Pricing Corporate Governance

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Scholars and practitioners have long theorized that by penalizing firms with unattractive governance features, the stock market incentivizes firms to adopt the optimal governance structure at their initial public offerings (IPOs). This theory, however, does not seem to match with practice. Not only do many IPO firms offer putatively suboptimal governance arrangements, such as staggered boards and dual-class structures, but these arrangements have been gaining popularity among IPO firms. This Article argues that the IPO market is unlikely to provide the necessary discipline to incentivize companies to adopt the optimal governance package. In particular, when the optimal governance package differs across firms and there is an informational gap between the firms and the outside investors, the IPO market cannot accurately price governance provisions, and many firms will adopt a suboptimal governance structure. After presenting the baseline thesis, this Article examines various private ordering and regulatory mechanisms that could mitigate this market failure, such as verification using a costly gatekeeper, reliance on internal capital markets, deliberate underpricing, and post-IPO liability. This Article also presents both positive and normative implications, such as empirical predictions as to when we may expect to observe better pricing of governance regimes and the proposal over sunset provisions on dual-class stock structure that convert dual-class to single-class stock after the IPO.

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TABLE OF CONTENTS

INTRODUCTION

From 2018 through 2022, over 750 companies sold their stock to the public through an initial public offering (IPO) and raised more than $260 billion.[1] Almost half of those funds—$126 billion—were raised by companies with a dual-class stock structure.[2] The dual-class companies, which include recognizable names such as Allbirds,[3] Sweetgreen,[4] and Warby Parker,[5] effectively shut out public shareholders from participating in future governance decisions by allowing the founder-controllers to retain their lock on control with super voting stock. The governance decisions include electing directors, amending the corporate charter, and deciding whether to sell the company. Critics of the dual-class structure argue that the unequal voting rights are not only inequitable but also inefficient because they fail to hold the founder-controllers accountable.[6] Proponents, on the other hand, argue that the dual-class

1. JAY R. RITTER, INITIAL PUBLIC OFFERINGS: UPDATED STATISTICS 3 tbl.1 (2023), https://site.warrington.ufl.edu/ritter/files/IPO-Statistics.pdf.

2. *Id.* When a company has a dual-class stock structure, one class is given more voting rights (e.g., ten votes per share) than the other (e.g., one vote per share), even though they have the same "cash-flow" rights, such as the right to receive dividends. *See generally* Albert H. Choi, *Concentrated Ownership and Long-Term Shareholder Value*, 8 HARV. BUS. L. REV. 52 (2018) (discussing dual-class stock structures and other modes of separating "cash-flow" rights from voting (control) rights).

3. At Allbirds, two founders, Timothy Brown and Joseph Zwillinger, who are also co-chief executive officers, own about 64.8% of the voting power. *See* Allbirds, Inc., Amendment No. 4 to Form S-1 Registration Statement (Form S-1/A) (Oct. 25, 2021). The company also has a staggered board (three classes of directors with a three-year staggered term) and does not allow shareholders to call a special meeting. *Id.*

4. At Sweetgreen, three founders, Jonathan Neman, Niclas Jammet, and Nathaniel Ru, collectively own about 59.8% of the voting power. *See* Sweetgreen, Inc., Amendment No. 2 to Form S-1 Registration Statement (Form S-1/A) (Nov. 16, 2021). The company does not allow shareholders to act through written consent or call a special meeting and requires two-thirds super majority to remove a director. *Id.*

5. At Warby Parker, two founders, Neil Blumenthal and Dave Gilboa, who are also co-chief executives, own about 48% of the voting power. *See* Warby Parker Inc., Amendment No. 1 to Form S-1 Registration Statement (Form S-1/A) (Sept. 14, 2021). The company also has a staggered board, does not allow shareholders to call a special meeting or act through a written consent, and requires two-thirds super majority to remove a director. *Id.*

6. *See* Lucian Bebchuk & Kobi Kastiel, *The Untenable Case for Perpetual Dual-Class Stock*, 103 VA. L. REV. 585, 618 (2017) (highlighting the inefficiency of allowing perpetual dual-class stock and advocating for sunset provisions on dual-class structure). *But see* Jill Fisch & Steven Davidoff Solomon, *The Problem of Sunsets*, 99 B.U. L. REV. 1057, 1083 (2019) (arguing that a fixed sunset provision for dual-class stock may create a moral hazard problem, for instance, by incentivizing the founder to maximize their economic position while they have control). The Council of Institutional Shareholders (CII), a non-profit association that represents many of the largest pension funds, foundations, and endowments in the US (with a combined assets of under management of about $4 trillion), has long criticized dual-class structure and has requested the New York Stock Exchange and NASDAQ to impose a mandatory sunset provision on dual-class structure (which would convert into a single class structure after a certain period). CII also asked entities that manage popular stock indices, such as the S&P 500 and Russell 2000, to exclude certain dual-class stock without a sunset provision from the indices. *See* Letter from Ash Williams, Chair, CII, Jeff Mahoney, Gen. Couns., CII, & Kenneth Bertsch, Exec. Dir., CII, to Elizabeth King, CRO, NYSE (Oct. 24, 2018), https://www.cii.org/files/issues_and_advocacy/correspondence/2018/20181024%20NYSE%20Petition%20on%20Multiclass%20Sunsets%20FINAL.pdf; Letter from Kenneth Bertsch, Exec. Dir., CII, to MSCI Index Comm. (May 9, 2018), https://www.cii.org/files/issues_and_advocacy/correspondence/CII%20response%20to%20MSCI%20Expanded%20Consultation%20FINAL.pdf; *see also About CII*, COUNCIL INST. INVS., https://www.cii.org/about (last visited Sept. 8, 2023).

structure enables more companies to go public, and that the public investors purchase the shares knowingly and willingly.[7] If the investors find the prospect of being unable to participate in future governance unattractive, they could simply decline to purchase the shares or pay less for them. Such market discipline would provide the requisite incentive for the companies to adopt a more efficient and attractive governance structure.[8]

Does the IPO market accurately price the governance arrangements and provide the necessary incentive to companies to adopt the optimal governance structure? This question has been hotly debated in corporate law and governance. Notwithstanding the criticism against the dual-class structure and other controversial governance arrangements—such as a staggered board, limiting the ability to nominate or remove directors, and eliminating the right to call a shareholders' meeting or act through written consent[9]—not only are they

7. *See* David Berger, Partner, Wilson Sonsini Goodrich & Rosati, Why Dual Class Stock? A Response to CII's Petition to NASDAQ for Mandatory Sunset Provisions, Address Before the Nasdaq Listing Council (March 28, 2019), *in* SSRN ELEC. J., Apr. 2019 (arguing that firms with dual-class stock structure out-perform those without for more than seven years and that the firms with dual-class stock are often the most innovative companies; and due to the concentration of stock ownership among a small number of institutional shareholders, dual-class allows the innovative founders to retain the decision-making power and keep it away from the dominant institutional shareholders); *see also* Zohar Goshen & Assaf Hamdani, *Corporate Control and Idiosyncratic Vision*, 125 YALE L.J. 560, 590–91 (2016) (arguing that by allowing the founder to retain control with dual-class stock structure, for instance, the founder can implement her "idiosyncratic vision" that is not appreciated by the market). *See generally* Choi, *supra* note 2 (discussing arguments in favor of and against dual-class stock and an analysis on how dual-class structure can, under certain conditions, facilitate the founder-controller to commit for the long-term).

8. *See* Frank Easterbrook & Daniel Fischel, *The Corporate Contract*, 89 COLUM. L. REV. 1416, 1418 (1989) (stating "no one set of terms will be best for all; hence the 'enabling' structure of corporate law"); Lucian A. Bebchuk, *The Debate on Contractual Freedom in Corporate Law*, 89 COLUM. L. REV. 1395, 1395 (1989) (examining to what extent corporations should have the "contractual freedom" to make their own governance arrangements). According to Bebchuk, "the price investors will be willing to pay for stock in an initial offering will generally reflect the initial charter provision, and the party designing the charter will take this into account. Charter provisions will consequently tend to be the efficient, value-maximizing provisions." Bebchuk, *supra*, at 1404; *see also* Jeff Gordon, *The Mandatory Structure of Corporate Law*, 89 COLUM. L. REV. 1549, 1562 (1989) ("A charter term that significantly affected risk or return should be noticed by the informed investor, in the same way that any other business factor would be noticed. . . . [A]nd we would readily observe price effects for significant variations from the standard form."); Roberta Romano & Sarath Sanga, *The Private Ordering Solution to Multiforum Shareholder Litigation*, 14 J. EMP. L. STUD. 31, 33 (2017) (arguing that when an exclusive forum provision is adopted at IPO, its effect can be "impounded into the stock price before public investors purchase their shares"); David Berger, Jill Fisch, & Steven Davidoff Solomon, *Extending Dual Class Stock: A Proposal* 21–22 (Eur. Corp. Governance Inst., Working Paper No. 707, 2023) (arguing that the companies should be able to include, in their IPO charters, whether their dual-class structure will be extended for a longer term).

9. Other governance arrangements include the right to nominate directors, an exclusive forum provision, access to company's proxy, and mandatory individual arbitration provisions. These arrangements are typically included in the company's charter or bylaws. With respect to features such as dual-class capital structure, staggered board, or right to call special shareholders' meeting, state corporate law expressly allows (or requires) them to be included in the company's governing documents. See Robert Daines & Michael Klausner, *Do IPO Charters Maximize Firm Value? Antitakeover Protection in IPOs*, 17 J.L. ECON. & ORG. 83 (2001) for an empirical examination of various governance structures. In addressing whether they can include a mandatory arbitration (or other forum) provision with respect to federal securities (and not state corporate) claims, the Delaware Supreme Court has recently expressly allowed Delaware companies to adopt a federal forum provision. *See* Dhruv Aggarwal, Albert H. Choi, & Ofer Eldar, *Federal Forum Provisions and the Internal*

prevalent among IPO firms, the arrangements are actually *gaining* popularity. Among all the firms that went public in 2000, about 6.8% had a dual-class structure, and the share of "technology" firm IPOs with a dual-class was at 7.3%.[10] By 2021, these numbers ballooned to 31.7% for all IPO firms and 46.2% for "technology" firms.[11] Staggered board structure, considered an effective antitakeover mechanism,[12] has also gotten more popular among IPO firms: the percentage of firms going public with a staggered board has nearly doubled from 40% in 1990 to over 70% in 2017.[13] Does this imply that the critics of the dual-class structure (and staggered board) are wrong about the inequity and inefficiency of these governance arrangements? Is the IPO market providing the necessary discipline for the firms to adopt the optimal governance arrangement?

This Article attempts to tackle these puzzles with the help of game theory. There is a long-standing skepticism, particularly among finance scholars, as to whether the IPO market, plagued by frequent short-term underpricing and long-term overpricing, is informationally efficient and rationally incorporates all

Affairs Doctrine, 10 HARV. BUS. L. REV. 383, 386–87 (2020); William Chandler III, Joseph Grundfest, Virginia Milstead, & Peter Morrison, *FAQs Re: FFPs Frequently Asked Questions About Federal Forum Provisions*, 2021 COLUM. BUS. L. REV. 569, 575–88 (2021) (discussing more recent developments surrounding federal forum provisions). One important issue that has come up recently is whether to allow companies to include a waiver of certain statutory rights, such as the right to bring an appraisal petition in an M&A transaction, in the company's charter when going public. *See* Jill Fisch, *A Lesson from Startups: Contracting Out of Shareholder Appraisal*, 107 IOWA L. REV. 941, 978 (2022) (arguing in favor of such statutory waiver in the charter and when the company is selling its shares to the public, the waiver will be "transparent," the shares will be subject to "market discipline," and the shareholders can factor the waiver into account the purchase price). *See generally* Albert H. Choi & Eric Talley, *Appraising the "Merger Price" Appraisal Rule*, 34 J.L. ECON. & ORG. 543 (2018) (analyzing how eliminating an appraisal remedy can depress the acquisition price and lower target shareholders' welfare).

10. RITTER, *supra* note 1.

11. *Id.* Similarly, according to Field and Lowry, the percentage of IPOs with dual-class structure has doubled from less than 10% before 2000 to more than 25% in 2017. Laura Field & Michelle Lowry, *Bucking the Trend: Why Do IPOs Choose Controversial Governance Structure and Why Do Investors Let Them?*, 12–13 (Eur. Corp. Governance Inst., Working Paper No. 830, 2022).

12. Similar arguments have also been raised with respect to antitakeover provisions. Opponents argue that an antitakeover provision, such as a staggered board, shields the company from outside market forces and allows the inside managers to pursue a corporate policy that undermines the investors' rights. Proponents, on the other hand, argue that an antitakeover provision allows the inside managers to pursue longer-term projects that ultimately benefit the shareholders without having to worry about the vagaries of market forces. See Daines & Klausner, *supra* note 9, at 87 for a background discussion on staggered board and other antitakeover provisions.

13. *See* Field & Lowry, *supra* note 11, at 12. According to a non-exhaustive survey by Davis Polk, about 90% of the sample IPO firms (without a controlling shareholder) adopted a staggered board in 2022. DAVIS POLK, IPO GOVERNANCE SURVEY: CORPORATE GOVERNANCE PRACTICES IN U.S. INITIAL PUBLIC OFFERINGS 5 (2020), https://www.davispolk.com/sites/default/files/corporate_governance_practices_in_u.s._initial_public_offerings.pdf (showing that, among fifty non-controlled company IPOs, about 88% prohibited shareholder action by written consent, 88% required a supermajority shareholder vote to amend bylaws, and 90% adopted a staggered board). The popularity of dual-class and staggered board among IPO firms is more striking when compared to the fact that the trends among publicly traded companies ("mature" companies) have been moving in the opposite direction. According to Field and Lowry, the percent of firms with a staggered board among S&P 1500 firms decreased from about 60% between 1990 to 2000 to about 35% in 2017, and the percent with dual-class also decreased from 12% to 7% during the same period. Field & Lowry, *supra* note 11, at 12.

available information.[14] The Article argues that *even if* the IPO market is informationally efficient, when different firms have different optimal governance structures and outside investors are informationally disadvantaged compared to the insiders,[15] it becomes likely that the governance package offered by (at least some) firms will be suboptimal. The theory that firms will adopt the optimal governance structure at IPO relies on either one of two important assumptions: (1) one type of governance structure (for example, a one-share-one-vote arrangement or an un-staggered board) is optimal for all firms; or (2) outside investors know which governance arrangement is optimal for which firm. When these assumptions do not hold, it becomes likely that the governance package chosen by (at least some) IPO firms will be suboptimal. When the outside investors cannot correctly identify the optimal governance package for a firm, the founder (and other pre-IPO shareholders) becomes willing to adopt a suboptimal governance structure in pursuit of a more favorable IPO valuation. The analysis shows that this incentive is independent of whether the founder is intent on extracting private benefits of control, for instance, by using a dual-class structure.

After presenting the basic thesis, this Article examines a number of mechanisms that can nudge a firm to adopt the optimal governance structure at its IPO. The mechanisms are divided into two categories. In the first category, the firms themselves may be able to "signal" to the market about their true type. In the second, when the IPO stock is overvalued (with a suboptimal governance structure), investors may bring a claim against the firm after the IPO. With respect to the first, this Article examines several signaling mechanisms: employing a set of costly and reputable agents to conduct an IPO; more utilization of internal capital; and deliberate underpricing of its stock at the IPO. With respect to the second, the Article notes that, because the plaintiffs are the firm's shareholders who bear some of the cost of damages paid by the firm

14. *See* Jay Ritter & Ivo Welch, *A Review of IPO Activity, Pricing, and Allocations*, 57 J. FIN. 1795, 1817–22 (2002) (discussing long-term under-performance of IPO stock). The empirical documentation of the long-term under-performance of IPO stock also raises an interesting question about whether the secondary market is working well with respect to the IPO stock compared to others that have been trading on the market for some time. *See* Jay Ritter, *Equilibrium in the Initial Public Offerings Market*, 3 ANN. REV. FIN. ECON. 347, 352–54 (2011) (arguing that factors such as underwriters' desire to excessively underprice the IPOs, lack of competition among underwriters, and the issuers' lack of focus on maximizing the proceeds can better explain IPO underpricing than asymmetric information factors); Patrick Corrigan, *Footloose with Green Shoes? Can Underwriters Profit from IPO Underpricing?*, 38 YALE J. ON REG. 908, 916 (2021) (showing how underwriters can profit from using "green shoe" options possibly at the expense of the issuers).

15. Even when a majority of IPO investors consists of sophisticated institutional investors, a suboptimal outcome becomes possible if those investors lack the necessary information. Although the founders and other pre-IPO investors sell only a fraction of the firm to the public in the IPO, to the extent that receiving a larger proceed from the offering is more beneficial, the incentive to take advantage of the informational advantage will be present. *See* Holger Spamann, *Indirect Investor Protection: The Investment Ecosystem and Its Legal Underpinnings*, 14 J. LEGAL ANALYSIS 17, 32–33 (2022) (noting that the absence of speculators betting against the stock price in the primary market can lead to less informative prices at IPOs). *But see* Amy Edwards & Kathleen Hanley, *Short Selling in Initial Public Offerings*, 98 J. FIN. ECON. 21, 22 (2010) (documenting how short selling occurs on the offer day in 99.5% of the IPOs).

through a reduced stock price, there is an inherent under-deterrence aspect with the system. Importantly, whether the private ordering mechanisms or the liability system can enhance the efficiency of the IPO market depends on how much "skin in the game" is retained by the founder (and other pre-IPO shareholders). When the founder retains a larger fraction of the firm, it becomes easier for the founder to credibly signal to the market and for the outside investors to hold the founder liable ex post.

The findings lead to both positive and normative implications. On the positive side, the Article shows why it may be possible to observe IPO firms adopting relatively homogeneous governance features even if they may not be optimal for all firms—the firms may exhibit a "herding" behavior with respect to certain governance features (a "pooling" equilibrium). Furthermore, as the informational gap or governance heterogeneity grows larger, we are more likely to observe governance homogeneity. This can explain why certain governance arrangements (such as dual-class stock) are more prevalent in some industries (such as the "technology" sector) and not others.[16] On the normative side, this Article examines various policy proposals—especially the sunset proposal,[17] which would allow or require the firm to revisit its governance structure after the IPO. Although a full discussion is reserved for later, a few points are worth mentioning briefly. First, a sunset provision can create an ex-ante versus ex-post tradeoff. While it may allow the investors to mitigate or undo an inefficient governance structure after the IPO, it may lessen the firm's incentive to adopt the optimal governance structure at its IPO. Second, when firms have a choice to adopt a sunset provision, the firm may be hesitant to adopt a provision at its IPO in fear of sending an adverse signal to the market. When such hesitancy is sufficiently strong, giving firms a choice over sunset provisions may actually be worse than making it mandatory. Third, when the founder enjoys some private benefits of control, the initial governance choice at the IPO can create a "lock-in" effect, thereby making it difficult (if not impossible) for the shareholders to revisit the governance structure after the IPO under an optional sunset regime.

This Article begins in Part I by conducting a brief overview of the existing literature on governance arrangements at IPOs. The review starts with the debate scholars and practitioners have had on antitakeover measures and features the more recent debate over dual-class stock. Part II presents a numerical example (utilizing game theory) that shows how the presence of heterogeneity ("one size

16. *See* RITTER, *supra* note 1.

17. For a debate over mandatory and optional sunset provisions on dual-class stock, see sources cited *supra* note 6. Recently, three of the largest institutional shareholders, BlackRock, State Street, and Vanguard, have adopted voting guidelines that will support the principle of "one share, one vote," and proposals that will eliminate dual-class structure. *See* BLACKROCK, BLACKROCK PROXY VOTING GUIDELINES 11 (2023); STATE STREET, PROXY VOTING AND ENGAGEMENT GUIDELINES 10 (2023); VANGUARD, PROXY VOTING POLICY FOR CANADIAN PORTFOLIO COMPANIES 15 (2023). According to Vanguard's proxy guidelines in particular, "Vanguard supports the idea of a newly public, dual-share-class company adopting a sunset provision that would move the company toward a one-share, one-vote structure over time." VANGUARD, *supra*, at 16.

does not fit all") and outside investors' informational disadvantage can lead to adoption of suboptimal governance arrangement at IPOs. In Subpart II.E, the Article discusses two forces that could mitigate the suboptimal outcome: costly signaling by IPO firms and ex-post liability. With respect to the former, the Article examines reliance on reputable agents as a screen, more utilization of internal capital, and deliberate underpricing at the IPO. In Part III, the Article discusses both positive and normative implications of the findings. The last Part concludes with some thoughts for future research. The Appendix contains a more formal analysis on mechanisms that are discussed in Subpart II.E.

I. A BRIEF REVIEW OF EXISTING SCHOLARSHIP

The debate over whether firms going through an IPO have the requisite incentive to adopt the optimal governance features and how much "contractual" freedom the firms should be able to exercise has been around for some time.[18] Important articles in the early 2000s have presented surprising findings that, despite the conventional understanding that antitakeover mechanisms are suboptimal,[19] many firms going public had various antitakeover provisions. Daines and Klausner, for instance, looked at 310 firms that went public between January 1994 and July 1997 and found that about two-thirds of the sample firms had antitakeover provisions.[20] Similarly, Field and Karpoff examined 1,019 industrial firms that went public between 1988 and 1992 and showed that about 53% of the firms had at least one takeover defense provision.[21] In examining what might have influenced the IPO firms to adopt (what they perceived to be inefficient) antitakeover provisions, Coates documented that, among the 195 sample firms that went public in 1988 and 1999, there was a strong correlation between an IPO firm's adoption of antitakeover provisions and various law firm

18. *E.g.*, Bebchuk, *supra* note 8.

19. The argument is that antitakeover provisions, such as poison pills and staggered boards, shield managers from market discipline (such as value-increasing hostile takeovers or shareholder activism) and increased agency costs. *See* Daines & Klausner, *supra* note 9, at 83–84.

20. *Id.* at 85. The provisions Daines and Klausner examined include dual-class stock, staggered board, shareholders' rights to act through written consent or to call a special meeting, blank check preferred stock provisions, and opting out of Delaware's section 203 business combination statute. *Id.* at 96. They also show that the presence of antitakeover provisions is positively correlated with a measure of takeover activity in the industry and is negatively correlated with a firm's R&D activity. *Id.* at 100–03. In a more recent study of 373 firms, Klausner looked at other governance features, such as independent compensation, nominating, or governance committees, separation of CEO and board chair, and majority rule on director elections, and found that very few firms deviated from the standard, default provisions. *See* Michael Klausner, *Fact and Fiction in Corporate Law and Governance*, 65 STAN. L. REV. 1325, 1338 (2013).

21. *See* Laura Field & Jonathan Karpoff, *Takeover Defenses of IPO Firms*, 57 J. FIN. 1857, 1858 (2002). More recently, there seems some evidence that firms that have valuable long-term business relationships (e.g. with suppliers) are more likely to have antitakeover provisions. *See* William Johnson, Jonathan Karpoff, & Sangho Yi, *The Bonding Hypothesis of Takeover Defenses: Evidence from IPO Firms*, 117 J. FIN. ECON. 307, 309 (2015). *But see* Lucian Bebchuk, *Why Do Firms Adopt Antitakeover Arrangements*, 152 U. PA. L. REV. 713, 728 (2003) (arguing that if the protection of such firm-specific investments is important, shareholders should be much more willing to adopt antitakeover provisions after the IPO rather than resisting them as empirically observed).

characteristics, such as its takeover experience, size, and location.[22] Coates's analysis also found that there seems to be no correlation between the presence of an antitakeover provision and the IPO pricing, suggesting that the firms with (possibly) inefficient provisions are not being "penalized" by the IPO market.[23] These studies collectively suggest that there is a substantial doubt as to whether the IPO market correctly prices various governance features. Especially if we believe that the antitakeover provisions are bad for the shareholders, the studies raise the question of whether adoption of certain governance features are driven more (or even primarily) by non-valuation factors (such as the type of law firm used in the IPO process).

Motivated by the puzzle of why many firms adopt antitakeover provisions at IPO, some scholars have taken a more theoretical approach. Bebchuk, for instance, presents an analytical model that examines whether a firm (either at IPO or post-IPO) would allow its board to have veto power over future takeover bids, essentially an antitakeover arrangement.[24] The analysis shows that granting the board veto power enables the founder-controller to extract more private benefits of control but can also reduce the founder-controller's resistance to raising more equity capital and further diluting her ownership fraction in the future.[25] Giving the board veto power can be beneficial, particularly when future equity financing can enhance the value of the firm. In Bebchuk's analysis, the firm makes a tradeoff between the beneficial ability to take advantage of future equity financing and the costs of private benefits of control that the founder-controller extracts from the firm.[26] Barzuza similarly focuses on the tradeoff between private benefits of control and firm value and shows how firms might adopt an inefficient governance arrangement mid-stream (or even at their IPOs) when outside investors do not have adequate information.[27]

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22. *See* John Coates, *Explaining Variation in Takeover Defenses: Blame the Lawyers*, 89 CALIF. L. REV. 1301, 1381–82 (2001) ("[A] lack of pricing penalty [on antitakeover provisions at IPOs] is also consistent with anecdotal reports from IPO participants, including investment bankers, venture capitalists, and lawyers from Wilson Sonsini (among other lawyers), who all uniformly report in conversations that conventional defenses do not affect IPO pricing."). The paper also shows that the incidence of a staggered board, an important antitakeover mechanism, compared to the earlier studies, is even higher at 82%. *Id.* at 1377.

23. *Id.* at 1381–82.

24. *See* Bebchuk, *supra* note 21, at 719–20.

25. *Id.* at 729–33. The paper also presents a brief discussion of the problem that investors' incomplete information can have in inducing the firms to adopt the optimal governance arrangement at their IPOs. *Id.* at 739–40.

26. *See id.* at 728. By contrast, Kahan and Rock take an approach under which, by adopting an antitakeover device, a firm can endow its managers with a strong bargaining power against a future, yet-unknown buyer and thereby increase the return for the shareholders. *See* Marcel Kahan & Edward Rock, *Corporate Constitutionalism: Antitakeover Charter Provisions as Precommitment*, 152 U. PA. L. REV. 473, 484–85, 505–06 (2003); *see also* Lynn Stout, *The Shareholder as Ulysses: Some Empirical Evidence on Why Investors in Public Companies Tolerate Board Governance*, 152 U. PA. L. REV. 667, 706–07 (2003) (arguing that public company shareholders are willing to tolerate antitakeover arrangements to encourage managers to make more firm-specific human capital investment).

27. *See* Michal Barzuza, *Inefficient Tailoring: The Private Ordering Paradox in Corporate Law*, 8 HARV. BUS. L. REV. 131, 146–51 (2018); *see also* Kobi Kastiel & Yaron Nili, *The Corporate Governance Gap*,

This Article builds upon these earlier analyses but focuses more specifically on how other factors—such as potential mispricing of the IPO shares, volatility of IPO prices, and the fraction of ownership sold at IPO—can affect the incentive to adopt an optimal governance arrangement. The Article also examines possible mechanisms (both private ordering and post-IPO liability) that could mitigate the misaligned incentive problem and whether (mandatory or optional) sunset provisions can alleviate the disincentive problem.[28] In the process, the Article focuses less on private benefits of control and more on governance and pricing mismatch among firms.[29] As the analysis will show, even in the absence of any private benefits of control, the informational issues and the potential for mispricing can induce firms to adopt suboptimal governance structure in order to take advantage of better IPO pricing.

While the issues over antitakeover provisions adopted by IPO firms have remained unsettled, recent discussion around dual-class stock and, to a lesser extent, mandatory individual arbitration provisions seems to have reignited the debate. Since Google's IPO in 2004, the number of firms (especially "technology" firms) that have adopted a dual-class structure has substantially increased over time.[30] The opinion over whether this is a good trend seems to be sharply divided among investors, and practitioners. On the one hand, the Council of Institutional Investors has taken a position against dual-class structure, advocating for either a mandatory sunset provision of seven years or less after the IPO, or exclusion from some of the major indices for certain no vote or dual-class stock.[31] Some practitioners have argued, on the other hand, that dual-class stock structure is necessary and beneficial for particularly innovative companies,

131 YALE L.J. 782, 821–48 (2022) (showing how the governance structures of smaller market cap companies can depart significantly from that of larger companies).

28. In Bebchuk's analysis, the founder sells a fraction of their equity to raise financing, but the primary motivation over whether the board should have veto power over takeover bids concerns whether the founder will have an incentive to not engage in additional financing post-IPO to protect their private benefits of control. Bebchuk, *supra* note 21. For an analysis that examines how the desire to engage in secondary equity issuance can lead to underpricing at the IPO, see Ivo Welch, *Seasoned Offerings, Imitation Costs, and the Underpricing of Initial Public Offerings*, 44 J. FIN. 421, 444 (1989). Also, in Barzuza's analysis, the firm is trying to maximize its valuation minus the value of private benefits. *See* Barzuza, *supra* note 27, at 147, 149. Neither Bebchuk's nor Barzuza's analysis theoretically examines sunset provisions on dual-class stock.

29. Less emphasis on private benefits of control is in contrast with Bebchuk, *supra* note 21, and Barzuza, *supra* note 27. The analysis reveals that aiming to extract more private benefits of control and adopting a suboptimal governance structure can be orthogonal issues. An interesting question that needs further examination is how a founder-controller's private benefits of control can interact with a firm's governance choice. *See* discussion *infra* Conclusion; *see also* Choi, *supra* note 2, at 60 (discussing how private benefits of control can create a lock-in effect on the controller and induce the controller to care for the long-term).

30. *See* Choi, *supra* note 2, at 54 (showing that in response to IPO investors' push-back against using dual-class stock, the company's founders circulated a letter to the investors touting the virtues of having a dual-class stock, such as staying focused on the long-term objectives of the company and circumventing short-term fluctuations in earnings and stock prices).

31. *See* discussion *supra* Introduction.

and that the structure allows the founders to engage more broadly in stakeholder governance.[32]

There is a sharp disagreement among academics as well. Bebchuk and Kastiel, who generally advocate for sunset provisions, have argued that the potential benefits of having a dual-class structure tend to recede over time while the cost of allowing a company to perpetually maintain such a structure is high.[33] Goshen and Hamdani, however, have argued that concentrated ownership, possibly with dual-class stock, can allow the founder to realize her "idiosyncratic" vision, which may not be appreciated by the capital market but may benefit all shareholders in the long run.[34] Furthermore, Fisch and Davidoff Solomon argue against time-based sunset provisions because the provision can lead to other moral hazard problems, including the founder-controller economically entrenching herself before the sunset kicks in.[35]

On the empirical side, Masulis, Wang, and Xie examined whether the agency problems are more serious at dual-class companies. They show that as the "wedge" between cash flow and control rights gets larger, company CEOs receive higher compensation and capital expenditures contribute less to shareholder value.[36] Similarly, Gompers, Ishii, and Metrick have examined the wedge's impact on firm valuation and performance post-IPO, demonstrating that as the wedge gets larger, a firm's performance (as measured by Tobin's Q) decreases.[37] Some scholars have examined dual-class company IPOs more

32. *See* Berger, *supra* note 7, at 8 (discussing how founders seek to elect directors who are "focused on the interests of various stakeholders and broader issues such as corporate purpose").

33. *See* Bebchuk & Kastiel, *supra* note 6, at 613–17 (analyzing a founder's structural incentive to resist conversion to single-class structure when the founder enjoys significant private benefits of control).

34. *See* Goshen & Hamdani, *supra* note 7, at 566 (arguing that by allowing the entrepreneur to retain control over time, the entrepreneur can "pursue her idiosyncratic vision for producing above-market returns").

35. *See* Fisch & Davidoff Solomon, *supra* note 6. Fisch and Davidoff Solomon also argue that there should be more private ordering solutions regarding sunsets, including "event-based sunsets" that rely on "objective events that are more likely to result in the founder losing track of his or her mission or being overly incentivized to favor his or her own interests." *Id.* at 1086. More broadly, the article states that "there is particular value to market participants working to develop norms and standards around the types of sunsets that the market should demand of dual-class issuers." *Id.* at 1092.

36. *See* Ronald Masulis, Cong Wang, & Fei Xie, *Agency Problems at Dual-Class Companies*, 64 J. FIN. 1697, 1715–20 (2009) (finding that as the "wedge" increases, (1) corporate cash holdings become less valuable to outside shareholders, (2) CEOs receive higher compensation, (3) managers increasingly make shareholder value-destroying acquisitions, and (4) capital expenditures contribute less to shareholder value). To the extent that the empirical studies show that dual-class firms perform "worse" than single-class firms, the studies focus on the return for the public (outside) shareholders. The studies do not attempt to measure the amount of private benefits of control that the controller captures. One can argue that the total welfare should take into account both the public value of the firm and the private benefits of control. Some studies have tried to measure the private benefits of control more indirectly by estimating the control premium when control block is being sold. *See* Choi, *supra* note 2, at 63–65 (discussing earlier empirical studies on measuring control premiums).

37. *See* Paul Gompers, Joy Ishii, & Andrew Metrick, *Extreme Governance: An Analysis of Dual-Class Firms in the United States*, 23 REV. FIN. STUD. 1051, 1054 (2010) (finding that the dual-class firm value increases as the insiders' cash-flow rights increase but decreases as the insiders' voting rights increase). For the definition and a general critique of using Tobin's Q, see Robert Bartlett & Frank Partnoy, *The Misuse of Tobin's Q*, 73 VAND. L. REV. 353, 358–62 (2020).

directly, and the evidence seems to be more mixed. Smart and Zutter have found that dual-class IPOs are less likely to be underpriced compared to single-class firms.[38] Cremers, Lauterbach, and Pajuste, as well as Kim and Michaely, show that dual-class companies exhibit higher valuations (in terms of Tobin's Q) compared to comparable single-class firms around the time of the IPO.[39] At the same time, both studies show that as dual-class firms age, their valuations and stock premiums tend to decline.[40] Looking more closely at characteristics of dual-class firms at IPOs, Aggarwal, Eldar, Hochberg, and Litov show how there is considerable variance among dual-class structures.[41] They also show that the size of the wedge tends to depend on the founder's bargaining power, measured, for instance, by the ease of access to private financial markets.[42] Overall, the empirical studies on dual-class IPOs suggest that not only is there great variance among dual-class firms, but also that some dual-class firms actually perform well (either in terms of valuation or stock returns) around the time of their IPOs.[43]

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38. Scott Smart & Chad Zutter, *Control as a Motivation for Underpricing: A Comparison of Dual and Single-Class IPOs*, 69 J. FIN. ECON. 85, 107 (2003).

39. Martijn Cremers, Beni Lauterbach, & Anete Pajuste, *The Life-Cycle of Dual Class Firm Valuation* 2–3 (Eur. Corp. Governance Inst., Working Paper No. 550, 2020), https://www.ecgi.global/working-paper/life-cycle-dual-class-firm-valuation (demonstrating empirically that the dual-class firms have higher valuations at the IPO and that as the firms age the valuation premium dissipates). The study found that at around the time of the IPO, dual-class firms have an average Tobin's Q that is 0.39 higher than comparable single-class firms, but the difference disappears by about four years after the IPO. *Id.* at 14, 40 tbl.2. Other studies also show that there is a large variation in the valuations among dual and single class firms at both the IPO and in subsequent years. *Id.* at 15, 40 tbl.2; Hyunseob Kim & Roni Michaely, *Sticking Around Too Long? Dynamics of the Benefits of Dual-Class Voting* 32 (Eur. Corp. Governance Inst., Working Paper No. 590, 2019) (showing that young dual-class firms trade at a premium and operate at least as efficiently as young single-class firms, but that dual-class firms' valuations decline as they mature). Kim and Michaely also looked at other factors such as the voting premium (of high-vote stock) and the amount of cash dividends paid by dual versus single class firms and found that as the dual-class firms age, the voting premium decreases and dividends are perceived to be more valuable. Kim & Michaely, *supra*, at 11–14.

40. Kim & Michaely, *supra* note 39, at 19; Cremers et al., *supra* note 39, at 15.

41. *See* Dhruv Aggarwal, Ofer Eldar, Yael Hochberg, & Lubomir Litov, *The Rise of Dual-Class Stock IPOs*, 144 J. FIN. ECON. 122, 124 (2022).

42. *Id.* at 141 (providing an empirical documentation of the variance of dual-class structures among IPO firms and showing how a founder-controller's bargaining power affects the "wedge" between voting and economic rights). The authors show that the average "wedge" is substantially higher when there is a founder. The average wedge with a founder was more than 26.1%, while one without a founder was 14.1%. *Id.* at 129. At least with rational agents, one party's superior bargaining power shouldn't matter much in affecting "qualitative" features of the firm, such as its governance arrangements. The evidence that a founder's superior bargaining leverage affects the wedge suggests that the bargaining between the controller and the investors (the market) isn't being conducted under a homogeneous informational environment. *See* Albert H. Choi & George Triantis, *The Effect of Bargaining Power on Contract Design*, 98 VA. L. REV. 1665, 1687 (2012) (showing how the lack of symmetric information can affect non-price terms in contracts when one party has superior bargaining power).

43. To the extent that the market has a sufficient foresight, these findings support the thesis that the companies are not being "punished" for adopting a dual-class structure or perhaps even that the IPO market may perceive them rather favorably. The issues of how dual-class companies perform in the long-run and how post-IPO, "mid-stream" governance changes can be implemented are important issues but are not the focus of this paper. Post-IPO governance changes raise their own challenges. On the one hand, given that the firm's stock has been subject to various disclosures and secondary market trading for some time, one could assume that the

II. A NUMERICAL EXAMPLE OF IPO PRICING OF GOVERNANCE STRUCTURE

In this Part, I present a numerical example based on game theory, which shows how the IPO process can value different governance structures. The example assumes that the participants in the market are "rational," meaning that they price the offered stock with all available information in an unbiased manner.[44] Especially regarding outside investors, who will be purchasing stock from the IPO firm, I assume that they can accurately estimate the impact that a certain governance structure has on the firm's long-term value. At the same time, I examine two important variations in more detail: (1) heterogeneity in optimal governance structures (one governance structure is not optimal for all firms); and (2) whether the outside investors have the relevant information that the insiders—the founder and other pre-IPO shareholders—have (whether the outsider investors are informationally disadvantaged vis-à-vis the insiders).

The numerical example contemplates a setting where different types of firms (denoted as the "A-type" or the "B-type") have possibly different optimal governance structures (for example, dual-class structure is optimal for A-type and single-class structure is optimal for B-type). While the firm is aware of its optimal governance structure, the outside investors may not be. The example first shows that when there is no informational gap between the outside investors and the insiders, the firms will have an incentive to adopt the optimal governance structure (A-type will adopt dual-class while B-type will adopt single-class). The market discipline works well. When the outside investors suffer from informational disadvantage vis-à-vis the insiders and different firm types have different optimal governance structures, however, the firms may no longer adopt the optimal governance arrangements (there may be too few or too many dual-class firms). This is true regardless of whether the founder-controller gets to realize some private benefits of control under a dual-class structure. Furthermore, the market (IPO) valuation will no longer be accurate: some firms may be under-valued while others may be over-valued.

A. THE EXAMPLE SETUP

The numerical example has two players: the firm that sells its stock to the outside investors (or simply "investors"),[45] and the outside investors who

informational issues, compared to the IPO market, may be less, and that the outside investors are better aware of which governance feature would be optimal for a particular firm. On the other hand, there also is a possibility that the firm is "locked into" the existing governance structure due to various factors, such as founder-controller's private benefits of control, firm-specific investment, etc.

44. For more "behavioral" or "psychological" explanations over the IPO market, see, for example, Patrick Corrigan, *The Seller's Curse and the Underwriter's Pricing Pivot: A Behavioral Theory of IPO Pricing*, 13 VA. L. & BUS. REV. 335, 386 (2019).

45. "Outside investors" means both institutional and retail investors. It usually is the case that the bulk of the IPO shares are bought by institutional (and other high net worth, "sophisticated" retail) investors, but so long as the firm is better informed than the outside investors, the analysis will carry through. See Ritter, *supra* note 14, and Corrigan, *supra* note 14, for a more general discussion of the IPO process.

purchase the stock.[46] The firm (along with the pre-IPO shareholders, including the founders) is going through an IPO to raise capital with a governance structure, and investors decide how much they are willing to pay for the firm's offered stock. Initially, the example assumes that there are two types of firms: the firm can be either "A-type" or "B-type" with equal probabilities.[47] It also assumes that all players (the firm and the investors) know the probabilities. Additionally, the firm knows its type (A or B), but this information may or may not be known by the investors.[48] The firm chooses its governance structure and offers its stock to the investors. The financing need for the firm is fifty (million) dollars, and the firm is offering a fraction of the firm's stock to meet its financing need. Depending on what the outside investors believe about the firm's future prospects (which depends on the firm type and its governance structure), the firm may need to offer a larger or a smaller fraction of its equity ownership to the investors. This also translates to the IPO price.

After observing the firm's offer, relying on the outside investors' knowledge (or "belief") about the firm type, the investors decide whether to buy the offered stock and for how much. While the firm's type (A or B) may not be known to the outside investors, the firm's choice over governance structure is observed by the investors. Based on the observed governance structure and the offered price, the investors make their purchase decision. The example assumes that the investors must break even: how much they are willing to pay should be equal, in expectation, to the value of the ownership fraction offered by the firm. For instance, if the firm is offering to sell 50% of its equity to investors to raise $50, the investors must believe that the firm is worth, in expectation, at least

46. The description of the game periods, respective player's strategies, information sets, and the payoffs, is informal. With respect to the stages, we assume that there are four periods ($t \in \{0,1,2,3\}$) with no time discount. At t=0, the nature chooses the firm type (with 50% probability for each type) and the realized type is observed by the firm but may or may not be observed by the outside investors; at t=1, the firm offers to sell its stock with certain governance features to the investors; at t=2, the investors decide whether to accept the offer; and at t=3, the payoffs are "realized."

47. I assume equal probabilities for simplicity. Even if the probabilities are uneven, the basic thesis will remain unchanged.

48. The assumption that the firm knows its type (along with the optimal governance structure) while the outside investors do not is made for expositional ease. Two points are worth mentioning. First, what is important is not that the firm knows *for certain* its "true" type but rather that the firm knows *more* about the type than the outside investors. That is, the firm is better aware of what its optimal governance structure would be (along with the valuation) than the outside investors. Second, the analysis can nevertheless easily incorporate a third type of firms (the "uninformed" type)—those who do not know the optimal governance structure for them. It is straightforward to show that the uninformed firms will be concerned about sending an adverse signal to the market (and being punished on IPO valuation). In a pooling outcome, for instance, the uninformed firms will choose the governance structure that the informed firms choose. In a separating outcome (under which the informed firms separate on governance structures), the uninformed firms will choose a governance structure that gives them, on average, a more favorable valuation. The outside investors, in response, will accordingly adjust how much they would be willing to pay conditional on governance structure offered. For specific examples, see *infra* notes 55 and 65.

$100.[49] When the investors purchase the stock, the firm spends the proceeds ($50) on its proposed investment project and the future cash flows are realized.

Before the firm offers to sell its stock to outside investors, the firm chooses its corporate governance structure. The governance structure can include numerous different dimensions, such as dual-class stock, a staggered board, a mandatory arbitration provision, a percentage of independent directors, restricted shareholders' right to call shareholders' meeting or nominate directors, or a waiver of statutory remedy. For simplicity's sake, the example uses the choice over single versus dual-class stock.[50] Dual-class stock means having multiple classes of stock, where all classes have the same cash flow rights, but a certain class has superior voting rights. The example also assumes that the high-vote shares are retained by the founder-controller (and possibly other pre-IPO shareholders) so as to give the founder-controller (de facto) control over the firm.[51]

For instance, suppose the firm needs to sell 70% of its equity (in terms of cash flow) to the outside investors. If the firm is capitalized with one class of stock (each share with one vote) and if there are 1000 shares outstanding, 700 shares will be owned by the outside investors, giving them 70% of the total voting power and cash flow rights—with the founder-controller retaining 30% both in terms of cash flow and voting rights. By comparison, suppose the firm is capitalized with two classes of stock: 700 shares of Class I with each share having one vote per share, and 300 shares of Class II with each share having ten votes per share. Suppose also that both classes have the same cash-flow right and Class I shares are sold to outside investors while Class II shares are retained by the founder-controller. With this dual-class structure, the public investors will be entitled to 70% of the firm's cash flows but their voting control will only be approximately $19\%(\approx 700/3700)$. In the former case with a single-class structure, the founder-controller, with 30% voting power, may not have (effective) control over the firm, but in the latter case, the founder-controller, with about 81% voting power, is certain to retain her control.

Turning to the firm types and valuations, for the "A-type" firm, having a dual-class stock structure is beneficial and increases its total firm value. This may be because the structure allows the founder-controller to focus on the long-term and not worry about the short-term fluctuations of the stock price or

49. With a $100 firm valuation, when the investors own 50% of the firm's equity, the value of their ownership shares is $50 (=(0.5)×($100)).

50. For a background discussion on other controversial governance arrangements, see sources cited *supra* note 8.

51. There certainly are many different types of "dual-class" structure and many different ways to create a "wedge" between cash-flow rights and voting/control rights. However, I abstract away from the variance to make the analysis simple. *See generally* Aggarwal, Eldar, Hochberg, & Litov, *supra* note 41 (empirically documenting and examining different types of dual-class firms at their IPOs).

earnings.[52] The structure also prevents the founder-controller from facing any potential threat from short-term investors (including short-term activist investors).[53] The dual-class structure can also allow the founder-controller to implement her long-term, idiosyncratic vision[54] without needing to worry about being subject to a value-destroying, hostile takeover. More concretely, suppose that the A-type firm has a dual-class stock structure, its fundamental total market valuation is $100 (in expectation), whereas without a dual-class stock structure, the total market valuation drops to $60.[55] These valuation numbers represent the present discounted value of future cash flows that result from implementing the firm's investment.[56]

For the "B-type" firm, on the other hand, the optimal governance arrangement is to have a one-share-one-vote, single-class structure. If the B-type firm had a dual-class stock structure that gives disproportionate voting power to the founder-controller, the capital structure would entrench the founder-controller and shield the firm from future market discipline, such as being subject to a value-increasing takeover or shareholder activism. It may also allow the founder-controller to extract more private benefits of control at the expense of the outside shareholders.[57] By having a single-class of stock structure, the B-type firm reduces the incentive for the founder to extract private benefits of control and subjects the firm to future market discipline. Suppose for the B-type firm, with a dual-class stock structure, its (fundamental) market valuation (in terms of present value of future cash flows) is $60 and with the single-class stock structure, its market valuation increases to $70.

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52. *See* Choi, *supra* note 2, at 61 (analyzing how dual class stock and other concentrated ownership structure can promote beneficial long-term commitment and focus). This was the primary argument made by Google when it went public using a dual-class stock structure. *Id*. *See also* Warby Parker Inc., *supra* note 5.

53. *See* Choi, *supra* note 2, at 98 (arguing that while a separation of cash-flow right from control right can enable the controller to extract more private benefits of control after the firm goes public, such non-transferrable private benefits of control can also create a lock-in effect that induces the controller to care for the long-term value of company); *see also* Berger, *supra* note 7, at 12 (arguing that firms with dual-class stock structure out-perform those without for more than seven years).

54. *See* Goshen & Hamdani, *supra* note 7, at 591.

55. Note that the valuation for the A-type drops from $100 to $60 when switching from dual- to single-class. One may argue that this is a very steep drop. As the analysis will show, this assumption is not as important. We could, for instance, change the A-type's single-class valuation to $80, and the rest of the analysis will still go through. One could justify this assumption if we think that the A-type firm has a much larger opportunity to make a long-term, non-verifiable investment compared to the B-type firm (which needs to focus more on short-term verifiable investments), and without such investments, much of the value for the A-type firm would be lost.

56. Although I refer to these numbers as "firm valuation," it would be more accurate to think of them as the present value of future cash flow that is generated from the initial investment. In other words, "firm valuation" means an incremental value to the firm. We can assume that both types of firms have a common baseline valuation amount (like $50), and the $100 valuation stems from implementing the project. I use the description of "firm valuation" to simplify the presentation.

57. For now, the analysis is not assuming any private benefits of control. Though the Article's main arguments do not (directly) rely on the extraction of private benefits of control, the analysis can be made consistent. One can, for instance, assume that with dual-class stock, for the A-type firm, the value of private benefits is zero while for the B-type firm, the value is positive. *See* discussion *infra* Part II.C.1.

Structure	A Type	B Type
Dual-Class Stock	$100	$60
Single-Class Stock	$60	$70

Table 1: Firm Valuations under Heterogeneity

Table 1 summarizes the firm valuation numbers. For the A-type firm, dual-class structure is optimal (meaning, it maximizes its valuation), while for the B-type firm, single-class structure is optimal. These numbers are representative of the firm's "true," "fundamental," or "fair" values (in expectation). This example assumes that all valuation numbers (along with the class structure chosen by the firm) are also known by the outside investors. In addition, it assumes that apart from the possibly different governance structure, other visible characteristics across these two types of firms are the same (or sufficiently similar). For example, the two firms are operating in a similar industry with similar business models; they have comparable finance and accounting metrics; and so on.

B. MARKET OUTCOME UNDER COMPLETE INFORMATION

If the outside investors are fully aware of which type of firm is offering to sell its stock and with which governance package, the IPO market will work efficiently and price the stock accordingly. For the A-type firm, the optimal choice is to adopt a dual-class stock structure. By doing so, the firm will be able to sell its stock at $100 valuation. To raise $50, the firm will sell 50% of its ownership (in terms of cash flow rights) to the outside investors with a dual-class structure.[58] Similarly, for the B-type firm, the optimal choice is to adopt the single-class structure. By doing this, it will be able to sell its stock at $70. To raise $50, the B-type firm will offer to sell approximately 71.4% ($\approx \$50/\$70$) of its equity ownership to outside investors. With complete information, the A-type firm adopts a dual-class structure and sells 50% of its equity ownership while the B-type firm adopts the single-class structure and sells about 71.4% of its equity ownership, and both firms raise $50. The respective governance arrangements are optimal.[59] The results are summarized in Table 2.[60]

58. If we assume that the firm is selling 50 shares at IPO and the pre-IPO shareholders are retaining 50 shares, each share will be offered and trade at $1.

59. There are two types of inefficiencies to keep in mind: those stemming from adopting suboptimal governance structure and those stemming from mispricing and (possible) misallocating of proceeds. While I focus on the former, I will, on occasion, highlight the latter.

60. If there are some firms that do not know what their optimal governance structure is (the "uninformed" type), assuming that the investors know that they are uninformed, the firms will choose the governance arrangement that produces the maximum average valuation. Given the valuation numbers in this example, they will choose dual-class structure and sell their equity at an (average) $80 valuation.

	A Type	B Type
Structure Used	Dual-Class Stock	Single-Class Stock
Valuation Obtained	$100	$70
Optimal?	Yes	Yes
Capital Raised	$50	$50
Investors' Ownership	50%	71.4%

Table 2: Outcome under Complete Information

Even with this simple, stylized example, it is worth noting a few important points. First, in a well-functioning market without any informational issues, the founder-controller becomes the "residual claimant" of the firm, once the outside investors' required return is satisfied.[61] When the B-type firm sells 71.4% of its equity to the outside investors to raise $50, the founder-controllers will realize a return of $20. As a residual claimant, the founder-controller (and other pre-IPO shareholders) will maximize the total value of the firm, measured by both private benefits and public value. For instance, suppose that by adopting dual-class stock, the founder-controller gets to realize $5 of private benefits of control while the public valuation stays the same at $60. Whereas with single-class stock, there are no private benefits of control. Even with $5 of private benefits of control, and even with complete information, the founder-controller still only gets $15 of return by adopting dual-class structure. This amount is still less than the $20 of return she would have gotten with a single-class structure.[62] Thus, when the IPO market is working well, the founder-controller (and other pre-IPO shareholders) will have the right incentive to choose the optimal governance structure.[63]

Second, it is easy to recognize that even if the valuation numbers were different, the optimal result occurs if the investors have all the information and correctly value the governance features. Suppose, for instance, instead of the valuation numbers in Table 1, we have the numbers as shown in Table 3. In this variation, it is optimal for both firms to adopt the single-class structure: valuation numbers for the A-type firm (for either single-class or dual-class) are swapped. Obviously, when the outside investors are aware of which firm they are purchasing the stock from, that firm will choose the optimal governance structure. The A-type firm will choose the single-class structure and sell 50% of

61. When the founder-controller becomes the "residual claimant," they get to enjoy any increase in firm value and will, therefore, have an incentive to maximize firm value (along with any private benefits of control).

62. So long as the private benefits of control under dual-class structure are less than $10, the founder-controller will choose the single-class structure, which is optimal (if we consider both the private benefits for the founder-controller and the public value of the firm). When the private benefits of control are larger than $10, the dual-class structure generates more value overall (i.e., is more efficient) for the B-type, and the founder-controller will adopt the dual-class structure.

63. We will see later, however, once the firm has chosen a suboptimal governance structure at IPO, even a small amount of private benefits produces a lock-in effect, making it difficult for the firm to "undo" the suboptimal structure after the IPO. *See infra* Part III.B.2.

its equity at $100 valuation, and the B-type firm will also choose the single-class structure and sell about 71.4% of its equity at $70 valuation.

Structure	A Type	B Type
Dual-Class Stock	$60	$60
Single-Class Stock	$100	$70

Table 3: Firm Valuations under Homogeneity

Third, complete information, per se, does not lead to the conclusion that there will be much variation among firms in terms of their choice of governance package. The degree of variation depends on what assumption we are making about which governance package is optimal for which firm (meaning, how they are "matched"). At the same time, it is likely that there will be variation in terms of valuation. This is true even when most or all firms adopt the same or a similar governance package, in which case some firms (the A-type) will be valued higher than others (the B-type). Interestingly, it becomes more likely that the firms offer a similar governance package to investors without the assumption of complete information.

C. MARKET OUTCOME UNDER GOVERNANCE HETEROGENEITY AND ASYMMETRIC INFORMATION

Returning to the valuation numbers given in Table 1, what if the investors do not know which type of firm is offering the stock? More precisely, suppose that while the firm knows its type, the investors do not. It is easy to imagine that it is no longer guaranteed that the firm would adopt the optimal governance arrangement. Given the valuation numbers in Table 1, a fully separating outcome (where the A-type and the B-type separate based either on governance structure, price, or both) is not possible. Suppose the A-type firm adopts a dual-class stock while the B-type firm adopts a single-class stock, and the market values its respective stock accordingly. Can this outcome hold? The answer, unfortunately, is no.

Given that the investors do not know whether they are facing an A-type or a B-type firm, now the B-type firm will have an incentive to mimic the A-type firm by also adopting the dual-class structure. By doing so, it can increase its market valuation to $100 and sells only 50% of its equity, as opposed to having to sell 71.4%. Being able to sell a smaller fraction of the firm to outside investors at a high valuation can be quite attractive for the founder.[64] For the B-type firm's founder, with the single-class structure, after selling 71.4% of its stock to investors, the founder realizes a gain of $20 ($\approx (28.6\%)(\$70)$). On the other hand, if the firm were to mimic the A-type and sell only 50% of its equity at (an incorrect) $100 valuation (with dual-class stock structure), the founder gets to

64. Note that this is true even if the founder-controller is not enjoying any private benefits of control.

realize \$30 after the IPO ($\approx (50\%)(\$60)$).[65] The outside investors, now aware of the B-type firm's incentive to mimic, would no longer be willing to value the dual-class firm at \$100.

1. Both Types Adopt Dual-Class

When market separation is no longer feasible, one possible outcome is to have both types of firms adopt a dual-class structure (and offer the same fraction of the firm) when selling its stock to the public. This is a "pooling" outcome.[66] Expecting that both types of firms are pooling on the dual-class structure, investors will rationally value the firm at \$80 ($= (0.5)(\$100) + (0.5)(\$60)$).[67] In order to raise \$50 for its investment, the firm will now have to sell approximately 62.5% of its equity ($\approx \$50/\$80$).[68] When the stock for both types with dual-class structures is priced at \$80, neither the A-type nor the B-type firm will have an incentive to deviate from this outcome by switching to a single-class structure. Even under the most optimistic scenario,[69] doing so will only yield \$70 of market valuation, which is lower than the \$80 firm valuation they got from pooling.[70] We also cannot have an opposite separation, under which the A-type firm adopts the single-class stock while the B-type firm adopts the dual-class stock. In that case, the B-type firm will have an incentive to deviate and switch to the single-class stock, thereby increasing its market valuation from \$60 to \$70. In short, the pooling outcome, shown by Table 4, where both types are offering their stock with dual-class structure, is "robust."

With the pooling outcome, we get the A-type firm being "under-valued" while the B-type firm gets "over-valued" in the IPO.[71] If we assume that the prices will converge to their true valuations through the post-IPO secondary

65. Given that (1) the true valuation of the B-type firm with dual-class structure is \$60, (2) the B-type firm mimics the A-type, and (3) the investors purchase 50% of its stock at (false) valuation of \$100, the investors are left with 50% of the firm worth \$60, incurring a loss of \$20.

66. While I focus here on a pooling outcome, a separating outcome is also possible but incurs a cost (efficiency loss). The next Subpart discusses this issue.

67. This analysis assumes that both types are equally likely.

68. If some firms do not know their optimal governance structure (the "uninformed" type), they will also pool with the others by adopting dual-class structure to avoid sending an adverse signal to the market and being penalized in valuation. For instance, suppose we divide the firms into three types: 40% know that they are A-type ("informed A-type"), 40% know that they are B-type ("informed B-type"), and 20% know that they are either A- or B-type with equal probabilities ("uninformed" type). In equilibrium, all three types will pool with dual-class structure, and the average valuation numbers will be unaffected. This is because the ratio of A- to B-types among the uninformed is the same as the ratio between informed A- and informed B-types.

69. What I mean by the phrase "even under the most optimistic scenario" is to assume that the public investors believe that the deviating firm is the B-type and be willing to value the firm at \$70.

70. Under the pooling outcome, after selling 62.5% of the firm at \$80 valuation, the B-type firm founder-controller would receive \$22.5 ($\approx (0.375)\times(\$60)$). This is higher than what she would have gotten with single-class structure, which would be \$20.

71. In terms of the per share price, if each type of firm is offering about 62.5 shares to the public (out of total 100 shares) with the expected firm valuation of \$80, each share will be sold at about \$0.80 ($\$0.80\times62.5\approx\$50$) at the IPO. However, assuming that the secondary market trading will eliminate this informational issue, for the A-type, the price will increase and converge to \$1 per share, while for the B-type firm, the price will decrease to \$0.50 per share.

market trading,[72] the A-type firm's initial offer is underpriced and the firm valuation may ultimately converge to $100. By contrast, the B-type firm's initial offer is overpriced and there is subsequent decline in price to the firm valuation of $60. If prices will converge relatively quickly to their true valuation after the IPO, the example also shows how "volatile" post-IPO trading can be.[73] Although both underpricing and overpricing are equally possible (and the respective magnitudes are the same), this is due to the assumption that both types (A type or B type) are equally likely. If one assumes, instead, that the investors are 70% likely to face the A-type firm and 30% likely to face the B-type firm, there would be much more underpricing and overpricing in equilibrium (70 to 30 ratio), and the magnitude of underpricing would be lower compared to that for overpricing.[74] The initial offering valuation would be $\$85\ (= (0.7)(\$100) + (0.3)(\$50))$.

	A Type	B Type
Structure Used	Dual-Class Stock	Dual-Class Stock
Valuation Obtained	$80	$80
Optimal?	Yes	No
Capital Raised	$50	$50
Investors' Ownership	62.5%	62.5%

Table 4: Pooling Outcome under Heterogeneity and Asymmetric Information

More importantly, to the extent that the post-IPO secondary market can reveal more information about the firm and its optimal governance structure, such information revelation can potentially present an opportunity for the market to "correct" or "undo" the initial, inefficient governance structure sometime after the IPO.[75] Although a firm presumably always has a choice to rearrange its governance structure anytime, it may opt into an arrangement at its IPO that could facilitate such rearrangement ex post. A sunset provision that allows (or even requires) the shareholders to undo dual-class structure after the IPO is one such mechanism. At the same time, as discussed earlier, there could also be

72. *See* Ritter & Welch, *supra* note 14, at 1821.

73. *See* Corrigan, *supra* note 44, at 348–51 (describing post-IPO price volatility).

74. *See* Michelle Lowry, Micah Officer, & G. William Schwert, *The Variability of IPO Initial Returns*, 65 J. FIN. 425, 455 (2010) (showing how about one-third of IPOs in a sample from 1965 through 2005 had a negative return after at least twenty days from the IPO).

75. If the investors believe that the post-IPO trading will allow the market to reveal the true valuation of the firm relatively quickly, the A-type firm can (at least in theory) utilize a security that relies on such ex-post information, such as a contingent valuation right (CVR) or a warrant. Although such contingent rights are occasionally used in certain M&A transactions, their use in an IPO setting is unclear. *See* Albert H. Choi, *Facilitating Mergers and Acquisitions with Earnouts and Purchase Price Adjustments*, 2 J.L. FIN. & ACCT. 1, 8 (2017) (demonstrating how earnout and purchase price adjustment mechanisms can alleviate the problems of information asymmetry or non-convergent priors in M&A transactions).

potential lock-in effect from the IPO that could make it difficult for the firm to revisit the governance structure. Part IV will discuss this issue in more detail.

Before proceeding, a couple of important points must be noted. First, even though the market is inefficient, the outside investors, at least in expectation, are not being harmed. They are valuing the firm rationally given all the information they have. When comparing the outside investors' expected return in this inefficient pooling outcome to that in a complete information setting, the expected returns are the same. Thus, the market inefficiency does not imply that the outside investors are somehow being hurt. However, with incomplete information what is happening is cross-subsidization. The A-type firm is "subsidizing" the B-type firm (or vice versa, depending on the valuation numbers) through average valuation. Though the outside investors realize a loss with respect to the B-type firm, that negative return is being made up through a positive return on the A-type firm. This feature, where the rational, outside investors recover their cost of capital (in expectation) despite the inefficiency, will be common throughout the analysis.

Second, note that the example is neutral regarding the size of the founder-controller's private benefits of control. What the example shows is that, even in the absence of any private benefits of control, the founder-controller may still want to adopt a suboptimal governance structure because this allows the founder-controller to retain a larger share of the firm's future cash flows. For the B-type, for instance, by pooling with the A-type and adopting the dual-class structure, the founder-controller manages to sell 62.5% of the company, as opposed to 71.4% of the company under complete information, thereby capturing a larger share of the firm's cash flows.[76] If the founder-controller can also capture some private benefits of control with the dual-class structure, the B-type's incentive to mimic the A-type would be even stronger.[77] Thus, dual-class stock or antitakeover provisions are not only about protecting private benefits of control.

2. Both Types Adopt a Single-Class Structure

What made the pooling outcome—where both types adopt a dual-class structure—fairly robust was the fact that the firms' average valuation of $80 was higher than either firm's true valuation under single-class structure ($60 for the A-type and $70 for the B-type). If the firm's valuation is higher under the single-class structure, we may get an outcome where both types adopt the single-class structure. Suppose the valuation with single-class stock is $80 for the A-type and $90 for the B-type. These numbers are shown in Table 5. Note that,

76. Under complete information and single class structure, the founder-controller captures $20 of total firm value (≈ (28.6%)×($70)). Under incomplete information and dual-class structure, the founder-controller captures $22.5 ((37.5%)×($60)).

77. On the flipside, though somewhat unlikely, even if the founder were to sacrifice some private benefits of control by adopting a dual-class structure, she would be willing to do so to capture a larger share of the firm's cash flow.

compared to the earlier scenario, we have only increased the firm valuation numbers under single-class structure.

Structure	A Type	B Type
Dual-Class Stock	$100	$60
Single-Class Stock	$80	$90

Table 5: Firm Valuations under Heterogeneity: Variation

In this case, it would no longer be desirable for both types of firm to adopt dual-class structure. By doing so, they would get the valuation of $80 (average). However, from both types' perspective, they can potentially increase the stock price (and firm valuation) by switching to a single-class structure. Deviation thus becomes profitable. At the same time, just as in the previous example, we cannot have a fully separating outcome where only the A-type firm adopts the dual-class stock while the B-type firm adopts the single-class structure. If that were the case, the B-type firm will again have an incentive to switch to dual-class stock in order to get the valuation of $100, instead of $90. In equilibrium, both types of firms will offer their stock with a single-class structure with the average firm valuation of $85.[78] What is interesting about this example is that, unlike the previous example, the A-type firm is now the one with a suboptimal governance structure.[79] The outcome is shown in Table 6.

	A Type	B Type
Structure Used	Single-Class Stock	Single-Class Stock
Valuation Obtained	$85	$85
Optimal?	No	Yes
Capital Raised	$50	$50
Investors' Ownership	58.8%	58.8%

Table 6: Pooling Outcome under Heterogeneity and Asymmetric Information

Setting aside the fact that the A-type firm is adopting an inefficient governance structure, the IPO market in this example prices the stock offered by both types of firms more accurately than in the initial example, where both types were adopting the dual-class structure. With the assumption that the valuation gap between the types is narrower, the size of underpricing and overpricing is

78. To raise $50, each type of firm will sell about 58.8% (≈$50/$85) of its total equity.

79. With respect to the investors' off-the-equilibrium belief, if they were to "naïvely" believe that the dual-class structure is coming from the A-type and are willing to pay $100 for the stock, the pooling outcome will fall apart. *See supra* Part II.C.2. This "naïve," off-the-equilibrium belief will not survive a refinement (such as the intuitive criterion), however, since the B-type firm will also have a strong incentive to deviate. One plausible off-the-equilibrium belief for investors is that any dual-class structure is equally likely to come from either the A-type or the B-type. With this off-the-equilibrium belief, investors are willing to pay $75 for the firm, and the pooling outcome is sustained.

relatively small.[80] Concurrently, compared to the earlier case, the A-type firm is now being overpriced while the B-type firm is being underpriced at IPO.[81] If the stock prices will converge to their true valuation through the post-IPO secondary market trading, the A-type firm's valuation will decrease to $80 while the B-type firm's valuation will increase to $90.[82]

D. MARKET OUTCOME UNDER GOVERNANCE HOMOGENEITY AND ASYMMETRIC INFORMATION

Why do firms fail to adopt the optimal governance structure at the initial public offering? The problem stems from two sources. First, outside investors are unaware of which type of firm they face when they participate in the IPO market. The firms, on the other hand, either know or are at least in a better position to know their type. This is the problem of information asymmetry—because the firms have better information than the investors, they have an incentive to manipulate the market process for their advantage. The second reason is the assumption that different firms have different optimal governance structures. No single governance structure is optimal for all types of firms. If the assumption of asymmetric information is retained but the heterogeneity assumption is relaxed, an efficient outcome will be obtained (at least from the governance perspective).[83]

Returning to the example, suppose the valuation numbers are those in Table 3. Recall that under this scenario, while there are some variations in market valuations, single-class structure is optimal for both types of firms. In this case, it is easy to see that both types of firms will adopt the optimal governance structure of single-class stock. There will still be some mispricing, however.[84] When the investors observe the firm offering its stock with a single-class structure, they will value the stock at $\$85 \ (= (0.5)(\$100) + (0.5)(\$70))$, given that they do not know which type of firm they are facing. The A-type firm is undervalued while the B-type firm is overvalued. Nonetheless, the governance structure chosen by the firms is optimal. With the valuation of $85, neither type will want to deviate from their choice. Even if the investors believe that the firm

80. This assumes that the valuations for both types under the single-class structure are roughly equal. If there is a meaningful difference in valuations, prices will diverge after the IPO, assuming that the secondary trading reveals more information about the firm.

81. This assumes that the A-type's valuation with single-class structure is $80 while the B-type's valuation is $90. If those numbers changed to $90 for the A-type and $80 for the B-type, there will again be underpricing for the A-type and overpricing for the B-type.

82. If we assume that both types are offering about 58.8 shares to the public (out of 100 total shares) to raise $50, the IPO price will be about $0.85 (≈$50/58.8). Through secondary trading, the A-type firm's share price will decrease and converge to $0.80 while the B-type firm's stock price will increase to $0.90.

83. Inefficiency from mispricing will persist.

84. With the mispricing, there would also be some investment inefficiency. In the current example, the firm is either selling too large or too small a fraction of its equity to the public. Selling too large a fraction could prohibit the firm from engaging in a future round of financing. Furthermore, the insiders (including the founder-controller) may retain too little "skin in the game" to care about the firm's long-term health.

offering dual-class structure is an A-type, the deviating firm can only get the valuation of $70. Hence, there is no incentive to deviate.[85] Finally, even if the numbers were flipped so that both types of firms would have a higher valuation under the dual-class structure, both types will offer dual-class structure and the outcome would still be optimal. The outcome is summarized in Table 7.

	A Type	B Type
Structure Used	Single-Class Stock	Single-Class Stock
Valuation Obtained	$85	$85
Optimal?	Yes	Yes
Capital Raised	$50	$50
Investors' Ownership	58.8%	58.8%

Table 7: Market Outcome under Homogeneity and Asymmetric Information

E. POTENTIAL COUNTERVAILING FORCES: SOME COMPLICATIONS

So far, this Article has examined how the presence of informational issues and the heterogeneity in optimal governance structure can lead to suboptimal governance choice. The presence of "market failure" also raises the possibility that, perhaps, the firms (especially the A-type) can rely on certain private ordering mechanisms to mitigate or eliminate the inefficiency. In addition, the legal system allows the investors who purchase the stock at an inflated price to recover monetary damages from the firm when evidence of non-disclosure or misrepresentation is uncovered. This Subpart informally and briefly explores whether the inefficiencies at the IPO can be mitigated with the help of either private ordering mechanisms or the post-IPO liability system. The Appendix presents a more formal analysis, relying on extensions of the numerical example presented in Part II.

1. Private Ordering Mechanisms

Private ordering mechanisms may allow an A-type firm to send a costly "signal" to the market in order to "separate" itself from the B-type (credibly convince the outside investors of its type).[86] While there may be many different

85. In this example, the pooling outcome where both types are choosing single-class structure is possible because deviation (with any plausible off-the-equilibrium belief by the investors) is not attractive. In other circumstances, this may no longer be true. Suppose we start from Table 2 but increase A-type's valuation with dual-class to $85 while reducing the B-type's valuation with single-class to $60. Even with the new numbers, it is still optimal for both firms to choose single-class. However, that pooling outcome may no longer be stable, unless the investors are willing to substantially "punish" the deviators. On the equilibrium path, both types of firms will sell with single class structure at $80. The A-type firms, however, will now have an incentive to deviate to dual-class stock so long as the investors believe that the deviator is an A-type firm rather than a B-type firm.

86. There is a robust economics literature on how economic agents can credibly signal his or her type to the others since the path-breaking work of Michael Spence. *See* Michael Spence, *Job Market Signaling*, 87 Q.J. ECON. 355, 355 (1973); *see also* Philippe Aghion & Benjamin Hermalin, *Legal Restrictions on Private Contracts*

types of signaling mechanisms, this Subpart discusses three possibilities: (1) reliance on reputable IPO advisors (gatekeepers); (2) utilizing more internal capital; and (3) deliberate underpricing. First, it may be possible for the A-type firm undergoing an IPO, to hire a set of reputable financial and legal advisors who can "attest" to the market that the firm's future revenues are relatively high and that the optimal capital structure for the firm is to adopt a dual-class structure. To the extent that the outside advisors have some reputational capital at stake and that the advisors are costly, it may be possible for the A-type firm to send a credible signal to the market that its valuation should be high by adopting a dual-class structure. This signal might thus prevent the B-type firm from mimicking the A-type.

Another possible channel may be for the A-type firm to either raise less money from external financing by relying more on internal capital. For instance, by relying more on the internal, personal investment, the founder-controller with more "skin in the game" can send a credible signal to the market about the quality of its investment (along with sanguine prospects of future cash flow) and how the firm's choice over governance structure is optimal. It also lessens the reliance on less informed investors ("blind" money). So long as the amount of reliance on external financing is relatively small (or conversely, the amount of "skin in the game" is relatively high), the better-quality A-type firm will be able to separate itself from the herd.

The third possibility is to deliberately underprice its stock at the IPO. With the valuation numbers given in Table 1, when both types of firms offer to sell their stock at an $80 valuation with dual-class structure, there was already underpricing for the A-type while overpricing for the B-type. Throughout the examples, once the outside investors' belief about the firm's valuation is determined, the IPO pricing makes sure that the outside investors break even. This implicit assumption is a simplification. In reality, the firm going through an IPO has the option of pricing their shares below what the outside investors are willing to pay (based on their beliefs about the firm valuation). When the amount of necessary internal investment is sufficiently large, but not large enough to induce separation on its own, the A-type firm may be able to separate itself from the B-type by deliberately underpricing its shares. Intuitively, as the amount of underpricing gets larger (or, more accurately, as the fraction of firm sold to the outside investors to raise a fixed amount of capital gets larger), sooner or later the B-type firm, with poorer investment prospects, will no longer find it worthwhile to mimic the A-type firm because the founder will no longer be able to recoup her personal investment. Underpricing ends up being more costly for the B-type firm than the A-type firm, and the A-type firm would be willing to make this sacrifice to avoid pooling with the B-type.

Can Enhance Efficiency, 6 J.L. ECON. & ORG. 381, 403 (1990) (noting the potential for inefficient "over-signaling" when agents are given contractual freedom).

2. Liability System

In addition to the private ordering mechanisms, the B-type firm (and perhaps even the A-type firm) may also face potential liability. We saw earlier in Part II.B.1 that when both types pool and offer dual-class stock, the B-type firm is overvalued at its IPO. If such overvaluation is based on material misstatement or omission by the firm, the IPO investors may be able to recover damages from the firm after the IPO.[87] The presence of such post-IPO liability schemes can function as a deterrent against the B-type from misrepresenting its valuation.[88] Under the existing regulation, the IPO investors can recover compensatory damages from the firm when they can show that the IPO documents, such as the registration statement and the prospectus, contained material misstatement or omission. In particular, when the share price drops below the initial offering price, the outside investors are entitled to recover the difference between the IPO price and the market price (or the sale price in case the shares have been sold) as compensatory damages. Scholars have emphasized the importance of such a liability system as a potential deterrent against material misrepresentation and also as a possible reason for underpricing.[89] When the size of potential liability is sufficiently high, the B-type will be prevented from pooling with the A-type and offering its stock that is over-priced at IPO.

3. Limits of Private Signaling and Ex-Post Liability

Although both the signaling mechanisms and the ex-post liability system work through different channels in mitigating market failure, they share a common theme. Whether the private signaling or post-IPO liability mechanisms can enhance the efficiency of the IPO market largely depends on how much "skin in the game" the founder-controller retains and what fraction of the firm's equity is being sold to the market. Simply put, the more "skin in the game" that the founder-controller commits, the more effective the mechanisms and the better the market outcomes. For instance, a larger reliance on internal capital and/or deliberate underpricing directly forces the founder-controller to retain a larger share of the future revenue. The idea is similar in the costly advisor (gatekeeper) story: when the founder-controller retains a larger fraction of the

87. *See* Albert H. Choi & Kathryn Spier, *Liability for Non-Disclosure in Equity Financing* 25–28 (U. Mich. L. & Econ., Working Paper No. 22-007, 2022).

88. There also is a lively debate over whether the post-IPO liability should be mandatory and whether firms should be able to "manage" the liability system through private ordering (such as an individual mandatory arbitration provision in charters). See Hal Scott & Leslie Silverman, *Stockholder Adoption of Mandatory Individual Arbitration for Stockholder Disputes*, 36 HARV. J.L. & PUB. POL'Y 1187, 1209–26 (2013), and Choi & Spier, *supra* note 87, at 25–28, for a more detailed discussion.

89. *See* Patricia Hughes & Anjan Thakor, *Litigation Risk, Intermediation, and the Underpricing of Initial Public Offerings*, 5 REV. FIN. STUD. 709, 711–12 (1992) (examining what type of litigation risk can lead to IPO underpricing); Janet Alexander, *The Lawsuit Avoidance Theory of Why Initial Public Offerings Are Underpriced*, 41 UCLA L. REV. 17, 19–20 (1993) (arguing that once the substantive law is considered, lawsuit avoidance theory of IPO underpricing is less convincing).

firm, hiring a reputable but costly advisor becomes more costly (and more effective in signaling) for the founder.

The "skin in the game" story is also important in the ex-post liability system. After making an equity investment into a firm, when the shareholders bring a lawsuit against the firm (alleging material misstatement or omission), because damages are being paid by the firm, the damages are partially borne by the shareholders. This regime will not only reduce the incentive of the shareholders to bring such a lawsuit in the first place but will also reduce deterrence against the firm and the founder-controller. The problem becomes more acute as the fraction of ownership retained by the founder-controller gets smaller. An extreme example may be the case where the founder-controller retains no shares of the firm. In that case, when shareholders bring a lawsuit against the firm, they are simply transferring money from their left pocket to the right pocket, with some lost in the process due to litigation and other costs. Their lawsuit incentive will be nonexistent. In other words, the ex-post liability system will function better if the founder-controller retains a larger share of the firm.

Finally, while the mechanisms can be important tools in incentivizing firms to adopt optimal governance structure, they may be insufficient in creating a more efficient outcome. For instance, when the A-type founder has insufficient capital to pledge (the size of the internal capital is too small), selling a smaller fraction of the firm to the outside investors or to deliberately underpricing its stock to send a credible signal to the market may simply become infeasible. In certain circumstances, reputable advisors who can attest to its bright future prospects may be too costly for the firm (especially those with relatively small market capitalization). And, of course, relying on the liability system requires real expenditures in terms of litigation costs and other non-legal business costs (like management distraction and reputational risk). In other words, while both private signaling and an ex-post liability system can go a long way in mitigating the problems of IPO market failure, one would not expect these mechanisms to fully eliminate the inefficiencies given their limitations.

III. IMPLICATIONS

While the main thesis of the numerical example in Part II is straightforward, it renders a number of positive and normative implications. This Part is divided into two Subparts. The Subpart III.A discusses some positive implications with some empirical predictions, while Subpart III.B focuses on the normative side. On the positive side, the numerical examples can help us better understand the tension between the theory and the prior empirical findings, and how we may expect certain variables to be more indicative or to be correlated with the presence of market inefficiency. On the normative side, we examine various policy proposals. These include prohibiting companies from adopting certain governance arrangements at the IPO and allowing or requiring

shareholders to revisit the governance arrangement after the IPO (the use of "sunset" provisions).

A. POSITIVE IMPLICATIONS

As the baseline numerical example shows (Tables 1, 4, and 6, in particular), whether the IPO market will value governance provisions well depends on two important assumptions: (1) firms can have different governance provisions as part of their optimal governance structure; and (2) investors may lack sufficient knowledge to see which provision is optimal for which firm. The latter may be particularly likely because the investors may not know the true characteristics of the firm. For example, investors may not know whether the founder is more likely to commit for the "long-term" to maximize the firm value, or whether the founder is more likely to extract substantial private benefits to the detriment of the outside investors.[90] The IPO market is susceptible to possible informational failure. All IPO companies, at least facially, claim that they want to maximize firm value and protect shareholders' long-term interest. Relying on their statements about future prospects alone would be insufficient. In the presence of such informational problems, it is possible to observe that, in equilibrium, all firms (or a large majority of them) adopt the same governance structure even though this is not optimal.[91]

On the other hand, the fact that there is little variation in the governance structure does not per se imply that the outcome is inefficient. As seen in the baseline numerical example (Tables 3 and 7), even with informational asymmetry, when a certain governance feature is optimal across the board (although how valuable they are is uncertain with respect to any given firm), the IPO market will function relatively well to incentivize the firms to adopt the optimal governance structure. The uniform adoption can stem from two different reasons: (1) a single governance feature is optimal across the board (with or without investors' lacking information about the firm's type); or (2) firms adopt one governance feature due to the failure of the IPO market. If we were to apply this finding to the earlier empirical literature on staggered boards (and other antitakeover provisions at IPOs),[92] for instance, if having a staggered board is generally better for each firm, though there is a variation on how beneficial they are for each firm, the firms are likely to adopt them at the IPO, notwithstanding variation on valuation.[93]

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90. *See* Choi, *supra* note 2, at 53–54 (discussing Google founders' letter to the investor).

91. As briefly mentioned in Part I, all firms adopt the same government structure even when some firms do not know their optimal governance structure (the "uninformed" type). For the uninformed types, the firms would be concerned about sending a negative signal to the market (and being penalized on valuation), and in a pooling outcome, they will also choose the same governance structure that the informed types adopt. In some sense, this creates a "herding" behavior.

92. *See supra* Part I.

93. One possible way of empirically distinguishing these two types of equilibria may be to examine the post-IPO performance of the stock. Where similar firms are adopting similar and optimal governance structure,

Conversely, even if, for instance, there are variations across firms with respect to dual-class stock, this does not mean that the IPO market is functioning well. An important assumption underlying the Article's analysis is that, apart from the governance structure, other visible characteristics of the firms are more or less identical from the perspective of the investors. That is, both the A-type and the B-type firms were operating in the same industry, with similar business plans, with similar financial attributes (including cash flows and earnings), and so on. Hence, what is more important here is whether there is variation across governance features after controlling for various, visible firm characteristics. Even when two firms look similar, if one firm is being managed by a founder-controller whose interest is in committing for the long-term, while the other is being managed by a founder-controller who is more focused on pursuing pet projects, such differences in goals may be very difficult to uncover.

Various extensions discussed in Subpart II.E also tell us a bit about the circumstances under which the IPO market is working well with respect to a firm's choice over governance. For instance, when the firm relies less on external financing and more on internal capital markets, we can expect that the firms would be more inclined to adopt the optimal governance regime. One observable characteristic might be how much inside capital is being committed and, what relative fraction of the firm's equity is being offered to the public. As the amount of inside capital commitment rises and the fraction of equity sold to the public falls, there is greater confidence that the IPO market is functioning well. Another mechanism was underpricing. Somewhat paradoxically, the size of the underpricing can correlate with a better functioning IPO market, at least with respect to governance arrangements. Perhaps this can explain why certain dual-class firms can outperform others in the short run. The third possibility was the disclosure of more easily verifiable information and the potential post-IPO liability.

Although these mechanisms seem disparate, there is a common driver that affects the efficacy of each mechanism: the size of the "skin in the game" that the founder-controller and other pre-IPO shareholders retain after the IPO. A heavier reliance on internal capital markets (and tantamount reduction on external financing) will increase the cash flow fraction that the insiders retain. Because of the founder-controller's personal investment, a firm's deliberate underpricing of its IPO shares effectively increases the outside investors' ownership fraction because the firm needs to sell more shares to raise the necessary capital. Thus, a larger personal investment combined with IPO pricing functions as an efficiency-increasing mechanism. Finally, with respect to post-IPO liability, as the outside investors' ownership fraction rises, it becomes less likely that the investors would want to sue the firm even with a valid claim.

there may be less post-IPO drift in stock prices; in the opposite situation, we would observe bigger variations in post-IPO stock performance.

Conversely, as the founder-controller retains a larger fraction, the post-IPO liability system can more effectively induce the IPO market to function better.

B. NORMATIVE IMPLICATIONS

On the normative side, one fairly straightforward implication is that imposing one type of governance structure across firms (or, conversely, banning certain features at IPO) would not be optimal—particularly if we think that there is a lot of heterogeneity in optimal governance structure across companies. The implication also relates to the debate over dual-class stock structure. While some (including the CII's earlier proposal) recommend that we should ban dual-class structure even at the IPO (just as we do in mid-stream recapitalization through exchange regulations), such a one-size-fits-all policy is unlikely to produce an efficient outcome. This is especially true when different firms have different sets of optimal governance arrangements.

1. Mandatory Sunset

Rather than impose a mandatory set of governance features at the IPO, what if we were to instead require or allow the outside investors to revisit this issue after the IPO? What if, for instance, the outside investors were given the right to choose whether to keep the dual-class structure sometime after the IPO? Some have argued for such a mandatory "sunset" provision, under which the firm that go public with a dual-class structure can do so only for a pre-set number of years. When that period comes to an end, the outside shareholders get to decide whether to keep the dual-class structure.[94] Presumably, one of the reasons why the IPO market is prone to suffer the problems of adverse selection is that the outside investors lack the requisite information to decide which governance provisions are optimal. After some time has passed, however, it may become likely that the information problems have been substantially mitigated. Perhaps then, the outside investors should be given the right to readjust to eliminate an inefficient governance regime and implement a more favorable governance structure.

From the numerical example, suppose we are in a pooling outcome where both the A-type and the B-type firms adopt dual-class structure at the IPO, even though the dual-class structure is value-enhancing only for the A-type firm (Table 4). Now, even though the investors might have been unaware of whether they are purchasing from B-type, it is plausible that, over time, they will discover that the founder-controller who sold the stock is more interested in extracting private benefits rather than committing for the long-term or implementing her vision. Or perhaps over time, the investors get to observe the firm's performance

94. *See* Bebchuk & Kastiel, *supra* note 6, at 619 (discussing possible fixed-time sunset). The Council of Institutional Investors have argued for a seven-year sunset. *See* discussion *supra* Introduction and sources cited *supra* notes 6, 17; *see also* Fisch & Davidoff Solomon, *supra* note 6 (arguing against time-based sunsets and in favor of more private ordering solutions).

and to test whether the firm's initial "commitment" to the long-term is turning out to be correct. Thus, the firm's B-type gets revealed over time. Once the type has been "revealed," giving investors a chance to revisit the governance structure can improve efficiency.[95] For instance, suppose, initially, that we are in an inefficient pooling outcome (Table 4), but the investors discover that the firm is a B-type. By switching from dual-class to single-class, they can increase the valuation from $60 to $70. Plus, given their ownership of 50% of the firm's outstanding stock, the value of their ownership will increase from $30 to $35.

At the same time, a mandatory sunset provision also presents a few complications.[96] First, somewhat paradoxically, allowing outside investors to "undo" a previous, inefficient governance structure after the IPO can potentially exacerbate the inefficiency at the IPO stage. In such a situation, an increase in ex-post efficiency can come at the expense of reducing ex-ante efficiency. Using the valuation numbers in Table 1 with the A-type firm offering to sell at $100 valuation (with dual-class stock), what is the B-type firm's incentive to mimic? Suppose that under a mandatory sunset feature, after the B-type firm mimics and sells at $100 valuation (with dual-class stock), the investors will switch from dual-class to single-class stock—thereby increasing the post-IPO valuation from $60 to $70. From the founder's perspective, as before, by initially selling the stock with single-class stock at $70 valuation, she realized a return of $20 $(= (28.6\%) \times (\$70))$. If the B-type founder were to mimic and sell 50% of its stock (with dual-class) at $100 valuation, assuming that the class structure will be changed to single-class (shortly) after the IPO under a sunset provision, the founder's return becomes $35 $(= (50\%) \times (\$70))$, which is even higher than what the founder could have realized without a sunset $(\$30 = (50\%) \times (\$60))$.[97] In the example, allowing the investors to undo the initially inefficient

95. Another issue is what happens when the types change over time. So far, the Article assumes that the A-type and the B-type firms will maintain their types into the future. However, it is also plausible that even though a dual-class structure might have once been efficient, that efficiency disappears over time. The founders become less capable of running the business. Allowing the outside shareholders to revisit the governance structure can alleviate the problem of "being stuck" at an inefficient structure for the long-term.

96. The discussion focuses more on the structural problems that relate to the IPO market. Another issue concerns beneficial firm-specific investments and possible hold-ups. If the founder-controller has built substantial, firm-specific human capital that increases the total cash flow for the firm, allowing the public investors to change the governance structure mid-stream can cause a hold-up problem. Knowing that the founder-controller has built up substantial firm-specific human capital, public investors (potentially led by an opportunistic institutional investor) may be tempted to demand additional consideration in return to voting in favor of retaining the dual-class structure. If that is the case, allowing the public investors to revisit the capital structure can undermine the founder-controller's incentive to invest in firm-specific human capital in the long run.

97. However, if the founder-controller enjoys some private benefits of control with dual-class structure, this can create an opposite incentive. Suppose the founder-controller of the B-type firm gets $5 of private benefits of control with dual-class structure (but none with single-class structure). Without a mandatory sunset, the founder-controller's return, by mimicking the A-type, is $35 (=0.5$60+$5). With a mandatory sunset, the return is also $35 (=(0.5)×($70)).With $5 (or more) of private benefits, a mandatory sunset provision does not change the founder-controller's incentive to mimic the A-type at IPO. If the private benefits are lower than $5, the mandatory sunset provision will boost the B-type's incentive to mimic the A-type.

governance mechanism can provide an extra return for the founder ex-ante and dilute the founder's incentive to choose the optimal governance regime at the IPO.[98] From the efficiency perspective, the proposal may be ambiguous. Although it may induce less separation among firms at the IPO, given that the firms are not "stuck" with inefficient governance arrangement, the ex-post efficiency will be improved.

2. Optional Sunset

A related issue with respect to sunsets is whether to make them mandatory or optional: whether to allow the IPO firm discretion in deciding whether to have sunset provision in its governing document or to mandate the decision by law.[99] In principle, the contractarian approach seems more attractive than a mandatory regulation since it allows the firms to innovate and move away from a one-size-fits-all approach. At the same time, however, the private ordering solution is not without problems when we are dealing with potential market failure.[100] Given the informational issues in the IPO market, it is possible that neither type of firm adopts a sunset provision when the provision is optional, even though that may be efficient. In the numerical example, although the B-type firm prefers to have a sunset, because the A-type firm does not (or is indifferent), the B-type firm would be concerned about sending a negative signal ("revealing its type") by adopting a sunset provision. The B-type firm will mimic the A-type firm with respect to a sunset provision, too. The adoption of a sunset provision can provide another signal to the market, and the B-type would want to prevent the market from making an adverse inference. In equilibrium, it is possible to have neither firm adopt a sunset provision at their IPOs.[101]

The second issue has to do with the possibility that the choice made at the IPO can create a "lock-in" effect, which can potentially undermine the parties'

98. The pooling outcome will also change. When the investors know that they will be able to change the B-type firm's inefficient governance structure ex post and realize a firm valuation of $70 ex-post, in a pooling outcome, the investors will be willing to value the firm at $85 ex-ante and demand 58.8% of the equity.

99. *See* Fisch & Davidoff Solomon, *supra* note 6, at 1086 (advocating for more "private ordering" solutions (rather than mandating sunsets across all dual-class firms) and for event-based (rather than time-based) sunsets). The issue is similar to the debate over whether to allow firms to have an individual mandatory arbitration provision (with respect to federal securities claims) in their governing document. *See* Scott & Silverman, *supra* note 88 (arguing for allowing the firms to adopt a mandatory individual arbitration provision in their organizational documents); Choi & Spier, *supra* note 88 (demonstrating how firms can pool by not offering either a liability or class action waiver even though it may be efficient); *see also* Aghion & Hermalin, *supra* note 86 (describing potential for inefficient "over-signaling" when agents are given contractual freedom).

100. The private ordering approach can be a bigger cause for concern when we are dealing with mid-stream (post-IPO) changes, particularly when either party (managers and directors on one hand and outside shareholders on the other) has discretion. *See, e.g.*, Albert H. Choi & Geeyoung Min, *Contractarian Theory and Unilateral Bylaw Amendments*, 104 IOWA L. REV. 1, 21–29 (2018) (discussing potential agency problems associated with midstream unilateral bylaw changes).

101. For instance, from the numerical example, if the A-type firm were to adopt a sunset provision and sell its stock at $100 valuation with dual-class stock, the B-type firm would want to mimic that as well. In equilibrium, either both types or neither type will adopt a sunset provision. *See supra* Table 1. For the private ordering approach to work and reduce inefficiency, it must impose differential costs on firms. *See supra* Part II.E.

incentive to revisit the governance structure after the IPO. Especially for the founder-controller, her incentive to adopt (or propose to change to) the optimal governance structure after the IPO can change significantly when she can extract some private benefits of control that are not shared with the other investors.[102] The reason for this is that, once a fraction of the shares have been sold to outside investors and the founder-controller owns less than 100% of the firm, the founder-controller will care only about the value of her shares and her private benefits of control. This will be the case even though switching to a more efficient governance structure and reducing or eliminating the private benefits of control may be more efficient—since she would not get the entire benefit from that change, she would be much more resistant to it.

To illustrate this change in incentive, suppose that under a slight variation of the initial numerical example for the B-type firm, the founder-controller gets to realize $5 of private benefits of control with a dual-class structure, while there are no private benefits to the founder-controller with a single-class structure. If the IPO market is functioning well without any informational issues, the founder-controller will still choose the single-class structure and realize a return of $20. By contrast, suppose in the IPO market outcome, due to the informational issues, both types adopted a dual-class structure, and the B-type sold 62.5% of its stock at average valuation of $80 (as shown in Table 4). Suppose also that the firm has an option to switch to single-class structure after the IPO and, relying on the relative efficiency of the secondary market, the firm valuation converges to $60 (for type B). The founder-controller would no longer be interested in switching to the single-class structure. By staying with the dual-class structure, with $5 of private benefits of control, the founder-controller gets a total return of $27.5 ($= \$5 + (0.375) \times (\$60)$). By switching to single-class structure, however, the founder-controller's return decreases to about $26.3 ($\approx (0.375) \times (\$70)$). The initial suboptimal governance structure has made it quite difficult (if not impossible) to do a mid-stream correction.[103]

The third issue concerns the functioning of the secondary market and the reliance on different financial metrics to determine whether a switch in governance structure would be desirable. In other words, is the secondary market more efficient than the primary market? Although this Article has implicitly assumed that the IPO market is more likely to perform poorly compared to the secondary market, that assumption may not always be true. For firms in certain industries, for instance, the IPO market may work relatively well (either due to lack of information asymmetry or due to private ordering mechanisms), while

102. For a more general discussion over private benefits of control, see Choi, *supra* note 2.

103. Given that switching from a dual-class to a single-class structure requires a charter amendment, and that the amendment must be proposed by the board of directors, even if she has control over the board, a founder-controller may still have difficulty incentivizing the board to make the necessary proposal. *See, e.g.*, DEL. CODE tit. 8, § 242 (1953). One way of getting around this resistance might be to make the conversion "automatic" based on some type of event-trigger, such as when the founder-controller's ownership share falls below a threshold. See Aggarwal et al., *supra* note 41, at 146–47, for different types of sunset provisions.

the secondary market may be more prone to mispricing.[104] Recall the valuation numbers in Table 3, but switch the numbers between dual- and single-class structure so that it is optimal for both A- and B-type firms to adopt a dual-class structure. In that case, notwithstanding the investors' lack of information, the IPO market would work well (enough) so that both types will adopt a dual-class structure at an average firm valuation of $85. But if the secondary financial market doesn't work as well (due, for instance, to very noisy accounting metrics), so that a firm's valuation can diverge from its fundamental value (at least temporarily), switching from dual- to single-class can introduce further long-term loss in value.[105]

Fourth, given the possibility of inefficient governance structure at the IPO, if switching from one type of governance to the other should be possible post-IPO, one can argue that going in the reverse direction should also be allowed. That is, outside investors perhaps should be given a chance to switch from a single-class structure to a dual-class structure after the IPO, especially if the initial IPO outcome is pushing all firms to adopt single-class structure, even though this may be inefficient for some firms.[106] Tables 5 and 6 represent this scenario where both types are adopting single-class structures even though this is suboptimal for the A-type.[107] In fact, the current stock exchange regulations do not allow a mid-stream re-capitalization. This prohibition contrasts with those on other governance mechanisms, such as staggered boards, which can be adopted or changed mid-stream so long as shareholders vote in favor.[108] If we are going to ask the investors whether they would want to retain a dual-class structure or switch to a single-class structure, we also need to think about whether we want to allow the firms to switch from a single-class structure to a dual-class structure.[109]

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104. Long-run "under-performance" of IPO stock has been fairly well-documented empirically. *See* Ritter & Welch, *supra* note 14, at 1817–22 (documenting that investment in a value-weighted market portfolio generates an average return that is twice as high as an equal-weighted portfolio of IPOs over a three year horizon).

105. Here, we are implicitly assuming that the type has not been fully revealed after IPO, the post-IPO stock price is noisy, and that the investors may not be aware of which governance provisions are good (whether they are in Table 1 or Table 2). In that case, when the valuation drops to $70, the investors will not be certain that the firm type is B and, in case the firm type is B, switching to a single class structure will make them even worse off in the long run.

106. This will also be true when the types change over time. For instance, if a B-type firm can become an A-type firm after its IPO, to achieve an efficient outcome, the firm should be able to adopt a dual-class structure mid-stream.

107. With respect to going in the "reverse" direction, the closest example might be when Google proposed to amend its charter so as to create a new non-voting Class C stock for the (implicit) purpose of allowing the founders (Sergey Brin, Larry Page, and Eric Schmidt) to maintain their control going forward. While there was litigation, the shareholders ultimately approved the amendment proposal. *See* Geeyoung Min, *Governance by Dividends*, 107 IOWA L. REV. 117, 122 n.15 (2021). Facebook also proposed to create a new non-voting stock, but that proposal was dropped. *Id.* at 146 n.122.

108. *See, e.g.*, DEL. CODE tit. 8, § 141(d) (1953) (requiring a shareholder approval to stagger a board).

109. One issue of switching from single- to dual-class structure mid-stream has to do with information revelation. After the A-type firm has adopted single-class structure at its IPO, it may become less likely for the

CONCLUSION

With the help of a simple, game-theoretic analysis, this Article examines the long-standing debate over whether firms have a market-based incentive to adopt the optimal set of governance provisions at their IPOs. This Article attempts to bridge the gap between the argument that firms have a good incentive to offer stock to outside investors with optimal governance structure at their IPO and various empirical findings that have produced robust evidence that many governance features at the IPO seem inefficient. The Article's first argument is that the IPO market likely will not function efficiently to provide the requisite incentive when different firms have different sets of optimal governance features and outside IPO investors have less information than the founder-controller and other pre-IPO shareholders. The Article's second argument demonstrates how various private ordering mechanisms and the mandatory legal regime can mitigate that inefficiency. Building on this analysis, the Article explores various positive and normative implications, such as empirical predictions as to when we may expect to observe better pricing of governance regimes, as well as the proposal over a mandatory or optional sunset provision on dual-class structure.

The Article's examination of the IPO market and firms' incentives over governance provisions also points to several steps for future research. Foremost, a firm's incentive to implement a particular governance regime may be closely related to its preferences concerning different types of financing. This issue can be more broadly addressed through the existing corporate finance and governance literature. For instance, while this Article analyzes the question over governance choice that is conditional on a firm's going public, it is not clear that a firm would choose to go public in the first place or, even if it does, rely primarily on equity financing. In Subpart II.E, the Article takes a first step by looking more closely at the reliance on internal markets. Broader questions surrounding the decision to rely on internal or external types of financing, and how those decisions relate to governance choices, would be fruitful to explore.

Another potential area of exploration is the interaction between the founder-controller's private benefits of control and the firm's governance choice. In this Article's analysis, even if the private benefits of control are nonexistent, founders may still have an incentive to adopt a suboptimal governance arrangement to get a more favorable valuation and to retain a larger fraction of the firm's future cash flow. One issue that is worth further examination is how these forces interact with one another. In the analysis here, the B-type founder would want to mimic the A-type in an attempt to retain a larger fraction of the firm. Even though this is inefficient from the perspective of pricing and the choice of governance package, when the founder-controller retains a larger fraction of the firm, it can actually mitigate the private benefits

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A-type to prove to the market that it can benefit more with a dual-class structure because it no longer gets the benefit of having a dual-class structure.

of control issues in the long-run.[110] As discussed briefly in Subpart III.B, the founder-controller's private benefits of control can play an important role, especially if the firm tries to implement a post-IPO, "midstream" governance change, for instance, by switching from dual-class to single-class structure. While this Article's focus has been on a firm's governance choice at its IPO, more research on the challenges of post-IPO governance changes will allow for a better understanding of a firm's overall governance and its dynamics in the long-run.

APPENDIX: PRIVATE ORDERING AND LIABILITY MECHANISMS

This Appendix presents a more formal analysis of how certain private ordering mechanisms and the post-IPO liability system, which were briefly examined in the main text (Subpart II.E), can mitigate the problems of inaccurate pricing of corporate governance features at IPOs. With respect to the former, this Article focused on three private ordering mechanisms that can enable the A-type firm to send a costly "signal" to the market: (1) reliance on reputable IPO advisors, (2) utilization of more internal capital, and (3) deliberate underpricing. With respect to the latter, this Article raised the possibility of the B-type firm facing legal liability after the IPO when the investors uncover evidence of strategic non-disclosure or misrepresentation.

A. COSTLY SIGNALING, PRIVATE ORDERING MECHANISMS

Suppose we go back to the valuation numbers used in Table 1, along with the assumption that the IPO investors do not observe which type of firm they are facing when they are making their investment decision. As we saw earlier, it is likely in that setting, both types of firms will offer the same governance package of dual-class stock, and both will sell their stock at $75. The results were shown in Table 3. Although the IPO investors are not suffering any losses on average, the outcome exhibited two kinds of inefficiency: a governance inefficiency that results from the B-type firm using dual-class stock and an investment inefficiency that results from mispricing.

Can the A-type firm, in such a setting, somehow "signal" its type to the investors to separate itself from the B-type? There may be certain mechanisms that the A-type firm could utilize. One possibility is to engage in more costly disclosure. To the extent that a firm that is going public can disclose more credible, positive information to the potential investors, such disclosure can function as a signal to the investors about the quality of the firm.[111] Another

110. This is because with a larger cash flow ownership, converting the firm's cash flow into private benefits will impose a larger cost on the founder-controller. See Choi, *supra* note 2, for a more detailed analysis.

111. At the same time, with respect to certain types of information, there may be limits on whether a firm can make a credible disclosure to the outside investors. If the founder-controller wants to "commit for the long-term," stay "innovative," or implement her "idiosyncratic" vision, disclosing such "soft" information (though

possibility is for the firm to rely on high quality financial and legal advisors.[112] One can imagine that retaining high-quality advisors can potentially send a signal to the market about the quality of the offering. Still another possibility is through voluntarily retaining a large block of stock. By exposing oneself to a higher post-IPO risk, a founder can signal the quality of the equity offering to the market.[113] While there are many different ways to reflect costly signaling, this Subpart focuses on three possibilities: (1) relying on a costly underwriter, (2) pledging some personal assets or internal capital, and (3) deliberate underpricing of IPO shares.

1. Reliance on Costly but Reputable Advisors

One possible way that the A-type firm can attempt to separate itself from the B-type is by relying on costly but reputable agents, such as reputable underwriters and legal advisers. One can imagine that a reputable underwriter, for instance, can get a more accurate understanding of the business and investment model of the firm and its future cash flow projections. Employing these advisors at (a high) cost can send a credible signal to the market that the firm is adopting the optimal governance structure to maximize the future cash flows.[114] Returning to the valuation numbers in Table 1, along with the assumption that the investors cannot tell which type of firm is selling its equity, as we saw earlier, one possible outcome was for both types of firms to pool by adopting the dual-class stock and offer 62.5% of equity to the investors at the average firm valuation of $80 in order to raise $50 necessary for investment. The results are shown in Table 4.

Now, suppose that a firm can hire a set of advisors who can "verify" the firm's business and investment model and better predict its future cash flows. Suppose that employing them to manage the IPO process will cost the firm

important) may not convey any information to the outside investors. If the type of information that the investors need is "soft," informational issues may become more difficult to overcome and other, more credible mechanisms become necessary. Some such mechanisms are analyzed in this Part. See also *infra* Appendix Part B for a discussion on the difficulty of implementing post-IPO liability regime in the presence of "soft" information.

112. *See* Hsuan-Chi Chen & Jay Ritter, *The Seven Percent Solution*, 55 J. FIN. 1105, 1105 (2000) (showing that more than 90% of IPOs raising $20 to $80 million have spreads of exactly 7% as compensation for the underwriters); Robert Hansen, *Do Investment Banks Compete in IPOs?: The Advent of the '7% Plus Contract,'* 59 J. FIN. ECON. 313, 344 (2001) (arguing that 7% contract is not the result of a collusion among underwriters, and that 7% does not lead to an abnormal profit); *see also* Coates, *supra* note 22, at 1390 (arguing that variations in takeover defenses stem from the quality of pre-IPO legal advice); Aggarwal et al., *supra* note 9, at 401 (showing variations among IPO firms depending on whether law firms or venture capital firms retained them).

113. See Hayne Leland & David Pyle, *Informational Asymmetries, Financial Structure, and Financial Intermediation*, 32 J. FIN. 371, 372 (1977) for a class treatment on this issue. Another important device often used is a lock-up agreement that contractually prohibits certain insiders (including the founders, underwriters, and venture capitalists) from selling their stock for a certain period of time (typically for 180 days) after the IPO.

114. This mechanism may be partly driven by the potential liability that the underwriter can face for material misrepresentation or omission. *See generally* Reinier Kraakman, *Gatekeepers: The Anatomy of a Third-Party Enforcement Strategy*, 2 J.L. ECON. & ORG. 53 (1986) (analyzing conditions under which holding gatekeepers liable can achieve better deterrence).

$10.[115] Obviously, from the B-type's perspective, it does not make sense to spend $10 to hire the advisors simply to tell the market that its firm valuation is either $60 (with dual-class stock) or $70 (with single-class stock). For the A-type, however, engaging in this costly verification mechanism can make sense. Suppose that by spending $10 on the advisors, it can credibly signal to the market that with dual-class stock, its valuation is $100. Suppose also that the compensation for the advisors is done through IPO share allocation. For the A-type, with the help of the underwriter, it credibly signals to the investors that its valuation is $100, sells 50% of its stock at $100 to raise $50 fund necessary for the investment, and also gives 10% of its stock to the underwriter as advisory fee.[116] Since the founder (with other pre-IPO shareholders) is retaining 40% of the firm's equity, the return for the founder is $40 ($(= (0.4)(\$100)$). At the same time, the B-type will simply choose the single class structure and, without the help of the advisors, sell about 71.4% ($\approx \$50/\$70$) of its equity at $70 valuation. Thus, we get a complete separation.

Had the A-type not engaged in this costly verification mechanism (using the expensive advisors), under the pooling outcome, the firm would have sold 62.5% of its equity at average valuation of $80, and the founder (and other pre-IPO shareholders) would be left with their equity that is worth $37.5. Clearly, it makes sense for the A-type to rely on costly underwriters to eliminate the informational issues. At the same time, if the advisory fee gets too high, the A-type would rather pool with the B-type. For instance, if the A-type had to allocate 15% of its stock to the underwriter instead of 10%, this would be worse than being pooled with the B-type since the founder will be left only with 35% of the firm, which is worth $35.[117]

Furthermore, while the costly signaling mechanism may better allocate capital to both types of firm, it has its own cost. One is the cost of underwriting, to the extent that the $10 advisory fee does not generate any other efficiency benefit. The other is possible agency cost that stems from having to use a set of advisors, who may attempt to pursue an interest that diverges from the firm's interests.[118] Still another potential inefficiency is through "over-signaling." With the pooling outcome, the efficiency loss was created when the B-type adopted a suboptimal governance structure (of dual-class stock), which reduced its

115. For the A-type firm, this is 10% of its equity and is obviously quite high, but the numbers help simplify the analysis. The example also assumes the firm has an option not to use an advisor (underwriter) to simplify the analysis. More important is whether a reputable advisor (who can better "verify" the valuations) is more costly than a non-reputable one.

116. Another way to structure this is to have a firm commitment contract with the underwriter to sell 60% of the stock, where the underwriter purchases the stock at $50 and turns around and sells it to the public at $60, keeping the $10 difference as its compensation. *See* Corrigan, *supra* note 44, at 344–48 (describing the IPO underwriting process).

117. In the example, the break-even point (in terms of allocation for the underwriter) is 12.5%.

118. Ritter, *supra* note 14, at 360–64 (arguing that the underwriters' incentive to underprice excessively and the lack of competition among underwriters are important drivers in IPO underpricing and other types of inefficiency); *see* Chen & Ritter, *supra* note 112, at 1124–28. *But see* Hansen, *supra* note 112.

valuation from $70 to $60. Given that, under full separation, the B-type gets to adopt the optimal governance structure, the increase in efficiency benefit is $10 with the assumed numbers. In other words, $10 is spent as costly verification to generate $10 of additional efficiency, and there is no net efficiency gain. If, for instance, the advisory fee was $12, the A-type will still utilize their service to separate itself from the B-type, but this will create an efficiency loss.[119]

2. Reliance on Internal Capital Markets

Another way the A-type can credibly separate itself from the B-type is by using more internal capital, thereby lessening the need to engage in external financing. By relying more on the internal, personal investment, the founder-controller with more "skin in the game" can send a credible signal to the market about the quality of its investment and how the firm's choice over governance structure is optimal. It also lessens the reliance on less informative investors ("blind" money). So long as the level of reliance on external financing is relatively low (or conversely, the amount of "skin in the game" is relatively high), the better-quality firm will be able to separate itself from the herd.

To illustrate, suppose the firm needs to raise $50 for its investment. However, out of $50, now the founder-controller and other pre-IPO shareholders need to contribute $30, thereby lowering the amount of public financing from $50 to $20. The valuation numbers are the same as before (as in Table 1). As seen in Table 4, if the B-type were to separate itself using a single-class structure, the investors will value the firm at $70. To get $20 of external financing, the B-type will need to sell about 28.6% ($\approx \$20/\$70$) and retain about 71.4% ($\approx \$50/\$70$) of its equity. Given that the founder-controller also needs to put in $30 of personal capital for the investment,[120] the founder-controller will realize a net return of about $20 ($= (71.4\%) \times (\$70) - \$30$). At the same time, suppose the A-type sells 20% of its equity (with dual-class structure) at a valuation of $100 and realizes a net return of $50 ($= (80\%) \times (\$100) - \$30$).

119. For an earlier work on inefficient signaling, see Aghion & Hermalin, *supra* note 86, at 381 (demonstrating that, under certain circumstances, private parties may have too much incentive to engage in costly signaling, and that restricting or eliminating such an option can actually improve welfare).

120. We are assuming here that the founder-controller can credibly commit to putting in her personal assets for the investment at the time of the IPO.

	A Type	B Type
Structure Used	Dual-Class Stock	Single-Class Stock
Valuation Obtained	$100	$70
Optimal?	Yes	Yes
Internal Capital	$30	$0
Capital Raised	$20	$50
Investors' Ownership	20%	71.4%

Table 8: Market Outcome with Internal Capital

With a large fraction of fund-raising coming from the insiders, it is easy to see that the B-type will no longer have an incentive to mimic the A-type. Had the B-type founder-controller adopted dual-class stock and sold 20% of the firm at the investors' perceived valuation of $100, she would have made a net return of $\$18\ (=(80\%)\times(\$60)-\$30)$, which is lower than what the founder-controller would have gotten had she adopted the single-class structure and sold about 71.4% of the firm at $70 valuation. In fact, once the firm realizes that it can finance the investment at an accurate valuation, the B-type firm will be indifferent as to the amount of outside financing. For simplicity, suppose that the B-type will now rely entirely on outside financing, as shown in Table 8. In short, by reducing the reliance on external financing (which is prone to informational issues) and increasing the founder-controller's "skin in the game," the A-type firm can credibly separate itself from the B-type. At the same time, this strategy may require a substantial amount of internal investment. If, for instance, the founder-controller needs to raise $40 with only $10 of personal investment, the A-type firm will no longer be able to separate itself from the B-type.[121] The need for external financing will be too great, and the costly signal sent through personal investment is too weak.

3. Deliberate Underpricing

The third costly signaling possibility is through deliberate underpricing. With the valuation numbers given in Table 1, when both types of firms offer to sell their stock at an $80 valuation with dual-class structure, there already was underpricing for the A-type (whose true valuation is $100) and overpricing for the B-type (a $60 true valuation). The examples assumed that once the outside investors' belief about the firm's valuation is given, the IPO pricing was done simply to make sure that the outside investors breakeven. This implicit assumption, of course, is a simplification. In reality, the firm going through an IPO has the option of pricing its shares below what outside investors are willing to pay based on their beliefs about the firm valuation.

121. In this case, by being truthful, the B-type will still realize a net return of $20. However, by mimicking the A-type (who sells 40% of its stock at $100 valuation), the B-type will be able to realize a net return of $26 (=60%$60-$10).

When the amount of internal investment necessary is sufficiently large (but not large enough to induce separation on its own), the A-type firm may be able to separate itself from the B-type by deliberately underpricing its shares. Intuitively, as the amount of underpricing gets larger (or, more accurately, as the fraction of the firm sold to the outside investors to raise a fixed amount of capital gets larger), sooner or later the B-type firm, with poorer investment prospects, will no longer find it worthwhile to mimic the A-type firm. In a sense, underpricing ends up being more costly for the B-type firm than the A-type firm, and the A-type firm would be willing to make this sacrifice to avoid pooling with the B-type.

To examine this issue more concretely, recall the valuation numbers given in Table 1 with the assumption that the outside investors cannot tell the firms apart. In contrast to the earlier example, however, now suppose that the total amount of investment necessary is \$65 and the firm needs to raise \$35 from the capital market while internally supplying \$30.[122] Note that, with a \$65 total investment, the B-type firm in this example should engage in financing and investment if it uses the single-class structure but not if it uses a dual-class structure. If the B-type firm were to pool with the A-type using a dual-class structure, given that its valuation is only \$60, investing \$65 will lead to an efficiency loss. With a \$70 valuation under a single-class structure, the investment of \$65 will generate a \$5 surplus.

Even a personal investment of \$30 is insufficient to eliminate the incentive for the B-type firm to mimic the A-type firm. Suppose the A-type firm is offering 35% of its stock to the outside investors at a \$100 valuation. If the B-type firm were to mimic and offer the same terms to the outside investors, even with \$30 of internal (personal) investment, by retaining 65% of the firm that is worth \$60, the B-type founder-controller will realize a net return of \$9 ($= (0.65) \times \$60 - \$30$). If the B-type firm were to offer to sell 50% of its stock (with a single class structure) to the outside investors to raise \$35 with a firm valuation of \$70, the B-type firm will realize a net return of \$5 ($= (0.5) \times (\$70) - \$30$). Clearly, for the B-type firm, mimicking the A-type firm (using dual-class stock) is more profitable.[123]

In order to eliminate the B-type firm's incentive to also offer dual-class stock and the same fraction of equity as the A-type firm, the A-type firm, when offering stock at \$100 valuation, can deliberately choose to underprice its stock.

122. The example here builds Jean Tirole's work, THE THEORY OF CORPORATE FINANCE 262 (2006). In Tirole's analysis, there is no corporate governance dimension, and the B-type firm should be kept away from the IPO market altogether. In our analysis, the B-type firm should be encouraged to sell its shares using a single class stock structure. *Id.*; *see also* Welch, *supra* note 28, at 432–35 (demonstrating how a high-quality firm will deliberately underprice its IPO shares so as to take advantage of more favorable subsequent, seasoned offerings).

123. At the same time, a complete pooling outcome, where both types offer to sell about 43.8% (≈35/80) to the public investors using dual-class stock, is not feasible either. In that scenario, the B-type firm will realize (after \$30 of personal investment) a net return of \$3.75 ($\approx (45/80) \times \$60 - \$30$). The outcome will be partial pooling, under which the B-type firm will "mix" dual-class and single-class stock offerings, and the outside investors will value the dual-class firm based on the B-type firm's "mixed" probability.

For example, it can deliberately choose to offer more than 35% of the firm to the outside investors to raise $35. Suppose the A-type firm were to offer 42% of its firm to the public using dual-class stock in return for $35 of investment. Suppose also that the investors believe that it is the A-type firm that is making this offer. Will this belief be supported by the B-type firm's behavior? As seen earlier, had the B-type firm simply stuck with a single-class structure and offered to sell 50% of its stock at $70 firm valuation, the B-type firm would have realized a net return of $5. What if the B-type firm were to try to mimic the A-type firm by also offering 42% of its stock at a (false) $100 firm valuation?[124] By retaining 58% of its equity, after making its own $30 investment, the B-type firm will realize a net return of $\$4.8\ (= (0.58) \times (\$60) - \$30)$. The A-type, by comparison, realizes a net return of $\$28\ (= (0.58) \times (\$100) - \$30)$. The B-type's incentive to mimic the A-type has been eliminated.

	A Type	B Type
Structure Used	Dual-Class Stock	Single-Class Stock
Valuation Obtained	$100	$70
Optimal?	Yes	Yes
Internal Capital	$30	$30
Capital Raised	$35	$35
Investors' Ownership	42%	50%
Underpricing	83%	100%

Table 9: Market Outcome with Underpricing

In equilibrium, the A-type firm will offer to sell 42% of its stock (with dual-class) to raise $35 while the B-type firm will issue 50% of its stock (with single-class) to raise the same amount. In terms of the share price, if we assume that the A-type firm is selling 42 shares while retaining 58 shares (out of 100 total shares), given the proceeds of $35, the initial share price will be about $0.83 ($\approx \$35/42$). If the post-IPO secondary trading will bring the share price to its true value, ultimately the share price will rise to $1 per share. If the share price will jump to $1 immediately after the IPO, there is roughly a 20% underpricing ($\approx \frac{1}{0.83} - 1$) for the A-type firm.[125] Because of the A-type firm's underpricing, there will also be an average 10% underpricing across both types even though the B-type firm's stock is not underpriced.

124. More precisely, in order to deter the B-type firm from mimicking, the A-type firm needs to retain fraction such that $60-$30≤$5. When we solve for, we get α=3560≈58.3%. The fraction retained is insufficient to recoup the B-type's personal investment (of $30).

125. Given that the outside investors rationally expect the share to be worth $1, when the shares are initially offered at $0.83, there will be excess demand from the investors and, with excess demand, there will be some rationing (possibly managed by the underwriter).

B. POST-IPO LIABILITY

The previous Subpart examined the possible "private ordering" solutions that the A-type firm can engage in to eliminate the incentive of the B-type firm to mimic and create an inefficient outcome. Another important, mandatory mechanism is for the investors (and the regulatory authority) to hold a firm liable for material misrepresentation or omission to outside investors when going through an IPO.[126] Under the existing regulation, the IPO investors can recover compensatory damages from the firm when they can show that the IPO documents, such as the registration statement and the prospectus, contained material misstatements or omissions. In particular, when the share price drops below the initial offering price, outside investors are entitled to recover the difference between the IPO price and the market price (or the sale price in case the shares have been sold) as compensatory damages. Scholars have emphasized the importance of such a liability system as a potential deterrent against material misstatement and omission, and also as a possible reason for underpricing.[127]

In the initial example from Tables 1 and 4, when both types of firms sold 62.5% of its equity (=$\$50/\$80$) at an average firm valuation of $80 (with dual-class structure), we saw that this led to an underpricing of the A-type firm's stock and an overpricing of the B-type firm's stock. If we assume that the stock price will converge to their fundamental value after the IPO, the B-type firm stock's post-IPO downward drift can expose the firm to a potential litigation risk. That risk, in turn, can reduce the B-type firm's incentive to mimic the A-type firm in the first place. When the liability system is sufficiently costless and accurate, B-type firm's inefficient incentives can be eliminated altogether.[128] At the same time, what is notable about the liability system is that the firm pays the damages and the plaintiffs (outside investors) are the residual, equity owners of the firm. This means that the plaintiffs partially bear the cost of the damages through a reduction in stock price when the firm pays damages, which will reduce the deterrence effect of the liability system. The greater the equity fraction sold to the investors is, the greater the reduction in deterrence effect will be. When the financing needs are relatively large, compensatory damages paid by the firm will no longer achieve the desired deterrence.

To illustrate this, suppose we come back to the initial setup (Table 1) but with a slight variation: instead of having to raise $50 from the outside investors, the firm now needs to raise only $40. If the B-type were to issue its stock using single-class structure, the firm will offer to sell about 57.1% ($\approx \$40/\$70$) of its equity (with the founder-controller retaining about 42.9%),

126. For a discussion on whether the post-IPO liability should also be mandatory see Scott & Silverman, *supra* note 88, and Choi & Spier, *supra* note 88.

127. *See* Hughes & Thakor, *supra* note 89 (examining what type of litigation risk can lead to IPO underpricing); Janet Alexander, *The Lawsuit Avoidance Theory of Why Initial Public Offerings Are Underpriced*, 41 UCLA L. REV. 17, 72 (1993) (arguing that once the substantive law is considered, lawsuit avoidance theory of IPO underpricing is less convincing).

128. The following discussion is based on Choi & Spier, *supra* note 88.

and the founder-controller will realize a return of \$30 ($\approx (42.9\%) \times \$70$). If the A-type were to offer 40% of its equity at a \$100 valuation (with dual-class stock), will the B-type mimic? In this case, the liability system is strong enough to create the necessary deterrence. Suppose the B-type firm also offered to sell 40% of its equity (with dual-class stock) at a false firm valuation of \$100 and raise \$40. The founder-controller will expect that when the firm value drops to \$60 after the IPO, the firm will have to pay compensatory damages of \$16, which represents the difference between the 40% equity value at the IPO and the post-IPO valuation ($= (0.4) \times (\$100 - \$60)$). After paying the damages of \$16, the founder-controller, who owns 60% of the firm, has an ownership fraction valued at \$26.4 ($= (0.6) \times (\$60 - \$16)$). This is less than what the founder-controller would have gotten under the single-class structure (and the correct firm valuation of \$70). The liability system that relies on compensatory damages from the firm is strong enough to achieve the necessary deterrence.[129] Table 10, below, summarizes the result.

	Dual-Class Stock	Single-Class Stock
Valuation Obtained	\$100	\$70
Fraction Sold	40%	57%
Compensatory Damages	\$16	\$0
Founder's Return	\$26.4	\$30

Table 10: Post-IPO Liability against the B-Type

Note, however, that when the firm pays the compensatory damages (\$16) to the outside investors, the founder-controller (and other pre-IPO shareholders) does not bear the entire cost of damages. The founder-controller bears only 60% of the damages through the reduction in the value of her ownership (\$9.6). The other 40% of the damages (\$6.4) are borne by the outside investors who are now shareholders of the firm. The liability system is undercompensating for the investors. Even if the outside investors sold their stock before suing so that they no longer remained shareholders of the firm at the time of the lawsuit, if the financial market is sufficiently forward-looking, the share price will reflect the cost of the firm liability. As a result, the original investors will have to indirectly bear the cost through the reduction in sale price. In the example, when the capital market rationally expects the future liability (of \$16) on the firm, the market will value the 40% of the firm's equity at \$17.6 ($= (0.4) \times (\$60 - \$16)$). If the outside investors were to sell their ownership fraction at \$17.6, after collecting \$16 as compensatory damages from the firm, their return is \$33.6—still less than

129. What the numerical example also demonstrates is that the liability system does not lead to underpricing. This depends on the assumption that the liability system is fairly accurate in determining whether a wrongdoing actually occurred. *See* Choi & Spier, *supra* note 88, at 18–20. This is also consistent with the analysis in Hughes & Thakor, *supra* note 89, at 719–20.

the initial $40 of investment they made at the IPO. The difference of $6.4 now reflects a fraction of the compensatory damages born by the outside investors through the reduction in the share price ($= (0.4) \times (\$16)$).[130]

What this implies is that as the fraction of the firm sold to the outside investors gets larger, the size of this under-compensation will also get bigger, potentially undermining the necessary deterrence. In our example, it is fairly straightforward to show that if the firm were to try to raise $60 the B-type firm will no longer be deterred from adopting dual-class stock and trying to sell its shares at $100 valuation because the outside investors get to own 60% of the firm (with $100 valuation)—even with "full" compensatory damages paid by the firm.[131] To achieve the desired deterrence with the firm paying damages, punitive damages may actually be necessary. Another possibility is to hold the founder-controller personally liable.

In addition to the under-compensatory feature of the liability system, there are a few other obstacles to achieving full deterrence. The first is the efficiency and accuracy of the post-IPO secondary market. Once the shares start trading on the market after the IPO, the market can presumably aggregate investors' information to better determine the "fundamental" value of the shares. This stands in contrast to the IPO setting, where the firm gets to dictate the initial price. In particular, bearish investors can even take a short position against the stock so as to bet against the rise of the stock price.[132] At the same time, there is also reason to suspect that the post-IPO market is not as efficient as the market for securities that have been trading for a long time. The phenomenon of IPO stock under-performance, at least in the medium-term, seems to support this skepticism.[133] A related problem is the source and supply of information in the secondary market. After the IPO—or at least until the firm needs to file its earnings statement with the SEC, which can take some time—the secondary market may not be able to update its valuation estimates on the firm. This can further reduce the speed with which the stock price will converge to its fundamental value.

The second reason concerns the type of information that is disclosed or omitted by the firm. In order to bring a successful lawsuit against the B-type

130. In a sense, the founder-controller is imposing a negative externality on the outside investors when the firm pays compensatory damages.

131. For a more detailed analysis, see Choi & Spier, *supra* note 88, at 9–13. If we were to achieve the necessary deterrence, one possibility is to impose punitive damages on the firm. Another possibility is to hold the founder-controller (perhaps with other pre-IPO shareholders) personally liable.

132. *See* Spamann, *supra* note 15 (comparing primary and secondary market efficiencies); *see also* Bebchuk, Cohen, & Wang, *Learning and the Disappearing Association between Governance and Returns*, 108 J. FIN. ECON. 323 (2013) (documenting how the correlation between governance indices and abnormal returns documented in 1990s has subsequently disappeared and arguing that this is due to the market learning the difference between good and bad governance structures). *But see* Edwards & Hanley, *supra* note 15, at 24–27 (documenting short selling at IPOs); Ritter & Welch, *supra* note 14, at 1820–21 (documenting long-term under-performance of IPO stock compared to market indices).

133. *See* Ritter & Welch, *supra* note 14, at 1816–22 (discussing under-performance of stock after its IPO).

firm, the investors will have to demonstrate that there was in fact a material misstatement or omission by the firm.[134] In certain cases, the investors may be able to uncover some hard evidence of misstatement or omission; in other cases, it is possible that much of the information that can be shared with IPO investors may be "soft" rather than "hard,"[135] thus making it difficult for the investors to prove their case in court. When IPO investors receive communication from the firm that it plans to commit for the "long-term," to stay "innovative," and to take advantage of all "lucrative" opportunities in a certain industry, there may be much uncertainty surrounding what information is being disclosed and whether any misrepresentation has been made. Furthermore, even with "hard" information, it may also be difficult for the investors to demonstrate that an important omission has been made by the firm.

The third is the cost and errors in the adjudication system. When the investor-plaintiffs need to compensate their attorneys (likely on a contingency basis), the investors' net recovery is reduced, which, in turn will reduce their willingness to pay for the IPO shares.[136] Furthermore, especially when the lawsuits are brought on a class action basis, the plaintiffs will likely have to bear the agency cost in the absence of active monitoring. In some cases, when the cost of litigation (including the agency cost) is sufficiently high, it may be that private lawsuits are no longer worth pursuing. Similarly, to the extent that the adjudication is imperfect, and the court may make false positive and/or negative errors, such errors will also lower deterrence.

134. 17 C.F.R. § 240.11 (2015).

135. What we mean here by "hard" versus "soft" is the level of difficulty in verification, which can entail both out-of-pocket costs of verification (such as cost of dispute resolution) and potential errors (type I and type II). See Albert H. Choi & George Triantis, *Completing Contracts in the Shadow of Costly Verification*, 37 J. LEGAL STUD. 503, 512–26 (2008), for a more detailed analysis.

136. The costs associated with lawsuits, however, are not always bad. If the firm needs to bear the cost of adjudication, this can increase the magnitude of deterrence. Another possibility is that if, in equilibrium, there is no deterrence against the B-type firm (as in our example when the firm is raising $60 from the outside investors), litigation cost can produce additional deadweight loss without achieving any deterrence benefit. When the cost is sufficiently high, by making the lawsuit not worthwhile ex-post, we can reduce that inefficiency. For a more detailed analysis, see Choi & Spier, *supra* note 88, at 21–25.

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