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CEO Turnover at Dual-Class Firms

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CEO Turnover at Dual-Class Firms

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Abstract

In recent years, tech companies have increasingly gone public with dual-class structures, in which founders hold high-vote stock. Commentators argue that this entrenches founder-CEOs, allowing them to retain power long after the IPO. We examine a sample of U.S. VC-backed firms that went public from 2002 to 2020. Our time-to-event analysis finds that CEOs of dual-class firms have a median post-IPO tenure of 6.6 years, compared to 4.3 years for a matched sample of single-class firms. While this supports concerns of CEO entrenchment, the difference is largely due to a higher rate of M&A sales involving single-class firms. Excluding M&A-related turnover, there is no significant difference in CEO tenure, challenging the view that dual-class structures shield underperforming CEOs from internal pressure to step down. Furthermore, poor firm performance frequently precedes turnover of dual-class CEOs, and news coverage often mentions this as a reason for the change. Most dual-class turnovers occurred well before any sunset clauses were triggered, calling into question the focus on this governance mechanism.

Keywords: Dual-Class, Sunset Provisions, Startups, Venture Capital, Initial Public Offering (IPO), Founder Control, CEO Turnover, Controlling Shareholder, Corporate Governance

JEL Classification: D22, G24, G28, G30, G32, G34, K22, L22, L26

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Introduction

Dual-class structures have existed since the early twentieth century and have provoked debate for nearly as long. Although companies with dual-class stock were relatively rare in the twentieth century, in the past two decades an increasing number of companies have gone public with such a structure (Aggarwal et al. 2022). In the typical dual-class IPO, the company sells a class of common stock that provides one vote per share to public investors, while a separate class of high-vote common stock (e.g., 10 votes per share) is awarded to the firm's founders and other insiders.[1] Historically, dual-class structures were primarily used by family-owned firms and media companies to consolidate insider control (Fisch and Solomon 2023; Gordon 1988). In the twenty-first century, a growing number of dual-class IPOs involve venture capital ("VC")-backed tech companies such as Google, which started the trend in 2004, and was followed by prominent examples such as Facebook, Snap, Airbnb, and Palantir.[2] At tech firms, a founder-CEO is often the main party protected by the dual-class structure. Founder-CEO Mark Zuckerberg, for instance, retains voting control at Meta (formerly Facebook) more than a decade after its 2012 IPO through a dual-class arrangement.

Under the conventional view, dual-class stock structures are a form of entrenchment that disenfranchises minority shareholders, blocks takeover activity, exacerbates agency costs, and removes accountability for poorly performing managers (e.g., Bebchuk and Kastiel 2017).[3] Subscribing to this view, institutional investors and their trade associations such as the Council of Institutional Investors have derided dual-class stock, pushing for its exclusion or restriction from certain indices (Hirst and Kastiel 2019), and proxy advisor Institutional Shareholder Services (ISS) has adopted voting guidelines against its use.[4] Under the conventional view, the problem with dual-class stock is that it violates the principle of one-share-one-vote and creates a wedge between the holder's voting power and economic ownership thereby increasing agency costs.

Challenging this view, some scholars and practitioners argue that dual-class structures may be desirable in some firms as a way to protect the founder's idiosyncratic vision, providing insulation from short-term market pressures, and encouraging long-term planning and innovation (Goshen and Hamdani, 2016; Berger 2017, 2018; Proctor and Bernstein 2019; Chemmanur and Jiao 2012; Kim and Michaely 2019). Goshen and Hamdani (2016, p.

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[1] For terminology purposes, we refer to a firm as being "dual-class" whenever it has more than 1 class of common stock, which includes some firms that authorize more than two classes of common stock and some firms where the dual class structure does not include high-vote stock at all and may be used for tax reasons (e.g., an Up-C structure). For the empirical analysis, however, we limit our analysis to the subset of dual-class firms that issue high-vote stock to insiders.

[2] From 2004 to 2020, 12.6% of companies went public with a dual-class structure (Shobe and Shobe 2021).

[3] Adams and Ferreira (2008, p. 52) observe: "The idea that the 'one share-one vote' principle is desirable is what might be considered the dominant view in the literature."

[4] Institutional Shareholder Services, United States Proxy Voting Guidelines Benchmark Policy Recommendations, Jan. 2024, https://www.issgovernance.com/file/policy/active/americas/US-Voting-Guidelines.pdf?v=1 (recommending a vote against proposals for dual-class structures and withholding or voting against a director in a dual-class company, with limited exceptions, such as sunset provision of seven years or less).

565) explain, for instance, that "[t]he entrepreneur values control because it protects her against the possibility of subsequent midstream investor doubt and objections regarding either the entrepreneur's vision or her abilities." Furthermore, some literature finds that dual-class firms are associated with higher research and development (R&D) expenses and greater innovation compared to single-class firms (Baran et al. 2019; Jordan et al. 2016; Lehn et al. 1990). Scholars have also argued that dual-class stock might mitigate the potential anticompetitive effect of common ownership (Battocletti et al. 2023).

As a compromise of sorts, the current policy debate focuses on whether investors or regulators should require a sunset provision for dual-class firms. These provisions require the conversion of high-vote shares to single-vote shares after a specified time period or upon certain triggering events (Bebchuk and Kastiel 2017; Fisch and Solomon 2019; Sharfman 2019). Bebchuk and Kastiel (2017, p. 617), for example, argue that "[a]bsent a sunset provision, the lifecycle of a dual-class structure is perpetual, and this infinite duration is likely to create growing risks and costs over time."

Notably, both sides of the debate assume, without further inquiry, that founders protected by dual-class stock in fact hold onto power and remain CEO or otherwise exert day-to-day control over the firm long after the IPO. Mark Zuckerberg's long tenure at Meta fits this account, but is it true generally? There are certainly counterexamples. Aran and Pollman (2024) highlight cases of prominent VC-backed firms that went public – Peloton, Pinterest, and Blue Apron – where a founder-CEO who held dual-class stock was nonetheless removed from the CEO position. Lyft provides another notable example that challenges the entrenchment narrative. When Lyft went public in 2019, its dual-class structure gave founders Logan Green and John Zimmer 20 votes per share while public investors received single-vote shares. Collectively Green and Zimmer held approximately 48% of the voting power immediately after Lyft's IPO. This arrangement prompted the Council of Institutional Investors to warn that investors would be "virtually powerless," leaving founders to govern "as supreme monarchs in perpetuity."[5] Yet just four years after the IPO, Green voluntarily stepped down as CEO, transitioning to board chair. The company appointed an outside executive, David Risher, as the new CEO and each founder's voting power declined approximately 10 percentage points over this period.

Still, the prevalence of these cases remains unexplored. While empirical studies have examined the relationship between financial underperformance and CEO turnover, both voluntary and involuntary, they have not focused on the specific context of dual-class firms (Jenter and Kanaan 2015; Darouichi et al. 2021). This leaves a significant gap in our understanding of whether such CEO removals represent a widespread trend or merely isolated incidents within dual-class firms.

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[5] https://www.cii.org/lyftdualclassipo. For additional background on the dual class structure at Lyft *see* Bebchuk, Lucian, and Kobi Kastiel. "The Perils of Lyft's Dual-Class Structure." Harvard Law School Forum on Corporate Governance (blog). April 3, 2019. https://corpgov.law.harvard.edu/2019/04/03/the-perils-of-lyfts-dual-class-structure/ (cautioning that "Lyft's co-founders will be able to retain control for an extremely long period, which could well last for five or six decades, even if they become value-decreasing leaders" as opposed to a scenario where "Lyft were to go public with a standard one-share-one-vote structure," allowing "public investors [] to facilitate a leadership change").

We aim to address this gap by analyzing the tenure of founder-CEOs at single and dual-class firms and the reasons for CEO turnover in these firms. To explore this issue, we compile a dataset of U.S. headquartered VC-backed firms that completed an IPO from 2002 to 2020, a period following the dot-com crash and during which dual-class structures became more common. Our focus on U.S. firms enables us to analyze these governance choices in a setting with consistent institutional frameworks and reliable data availability.[6] We concentrate on VC-backed firms because they represent the segment where dual-class structures have grown most rapidly in recent years and are at the center of current debates about founder control. Additionally, VC-backed firms often feature the kind of intangible assets and growth opportunities that dual-class advocates argue justify greater founder control. Naturally, the relationships we document may differ in other institutional contexts or types of firms.

We collect additional data about the CEO at the time of IPO, including their voting power, the wedge between their voting rights and economic rights, and any dual-class sunset clauses. For the period after the IPO, we track all CEO replacements and, in each case, we code the reason for replacement and whether the former CEO retained an important role at the firm thereafter.

This project faces two central research design challenges. First, the choice to adopt a dual-class IPO structure is endogenous. It may reflect the perceived importance of the founder's vision to the firm's success or simply the founder's bargaining power going into the IPO. Consequently, we cannot conclude that differences in CEO turnover between single-class and dual-class firms in our sample are *caused* by the high-vote stock as opposed to selection effect. We partially address this concern by employing propensity score matching to find a group of single-class IPOs that are similar to the dual-class group on observable features. Matching cannot, however, account for unobserved differences. We emphasize that single-class firms should not be thought of as a randomly assigned "control" group, but rather as a descriptive reference point – similar to CEO turnover rates reported in prior research (Jenter and Lewellen 2021; Kaplan and Minton 2012). Furthermore, instead of comparing dual-class to single-class, most of the regression analysis in section III and IV focuses on variation within different dual-class firms to better understand why some dual-class firms replace the founder-CEO despite the presence of high-vote stock and others do not.

Second, we can only observe CEO turnovers that occurred by October 31, 2023, when we started data collection. Coupled with the fact that the firms in our sample went public at different times, there is substantial variation in post-IPO observation periods and right-censoring of CEO tenure. Censoring makes it difficult to determine how long a typical CEO will hold onto the job. If we were to simply report survival times up to the date of replacement or date of censoring, we would understate average CEO tenure. Similarly, limiting analysis to

[6] While dual-class structures are increasingly common among non-U.S. firms, we focus on U.S. firms for several reasons. First, the institutional context, particularly regarding minority shareholder protection and enforcement mechanisms, differs significantly across jurisdictions. Second, the motivations for adopting dual-class structures may vary systematically between developed and emerging markets, with some non-U.S. firms using these structures primarily to maintain political connections or navigate regulatory requirements rather than to protect idiosyncratic vision. Third, data availability and quality for ownership structures and corporate governance arrangements tends to be more reliable and standardized for U.S. firms. For analysis of dual-class structures in non-U.S. markets, see Cao et al. (2011) and Bennedsen and Meisner Nielsen (2006).

the subset of firms that experienced a turnover event by October 2023 would create its own bias, as it would exclude the group of CEOs who are most successful at holding onto the job. To address this challenge, we use time-to-event analysis (also known as survival analysis). This statistical method, widely adopted in epidemiological studies where patients have varying follow-up periods, enables us to estimate the overall probability of CEO retention, using data from both completed and ongoing CEO tenures.

Using a Kaplan-Meier survival function, we find that the median time from IPO to CEO turnover is longer in dual-class firms (6.6 years) compared to single-class firms (4.3 years), a finding consistent with the view that dual-class structures entrench founder-CEOs. However, this difference is driven by a higher rate of M&A sales involving single-class firms. When we conduct a competing risks analysis separating M&A-related turnover from internal turnover – where the board replaces the CEO or the CEO resigns – we find no significant difference in internal turnover rates between dual-class and single-class firms.[7] Despite dual-class CEOs holding, on average, three times more voting power post-IPO (26%) than single-class CEOs (8%), their risk of being replaced internally is not significantly different. Further, contrary to expectations, we find no evidence that larger voting-ownership wedges reduce turnover risk—even firms with wedges exceeding 20% show no meaningful reduction in turnover probability.

Similar to research on CEO turnover in other settings (Jenter and Lewellen 2021), we find that dual-class firms are more likely to replace the CEO, voluntarily or involuntary, following poor shareholder returns. Notably, the link between performance and CEO turnover does not depend on the CEO's vote power. Even dual-class CEOs commanding substantial voting power are replaced in the wake of poor shareholder returns. This is consistent with qualitative accounts. Press releases and news coverage of dual-class turnovers involving firms in our sample often mention poor economic performance as a reason for the change.

We acknowledge that formal CEO replacement may not fully capture the extent of founder control. Founders with substantial voting rights often retain significant de facto influence even after stepping down as CEO, whether through board chairmanship or maintaining other leadership roles. Our results show that the percentage of former CEOs who remain with their firms after stepping down from the CEO role is similar in dual-class (69%) and single-class firms (66%), but their ultimate dispositions differ notably: dual-class CEOs are more likely to maintain officer positions for extended periods and less likely to relinquish all leadership roles. We also document cases of 'boomerang CEOs,' where founders return to a second term, a pattern that is relatively rare but more common in dual-class firms. Although stepping down from the CEO position typically marks the beginning of a complete departure from the firm—as evidenced by the many former CEOs in our sample who went on to found new ventures—the dual-class structure could potentially provide mechanisms for continued influence beyond the CEO role.

Our research makes several contributions. First, our study contributes generally to the scholarship on dual-class stock structures. Much of the literature assumes that such structures entrench founder-CEOs and debates whether this may be desirable, because it

[7] For more on the distinction between external turnover – due to events such the firm being acquired or liquidated – and internal turnover, either voluntary or involuntary see Kaplan and Minton (2012).

allows for the promotion of idiosyncratic vision (Goshen and Hamdani 2016; Berger 2017, 2018), protects firm-specific investments (Fischel 1987; Choi 2018),[8] reduces barriers to going public by allowing founders to maintain control while accessing public capital markets (Smart and Zutter 2003; Eldar 2023), lowers the cost of capital or otherwise increases efficiency (Lund 2019; Grinapell 2020), or is instead undesirable, because of agency costs and the ability of controllers to extract private benefits (Bebchuk, Kraakman, and Triantis 2000; Bebchuk and Kastiel 2017, 2019; Masulis, Wang, and Xie 2009).[9] To the best of our knowledge, we provide the first detailed examination of CEO turnover involving the recent wave of dual-class IPOs.[10] Our results challenge the common wisdom that dual-class stock shields underperforming founder-CEOs from internal discipline and turnover.

Second, our findings have implications for the strand of literature on the valuation of dual-class firms over their life cycle (Cremers, Lauterbach, and Pajuste 2018; Kim and Michaely 2019).[11] Our study shows that dual-class CEOs are often replaced within 7 years of the IPO, before the point in a firm's life cycle when these theories suggest dual-class structures begin to harm shareholder returns. This suggests that any reduction in shareholder value associated with dual-class structures in the later stages of a firm's life cycle may be driven by factors other than managerial entrenchment. Lower rates of M&A sales involving dual-class firms could be one such factor, though further research is needed to fully understand these dynamics.[12]

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[8] Relatedly, a strand of literature suggests that IPO firms' use of takeover defenses creates positive spillovers for large customers to promote value creation for some firms by enabling commitments to long-term projects and bonding to the relationship-specific investments of stakeholders (Johnson, Karpoff, and Yi 2015; Cremers, Litov, and Sepe 2017).

[9] A different line of opposition to dual-class structures stems from concerns about social costs and negative externalities (Battocletti, Enriques, and Romano 2023; Shill 2023).

[10] One study examining dual-class firms and stock pricing based on companies that went public between 1990 and 1998 found that internal CEO turnover was less frequent among dual-class firms but notes that this difference was not statistically significant (Smart, Thirumalai, and Zutter 2008, p. 108). During the 1990s most dual-class IPOs did not involve VC-backed firms and studies using more recent data have found different patterns related to shareholder returns associated with dual-class IPOs.

[11] Although scholars have long studied the valuation and pricing of dual-class structures, to date the outcomes are inconclusive and mixed (Adams and Ferreira 2008; Burkart and Lee 2008). One line of research finds no significant association between dual-class structures and shareholder returns or a positive effect (Partch 1987; Cornett and Vetsuypens 1989; Dimitrov and Jain 2006). Another group of studies documents lower mean valuations of dual-class companies relative to single-class companies (Jarrell and Poulsen 1988; Gompers, Ishii, and Metrick 2010; Smart, Thirumalai, and Zutter 2008). Cremers, Lauterbach, and Pajuste (2024) show that the wedge, or difference between the insider voting and equity stakes, tends to increase as the dual-class firm ages, and the valuation premium of dual-class firms tends to dissipate. Similarly, using a data set of corporate voting rights between 1971 to 2015, Kim and Michaely (2019) find a valuation premium of young dual-class firms, but declining valuation over time as they become less efficient in their margins, innovation, and labor productivity compared to single-class firms.

[12] Additional research could also enrich the literature on the interaction between various antitakeover protections at IPO (see, e.g., Daines and Klausner 2001; Ganor 2016), and the use of contract or shareholder agreements in public company governance as control-enhancing devices or "stealth" dual-class (see, e.g., Fisch 2021; Rauterberg 2021; Shobe and Shobe 2022; Sen 2024).

Third, we contribute to the literature on sunset provisions in dual-class firms. Existing literature has taxonomized various types of sunset provisions (Winden 2018; Petrucci 2024), explored the post-IPO performance of firms with such provisions (Liang et al. 2022), and debated their structure and merits (Bebchuk and Kastiel 2017; Fisch and Solomon 2019; Sharfman 2019), but it has not investigated their impact on CEO turnover.[13] Almost half of the dual-class IPOs in our sample include a time-based sunset. Yet, we find no significant difference between the survival function of dual-class firms that provided a sunset and those that do not. While this may partially reflect the fact that time-based sunsets are a recent development and many have yet to reach their trigger date, it also raises questions about whether sunset provisions are needed to alleviate the costs of managerial entrenchment as envisioned by existing literature (e.g., Hossain and Kryzanowski 2019; Yan 2020), and in regulatory policy debates around the world (Reddy 2021; Hopt and Kalss 2024).

Finally, our study adds to the extensive literature linking CEO turnover to corporate governance. We do so by focusing on dual-class firms—a context largely overlooked by the turnover literature.[14] Existing research relies on news reports and rough proxies (e.g., CEO age or board status) to distinguish voluntary turnover from involuntary or forced turnover (Jenter and Kanaan 2015; Shen and Cannella 2002). These inputs are sometimes combined into a weighted algorithm to improve accuracy (Parrino 1997), but even so the classification is imperfect. Illustrative of this problem, Jenter and Lewellen (2021, p. 570) show that turnovers "classified as *voluntary* are significantly more frequent at lower levels of performance, suggesting that many of them are in fact performance induced." Dual-class firms provide an interesting window into this literature: while their structure can weaken a board's ability to force CEO departure, we find that CEO turnover remains highly sensitive to firm performance, with news reports often citing poor performance as a reason for change. These findings suggest that the dichotomous categorization of CEO turnover as either voluntary or involuntary may be overly reductive. Instead, dual-class CEO transitions appear to exist on a continuum, where various degrees of internal and external pressures intersect with personal decision-making.

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[13] Hossain and Kryzanowski (2019, p. 1210-11) observe: "Future research is needed to examine the effects of such [sunset] provisions on the benefits and costs of dual-class share structures, and in particular compared to single-class and other share ownership structures . . ." because "comprehensive theoretical and empirical studies investigating the effects of these provisions are missing from the literature."

[14] Research on CEO turnover and dismissal consistently shows an inverse relationship with firm performance, though this relationship is statistically significant but economically small (see, e.g., Murphy and Zimmerman 1993; Huson et al. 2001; Parrino 1997; Kaplan and Minton 2012; Jenter and Kanaan 2015; Jenter and Lewellen 2021). Notably, CEO age is a more important factor in explaining turnover than performance. While performance is the most studied antecedent of dismissal, other factors include CEO characteristics, board composition, and financial misconduct. The sensitivity of turnover to performance varies across firms based on factors like board composition and concentrated outside stock holdings. However, these variations explain little of the overall turnover patterns (see, e.g., Brickley 2003; Gentry et al. 2021). Notably, dual or multi-class ownership structures are largely overlooked in these studies, despite their potential impact on CEO turnover dynamics. Fisman et al. (2014) is a notable exception, providing a theoretical model that explores tradeoffs associated with limiting shareholder power to replace the CEO through entrenchment devices, including dual-class stock. The empirical analysis in Fisman et al. (2014), however, relies on the G-Index as a proxy for entrenchment and does not separately measure the effect of dual-class stock.

The rest of this paper is organized as follows. Section II provides data and descriptive statistics. Section III explores the impact of shareholder returns and CEO vote power on the rate of turnover at dual-class firms and provides regression estimates. Section IV considers robustness checks and alternative interpretations. Section V concludes.

II. Data and Descriptive Statistics

To explore CEO turnover among dual-class firms we collect data on IPO firms. The remainder of this section describes (i) the sample frame and sources of data, (ii) summary statistics for the full sample and a subset of matched dual- and single-class firms, (iii) CEO characteristics and control rights, and (iv) CEO turnover among firms in the matched subsample.

a. Sample Frame

We start with the list of IPOs maintained by Jay Ritter and identify VC-backed firms that completed an IPO between 1/1/2002 and 12/31/2020 (n=1,339)[15] – a period following the dotcom crash and during which dual-class IPOs became more common. We remove firms headquartered outside the U.S. and firms where we could not find accounting data from COMPUSTAT. Based on these filters, we are left with 1,009 firms – of which Ritter classifies 119 as dual-class and 890 as single-class. Some of the firms classified as dual-class, however, did not issue high-vote stock, and instead use a multiclass structure for regulatory or tax reasons (e.g., Up-C structure), or issue non-voting stock for compensation purposes or as consideration in merger transactions, rather than to consolidate voting power. Our empirical analysis is based on dual-class IPOs in which CEOs hold high-vote stock while public investors hold low-vote stock. Our focus on firms that provide high-vote rights is similar to other empirical studies of dual-class firms (Aggarwal et al. 2022; Tallarita 2024). We end up with 79 dual-class IPOs and 890 single-class IPOs (the "full sample").

b. Sample Description and Matching

Table 1 (Panel A) reports descriptive statistics and highlights important differences between dual- and single-class firms in the full sample. On average, firms that complete a dual-class IPO are larger and more valuable. For example, the average market cap for dual-class firms is a full order of magnitude higher than for single-class firms ($23.3 billion vs $1.9 billion).[16] Similarly, dual-class firms on average report more assets ($4,598 million vs $715 million) and hire more employees (3,600 vs 1,000). There are also industry differences. Dual-class firms, for example, are more likely to be in a software or IT related industry, whereas single-class firms are more likely to be in the health, bio-science, or pharmaceutical industry. Moreover, dual-class firms went public more recently – the average IPO year for dual-class firms is 2016 as compared to 2012 for single-class firms. This underscores that widespread use of dual-class IPOs for venture backed firms is a recent development (Aggarwal et al.

[15] https://site.warrington.ufl.edu/ritter/ipo-data/.

[16] For each firm we record the average market cap across all years in which the firm appears in our study.

2022). Figure 1 shows the number of single-class IPOs and dual-class IPOs each year for the full sample of venture-backed IPOs.

[Insert Table 1 and Figure 1 here]

Collectively, Table 1 (Panel A) highlights large differences between the dual-class and single-class firms in the full sample. A difference of means test finds a significant difference (1% level) between the two groups on each of the measures reported above.

To improve covariate overlap we employ propensity score matching. For each dual-class firm, we find a 1-to-1 nearest neighbor match (without replacement) from within the set of single-class firms. Propensity scores are estimated from the following explanatory variables: (i) market capitalization, (ii) total assets, (iii) number of employees, (iv) IPO year, and (v) industry (2-digit SIC codes).[17] Panel B (Table 1) reports descriptive statistics limited to the 79 dual-class and 79 single-class firms identified as nearest-neighbor pairs (the "matched sample"). While propensity score matching does not lead to perfect covariate balance, the remaining differences that we find between the single-class and the dual-class group are not statistically significant for any of the variables reported in Table 1. Firms in the matched sample are relatively similar in terms of size, number of employees, IPO timing, and industry. In addition, dual-class and single-class firms in the matched sample went public around the same time. For both groups the median IPO year is 2017. This reduces concern that CEO survival in either group is biased by temporal patterns in different IPO vintages.

Our decision to use 1-to-1 matching instead of inverse weighting or entropy balancing is informed by the fact that manually collecting data on CEO control rights and classifying the reason for each CEO turnover event is labor-intensive and it would not be practical to collect this level of detail for all 890 single-class firms in the full sample. By identifying a group of single-class firms that are fairly similar to the dual-class firms in our study, 1-to-1 matching allowed us to focus our data collection efforts where they are most valuable.

c. CEO Characteristics and Control Rights

Our next step is to identify the CEO at the time of the IPO for each firm in the matched sample and then record various characteristics of the CEO and control rights associated with her equity holdings. Unfortunately, standard research databases do not cover such information. COMPUSTAT does not identify senior executives and ExecuComp - a database often used to track CEO equity holdings – has limited coverage for IPO firms, and no coverage of dual-class IPOs from 2017 to 2023.[18]

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[17] For industry we use dummy variables for each 2-digit SIC code that represents at least 5% of the firms in the dual-class group. Software/IT (sic2=73) and Pharmaceuticals (sic2=28) are the only 2-digit SIC codes that meet this threshold.

[18] Indeed, only 137 out of the 1,009 IPO firms in our full sample show up in ExecuComp within 2 years of the IPO, and only 16 of these were dual class IPOs. ExecuComp covers the S&P 1500 index, and while many IPO firms have a sizeable market cap, they often fail to have a large enough public float to qualify for inclusion in the S&P 1500 until several years after their IPO. Moreover, S&P barred multiclass firms that went public

To address this, we hand-collect data from IPO prospectuses [424b4 filings] filed with the SEC. For each firm we record: (i) the age of the CEO at the time of the IPO, (ii) whether the CEO was a founder of the firm, (iii) percent of total voting power beneficially held by the CEO, (iv) the CEO's equity stake (and subsequent wedge between their voting rights and cash flow rights), (v) whether the CEO held high-vote stock, and if so (vi) whether the high-vote stock included a time-based sunset.[19] For dual-class firms we also collect data from each firm's annual proxy filing (DEF 14A) for each year after the IPO to record any changes in the CEO's fraction of the shareholder voting rights.

We use Capital IQ to observe CEO turnover in the period after the IPO. We include all turnover events that occur prior to the start of data collection (October 31, 2023). This includes voluntary turnover (due to retirement or new opportunity), involuntary turnover (board fires the CEO), and turnover created by external events such the firm being acquired or liquidated. For each turnover event, a research assistant used press releases and news coverage to classify the reason for the CEO turnover. We divide internal turnover into two subcategories: (i) performance-related and (ii) retirement or new opportunity. We classify a turnover as performance-related if the press release or news coverage of the event mentions economic difficulties or other performance issues as a reason for the change. Internal turnovers where the press release and news coverage did not mention any economic difficulties fall into a residual category: retirement or new opportunity. Still, a firm may obscure the true reason for replacement, perhaps to let the CEO save face or to preserve a harmonious relationship making it difficult to classify each turnover as voluntary or involuntary (Jenter and Lewellen 2021). Finally, a small number of turnovers are due to death or illness.

Table 2 presents CEO characteristics at the time of the IPO and their percent of total voting power for the firms in the matched sample (including voting proxies and other contractual arrangements as disclosed in SEC filings). In terms of personal characteristics, the CEO of a firm that completes a dual-class IPO is more likely to be a founder (89% vs 41%) and is younger on average (45 vs 50).

The impact of the high-vote stock can be seen by comparing the average percentage of the vote held by the CEO in dual-class firms (25.6%) as compared to single-class firms (7.7%). For the CEO of each dual-class firm we calculate the dual-class wedge immediately following the IPO by subtracting the CEO's equity cash flow rights from her voting power.[20] The average dual class wedge is 9.7%; however, the median wedge is only 2.1%. For most CEOs there is little gap between their voting power and their economic interest immediately following the IPO. The large wedge between Mark Zuckerberg's voting power and equity

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between 2017 to 2023 from being included in their indices – effectively limiting ExecuComp's coverage of dual-class firms. *See* S&P Global, S&P Dow Jones Indices Announces Decision on Multi-Class Shares and Voting Rules (July 31, 2017), https://press.spglobal.com/2017-07-31-S-P-Dow-Jones-Indices-Announces-Decision-on-Multi-Class-Shares-and-Voting-Rules.

[19] We focus on time-based sunset provisions due to data availability limitations. This focus is appropriate as Kim, Levit and Michaely (2024) find that other types of sunset provisions (ownership and transfer-based) rarely lead to unification (i.e., removal of dual-class structure).

[20] For instance, if a CEO controlled 18% of the vote and 6% of the equity cash flows, we would record the "dual-class wedge" as 12%.

rights (approximately 36%) at the time of the Facebook IPO is an outlier.[21] One reason that the CEO's dual-class wedge is often modest is that other parties – most notably VC investors – also hold high vote shares immediately after the IPO diluting the CEOs vote power.

Dual-class CEOs on average hold a larger fraction of the equity cash flow rights (15.9%) as compared to single-class CEOs (7.7%) immediately after the IPO. Dual-class CEOs have more to lose, on average, if the firm performs poorly. Even though dual-class CEOs hold large voting blocks, most do not have outright control. Indeed, among the 79 dual-class firms in our sample, only 11 have CEOs controlling more than half of the voting power immediately following the IPO.

CEO voting power at dual-class firms often increases in the years immediately after the IPO (Tallarita 2024). This is primarily caused by other holders of high-vote stock, notably VC investors and sometimes also co-founders, selling their high-vote shares after the IPO. The sale or transfer of high-vote shares typically causes such shares to lose their high-vote right. Consequently, when a VC investor sells its high-vote stock, the percentage of high-vote stock held by the CEO increases, and thereby consolidates her vote percentage. Figure 2 reports the average change in the CEO's vote percentage since IPO for our sample of dual-class firms. Two years after the IPO, a typical CEO's voting power has increased on average by 7 percentage points relative to her share of the vote at the IPO. Even accounting for such post-IPO changes, however, we only find 24 dual-class firms (20% of the sample) in which the CEO held more than 50% of the vote at any point.

[Insert Table 2 and figure 2 here]

Still, there is reason to think the CEO's formal voting power reported in Table 2 may understate her de facto influence over the vote. For one thing, high-vote stock is often held by multiple parties who are likely to vote with the founder-CEO. This occurs most obviously when other senior executives and other founders are also given high-vote stock. These parties may have similar interests as or a longstanding relationship with the CEO, and if their voting power were aggregated with that of the CEO, the combined amount would suggest that the CEO can influence (if not outright control) a substantially higher percentage of the vote. Another group that often holds high-vote stock following the IPO are the firm's VC investors. VC investors have strong incentives to maintain a founder-friendly reputation (Broughman and Wansley 2023). The CEO has typically been working with these investors since before the IPO and likely has some comfort that their vision for the firm is consistent with the CEO's own vision. While IPO prospectus filings alone may not provide complete visibility into these relationships, SEC regulations require disclosure of voting-related contracts, arrangements, understandings, or relationships in proxy filings.[22] Our data

[21] In Mark Zuckerberg's case the wedge between his voting rights and economic interest is not just due to the high vote stock, but also a voting proxy that he held over 27% of the vote immediately following the IPO. See https://www.sec.gov/Archives/edgar/data/1326801/000119312512240111/d287954d424b4.htm.

[22] Section 13(d) of the Securities Exchange Act of 1934 requires investors beneficially owning more than 5 percent of a covered class of equity securities to file a Schedule 13D with the SEC. Item 6 of Schedule 13D mandates disclosure of any contracts, arrangements, understandings, or relationships (legal or otherwise)

collection process incorporates this information, mitigating concerns about underestimation of CEO voting influence.

d. CEO Turnover

As of October 31, 2023 (time of data collection), 91 out of 158 (57%) firms in our matched sample had experienced a CEO-turnover event. Turnover includes (i) external turnover (where the CEO's tenure ends because the firm was acquired or liquidated), (ii) internal turnover (where the board replaces the CEO or she otherwise resigns) and (iii) other causes (where the CEO's tenure ends due to illness or death). Table 3 reports a classification of turnover events for each group.

External turnover via acquisition is more common for single-class firms (25%) compared to dual-class firms (14%). While CEOs of acquired firms may remain employed at the surviving entity, they lose their position as the top executive of an independent public company and, in the case of dual-class firms, the protection of high-vote stock.

Internal turnover, including performance-related departures, occurs at similar rates in both dual-class and single-class firms. We examine performance-related departures using both qualitative evidence from news coverage and press releases, as well as a systematic analysis in Section III(a) that examines the relationship between CEO turnover and objective measures of firm performance using shareholder returns and accounting data.

For 67 of the 158 firms in our matched sample, the CEO at IPO remained in this position until October 31, 2023. These observations are right censored by the timing of data collection. Since the firms in our sample went public on different dates, we observe them over varying time periods. To account for uneven observation periods and right censoring, we use survival analysis. This approach, while relatively new in studies of CEO tenure, is well suited for our project.[23] Survival analysis assumes that censoring is independent of survival prospects (non-informative censoring). In our setting, censoring is independent of CEO characteristics or performance and is simply driven by the timing of data collection. This differs from challenges often encountered in epidemiological studies, where patients may drop out for reasons correlated with the event of interest (e.g., a patient in declining health choosing to discontinue participation in the study).

Figure 3 graphs a separate Kaplan-Meier survivor function for the single-class and dual-class firms in the matched sample. Consistent with the conventional view, we find a longer time-to-event in dual-class firms, with a median of 6.6 years compared to 4.3 years for single-class firms ($p = .09$). This difference is primarily due to the higher rate of acquisitions targeting single-class firms (25%) as compared to dual-class (14%).

To illustrate, we employ competing risks analysis to compare CEO turnover due to two distinct events (i) merger-related turnover and (ii) internal replacement. These events are competing because the occurrence of one event precludes the observation of the other. We

relating to the issuer's securities, including agreements regarding voting rights or the giving or withholding of proxies. This information is subsequently reflected in the description of beneficial owners in the company's DEF 14A proxy filings.

[23] Recent economic studies of CEO tenure include survival analysis (see, e.g., Aktas et al. 2021; Klein 2018).

estimate separate cumulative incidence functions (CIF) for dual- and single-class firms using the non-parametric Aalen-Johansen estimator. Results are reported in Figure 4. The CIF represents the probability of experiencing a specific type of turnover by time t while acknowledging the possibility of other competing events. We find no significant difference in the cumulative incidence of internal replacements between dual-class and single-class firms ($p = .67$). However, we find a significant difference in merger-related turnover between dual-class and single-class firms ($p = .05$), with dual-class firms experiencing lower cumulative incidence of merger-related departures.

In summary, dual-class firms show longer median CEO survival time due to fewer acquisitions, but maintain internal turnover rates—whether through board action or CEO resignation—similar to those of single-class firms.

[**Insert Figures 3 & 4 here**]

We also compare the annual likelihood of CEO turnover for dual-class and single-class firms. Table 4 reports this for each calendar year from 2004 through the first 10 months of 2023. To adjust for mid-year IPOs and turnovers we determine the number of days-at-risk occurring each calendar year and use this to calculate the annual turnover percentage.[24] For dual-class firms we find an annual probability of turnover equal to 10.5% and for single-class firms the annual probability is 14.8%. If we exclude acquisitions and limit our analysis to internal turnovers, the annual probability of turnover falls to 7.3% for dual-class firms and to 9.1% for single-class firms. Notably, the annual probability of CEO turnover involving the firms in our dual-class sample is somewhat lower than turnover rates found in other settings. For example, Jenter and Lewellen (2021) find an 11.7% annual probability of CEO turnover (excluding acquisitions) involving S&P 1500 firms from 1993 to 2011 and Kaplan and Mintor (2012) find a 15.8% annual turnover rate (including turnovers due to acquisition). These numbers are similar to the turnover rate we find among single-class firms.

[**Insert Table 4 here**]

Overall, we find less frequent and slower turnover among CEOs of dual-class firms. This observation aligns with the conventional view that managers protected by dual-class stock are shielded from market pressure. However, we cannot infer that these results are caused by the voting protection conferred by high-vote stock. The findings are equally consistent with two alternative explanations: first, firms that believe a particular executive is critical to the firm's success —including those with "superstar CEOs" (Hamdani and Kastiel 2022)— are more likely to offer dual-class stock in the first place; second, firms more open to being acquisition targets—particularly those pursuing what is known as "a double exit" (IPO followed by an acquisition)—may be more inclined to go public with a single class of common stock.

More surprising to the conventional account is that when we focus on internal board-initiated turnover we find little difference between turnover at dual-class and single-class

[24] The annual turnover percentage is found by dividing the number of turnover events by [days-at-risk/365.25].

firms. Indeed, our competing risks analysis shows that, controlling for acquisition-related turnover, we could not reject the null hypothesis that dual and single-class firms have the same internal survivor function (Fig. 4). And when CEOs of dual-class firms are replaced, it is often reported that the turnover is due to poor performance (Table 3). These findings contrast with the view that dual-class structures allow CEOs to maintain "indefinite," "lifetime" or "perpetual" control over their companies, and appear inconsistent with the concern that dual-class CEOs are insulated from market disciplinary forces and the threat of replacement (Bebchuk and Kastiel 2017, 2019; Council of Institutional Investors). In the next section, we explore in more detail the connection between firm performance, CEO vote power, and CEO turnover at dual-class firms.

III. Firm Performance, Vote Power, and CEO Turnover

The prior section describes the amount and frequency of CEO turnover and duration of CEO tenure but does not explore the drivers of turnover. In this section, we consider two possible explanations: (a) firm performance and (b) CEO vote power. We take advantage of heterogeneity within dual-class firms on these dimensions to estimate the relationship between economic returns and voting power and the likelihood of CEO turnover.

a. Firm Performance

Prior research in the CEO turnover literature documents increased turnover at poorly performing firms (Jenter and Lewellen 2021; Kaplan and Minton 2012). A board may have trouble directly observing how its CEO is performing on the job and thus rely on economic performance – shareholder returns and accounting measures – to provide an indirect signal of the CEO's quality. The board can then use this signal (among other inputs) to decide whether to retain or replace the firm's management team. At a dual-class firm, however, the board may be controlled by a controlling shareholder-CEO, insulating managers from market accountability, and consequently we might expect a firm's economic performance to have less impact on CEO turnover. In this subsection we explore whether this is an accurate account by looking at the relationship between shareholder returns and accounting proxies for firm performance and the rate of CEO turnover at dual-class firms.

We evaluate firm performance using annualized stock returns and 1-factor alphas. Monthly stock returns are collected from CRSP for each firm in the matched sample starting a month after the firm's IPO. For firm *i* in year *t* we calculate:

$$Stock\ Return_{it} = [\prod_{k=1}^{n}(1 + R_{ik})]^{\frac{12}{k}} - 1 \quad (1)$$

where R_{ik} is the monthly return for firm i in month k, where $k \in (1, \ldots n)$ represents the months for which we have return data for firm i in year t. To calculate 1-factor alphas we separately estimate the CAPM equation for each firm-year pair in our database[25]:

[25] We only estimate Eq. (2) for full-year observations. For part-year observations (e.g., a firm goes public in September and only has three months of return data for the calendar year) using regression coefficients from

$$R_{ik} - R_{fk} = \alpha_{it} + \beta_{it}(R_{mk} - R_{fk}) + \epsilon_{it} \quad (2)$$

where R_{fk} is the monthly risk-free rate, R_{mk} is the monthly return of the CRSP value-weighted market portfolio, α_{it} is the monthly alpha for firm *i* in year *t*, β_{it} is CAPM's beta, and ϵ_{it} is the error term. We then calculate an annualized value:

$$Alpha_{it} = [\prod_{k=1}^{n}(1 + \alpha_{it})]^{\frac{12}{k}} - 1 \quad (3)$$

One benefit of using $Alpha_{it}$, as compared to unadjusted stock returns, is *Alpha* adjusts for performance relative to the rest of the market. Generating a 20% annual return during a period when the market was up 30% does not count as strong economic performance. *Alpha* is effectively an abnormal return relative to the CAPM pricing model and better reflects a firm's performance relative to the rest of the market.

Figures 5 and 6 demonstrate the relationship between firm performance and CEO turnover across performance quartiles. We divided our sample into quartiles based on $Stock\ Return_{it}$ and $Alpha_{it}$ for both dual-class firms and single-class firms in the matched sample. The highest returns fall into quartile 4, while the lowest are in quartile 1. Figure 5 displays the annual probability of CEO turnover in year t+1 for each quartile of $Stock\ Return_{it}$. Similarly, Figure 6 presents this probability for each quartile of $Alpha_{it}$.

For both dual-class and single-class firms, there is an inverse relationship between the likelihood of CEO turnover and the return quartiles. In Figure 5, the data indicates that the annual probability of CEO turnover is roughly twice as high in the lowest quartile compared to the highest. Similarly, Figure 6 reveals a heightened risk of turnover in the lower quartiles, underscoring that not only absolute performance but also relative market performance influences turnover decisions. We cannot say whether turnover is more (or less) sensitive to economic performance at the dual-class firms as compared to single-class. Our results, however, call into question the idea that dual class removes market accountability for underperformance.

[Insert Figures 5 and 6 here]

b. CEO Vote Power and Sunset Clauses

By departing from "one share one vote," dual-class structures rearrange voting power in a manner that benefits the holders of high-vote stock. There is considerable variation, however, between dual-class firms in the concentration of voting power (Tallarita 2024). At some dual-class firms, even with high-vote stock, the CEO may hold only a small fraction of the shareholder vote, insufficient to shield her job. By contrast at other dual-class firms the CEO may hold a large fraction of the vote, possibly even a controlling position; in which case the CEO could use such votes to entrench her managerial position. This section uses variation in CEO vote power (at both dual- and single-class firms) to see if CEOs who hold a larger share of the vote are in fact less likely to be replaced.

Eq. (2) can lead to extreme outliers for alpha and beta. To adjust for this, we use the firm's average beta from other years in our sample and use this to calculate abnormal monthly returns for the part-year data.

Figure 7 illustrates the annual probability of CEO turnover across various intervals of CEO vote power. For dual-class firms, the data does not suggest a clear pattern – CEO vote power appears largely uncorrelated with the likelihood of turnover. In contrast, single-class firms display a sharp inverse relationship between CEO vote power and turnover likelihood. CEOs of single-class firms with less voting power face a higher probability of replacement. Table 5 tabulates the data reported in Figure 7 and reports combined results aggregating data for dual- and single-class firms. The combined sample highlights the vulnerability of CEOs who hold less than 5% of the vote. Such individuals are more than twice as likely to be replaced in any given year (21.4%) as compared to CEOs who hold more than 5% of the vote (9.2%).[26] Of course, this correlation could simply reflect that weak CEOs receive less equity. Interestingly, the difference between holding 10% of the vote and holding a substantially larger percentage, often needed to satisfy legal definitions of shareholder control, appears to have less impact on turnover.

Table 5 also reports the annual likelihood of turnover at dual-class firms based on the wedge between the CEO's voting rights and financial interest (Panel B). The conventional account predicts that agency costs increase as the wedge expands and consequently, we might expect an inverse relationship between CEO turnover and the dual-class wedge. Panel B, however, does not show a clear pattern. Indeed, when the wedge is less than 5%, the annual probability of turnover (9.4%) is slightly less than it is for dual-class wedge greater than 5% (11.0%). Perhaps most telling is that even when the wedge is very large (> 20%) we do not see any notable decline in the annual probability of turnover.

[Insert Figure 7 and Table 5 here]

For an alternative perspective on CEO vote power, we explore whether the triggering of a dual-class sunset clause has an impact on CEO turnover. A time-based sunset clause will automatically convert the firm's high-vote stock to a single-class share structure with one vote per share after a defined period, typically 7 years or 10 years after the IPO (Tallarita 2024). This conversion effectively reduces the CEO's voting power and removes whatever protection the high-vote stock was providing. Consequently, we would expect to see an increased risk of turnover after a sunset clause is triggered, and possibly even before it is triggered since the parties may negotiate turnover in the shadow of an upcoming sunset.

In our analysis of 79 dual-class firms, 37 implemented time-based sunset clauses with an average trigger-date 9.6 years following the IPO. We compare average CEO tenure in dual-class firms that provide a sunset to those that do not. Figure 8 plots Kaplan-Meier survival functions for each group. We find a median survival time of 6.6 years for dual-class firms that do not provide a sunset, compared to 7.5 years for dual-class firms with a sunset. This difference is not significant ($p = .39$).

[Insert Figure 8 and Table 6 here]

[26] This is calculated from the data in Table 5.

For the subset of dual-class firms with a sunset clause (n=37), we take advantage of longitudinal variation to see if turnover is more likely to occur before or after each firm's sunset clause has been triggered. For both the pre-trigger and post-trigger period, we calculate the ratio of turnover events divided by the number of days-at-risk of turnover. Table 6 reports results. CEOs at this subset of firms experienced a total of 57,849 days-at-risk of turnover and 19 turnover events, with most of these days (54,221) and turnovers (17) occurring before the sunset clause trigger-date.

Indeed, only 6 of the 37 sunset firms reached the trigger date with their CEO still in place. The remaining observations were either censored (n=14) or they replaced their CEO *well before* the sunset date (n=17). The 6 firms that reached the sunset date generated 3,628 days of survival data after the sunset triggered and 2 turnover events, implying an annual post-sunset turnover probability of 20.1%. While this is a higher rate of annual turnover than for the rest of the sample, we hesitate to draw much inference from two observations. Moreover, one of the two CEOs who was replaced after the sunset trigger-date subsequently reclaimed the CEO position (Vladimir Shmunis at RingCentral).

In our sample, 17 of the 37 firms that went public with a sunset clause replaced the IPO CEO prior to the triggering of the sunset. In each case the turnover occurred at least 3 years before the sunset date, suggesting these turnovers were not done in the "shadow" of an imminent sunset. The annual turnover probability for the pre-sunset period is 11.5%, only slightly higher than the 10.5% annual turnover probability for the dual-class group as a whole (Table 4). Our data suggests that sunset clauses, as currently implemented, do not substantially alter the dynamics of CEO turnover. Most dual-class CEOs do not hold the job long enough for the sunset clause to come into play. The overall picture both with sunsets and with dual-class CEO vote power in general suggests that the CEO's fraction of the shareholder vote has little impact on turnover.

c. Multivariate Regression Analysis

To test the relationship between (i) firm performance and (ii) CEO vote power and CEO turnover in the period following each firm's IPO, we employ multivariate regression analysis. We use a Cox proportional hazard model due to its suitability for survival analysis and right-censored data. This model is particularly relevant for our setting as several CEOs from both the dual-class and the single-class samples remained in their positions when we collected data in October 2023. The Cox model assumes the relationship between covariates and the hazard rate is constant over time. We believe this is reasonable in the CEO turnover context since an executive can be fired at any time and firm performance and CEO control over the board operate the same regardless of timing. Put differently, there is no obvious reason to think that firm performance or CEO vote power would be more (or less) important in year n as compared to year n+1.

Since our key explanatory variables – firm performance and CEO vote power – change over time, we split each CEO's survival into multiple observation periods. Each observation period is defined by the fiscal year-end dates reported in the firm's 10K filings. Explanatory variables are measured at the start of each observation period. So, for turnover events that

occur in fiscal year *t*, we use data from SEC filings and share returns covering year *t-1*.[27] We include separate models for dual-class and single-class firms.

To assess economic performance and other factors influencing CEO turnover, we include several explanatory variables. As discussed above, we measure firm performance using annualized stock returns (*Stock Return*) and 1-factor alphas (*Alpha*). As a proxy for the health of each firm's balance sheet we control for the *Inverse Current Ratio*, calculated as short-term debt divided by current assets. This ratio is sometimes used in debt covenants to assess a firm's short-term financial health and liquidity risks.[28] *CEO Vote Percentage* measures the CEO's fraction of the vote. For dual-class firms we also include the *Wedge Ratio*, which equals the *Dual-Class Wedge* as a ratio of *CEO Vote Percentage.* Other control variables include *CEO Age* to account for experience and potential lifecycle effects; *Founder CEO* to differentiate the influence of founder-led versus non-founder-led firms, and *Years Since IPO* to consider the growth phase and stabilization post-IPO. To adjust for industry-specific and temporal effects we include time and industry dummy variables.[29]

Model results are reported in Table 7. A hazard ratio greater than 1 means the covariate is associated with an increased risk of CEO turnover, and a ratio less than 1 implies a decreased risk of turnover. Models (1) to (4) are limited to dual-class firms, while models (5) and (6) are limited to single-class firms. Models (7) and (8) include the full matched sample of both dual- and single-class firms.[30]

For both dual- and single-class firms we find that an increased risk of CEO turnover when a firm suffers bad economic performance. The hazard ratio for *Alpha* and *Stock Return* is less than one in all eight models and statistically significant in most cases. To illustrate, in Model 1 we estimate the hazard ratio for *Alpha* is 0.47 ($p = .04$), indicating that a 1-unit (i.e. 100-percentage point) increase in *Alpha* is associated with a reduced hazard of CEO turnover by approximately 53%. Perhaps more realistic in scale, our model suggests that even a 10-percent-point increase in *Alpha* is associated with a 7.2% decrease in the risk of CEO turnover.[31] Even a modest increase in *Alpha* is associated with a meaningful reduction in turnover. We find a similar relationship between raw *Stock Returns* and turnover. Though *Alpha* is not statistically significant in model (5), which is limited to the single-class

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[27] In each case we use the most recent data that precedes the start of the observation period: accounting data from the 10K filing for year *t-1*, share return data from CRSP that covers the months of year *t-1* and CEO voting power from the DEF 14A filing in year *t-1*. The voting data may be lagged by part of a year as the DEF 14A filing does not necessarily line up with the fiscal year end.

[28] Nini, Sufi, and Smith (2012) document that a statistically significant increase in CEO turnover following the announcement of a violation of a financial covenant in a credit agreement.

[29] To avoid overfitting year dummies with a small sample, we group observations into broader time categories: 2002-2013, 2014-2016, 2017-2019, 2020-2021, and 2022-2023. Most firms in the matched sample have a fiscal year-end that aligns with the calendar year. For firms that do not, however, we assign the fiscal year to the time dummy for which it has greatest overlap.

[30] For each model we run a Proportional-Hazard (PH)-test. In each case, except for Model (2), the PH-test was unable to reject that null hypothesis that model coefficients are independent of analysis time, supporting our use of the Cox model.

[31] We calculate the hazard ratio for a 0.1 increase in *Alpha* from the expression $0.473^{.1} \approx 0.928$. A 10% increase in *Alpha Returns* decreases the hazard of CEO turnover by approximately 7.2% (= 1-.928).

subsample, we cannot necessarily infer that turnover at single-class firms is less sensitive to market performance. Unobserved differences between dual-class and single-class firms could correlate with turnover decisions and mask the impact of economic performance. On the other hand, we find no evidence that dual-class stock shields CEOs from market accountability. When dual-class firms perform badly, the CEO is at increased risk of turnover.

Consistent with Figure 7, *CEO Vote Percentage* appears to matter at single-class firms but not at dual-class firms. At single-class firms we find that a high *CEO Vote Percentage* is associated with less turnover activity [Models 5 & 6]. At dual-class firms, however, there is no clear relationship between *CEO Vote Percentage* and turnover. As reported in Table 5 we know that this is primarily driven by high turnover at single-class firms where the CEO holds less than 5% of the vote. We cannot say for sure why vote power appears to matter for single-class turnover but not for dual-class turnover. Contrary to the conventional account, the *Wedge Ratio* is associated with a significant increase in the risk of turnover [Models 3 & 4]. Rather than entrenchment, decoupling a CEO's voting rights and cash flows (if anything) appears associated with shorter tenure and increased likelihood of CEO replacement.

[**Insert Table 7 here**]

IV. Robustness Checks and Alternative Interpretations

This section explores the robustness of our results to panel analysis and discusses alternative interpretations.

a. Panel Analysis

While the Cox model is well suited for survival analysis it does not have a good way to address time-constant unobserved effects that might exist at each firm. To the extent that firm-level unobserved effects correlate with our explanatory variables and with CEO-turnover this could introduce bias. To address this concern, we take advantage of the fact that we have multiple observations for each firm, giving us panel data. We use this to construct a first-difference transformation of a linear equation using *Stock Returns* and *CEO Vote %* to predict the annual likelihood of CEO turnover. Such equation takes the general form:

$$CEO\_Turnover_{it} = \alpha^*(Stock\ Returns_{it}) + \beta^*(CEO\ Vote\ \%_{it}) + \gamma^*X + \varepsilon \quad (4)$$

where ε is the error term and X is a vector of included control variables. $CEO\_Turnover_{it}$ equals 1 if the CEO at firm *i* was replaced in year *t* and 0 otherwise. We construct a first-difference transformation of Eq. (4):

$$\Delta\text{-}CEO\_Turnover_{it} = \alpha^*(\Delta\text{-}Stock\ Returns_{it}) + \beta^*(\Delta\text{-}CEO\ Vote\ \%_{it}) + \gamma^*\Delta X + \varepsilon \quad (5)$$

where Δ indicates the change in each variable from period t-1 to period t. Because the variables are defined by annual SEC filings, Equation 5 effectively reports the annual change in each variable. To illustrate, $\Delta\text{-}CEO\_Vote\%_{it}$ equals the difference between Δ-*CEO_Vote%* in year *t* minus Δ-*CEO_Vote%* in year t-1. The first-difference transformation is similar to a firm fixed-effect model in that it eliminates firm-level time-constant variables, both observed and

unobserved effects.[32] As a consequence, time-invariant measures such as the firm's industry or whether the IPO CEO is a founder, automatically fall out of the analysis. In our setting, the first-difference model can be understood as a discrete-time hazard model: we estimate the hazard of CEO turnover in year t conditional on surviving up till that point (Shumway 2001; Jenkins 1995).

Table 8 reports first-difference regression results estimated separately for dual-class firms (Models 1 & 2) and single-class firms (Models 3 & 4). The results largely corroborate our main findings, subject to the following refinements.

First, the inverse relationship between equity returns and turnover, though still significant in Model (1) (Table 8), is dampened in the first-difference estimates. Note, however, that the coefficient estimates for *Δ-Stock Return* and *Δ-Alpha* are measuring the change in equity returns relative to the prior year. To the extent that one is concerned about persistent year-over-year performance deviations from CAPM at a particular firm (i.e. the ability of a particular management team to generate positive alpha every year) the first-difference model is the correct approach as it will remove this time-constant firm-specific effect and measure whether the particular firm generated a larger positive *Alpha* in year *t* as compared to year *t-1*. This, however, can lead to the odd result that a firm with a positive *Alpha* in year *t* could have a negative *Δ-Alpha* depending on how it compared to year *t-1*. The efficient market hypothesis predicts *Alpha* should revert to zero every year, unless there is a persistent piece of positive (or negative) news that remains hidden from the market for an extended period.[33]

Second, a change in the CEO's voting power at dual-class firms is negatively correlated with turnover. Previously (Fig. 7 & Table 7) we found that the absolute level of CEO vote power at dual class firms was largely uncorrelated with turnover. The first difference results suggest a more nuanced view, regardless of the absolute level, an increase (decrease) in vote power relative to the prior year reduces (heightens) the likelihood of turnover at dual class firms. While this may suggest that the change in voting power enhances (weakens) the CEO's ability to protect their job, it is also possible that a CEO who anticipates leaving in the future may start to sell some of her shares prior to turnover.

Finally, the coefficient estimate for *Δ-Inverse Current Ratio* is positive in each model in Table 8 (and significant in Models 2 & 4). There are sensible reasons why businesses in different industries may carry different levels of short-term liabilities. For instance, retail or manufacturing firms may incur large short-term liabilities related to inventory, whereas a software firm does not need to purchase inventory. In this context a change in the ratio of short-term liabilities to liquid assets from one year to the next may be a more meaningful indicator of financial risk than the absolute level. Consistent with this, CEOs at both dual- and

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[32] In the context of right-censored survival data a firm fixed-effect model would be inappropriate as it would drop all observations from firms in which CEO turnover never occurred. The first-difference model does not suffer this problem, but it does require us to assume that any change in a variable will have its impact in the next time period, and that there are no multi-period lags.

[33] We separately estimate (unreported) the models in Table 8 using *Stock Return* and *Alpha* instead of *Δ-Stock Return* and *Δ-Alpha* and we find a significant negative relationship between equity returns and turnover in each model.

single-class firms are more likely to be replaced when *Δ-Inverse Current Ratio* increases. This finding aligns with research suggesting that financial constraints can serve as a disciplining mechanism on management (Luo 2011), effectively substituting for other governance mechanisms by limiting managerial discretion over cash resources.

[**Insert Table 8 here**]

b. Former CEO as Controlling Shareholder

One concern is that even after a founder is replaced as CEO, retaining a large block of high-vote stock can allow them to maintain considerable power over the firm's direction. For instance, the original CEO may have had an important role in picking their successor, retain a large voting position, and become chair of board after relinquishing the CEO job. The turnover that we document reflects a meaningful change in day-to-day operations, but the founder may nonetheless retain de facto control and could subsequently remove the new CEO or retake the job.

To explore this possibility, for each CEO who was internally replaced or left due to illness we classify the individual's vote power at the time of turnover and their subsequent role (if any) at the firm. Results are reported in Table 9 and cover 26 turnovers at dual-class firms and 32 at single-class firms. The first thing to note is the large gap in vote power at the time of turnover. Internally replaced CEOs at dual-class firms hold on average 34.7% of the vote (median = 29.2%) at the time of turnover, compared to only 7.5% (median = 4.8%) for replaced CEOs at single-class firms.

Most of the replaced CEOs – both dual- and single-class – retain an important role post-turnover. At dual-class firms we find that 69% (=18/26) of departed CEOs stay connected to the firm – 15 became chair of the board and 3 continued as directors or took a non-CEO position. We find a similar result at single-class firms, where 66% (=21/32) stay connected to the firm as either chair of the board or in another director/executive position. We also find, however, that some replaced CEOs move on entirely. For instance, six of the replaced dual-class CEOs went on to found a new venture and six of the replaced single-class CEOs left to become an employee at a different firm. This process of reducing a founder-CEO's managerial influence often occurs gradually, as exemplified by cases like Peloton's John Foley, Blue Apron's Matt Salzberg, Pinterest's Ben Silbermann, and Lyft's Logan Green (Aran and Pollman 2024). Typically, it begins with removal from the CEO position and later extends to departure from the board of directors.

There is a notable difference, however, in the ultimate disposition of departed CEOs in single- and dual-class firms. Among those who initially stayed, in dual-class firms 10 maintained officer positions and 4 departed completely, while in single-class firms only 5 maintained officer positions and 14 departed completely. Additionally, if a founder retains a large block of high-vote stock, they may be able to regain the CEO position later (a "boomerang CEO"), which occurred in 4 dual-class cases compared to 2 in single-class firms.

Finally, for each category we separately report individuals who held a large fraction of the vote (> 25%) at the time of turnover.[34] For example, of the 10 dual-class CEOs who retained an officer or director position long term, we find that half (5) also held at least 25% of the vote. Combined with the boomerang CEOs, these may be thought of as formal turnovers but not de facto turnovers. Nonetheless, even here the CEO position is an important source of day-to-day control and the fact that founder-CEOs holding large voting blocks often step down after poor performance suggests a more nuanced account than the conventional entrenchment narrative.

An examination of the boomerang CEO cases reveals diverse scenarios rather than a conclusive pattern. At Domo, Joshua James held 86% of voting rights but only 15% of equity stakes at IPO. In contrast, Katrina Lake at Stitch Fix operated under significant venture capital influence, with Bill Gurley from Benchmark and Steve Anderson from Baseline Ventures each controlling more voting power than Lake, creating a delicate balance of control that likely shaped her departure and return dynamics. The duration of absence from the CEO role also varied significantly, ranging from just 4 months (Vladimir Shmunis at RingCentral) to approximately 21 months (Mark Pincus's first return to Zynga).

Three out of the four boomerang CEOs remained on the board during their time away from the CEO role, serving as Chairperson or Executive Chairperson. The reasons for both departure and return varied. Initial departures ranged from leadership transitions (Katrina Lake) to allegations of sexual assault (Joshua James), while returns were often justified by the need for renewed strategic focus or to address company performance issues, suggesting that these CEOs may serve as a form of 'leadership reserve' in times of corporate stress. Some returns, like Katrina Lake's at Stitch Fix, were explicitly temporary, highlighting the founder's role in stabilizing the company during transition periods.

Interestingly, while most of the replaced CEOs retain significant voting power after departure, the exact level did not seem associated with the likelihood or speed of return. Several replaced CEOs held more voting power than Katrina Lake at Stitch Fix or Vladimir Shmunis at RingCentral and yet did not regain the CEO job. These cases also raise questions about the effectiveness of succession planning and the development of non-founder leadership in these companies. The repeated return of some founders, like Mark Pincus, highlight the challenges of establishing alternative leadership post-IPO when founders retain significant voting power. More broadly, these cases also reflect the use of a successor CEO model in which the former CEO retains power through the chair role and the company maintains access to a trusted advisor with vast knowledge of the company, but can raise questions of influence and control (Nili 2019).

While dual-class structures provide founders with the power to return to leadership, the decision to do so is often driven by company performance and strategic needs, even among those with majority voting control. This indicates that market forces and board dynamics continue to play a significant role in dual-class firms, alongside the concentration of voting power in founders' hands.

[34] We only record vote power at the time of turnover. It is of course possible, even likely, departed CEOs will sell all or a portion of their equity and their vote power will gradually decline.

c. Dual Class as Contingent Protection

One interpretation of our study is that the protection afforded by dual-class structures for insiders is not absolute, but rather seems to depend on the firm's financial health. When a dual-class firm maintains positive equity returns the insider's position is reinforced. However, dual-class protection seems to weaken considerably if the firm fails to generate shareholder returns and must seek additional funding or key resources from external parties. In such scenarios, the insider's bargaining power is likely diminished, as the potential for corporate insolvency or other severe measures becomes a credible threat.

The contrast between Meta's Mark Zuckerberg and other founder-CEOs illustrates this dynamic. Zuckerberg, supported by Meta's substantial cash reserves, has maintained his position for a lengthy period post-IPO despite significant challenges, including a stock value decline exceeding 50% at one point in the company's history, scrutiny over the metaverse strategy, and a high-profile privacy controversy. Our findings suggest that Zuckerberg's longevity and resilience in the top executive role is not commonplace across dual-class firms. We find that even dual-class CEOs commanding substantial voting power are often replaced in the wake of poor shareholder returns.

A dual-class firm's board, with practical constraints limiting its ability to remove the founder-CEO who elects them, may need to rely on the threat of firm failure or shareholder activism in the wake of financial decline to influence the chief executive to step down.[35] This differs from single-class firms, where boards may have more options to replace CEOs or consider acquisition proposals. The lower acquisition rate of dual-class firms is consistent with this observation. In high-performing dual-class firms, the CEO may be able to resist acquisition attempts, regardless of their potential benefit to other shareholders, whereas a dual-class CEO at a struggling firm may face practical constraints that limit such tactics.

Our analysis suggests that dual-class structures create a governance environment in which economic performance plays a crucial role in leadership transitions. While these structures can insulate CEOs from certain external pressures, they also increase the importance of financial performance as a governance mechanism. Regardless of the wedge size, CEOs whose wealth is concentrated in the firm have strong incentives to step down when performance deteriorates, as their departure might allow the stock price to recover. The board's influence in these situations may become more binary – either the firm performs well and the CEO remains in place, or performance deteriorates significantly, potentially leading to a leadership change. This understanding of dual-class challenges the view of these structures as mere tools of entrenchment. Instead, it suggests a complex relationship between voting rights, economic performance, and corporate governance, where the protection offered by high-vote shares is diminished with poor financial performance.

V. Conclusion

Although a robust literature has developed on dual-class structures and sunset provisions, the turnover of CEOs in the top managerial spot at dual-class firms after IPO has

[35] On the role that activist hedge funds play in public companies with a controlling shareholder, see Kastiel (2016).

gone largely unexamined. Understanding whether CEOs are entrenched in their role, as assumed, and whether sunset provisions are needed to alleviate such potential for agency costs is important in light of the rise of VC-backed dual-class IPOs, the significance of these firms in the economy, and the concerns that these structures have posed for investors.

Our article is the first to explore the tenure and turnover patterns of CEOs in firms with and without dual-class structures. We use a dataset of U.S. headquartered VC-backed firms that completed an IPO from 2002 to 2020. We find that the median time to CEO turnover from IPO is longer in dual-class firms compared to single-class firms. Although dual-class CEOs on average have three times as much voting power after the IPO as single-class CEOs, they only hold the reins two years longer in the top managerial role. Moreover, the difference is due to a higher rate of acquisitions targeting single-class firms (25%) as compared to dual-class firms (14%). There is no significant difference in internal turnover rates—cases where the CEO steps down or is replaced outside of an acquisition or merger.

Similar to research on CEO turnover in other settings, we find that dual-class firms are more likely to replace the CEO following poor financial performance. Further, the link between performance and CEO turnover does not depend on the CEO's vote power or the size of the wedge between her vote percentage and her equity stake. Finally, most dual-class turnovers occurred well before any sunset clauses could trigger. These results hold across various empirical approaches, calling into question the prevailing assumption that dual-class stock shields founder-CEOs from market pressures.

We caveat that our study cannot answer the broader question of whether shareholders benefit from dual-class structures. Even if a dual-class structure does not entrench a firm's CEO, it may be associated with other governance problems. For instance, it might hinder an effective market for corporate control, allow CEOs to bargain for lucrative golden parachutes, or create challenges in planning leadership transitions.

Our study opens several important avenues for future research. First, investigating dual-class firms outside the VC-backed sector and across different regions and time periods would test the generalizability of our findings. Additionally, within the context of VC-backed companies, more research is needed on the post-IPO relationship between founders and VC investors, particularly how VC voting power and contractual rights influence CEO turnover. This includes examining how control arrangements between VCs and founders evolve over time, especially given that VCs often retain high-vote stock immediately after IPO and gradually sell later on. Understanding these dynamics could illuminate how dual-class structures operate in the VC-backed IPO context. Furthermore, the recent *Moelis* litigation[36] underscores the importance of understanding how contractual control rights interact with dual-class voting structures and executive succession.

Reference List

[36] *West Palm Beach Firefighters' Pension Fund v. Moelis & Co.*, No. 2023-0309-JTL (Del. Ch. Feb. 23, 2024).

Adams, Renée, and Daniel Ferreira. 2008. One Share-One Vote: The Empirical Evidence. *Review of Finance* 12:51–91.

Aggarwal, Dhruv, Ofer Eldar, Yael V. Hochberg, and Lubomir P. Litov. 2022. The Rise of Dual-Class Stock IPOs. *Journal of Financial Economics* 144(1): 122–153.

Aktas, Nihat, Audra Boone, Ettore Croci, and Andrea Signori. 2021. Reductions in CEO career horizons and corporate policies. *Journal of Corporate Finance* 66: 101862.

Aran, Yifat, and Elizabeth Pollman. 2024. Ousted. *Theoretical Inquiries in Law* 25:231–263.

Baran, Lindsay, Arno Forst, and M. Tony Via. 2019. Dual-class Share Structure and Innovation, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3183517.

Battocletti, Vittoria, Luca Enriques, and Alessandro Romano. 2023. Dual-Class Shares in the Age of Common Ownership. *Journal of Corporation Law* 48:541–576.

Bebchuk, Lucian A., and Kobi Kastiel. 2017. The Untenable Case for Perpetual Dual-Class Stock. *Virginia Law Review* 103:585–631.

Bebchuk, Lucian A., and Kobi Kastiel. 2019. The Perils of Small Minority-Controllers. *Georgetown Law Journal* 107:1453–1514.

Bebchuk, Lucian Arye, Reiner Kraakman, and George G. Triantis. 2000. Stock Pyramids, Cross-Ownership, and Dual-class Equity: The Mechanisms and Agency Costs of Separating Control from Cash-Flow Rights. Pp 295–318 in *Concentrated Corporate Ownership*, edited by Randall K. Morck. Chicago: University of Chicago Press.

Bennedsen, Morten, and Kasper Meisner Nielsen. 2006. The Principle of Proportional Ownership, Investor Protection and Firm Value in Western Europe. ECGI-Finance Working Paper 134.

Berger, David J. 2017. Dual-Class Stock and Private Ordering: A System That Works. *Harvard Law School Forum on Corporate Governance*, https://corpgov.law.harvard.edu/2017/05/24/dual-class-stock-and-private-ordering-a-system-that-works/.

Berger, David. Why Dual-Class Stock: A Brief Response to Commissioners Jackson and Stein. *Harvard Law School Forum on Corporate Governance*, https://www.wsgr.com/a/web/35/berger-022218.pdf.

Borgschulte, Mark, Marius Guenzel, Canyao Liu, and Ulrike Malmendier. 2021. CEO stress, aging, and death. No. w28550. National Bureau of Economic Research.

Brickley, James A. 2003. Empirical research on CEO turnover and firm-performance: A discussion. *Journal of Accounting and Economics* 36: 227–233.

Broughman, Brian J., and Matthew T. Wansley. 2023. Risk-Seeking Governance. *Vanderbilt Law Review* 76: 1299–1378.

Broughman, Brian, and Jesse Fried. 2020. Do Founders Control Start-up Firms that Go Public? *Harvard Business Law Review* 10:49–86.

Burkart, Mike, and Samuel Lee. 2008. One Share - One Vote: The Theory. *Review of Finance* 12:1–49.

Cao, Jerry, Xiaofei Pan, and Gary Tian. 2011. Disproportional Ownership Structure and Pay–Performance Relationship: Evidence from China's Listed Firms. *Journal of Corporate Finance* 17:541–554.

Chemmanur, Thomas J., and Yawen Jiao. 2012. Dual-class IPOs: A Theoretical Analysis. *Journal of Banking and Finance* 36:305–319.

Choi, Albert H. 2018. Concentrated Ownership and Long-term Shareholder Value. *Harvard Business Law Review* 8:53–99.

Cornett, Marcia Millon, and Michael R. Vetsuypens. 1989. Voting Rights and Shareholder Wealth: The Issuance of Limited Voting Common Stock. *Managerial and Decision Economics* 10:175–188.

Cremers, Martijn, Beni Lauterbach, and Anete Pajuste. 2024. The Life-Cycle of Dual-class Firm Valuation. *Review of Corporate Finance Studies* 13(2):459–493.

Cremers, Martijn, Lubomir Litov, and Simone M. Sepe. 2017. Staggered Boards and Firm Value, Revisited. *Journal of Financial Economics* 126:422–444.

Daines, Robert, and Michael Klausner. 2001. Do IPO Charters Maximize Firm Value – Antitakeover Protection in IPOs. *Journal of Law, Economics, and Organization* 17(1):83–120.

Dimitrov, Valentin, and Prem C. Jain. 2006. Recapitalization of One Class of Common Stock into Dual-Class: Growth and Long-run Stock Returns. *Journal of Corporate Finance* 12:342–366.

Eldar, Ofer. 2023. Dual-Class IPOs: A Solution to Unicorn Governance Failure. European Corporate Governance Institute-Law Working Paper No. 741/2023, https://ssrn.com/abstract=4647143.

Fisch, Jill E. 2021. Stealth Governance: Shareholder Agreements and Private Ordering. *Washington University Law Review* 99:913–960.

Fisch, Jill E., and Steven Davidoff Solomon. 2023. Dual-class Stock. Pp. [__] in *Oxford Handbook of Corporate Law and Governance*, edited by Jeffrey N. Gordon & Wolf-Georg Ringe. Oxford: Oxford University Press 2d ed.

Fisch, Jill E., and Steven Davidoff Solomon. 2019. The Problem of Sunsets. *Boston University Law Review* 99: 1057–1094.

Fischel, Daniel, R. 1987. Organized Exchanges and the Regulation of Dual-class Common Stock. *University of Chicago Law Review* 54: 119–152.

Fisman, Ray, Rakesh Khurana, Matthew Rhodes-Kropf, and Soojin Yim. 2014. Governance and CEO Turnover: Do Something or Do the Right Thing? *Management Science* 60:319–337.

Dasgupta, Sudipto, Xi Li, and Albert Y. Wang. 2018. Product Market Competition Shocks, Firm Performance, and Forced CEO Turnover. *The Review of Financial Studies* 31(11):4187–4231.

Ganor, Mira. 2016. Why Do Dual-Class Firms Have Staggered Boards? *Ohio State Business Law Journal* 10(2):147–191.

Gentry, Richard J., Joseph S. Harrison, Timothy J. Quigley, and Steven Boivie. 2021. A Database of CEO Turnover and Dismissal in S&P 1500 Firms, 2000–2018. *Strategic Management Journal* 42(5):968–991.

Gompers, Paul A., Joy Ishii, and Andrew Metrick. 2010. Extreme Governance: An Analysis of Dual-Class Companies in the United States. *Review of Financial Studies* 23:1051–88.

Gordon, Jeffrey N. 1988. Ties that Bond: Dual-class Common Stock and the Problem of Shareholder Choice. *California Law Review* 76(1):1–85.

Goshen, Zohar, and Assaf Hamdani. 2016. Corporate Control and Idiosyncratic Vision. *Yale Law Journal* 125:560–617.

Grinapell, Adi. 2020. Dual-Class Stock Structure and Firm Innovation. *Stanford Journal of Law, Business & Finance* 25:40-85.

Gray, Robert J. 1988. A Class of K-Sample Tests for Comparing the Cumulative Incidence of a Competing Risk. *The Annals of Statistics* 16(3): 1141-1154.

Hirst, Scott, and Kobi Kastiel. 2019. Corporate Governance By Index Exclusion. *Boston University Law Review* 99:1229–1278.

Hamdani, Assaf, and Kobi Kastiel. 2022. Superstar CEOs and Corporate Law. *Washington University Law Review* 100:1353–1410.

Hopt, Klaus J. and Susanne Kalss. 2024. Multiple-voting Shares in Europe: A Comparative Law and Economic Analysis. European Corporate Governance Institute (ECGI) - Law Working Paper No. 786/2024, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4887591.

Hossain, Ashrafee Tanvir, and Lawrence Kryzanowski, 2019. A Review of the Literature on Dual-Class Firms. *Managerial Finance* 45(9):119–1218.

Huson, Mark R., Robert Parrino, and Laura T. Starks. 2002. Internal Monitoring Mechanisms and CEO Turnover: A Long-Term Perspective. *Journal of Finance* 56(6):2265–2297.

Jarrell, Gregg A., and Annette B. Poulsen. 1988. Dual-class Recapitalizations as Antitakeover Mechanisms: The Recent Evidence. *Journal of Financial Economics* 20:129–152.

Jenkins, Stephen P. 1995. "Easy Estimation Methods for Discrete-Time Duration Models." *Oxford Bulletin of Economics and Statistics* 57:129–138.

Jenter, Dirk, and Fadi Kanaan. 2015. CEO Turnover and Relative Performance Evaluation. *Journal of Finance* 70:2155–2184.

Jenter, Dirk, and Katharina Lewellen. 2021. Performance-Induced CEO Turnover. *The Review of Financial Studies* 34(2):569 –617.

Johnson, William C., Jonathan M. Karpoff, and Sangho Yi. 2015. The Bonding Hypothesis of Takeover Defenses: Evidence from IPO Firms. *Journal of Financial Economics* 117:307–32.

Jordan, Bradford, Soohyung Kim, and Mark H. Liu. 2016. Growth Opportunities, Short Term Market Pressure, and Dual-Class Share Structure. *Journal of Corporate Finance* 41:304–328.

Kaplan, S.N. and Minton, B.A., 2012. How has CEO turnover changed?. *International Review of Finance* 12(1): 57–87.

Kastiel, Kobi. 2016. Against All Odds: Hedge Fund Activism in Controlled Companies. *Columbia Business Law Review* 2016(1):60–132.

Kim, Hyunseob, and Roni Michaely. 2019. Sticking Around Too Long? Dynamics of the Benefits of Dual-Class Voting. European Corporate Governance Institute (ECGI) - Finance Working Paper No. 590/2019, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3145209.

Kim, Hyunseob, Doron Levit, and Roni Michaely. 2024. Dynamic Incentive Effects of Dual-Class Shares: Theory and Evidence. Working Paper, Chicago Fed, University of Washington, and University of Hong Kong.

Klein, Daniel. 2018. "Executive turnover and the valuation of stock options." *Journal of Corporate Finance* 48: 76–93.

Lafuente, Esteban, and Miguel Á. García-Cestona. 2001. CEO Turnover in Public and Private Organizations: Analysis of the Relevance of Different Performance Horizons. *Journal of Economics, Finance, and Administrative Science* 26(52):333–357.

Lehn, Kenneth, Jeffry Netter, and Annette Poulsen. 1990. Consolidating Corporate Control: Dual-Class Recapitalizations Versus Leveraged Buyouts. *Journal of Financial Economics* 27:557–80.

Liang, Hao, Junho Park, and Wei Zhang. 2022. Riding Off Into the Sunset: Dual-Class Structure in the Age of Unicorns Going Public. ECGI Finance Working Paper No. 851/2022, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4242984.

Lund, Dorothy, S. 2019. Nonvoting Shares and Efficient Corporate Governance. *Stanford Law Review* 71:687–745.

Luo, Mi. 2011. A Bright Side of Financial Constraints in Cash Management. *Journal of Corporate Finance* 17:1430–1444.

Masulis, Ronald W., Cong Wang, and Fei Xie. 2009. Agency Problems at Dual-Class Companies. *Journal of Finance* 64:1697–1727.

Nili, Yaron. 2019. Successor CEOs. *Boston University Law Review* 99:787–836.

Nini, Greg, Amir Sufi, and David C. Smith. 2012. Creditor Control Rights, Corporate Governance, and Firm Value. *The Review of Financial Studies* 25:1713–1761.

Parrino, Robert, 1997. CEO turnover and outside succession: A cross-sectional analysis. Journal of Financial Economics 46, 165-197.

Partch, M. Megan. 1987. The Creation of a Class of Limited Voting Common Stock and Shareholder Wealth. *Journal of Financial Economics* 18: 313–339.

Petrucci, Caley. 2024. The Dual-Class Duo: A Structural Analysis of Dual-Class Guardrails. Unpublished manuscript, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4456280.

Proctor, Goodwin, and David Bernstein. 2019. In Defence of Dual-Class Stocks. *International Financial Law Review* 2019(4):34–37.

Rauterberg, Gabriel V. 2021. The Separation of Voting and Control: The Role of Contract in Corporate Governance. *Yale Journal on Regulation* 38(4):1124–1181.

Reddy, Bobby V. 2021. More than Meets the Eye: Reassessing the Empirical Evidence on U.S. Dual-Class Stock. *University of Pennsylvania Journal of Business Law* 23:955–1017.

Sharfman, Bernard S. 2019. The Undesirability of Mandatory Time-based Sunsets in Dual-class Share Structures: A Reply to Bebchuk and Kastiel. *Southern California Law Review Postscript* 93:1–10.

Sen, Ria. 2024. Private Equity, Private Ordering, and the Stealth Dual Class. Unpublished manuscript, on file with authors.

Shen, Wei, and Albert A. Cannella, Jr. 2002. Revisiting the performance consequences of CEO succession: The impacts of successor type, post-succession senior executive turnover, and departing CEO tenure. *Academy of Management Journal* 45(4):717–733.

Shobe, Gladriel, and Jarrod Shobe. 2022. The Dual-Class Spectrum. *Yale Journal on Regulation* 39:1343–1390.

Shumway, Tyler. 2001. "Forecasting Bankruptcy More Accurately: A Simple Hazard Model." Journal of Business 74:101–124.

Smart, Scott B., and Chad J. Zutter. 2003. Control as a Motivation for Underpricing: A Comparison of Dual- and Single-Class IPOs. *Journal of Financial Economics* 69(1), 85–110.

Smart, Scott B., Ramabhadran S. Thirumalai, and Chad J. Zutter. 2008. What's In a Vote? The Short-and Long-run Impact of Dual-Class Equity on IPO Firm Values. *Journal of Accounting and Economics* 45:94–115.

Tallarita, Roberto. 2024. Dual-class Contracting. *Journal of Corporation Law* (forthcoming).

Yan, Min. 2020. A Control-Accountability Analysis of Dual-class Share (DCS) Structures. *Delaware Journal of Corporate Law* 45(1):1–48.

Table 1: Descriptive Statistics for Sample Firms

This table reports descriptive statistics for sample of US-based venture backed firms that went public between 2002 to 2020. Panel A compares dual-class IPOs (n=79) to the full sample of single-class IPOs (n=890). Panel B compares the group of 79 dual-class IPOs to a subset of 79 single-class IPOs identified by nearest-neighbor propensity score matching (the "matched sample"). For variables that change from year-to-year this table reports the average firm-level value across all years in our sample. All dollar values are reported in $-millions. The final column reports the p-value from a difference of means t-test. We use a two-sided test for significance (* = 10% and ** = 1% significance).

Panel A: Full Sample

	Dual-Class Firms				Single-Class Firms				Diff-means
Variable	Obs.	Mean	Med.	SD	Obs.	Mean	Med.	SD	(p-value)
Market Cap [$M]	79	23349	3715	82252	888	1969	546	9480	0.00**
Total Assets [$M]	79	4598	999	18368	890	715	191	3148	0.00**
# of Employees (000)	79	3.6	1.8	8.1	889	1.0	0.3	2.8	0.00**
IPO Year	79	2016.2	2017	3.5	890	2012.4	2013	5.4	0.00**
Software/IT Related	79	68.4%	.	46.8%	890	20.0%	.	40.0%	0.00**
Healthcare/Pharma	79	5.1%	.	22.1%	890	44.4%	.	49.7%	0.00**
Propensity Score	79	0.32	0.33	0.19	887	0.07	0.03	0.10	0.00**

Panel B: PS Matched Sample

	Dual-Class Firms				Single-Class Firms				Diff-means
Variable	Obs.	Mean	Med.	SD	Obs.	Mean	Med.	SD	(p-value)
Market Cap [$M]	79	23349	3715	82252	79	9564	1998	28980	0.16
Total Assets [$M]	79	4598	999	18368	79	2085	599	5459	0.25
# of Employees (000)	79	3.6	1.8	8.1	79	3.4	1.1	7.1	0.90
IPO Year	79	2016.2	2017	3.5	79	2015.5	2017	4.1	0.25
Software/IT Related	79	68.4%	.	46.8%	79	70.9%	.	45.7%	0.73
Healthcare/Pharma	79	5.1%	.	22.1%	79	5.1%	.	22.1%	1.00
Propensity Score	79	0.32	0.33	0.19	79	0.29	0.29	0.16	0.29

Figure 1-Number of IPOs per year (Full Sample)

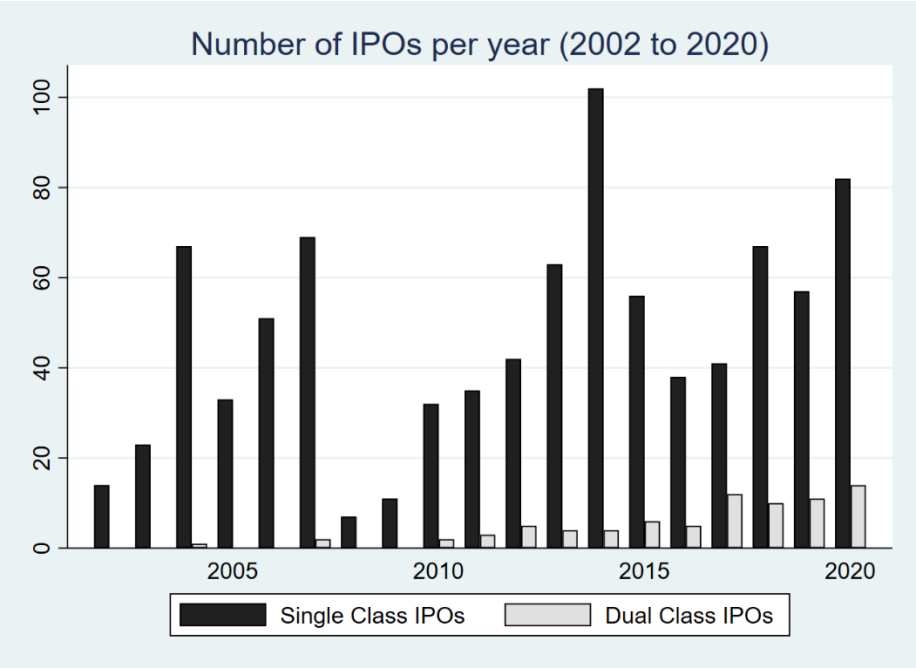

Table 2: CEO Characteristics and Control Rights

This table reports data on the CEO and allocation of voting rights immediately following the IPO for a matched sample of 79 dual-class and 79 single-class IPO firms.

	Dual-class Firms			Single-class Firms		
	Obs.	Mean	Med.	Obs.	Mean	Med.
CEO Age at IPO	79	45.3	45	79	49.8	49
IPO CEO is Founder	79	88.6%	1	79	40.5%	0
Time-based sunset	79	46.8%	0	-	N.A.	
CEO vote % at IPO	79	25.6%	18.4%	79	7.7%	4.8%
- if CEO is founder	*70*	*27.8%*	*19.9%*	*32*	*13.2%*	*8.1%*
- if CEO is not Founder	*9*	*7.9%*	*5.9%*	*47*	*3.9%*	*3.4%*
Dual Class Wedge	79	9.7%	2.1%	-	N.A.	
Equity Cash Flow % at IPO	79	15.9%	12.4%	79	7.7%	4.8%
CEO controls > 30% vote at IPO	79	27.8%	0	79	2.5%	0
CEO controls > 50% vote at IPO	79	15.1%	0	79	0	0

Figure 2 – Change in Dual-Class CEO's Vote Power since IPO

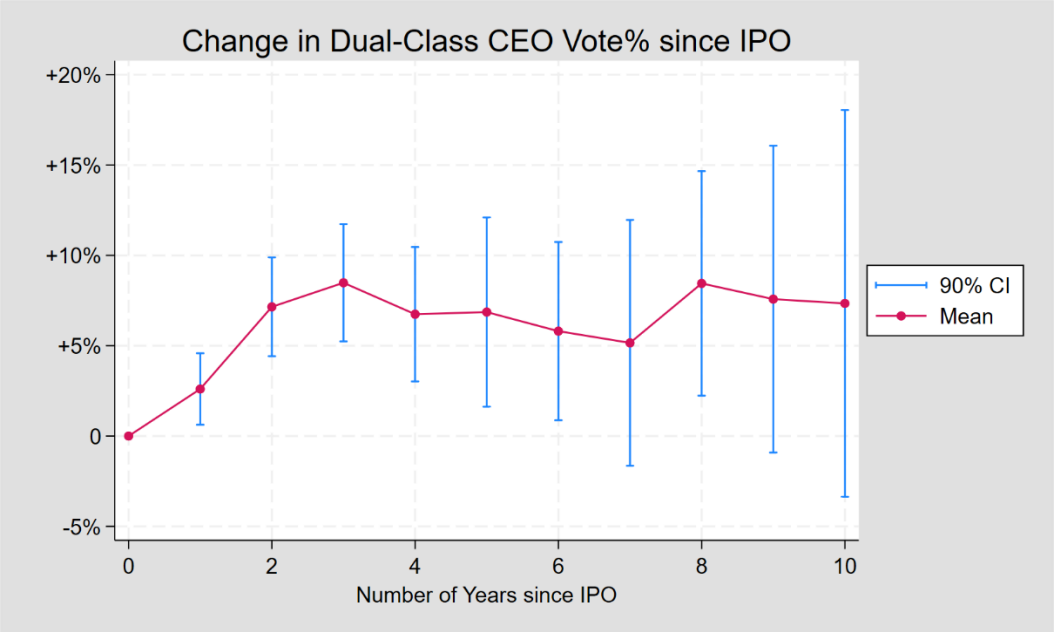

Table 3: Classification of CEO Turnover Events
The table below reports the reason for each CEO turnover observed in the matched sample of 79 dual-class and 79 single-class IPO firms. Results are separately reported for dual-class and single-class firms.

	Dual-class Firms		Single-class Firms	
	Count	Percent	Count	Percent
Right-Censored Observations (no turnover as of Oct 31, 2023)	40	51%	27	34%
External				
- *Firm Acquired*	11	14%	20	25%
- *Bankruptcy*	1	1%	0	0%
Internal				
- *Performance Related*	10	13%	8	10%
- *Retirement or New Opportunity*	16	20%	22	28%
Other				
- *Illness*	0	0%	2	3%
- *Death*	1	1%	0	0%
Total	**79**	**100%**	**79**	**100%**

Figure 3 – Survival Plot – All Turnover Events
This graph plots Kaplan-Meier estimates of CEO tenure for 79 Dual-Class and 79 Single-Class firms in the matched sample. Failure includes internal and external turnover events.

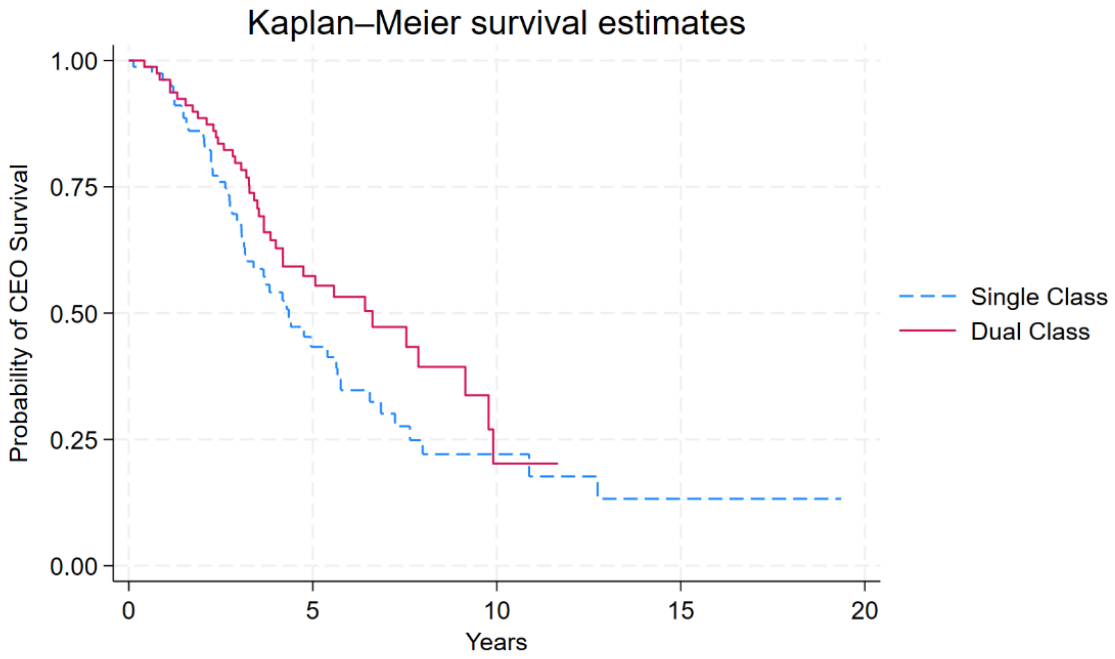

Figure 4 – Competing Risks – Internal vs Merger-Related Turnover

This graph reports separate cumulative incidence functions (CIF) for internal replacement and merger-related turnover. The CIF for each event is calculated using the Aalen-Johansen estimator. To test for differences in the cumulative incidence of turnover between dual-class and single-class firms, we employ Gray's test, with p-values reported below (Gray, 1988).

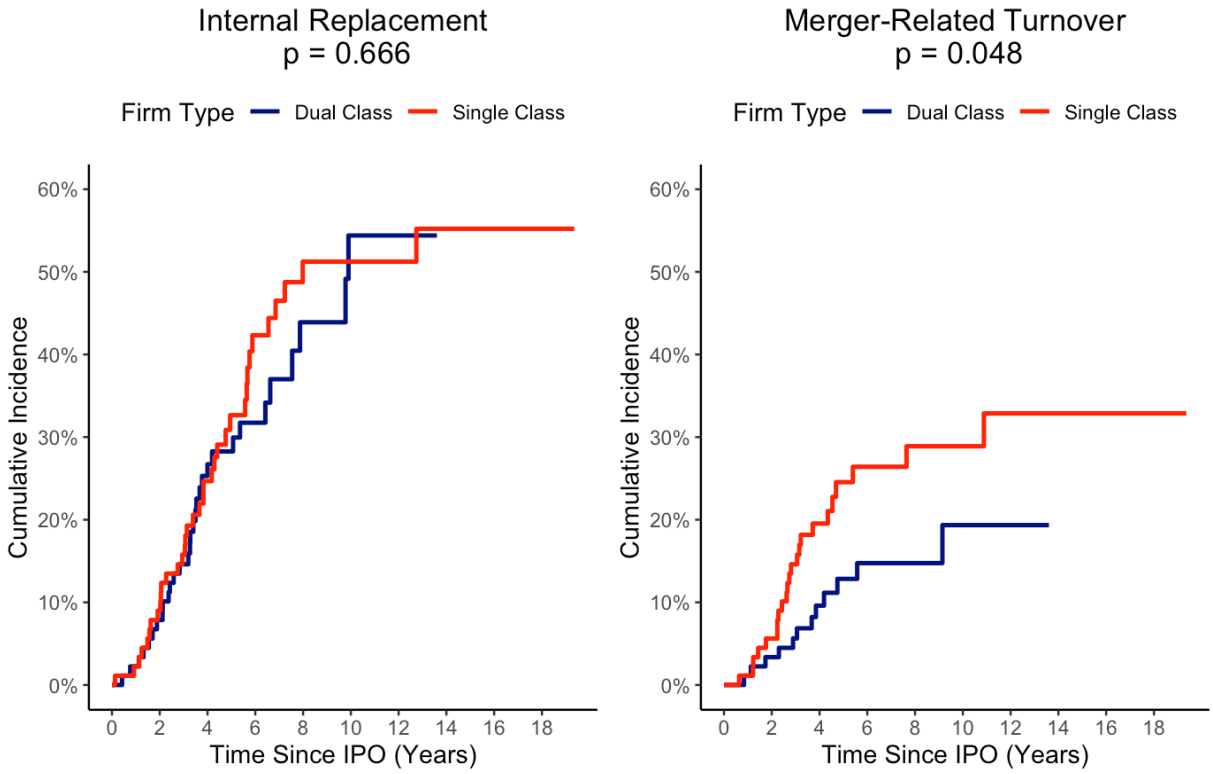

Table 4: CEO Turnover sorted by Year

For firms in the matched sample, this table reports the number of turnover events and annual turnover probability for each year. Turnover probability is calculated relative to the number of days-at-risk occurring in each calendar year. The annual turnover probability is separately reported at the bottom of the table for all turnover event (the "Total" row) and excluding merger-related turnovers (the "Internal" row).

	Dual-Class Firms			Single-Class Firms		
Year	Turnover Events	Days at Risk	Annual Turnover %	Turnover Events	Days at Risk	Annual Turnover %
2004	0	134	0.0%	0	222	0.0%
2005	0	365	0.0%	0	365	0.0%
2006	0	365	0.0%	0	623	0.0%
2007	0	814	0.0%	0	1,521	0.0%
2008	1	1,068	34.2%	1	1,569	23.3%
2009	0	730	0.0%	1	1,676	21.8%
2010	0	1,223	0.0%	0	2,808	0.0%
2011	1	1,377	26.5%	2	3,592	20.3%
2012	0	3,152	0.0%	2	3,878	18.8%
2013	3	3,779	29.0%	0	4,029	0.0%
2014	1	4,681	7.8%	2	6,370	11.5%
2015	2	6,212	11.8%	2	8,350	8.7%
2016	1	7,372	5.0%	3	8,926	12.3%
2017	5	9,458	19.3%	6	10,114	21.7%
2018	2	12,755	5.7%	3	10,421	10.5%
2019	3	14,507	7.6%	8	11,592	25.2%
2020	6	17,244	12.7%	3	13,201	8.3%
2021	4	18,680	7.8%	5	15,371	11.9%
2022	5	16,611	11.0%	7	13,263	19.3%
2023	3	15,357	7.1%	7	10,444	24.5%
Total	**39**	**135,884**	**10.5%**	**52**	**128,335**	**14.8%**
Internal	**27**	**135,884**	**7.3%**	**32**	**128,335**	**9.1%**

Figure 5 – Annual Stock Returns and Annual Probability of CEO Turnover

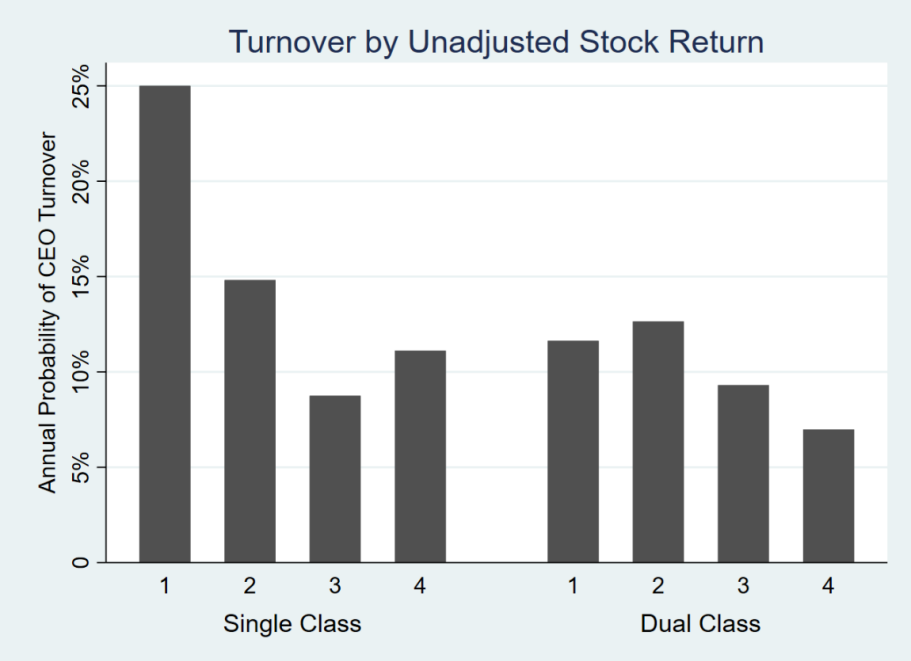

Figure 6 – Alpha and Annual Probability of CEO Turnover

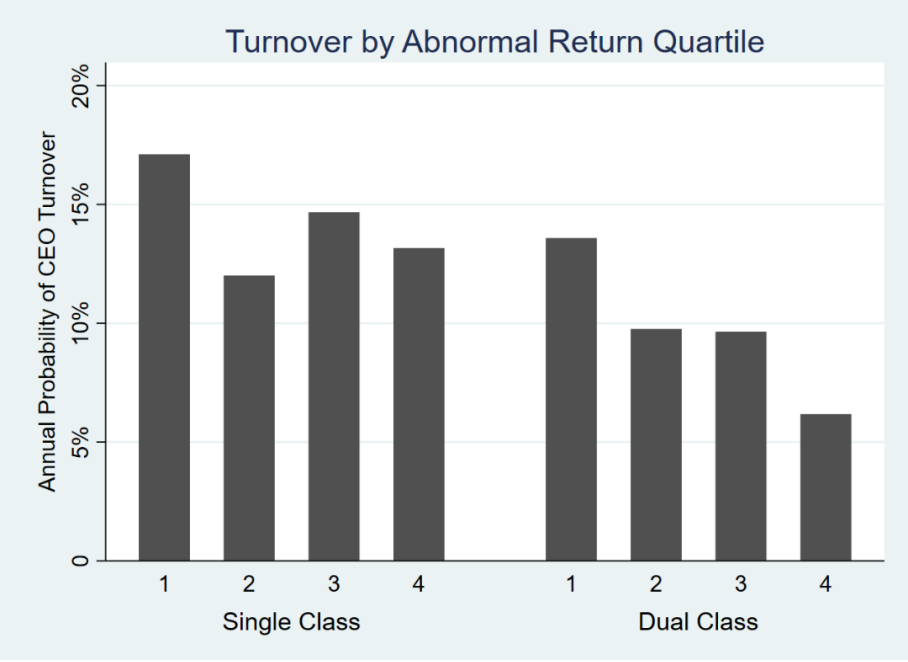

Figure 7 – CEO Voting Power and Annual Probability of CEO Turnover

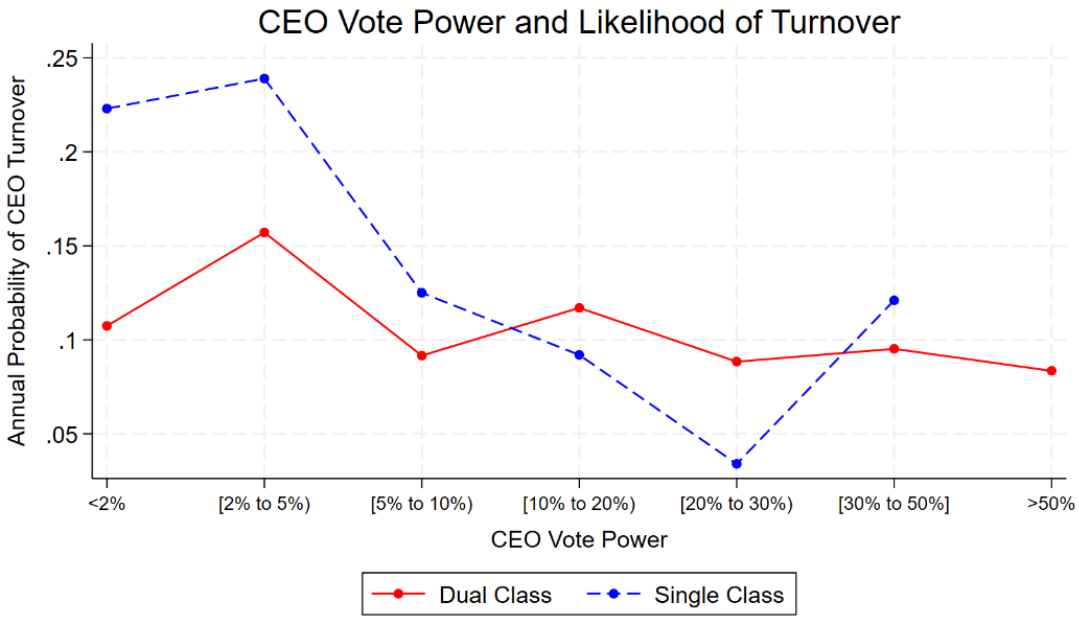

Table 5 – CEO Turnover sorted by Vote Power and Dual Class Wedge

Panel A: CEO Vote Power

	Dual			Single			Combined		
Vote Power	Turnover Events	Days at Risk	Annual Turnover	Turnover Events	Days at Risk	Annual Turnover	Turnover Events	Days at Risk	Annual Turnover
Less than 2%	3,401	1	10.7%	14,774	9	22.3%	18,175	10	20.1%
[2% to 5%)	11,624	5	15.7%	36,682	24	23.9%	48,306	29	21.9%
[5% to 10%)	19,927	5	9.2%	29,261	10	12.5%	49,188	15	11.1%
[10% to 20%)	18,723	6	11.7%	19,893	5	9.2%	38,616	11	10.4%
[20% to 30%)	16,528	4	8.8%	21,691	2	3.4%	38,219	6	5.7%
[30% to 50%)	30,685	8	9.5%	6,034	2	12.1%	36,719	10	9.9%
greater than 50%	34,996	8	8.3%	-	-	-	34,996	8	8.3%

Panel B: CEO Dual Class Wedge

	Dual		
Dual Class Wedge	Turnover Events	Days at Risk	Annual Turnover
Less than 2%	71,246	20	10.3%
[2% to 5%)	21,506	4	6.8%
[5% to 10%)	10,332	1	3.5%
[10% to 20%)	6,582	4	22.2%
[20% to 30%)	11,426	3	9.6%
[30% to 50%)	11,599	3	9.4%
greater than 50%	3,193	2	22.9%

Figure 8 – Survival Plot – Comparing dual-class with and without sunset
This graph plots Kaplan-Meier estimates of CEO tenure for Dual-Class firms in our matched sample. The dashed blue-line plots the survival function for CEOs at firms without a sunset provision and the solid red line plots the survival function for CEOs at firms that include a time-based sunset.

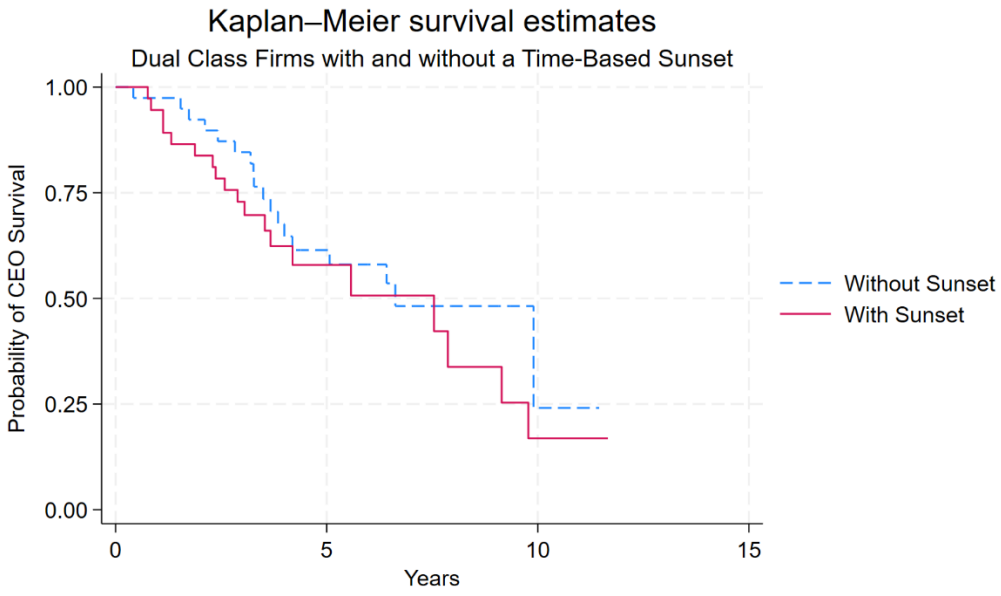

Table 6 – Turnover Events before and after triggering sunset clause

	Total	Pre-Trigger	Post-Trigger
Days-at-Risk	57,849	54,221	3,628
Turnover Events	19	17	2
Annual Turnover %	11.9%	11.5%	20.1%

Table 7: Cox Proportional Hazard Models

This table reports Cox proportional hazard models for CEO turnover estimated on a matched sample of dual class and single class US-based VC-backed firms that completed an IPO between 2002 and 2020. To account for longitudinal changes in key explanatory variables each firm's survival period is split into multiple observation periods. Models (1) to (4) are limited to dual-class firms; (5) and (6) are limited to single-class firms; and (7) and (8) are estimated on the full matched sample. For each explanatory variable we report its hazard ratio. P-values are reported in parentheses below each hazard ratio. Standard errors are clustered at the firm level. We use a two-sided test for significance (* = 10% and ** = 1% significance).

	Dual				Single		Combined	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dual Class							1.000	0.988
							(.999)	(.967)
Alpha	0.473		0.461		0.911		0.672	
	(.040)		(.042)		(.809)		(.120)	
Stock Return		0.499		0.509		0.468		0.476
		(.026)		(.033)		(.098)		(.004)
CEO Vote Percentage	0.970	0.710	1.184	0.782	0.005	0.017	0.596	0.590
	(.974)	(.691)	(.835)	(.740)	(.063)	(.076)	(.535)	(.515)
Wedge Ratio			7.438	4.831				
			(.020)	(.040)				
Assets ($100M)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	(.873)	(.778)	(.304)	(.351)	(.181)	(.120)	(.227)	(.189)
Inverse Current Ratio	2.212	2.520	0.630	0.967	0.630	4.440	0.710	1.742
	(.723)	(.698)	(.828)	(.988)	(.832)	(.560)	(.793)	(.717)
Founder CEO	0.972	1.211	0.399	0.621	0.618	0.451	0.479	0.447
	(.975)	(.824)	(.383)	(.623)	(.253)	(.055)	(.024)	(.008)
CEO Age	1.036	1.025	1.012	1.007	1.017	1.011	1.019	1.012
	(.292)	(.402)	(.730)	(.828)	(.559)	(.653)	(.275)	(.457)
Years Since IPO	2.195	2.296	2.400	2.507	1.215	1.303	1.615	1.705
	(.177)	(.105)	(.191)	(.114)	(.706)	(.605)	(.184)	(.128)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	392	410	392	410	365	385	757	795
# of Firms	77	77	77	77	75	75	152	152
Time at risk (days)	122,685	128,721	122,685	128,721	110,998	117,233	233,683	245,954
Wald Chi Square	12.2	13.2	13.0	13.6	18.7	22.0	23.6	30.0
PH Test (P value)	.11	.04	.40	.10	.48	.91	.37	.77

Table 8: First Difference Regression Model

This table reports first-difference regression estimates on a matched sample of dual class and single class US-based VC-backed firms that completed an IPO between 2002 and 2020. Models (1) and (2) are limited to dual-class firms and models (3) and (4) to single class firms.[37] The firm-year pair is the unit of analysis, and data are estimated for each year in which the firm's CEO at IPO remained CEO at the start of the year. The dependent variable is *Turnover*, which equals one if firm's CEO was replaced in the relevant year and zero otherwise. Since multiple observations from a single firm are not independent, standard errors are clustered at the firm level. P-values are reported in parentheses below each coefficient estimate. We use a two-sided test for significance (* = 10% and ** = 1% significance).

	Dual		Single	
	(1)	(2)	(3)	(4)
Δ-Stock Return	-0.025*		-0.007	
	(.058)		(.588)	
Δ-Alpha		-0.025		0.008
		(.166)		(.810)
Δ-CEO Vote Percentage	-0.365*	-0.313		
	(.072)	(.149)		
Δ-Assets (in $100M)	-0.00045	-0.00033	-0.00142**	-0.00145**
	(.235)	(.431)	(.000)	(.000)
Δ-Inverse Current ratio	0.258	0.414*	0.295	0.350*
	(.201)	(.082)	(.122)	(.018)
Time Dummies	Yes	Yes	Yes	Yes
Observations	325	294	308	274
Firm Clusters	73	68	70	63
R-squared	.038	.029	.030	.039

[37] Because the first-difference model requires at least two annual observations per firm, we cannot include firms where turnover occurred less than a year after the IPO.

Table 9: Role at Firm after Turnover

For each firm in the matched sample where the CEO was internally replaced or left due to illness, this table reports the individual's vote power at the time of turnover and their subsequent role (if any) at the firm – both immediately after turnover and long-term. The table provides a separate count of departed CEOs who held at least 25% of the vote at the time of turnover (column "if > 25%").

	Dual		Single	
	Any	**if > 25%**	**Any**	**if > 25%**
Internal Turnover or Illness	**26**		**32**	
– Mean vote power at Turnover	34.7%		7.5%	
– Median vote power at Turnover	29.2%		4.8%	
Post Turnover Role				
Stayed connected to firm	18	10	21	1
– Chair of the Board	15	8	14	1
– Remained as executive or director (non-Chair)	3	2	7	0
Left to do something else	8	3	11	0
– Employed at another company	1	0	6	0
– Founded a new venture	6	3	3	0
– Retired	1	0	2	0
Long-Term Role				
– Boomerang CEO	4	3	2	0
– Still Officer or Director	10	5	5	0
– Left Completely	4	2	14	0