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CEO Turnover at Dual-Class Firms

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Abstract

In recent years, tech companies have increasingly adopted dual-class structures that grant founders high-vote stock. Commentators argue that this entrenches founder-CEOs, allowing them to retain power long after the IPO. Applying time-to-event analysis to a sample of U.S. VC-backed IPOs, we find that dual-class CEOs indeed have a longer median post-IPO tenure - 5.6 years versus 4.4 years for a matched sample of single-class firms - based on completed and ongoing CEO tenures. The difference, however, is due to a higher rate of M&A sales involving single-class firms. Excluding transaction-related turnover, we find no significant difference in CEO tenure. Moreover, we find that turnover at dual-class firms is highly sensitive to performance, exhibiting similar levels of performance-induced turnover to those found in existing scholarship on CEO turnover. Most dual-class turnovers occurred well before any sunset clauses were triggered, calling into question the focus on this governance mechanism.

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CEO TURNOVER AT DUAL-CLASS FIRMS

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Abstract

In recent years, tech companies have increasingly adopted dual-class structures that grant founders high-vote stock. Commentators argue that this entrenches founder-CEOs, allowing them to retain power long after the IPO. Applying time-to-event analysis to a sample of U.S. VC-backed IPOs, we find that dual-class CEOs indeed have a longer median post-IPO tenure—5.6 years versus 4.4 years for a matched sample of single-class firms—based on completed and ongoing CEO tenures. The difference, however, is due to a higher rate of M&A sales involving single-class firms. Excluding transaction-related turnover, we find no significant difference in CEO tenure. Moreover, we find that turnover at dual-class firms is highly sensitive to performance, exhibiting similar levels of performance-induced turnover to those found in existing scholarship on CEO turnover.

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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 initial public offering ("IPO") involving a dual-class structure, 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 a key 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). 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.[3] Dual-class stock diverges from the principle of one-share-one-vote,[4] and as the wedge between voting power and ownership grows, it may increase agency costs and allow entrenched insiders to pursue private benefits at the expense of firm value (Gompers, Ishii, and Metrick 2010).

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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 2022).

[3] ISS recommends 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 (Institutional Shareholder Services, 2025)

[4] 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."

Challenging this view, some scholars and practitioners argue that dual-class structures may be desirable as a way to protect the founder's idiosyncratic vision, providing insulation from short-term market pressures, and encouraging long-term planning and innovation.[5] Goshen and Hamdani (2016, p. 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." Cremers, Lauterbach, and Pajuste (2024) and Kim and Michaely (2019) find that such benefits are particularly salient in the early years after IPO—especially for innovative firms, with young founders—where dual-class firms often trade at valuation premiums relative to their single-class peers. However, these advantages tend to dissipate over time as firms mature.

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, much of the debate, on both sides, rests on the premise that founders insulated by dual-class stock retain effective control and continue to exert substantial managerial or day-to-day influence well beyond the IPO. Within this framework it is often assumed that the board cannot fire founder-CEOs of dual-class firms.[6] Mark Zuckerberg's long tenure at Meta might fit this account,[7] but is it true generally? There are certainly counterexamples. Aran and Pollman (2024) highlight cases of prominent VC-backed firms that went public such as Peloton, Pinterest, and Blue Apron, where a founder-CEO who held dual-class stock was

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[5] See, e.g., Goshen and Hamdani (2016); Berger (2017, 2018); Proctor and Bernstein (2019); Chemmanur and Jiao (2012); and Kim and Michaely (2019). Furthermore, some studies find that dual-class firms are associated with higher research and development (R&D) and greater innovation compared to single-class firms (Baran, Forst, and Via 2019; Jordan, Kim, and Liu 2016; Lehn, Netter, and Poulsen 1990).

[6] E.g., "With dual class structure, it is difficult to remove a controlling shareholder-manager even when the firm is performing poorly. Therefore, these managers face little or no discipline from the market for corporate control" (Baulkaran 2014, p. 70); *Cf.* "With control, a founder can cause the company to invest in research and development and other long-term initiatives without fear of removal from the company by the public shareholders or by a predatory acquiror subsequent to short-lived periods of low share price" (Reddy 2021, p.516).

[7] "Meta has incinerated twenty-seven billion dollars on the metaverse whilst Mark Zuckerberg maintains absolute control through dual-class share structures. The board cannot remove him regardless of performance" (Alberti 2025); see also "Zuckerberg alone controls more than 57% of the votes—meaning the only way he can be removed as chief executive is if he votes himself out" (Humphery-Jenner 2022).

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 co-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 (2019) to warn that investors would be "virtually powerless," leaving founders to govern "as supreme monarchs in perpetuity."[8] Yet just four years after the IPO, Green 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.[9] This leaves a significant gap in our understanding of whether such CEO removals represent a trend or merely isolated incidents within dual-class firms.

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.[10] We concentrate on VC-backed firms because they represent the segment where dual-class structures have

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[8] Bebchuk and Kastiel (2019a) provide additional background on the dual-class structure at Lyft: "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".

[9] For a sampling of studies that explore the link between financial performance and CEO turnover see Fee et al. (2018); Jenter and Kanaan (2015); Kaplan and Minton (2012); Parrino (1997); Huang, Maharjan, and Thakor (2020); Jenter and Lewellen (2021); Gentry et al. (2021); Gao, Harford, and Li (2017); Engel, Hayes, and Wang (2003); Weisbach (1988); Huson, Parrino, and Starks (2002); Eisfeldt and Kuhnen (2013); Brickley (2003); Dasgupta et al. (2018); Peters and Wagner (2014); and Hazarika, Karpoff, and Nahata (2012).

[10] 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, Pan, and Tian (2011) and Bennedsen and Meisner Nielsen (2006).

grown most rapidly in recent years and are at the center of current debates about founder control and entrenchment. Additionally, VC-backed firms often feature the kind of intangible assets and growth opportunities that dual-class advocates argue justify greater founder control.[11] 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 a leadership 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 effects. We partially address this concern by employing propensity score matching and inverse probability weights to find a group of single-class IPOs that are similar to the dual-class group on observable features. Since matching and weighting can account only for observed differences between the two groups, we also report Oster (2019) proportional-selection bounds and find that unobserved selection would need to be large—on the order of 3.5x selection on observables—to overturn our main performance-turnover result.[12]

Second, we can only observe CEO turnovers that occurred by July 2025. 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 the subset of firms that experienced a turnover event by July 2025 would create its own bias, as it would exclude the group of CEOs who are most successful at maintaining their role. To address this challenge, we use time-to-event analysis (also known as survival analysis). This statistical method, widely adopted in

[11] Prior work shows that venture-backed dual-class firms differ systematically from other dual-class firms: they are more likely to be founder-controlled, exhibit larger founder voting wedges, and arise in settings where private capital availability and technological change strengthen founder bargaining power (Aggarwal et al. 2022).

[12] Our calculation of Oster (2019) bounds is reported in the Appendix (see Table A4 and accompanying discussion).

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 significantly longer in dual-class firms (5.6 years) than in single-class firms (4.4 years), a pattern consistent with the view that dual-class structures entrench founder-CEOs. CEO turnover, however, occurs through two distinct channels. In some cases, turnover is *standalone*: the board replaces the CEO or the CEO resigns. In other cases, turnover is *transaction-related*: the CEO's tenure ends because the firm is acquired, liquidated, or delisted.[13] When we decompose turnover along these lines, we find that the tenure gap is driven by a higher rate of transaction-related turnover at single-class firms. A competing-risks analysis shows no significant difference in the incidence of standalone turnover between dual- and single-class firms.

We examine whether dual-class structures insulate founders from market pressure. Contrary to the standard account, we find similar levels of "performance-induced" turnover—departures that would not have occurred had firm performance been good (Jenter and Lewellen 2021)—at dual-class firms as at comparable single-class firms. We estimate that 66% of all CEO turnovers at dual-class firms are "performance-induced" compared to 59% at single-class firms; the 7-percentage-point gap is not statistically distinguishable from zero. Press releases and news coverage similarly cite poor economic performance as a reason for CEO departures at comparable rates across the two groups.

Notably, the link between firm-performance and CEO turnover does not appear to depend on the CEO's vote power at the close of the IPO or on the wedge between voting power and ownership. Even dual-class CEOs commanding substantial voting power are replaced in the wake of poor shareholder returns. The voting power of a firm's VC investors at the close of its IPO, however, is positively associated with CEO turnover. This suggests that substantial VC voting blocks, together with board seats and ongoing influence, may shape post-IPO leadership transitions, even though we do not find evidence that such blocks make turnover more sensitive to poor performance. We also find that CEO survival is shorter on average at firms with time-based sunset provisions, although the difference is not statistically

[13] Kaplan and Minton (2012) use a similar distinction, but they label transaction-related as "external" and standalone as "internal." However, the labels "internal" and "external" are also used in the turnover literature to designate whether the newly hired executive was hired from outside the organization (external) or promoted from within (internal). See, e.g., Parrino (1997) and Cziraki and Jenter (2022). To avoid confusion, we use our own labels.

significant. The potential impact of time-based sunsets is limited by the fact that most dual-class CEOs depart well before the sunset trigger date.

Finally, we use short-window event studies to examine how public markets respond to turnover announcements in our sample. For public announcement of standalone turnover, we find that dual-class firms exhibit positive cumulative abnormal returns (CARs) while single-class firms exhibit negative (or near-zero) returns. For transaction-related turnover, acquisition announcement returns are large for both groups, as expected, but are higher on average for dual-class targets. Within our sample, markets react more favorably to turnover announcements at dual- as compared to single-class firms, as evidenced by a marginally significant difference in mean CAR between the two groups.

A selection-based mechanism can reconcile our turnover and event-study findings. Dual-class voting rights raise the effective hurdle for both CEO replacement and change-of-control transactions. As a result, the turnover events that occur at dual-class firms may be more selective—occurring disproportionately when the expected gains are large enough for a transition to occur despite the added control-related frictions. This selection effect predicts that dual-class firms will experience (i) larger announcement returns conditional on turnover, and (ii) fewer turnover events overall.

Our data are broadly consistent with this pattern, though the reduction in turnover activity at dual-class firms is concentrated in transaction-related exits. One plausible explanation is that dual-class CEOs have stronger incentives to resist a sale of their firm, as it would not merely remove the CEO from the top executive role but it would also strip the CEO of high-vote stock. By contrast, a standalone CEO transition can leave the founder with substantial voting power and influence, especially if the former CEO retains a leadership position such as board chair after stepping down. This dynamic could generate substitution, with some foregone M&A exits instead resolving as standalone leadership transitions. Finally, while this framework is consistent with our main results, it does not definitively establish whether shareholders benefit from dual-class structures. If markets underweight founders' long-horizon vision, positive announcement returns may reflect short-term price reactions rather than improvements in long-run firm value.

Our research makes several contributions. First, we contribute to scholarship on dual-class stock structures (Bebchuk and Kastiel 2017, 2019a; Aggarwal et al. 2022) by providing the first detailed examination of CEO turnover involving the recent wave of VC-backed dual-

class IPOs.[14] Our findings challenge a common premise shared across the dual-class entrenchment debate: that dual-class stock shields underperforming founder-CEOs from internal discipline.[15] Despite longer average tenures and fewer transaction-related exits, CEO turnover at dual-class firms remains highly sensitive to poor performance and occurs at rates comparable to those at single-class firms.

Second, our findings have implications for the literature on life-cycle valuation and the related debate over sunset provisions at dual-class firms. Prior work finds that dual-class firms often enjoy an early valuation premium that erodes as they mature, a pattern frequently attributed to rising agency costs and declining market discipline, and invoked to justify time-based sunsets (Cremers, Lauterbach, and Pajuste 2024; Kim and Michaely 2019; Bebchuk and Kastiel 2017).[16] Missing from this work is direct evidence on what happens to the founder-CEO over the same horizon. Our data supply that evidence: dual-class founders are typically replaced as CEO within six years of IPO. We also find that CEO survival is shorter, on average, at firms with time-based sunsets, although the difference is not statistically significant and the comparison is limited by the fact that many firms in our sample have yet to reach the trigger date of their sunset provision.

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[14] One study examining dual-class firms and stock pricing based on companies that went public between 1990 and 1998 found that 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.

[15] Much of the dual-class literature assumes that such structures entrench founder-CEOs and debates whether this may be desirable, because it allows for the promotion of idiosyncratic vision (Goshen and Hamdani 2016; Berger 2017, 2018), protects firm-specific investments (Fischel 1987; Choi 2018), 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), mitigates anticompetitive effects of common ownership (Battocletti, Enriques, and Romano 2023), 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, 2019b; Masulis, Wang, and Xie 2009).

[16] 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 and 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. Scholars have taxonomized various sunset provisions (Winden 2018; Petrucci 2025), explored the post-IPO performance of firms with such provisions (Liang, Park, and Zhang 2022), and debated their structure and merits (Bebchuk and Kastiel 2017; Fisch and Solomon 2019; Sharfman 2019).

Finally, we contribute to the literature on CEO turnover. Prior work shows that boards rely on market performance as an indirect signal of managerial quality and that CEO turnover rises following poor firm performance across a wide range of samples and specifications (Gibbons and Murphy 1990; Parrino 1997; Kaplan and Minton 2012; Jenter and Kanaan 2015; Fee et al. 2018). Building on that literature, Jenter and Lewellen (2021) introduce the concept of "performance-induced" turnover and show that a substantial share of CEO departures would not have occurred absent poor firm performance. We extend this line of research to dual-class firms, a setting central to debates over managerial entrenchment but largely overlooked in the turnover literature. We find that dual-class firms exhibit performance-induced turnover at rates comparable to matched single-class firms and broadly similar to results found in other research settings. We also show that the observed tenure gap between dual- and single-class firms is driven primarily by transaction-related exits, which are substantially more common among single-class firms, implying that studies focused only on standalone turnover would miss the main source of cross-group difference.

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 uses an event-study design to measure the market response to turnover announcements. Section V considers alternative interpretations. Section VI 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 January 1, 2002 and December 31, 2020 (a total of 1,339 firms),[17] a period following the dot-com 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

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

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. Similar to other empirical studies of dual-class firms (Aggarwal et al. 2022; Tallarita 2024), we only characterize a firm as dual-class if it issues high-vote stock. 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 large differences between dual- and single-class firms in the full sample. On average, dual-class IPO firms are significantly larger, more valuable, and more likely to operate in software or IT-related industries, while single-class firms are more frequently in life sciences or healthcare. Dual-class firms also tend to be more recent IPOs, reflecting the rise of dual-class structures in venture-backed offerings over the past decade (Aggarwal et al. 2022). These differences are statistically significant at the 1% level across all variables reported in Panel A.

<Insert Table 1 here>

To improve covariate overlap between the groups, we employ propensity-score matching.[18] For each dual-class firm, we identify two single-class firms using 1-to-2 nearest-neighbor matching (without replacement). Propensity scores ($\hat{p}_i$) 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).[19] Panel B reports descriptive statistics for the resulting matched sample of 79 dual-class firms and 158 matched single-class firms (the "matched sample"). Matching ensures the firms in the dual- and single-class subsamples are of roughly similar IPO vintage, reducing concerns that differences in CEO survival rates might reflect temporal patterns or differences in the length of the post-IPO observation period. Comparing Panel A and Panel B, we see that matching substantially

[18] Our decision to use 1-to-2 matching instead of 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, matching allowed us to focus our data collection efforts where they are most valuable.

[19] We use dummy variables for each 2-digit SIC code that represents at least 5% of the dual-class group. Software/IT (sic2=73) and Pharmaceuticals (sic2=28) are the only 2-digit SIC codes that meet this threshold. The probit model used to estimate propensity scores is included in the appendix at Table A1.

improves overlap between the groups on each observed measure. Nonetheless, even after matching some notable differences remain, particularly in measures of firm size such as market capitalization and total assets.

To further improve covariate balance, we reweight the matched single-class firms using inverse propensity score weights (IPW). Dual-class firms receive weight 1, while matched single-class firms receive weight $\frac{\hat{p}_i}{1-\hat{p}_i}$. Panel C reports IPW-weighted estimates, showing improved balance on several key variables, including market capitalization, total assets, and IPO year.[20] Our use of IPW is to ensure that comparisons to the single-class group place greater emphasis on firms that resemble the dual-class firms on observed characteristics. In the analysis below, descriptive tables and figures are reported on an unweighted basis, and IPW-weighting is reserved for the regression analysis.

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, the primary database that researchers use to identify CEO turnover, has limited coverage for IPO firms and no coverage of dual-class IPOs from 2017 to 2023.[21]

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) aggregate percent of total voting power beneficially held by a firm's VC investors,[22]

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[20] To avoid extreme weights, we bound the propensity scores in the tails -- replacing values below 0.02 with 0.02 and above 0.98 with 0.98. In our matched sample, this trimming affects 8 single-class observations (5.1% of the single-class group), and the resulting maximum IPW weight is 5.10. In Panel C, the reported means and standard deviations are weighted and medians are computed using weighted percentiles. Difference in means tests for Panel C are implemented via weighted regression.

[21] 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 between 2017 and 2023 from being included in their indices – effectively limiting ExecuComp's coverage of dual-class firms. See Winden and Baker (2019).

[22] We identify venture capital and private equity (VC/PE) investors from the "Principal Stockholders" table in each firm's IPO prospectus (Form 424B4). Research assistants manually reviewed each institutional

(v) the CEO's equity stake (and resulting wedge between their voting rights and cash flow rights), (vi) whether the CEO held high-vote stock, and if so (vii) whether the high-vote stock included a time-based sunset.[23]

Table 2 presents CEO characteristics and voting power at the time of the IPO. CEOs at dual-class IPOs are more likely to be founders (89% vs. 42%)[24] and are younger on average (45 vs. 50). The impact of high-vote stock is evident in CEOs' average voting power (25.6% in dual-class firms vs. 6.7% in single-class firms). Figure 1 illustrates the full distribution: CEO voting power is tightly concentrated at low levels in single-class firms, while dual-class firms exhibit substantial dispersion and a long right tail.

Our measure of voting power includes the impact of contractual arrangements and voting proxies disclosed in SEC filings.[25] For each dual-class firm we calculate the CEO's dual-class wedge (Δ = voting rights − cash-flow rights) immediately following the IPO by subtracting the CEO's equity cash flow rights from voting power. The average wedge is 9.7%, though the median is only 2.1%. One reason the CEO's dual-class wedge is often modest is that other parties – most notably VC investors – also hold high-vote shares after the IPO diluting the CEO's vote power. Indeed, VC investors collectively hold a larger fraction of the vote following the IPO than the CEO on average in both single-class (43%) and dual-class firms (37%).

<Insert Table 2 and Figure 1 here>

Dual-class CEOs also hold a larger equity cash-flow stake following the IPO on average (15.9% vs. 6.7%), implying greater economic exposure to firm performance despite the wedge between their voting rights and cash flow rights. Moreover, outright control is uncommon: in our sample of 79 dual-class firms, only 11 (14%) have a CEO with majority voting power immediately after the IPO. This ownership profile stands in contrast to the

shareholder and classified it based on how the investor represents itself publicly and how it is described by others; ambiguous cases were flagged and resolved by the authors.

[23] 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).

[24] Using an older sample of VC-backed IPOs, Broughman and Fried (2020) find that 41% of firms have a founder as CEO at the close of the IPO.

[25] 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 make public filings with the SEC, typically on Schedule 13D or, for certain institutional or passive investors (including many venture capital funds), on Schedule 13G. Beneficial ownership for these purposes includes voting power, including the power to vote or direct the vote of securities, whether held directly or indirectly through any contract, arrangement, understanding, relationship, or otherwise. Regulation S-K Item 403 requires issuers to disclose beneficial ownership by 5 percent holders and management, using the Rule 13d-3 definition of beneficial ownership, in the IPO prospectuses. For a general discussion of shareholder agreements in VC-backed firms see Fisch (2021).

depiction of founder-CEOs retaining control with relatively small economic stakes in other settings (e.g., Cremers, Lauterbach, and Pajuste 2024; Bebchuk and Kastiel 2017). Instead, our evidence aligns with work emphasizing substantial heterogeneity in dual-class structures and demonstrating that the magnitude of the voting–cash flow wedge varies systematically across controller types and institutional settings (Aggarwal et al. 2022).

d. CEO Turnover

We use Capital IQ to observe CEO turnover in the period after the IPO. We include all turnover events that occur by July 2025. As of July 2025, 162 out of 237 (68%) firms in our matched sample had experienced a CEO-turnover event. Table 3 reports CEO turnover split into three categories: (i) transaction-related turnover, (ii) standalone turnover, and (iii) other causes (where the CEO's tenure ends due to illness or death).

For each turnover event, a research assistant used press releases and news coverage to classify the reason for the CEO turnover. We divide standalone turnover into two subcategories: (i) performance-cited and (ii) retirement or new opportunity. We classify turnover as performance-cited if the press release or news coverage of the event mentions economic difficulties or other performance issues as a reason for the change. Standalone turnover where the press release and news coverage did not mention any economic difficulties falls into a residual category: retirement or new opportunity. 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. To the extent this classification noise is similar across dual- and single-class firms, it will bias our measures away from finding a difference between the two groups.

[**Insert Table 3 about here**]

Transaction-related turnover is more common for single-class firms (32%) compared to dual-class firms (16%). 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. Standalone turnover occurs at similar rates in both dual-class and single-class firms. We find 38% of dual-class firms (30/79) and 39% of single-class firms (62/158) have experienced standalone CEO turnover by July 2025. Moreover, press releases and news coverage suggest a similar rate of performance-cited turnover (13%) for both groups of firms.

For 75 of the 237 firms in our matched sample, the CEO at IPO remained in this position through July 2025. 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, an approach well suited to our empirical setting.[26] In our setting, censoring is administrative: CEO spells are censored because data collection ends in July 2025, not because CEOs exit the sample for reasons linked to impending turnover.[27]

Figure 2 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 5.6 years compared to 4.4 years for single-class firms ($p = .046$). This difference is primarily due to the higher rate of transaction-related turnover involving single-class firms.

To illustrate, we employ competing risks analysis (Gray 1988) to compare CEO turnover due to two distinct events: (i) transaction-related turnover and (ii) standalone replacement. These events are competing because the occurrence of one event precludes the observation of the other. We estimate separate cumulative incidence functions (CIF) for dual- and single-class firms using the non-parametric Aalen-Johansen estimator. Results are reported in Figure 3. 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 standalone turnover between dual-class and single-class firms ($p = .879$). However, we find a significant difference in transaction-related turnover between dual-class and single-class firms ($p = .025$), with dual-class firms experiencing lower cumulative incidence of transaction-related departures. In summary, dual-class firms show longer median CEO survival time due to fewer acquisitions but maintain standalone turnover rates—whether via board action or CEO resignation—similar to those of single-class firms.

<Insert Figures 2 & 3 and Table 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 2011 through July 2025. To adjust for mid-year IPOs and turnovers we determine the fraction of years-at-risk occurring within

[26] Survival analysis assumes non-informative (independent) censoring, meaning that conditional on observed covariates and on survival up to time t, the probability of being censored at t is unrelated to the CEO's latent future survival prospects. Studies of CEO tenure include survival analysis (see, e.g., Hadlock, Lee, and Parrino 2002; Jenter and Kanaan 2015; Aktas et al. 2021; Klein 2018).

[27] Differences in censoring rates across groups do not, by themselves, imply informative censoring. Under administrative censoring at a fixed study end date, a group with a lower hazard of the event will mechanically have more observations censored "event-free," analogous to a clinical trial in which treated patients survive longer and are therefore more likely to be censored alive at the end of follow-up.

each calendar year and use this to calculate the annual turnover percentage. For dual-class firms, we find an annual probability of turnover equal to 10.1%, compared to 13.8% for single-class firms. Excluding acquisitions and limiting the analysis to standalone turnover, the annual probability falls to 7.0% for dual-class firms and 7.6% for single-class firms. These rates are somewhat lower than, but broadly comparable to, CEO turnover estimates in other public-company samples. For example, Eisfeldt and Kuhnen (2013) report an annual turnover frequency of 10.49%, Cziraki and Groen-Xu (2020) report 11.49%, Jenter and Lewellen (2021) report 11.7% excluding acquisitions, and Kaplan and Minton (2012) report 15.8% including acquisition-related turnover. These numbers are closer to the turnover rate we find among single-class firms.

At first glance, our findings appear to be in tension with the persistence of founder leadership reported by Cremers, Lauterbach, and Pajuste (2024), who report that nearly 88% of dual-class firms with founder-managers at the IPO retain the founder in a leadership role eight years later. That headline figure, however, reflects important measurement choices: their persistence definition treats firms that are acquired, delisted, or otherwise exit before year eight as persistent through the exit date. Because fewer than half of dual-class founder-manager firms in their matched sample survive to eight years post-IPO (46.4%), the majority of observations are effectively right-truncated. They also employ a broad definition of leadership that includes non-CEO roles such as board chair, director, or other senior executive positions, whereas we focus specifically on CEO turnover. Once these differences are taken into account, their results are not inconsistent with substantial CEO turnover at dual-class firms.

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 2023), 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 standalone turnover, we find little difference between turnover at dual-class and single-class firms. Indeed, our competing risks analysis shows that, controlling for transaction-related turnover,

we could not reject the null hypothesis that dual and single-class firms have the same cumulative incidence function (Fig. 3) for standalone turnover. 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, 2019a; Council of Institutional Investors 2019). In the next section, we explore in more detail the connection between firm performance, vote power, and CEO turnover at dual-class firms.

III. Performance Sensitivity, Vote Power, and CEO Turnover

The prior section documents the incidence and timing of CEO turnover but does not explore the drivers of turnover. In this section, we consider two possible explanations: (a) firm performance and (b) the CEO's vote power.

a. Firm Performance

A large body of research finds that CEO turnover is more common following poor firm performance (e.g. Jenter and Lewellen 2021; Jenter and Kanaan 2015; Kaplan and Minton 2012). A board may have trouble directly observing how its CEO is performing on the job and thus rely on a firm's economic performance to provide an indirect signal of the CEO's quality (Gibbons and Murphy 1990). The board can then use this signal (among other inputs) to decide whether to retain or replace the firm's management team. At dual-class firms, however, insiders with high-vote shares, often the CEO and top executives, can exert control over the board, reducing exposure to shareholder discipline. The standard account predicts that dual-class structures sever or at least dampen the link between firm performance and CEO turnover.

This suggests two distinct predictions, which we refer to as the *absolute* entrenchment hypothesis and the *relative* entrenchment hypothesis. To formalize let $P_g(x_{t-1})$ denote the probability of CEO turnover in year t given lagged firm performance x_{t-1}, where $g \in \{S, D\}$ indexes single- and dual-class firms. Under absolute entrenchment, the likelihood of CEO turnover at dual-class firms is unrelated to performance (i.e., the marginal effect of performance on turnover is zero), so $P_D'(x_{t-1}) = 0$.

We treat absolute entrenchment as a strong-form benchmark rather than the only plausible version of the entrenchment account. Even a founder with extensive voting control

may have incentives to step aside if continued service as CEO would materially reduce the value of her equity stake. Moreover, CEO turnover may occur because the firm's needs change over time: Anderson et al. (2018), for example, model turnover as arising not only from discipline after poor performance, but also when new growth opportunities require a different managerial skill set. While the dual-class debate is sometimes framed in absolute terms, we believe relative entrenchment is a more realistic prediction.[28] Under this account, dual-class stock does not eliminate performance-sensitivity, but the relationship between performance and turnover is attenuated in dual-class firms relative to single-class firms: $P_D'(x_{t-1}) < 0$ and $| P_D'(x_{t-1}) | < | P_S'(x_{t-1}) |$.

In this subsection, we test these predictions using the empirical framework of Jenter and Lewellen (2021) [hereafter "JL"]. We use lagged industry-adjusted annual shareholder returns to benchmark performance relative to other firms in the same industry-year, netting out industry-wide shocks.[29] Prior work suggests that market and industry adjusted measures can be more informative for turnover than raw returns (Fee et al. 2018). In the Appendix, we also consider unadjusted returns and CAPM alpha as alternative measures of performance. Because our IPO sample is substantially smaller than JL's and bin sizes become thin in deciles, we use performance quintiles throughout.

Figure 4 illustrates the relationship between economic performance and CEO turnover. We sort firms in the matched sample into quintiles based on lagged industry-adjusted returns (measured in year *t–1*) and plot the probability of CEO turnover in year *t*, separately for single-class and dual-class firms (with quintiles formed within each governance type). In both groups turnover is higher following poor performance. Dual-class firms in the bottom quintile, for example, are approximately 4 times as likely to experience CEO turnover in the subsequent year as compared to firms in the top quintile. Because quintiles are formed within each governance type, the return cutoffs defining each quintile differ across groups; Figure 4 does not support direct cross-group comparisons of performance sensitivity. To test whether the performance–turnover relationship differs between dual- and single-class firms, we rely on the regression analysis in Tables 5 through 7.

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[28] Suggesting absolute entrenchment, Bebchuk and Kastiel (2019b, p. 1466) claim that controllers "are fully insulated from market disciplinary forces." For a statement suggesting relative entrenchment, Smart, Thirumalai, and Zutter (2008, p. 97) note that dual-class structure "substantially weakens the link between an executive's tenure on the job and the performance of the company."

[29] To calculate $Industry\ Adjusted\ Returns_{it}$ we first split the universe of firms covered by CRSP into 49 categories based on their SIC code, using the 49-category classification provided by Fama and French. We calculate the average annual return (equal-weighted) of the firms in each industry for each year from 2002 to 2024. We then take the annual return of each firm in our matched sample and subtract from it the relevant industry return from the same year.

<Insert Figure 4 and Table 5 about here>

To distinguish turnover that is plausibly attributable to poor performance ("performance-induced turnover") from turnover that occurs for idiosyncratic reasons even among high performers (e.g., health shocks, planned succession, personal departures, or founder transitions), we follow JL's decomposition. We can restate $P(x_{t-1})$ as the sum of its components:

$$P(x_{t-1}) = P_{other} + P_{perf}(x_{t-1}) - \left[P_{other} * P_{perf}(x_{t-1})\right]. \quad (1)$$

Here, P_{other} captures turnover unrelated to performance, and $P_{perf}(x_{t-1})$ captures performance-induced turnover, which is negatively related to x_{t-1} and goes to zero with sufficiently strong performance. The last term of Equation (1) is an adjustment to avoid double counting CEOs who might experience turnover due to idiosyncratic and performance reasons in the same year.

A key identifying assumption in JL is that performance-induced turnover is effectively zero beyond a high-performance threshold. This allows the turnover rate among top performers to proxy for P_{other}, after which $P_{perf}(x_{t-1})$ can be backed out at lower performance levels using equation (1). In our setting, we approximate the high-performance threshold using the top quintile of lagged industry-adjusted returns in the matched sample.[30]

We model CEO turnover using the following general specification:

$$Turnover_{it} = \alpha + \beta_1 Perf_{i,t-1} + \beta_2 Dual_i + \beta_3 (Perf_{i,t-1} \times Dual_i) + X'_{it}\gamma + G'_i\delta \quad (2)$$

$Turnover_{it}$ equals one if firm i's IPO CEO is replaced in year t. $Perf_{i,t-1}$ is a lagged measure of firm performance. $Dual_i$ is a time-invariant indicator equal to 1 if firm i went public with a dual-class structure. X'_{it} is a vector of control variables [CEO age, age-band indicators, CEO tenure, and log assets] and G'_i contains a set of governance variables measured at the IPO.

Table 5 reports probit estimates of equation (2), using lagged industry-adjusted annual returns split into quintiles to capture firm performance. In Panel A, Model (1) estimates a baseline probit with performance-quintile indicators (Q5 omitted). Model (2) adds an

[30] Our replication of JL's baseline probit model includes some adjustments to accommodate our setting. First, due to the smaller sample and the need to preserve a reasonable bin size for coefficient estimates, we use performance quintiles rather than deciles. Second, we do not include "dividends" as an explanatory variable as this does not translate to the IPO setting. Third, as we cannot obtain stock price data from before the IPO, we only include one year of past performance. Other explanatory variables and modelling choices follow JL.

indicator for dual-class status and interactions between dual-class status and each performance quintile, allowing the performance–turnover relationship to differ between dual- and single-class firms. Models (1) and (2) apply IPW; Models (3) and (4) report an unweighted version of the first two models.

Across specifications, turnover is substantially higher following poor performance. In the baseline models, the coefficients on Q1–Q3 are positive and statistically significant relative to Q5, indicating that CEOs are more likely to be replaced after weak industry-adjusted returns. When we allow the performance-turnover relationship to differ by governance type in Models (2) and (4), most of the dual-by-performance interaction terms are statistically insignificant. Thus, although turnover increases following poor performance, we do not find a consistent difference in that relationship between dual- and single-class firms. One exception is the positive coefficient on Q4 × Dual in Models (2) and (4). This result is anomalous relative to the generally monotonic performance-turnover relationship found in the CEO turnover literature (e.g., Jenter and Lewellen 2021; Jenter and Kanaan 2015; Fee et al. 2018).[31] The Q4 × Dual estimate arises from only 65 dual-class firm-year observations (covering 40 unique firms and 10 turnover events). We view it as a localized irregularity driven by small bin sizes. Consistent with this view, our continuous-performance specifications in Table 6 (below) do not indicate that turnover rises with better performance among dual-class firms.

The results shown in Table 5 are inconsistent with the absolute entrenchment hypothesis: dual-class CEOs are not insulated from performance-based replacement. The evidence regarding relative entrenchment is more limited. The insignificant dual-by-performance interaction terms suggest that the performance-turnover relationship is not detectably weaker at dual-class firms in our sample. Attenuation in performance sensitivity at dual-class firms (if any) is not large enough to appear clearly in our data.

Panel B (Table 5) translates these estimates into implied turnover probabilities. In the weighted specification, the implied annual turnover probability is about 4–5% in the top performance quintile and roughly 18–19% in the bottom quintile. These results are similar to JL (2021, p.585), who find that the probability of turnover rises from "around 8% per year for the top performance decile to around 18% for the bottom decile."

[31] We use a Wald test to determine whether the Q1 × Dual and Q3 × Dual interaction coefficients differ from one another. Although the implied turnover probability for dual-class firms is higher in Q1 than in Q3—by approximately 13 percentage points in both the weighted and unweighted specifications—the interaction coefficients themselves are not statistically distinguishable from one another [p = .137 in model (2) and p = .110 in model (4)]

Using equation (1), we calculate the implied probability of performance-induced turnover [P_{perf}] for each quintile.[32] We set P_{other} equal to the model-implied rate of total turnover in the top performance quintile [Q5]. By construction, this implies that $P_{perf} = 0$ for the top quintile. Panel B of Table 5 reports the resulting decomposition. In the weighted specification, the implied share of turnover attributable to performance is 66% for dual-class firms and 59% for single-class firms; using a firm-clustered-bootstrap, we find that the 7-percentage-point gap is not statistically different from zero.[33]

In sum, contrary to the predictions of relative entrenchment we do not find a lower rate of performance-induced turnover at dual-class firms. We repeat this analysis using unadjusted returns and CAPM alpha as alternative proxies for firm performance (results reported in Table A2 and A3 of the appendix). Depending on how we measure performance, we estimate between 43% and 66% of turnovers at dual-class firms are performance-induced and between 44% and 59% of turnovers at single-class firms are performance-induced. We view these patterns as roughly consistent with JL – who report between 38% and 57% of all turnovers in their study are performance induced.

One reason the implied performance-induced share is relatively high for dual-class firms in our sample is that our estimate of P_{other} is comparatively low. In the weighted specification, for instance, the Q5 turnover rate used to proxy P_{other} is 4.1% per year for dual-class firms. For the sake of comparison, the various estimates of P_{other} in JL's sample are between 5% and 8%. Because the performance-induced share is defined relative to total turnover, a lower estimate of P_{other} increases the fraction attributed to performance. Substantively, a lower P_{other} among dual-class CEOs is plausible: CEOs in dual-class IPO firms are younger on average and more likely to be founders who are deeply connected to the business.[34] Given this, it is perhaps unsurprising that they seldom leave when things are going well. This interpretation also helps reconcile Table 5 with the longer CEO survival times

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[32] Technically, $P_{perf} \geq 0$. So, in any case where the solution to equation (1) would suggest a negative value, we set $P_{perf} = 0$. [see equation (3) in JL at 575].

[33] In each bootstrap replication, we resample firms with replacement, retain all firm-year observations for each sampled firm, re-estimate the Table 5 probit specification, recompute the implied performance-induced turnover shares using Equation (1), and record the dual-minus-single difference. The resulting bootstrap standard error for the 7-percentage-point gap is approximately 26 percentage points, with a 95% confidence interval of roughly [−46, +56] percentage points and a two-sided p-value of approximately 0.73.

[34] Our dual-class founder-CEOs are younger on average (approximately 45) than founder-manager samples emphasized elsewhere in the literature. For example, Cremers, Lauterbach, and Pajuste (2024) define "young" founder-managers as those aged 49 or younger at the IPO (the median founder-manager age in their sample) and show that early post-IPO valuation benefits of dual-class structures are concentrated among this younger group.

shown in Figure 2: longer tenures in dual-class firms may reflect greater CEO retention when things are going well, rather than insulation from market discipline when their business is struggling.

We assess the robustness of the baseline probit results in two ways. First, to ensure that our findings are not an artifact of the quintile cutoffs, we re-estimate the Table 5 specifications using lagged industry-adjusted returns (winsorized at the 2nd and 98th percentiles) as a continuous measure of performance [$Perf_{i,t-1}$] rather than quintile indicators. Models (1) and (2) in Table 6 report these results. Consistent with the quintile analysis, we find a significant negative relationship between industry-adjusted returns and CEO turnover in both models. In Model (2), we allow the performance–turnover relationship to differ by adding an interaction between *dual* and *industry-adjusted returns*. Neither *dual* nor the interaction term are statistically significant, suggesting that the marginal effect of performance on turnover is broadly similar across dual- and single-class firms.

Panel B reports average marginal effects (AMEs). A 10-percentage-point increase in industry-adjusted returns corresponds to an implied reduction of approximately 0.63 percentage points in the annual turnover probability at single-class firms and 0.59 percentage points at dual-class firms. The difference in AMEs between dual- and single-class firms is small and statistically indistinguishable from zero.

Second, our main specifications treat CEO turnover as including both standalone replacements and transaction-related turnover. This differs from most studies of CEO turnover, which only consider standalone turnover.[35] Because our research question concerns whether dual-class control insulates founders from being displaced from the CEO role, we adopt a broad definition of turnover that captures multiple potential channels through which insulation or entrenchment could arise. Excluding transaction-related turnovers would introduce bias if (as we find) the likelihood of transaction-related turnover differs by governance structure.

That said, the determinants of standalone replacement may differ from the determinants of firm sale or delisting. To examine this distinction, Models (3) and (4) re-estimate the continuous-performance specifications using standalone turnover only, excluding firms that were acquired or delisted while the IPO CEO remained in office. The resulting sample is smaller (801 observations). In Model (3), industry-adjusted returns remain a statistically significant negative predictor of standalone turnover, and the full-sample AME is similar to

[35] As a notable exception, Kaplan and Minton (2012) include transaction-related CEO turnover, which they label "external turnover" when examining the sensitivity of CEO turnover to firm performance.

that in Model (1). In Model (4), the interaction specification yields noisier subgroup estimates: the AME remains statistically significant for dual-class firms but is not statistically significant for single-class firms. The magnitude of the AME estimate for single-class firms changed from -0.063 in model (2) to -0.037 in Model (4), based on excluding firms that experienced transaction-related turnover. M&A sales are an important source of performance sensitivity at single-class firms. For dual-class firms, however, we do not find a material change in performance sensitivity based on whether the dependent variable is limited to standalone turnover.

<Insert Table 6 here>

b. CEO Vote Power and Sunset Clauses

By departing from "one share one vote," dual-class structures allocate voting power in a manner that benefits the holders of high-vote stock. There is considerable variation, however, among dual-class firms in the concentration of voting power (Tallarita 2024; Aggarwal et al. 2022). At some firms, the CEO holds only a modest share of the vote; at others, the CEO holds a large or even controlling block. If voting power entrenches management, CEOs with greater voting control should be less likely to be replaced. We test that prediction using variation in CEO voting power across both dual- and single-class firms.

Table 7 extends our baseline probit specification by adding governance variables measured at the IPO: CEO Vote Power, VC Vote Power, and the CEO's wedge between voting rights and cash-flow rights.[36] Under the conventional agency-cost account, turnover should be lower when the CEO controls more votes, especially when voting power is decoupled from economic ownership.

Models (1) and (2) first examine CEO Vote Power and Wedge. The coefficient on CEO Vote Power is negative in both models, consistent with the entrenchment prediction, but it is not statistically significant. The coefficient on Wedge is also statistically insignificant. These specifications provide no clear evidence on whether CEOs with greater voting power, or a larger voting-rights wedge, are less likely to be replaced. These estimates should not be read as causal. For example, founders who anticipate greater ouster risk may bargain for stronger voting protection, which could bias the estimated relationship between CEO vote power and

[36] At dual-class firms the Wedge equals the CEO's vote percentage minus her equity stake. At single-class firms the Wedge is zero.

turnover.[37] Still, the absence of a significant CEO-vote-power effect is notable given the centrality of control to the entrenchment account.

<Insert Table 7 here>

Models (3) through (6) add VC Vote Power. This extension is motivated by the ownership structure of VC-backed IPO firms: as Table 2 shows, VC investors often hold substantial voting blocks immediately after the IPO, giving them potential influence over CEO turnover. Across these specifications, VC Vote Power is positively associated with CEO turnover, indicating that firms in which VCs hold larger voting blocks are more likely to experience leadership change. This result is consistent with VC voting stakes, together with board seats and ongoing influence, shaping post-IPO succession decisions, though we cannot isolate the precise mechanism. The interaction models do not support a stronger claim that VC voting power increases performance-related discipline. In Model (5), the Industry Adjusted Returns × VC Vote Power interaction is positive and statistically insignificant, implying, if anything, weaker performance sensitivity at firms with larger VC voting blocks. Model (6) similarly provides no clear evidence that the wedge alters performance sensitivity: the interaction between Industry Adjusted Returns and Wedge is negative but statistically insignificant.

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. The potential impact of sunsets on CEO turnover is limited by timing: in our sample the average sunset trigger date is 9.6 years after the IPO, whereas the median post-IPO tenure of dual-class CEOs is only 5.6 years.

In our analysis of 79 dual-class firms, 37 implemented time-based sunset clauses. Figure 5 plots Kaplan-Meier survival functions, comparing CEO survival at dual-class firms with and without such provisions. CEOs at firms with sunsets exhibit shorter median survival (4.3 years) than CEOs at firms without sunsets (6.6 years), a pattern that is directionally consistent with sunset provisions making CEO replacement easier. The 2.3-year gap in

[37] Similar concerns could also impact the design of ex ante employment agreements (Schwab and Thomas 2006; Gillan, Hartzell, and Parrino 2009).

median survival is economically meaningful. The difference, however, is not statistically significant (p = .19). Because this comparison is confined to the dual-class subsample, the test has limited power and may reflect selection effects in adoption of sunsets.

<Insert Figure 5 and Table 8 here>

For the subset of dual-class firms with a sunset clause (n=37), we next examine if turnover is more likely to occur before or after the sunset trigger date. For both the pre-trigger and post-trigger period, we calculate the ratio of turnover events divided by the number of years-at-risk of turnover (years-at-risk includes fractional years for the portion of a year that occurs after an IPO or prior to replacement). Table 8 reports results. CEOs at this subset of firms experienced a total of 178.3 years-at-risk of turnover and 23 turnover events. Most of the observed exposure time, however, falls in the pre-trigger period: 161.1 years at risk and 21 turnover events occurred before the sunset date, compared to only 17.2 years at risk and 2 turnover events after the trigger.

This imbalance limits what can be learned from the before-versus-after comparison. Only 7 of the 37 sunset firms reached the trigger date with the IPO CEO still in place. The remaining observations were either censored before the trigger date (n=9) or they replaced the CEO beforehand (n=21). The 7 firms that reached the sunset date generated 17.2 years of survival data after the sunset triggered and 2 turnover events, implying an annual post-sunset turnover probability of 11.6%. We hesitate to draw much inference given that the post-sunset observation period is very small.

In our sample, 21 of the 37 firms that went public with a sunset clause replaced the IPO CEO prior to the trigger date. In each case the turnover occurred at least 2.6 years before the sunset date, suggesting these turnovers were not done in the "shadow" of an imminent sunset. The annual turnover rate at dual-class firms that include a sunset provision, 12.9% (Table 8), is within the range of CEO turnover estimates reported in other public-company samples. See, e.g., Kaplan and Minton (2012); Jenter and Lewellen (2021); Eisfeldt and Kuhnen (2013); Cziraki and Groen-Xu (2020).

IV. Market Response to CEO Turnover Announcements

To complement our analysis of CEO turnover, we examine stock-price reactions to turnover announcements for the firms in our matched sample. Using short-window event studies, we assess whether investors respond differently to CEO turnover at dual-class as compared to single-class firms.

We implement two separate event studies corresponding to the two distinct forms of CEO turnover documented in our sample: (i) standalone turnover and (ii) transaction-related turnover. We analyze these categories separately. While standalone turnover isolates the market response to a CEO change, transaction-related turnover occurs in the context of a firm sale, where abnormal returns largely reflect the deal premium negotiated in the acquisition itself. The size of an M&A premium, of course, may partially reflect value created by changes in senior management. Nonetheless, the processes are sufficiently distinct that we believe it is better to split standalone and transaction-related turnover into separate event studies.

We use a similar event-study design in both settings. For each firm, we identify the first public announcement date of either (i) the CEO change (standalone turnover) or (ii) the firm's sale or merger (transaction-related turnover) and treat that date as event day 0.[38] We then estimate cumulative abnormal returns using both a market-model and a simpler market-adjusted approach. For the market model we estimate the following equation for each firm:

$$R_{it} = \alpha_i + \beta_i R_{mt}, \tag{3}$$

using a pre-event estimation window that begins 250 trading days before the event and ends 30 trading days prior to the event $[-250, -30]$, where R_{it} denotes the firm's daily return and R_{mt} the market's daily return.[39] We use the fitted values from this model to compute daily abnormal returns and cumulative abnormal returns ("CARs") over standard event windows (e.g., [−2,+2]).[40] For robustness, we also compute a market-adjusted abnormal return and a market-adjusted CAR by taking the difference between R_{it} and R_{mt} for each day during our event window.

Figure 6 plots mean CARs over the $[-10, +10]$ window surrounding standalone turnover announcements, normalized to zero at the beginning of the window. The main feature is a divergence around the announcement date. Single-class firms experience a negative CAR after the announcement, while dual-class firms experience a positive CAR after announcement. The divergence persists through the end of the event window.

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[38] In identifying event day 0, we use the earliest public disclosure of the event (e.g., SEC filings or press release). If an announcement is made on a weekend or holiday, we assign day 0 as the first trading day. Similarly, daily returns are measured on trading days, skipping weekends and holidays.

[39] The market return R_{mt} is proxied by the CRSP value-weighted market return.

[40] The market-model daily abnormal return can be expressed as $\text{abret}_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$, where α_i and β_i are estimates from Equation (3). We compute cumulative abnormal returns for firm i over an event window $[T_1, T_2]$ by summing daily abnormal returns, $\text{CAR}_i[T_1, T_2] = \sum_{t=T_1}^{T_2} [R_{it} - (\alpha_i + \beta_i R_{mt})]$.

Table 9 (Panel A) summarizes announcement-window returns for standalone turnover. Across both market-model and market-adjusted specifications, standalone turnover at dual-class firms is associated with positive CARs, while standalone turnover at single-class firms is associated with negative CARs. When we reweight the single-class sample to better match the dual-class firms on observables, the single-class mean CARs move closer to zero, but the qualitative divergence in turnover announcement CARs remains. The difference in means between dual- and single-class firms is economically meaningful—generally on the order of 5–6% using the weighted comparison (and about 7–8% in the unweighted comparison). However, these differences are generally not statistically significant in the weighted specifications and are only marginally significant in the unweighted specifications.

Switching to M&A-related turnover, Figure 7 plots mean CARs over the $[-20, +10]$ window surrounding M&A announcements, normalized to zero at the beginning of the window. We use a longer pre-announcement window to capture potential price run-up or information leakage before the formal deal announcement. As expected, both dual- and single-class firms experience a large positive cumulative return around day 0, reflecting the acquisition premium. Dual-class firms also show a more pronounced pre-announcement run-up and somewhat higher post-announcement CARs. Table 9 (Panel B) shows that average CARs are on the order of 31–32% for single-class targets and 39–41% for dual-class targets. Although mean CARs are higher for M&A announcements involving dual-class firms—approximately 12% higher using the weighted comparison (and about 8–9% higher in the unweighted comparison)—the difference is only marginally significant in the weighted comparison and insignificant in the unweighted comparison. Nonetheless, across both standalone turnover and transaction-related turnover, the short-term market response to turnover announcements is, on average, more favorable for dual-class firms.

Two limitations of this design are worth flagging. First, our event study is restricted to acquisition announcements that ultimately resulted in delisting — withdrawn or unconsummated deals are by construction not in the sample. Prior work has used withdrawn or failed deals as a research-design device to isolate components of the market's reaction to acquisition announcements (Jacobsen 2014; Seru 2014). Second, because we tag transaction-related events at the firm level via the delisting record, every M&A event in our sample mechanically coincides with the CEO ceasing to be CEO of an independent public firm. The M&A CARs we report should therefore be read as combining a deal-premium effect with the market's reaction to the accompanying leadership change, rather than as estimates of either component in isolation.

<Insert Figures 6 & 7 and Table 9 here>

A dual-class structure can enhance a CEO's ability to block either a standalone or transaction-related turnover. In that case, the turnover events that we observe at dual-class firms may be unusual in that they coincide with gains large enough to clear these control-related hurdles. In the M&A context, this would imply fewer transactions and higher expected premiums for the sales that do occur. A parallel mechanism could operate for standalone turnover: if a dual-class CEO is harder to remove, poor performance may persist longer, depressing the pre-event price and creating greater scope for an upward repricing when a leadership change finally occurs.

Our event-study results are consistent with this pattern. At dual-class firms, however, we only find a lower rate of transaction-related turnover, with similar levels of standalone turnover between the two groups. One explanation is that dual-class CEOs have stronger incentives to resist a sale of the firm: a change-of-control transaction would not only remove the CEO from the top executive role but also terminate the high-vote control arrangement. By contrast, a standalone CEO transition can leave a dual-class founder with substantial voting power and influence—especially if the former CEO retains a leadership position (e.g., as board chair) after stepping down. This dynamic could generate substitution, with some foregone M&A exits at dual-class firms leading to standalone turnover instead.

How well does this selection-and-substitution account fit our broader results? With respect to transaction-related turnover, the evidence is directionally consistent: dual-class firms are less likely to experience transaction-related turnover and, conditional on sale, exhibit larger announcement returns, consistent with a holdout premium or selection-on-surplus effect. The framework also fits the positive announcement effects we observe for standalone CEO turnover at dual-class firms. Yet it has limits. We do not observe a higher incidence of standalone turnover at dual-class firms, suggesting that any substitution from foregone transactions into standalone transitions is modest and may be offset by "non-events" (founders remaining in office longer). And turnover-performance sensitivity is broadly similar across governance types, undercutting one of the mechanisms (vote power) that arguably gives dual-class CEOs the means to impede a turnover event. [41]

Several alternative interpretations are also consistent with our event-study results and caution against treating CARs as a definitive welfare measure. First, we find that announcement returns are more positive when the departing CEO is a founder, and because founders are more prevalent among dual-class CEOs, founder status may explain part of the

[41] Unobserved differences between dual-class and single-class firms could also explain these patterns (for example, dual-class firms, regardless of governance structure, may be better able to remain independent and less likely to consider a sale of the firm).

cross-group difference in CARs. This is consistent with research finding heterogeneity in stock price reactions to CEO deaths, including those of young and old founder-CEOs (Jenter, Matveyev, and Roth 2023). Further, it is consistent with research finding a favorable market reaction when CEO succession signals professionalization—for example, when firms appoint an outside CEO rather than promoting an insider (Dahya and McConnell 2005). Second, public markets may reflect a short-term bias (myopia) and have trouble evaluating long-term growth (Stein 1988; Thakor 1990). In the dual-class setting, proponents often argue that insulating a founder from market pressure can facilitate long-horizon investments, implying that a short-term event study reaction to CEO turnover may not map cleanly onto long-run outcomes (Oler, Harrison, and Allen 2008). We treat the event-study evidence as a useful complement to our turnover analyses, but not as a standalone test of whether dual-class governance enhances or reduces long-run shareholder value.

V. Alternative Interpretations

The analyses above show that CEO turnover at dual-class firms is sensitive to performance and is not materially less frequent than at comparable single-class firms once transaction-related exits are separated out. This section considers how these findings should be interpreted in light of the distinctive governance features of dual-class firms. In particular, we explore whether replaced dual-class CEOs retain influence through board seats and other positions after stepping down as chief executive. We also consider whether the protection afforded by dual-class structures is better understood as contingent on firm performance rather than absolute.

a. *Former CEO as Influential Shareholder*

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. The original CEO may help pick their successor (Nili 2019), become board chair, and continue to influence strategic decisions through their large voting power—in some cases even removing the new CEO or retaking the job. The turnover that we document reflects a meaningful change in day-to-day operations, but the founder may nonetheless retain a form of de facto control.

To explore this possibility, for each CEO who experienced standalone turnover 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 10 and cover 31 turnovers at dual-class firms and 65 at single-class firms. The first feature to note is the large gap in vote power:

replaced dual-class CEOs hold on average 36.1% of the vote power (median = 29.4%), compared with only 6.1% (median = 4.1%) for replaced single-class CEOs.

<Insert Table 10 here>

Beyond the headline retention rates, Table 10 captures a feature of post-turnover outcomes the broader turnover literature does not measure: the form of continued attachment to the firm.[42] We find that 68% (=21/31) of replaced dual-class CEOs and 58% (=38/65) of replaced single-class CEOs retain a role at the firm post-turnover. Among those who do move on entirely, the paths differ by class. Seven dual-class CEOs (23%) founded a new venture, compared with six single-class CEOs (9%); conversely, 13 single-class CEOs (20%) took an employee role at a different firm, compared with only two dual-class CEOs (6%). This reduction of founder-CEO influence often unfolds gradually, as seen at Peloton (John Foley), Blue Apron (Matt Salzberg), Pinterest (Ben Silbermann), and Lyft (Logan Green): removal from the CEO role typically comes first, with departure from the board following later (Aran and Pollman 2024). Overall, CEO turnover in our sample more often repositions founders within the firm than severs their ties.

There is a notable difference, however, in the ultimate disposition of departed CEOs in single- and dual-class firms. Among the 21 dual-class CEOs who initially retained a role, 16 became chair of the board and 5 continued as directors or in other non-CEO positions. Looking out to July 2025, 11 dual-class CEOs (35%) were still officers or directors and 6 (19%) had departed completely, while in single-class firms only 7 (11%) remained an officer or director and 27 (42%) had 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 (13%) dual-class cases compared to 4 (6%) in single-class firms.

For each category we separately report individuals who held a large fraction of the vote (> 25%) at the time of turnover.[43] Of the 11 dual-class CEOs who retained an officer or director position long term, we find that just over half (6) also held at least 25% of the vote. Together with the boomerang cases, these observations point to a distinct form of founder turnover: the founder loses the CEO's day-to-day authority but remains positioned to

[42] Existing studies of CEO post-turnover outcomes focus on what happens at other firms. Cziraki and Groen-Xu (2020, Table 5 Panel A), studying 874 separated CEOs at S&P 1500 firms with fixed-term contracts, document that 21.5% obtain a senior executive role at another firm within three years and 26.8% find no further position anywhere. Fee, Hadlock, and Pierce (2018, Table 1 Panel B), in a sample of 6,787 generic CEO-turnover events, report an elite public-job resurfacing rate of 4.0% (the share of separated CEOs who become a top-four officer at another public firm within four years), a 36.8% rate of obtaining a board seat at another public firm, and a median imputed compensation ratio of roughly 76% of the prior post.

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

influence, or even resume, control. Even so, the fact that founder-CEOs holding large voting blocks routinely step down following poor performance suggests a more nuanced account than the conventional entrenchment narrative.

b. *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 may weaken 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. 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.[44]

Overall, 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.

VI. Conclusion

Although a robust literature has developed on dual-class structures, the turnover of CEOs in the top managerial spot at dual-class firms after IPO has gone largely unexamined.

[44] On the role that activist hedge funds play in public companies with a controlling shareholder, see Kastiel (2016) and Aran and Pollman (2024). The appendix provides some background on activist campaigns targeting the firms in our matched sample (see Table A5 and Figure A3).

Understanding whether CEOs are entrenched in their role, as assumed, 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 hold almost four times as much voting power after the IPO as single-class CEOs, their median time in the top managerial role is only about one year longer (5.6 versus 4.4 years). Moreover, the difference is due to a higher rate of acquisitions targeting single-class firms as compared to dual-class firms. There is no significant difference in standalone—i.e., non-acquisition related—turnover rates.

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 voting power or the size of the wedge between vote percentage and equity stake. Finally, our evidence on sunset provisions is mixed. CEOs at firms with time-based sunsets exhibit shorter survival on average, in a direction consistent with sunsets making removal easier, but the difference is not statistically significant.

Our study cannot answer the broader question of whether shareholders benefit from dual-class structures. Such structures may play an important role in attracting and maintaining value-enhancing founder involvement post-IPO. Yet, even if dual-class structures do not entrench founder-CEOs, they may be associated with other governance problems. For instance, they might hinder an effective market for corporate control, allow CEOs to bargain for lucrative benefits, or create challenges in planning leadership transitions.

Our study opens several important avenues for future research. 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. Understanding these dynamics could illuminate how dual-class structures operate in the VC-

backed IPO context. Furthermore, recent Delaware case law,[45] and statutory amendments,[46] underscore the importance of understanding various control arrangements including through contractual rights and dual-class voting structures.

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Table 1. Descriptive Statistics for Sample Firms

Panel A: Full Sample

	Dual-Class Firms				Single-Class Firms				Diff-means (p-value)
Variable	Obs.	Mean	Med.	SD	Obs.	Mean	Med.	SD	
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: Matched Sample

	Dual-Class Firms				Single-Class Firms				Diff-means (p-value)
Variable	Obs.	Mean	Med.	SD	Obs.	Mean	Med.	SD	
Market Cap [$M]	79	23349	3715	82252	158	6699	1354	21676	0.02*
Total Assets [$M]	79	4598	999	18368	158	1561	423	4203	0.05*
# of Employees (000)	79	3.6	1.8	8.1	158	2.7	1.0	5.5	0.32
IPO Year	79	2016.2	2017	3.5	158	2015.1	2015	4.0	0.03*
CEO Age at IPO	79	45.3	45.0	9.0	158	49.5	49.0	7.0	0.00**
Software/IT Related	79	68.4%	.	46.8%	158	60.1%	.	49.1%	0.07*
Healthcare/Pharma	79	5.1%	.	22.1%	158	4.4%	.	20.6%	0.03*
Propensity Score	79	0.32	0.33	0.19	158	0.24	0.22	0.13	0.00**

Panel C: Matched Sample (Reweighted Single Class)

	Dual-Class Firms				Single-Class Firms				Diff-means (p-value)
Variable	Obs.	Mean	Med.	SD	Obs.	Mean	Med.	SD	
Market Cap [$M]	79	23349	3715	82252	158	29875	2953	64880	0.51
Total Assets [$M]	79	4598	999	18368	158	5499	692	10253	0.65
# of Employees (000)	79	3.6	1.8	8.1	158	7.4	1.4	12.3	0.01**
IPO Year	79	2016.2	2017	3.5	158	2016.1	2017	3.8	0.87
CEO Age at IPO	79	45.3	45.0	9.0	158	49.3	49.0	7.3	0.00**
Software/IT Related	79	68.4%	.	46.8%	158	64.3%	.	48.1%	0.52
Healthcare/Pharma	79	5.1%	.	22.1%	158	0.3%	.	5.5%	0.03*
Propensity Score	79	0.32	0.33	0.19	158	0.38	0.32	0.21	0.01*

Note. This table reports descriptive statistics for a sample of US-based venture-backed firms that went public between 2002 and 2020. Panel A compares dual-class IPOs (n = 79) to the full set of single-class IPOs (n = 890). Panel B compares the 79 dual-class IPOs to a matched sample of 158 single-class IPOs identified through 1-to-2 nearest-neighbor propensity score matching. Panel C applies inverse propensity score weights (ATT weights) to the matched single-class firms so that their observable characteristics more closely resemble those of the dual-class firms. For variables that change year-to-year, the 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 two-sided difference in means test *P < .10; **P < .01.

Table 2. CEO Characteristics and Control Rights

	Dual-class Firms			Single-class Firms		
	Obs.	Mean	Med.	Obs.	Mean	Med.
CEO age at IPO	79	45.3	45	158	49.5	49
IPO CEO is founder	79	88.6%	1	158	42.4%	0
Time-based sunset	79	46.8%	0	-	N.A.	
CEO vote % at IPO	79	25.6%	18.4%	158	6.7%	4.3%
- if CEO is founder	*70*	*27.8%*	*19.9%*	*67*	*10.2%*	*6.9%*
- if CEO is not founder	*9*	*7.9%*	*5.9%*	*91*	*4.2%*	*3.1%*
Dual-class wedge	79	9.7%	2.1%	-	N.A.	
CEO equity cash flow % at IPO	79	15.9%	12.4%	158	6.7%	4.3%
VC vote % at IPO	79	37.0%	38.3%	158	43.1%	45.8%
CEO controls > 30% vote at IPO	79	26.6%	0	158	2.5%	0
CEO controls > 50% vote at IPO	79	13.9%	0	158	0	0

Note. 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 158 single-class US-based IPO firms that went public between 2002 and 2020. N.A. = not applicable.

Figure 1. Distribution of CEO Vote Power at IPO

This figure plots the distribution of CEO voting power immediately after the IPO for firms in the matched sample, separately for single-class and dual-class firms. Bars report the percentage of firms in each two-percentage-point bin and sum to 100% within each panel.

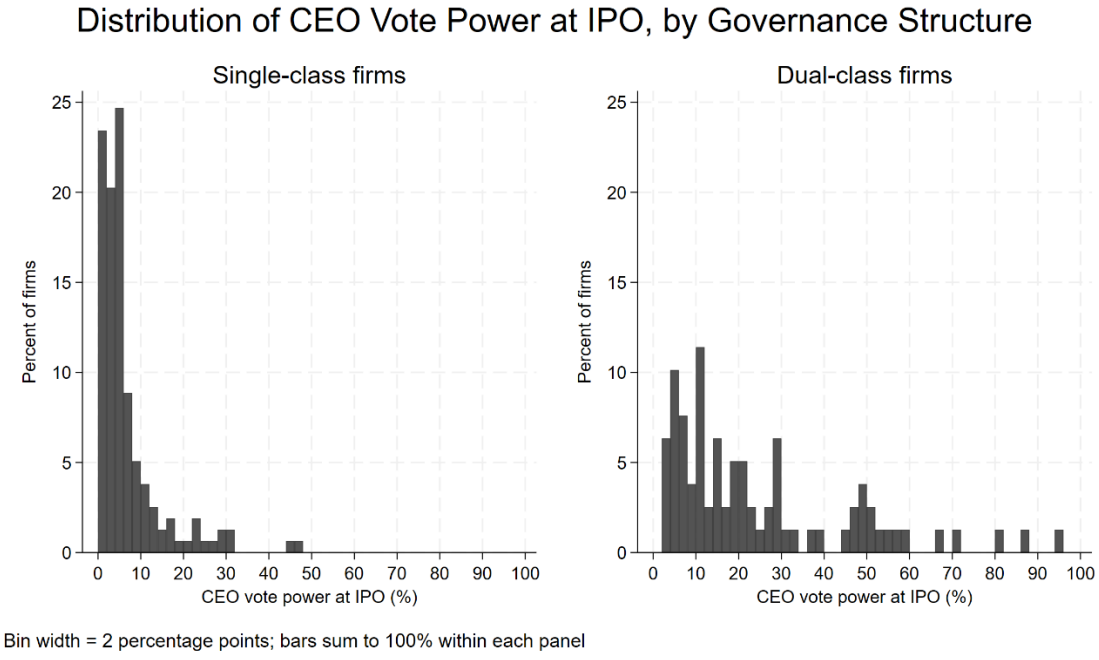


Table 3. Classification of CEO Turnover Events

	Dual-class Firms		Single-class Firms	
	Count	Percent	Count	Percent
Right-Censored Observations (no turnover as of July 30, 2025)	34	43%	41	26%
Transaction-Related				
- Firm Acquired	12	15%	49	31%
- Bankruptcy	1	1%	2	1%
Standalone				
- Performance-cited	10	13%	20	13%
- Retirement or New Opportunity	20	25%	42	27%
Other				
- Illness	1	1%	3	2%
- Death	1	1%	1	1%
Total	79	100%	158	100%

Note. This table reports the reason for each CEO turnover observed in the matched sample of 79 dual-class and 158 single-class US-based IPO firms that went public between 2002 and 2020. Results are separately reported for dual-class and single-class firms.

Figure 2. Survival Plot – All Turnover Events

This figure plots Kaplan-Meier survival estimates for the IPO CEO among 79 dual-class and 158 single-class firms in the matched sample. Failure includes both standalone CEO turnover and transaction-related turnover; observations are right-censored if the IPO CEO remains in office as of July 2025.

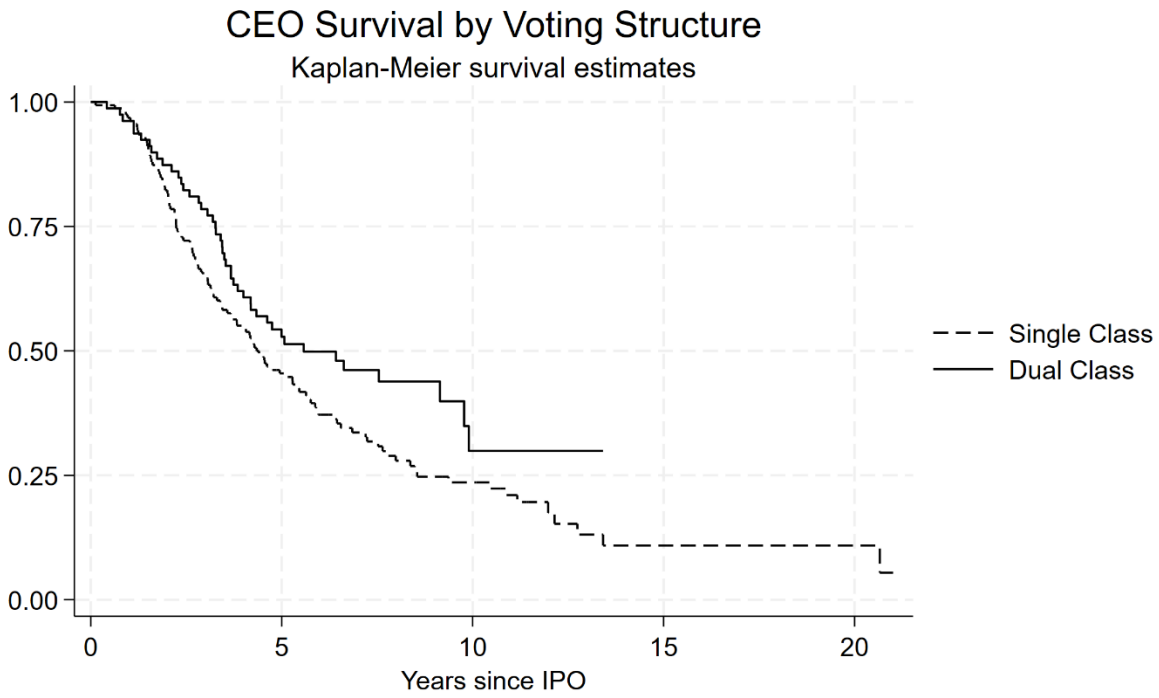


Figure 3. Competing Risks – Standalone vs. Transaction-Related Turnover

This graph reports separate cumulative incidence functions (CIF) for standalone turnover and transaction-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).

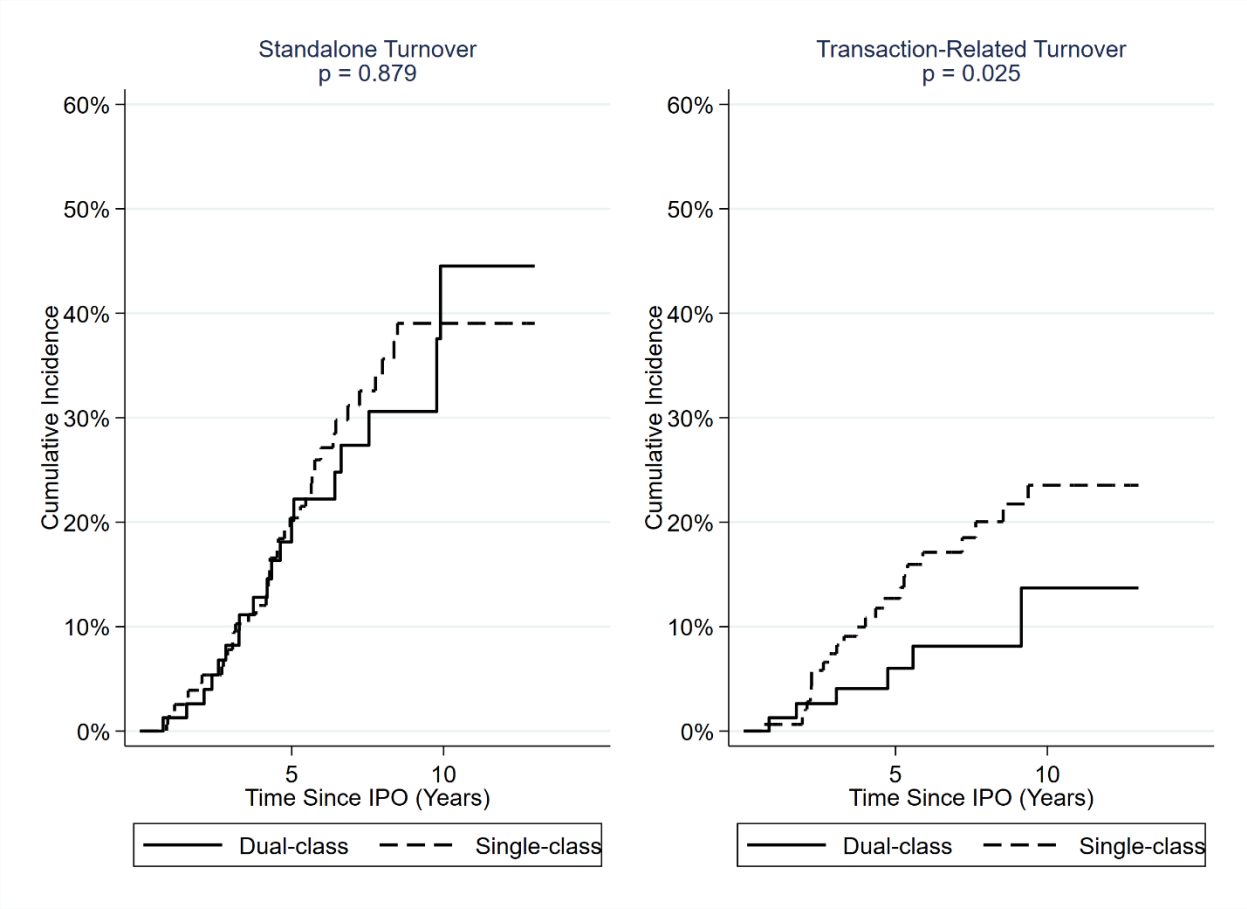


Table 4. CEO Turnover by Year

	Dual-Class Firms			Single-Class Firms		
Year	Turnover Events	Years at Risk	Annual Turnover %	Turnover Events	Years at Risk	Annual Turnover %
2002 - 2010	1	12.9	7.8%	2	55.7	3.6%
2011	1	3.8	26.4%	2	16.9	11.8%
2012	0	8.5	0.0%	2	22.2	9.0%
2013	3	10.3	29.2%	1	30.0	3.3%
2014	2	12.2	16.4%	4	52.5	7.6%
2015	1	16.6	6.0%	10	63.1	15.8%
2016	1	20.6	4.9%	11	59.7	18.4%
2017	5	26.4	18.9%	10	59.1	16.9%
2018	3	34.2	8.8%	6	62.2	9.7%
2019	3	39.3	7.6%	16	65.9	24.3%
2020	4	46.3	8.6%	5	72.4	6.9%
2021	5	49.8	10.0%	13	78.6	16.5%
2022	5	45.1	11.1%	14	63.7	22.0%
2023	3	42.1	7.1%	11	50.6	21.7%
2024	5	37.1	13.5%	4	43.5	9.2%
2025	1	20.6	4.9%	2	22.7	8.8%
Total	43	425.8	10.1%	113	818.9	13.8%
Standalone	30	425.8	7.0%	62	818.9	7.6%

Note. For 79 dual-class and 158 single-class firms in the matched sample, this table reports the number of turnover events, excluding departures due to death or illness, and annual turnover probability for each calendar year. Annual turnover probability is separately reported in the bottom rows for all turnover events, the "Total" row, and excluding transaction-related turnover, the "Standalone" row.

Figure 4. Industry Adjusted Returns and Annual Probability of CEO Turnover

For 79 dual-class and 158 single-class firms in the matched sample, this figure plots the annual probability of CEO turnover in year *t* by quintile of lagged industry-adjusted stock returns, measured in year *t*–1. Quintiles are formed separately within the single-class and dual-class groups, with Quintile 1 representing the worst prior-year performers and Quintile 5 representing the best prior-year performers.

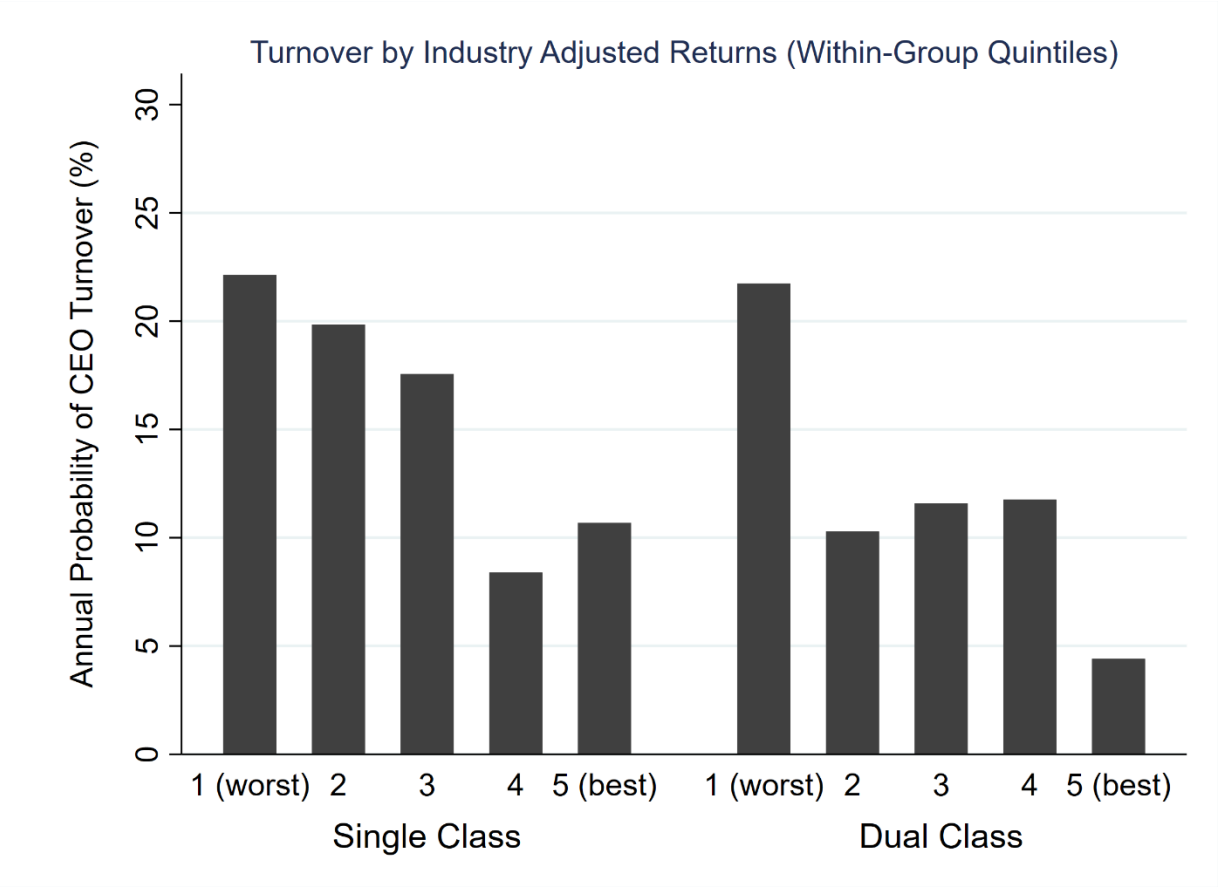


Table 5. Baseline Probit Model with Performance Quintile Indicators

Panel A. Probit regressions

	Weighted (IPW)		Unweighted	
	(1)	(2)	(3)	(4)
Q1 (lowest)	0.847***	0.751***	0.629***	0.520**
	(0.000)	(0.001)	(0.000)	(0.014)
Q2	0.558**	0.568**	0.450**	0.419*
	(0.015)	(0.028)	(0.014)	(0.053)
Q3	0.522**	0.684***	0.494***	0.505**
	(0.016)	(0.003)	(0.005)	(0.013)
Q4	0.495**	0.029	0.211	-0.080
	(0.036)	(0.909)	(0.259)	(0.725)
Q5 (highest, base)	-	-	-	-
Dual-class firm		-0.104		-0.326
		(0.758)		(0.316)
Q1 × Dual		0.168		0.345
		(0.689)		(0.382)
Q2 × Dual		-0.016		0.108
		(0.972)		(0.791)
Q3 × Dual		-0.478		-0.287
		(0.298)		(0.517)
Q4 × Dual		0.737*		0.819**
		(0.086)		(0.044)
CEO age	0.030***	0.029**	0.018**	0.017*
	(0.009)	(0.012)	(0.043)	(0.067)
Age 61–63	-0.046	-0.060	0.174	0.185
	(0.863)	(0.821)	(0.432)	(0.403)
Age 64–66	-0.031	-0.018	-0.041	-0.032
	(0.929)	(0.958)	(0.874)	(0.902)
Age ≥ 67	-0.553	-0.561	-0.173	-0.157
	(0.117)	(0.116)	(0.502)	(0.546)
Tenure (years)	-0.030	-0.027	-0.021	-0.022
	(0.268)	(0.308)	(0.201)	(0.188)
Log Assets (lagged)	-0.123**	-0.123**	-0.056	-0.052
	(0.025)	(0.022)	(0.131)	(0.186)
Constant	-2.222***	-2.120***	-1.971***	-1.810***
	(0.004)	(0.005)	(0.001)	(0.002)
Observations	981	981	981	981
Firm Clusters	222	222	222	222
Inverse Probability Weights	Yes	Yes	No	No

Panel B. Implied Turnover Probabilities

	weighted			unweighted		
	Overall	Single	Dual	Overall	Single	Dual
			Total Turnover			
Q1 (lowest)	18.5%	17.6%	19.2%	19.7%	19.5%	20.0%
Q2	12.1%	13.5%	11.2%	15.2%	16.9%	12.0%
Q3	11.4%	16.0%	6.1%	16.2%	19.1%	7.0%
Q4	10.9%	5.3%	15.5%	10.3%	7.4%	16.7%
Q5 (highest)	4.5%	5.0%	4.1%	7.1%	8.5%	4.5%
All turnover	11.5%	11.5%	11.2%	13.7%	14.3%	12.0%
			Performance Induced			
Q1 (lowest)	14.7%	13.3%	15.7%	13.6%	12.0%	16.2%
Q2	8.0%	8.9%	7.4%	8.7%	9.2%	7.9%
Q3	7.2%	11.6%	2.1%	9.8%	11.6%	2.6%
Q4	6.7%	0.3%	11.9%	3.4%	0.0%	12.8%
Q5 (highest)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Performance induced	7.3%	6.8%	7.4%	7.1%	6.6%	7.9%
Percentage of all turnover that is performance induced	63.7%	59.4%	66.2%	51.9%	45.9%	65.6%

Note. This table reports probit models of CEO turnover estimated on a matched sample of 79 dual-class and 158 single-class US-based VC-backed firms that completed an IPO between 2002 and 2020. Performance is measured as prior-year industry-adjusted annual returns, split into quintiles. Models (1) and (2) use inverse probability weighting (IPW) to balance the single-class firms to the dual-class sample; models (3) and (4) are unweighted. Panel A reports probit coefficients, with p-values in parentheses beneath each coefficient. Standard errors are clustered at the firm level. Significance levels are denoted as follows: * P < .10; ** P < .05; *** P < .01. Panel B reports model-implied turnover probabilities for each quintile. Performance-induced turnover is calculated from equation (1).

Table 6. Robustness, Continuous Performance and Standalone Turnover

Panel A. Probit Regressions

	All Turnover		Standalone Turnover Only	
	(1)	(2)	(3)	(4)
Industry Adjusted Returns	-0.338***	-0.351**	-0.349**	-0.257
	(0.006)	(0.021)	(0.011)	(0.129)
Dual		-0.005		0.110
		(0.968)		(0.463)
Dual * Ind. Adj. Returns		0.021		-0.149
		(0.929)		(0.575)
Control Variables	Yes	Yes	Yes	Yes
Observations	981	981	801	801
Firm Clusters	222	222	168	168
Inverse Probability Weights	Yes	Yes	Yes	Yes

Panel B. Average Marginal Effects (AME)

	All Turnover		Standalone Turnover Only	
Industry Adjusted Returns	(1)	(2)	(3)	(4)
Full Sample AME	-0.060***		-0.054***	
	(0.005)		(0.010)	
- Single Class AME		-0.063**		-0.037
		(0.021)		(0.126)
- Dual Class AME		-0.059*		-0.066**
		(0.053)		(0.042)
- Δ AME (Dual – Single)		0.004		-0.029
		(0.922)		(0.475)

Note. This table reports probit models of CEO turnover estimated on a matched sample of 79 dual-class and 158 single-class U.S.-based VC-backed IPO firms from 2002 to 2020. Performance is measured as lagged industry-adjusted annual returns, winsorized at the 2 percent level. All specifications use inverse probability weighting (IPW) to balance the single-class firms to the dual-class sample and include the same control variables as Table 5. Models (1) and (2) include all turnover events; models (3) and (4) are limited to standalone turnover, removing firms that were acquired or delisted with the original CEO still in office. Panel A reports probit coefficients, with p-values in parentheses beneath each coefficient. Standard errors are clustered at the firm level. Significance levels are denoted as follows: * P < .10; ** P < .05; *** P < .01. Panel B reports the average marginal effect (AME) for a one-unit change in industry-adjusted returns, with p-values in parentheses beneath each estimate. The marginal effects for models (2) and (4) are evaluated separately for dual = 1, dual class, and dual = 0, single class.

Table 7. Voting Power and CEO Turnover

Panel A. Probit Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
Ind. Adj. Returns	-0.323***	-0.337**	-0.337***	-0.342**	-0.757**	-0.344**
	(0.007)	(0.027)	(0.006)	(0.029)	(0.026)	(0.028)
Dual		-0.047		-0.091	-0.106	-0.094
		(0.754)		(0.546)	(0.487)	(0.540)
Dual * Ind. Adj. Returns		0.025		0.011	0.035	0.156
		(0.913)		(0.963)	(0.878)	(0.522)
CEO Vote Power	-0.688	-0.663	-0.302	-0.240	-0.223	-0.213
	(0.246)	(0.275)	(0.628)	(0.709)	(0.726)	(0.744)
Wedge	1.383	1.431	1.634*	1.735*	1.646*	1.417
	(0.148)	(0.130)	(0.086)	(0.063)	(0.079)	(0.136)
VC Vote Power			0.767**	0.800**	0.808**	0.788**
			(0.047)	(0.038)	(0.037)	(0.041)
Ind. Adj. Ret. × VC Vote Power					0.994	
					(0.172)	
Ind. Adj. Returns × Wedge						-1.738
						(0.128)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	981	981	975	975	975	975
Firm Clusters	222	222	220	220	220	220
Inverse Probability Weights	Yes	Yes	Yes	Yes	Yes	Yes

Panel B. Average Marginal Effects (AME)

Industry Adjusted Returns	(1)	(2)	(3)	(4)	(5)	(6)
Full Sample AME	-0.057***		-0.058***			
	(0.006)		(0.005)			
- Single Class AME		-0.061**		-0.063**	-0.068**	-0.081**
		(0.028)		(0.029)	(0.021)	(0.010)
- Dual Class AME		-0.054*		-0.055*	-0.055**	-0.048*
		(0.061)		(0.054)	(0.047)	(0.084)
- Δ AME (Dual – Single)		0.007		0.008	0.013	0.033
		(0.856)		(0.851)	(0.746)	(0.450)

Note. This table reports probit models of CEO turnover estimated on a matched sample of 79 dual-class and 158 single-class U.S.-based VC-backed IPO firms from 2002 to 2020. Performance is measured as lagged industry-adjusted annual returns, winsorized at the 2 percent level. All specifications use inverse probability weighting (IPW) to balance the single-class firms to the dual-class sample and include the same control variables as Table 5. Panel A reports probit coefficients, with p-values in parentheses beneath each coefficient. Standard errors are clustered at the firm level. Significance levels are denoted as follows: * P < .10; ** P < .05; *** P < .01. Panel B reports the average marginal effect (AME) for a one-unit change in industry-adjusted returns, with p-values in parentheses beneath each estimate. The marginal effects for models (2), (4), (5), and (6) are evaluated separately for dual-class and single-class firms.

Figure 5. Survival Plot, Comparing Dual-class With and Without Sunset

This graph plots Kaplan-Meier survival estimates for 79 Dual-Class firms. Survival curves are separately plotted for firms that went public with a time-based sunset and without a time-based sunset. Failure includes both standalone CEO turnover and transaction-related turnover; observations are right-censored if the IPO CEO remains in office as of July 2025.

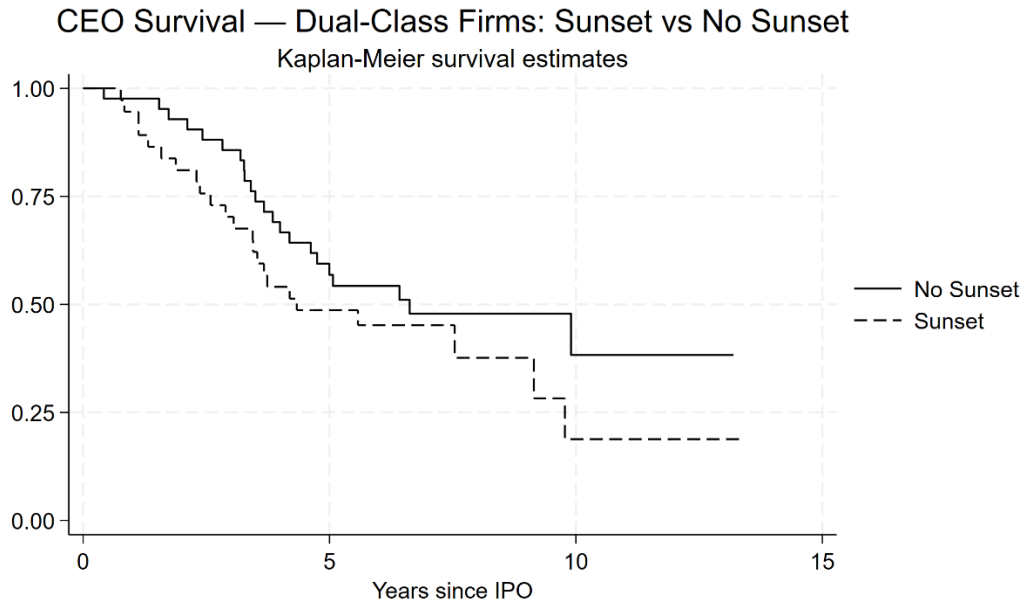


Table 8. Events Before and After Sunset Trigger Date

	Total	Pre-Trigger	Post-Trigger
Years-at-Risk	178.3	161.1	17.2
Turnover Events	23	21	2
Annual Turnover %	12.9%	13.0%	11.6%

Note. This table reports CEO turnover for the 37 dual-class firms in the matched sample with a time-based sunset clause. Years at risk include fractional years from IPO to CEO turnover, censoring, or the sunset trigger date, as applicable. Pre-trigger observations occur before the sunset date; post-trigger observations occur only for firms whose IPO CEO remained in office when the sunset triggered. Annual turnover percentage equals turnover events divided by years at risk.

Figure 6. Event Study of Turnover Announcement

This figure plots mean cumulative abnormal returns (CARs) for dual- and single-class firms around standalone CEO turnover announcements. Event day 0 is the first public announcement of the CEO turnover. CARs are calculated by summing daily abnormal returns from the beginning of the event window through event day t.

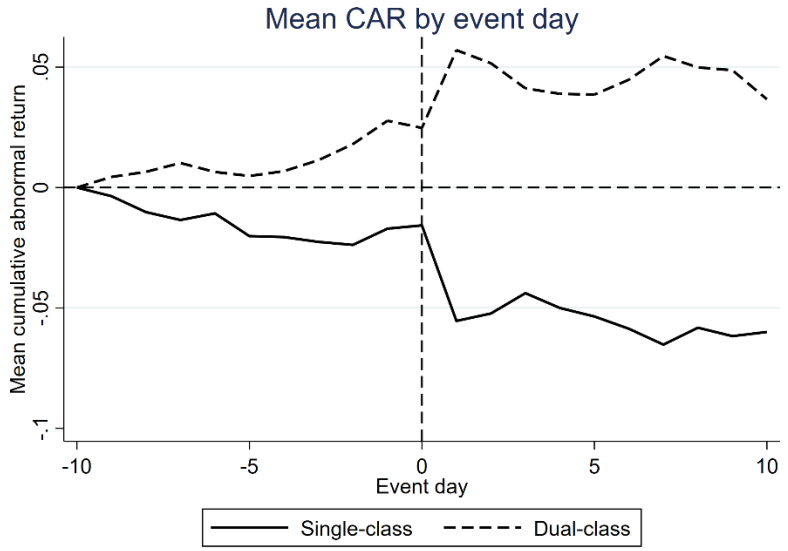


Figure 7. Event Study of M&A Announcement

This figure plots mean cumulative abnormal returns (CARs) for dual- and single-class firms around M&A announcements that result in transaction-related CEO turnover. Event day 0 is the first public announcement of the transaction. CARs are calculated by summing daily abnormal returns from the beginning of the event window through event day *t*.

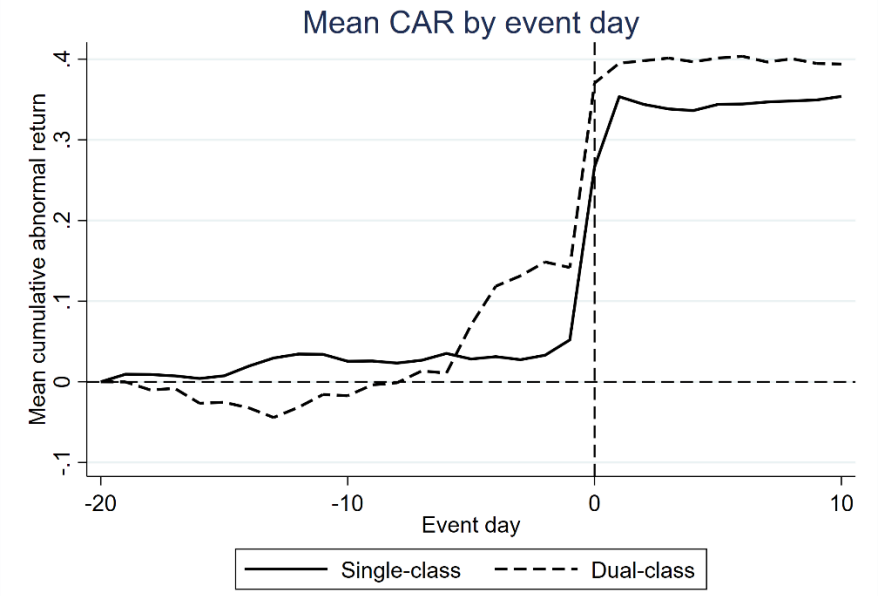


Table 9. Turnover Announcement: Cumulative Abnormal Returns

Panel A. Standalone Turnover, Announcement Returns

	Single Class			Dual Class		Diff-in-Means	
	Mean	Med.	Weighted Mean	Mean	Med.	Unweighted	Weighted
CAR[-1,+1] (market model)	-3.2%	-2.3%	-1.8%	3.9%	1.7%	7.1%*	5.6%
	(.230)		(.504)	(.169)		(.096)	(.139)
CAR[-2,+2] (market model)	-3.0%	-1.4%	-0.4%	4.0%	2.1%	7.0%	4.4%
	(.266)		(.881)	(.180)		(.108)	(.264)
CAR[-5,+5] (market model)	-4.3%	-0.9%	-2.4%	3.2%	1.0%	7.5%*	5.5%
	(.135)		(.444)	(.264)		(.099)	(.183)
CAR[-1,+1] (market-adj.)	-3.8%	-2.6%	-2.3%	3.6%	1.4%	7.3%*	5.9%
	(.144)		(.334)	(.205)		(.078)	(.109)
CAR[-2,+2] (market-adj.)	-3.9%	-2.7%	-1.6%	3.8%	2.4%	7.7%*	5.4%
	(.131)		(.479)	(.197)		(.068)	(.142)
CAR[-5,+5] (market-adj.)	-6.4%**	-2.6%	-5.5%	1.9%	0.3%	8.4%*	7.3%**
	(.018)		(.038)	(.480)		(.051)	(.049)

Panel B. M&A-Related Turnover, Announcement Returns

	Single Class			Dual Class		Diff-in-Means	
	Mean	Med.	Weighted Mean	Mean	Med.	Unweighted	Weighted
CAR[-5,+5] (market model)	30.9%***	27.2%	26.8%***	39.1%***	43.1%	8.2%	12.3%
	(.000)		(.000)	(.000)		(.468)	(.118)
CAR[-10,+10] (market model)	32.0%***	30.4%	28.6%***	41.0%***	41.7%	9.0%	12.4%*
	(.000)		(.000)	(.000)		(.430)	(.095)
CAR[-5,+5] (market-adj.)	30.5%***	26.7%	26.5%***	38.7%***	41.4%	8.2%	12.2%
	(.000)		(.000)	(.000)		(.460)	(.113)
CAR[-10,+10] (market-adj.)	31.3%***	28.7%	28.2%***	40.5%***	40.4%	9.3%	12.3%*
	(.000)		(.000)	(.000)		(.397)	(.078)

Note. This table reports cumulative abnormal returns (CARs) around CEO-turnover announcements for firms in the matched sample. Panel A reports CARs around standalone CEO-turnover announcements; Panel B reports CARs around M&A announcements that result in transaction-related CEO turnover. Event windows are measured in trading days relative to the first public announcement date. CARs are calculated using both a market-model specification and a market-adjusted specification. The weighted single-class mean applies inverse probability weights to the matched single-class firms. P-values are reported in parentheses. Significance levels are denoted as follows: * P < .10; ** P < .05; *** P < .01.

Table 10. Role at Firm after Turnover

	Dual		Single	
	Any	**if > 25%**	**Any**	**if > 25%**
Standalone Turnover or Illness	31		65	
– Mean vote power at Turnover	36.1%		6.06%	
– Median vote power at Turnover	29.4%		4.10%	
Post Turnover Role				
Stayed connected to firm	21 (68%)	13	38 (58%)	1
– Chair of the Board	16 (52%)	10	25 (38%)	1
– Remained as executive or director (non-Chair)	5 (16%)	3	13 (20%)	0
Left to do something else	10 (32%)	5	25 (38%)	0
– Employed at another company	2 (6%)	1	13 (20%)	0
– Founded a new venture	7 (23%)	4	6 (9%)	0
– Retired	1 (3%)	0	6 (9%)	0
– Unknown	0 (0%)	0	2 (3%)	0
Long-Term Role				
– Boomerang CEO	4 (13%)	3	4 (6%)	0
– Still Officer or Director	11 (35%)	6	7 (11%)	0
– Left completely	6 (19%)	4	27 (42%)	0

Note. For each firm in the matched sample where the CEO experienced a standalone turnover or left due to illness, this table reports the individual's vote power at the time of turnover and subsequent role, if any, at the firm, both immediately after turnover and long term. The table provides separate counts of departed CEOs who held at least 25 percent of the vote at the time of turnover, column "if > 25%." Percentages are computed against the row totals reported in the first row, 31 dual-class and 65 single-class firms experiencing standalone turnover or illness.

Appendix for:
CEO TURNOVER AT DUAL-CLASS FIRMS

Yifat Aran, Brian Broughman, Elizabeth Pollman

Table A1. Propensity-Score Model Predicting Dual-Class Status (Probit)

Variable	Coefficient	Std. Error	p-value
Market Cap	0.0000136*	0.0000079	(0.083)
Assets	-0.0000321	0.0000419	(0.444)
Employees	0.0221382	0.0333209	(0.506)
IPO Year	0.1217084***	0.0183546	(0.000)
Software	0.7243135***	0.1596915	(0.000)
Pharma	-1.014413***	0.2296244	(0.000)
Constant	-246.6779***	36.99674	(0.000)
Observations	966		
Log likelihood	-187.09		
Pseudo R-squared	0.3158		

Note. For a sample of US-based venture-backed firms that went public between 2002 and 2020, this table reports coefficient estimates from the probit model used to generate propensity scores for matching dual-class and single-class firms. Significance levels are denoted as follows: * P < .10; ** P < .05; *** P < .01.

Figure A1. Annual Stock Returns and Annual Probability of CEO Turnover

For 79 dual-class and 158 single-class firms in the matched sample, this figure plots the annual probability of CEO turnover in year *t* by quintile of lagged annual stock returns, measured in year *t*−1. Quintiles are formed separately within the single-class and dual-class groups, with Quintile 1 representing the worst prior-year performers and Quintile 5 representing the best prior-year performers.

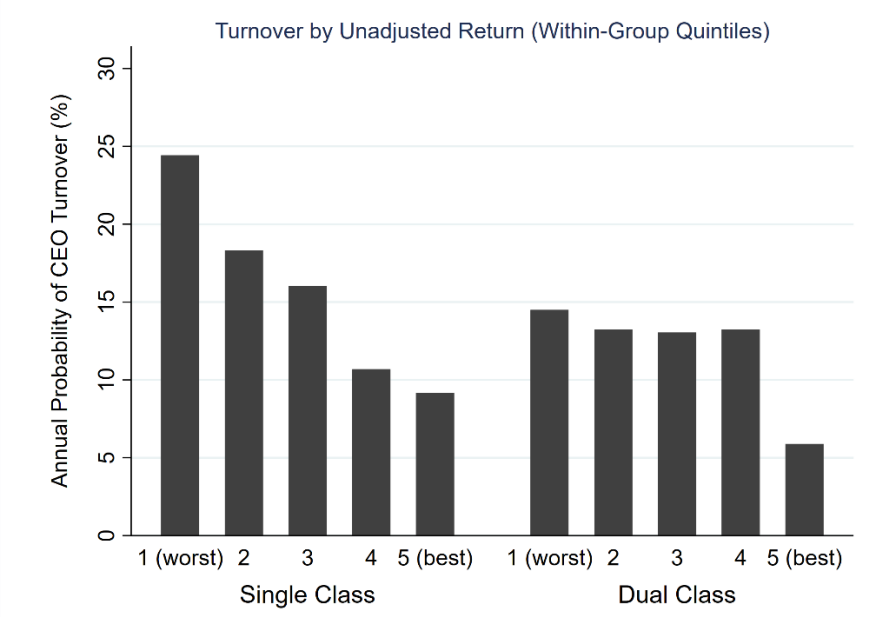


Figure A2. Alpha and Annual Probability of CEO Turnover

For 79 dual-class and 158 single-class firms in the matched sample, this figure plots the annual probability of CEO turnover in year *t* by quintile of lagged CAPM alpha, measured in year *t*−1. Quintiles are formed separately within the single-class and dual-class groups, with Quintile 1 representing the worst prior-year performers and Quintile 5 representing the best prior-year performers.

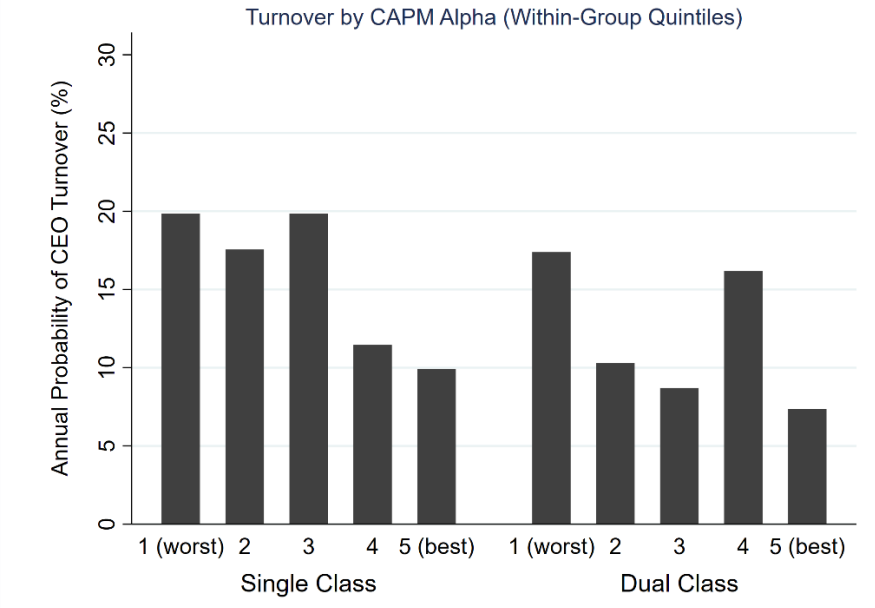


Table A2. Probit Model with Alpha and Unadjusted Returns Performance Quintiles

Panel A. Probit regressions

	Unadjusted Returns		CAPM Alpha	
	(A1)	(A2)	(A3)	(A4)
Q1 (lowest)	0.597***	0.782***	0.625***	0.565**
	(0.003)	(0.001)	(0.003)	(0.019)
Q2	0.376*	0.593**	0.513**	0.473**
	(0.066)	(0.012)	(0.015)	(0.043)
Q3	0.412*	0.545**	0.443**	0.348
	(0.050)	(0.024)	(0.033)	(0.121)
Q4	0.292	0.253	0.453**	0.033
	(0.167)	(0.283)	(0.034)	(0.881)
Q5 (highest, base)				
Dual-class firm		0.191		-0.188
		(0.496)		(0.551)
Q1 × Dual		-0.296		0.106
		(0.430)		(0.794)
Q2 × Dual		-0.388		0.053
		(0.316)		(0.897)
Q3 × Dual		-0.214		0.149
		(0.586)		(0.721)
Q4 × Dual		0.089		0.674*
		(0.814)		(0.083)
CEO age	0.026**	0.026**	0.026**	0.025**
	(0.023)	(0.025)	(0.022)	(0.027)
Age 61–63	0.025	0.038	-0.007	0.001
	(0.926)	(0.889)	(0.979)	(0.997)
Age 64–66	0.109	0.068	0.13	0.122
	(0.719)	(0.825)	(0.655)	(0.675)
Age ≥ 67	-0.199	-0.191	-0.223	-0.211
	(0.486)	(0.503)	(0.404)	(0.431)
Tenure (years)	-0.045*	-0.043	-0.052**	-0.049*
	(0.084)	(0.101)	(0.048)	(0.064)
Log Assets (lagged)	-0.117**	-0.117**	-0.119**	-0.119**
	(0.029)	(0.029)	(0.027)	(0.027)
Constant	-1.849**	-1.977***	-1.875**	-1.747**
	(0.012)	(0.007)	(0.012)	(0.018)
Observations	1,051	1,051	1,051	1,051
Firm Clusters	222	222	222	222
Inverse Probability Weights	Yes	Yes	Yes	Yes

Panel B. Implied Turnover Probabilities

	Unadjusted Returns			CAPM Alpha		
	Overall	*Single*	*Dual*	*Overall*	*Single*	*Dual*
			Total Turnover			
Q1 (lowest)	15.8%	17.4%	14.7%	14.8%	16.2%	14.0%
Q2	11.3%	13.3%	9.4%	12.5%	14.1%	11.2%
Q3	11.9%	12.3%	11.6%	11.2%	11.7%	10.7%
Q4	9.8%	7.6%	11.8%	11.4%	6.9%	14.8%
Q5 (highest)	5.9%	4.8%	6.5%	5.2%	6.5%	4.3%
All turnover	10.9%	11.1%	10.8%	11.0%	11.1%	11.0%
			Performance Induced			
Q1 (lowest)	10.5%	13.2%	8.8%	10.1%	10.4%	10.1%
Q2	5.7%	8.9%	3.1%	7.7%	8.1%	7.2%
Q3	6.4%	7.9%	5.5%	6.3%	5.6%	6.7%
Q4	4.1%	2.9%	5.7%	6.5%	0.4%	11.0%
Q5 (highest)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Performance induced	5.4%	6.6%	4.6%	6.1%	4.9%	7.0%
Percentage of all turnover that is performance induced	49.0%	59.5%	42.6%	55.7%	44.2%	63.6%

Note. This table reestimates models (1) and (2) from Table 5 using alternative measures of firm performance. For models (A1) and (A2), performance is measured as unadjusted annual stock returns from the prior year, split into quintiles. For models (A3) and (A4), performance is measured as CAPM alpha from the prior year, split into quintiles. All specifications use inverse probability weighting (IPW) to balance the single-class firms to the dual-class sample. Panel A reports probit coefficients, with p-values in parentheses beneath each coefficient. Standard errors are clustered at the firm level. Significance levels are denoted as follows: * P < .10; ** P < .05; *** P < .01. Panel B reports model-implied turnover probabilities for each quintile. Performance-induced turnover is calculated from equation (1).

Table A3: Probit Models with Alternative Measures of Firm Performance

Panel A. Probit Regressions

	Unadjusted Returns		CAPM alpha	
	(A5)	(A6)	(A7)	(A8)
Unadjusted Returns	-0.247**	-0.327**		
	(0.011)	(0.020)		
CAPM alpha			-0.174**	-0.224*
			(0.042)	(0.061)
Dual		-0.062		-0.052
		(0.683)		(0.731)
*Dual * Unadjusted Returns*		0.128		
		(0.506)		
*Dual * CAPM alpha*				0.077
				(0.641)
CEO Vote Power	-0.698	-0.664	-0.666	-0.643
	(0.240)	(0.275)	(0.263)	(0.292)
Wedge	1.454	1.505	1.419	1.468
	(0.128)	(0.111)	(0.138)	(0.122)
Control Variables	Yes	Yes	Yes	Yes
Observations	981	981	981	981
Firm Clusters	222	222	222	222
Inverse Probability Weights	Yes	Yes	Yes	Yes

Panel B. Average Marginal Effects (AME)

	Unadjusted Returns		CAPM alpha	
Full Sample AME	-0.044**		-0.031**	
	(0.010)		(0.038)	
- Single Class AME		-0.060**		-0.041*
		(0.022)		(0.062)
- Dual Class AME		-0.035		-0.026
		(0.120)		(0.190)
- Δ AME (Dual – Single)		0.025		0.015
		(0.472)		(0.611)

Note. This table reestimates models (1) and (2) from Table 7 using alternative measures of firm performance. For models (A5) and (A6), performance is measured as unadjusted annual stock returns from the prior year, winsorized at the 2 percent and 98 percent levels. For models (A7) and (A8), performance is measured as firm-specific CAPM alpha from the prior year, winsorized at the 2 percent and 98 percent levels. Included control variables are the same as reported in Table 5. All specifications use inverse probability weighting (IPW) to balance the single-class firms to the dual-class sample. Panel A reports probit coefficients, with p-values in parentheses beneath each coefficient. Standard errors are clustered at the firm level. Significance levels are denoted as follows: * P < .10; ** P < .05; *** P < .01. Panel B reports the average marginal effect (AME) for a one-unit change in unadjusted returns or a one-unit change in CAPM alpha, with p-values in parentheses beneath each estimate.

Robustness to omitted variables

Because the decision to adopt a dual-class structure is endogenous, comparisons between dual- and single-class firms may reflect unobserved differences that are not fully captured by matching or weighting on observables. To explore this issue, we implement the proportional-selection sensitivity analysis developed by Oster (2019).

Oster's approach formalizes the intuition behind "coefficient stability" diagnostics: if adding a rich set of observed controls substantially increases a model's explanatory power (R^2) while leaving the coefficient of interest relatively stable, then it is harder for unobservables to overturn the estimated relationship. The method uses the movement in both the coefficient and the model's R^2 between a simple model and a specification with a full set of control variables, together with an assumed upper bound on the achievable R^2, to generate bias-adjusted coefficient estimates.

To apply this framework, we use a linear probability model (necessary to generate R^2) in place of our standard probit model, and estimate a simple model [eq (A1)] and a full model [eq(A2)] shown below

$$Turnover_{it} = \alpha + \beta_1 Perf_{it-1} + \beta_2 Dual_i + \beta_3 (Perf_{it-1} \times Dual_i) + \varepsilon_{it} \qquad (A1)$$

$$Turnover_{it} = \alpha + \beta_1 Perf_{it-1} + \beta_2 Dual_i + \beta_3 (Perf_{it-1} \times Dual_i) + \mathbf{X}'_{it}\boldsymbol{\gamma} + \varepsilon_{it}, \qquad (A2)$$

where $Turnover_{it}$ is an indicator equal to 1 if firm i's CEO is replaced in year t and $Perf_{it-1}$ denotes firm i's industry-adjusted stock returns from year t-1 (in decimal units), and $\mathbf{X}_{it}$is a vector of additional control variables. The primary coefficients of interest are β_1 and β_3. These measure overall performance sensitivity (β_1) and the difference in performance sensitivity between single- and dual-class firms (β_3). For the full specification we add all of the additional control variables used in Model (4) from Table 7.

We first examine β_1 and find that moving from equation ($A1$) to ($A2$) increases the model's explanatory power (R^2 rises from 0.017 to 0.062) while the coefficient estimate for $Perf_{it-1}$ remains of similar magnitude (β_1 changes from −0.059 to −0.041). Oster-adjusted estimates remain negative under both equal selection (δ=1: −0.030) and stronger selection (δ=2: −0.019). In economic terms, these imply that a 10-percentage point increase in industry adjusted returns is associated with roughly a 0.19–0.30 percentage point reduction in turnover probability. Under this framework, selection on unobservables would need to be approximately 3.5 times as strong as selection on observables to reduce the estimated turnover–performance relationship to zero.

Next we examine β_3 to see whether omitted variables could plausibly mask a meaningful difference in turnover–performance sensitivity between dual- and single-class firms. The

OLS estimate is already close to zero (Panel A: $\beta_3 = -0.007$ in the full specification), so the standard Oster question — how much selection would be needed to push the coefficient to zero — is uninformative. We instead examine the *sign* of the bias-adjusted coefficient under proportional selection. Under $\delta = 1$ the bias-adjusted interaction is −0.022; under $\delta = 2$ it is −0.037. Both remain negative — the *opposite* sign from the relative-entrenchment prediction (which would require $\beta_3 > 0$, i.e., turnover at dual-class firms being *less* sensitive to poor performance than at single-class firms). To obtain a positive bias-adjusted β_3 under this framework, selection on unobservables would have to operate in the opposite direction from selection on observables (the implied δ is approximately −3.4). Taken together, these calculations reinforce the conclusion that turnover–performance sensitivity is not weaker at dual-class firms: under standard assumptions about unobservables, the implied bias adjustment runs in the opposite direction from what the relative-entrenchment hypothesis would predict.

Table A4. Oster (2019) Sensitivity Analysis for Omitted-Variable Bias

Panel A. OLS Estimates Eq (A1) and (A2)

	Simple Model [Eq. (A1)]		Full Model [Eq. (A2)]	
Variable	Coef.	p-value	Coef.	p-value
Ind.-adjusted returns [β_1]	-.060	(.002)	-.041	(.064)
Dual	-.006	(.874)	-.031	(.246)
Dual * Ind.-adjusted returns [β_3]	.009	(.750)	-.007	(.806)
Vector of Additional Controls	No		Yes	
Observations	997		975	
Clusters	224		220	
R-squared	.017		.062	

Panel B. Performance Main Effect (β_1)

Oster-adjusted / bound	Value
Bias-adjusted β_1^* (δ = 1)	−0.0301
Bias-adjusted β_1^* (δ = 2)	−0.0193
δ required for $\beta_1 = 0$	3.49

Panel C. Interaction-Term (β_3)

Oster-adjusted / bound	Value
Bias-adjusted β_3^* (δ = 1)	−0.022
Bias-adjusted β_3^* (δ = 2)	−0.037

Note. This table reports omitted-variable sensitivity using the proportional-selection framework of Oster (2019). Panel A reports OLS estimates for a simple specification, equation (A1), and a full specification, equation (A2), which includes the control variables used in model (4) from Table 7. We set $R_{max} = min\{1, 1.3\tilde{R}\}$, where $\tilde{R}$ is the R^2 from the full model, capped at 1. Bias-adjusted coefficients β_1* are reported for $\delta \in \{1, 2\}$, where δ indexes the strength of selection on unobservables relative to observables. In Panel B, "δ required for $\beta_1 = 0$" is the implied δ needed to reduce the performance effect to zero. All models are estimated using inverse probability weights, with cluster-robust standard errors at the firm level. OLS = ordinary least squares.

Shareholder Activism in the Matched Sample

A mechanism through which dual-class control could affect CEO retention is by shaping exposure to shareholder activism. If concentrated voting power limits the effectiveness of shareholder intervention, activists may be less likely to target dual-class firms. Using FactSet activism campaign data, we match activist campaign targets to our IPO sample by ticker and construct an indicator for whether a firm is ever targeted during the sample period. We define a firm as an "activist target" if FactSet records at least one activist campaign involving the firm between 2002–2023.

As shown in Table A5, 38 of 237 firms in the matched sample (16.0%) are targeted at least once, with similar incidence across governance structures: 12 of 79 dual-class firms (15.2%) and 26 of 158 single-class firms (16.5%). In the campaign-level data, these 38 firms are associated with 57 campaigns (some firms experience multiple campaigns). Firms targeted by activists are somewhat more likely to experience CEO turnover. We find that CEO turnover (either standalone or transaction related) occurred at 29 out of 38 targeted firms (76.3%), compared to 133 out of 199 untargeted firms (66.8%). However, these associations are modest and statistically weak. Activist targeting is only weakly correlated with CEO replacement (correlation = 0.067, p = 0.302) and with CEO vote power at IPO (correlation = −0.079, p = 0.228).

To examine the timing of activism relative to CEO replacement, we focus on targeted firms that experience CEO replacement and compare each campaign's announcement date to the CEO replacement date. If activism were an important proximate driver of CEO replacement, one would expect campaigns to occur disproportionately in the year or two preceding replacement. Figure A3 plots the distribution of campaign timing relative to replacement (campaign-level data; firms with multiple campaigns may appear multiple times).

Campaigns show some clustering in the period before CEO replacement. In particular, 10 different firms in our matched sample were targeted in the year prior to replacement; 9 of these were single-class firms and only 1 was a dual-class firm. Consistent with this pattern, a substantial share of campaigns in our matched sample were initiated after the IPO CEO had already been replaced. Overall, while dual-class and single-class firms are targeted at similar rates in our matched sample, activism appears less likely to be a proximate antecedent of CEO replacement at the dual-class firms in our sample.

Figure A3. Timing of Activism Campaign Relative to CEO Turnover

This figure plots the timing of shareholder activism campaigns relative to CEO replacement for targeted firms in the matched sample that experienced CEO turnover. Time is measured in years relative to the CEO replacement date, with year 0 representing the turnover date. Each observation is an activism campaign, so firms with multiple campaigns may appear more than once. The figure only includes campaigns occurring within seven years before or after CEO replacement, using 180-day bins.

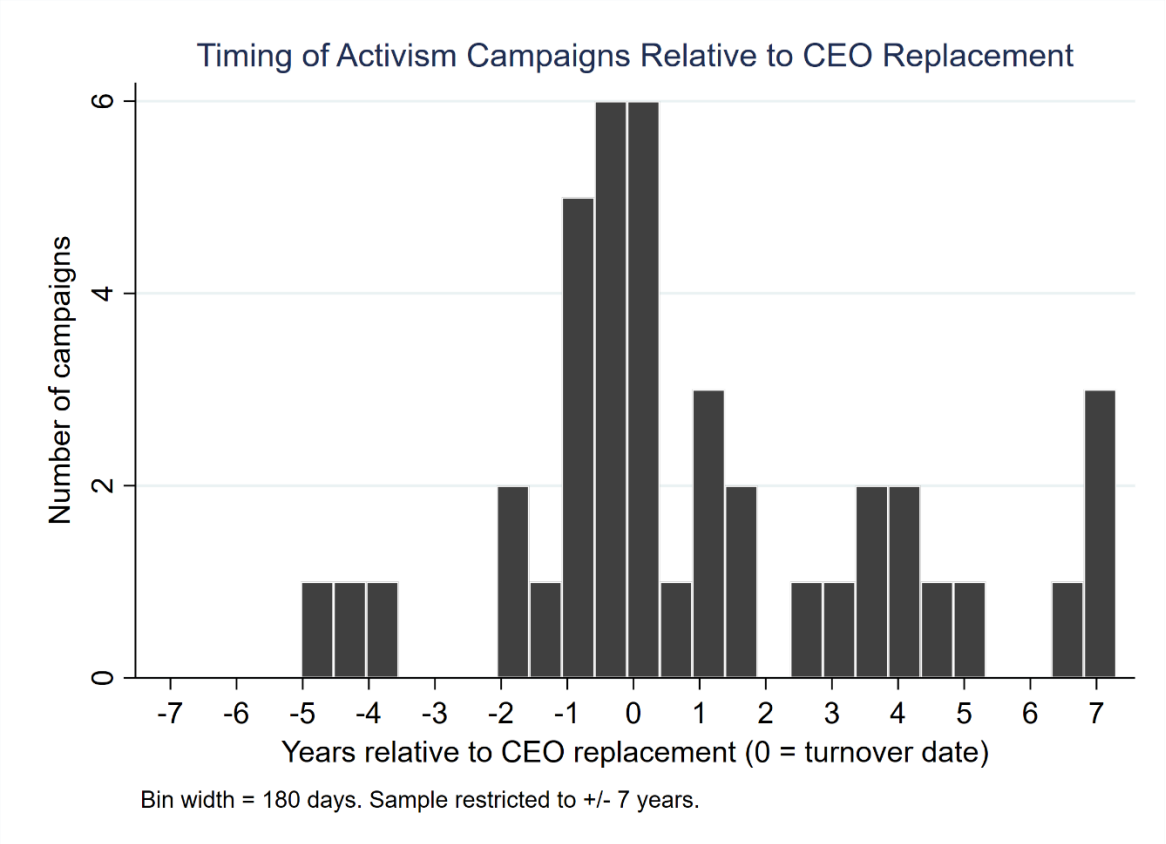


Table A5. Shareholder Activism in the Matched Sample

Panel A. Incidence of Activist Targeting, Firm Level

	Single-class	Dual-class	All firms
Number of firms	158	79	237
Number of activist targets	26	12	38
Percent activist targets	16.5%	15.2%	16.0%

Panel B. IPO CEO Replacement by Activism Status, Firm Level

	Non-target	Target	Total
Number of firms	199	38	237
IPO CEO replaced (count)	133	29	162
IPO CEO replaced (percent)	66.8%	76.3%	68.4%

Panel C. Correlations with Activist Targeting

	Correlation	p-value	N
Activist target × CEO vote power at IPO	-0.0786	0.2278	237
Activist target × IPO CEO replaced	0.0674	0.3017	237

Panel D. Firms with an Activism Campaign Launched Prior to CEO Turnover

	Single-class	Dual-class	All firms
Campaign launched within 12 months prior	9	1	10
Campaign launched within 24 months prior	10	1	11

Note. This table reports shareholder activism activity for firms in the matched sample using FactSet activism campaign data from 2002–2023. Panel A reports the incidence of activist targeting by governance structure, where a firm is classified as an activist target if FactSet records at least one campaign involving the firm. Panel B compares IPO CEO replacement rates for activist targets and non-targets. Panel C reports correlations between activist targeting and CEO vote power at IPO and between activist targeting and IPO CEO replacement. Panel D reports the number of firms with an activism campaign launched within 12 or 24 months before CEO turnover. IPO = initial public offering.

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