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Private or Public Equity? The Evolving Entrepreneurial Finance Landscape

Michael Ewens[1,2] and Joan Farre-Mensa[3]

[1]Division of the Humanities and Social Sciences, California Institute of Technology, Pasadena, California, USA

[2]Current affiliation: Columbia Business School, Columbia University, New York, NY, USA; email: michael.ewens@columbia.edu

[3]Department of Finance, University of Illinois at Chicago, Chicago, Illinois, USA; email: jfarre@uic.edu

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Abstract

The US entrepreneurial finance market has changed dramatically over the last two decades. Entrepreneurs who raise their first round of venture capital retain 30% more equity in their firm and are more likely to control their board of directors. Late-stage start-ups are raising larger amounts of capital in the private markets from a growing pool of traditional and new investors. These private market changes have coincided with a sharp decline in the number of firms going public—and when firms do go public, they are older and have raised more private capital. To understand these facts, we provide a systematic description of the differences between private and public firms. Next, we review several regulatory, technological, and competitive changes affecting both start-ups and investors that help explain how the trade-offs between going public and staying private have changed. We conclude by listing several open research questions.

1. INTRODUCTION

This article describes the changes undergone by the US entrepreneurial finance market over the last two decades and provides a framework to analyze the causes and consequences of these changes. These changes have impacted both early stage and late-stage start-ups, and they are the result of shifts in both the supply and the demand for private and public equity capital.

At the early stage level, technological innovations such as the popularization of cloud computing in the mid-2000s have decreased start-ups' financing needs, particularly during the initial, experimental stage of the entrepreneurial process. At the same time, the emergence of incubators and of new online platforms that help connect investors to start-ups—alongside the regulatory changes that have facilitated them—have contributed to a marked increase in the fundraising options available to early stage start-ups. We show that a key consequence of these changes is that entrepreneurs are increasingly able to retain control of their board and a higher equity stake after raising their initial financing rounds.

As these entrepreneurs' start-ups mature, they gain access to a late-stage private equity market that has grown more than fivefold since 2002: In 2002, the aggregate amount of private equity capital invested in venture capital (VC)–backed start-ups raising a Series C or higher round was \$14.2 billion; in 2019, it was \$80 billion. Much of this late-stage capital is now supplied by nontraditional start-up investors such as private equity funds (PE funds), mutual funds, and hedge funds.[1] This abundant supply of late-stage private capital means that many late-stage start-ups have little need to go public to finance their growth. As a result, firms are now less likely to go public, and when they do go public, they are older and have raised more private capital than in the 1990s. In fact, we show that the number of start-ups raising more than \$99 million in a single financing round, a sum historically only available via the public markets, grew 31-fold from 2002 to 2019.

What explains the increase in the supply of late-stage private capital? First, regulatory changes such as the National Securities Markets Improvement Act (NSMIA) of 1996 have made it easier for VC and PE funds to raise large sums of capital. Second, these funds have benefited from a sharp increase in allocations to private equity by institutional investors such as public pension funds and higher education endowments—in the case of pension funds, perhaps in an attempt to close their ballooning funding gaps. Third, the entry into the private equity market of mutual funds and hedge funds—traditional investors in public equity—has likely been spurred by the increased competition they face from passively managed index funds: Investing in private firms can help active funds beat the returns of their passive counterparts, thereby justifying the active funds' higher fees.

Of course, the fact that successful start-ups can continue financing their growth while remaining private does not mean that they have to remain private. We argue that, in addition to the increased supply of late-stage private capital, two demand-side changes help explain why many start-ups choose to remain private longer. First, founders' increased control of their firms after raising their initial financing rounds means that they enjoy greater bargaining power vis-à-vis investors at the time of making exit decisions. Founders can use this bargaining power to fulfill their desire to maintain control of their firms by delaying their exit. Second, the secular growth in the importance of R&D investments and intangible assets means that firms face greater disclosure costs. As a result, the benefits of staying private and thus avoiding the disclosure regulations that apply to public firms have increased.

[1] Throughout this article, we use the term PE funds to refer to funds traditionally focused on leveraged buyouts and increasingly also on growth-equity investments (see Section 3.2.2); they do not include VC funds.

The article proceeds as follows. Section 2 begins by describing the differences between public and private firms. Section 3 describes the changes in the entrepreneurial finance market over the last two decades, using Section 2 as a framework to understand these changes. Section 4 concludes by listing several open research questions.

2. HOW DO PUBLIC AND PRIVATE FIRMS DIFFER?

In this section, we define public and private firms, describe the differences between them, and discuss how these differences impact a firm's listing decision. Our focus throughout this section is on the current regulatory environment surrounding public and private firms; in Section 3, we discuss how these regulations have evolved over the last two decades.

2.1. Defining Public, Private, and Semipublic Firms

The finance literature agrees on the definition of publicly listed firms (henceforth, public firms): those whose shares are listed on a national securities exchange [e.g., the NYSE (New York Stock Exchange) and Nasdaq in the United States]. It is less clear how to define privately held firms (henceforth, private firms). In particular, the most expansive definition—all firms that are not public are private—includes two (overlapping) groups of nonpublic firms facing distinct liquidity, regulatory, and disclosure environments.

The first group are firms whose shares are listed on over-the-counter (OTC) markets.[2] The second group are firms without listed shares that must nonetheless regularly file their financial statements with the US Securities and Exchange Commission (SEC) because of one of three reasons: (*a*) their debt is listed on an exchange, (*b*) they have more than \$10 million in assets and their shares are held of record by at least 2,000 persons or 500 nonaccredited investors, or (*c*) they have registered equity or debt securities with the SEC during the current year or, if in a prior year, these securities are currently held by at least 300 record holders.[3]

In this review, our definitions of private firms and private capital markets focus on pure private firms; they do not include the prior two groups of firms, which we call semipublic firms for short. While this focus is not overly restrictive (most nonpublic firms and most firms that go public are pure private firms), we note that some of the differences between public and private firms described below do not apply to semipublic firms.

2.2. Private and Public Firm Regulation

Having defined public and private firms, we now describe how a firm's listing status affects the regulatory environment it faces when raising equity. Specifically, we first discuss the regulations that are triggered when a firm decides to lists its shares on a national exchange. We next briefly discuss follow-on equity offerings by public firms and then turn our attention to equity offerings by private firms.

2.2.1. Initial listing of shares on an exchange. A company can go public—i.e., list its shares on a national exchange—in three ways. The traditional way has been to conduct an initial public offering (IPO) of its common stock. More recently, two alternative approaches have emerged that allow private firms to avoid some costs (while giving up some benefits) associated with traditional

[2] Brüggemann et al. (2018) note that OTC markets offer a variety of trading environments with different regulatory and disclosure regimes, comprising venue rules and state laws beyond SEC regulation.
[3] Holder thresholds are different for banks (Morrison & Foerster 2018).

IPOs: a direct listing, whereby a private firm lists its shares on a national exchange without using an underwriter, and a special purpose acquisition company (SPAC) merger, whereby a private firm becomes public by merging with a public SPAC.

Before a company's shares can be offered for sale to the public and listed on a national exchange, the company must register them with the SEC, usually by filing Form S-1.[4] The form includes descriptions of the company's business operations, risk factors, and management as well as audited financial statements. Once the SEC declares its registration statement effective, the firm is subject to the reporting requirements of the 1934 Exchange Act, including the filing of annual reports on Form 10-K, quarterly reports on Form 10-Q, and current reports disclosing certain material transactions on Form 8-K.[5] These reporting obligations continue for as long as the firms' shares are listed on a national exchange (and potentially beyond, as discussed in Section 2.1).[6] In addition, public firms (and SEC-reporting semipublic firms) need to comply with Regulation Fair Disclosure (Reg FD), which aims to guarantee a level playing field among investors by prohibiting the selective disclosure of material nonpublic information.

Going public also triggers several nondisclosure regulations at the federal, state, and exchange levels. At the federal level, some governance regulations—most notably, those in the Sarbanes-Oxley Act (SOX) of 2002, discussed in Section 3.1—apply only to public (and SEC-reporting semipublic) firms. Similarly, some states impose governance regulations that apply only to public firms, such as California's board diversity requirements (SB 826 and AB 979). Conversely, public firms are largely exempt from state blue sky laws when issuing securities; by contrast, private firms may or may not be exempt from them (see Section 2.2.3).

Finally, to list its shares on a national exchange, a firm is required to comply with the exchange's listing standards. These include size and stock liquidity requirements, disclosure and corporate governance rules, and listing fees.[7]

2.2.2. Follow-on equity offerings by public firms. Once a firm is public, it can raise additional capital via a follow-on offering, whereby the company registers additional shares and offers them to the public, traditionally via a seasoned equity offering (SEO).[8] The mechanics of price formation and share allocation differ depending on the type of follow-on offering chosen (Johnson et al. 2020). As in an IPO, the shares sold in a follow-on offering can be primary (if the shares are sold by the firm itself) or secondary (if the shares are sold by certain shareholders).

To register the shares sold in a follow-on offering, public firms must file Form S-1 or its abbreviated version, Form S-3. A public firm can also use these forms to file a shelf registration statement to register securities that it will sell in the future, when the firm needs capital or market conditions are favorable.[9]

[4]Registration and listing are distinct events. Registration is required for listing, but a firm may choose to register its equity (or debt) securities to increase the pool of investors that can hold them without listing them. Registration is a security-specific event: Some of the shares of a public firm may be unregistered and thus ineligible for listing.

[5]When a private firm goes public via a SPAC merger, it avoids having to file a Form S-1, but it still becomes subject to the Exchange Act's reporting requirements.

[6]Small or young public firms (those that meet the requirements to be considered smaller reporting companies, nonaccelerated filers, or emerging growth companies) are subject to scaled-back disclosures (e.g., Ewens, Xiao & Xu 2021).

[7]See NYSE (2021); Nasdaq (2021).

[8]Public firms also have the option to sell unregistered shares to accredited investors via a private investment in public equity (PIPE).

[9]For further details, see Harmetz & Berman (2017).

2.2.3. Raising equity as a private firm. The ability of public firms to sell their shares without restrictions to the public as well as investors' ability to then easily trade those shares in an exchange contrasts with the limitations faced by private firms and their investors. Indeed, to sell unregistered shares to investors, private firms need to rely on an exemption from registration. Depending on the exemption, firms are limited in the amount of capital they can raise, the number of investors who can buy shares, or the characteristics of these investors.

Two popular exemptions are Rules 506(b) and 506(c) of Regulation D, which allow private firms to raise an unlimited amount of capital from an unlimited number of investors as long as they are accredited—i.e., if they are institutions, individuals, or couples with a net worth (not including their primary residence) of more than \$1 million, or individuals (couples) with income exceeding \$200,000 (\$300,000).[10] In addition, when selling shares under Rule 506(b), up to 35 nonaccredited investors can also participate in the offering. By contrast, when relying on Rule 506(c), all investors must be accredited and issuers must take reasonable steps to verify this; in exchange, issuers are allowed to solicit and advertise the offering, which they cannot do under Rule 506(b). A key advantage of Rules 506(b) and 506(c) is that the issuer is exempt from complying with state blue sky (i.e., securities) laws (Ewens & Farre-Mensa 2020).[11]

Investors in a private firm's Rule 506(b) or 506(c) offering receive restricted securities that are not freely tradable: They typically need to hold the securities for 1 year before they can resell them to the public under Rule 144.[12] But even after 1 year, reselling often requires the private issuer's consent (SEC 2013) and can be labor intensive, as the seller needs to find a willing buyer without relying on an exchange.

While investors in private firms can invest directly, as with angel investors (Shane 2012; Kerr, Lerner & Shoar 2014), they often rely on intermediaries such as VC or PE funds. These funds raise capital from limited partners (LPs): institutions (e.g., pension funds and university endowments) and other accredited investors. The fund managers [general partners (GPs)] then select private firms in which to invest this capital. In contrast to mutual funds and most investors in public firms, VC and PE fund managers tend to be closely involved in advising and monitoring their portfolio companies (Da Rin, Hellmann & Puri 2013). This active involvement is facilitated by the widespread use of (convertible) preferred stock in private financings, which provides investors with a complex set of cash flow, information, and control rights (Metrick & Yasuda 2021).

2.3. How Do the Financing and Informational Frictions Faced by Public and Private Firms Differ?

We now discuss how the regulatory differences between public and private firms affect the financing and information environments surrounding them. We organize our discussion of the economic differences between public and private firms around four key dimensions: stock liquidity and cost of capital, information environment, agency problems, and equity issuance expenses.

2.3.1. Differences in stock liquidity and cost of capital. By registering and listing their shares, public firms increase the shares' liquidity and gain access to a larger pool of well-diversified investors. Standard asset pricing models predict that going public should translate into a lower cost

[10]For other less common qualification criteria, see Dodhia (2020).

[11]Other exemptions from registration that do place limits on the size of the offering and do not exempt issuers from state blue sky laws are Rule 504, Regulation A Tier 1, and Regulation Crowdfunding (SEC 2021).

[12]Alternatively, investors can opt for a private resale of the restricted securities by relying on the so-called Section 4(a)(1½) exemption [largely codified in 2015 as Section 4(a)(7)], a complex and time-consuming process (Effron 2016; Sweet 2016).

of equity for these firms, all else being equal (Longstaff 1995; Brennan & Torous 1999; Heaton & Lucas 2004).

To quantify the difference in the cost of equity between public and private firms, one would ideally compare the costs of two identical firms that differ only in their listing status. Such a comparison is not possible, however, because firms choose whether to be public or private after considering the relative costs and benefits of each option—a recurring challenge in the literature comparing public and private firms. Another challenge is that the premium paid by private firms when raising equity is unlikely to be unique: Abudy, Benninga & Shust's (2016) model predicts that the private premium increases with a firm's asset risk and leverage ratio, while it is negatively related to taxes and owner diversification.

These challenges notwithstanding, several papers have attempted to quantify private firms' valuation discount. Officer's (2007) analysis of acquisition equity multiples shows that private targets sell at an average discount of 15–30% relative to industry- and size-matched public targets. Koeplin, Sarin & Shapiro (2000) find similar results.

Public firms also appear to benefit from a lower cost of debt. Saunders & Steffen (2011) find that UK private firms pay loan spreads that are between 26 and 60 basis points higher than those paid by matched public firms.[13] They emphasize lenders' higher costs of information production when lending to private firms, private firms' lower bargaining power, and their higher ownership concentration as key channels driving private firms' higher borrowing costs. Kovner & Wei (2014) and Badertscher et al. (2019) reach similar conclusions when comparing the costs faced by public and SEC-reporting semipublic firms in the US public bond market.

Public firms' higher stock liquidity not only enables them to raise capital at a lower cost but also provides currency for stock-financed acquisitions (Celikyurt, Sevilir & Shivdasani 2010). In addition, by registering their shares and listing them on a major exchange, public firms make it easier for their founders, early investors, and stock-compensated employees to sell their shares. This liquidity is valuable to VC investors, who typically need to exit their investments before the end of their fund's life cycle and for whom IPOs bring large reputational benefits (Gompers 1996).

2.3.2. Differences in the information environment. The information environment faced by public (and SEC-reporting semipublic) firms is markedly different from that faced by private firms. Public firms—but not private ones—are required to make their financial statements publicly available and thus accessible to any potential investor. In addition, Reg FD does not allow public firms to disclose material information to selected investors, ensuring that all investors have access to the same raw information about all public firms.

The requirement that all potential investors in a public firm have access to the same information means that their managers face a two-audiences problem when raising capital: They need to trade off the benefits of information disclosure with the costs of making the information public and thus available to their competitors (Bhattacharya & Ritter 1983). By contrast, (pure) private firms do not face this trade-off because they are not restricted in their ability to disclose information to selected investors—an advantage that is particularly important in industries where proprietary information is most valuable (Maksimovic & Pichler 2001; Farre-Mensa 2017).

To illustrate, Google Inc's (2004, p. iv) management wrote in a letter to prospective investors in the firm's Form S-1 filing: "As a smaller private company, Google kept business information closely held, and we believe this helped us against competitors." The letter continued: "As a public

[13]In the United Kingdom, all public and private firms are required to publicly file their financial statements. This facilitates research on UK private firms, but it means that their disclosure regulations are closer to those faced by SEC-reporting semipublic firms than those faced by pure private firms in the United States.

company, we will of course provide you with all information required by law.... But we will not unnecessarily disclose all of our strengths, strategies and intentions." By contrast, VCs and other private investors often have almost unfettered access to their portfolio companies (e.g., Bernstein, Giroud & Townsend 2016). Google's example thus points to a complex relationship between a firm's listing status and the information available to investors: While far more information is publicly available about the average public than the average private firm, private firms' shareholders often gain access to proprietary information that is off-limits to investors in public firms.

The information environment surrounding public and private firms differs in one additional aspect: Public firms' stock prices aggregate the information available to a variety of market participants and are available in real time. As a result, stock prices can help public managers make better investment and acquisition decisions (Dow & Gorton 1997; Hsieh, Lyandres & Zhdanov 2011). But prices can also be a distraction and lead to suboptimal decision-making, particularly if markets are inefficient (Baker & Wurgler 2013, section 2.4) or in the presence of agency conflicts—discussed next.

2.3.3. Differences in agency problems. Public firms' ability to gain access to a large pool of well-diversified investors and the associated risk-sharing benefits comes at the expense of separating ownership and control, opening the door to agency problems (Jensen & Meckling 1976). The potential for agency problems is exacerbated in situations where public managers' two-audiences problem prevents them from sharing proprietary information with shareholders, leading to increased information asymmetry.

One type of agency problem that has received considerable attention when comparing public and private firms has been short-termism (Asker, Farre-Mensa & Ljungqvist 2015). In particular, Stein's (1989) short-termism model shows that a manager whose utility depends on both the firm's long-term earnings and its current stock price may sacrifice long-term value to boost the firm's stock price even if investors anticipate this behavior. The reason is that investors expect the firm's current earnings to be inflated by borrowing from the future and discount them accordingly—and the manager has no way to credibly commit to not engaging in this inefficient behavior. A key model assumption is that investors cannot observe the amount of borrowing from the future, thus highlighting the role of information asymmetry in public firms' agency problems.

Agency problems can also arise in private firms, particularly in environments with weak property rights where majority shareholders can exploit minority shareholders (La Porta, Lopez-de-Silanes & Shleifer 1999; Loderer & Waelchli 2010). At the same time, Holmström & Tirole (1993) argue that liquid stock prices can help monitor public managers' performance. More generally, the vast corporate governance literature outlines a variety of mechanisms that firms can use to alleviate agency problems (for reviews, see Shleifer & Vishny 1997; Stein 2003; Hermalin & Weisbach 2017). Thus, while public firms' separation of ownership and control increases the potential for agency problems, the extent to which agency problems distort the behavior of public firms relative to private ones remains an open empirical question.

2.3.4. Differences in equity issuance expenses. The expenses associated with raising equity via the public and private markets can be substantially different—although the latter are hard to quantify. On the public side, IPO expenses include underwriting fees, IPO underpricing, and (comparatively smaller) exchange listing fees and miscellaneous expenses. For moderate-size IPOs, underwriting fees are almost always 7% of gross IPO proceeds, but they can be lower for larger IPOs (Ritter 2011). In addition, IPO firms leave considerable money on the table due to underpricing: First-day IPO returns averaged 17% from 2001 through 2020 (Ritter 2021, table 1). SEO expenses tend to be lower than IPO expenses: From 2008 through 2015, the mean underwriting fee equaled 4.5% of SEO gross proceeds (Billett, Floros & Garfinkel 2019, table 3), while the mean SEO announcement return from 1996 through 2012 was −2% (Akhigbe & Whyte 2015, table 4).

We are not aware of any study of private firms' equity issuance expenses. However, to the extent that such firms often raise equity via VC and PE funds, it is worth noting that the fees charged by these funds (and ultimately borne by their portfolio companies) can be orders of magnitude higher than those charged by mutual funds investing in public firms (Robinson & Sensoy 2013; Phalippou, Rauch & Umber 2018).[14]

2.4. The Listing Decision

Do the above differences in the financing and information frictions faced by public and private firms affect listing decisions? A number of papers find that they do—although the precise weights that firms put on each factor and how these weights vary across firms and over time remain open research questions. But before reviewing these studies, it is worth delimiting our discussion's scope. First, exchange size requirements and the fixed costs associated with going public mean that most private firms are too small to consider going public. Second, while our focus is on the going-public decision, the same basic trade-offs influence the decision to go private (e.g., via a PE fund–sponsored leveraged buyout). Finally, the literature on the going-public decision is vast, and we do not aim to review it all here (for a recent review of the IPO literature, see Lowry, Michaely & Volkova 2017).

Consistent with the notion that going public gives firms access to a large pool of low-cost equity capital, the need to finance investments—particularly hard-to-collateralize R&D projects—appears to be a major driver of IPOs: Kim & Weisbach (2008) show that R&D and capital expenditures increase by 78.0 cents and 19.9 cents, respectively, per IPO dollar raised in the 4 years following the IPO. When IPOs involve mature firms like those studied by Pagano, Panetta & Zingales (1998), which are not the norm in the United States,[15] capital structure adjustments rather than investments constitute the main use of IPO funds.

Consistent with listing allowing shareholders to better diversify idiosyncratic risk, Chemmanur, He & Nandy (2010) show that larger firms are more likely to go public. Relatedly, Chod & Lyandres (2011) find that in industries with higher competition and demand uncertainty there are more public firms, which they argue suggests that public firm owners' greater diversification allows them to adopt riskier and more aggressive strategies. Furthermore, Bodnaruk et al. (2008) show that private firms owned by less-diversified controlling shareholders are more likely to go public and that these undiversified shareholders tend to sell more shares at the IPO. These findings support the idea that stock liquidity is an important consideration for many firms going public—even those with no need to raise capital for investment.

Support also exists for the notion that private firms' ability to avoid public disclosures is an important factor in their decision to stay private: Aghamolla & Thakor (2022) show that following a legal reform requiring firms to publicly disclose clinical trial information regardless of listing status, the affected firms increased their propensity to go public. As for agency considerations, Brau & Fawcett's (2006) survey shows that managers' desire to maintain decision-making control and avoid ownership dilution—which tends to further separate ownership and control—are the

[14]VC and PE fund managers typically charge an annual management fee (approximately 2% of the fund's assets) and a performance or carried interest fee (approximately 20% of fund profits).

[15]The median age in the sample of Italian IPOs analyzed by Pagano, Panetta & Zingales (1998) is 26 years. By contrast, the median IPO firm in the United States is 8 years old (Ritter 2021, table 4).

two top reasons why firms stay private. One additional factor has been shown to influence IPO decisions: private owners' desire to go public when public investor sentiment and valuations are high (Lowry 2003).

3. HOW HAS THE ENTREPRENEURIAL FINANCE MARKET CHANGED OVER THE LAST TWO DECADES?

This section describes how the public and private capital markets have changed over the last two decades, using the differences between public and private firms described in Section 2 as a framework to understand the causes and consequences of these changes. To streamline our discussion, we zero in on changes in the financing choices faced by high-growth, innovative start-ups—the kind of firms most likely to raise VC (Puri & Zarutskie 2012). As a result, our focus is on equity financings.

3.1. Changes to Public Firm Regulations

The number of annual IPOs in the United States averaged 436 from 1991 through 2000, peaking at 677 in 1996. By contrast, from 2001 through 2020, annual IPO counts averaged 113, with a peak of 206 in 2014 (Ritter 2021, table 1). Although regulatory changes in the public equity markets are unlikely to be a major driver of this decline (Doidge, Karolyi & Stulz 2013, 2017; Gao, Ritter & Zhu 2013), it is still helpful to review these changes.

Since the early days of the 2002 SOX, there were concerns that the compliance costs of some of its provisions may be unexpectedly high, particularly for small and young public firms (SEC 2009)—the kind of firms most likely to be on the margin between being public or private.[16] Since 2007, several regulatory changes have shielded certain public firms from some of the costliest provisions of SOX, such as those related to the assessment of the effectiveness of internal control over financial reporting in Section 404. In particular, the 2012 JOBS Act created a new category of SEC-reporting companies called "emerging growth companies," which benefit from scaled back disclosure requirements and are exempt from Section 404(b) of SOX.

Prior to the JOBS Act, the SEC had already provided small public firms with some reprieve in the speed and detail of their financial reporting. In particular, the SEC introduced the "accelerated filer" and "large accelerated filer" reporting categories in 2002 and 2005, respectively, adding the "smaller reporting company" category in 2008. Taken together, these changes help explain why public firms' regulatory compliance costs, which increased markedly after SOX, returned to their pre-SOX levels in 2018 (Ewens, Xiao & Xu 2021).

In parallel, the SEC has also sought to make it easier for public firms to conduct follow-on offerings. Some of these changes target large firms, such as the introduction of the "well-known seasoned issuer" category in 2005. But others apply to small issuers, most notably the 2008 rule allowing firms with public floats below $75 million to raise equity via shelf registrations, which led to a 49% increase in the treated firms' annual probability of raising equity (Gustafson & Iliev 2017). Since 2008, the SEC has also made it easier for public companies to conduct at-the-market (ATM) follow-on offerings, direct share issuances sold in the secondary market that differ from traditional SEOs in that they forgo underwriters (Billett, Floros & Garfinkel 2019).

The last few years have also seen substantial innovation in the listing process itself. Since 2020, there has been a proliferation of firms going public via SPAC mergers. However, once all costs are considered, it does not appear that SPACs result in lower listing expenses—if anything, the

[16]Coates & Srinivasan (2014) review the literature on SOX and its consequences.

opposite may be the case (Gahng, Ritter & Zhang 2021). Direct listings have higher potential to result in lower expenses, but they are too recent to draw any firm conclusions—particularly those involving primary shares, only allowed in the NYSE since December 2020 and in the Nasdaq since March 2021.

3.2. Changes in the Private Equity Market

We now discuss the changes in the private equity market that have taken place over the last two decades. We begin our discussion by describing the key regulatory changes affecting private markets. We then turn our attention to several (nonregulatory) changes that have impacted investors in private markets as well as start-ups and their founders.

3.2.1. Regulatory changes. Several important regulatory changes have impacted the private equity market over the last two decades. For completeness, we begin our review a bit further back, with the 1996 NSMIA. As discussed by Ewens & Farre-Mensa (2020), two provisions of NSMIA make it easier for private start-ups to raise capital, particularly late-stage rounds. First, NSMIA facilitates start-ups' access to out-of-state private capital by exempting certain private issuers—most notably, those relying on Rules 506(b) or 506(c)—from complying with the blue sky (i.e., securities) laws in the various states where their investors reside. Second, NSMIA makes it possible for VC and PE funds to raise larger funds without having to register as public investment companies (and thus be regulated like mutual funds).

VC and PE funds' ability to raise large funds was also facilitated by a provision in the Pension Protection Act of 2006 that made it easier for them to raise capital from public (i.e., governmental) pension plans without triggering certain costly fiduciary rules (Lawson 2006). The Department of Labor's decision in June 2020 to allow 401(k) and other nongovernmental defined contribution pension plans to offer funds "with a private equity component" could help further increase the supply of capital available to VC and PE funds (Campagna 2020, para. 3).

By contrast, two provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA) of 2010 may have decreased the supply of private capital. Lindsey & Stein (2020) show that the DFA's requirement that the value of the primary residence be excluded from net worth when determining accredited investor status decreased the amount of angel financing available to early stage start-ups. Chen & Ewens (2021) find that the Volcker Rule's restriction on VC investments by banks lowered the capital available to both VCs and start-ups; the restriction was reversed in 2020.

The next major legislative change affecting the private equity market was the 2012 JOBS Act. This act makes it easier for private firms to raise capital without becoming an SEC-reporting semipublic firm by increasing the threshold that triggers registration of securities from 500 to 2,000 record holders.[17] In addition, the act introduced a new registration exemption, Rule 506(c), which for the first time allows private issuers to generally solicit and advertise their offerings as long as all investors are accredited. That said, the Rule 506(b) exemption remains by far the most popular exemption (Bauguess, Gullapalli & Ivanov 2018).

The JOBS Act also established crowdfunding provisions, codified by the SEC in Regulation Crowdfunding (Reg CF), which went into effect in May 2016 and allows early stage businesses to sell securities to the general public, including nonaccredited investors. Initially, start-ups raising capital under Reg CF could raise up to $1 million per 12-month period; however, this limit was

[17]The Act also exempts shareholders who receive shares under an employee compensation plan from this count.

increased to $5 million effective March 2021. Rossi, Vanacker & Vismara (2021) discuss the regulatory environment surrounding equity crowdfunding in the United States and compare it with the United Kingdom, where equity crowdfunding has been regulated since 2000.

Taken together, the regulatory changes that have impacted the private equity market over the last quarter century have likely helped increase the supply of private capital. This is particularly the case given that these changes have coincided with a number of other nonregulatory changes affecting investors in private markets—discussed below—that have also tended to increase the supply of private capital.

3.2.2. Changes affecting investors in private markets. The private market investor landscape has changed substantially over the last two decades. At the early stage level, accelerators and incubators, which emerged in the mid-2000s, help entrepreneurs raise low-dilution capital to experiment and build their first product while also providing mentorship and networking support (Cohen et al. 2019). In addition, companies such as AngelList, Aumni, and Carta have introduced new online platforms for private markets that reduce search and informational frictions both between investors and start-ups and between GPs and LPs. An increase in the fraction of wealth owned by the upper tail of the wealth distribution (Smith, Zidar & Zwick 2021)—including former employees of start-ups that went public during the late 1990s dot-com boom—may have further contributed to increase the supply of angel capital. Many US states have sought to further spur angel investments via tax credits—with seemingly little effect on entrepreneurial activity (Denes et al. 2021).

These new organizations and platforms—alongside the above discussed regulatory changes that have facilitated them—have contributed to a marked increase in the number of fundraising options available to early stage start-ups since 2002 (**Table 1*d***). In particular, after a delayed start relative to much of Europe and Australia, likely due to the lack of a regulatory framework prior to Reg CF, equity crowdfunding may be finally taking off in the United States, with an aggregate $244 million raised in 2020 (Cumming, Johan & Reardon 2021). That said, the jury is still out on the real effects and staying power of some of these innovations.

Start-ups raising mid- and late-stage rounds usually do so via a financial intermediary—traditionally, a VC fund. **Table 1*b*** shows that the dollar amount raised by VC funds increased by a factor of 3.5 from 2002 to 2019, from $14.7 billion to $52.3 billion.[18] This increase has coincided with an 84% rise in the number of active VC firms (**Table 1*d***) and a sharp decline in the median VC fund size since 2008 (**Table 1*b***), perhaps as a result of new VCs raising relatively small funds to avoid the increasingly crowded late-stage market (see below).

During the same 2002–2019 period, so-called growth-equity investments made by PE funds in late-stage start-ups have increased by a factor of 7.8 (**Table 1*c***), reaching $51.8 billion in 2019—nearly the same amount raised by all VC funds that year. The fact that PE funds have broadened their interest from their traditional focus on leveraged buyouts to growth-equity investments is important, as the PE fund asset class is larger and has grown faster than the VC class: In 2019, PE funds raised $304 billion, 5.8 times the amount raised by VCs (**Table 1*b***). The capital available to invest in private equity is even larger when considering alternative vehicles such as coinvestment vehicles and parallel funds, which have grown markedly since the late 1990s (Lerner et al. 2022).

What explains the growth in fundraising by VC and PE funds? While there are undoubtedly multiple factors, one notable driver has been the increase in allocations to private equity by institutional investors such as public pension funds and higher education endowments: From 2002 to

[18]All dollar figures are real dollars of 2012 purchasing power.

Table 1 Evolution of the US entrepreneurial finance market: statistics on various features of the market for 2002, 2008, 2014, and 2019

Market features	2002	2008	2014	2019	Data sources
Panel A: Market size					
Unique start-ups raising a VC-backed financing round	2,750	3,691	5,741	6,335	VentureSource 2020
Start-ups raising their first VC round	672	1,474	2,385	2,769	VentureSource 2020
Amount raised by VC-backed start-ups ($ billion)	$28.9	$38.9	$67.3	$118.2	VentureSource 2020
Total capital raised in IPOs and SEOs by non-financial firms ($ billion)	$76.1	$47.1	$87.6	$90.7	Board Gov. Fed. Reserve Syst. 2022
Panel B: Capital supply					
Amount raised by VC funds ($ billion)	$14.7	$27.7	$36.7	$52.3	VentureSource 2020 (2002 data); PitchBook 2021 (2008, 2014, and 2019 data)
Amount raised by PE funds ($ billion)	$68.1	$202.8	$179	$304	PitchBook 2021
Median VC fund size ($ million)	$61.3	$78.6	$23.3	$31.7	PitchBook 2021
Public pension fund allocation to VC/PE funds	2%	4.1%	5.4%	7%	Public Plans Data 2021
Higher education endowment allocation to VC/PE funds	5.5%	11.3%	15%	19.9%	NACUBO 2021
VC funds dry powder ($ billion)	$122.6	$115	$103.5	$233	Gredil, Liu & Sensoy 2021
Panel C: Financing events					
Equity crowdfunding events	0	0	179[a]	1,134	SEC 2022
Percentage of private capital going to late-stage rounds (C or higher)[a]	49.7%	54.6%	66%	68%	VentureSource 2020
Amount invested by PE funds in growth-equity investments ($ billion)	$6.6	$13.2	$30.3	$51.8	PitchBook 2021
Rounds >$99 million[b]	6	35	78	189	VentureSource 2020
Panel D: Investor pool					
Unique early stage investors[a]	1,552	1,352	2,029	2,524	VentureSource 2020
Financings with angel investors	n/a	709	3,657	3,125	PitchBook 2021
Unique accelerators/incubators	111	248	787	1,078	PitchBook 2021
Equity crowdfunding platforms	0	0	23[c]	34	SEC 2022
Unique VC firms	1,008	975	1,450	1,854	VentureSource 2020
Unique late-stage investors[a]	1,486	1,275	1,484	1,960	VentureSource 2020
Financings with mutual or hedge funds	91	203	370	593	PitchBook 2021
Percentage of all late-stage dollars invested supplied by nontraditional investors[a,d]	53.9%	56.2%	68.3%	72.8%	VentureSource 2020
Panel E: Valuation and liquidity					
Average Series A pre-money valuation ($ million)	$10.3	$14.7	$16.2	$34.1	VentureSource 2020
Average Series C pre-money valuation ($ million)	$44	$64.1	$124.6	$145.4	VentureSource 2020

(Continued)

Table 1 ***(Continued)***

Market features	2002	2008	2014	2019	Data sources
Average equity stake sold in Series A[e]	46%	38%	29%	30%	VentureSource 2020
Average equity stake sold in Series C[e]	33%	26%	22%	22%	VentureSource 2020
Unicorns (start-ups with valuation > $1 billion)	0	5	57	130	VentureSource 2020
Secondary private transactions	2	16	44	223	PitchBook 2021
Panel F: Contracting and governance					
Deals with participating preferred	68%	55%	27%	12.2%	PitchBook 2021 (all years); VCExperts 2014 (2002 and 2008 data)
Deals with >1× liquidation preference	12.6%	5.6%	3.5%	0.4%	PitchBook 2021 (all years); VCExperts 2014 (2002 and 2008 data)
Deals with cumulative dividends	26.7%	21.9%	17%	18%	PitchBook 2021 (all years); VCExperts 2014 (2002 and 2008 data)
Series A boards controlled by VCs	37.3%	25.8%	12.7%	10.1%[f]	Ewens & Malenko 2022
Panel G: Characteristics of VC-backed start-ups at IPO					
Median age (years from first VC round)	3.83	8.19	7.2	6.3	VentureSource 2020
Median pre-IPO amount raised ($ million)	$80.7	$57.5	$108.6	$148.7	VentureSource 2020

All dollar figures are real US dollars of 2012 purchasing power.

Abbreviations: IPO, initial public offering; PE fund, private equity fund (not including VC); SEO, seasoned equity offering; VC, venture capital.

[a]We classify a round as late stage if the start-up is raising its third (typically, Series C) or higher round, and we classify lower rounds as early stage, with two refinements: (*a*) If a financing event is a third or later round but VentureSource lists it as "Seed," "Angel," or "Series A," we reclassify it as early stage; (*b*) if a financing event is a third or later round but VentureSource lists it as "Series B" and it has been less than 4 years since the start-up's first financing round, we also reclassify it as early stage.

[b]From 1990 to 2000, $99 million was the 90th percentile of the offering size of VC-backed IPOs.

[c]Information is for the year 2016.

[d]Nontraditional start-up investors are non-VC investors; they include PE funds, corporations, mutual funds, or hedge funds. When the dollar amounts supplied by some or all of the investors in a financing syndicate are not broken down, we assume equal shares.

[e]Average equity stake sold is the as-if-common equity stake sold to all investors in the financing syndicate (i.e., the capital invested divided by the post-money valuation).

[f]Information is for the year 2017.

2019, the average allocation to private equity by public pension funds increased from 2% to 7%; for endowments, the relative increase was similar, from 5.5% to 20% (**Table 1*b***). What drives these allocation increases? The regulatory changes discussed in Section 3.2.1 have likely played a role. In addition, we next highlight an explanation focused on public pension funds, which are among the largest investors in private equity (Lerner, Schoar & Wongsunwai 2007), while emphasizing that more research is needed to fully understand the growth in the supply of capital available to VC and PE funds.

The public pension funding gap—the difference between the liabilities and assets of state and local public pension funds—increased from virtually zero in 2001 to $1.25 trillion in 2019 (Pew Charit. Trusts 2015, 2021). One potential strategy to attempt to shrink the gap is to shift a fund's investment portfolio toward higher return (and higher risk) investments, and private equity has been a popular option. This choice has likely been reinforced by the fact that public pension funds assign the highest expected return of all asset classes in their portfolio to private equity (both VC and PE funds), with a mean expected net return of 12% (Andonov & Rauh 2022, table 1A, arithmetic basis). This expected return looks even more enticing when compared with the decline in the 10-year Treasury rate from 5.2% in January 2001 to 1.5% in January 2020 (Board Gov. Fed. Reserve Syst. 2021).

More generally, part of the growth in the supply of private equity may also reflect a (difficult to empirically identify) returns chasing phenomenon, whereby investors increase their allocations to VC and PE funds in response to their (real or perceived) outperformance over public markets—perhaps best exemplified by the strong performance of the Yale University endowment (Lerner, Schoar & Wang 2008). VC funds raised in the mid-1990s did perform exceedingly well: Performance peaked for the 1996 vintage, when the average VC fund's net-of-fees return was 4.17 times higher than if the same cash flow stream had been invested in the S&P 500 public market index (Harris et al. 2020, table 1, public market equivalent). However, the performance of VC funds from the 1999 through 2006 vintages was lackluster, with the average fund underperforming the S&P 500 in all but the 2003 vintage.[19] Only after 2006 did the average fund again consistently beat the S&P 500, but VC performance remained a far cry from the 1990s heights: In the average vintage year from 2007 through 2014, the average VC fund's return was 1.26 times higher than if the same cash flows had been invested in the S&P 500.[20]

Thus, the more modest—if not outright disappointing—average performance of VC funds in the last two decades has not stopped the continued growth of the private equity asset class. The growth in private equity allocations may still be justified if LPs believe that they have access to top-quartile funds, whose strong performance tends to be persistent and has more than doubled that of the S&P 500 even after 2000 (Harris et al. 2020, table 2)—though of course not all investors can invest in top funds. Furthermore, the performance of private equity relative to public equity can be sensitive to the choice of benchmark, and questions have been raised about the extent to which the fees earned by VC and PE fund managers are justified (Phalippou 2020). Understanding the role that the performance expectations of private versus public equity have played in driving the growth in private markets, the extent to which these expectations are justified by reality, and how the continued growth in the supply of capital to VC and PE funds may affect their future performance remain exciting research areas.

In parallel with the growth in investments by VC and PE funds, the investor side of the late-stage private equity market has experienced a second major change over the last two decades: a surge in investments by traditional public market investors such as mutual funds and hedge funds (Aragon, Li & Lindsey 2018; Kwon, Lowry & Qian 2020; Agarwal et al. 2021; Chernenko, Lerner & Zeng 2021; Huang et al. 2021). Indeed, the number of late-stage financings that included a mutual fund or a hedge fund grew from 91 in 2002 to 593 in 2019 (**Table 1*d***).[21]

What explains the increased interest of mutual and hedge funds in late-stage private markets? For one, the decline in IPOs discussed in Section 3.1 means that the kinds of firms that used to

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[19]The poor average performance of VC funds from the 1999 and 2000 vintages is particularly noteworthy on a value-weighted basis, as these were the two vintages with the largest number of funds raised and with the second and third largest average amount of capital committed per fund during the 1984–2014 period analyzed by Harris et al. (2020).

[20]The performance of funds from more recent vintages is not yet known, as most of their capital remains invested. The average performance of PE (buyout) funds over time has been far less volatile, with the average fund's cash flows 1.18 times higher than if invested in the S&P 500 in the average year from 1992 through 2014 (Harris et al. 2020, table 1).

[21]Sovereign wealth funds are also active in private equity, but their investments are harder to quantify (Bernstein, Lerner & Schoar 2013).

go public in the 1990s are now often still private. Thus, if mutual and hedge funds want to continue investing in such firms, they need to look for them in the (late-stage) private equity market. Another potential explanation may be found in the surge of low-fee, passively managed mutual and exchange traded funds since the mid-1990s (Anadu et al. 2020). Investing in private firms, which are excluded from the indices typically tracked by passive funds, may help active funds beat the returns of their passive counterparts, at least on a non-risk-adjusted basis—thereby helping justify the active funds' higher fees. While anecdotal evidence suggests that this strategy can be successful (Chung 2021), more research is needed to understand the causes and consequences of mutual and hedge funds' growing interest in private firms.

3.2.3. Changes affecting start-ups and their founders. We conclude our description of the changes in the private equity market by turning our attention to start-ups—the demand side of the market. A natural first question is: How has the number of new start-ups seeking to raise private capital changed? The evidence here is mixed. On the one hand, Decker et al.'s (2016) analysis of Census Bureau data indicates that the number of high-growth start-ups has declined since 2000, with start-ups contributing less to US job creation in the post-2000 period than before.

On the other hand, Guzman & Stern's (2020) analysis, which attempts to account for the quality of start-ups, paints a somewhat different picture: They find that while the number of start-ups that they identify as having high growth potential peaked in 2000 and then fell dramatically with the dot-com bust, starting in 2010 there has been a sharp upward swing. Our own figures in **Table 1*a*** show that the unique number of start-ups raising their first VC round went from 672 in 2002 to 2,769 in 2019.

The demand for private capital is affected not only by the number of new start-ups seeking to raise capital but also by their capital needs. In fact, technological innovations appear to have decreased start-ups' capital needs, particularly during the initial, experimental stage of the entrepreneurial process. For example, cloud computing's emergence in 2006 makes it possible for new start-ups to build software products without significant up-front investments, allowing them to raise smaller initial financing rounds (Ewens, Nanda & Rhodes-Kropf 2018). Innovations such as CRISPR, a low-cost gene editing technology (Plumer et al. 2018), could have a similar impact in the biotechnology industry. Start-ups' ability to raise smaller initial rounds makes it possible for investors to follow a spray-and-pray investment approach, making small investments in many high-risk start-ups (Ewens, Nanda & Rhodes-Kropf 2018; Lerner & Nanda 2020).

Compared with late-stage rounds, early stage capital tends to be relatively expensive due to the unproven nature of early stage businesses. Being able to raise smaller initial funding rounds allows those start-ups that grow to be successful to do so with less founder dilution—and thus more founder control—than if they had had to raise a larger initial round.

Another technological trend that has affected start-ups' demand for capital has been the growth in R&D investments and intangible assets over the last 40 years (Eisfeldt & Papanikolaou 2013; Kahle & Stulz 2017; Ewens, Peters & Wang 2020). To the extent that R&D intensive firms face greater disclosure costs and are more sensitive to the two-audiences problem discussed in Section 2.3.2, this growth would suggest that the benefits of raising private capital have increased (Farre-Mensa 2017; Doidge et al. 2018; Stulz 2020).

The desirability of staying private will further increase if it becomes easier for entrepreneurs to sell some of their shares without going public. Some advances have been made in this respect, particularly with the emergence since 2009 of platforms that facilitate private securities transactions, such as SharesPost and Nasdaq Private Market (Ibrahim 2012; Larcker, Tayan & Watts 2018). While increasing, the number of secondary transactions in these platforms remains low (**Table 1*e***), and so it is still unclear how these developments will impact private capital markets.

One countervailing technological trend may have decreased the demand for private capital while also contributing to the decline in the number of IPOs and listed firms: An increase in economies of scope, which would increase the benefits for small firms of selling out to larger, typically public, competitors relative to continuing to operate as independent firms (Gao, Ritter & Zhu 2013; Eckbo & Lithell 2022).

3.3. A New Equilibrium in the Entrepreneurial Finance Market

Taken together, the changes discussed above suggest that the demand for private capital is likely to have increased over the last two decades, particularly by late-stage start-ups. On the supply side, the growth in investments by nontraditional start-up investors such as PE funds, mutual funds, and hedge funds—in part explained by the competitive pressures they and their own investors face—should have led to an increase in the supply of private capital, again concentrated in late-stage rounds.

The data support these predictions. **Table 1*a*** shows that the capital raised by VC-backed private start-ups grew from $28.9 billion in 2002 to $118.2 billion in 2019. Importantly, much of this growth has been fueled by late-stage financings (Series C and higher rounds), whose share of all private financings grew from 50% in 2002 to 68% in 2019 (**Table 1*c***). These late-stage rounds are increasingly likely to contain nontraditional start-up investors (**Table 1*d***).

Interestingly, since 2017, the aggregate annual dollar amount raised in private financings has surpassed the combined amount raised by public firms via IPOs and SEOs, with the aggregate magnitude of late-stage financings alone being similar to all the capital raised via the public markets (**Figure 1*a***). The latter comparison is particularly relevant, as many of the private firms now raising late-stage rounds would probably have already gone public and would thus be raising

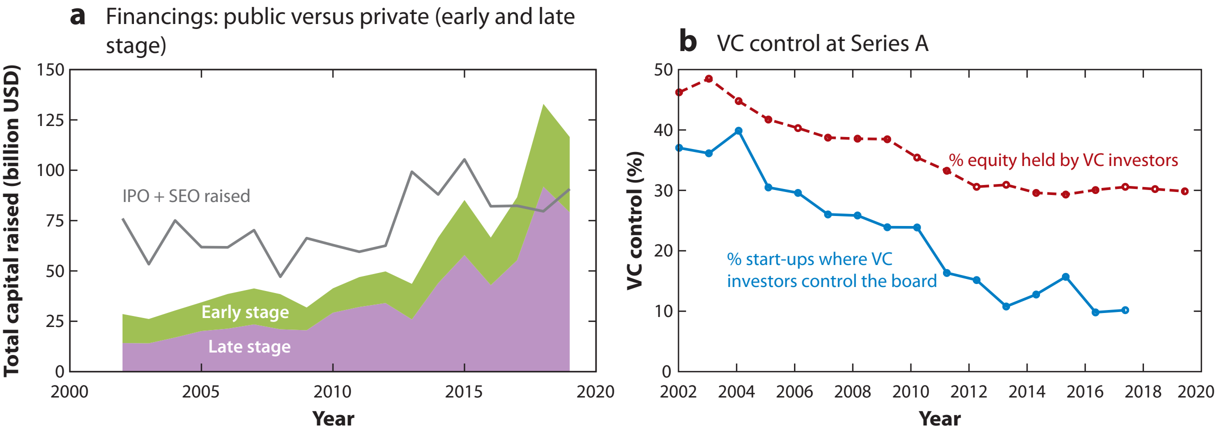

Figure 1

Changing financing sources and bargaining power. For each year, panel *a* shows the total capital raised in IPOs and SEOs by public firms (*gray solid line*) and the total capital raised by VC-backed start-ups, broken down by stage (*green* and *purple areas*). We classify a round as late stage if the start-up is raising its third (typically, Series C) or higher round, and we classify lower rounds as early stage, with two refinements: (*a*) If a financing event is a third or later round but VentureSource lists it as "Seed," "Angel," or "Series A," we reclassify it as early stage; (*b*) if a financing event is a third or later round but VentureSource lists it as "Series B" and it has been less than 4 years since the start-up's first financing round, we also reclassify it as early stage. All dollar figures are real US dollars of 2012 purchasing power. Panel *b* shows the annual fraction of start-ups where VC investors gain control of the board of directors after the Series A round (*blue solid line*) as well as the average equity stake held by VC investors at the Series A closing (*red dashed line*). Abbreviations: IPO, initial public offering; SEO, seasoned equity offering; VC, venture capital. Data sources: VentureSource (2020), PitchBook (2021), and Ewens & Malenko (2022).

public capital three decades ago. Consistent with this, when firms now do go public, they are older and have raised more private capital than in the 1990s or the early 2000s (Ewens & Farre-Mensa 2020).

One final comparison illustrates the extent to which the private markets have become a viable substitute for the public markets. From 1990 to 2000, the 90th percentile of IPO offering size was $99 million. While in 2002 there were only 6 private financing rounds where firms raised more than $99 million, the number of such large financing rounds grew 31-fold to 189 in 2019 (**Table 1*c***); by contrast, there were only 112 IPOs in 2019 (Ritter 2021, table 1).

We now turn our attention to valuations—a notoriously challenging exercise in private markets. **Table 1*e*** shows that the average pre-money valuation of the firms that raised their Series A financing round in 2002 was $10.3 million; by 2019, it had grown to $34.1 million.[22] Under the (strong) assumption that firms raising a Series A round in 2002 and 2019 were similar and obtained similar terms, this growth suggests that private valuations increased by 231% between those years. During the same period, the average pre-money valuation for firms raising a Series C round increased from $44 million to $145.4 million, a nearly identical 230% increase. The prevalence of so-called unicorns—companies with valuations higher than $1 billion—also grew markedly during these years, from 0 in 2012 to 130 in 2019.

The seemingly larger valuations at which private firms raise capital—combined with start-ups' smaller capital needs, particularly in early stages (Section 3.2.3)—have induced a marked decline in the fraction of equity firms need to sell to investors in exchange for the capital: In Series A rounds, the average stake sold to investors fell from 46% in 2002 to 30% in 2019. In Series C rounds, the decline was from 33% to 22%.

As noted above, VCs and other start-up investors virtually always receive (convertible) preferred stock with a complex set of cash flow and control rights. This raises the question: Do start-ups' higher valuations come at the expense of an increase in the use of contracting features offering downside protection to investors? Perhaps surprisingly, this is not the case: The use of investor-friendly contracting features such as participating preferred stock, large liquidation preferences, and cumulative dividends all declined from 2002 to 2019 (**Table 1*f***).

Nor do investors receive more control rights—in fact, the opposite appears to be the case. Ewens & Malenko (2022) show that 37% of all the Series A financing rounds raised in 2002 resulted in VCs controlling the start-up's board of directors; in 2017, that fraction had declined to 10% (**Figure 1*b***; **Table 1*f***). Furthermore, Ewens & Farre-Mensa (2020) show that the use of redemption rights in Series A rounds, which allow investors to trigger an exit by forcing start-ups to repurchase their shares after a specified time period, has also declined markedly since the early 2000s.

Investors' lower control rights and smaller stakes mean that entrepreneurs now enjoy greater bargaining power vis-à-vis investors at the time of making exit decisions. Given entrepreneurs' desire to maintain decision-making control (Brau & Fawcett 2006), their increased bargaining power likely helps explain why many start-ups are choosing to stay private and independent longer (Ewens & Farre-Mensa 2020)—even if this means overriding VC investors' preference to exit via an IPO (Black & Gilson 1998) or an acquisition (Cumming 2008) by the end of their fund's life cycle.

In sum, the new equilibrium in the entrepreneurial finance market features (*a*) more private capital invested, particularly in late-stage rounds, and (*b*) private equity contracts that are more

[22]A start-up's pre-money valuation is its valuation without including the money raised in the financing round. The valuations reported here follow industry practice and assume that all shares are as valuable as the most recently issued preferred shares—a widespread but likely inaccurate assumption (Gornall & Strebulaev 2020; Metrick & Yasuda 2021).

founder friendly in terms of both cash flow and control rights. What drives these changes? We highlight two potential explanations, while noting that more research is needed to fully understand all the forces behind this new equilibrium.

First, the new equilibrium suggests that the increase in the supply of private capital over the last two decades has outstripped the increase in the demand for it, leading to better terms for entrepreneurs in an increasingly "money chasing deals" (Gompers & Lerner 2000, p. 281) environment.[23] Second, compared with VC investors, some of the nontraditional start-up investors that have driven much of the increase in the supply of late-stage private capital may have a lower after-fee cost of capital and/or a lower preference for control rights (Chernenko, Lerner & Zeng 2021).

4. CONCLUSIONS

The US entrepreneurial finance market has changed dramatically over the last two decades. The number of listed firms has fallen sharply. At the same time, capital has flowed to the private markets, particularly in late-stage rounds, both via traditional start-up investors such as VC funds and via nontraditional investors such as PE funds, mutual funds, and hedge funds. This new equilibrium in the entrepreneurial finance market features seemingly higher valuations for private firms and more founder-friendly contracts.

In this article, we provide an intellectual framework to think through these changes by outlining the differences between public and private firms. Armed with this framework, we then attempt to identify the shifts in supply and demand forces that have given rise to this new equilibrium. But, as we have noted throughout the text, more research is needed to establish strong causal relationships between these shifts and the new equilibrium outcomes.

FUTURE ISSUES

1. What is the connection between (*a*) higher start-up valuations and more founder-friendly contracts and (*b*) the returns earned by the private equity asset class (Harris et al. 2020)? More generally, how will the growth of private markets affect investor returns?
2. How do the changes in the late-stage financing market impact the traditional venture capital investing model?
3. Has the increased availability of private capital changed the characteristics of individuals becoming entrepreneurs?
4. What are the real consequences of the decline in US listings and the growth of the private equity market? Several papers have analyzed the differences between how public and private firms invest and innovate (e.g., Asker, Farre-Mensa & Ljungqvist 2015; Bernstein 2015), but identification and external validity are challenging in this literature.
5. How (if at all) should regulators respond to the continued growth in the private capital markets? Several policy makers and regulators have voiced concerns about this growth, pointing in particular to the greater oversight and transparency under which public firms operate (e.g., Obama 2012; Kiernan 2022).

[23] VC funds' current historically high levels of dry powder (difference between the aggregate capital committed to the funds and the capital they have already invested; see **Table 1*b***) support this interpretation.

6. How do the patterns and trade-offs discussed here for the United States apply in other countries?
7. How can other countries foster a thriving entrepreneurial finance market, particularly for late-stage start-ups? To illustrate, a recent Eur. Comm. (2018) report notes that in the European Union, "later-stage financing in particular remains restricted" (p. 228).

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The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

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