(-8.23)
ROA	0.74***	0.77***	0.50**	1.28***
	(3.24)	(4.37)	(2.48)	(3.94)
Capital expenditures	0.032***	0.025**	0.035***	0.046***
	(2.71)	(2.56)	(4.32)	(4.23)
Research and development	0.041***	0.044***	0.042***	0.038***
	(3.45)	(4.85)	(5.21)	(3.42)
PPE	-2.30**	-2.19***	-1.21*	-0.85
	(-2.42)	(-3.17)	(-1.72)	(-0.96)
Cash balance	0.016***	0.019***	0.014***	0.014***
	(3.02)	(4.31)	(3.67)	(2.74)
Leverage	-0.49	-0.46	-0.34	-0.31
	(-1.20)	(-1.39)	(-1.06)	(-0.83)
Constant	7.35***	7.48***	6.32***	7.42***
	(9.33)	(11.42)	(11.06)	(10.22)
Years from IPO dummies	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Observations	1,140	1,640	1,909	1,215
R-squared	0.169	0.165	0.172	0.207

Table 10. The change in controlling shareholders holdings along dual class firms' life cycle

Controlling shareholders' equity share is the fraction of cash flow rights held by the controlling shareholders. *Vote minus equity (wedge)* is the difference between controlling shareholders' voting and equity rights. *Wedge (high-vote shares)* is the difference between the voting and equity rights of the high-vote class of shares. Panels A and B present the mean controlling shareholders' equity and wedge for dual-class firms in various years relative to the IPO. In Panel A we report means for all dual-class firms with available ownership data (for the period 1995-2017); a firm is dropped from the sample after the unification. In Panel B we report means for a balanced panel of dual-class firms with complete ownership data that preserved the dual-class structure for at least 5 years after the IPO. In Panel C we report balanced sample means regarding the whole class of high-vote shares.

	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5	IPO+6	IPO+7	IPO+8	IPO+9	IPO+1 vs. IPO+5 (p-value)
Panel A. Dual-class firms										
Controlling shareholders' equity share, %	49.93	45.25	41.48	40.02	37.13	36.98	37.49	38.37	38.12	*0.000*
Vote minus equity (wedge), %	16.22	17.38	19.81	20.97	22.01	22.40	23.68	24.91	26.38	*0.005*
Number of observations	358	326	281	243	208	196	172	163	151	
Panel B. Dual-class firms with complete ownership data that survived at least 5 years after the IPO (post-1995 data)										
Controlling shareholders' equity share, %	53.24	48.79	43.89	39.92	38.11					*0.000*
Vote minus equity (wedge), %	19.33	21.20	22.75	22.61	22.53					*0.002*
Number of observations	149	149	149	149	149					
Panel C. Dual-class firms with complete ownership data that survived at least 5 years after the IPO (including pre- and post-1995 IPOs)										
Equity stake (high-vote shares), %	50.70	47.34	42.16	39.85	37.79					*0.000*
Wedge (high-vote shares), %	27.80	29.56	31.07	32.30	32.22					*0.017*
Number of observations	271	271	271	271	271					

Table 11. The effect of dual class firm's listing age (time from IPO) on unification frequency

The table reports the results of pooled Probit regressions, where the dependent variable is an indicator variable equal to one in the year preceding a share class unification. The sample of all dual-class firms is used over the period 1995-2017. *Controlling shareholders' equity* is the fraction of cash flow rights held by the controlling shareholders. *Controlling shareholders vote* is the fraction of voting rights held by the controlling shareholders. *Wedge* is the difference between controlling shareholders' vote and equity rights. *Ln years from IPO* is the natural logarithm of the number of years since the IPO. *Media dummy* equals one if the company belongs to the media industries that are defined as SIC Codes 2710-11, 2720-21, 2730-31, 4830, 4832-33, 4840-41, 7810, 7812, and 7820. *Size* is the natural logarithm of total assets (in MUSD). *Growth opportunities* is measured as the median Tobin's Q ratio of single-class firms in the respective 48 Fama and French (1997) industry group. *Equity issue dummy (years +1, +2 or +3)* equals one if the company issues common or preferred stocks in years t+1, t+2 or t+3, where t is the unification year; otherwise the variable equals zero. All specifications include year fixed effects. Z-statistics are based on robust standard errors clustered at the firm level and are given in parentheses. ***, **, and * refers to statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)
Wedge	-1.35***	-1.36***	
	(-4.95)	(-4.99)	
Controlling shareholders' equity			-0.0034
			(-1.61)
Ln years from IPO	-0.09*	0.34	0.26
	(-1.93)	(1.52)	(1.19)
Squared Ln years from IPO		-0.13**	-0.12*
		(-1.97)	(-1.95)
Media dummy	-0.37**	-0.39**	-0.47***
	(-2.12)	(-2.27)	(-2.77)
Size	-0.04	-0.04	-0.03
	(-1.60)	(-1.47)	(-1.37)
Growth opportunities	0.17***	0.16***	0.17***
	(3.21)	(3.16)	(3.13)
Equity issue dummy (Years +1, +2 or +3)	0.40***	0.40***	0.31***
	(3.22)	(3.26)	(2.59)
Constant	-1.75***	-2.01***	-1.96***
	(-7.37)	(-7.48)	(-6.88)
Year dummies	Yes	Yes	Yes
Observations	3,350	3,350	3,343
Pseudo R-squared	0.082	0.086	0.058

Figure 1. The relative valuation of dual- vs. single-class firms along the life cycle

The figure reports the mean difference between the Tobin's Q of dual-class firms and their matched single-class firms in years relative to the IPO. Tobin's Q is measured as the market-to-book ratio of the firm (see Appendix A). We winsorize Tobin's Q at the 5 and 95 percentiles on each calendar year. The sample includes 538 dual- and 538 single-class firms that are matched according to their IPO date, the 48 Fama and French (1997) industry groups, firm size (assets), and ROA. 'IPO' denotes the fiscal year end following the IPO. 'IPO+1' denotes the fiscal year end one year after the IPO, and so on.

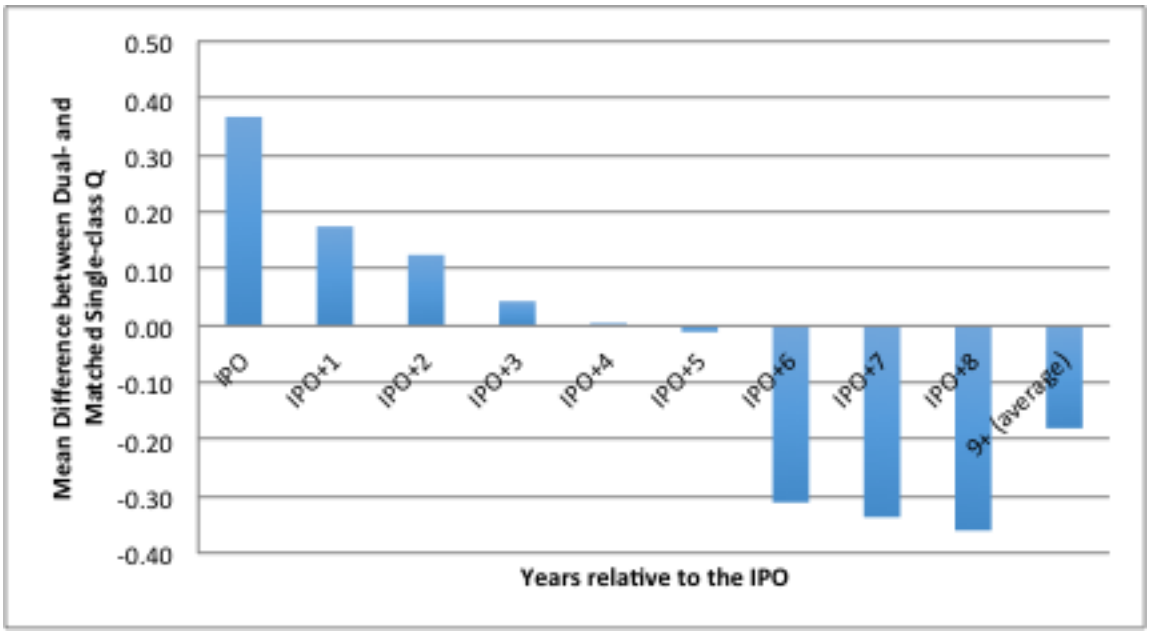

Figure 2. Voluntary dual class share unifications along the life cycle

The figure presents the number of unifications in years relative to the IPO. In this figure, we use a sample of 450 dual-class firms that had an IPO in the year 2008 or earlier, i.e., firms that could have survived for 9 years (till 2017, the end of our sample period) after the IPO.

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