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Success is good but failure is not so bad either: Serial entrepreneurs and venture capital contracting

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ABSTRACT

I analyze prior entrepreneurship as a determinant of financial contracting with venture capitalists and find more company-favorable contracts in startups founded by serial entrepreneurs. Repeat founders and other insiders retain greater board control and also suffer less equity dilution in their dealings with VCs. Second, serial founders retain their CEO positions more often. Third, startups founded by serial entrepreneurs obtain higher valuations at VC funding although this finding is confined to previously successful founders who also obtain the best contracts. Interestingly these results obtain despite poorer performance of such startups and VCs funding them sooner. Overall, even previously unsuccessful serial entrepreneurs receive better deal terms than novice founders, consistent with entrepreneurial learning being an important factor in fostering future entrepreneurship.

1. Introduction

Capital constraints are generally regarded as one of the primary barriers to entrepreneurship (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Holtz-Eakin et al., 1994; Blanchflower and Oswald, 1998). At the same time, serial entrepreneurship or entrepreneurs starting multiple businesses in their lifetime are not uncommon (MacMillan, 1986). Recent research suggests that prior founding experience is a significant determinant of future entrepreneurship (Cumming et al., 2016), and founders that were previously successful have a greater likelihood of not only receiving venture capital funding (Hsu, 2007) but also succeeding in their new businesses (Gompers et al., 2010). In this study, I empirically analyze the impact of serial entrepreneurship on one important dimension of capital-raising, namely, the structure of financial contracts between the recipients and providers of venture capital (VC). Using U.S. data, I address two basic issues. First, what is the impact of prior entrepreneurial experience on the deal terms negotiated between the startups and the venture capitalists – are these terms less onerous for serial entrepreneur backed startups? Second, how are the terms different for previously unsuccessful serial founders?

Specifically, I address the following questions. Are serial entrepreneurs, including those previously unsuccessful, able to retain greater control of the board and suffer less dilution of equity due to their prior entrepreneurial experience? Second, are they more likely to survive as CEOs (founder-CEO duality)? Third, how does their prior entrepreneurial experience affect the time it takes to raise VC funding? Finally, are the startup valuations or equity purchase prices offered by VCs higher for serial entrepreneur-backed startups? These are important issues that VCs and entrepreneurs alike grapple with when designing their financial contracts. In fact, valuation, allocation of control rights, share ownership, and founder-CEO duality are terms likely to be central to their negotiations relative to many 'boilerplate' items that often pervade these contracts.

The key challenge to analyzing these questions is the lack of detailed, complete, and publicly-available data on financial contracts.

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I circumvent this issue by focusing on VC-backed IPOs where public disclosure is required. Thus, I am able to hand-collect much cleaner and finer information on salient terms and relate them to prior entrepreneurial experience.[1] These data allow me to undertake a much richer analysis that otherwise would not be possible. The downside, however, is the constraint of only studying VC-backed IPOs rather than all VC-backed firms, although doing so has the advantage of analyzing deal terms in successful companies.

To preview the results, I find that even after controlling for the size of VC investment, serial entrepreneurs suffer less dilution of equity and retain greater board control in their VC deals. Moreover, they are also able to survive more often as CEOs. Interestingly, all of these findings also hold for previously unsuccessful serial entrepreneurs.[2]

The classification of serial founders into previously successful or unsuccessful is based on the outcome of their previous companies. In line with most VC literature (see Section 3 below), I classify the serial founders as previously successful if their previous firms were taken public or sold via an M&A deal. Interestingly, a few salient differences emerge which also help validate the scheme used to classify previously successful from unsuccessful founders. First, 52% of the previously successful entrepreneurs received VC funding in their *prior* startups whereas only 18% of the previously unsuccessful founders did, the difference being statistically significant. Second, the median (average) time between founding of the sample startup and the prior company is 7 (7.7) years for previously successful entrepreneurs which is significantly different from the 5 (5.7) years for previously unsuccessful founders. This makes sense because while previously successful founders take longer to float their most recent startups as they may still be involved with their prior ventures, previously unsuccessful founders move on sooner as their prior companies go out of business earlier. This observation is interesting for another reason: even though failure is usually a distressing experience for entrepreneurs and it enhances their difficulty in reentering the harsh world of startups, yet previously unsuccessful founders are able to float another startup in a reasonable timeframe and also obtain VC backing.

Coming back to contractual differences, I find that the equity purchase prices (a proxy for startup valuations) offered by the VC syndicate is significantly higher for serial entrepreneur backed startups, which is consistent with Koskinen et al.'s (2014) theoretical work that suggests a positive relation between founders' bargaining leverage and firm valuations. This result is however driven by previously successful entrepreneurs as there is no differential share pricing between previously unsuccessful- and novice founder-backed startups. There are two possible explanations for this result. First, previously successful founders have the greatest negotiating leverage among all founder types which results in them obtaining the most favorable contracts. Thus, previously unsuccessful entrepreneurs bear some cost in return for VC investment, namely lower valuations for their startups, on account of their prior track record (relatively to the previously successful founders) although they obtain better overall contracts compared to the novice founders. A second explanation for why previously unsuccessful founders suffer only on valuations while receiving similar other terms as the previously successful founders is rooted in the critical significance of entrepreneurial effort in early stage ventures.[3] Given the importance of entrepreneurial effort which is further reinforced by their prior experience, it is plausible that VCs chose to provide these founders with high powered incentives via cash flow and control rights while simultaneously extracting the cost by way of relatively lower valuations.[4]

I also find that startups backed by serial entrepreneurs (including previously unsuccessful ones) are younger at the time of initial VC investment. Fundraising is a non-trivial exercise for startups and early access to capital is crucial for maintaining a first mover advantage and tackling competition. The longer it takes to raise funds, the lesser the resources available for managing other crucial tasks (technology advancement, product and business development, human capital deployment, etc.) necessary for startups' progress. While not directly related to contract features, the result on timing of VC investment is interesting because although the serial entrepreneurs receive VC funding earlier, they obtain more favorable contract terms than other founders.

Given these findings, a natural question is whether these results are because of startups' operating performance. Better operating performance would increase founders' bargaining leverage resulting in more startup-favorable contracts. To analyze this issue, I examine three related metrics of industry-adjusted company performance – profit margin, return on assets (ROA), and asset turnover ratio – while the startup is still private.

Contrary to intuition I find that serial entrepreneur-backed startups have poorer operating performance than novice entrepreneur-backed firms. Interestingly, this result is driven by startups backed by previously successful founders. In particular, the profit margin of these serial founder backed firms is significantly lower than that of startups backed by novice founders. The ROA and asset turnover ratios obtain a similar pattern but they are not uniformly or significantly different across the founder types.

On the other hand, the startups founded by previously unsuccessful serial entrepreneurs do not perform any better or worse than the novice founder backed startups. It appears that when VCs fund previously successful serial entrepreneurs, the 'jockey' (founder) is weighted more than the 'horse' (startup) as these companies are able to receive quicker funding and more favorable contracts despite

[1] Commercial databases do not report many of the variables used in this study or their coverage on some items is replete with errors. For example, VentureXpert or VCExperts report no board seats for VCs in several of their portfolio companies (Bengtsson and Hsu, 2015; Bengtsson and Sensoy, 2015), whereas Kaplan and Stromberg (2003) and Masulis and Nahata (2009) find that VCs almost always have some board representation.

[2] Not surprisingly, these results hold for previously successful founders as well. However, one nuanced difference between previously successful and unsuccessful serial entrepreneurs materializes with respect to board control in their startups. The analysis of board representation reveals that insiders do not have greater board control in startups that are led by previously unsuccessful serial founders who are concurrently involved with another older private firm of theirs (portfolio entrepreneurs). In contrast, previously successful serial founders continue to enjoy greater board control despite being portfolio entrepreneurs.

[3] The primacy of entrepreneurial (or agent's) effort is a central feature in the principal-agent approach pioneered by Holmstrom (1979).

[4] Hereafter, references to "share pricing", "share/equity purchase price", "startup valuation", "pre-money valuation" and "post-money valuation" are meant to represent equity prices (or startup value) offered/negotiated by the VCs in return for their funding (see Hsu (2004), for example).

their underperformance relative to the novice entrepreneur backed startups. However, when previously unsuccessful serial entrepreneurs are funded, VCs do not appear to rely on the founders to the same extent; startup performance is important as well (see also Kaplan et al., 2009). Interestingly, these findings also relate to the classical theories of the firm including the critical resource theory. First, the results underscore the importance of both human (founders) and nonhuman (startup business) assets as emphasized by Wernerfelt (1984), Hart and Moore (1990, 1994), Hart (1995), Holmstrom and Roberts (1998), Holmstrom (1999), and Rajan and Zingales (2001a). Second, the significance of prior founding experience, particularly successful, points to the importance of specific human capital as highlighted in Zingales (2000) and Rajan and Zingales (2001b).

Finally, to ensure that the variation in contractual terms is driven primarily by prior entrepreneurial experience, I also examine the long-run post-IPO performance of the companies. I hasten to add that my objective is not to analyze startup performance per se as doing so would not be meaningful given the data limitations of examining only the VC-backed IPOs. The performance evaluation has a rather limited objective: to rule out the possibility of startup performance driving the observed contractual differences. For the long-run company performance, I also analyze Tobin's Q, patent counts, and patent citations, along with the profit margin, ROA, and asset turnover ratio. I find all of them to be statistically indistinguishable across the serial entrepreneur- and novice founder-backed companies.

Taken together (and supplemented with additional tests detailed below), the evidence indicates that previously successful serial founders obtain the most favorable deal terms. However, even previously unsuccessful founders put their entrepreneurial learning to effective use in negotiating overall better contracts compared to the novice founders. The analysis thus adds to a growing literature on VC contracting by empirically showing that prior entrepreneurial experience matters for startup-VC contracts. The venture capital industry is characterized by severe asymmetric information problems and an enduring challenge for VCs is the sorting of investments which entails pronounced search costs, time, and effort. One of the critical factors that VCs evaluate is the founders' track record. Prior entrepreneurial experience, particularly successful, is likely to significantly mitigate adverse selection risk for the VCs and lower their search costs. Thus, from a broader perspective, the study also contributes to the extensive literature on how VCs overcome the informational problems associated with startup financing.

The remainder of the paper is organized as follows. Section 2 reviews the related literature and develops testable hypotheses. Section 3 details data collection procedures and describes sample properties. Empirical results follow in Section 4. Section 5 discusses and presents findings that alleviate concerns related to sample selection. Section 6 reports on additional robustness checks. Finally, Section 7 summarizes and concludes.

2. Literature and hypothesis development

This study is related to at least three streams of finance research. First, several studies in entrepreneurial finance characterize capital constraints as a major barrier to entrepreneurship (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Holtz-Eakin et al., 1994; Blanchflower and Oswald, 1998). In surveys too, entrepreneurs often cite the difficulty in raising capital as one of the main challenges they face in their businesses (Blanchflower and Oswald, 1998). On one hand, banks are reluctant to fund risky startups, while on the other, VC funding is too expensive for many companies. Thus, one of the primary issues related to raising capital and also the focus of this study is the terms on which funds are raised. Deal terms are likely to directly affect startups' survival likelihood and their future trajectory. For instance, investor favorable contracts can make funding very costly for startups and are akin to harshly binding capital constraints. Despite the importance of contractual terms, anecdotal evidence also suggests that many founders often pay inadequate attention to proper negotiation of contracts or are not adept in their specifics, which can result in expensive and less desirable outcomes.

However, there are likely to be some entrepreneurs who are more proficient than others at negotiating deals with the VCs. A second branch of literature studies what MacMillan (1986) calls “habitual entrepreneurs” who generate multiple businesses in their lifetimes. While research on habitual founders is quite profound in academic entrepreneurship,[5] this topic has only now begun to receive attention in the finance literature. There is evidence that business founders are more likely to have prior entrepreneurial experience (Cumming et al., 2016), and those previously successful have a greater likelihood of not only receiving venture capital (Hsu, 2007) but also succeeding in their new businesses (Gompers et al., 2010).

Hsu (2007) also finds that experienced serial founders have valuable resource acquisition and team building skills, while Eggers and Song (2015) and Lafontaine and Shaw (2016) show that prior entrepreneurial experience, particularly in the same industry, matters also because of learning. Thus prior experience imparts valuable knowhow that is useful in running follow-on businesses. A potentially interesting question that arises is: do serial founders by virtue of their entrepreneurial experience/expertise possess greater bargaining leverage (relative to first-time founders) and negotiate better terms with external investors? And how does previous success of serial founders influence some of the salient contractual features?

While serial entrepreneurs with a successful track record have the benefits of reputation and demonstrated skillsets, unsuccessful founders are forced to cope with the unfortunate reality of failure. Although pervasive and perhaps inevitable in most cases (McGrath, 1999; Cope et al., 2004), failure leads to potentially painful and distressing experience for entrepreneurs (Shepherd, 2003; Singh et al., 2007; Cope, 2011; Ucbasaran et al., 2013), in no small measure due to the notion of stigma associated with it (Begley and Tan,

[5] The extant literature has further categorized habitual founders into serial and portfolio entrepreneurs. Portfolio entrepreneurs own and manage a portfolio of businesses concurrently while serial founders begin and manage their ventures sequentially. (See Westhead and Wright (1998), Ucbasaran et al. (2003) Westhead et al. (2003, 2005a, 2005b), Wiklund and Shepherd (2008) and Spivack et al. (2014) among others.)

2001; Cave et al., 2001; Cardon et al., 2011).

However, even previously unsuccessful founders gain valuable experience from their prior businesses. Several studies emphasize that entrepreneurship, even in failure, imparts valuable learning that is useful for subsequent ventures and success (Cope, 2005; Lazear, 2005; Politis, 2008; Politis and Gabrielsson, 2009; Cope, 2011; Sarasvathy et al., 2013; Ucbasaran et al., 2013; Lafontaine and Shaw, 2016). Learning from failure is also consistent with the creation theory of entrepreneurship that notes that the process of learning is key to exploiting future opportunities (Alvarez and Barney, 2007). This view also finds anecdotal support in the form of a more forward-looking outlook toward entrepreneurship in the U.S., Silicon Valley in particular, which is relatively more receptive of prior failure (Cardon et al., 2011).

While serial founders can draw on their experience in negotiations with external investors, it remains an empirical question how prior success or rather lack of it affects contracting with the VCs. On the other hand, novice entrepreneurs' inexperience and lower bargaining leverage can adversely affect their financial contracts with the VCs.

In contract negotiations, one of the primary issues entrepreneurs grapple with is how much equity and board control to allocate to external investors. These vital decisions affect the startups in multiple ways. For instance, greater share ownership for VCs not only gives them more influence but also implies a higher cost of equity capital since insiders suffer a greater dilution of equity. Similarly, allocation of board seats to external investors is a contentious issue as it has implications not only for exertion of control but also for important decisions that often determine startups' future strategy. If prior entrepreneurial experience and learning matter, and confer greater bargaining leverage on serial founders, it is likely to affect contracting with the VCs. The following two sets of hypotheses relate entrepreneurial experience with the allocation of ownership and control rights respectively in startups.

H_{1A}. Serial entrepreneurs suffer less dilution of equity in their startups by negotiating less share ownership for VCs than first-time entrepreneurs.

H_{1B}. Previously unsuccessful serial entrepreneurs suffer less dilution of equity in their startups by negotiating less share ownership for VCs than first-time entrepreneurs.

H_{2A}. Serial entrepreneurs retain greater board control over their startups than first-time entrepreneurs.

H_{2B}. Previously unsuccessful serial entrepreneurs retain greater board control over their startups than first-time entrepreneurs.

As per the hypotheses H_{1A} and H_{2A}, all serial founders are relatively advantaged in contract negotiations with the VCs compared to novice entrepreneurs. However, per hypotheses H_{1B} and H_{2B}, I also expect previously unsuccessful serial entrepreneurs to obtain more favorable deal terms vis-à-vis the novice founders, in their negotiations with the VCs. These hypotheses are consistent with the notion of accumulated learning through past entrepreneurship (Alvarez and Barney, 2007) and Landier's (2006) experimental equilibrium.

Apart from equity ownership and board seats, yet another effective way for the founders to exert control over their firms is through their CEO positions (founder-CEO duality). An extensive literature in corporate governance argues that CEO-Chair duality (CEOs who are also the Chairpersons) is an important mechanism through which CEOs enhance their power in firms. Retaining influence is important for founders given that VCs actively nurture and monitor their startups and frequently replace founder-CEOs with outside professionals (Hellmann and Puri, 2002). Prior research also suggests that VCs often have the right to fire founders from their CEO positions (Hellmann, 1998). Following the previous arguments that highlight the importance of accumulated learning and entrepreneurial experience, I have the following third set of hypotheses.

H_{3A}. Serial entrepreneurs are more likely to survive as CEOs than first-time entrepreneurs.

H_{3B}. Previously unsuccessful serial entrepreneurs are more likely to survive as CEOs than first-time entrepreneurs.

The arguments so far focus on the allocation of ownership and control rights among VCs and startup insiders. Another contentious issue during negotiations is the startup valuation offered to/by VC investors for buying equity shares. VCs choose a handful of risky companies to invest in from among hundreds of business plans. This makes investment sorting one of their most important and challenging activities. From the VCs' perspective, prior founding experience may significantly mitigate their adverse selection risk, which is likely to result in greater valuations for serial founder backed startups. Prior entrepreneurial experience is also likely to increase founders' bargaining leverage in negotiations with VCs and lead to higher firm valuations (Koskinen et al., 2014). The fourth set of hypotheses below highlights the implications of prior entrepreneurial experience for startup valuation at VC funding.

H_{4A}. Serial entrepreneurs are able to negotiate higher valuations for their startups than first-time entrepreneurs.

H_{4B}. Previously unsuccessful serial entrepreneurs are able to negotiate higher valuations for their startups than first-time entrepreneurs.

While my main focus is on comparing serial founders with the novice entrepreneurs, I also seek to further emphasize the importance of entrepreneurial learning by contrasting the latter with previously unsuccessful serial founders. Finally, I aim to highlight the salient differences between previously successful and unsuccessful founders as well. Overall, I expect the previously successful serial founders to obtain the most favorable contracts given their prior track record.

Given its focus on deal terms, this study also contributes to the empirical work on VC contracting in addition to the literatures on entrepreneurial finance and serial entrepreneurship. Most contracting theories emphasize possible conflicts of interest between

principals (investors) and agents (entrepreneurs) and devise contracting mechanisms to mitigate these conflicts.[6] This study focuses instead on the relative bargaining power of insiders and outside investors, and analyzes prior founding experience as a possible determinant of VC contracts.

I emphasize prior entrepreneurial experience because it has been shown to differ from more general business/management experience. Stuart and Abetti (1990) and Wise and Valliere (2014) document positive implications of startup founder experience over and above general business experience and network effects. Prior research has also highlighted cognitive differences in managers' and entrepreneurs' thinking/reasoning, which are partly dictated by the unique conditions (e.g., high uncertainty, time pressure, fatigue) faced by the startup founders (Busenitz and Barney, 1997; Baron, 1998; Mitchell et al., 2002). In fact, cognitive style has been presented as a contributing factor to the phenomenon of serial entrepreneurship (Brigham, 2001; Brigham and DeCastro, 2003). As well, the experiential learning within the process of entrepreneurship is likely to have implications for why founders start multiple businesses (Corbett, 2005). Thus, given the importance of experience gained as an entrepreneur, my focus is on prior founder experience, although I control for the general business experience of startup managers.[7]

In the following sections I test my hypotheses using a sample of U.S.-based VC-backed companies that went public.

3. Data and sample characteristics

In this section, I describe the data sources, sample selection criteria, variables, and present the summary statistics.

3.1. Data sources and sample criteria

The initial data are taken from the SDC VentureXpert database that identifies VC-backed companies including IPOs. The sample comprises privately-held U.S. headquartered companies that went public between 1996 and 2011.[8] My analysis extends until 2016 because I also analyze the companies' long-run (5-year) post-IPO performance, as discussed in Section 6 below. Since the focus is on VC-backed startups and serial entrepreneurs, companies that were funded through recapitalizations and buyouts are excluded (also by carefully reading the IPO prospectuses) from the purview of this study. The final sample comprises of 1262 VC-backed IPOs for which the relevant company- and VC firm-specific information are available, pursuant to a laborious hand-collection of data as described below.

From the VentureXpert database, I also determine the identify of investors in each round, total investment made by each VC in the startup, as well as the aggregate investment made by all VC firms in the startup. This information is used to determine the lead venture capitalist – the VC firm that participates in the initial funding round and makes the largest total investment in the company up to the IPO. In a few instances, if two or more VCs initiate funding at the same time, and also invest the same amount in the company, then the older VC is designated as the lead VC firm. The lead venture capitalist usually originates the deal and is among the most active members of the VC syndicate.

Other data obtained from the VentureXpert database include size of the VC syndicate in each startup, number of funding rounds, startup's founding date, startup's developmental stage when it first attracted VC investment, lead VC firm type (e.g., bank-affiliated, corporate investor, state-owned), and lead VC fund size.[9] When any information is missing in VentureXpert, I supplement the data by obtaining additional material from the IPO prospectuses.

The lead VC reputation is based on the cumulative market capitalization of portfolio companies taken public by the VC firm prior to the year of its first investment in the startup (Nahata, 2008); the data to construct this variable primarily come from VentureXpert and CRSP. I also measure and control for the geographical distance between the company headquarters and its lead VC investor using the average latitude and longitude data for the two states in which they are reported to be based (Coval and Moskowitz, 1999, 2001; Cumming and Dai, 2010). The locational data are also drawn primarily from VentureXpert; when missing, I use Web searches (using Google) to determine the locations of the two entities. Appendix 1 presents the construction and data sources of all variables used in this study.

The majority of startup-specific information is hand-collected from the IPO prospectuses which are the second major data source. From the prospectuses, I collect aggregate VC shareholdings, aggregate outside investor shareholdings (including VCs), founder status

[6] Sophisticated contracts are frequently employed to overcome the agency problems between outside investors and founders of early-stage companies whose assets are largely intangible and knowledge based. Studies that discuss contracting mechanisms for solving potential agency problems between investors and entrepreneurs, particularly in the context of VC financing include Admati and Pfleiderer (1994), Berglöf (1994), Lerner (1995), Hellmann (1998), Casamatta (2003), Kaplan et al. (2007), Cumming (2008), De Bettignies (2008), Masulis and Nahata (2009), Bengtsson and Sensoy (2011, 2015), and the Kaplan and Stromberg (2001, 2003, 2004) papers.

[7] There is also a parallel, albeit small, recent literature on serial CEOs which finds that serial CEOs are highly able, their prior experience as a CEO matters for future performance, and their optimal compensation contracts are likely to be different from non-serial CEOs (Gudell, 2011; Giannetti, 2011).

[8] The results are robust if the data are limited until 2007 to avoid the concern regarding the severe disruption to the IPO market (and IPOs) caused by the global financial crisis that began in 2008.

[9] Several studies document the importance of these variables in the VC context. For instance, see Lerner (1994) and Tian (2012) on VC syndication, Gompers (1995) and Tian (2011) on staged financing, Gompers and Lerner (2000), Hellmann (2002), Cumming (2006), and Masulis and Nahata (2009) on corporate venture capital, Hellmann et al. (2008) on bank affiliated VCs, Lerner (1999) and Armour and Cumming (2006) on state-owned VCs, and Cumming and Dai (2011) and Humphery-Jenner (2012) on VC fund size.

(whether he/she is also the CEO) and the number of board seats allocated to startup insiders, VCs, and other outside investors. Startup insiders include CEOs, founders and other managers who are startups' executives. Aggregate outside investor shareholdings include shares owned by VCs and other investors that include proprietorships, consulting firms, non-VC arms of insurance companies, hedge funds, investment management firms, hospital foundations, trusts, and retirement funds. Overall, the share ownership of other investors is negligible compared to VCs' equity ownership.

To ascertain the background of the founders, I read the management section in the prospectuses. This allows me to determine whether the entrepreneur has founded businesses before or not. Out of 1262 companies in the sample, 357 have at least one founder who had previously started another company. These serial entrepreneurs have founded their companies, ex-novo, and not inherited them. The percentage of serial entrepreneurs at 28% is slightly higher than the 24% reported in Bengtsson and Sensoy (2011). For all the serial entrepreneurs, I also hand-collect the founding year of the most recent *prior* startup founded by them, primarily through Web searches (using Google, Linkedin). Finally, of the 357 companies backed by serial entrepreneurs, 50 have founders who are *concurrently* involved with the private company that they found prior to my sample firm. These 50 *portfolio* entrepreneurs are accounted for by an indicator variable throughout the analysis.

One caveat about data collection from IPO prospectuses is that even though companies going public are required to disclose all material information including the management's background (Higgins and Gulati, 2006), some serial entrepreneurs may not, particularly if their prior startups were unsuccessful. To the extent these cases exist, I am understating the degree of serial entrepreneurship, although the percentage of serial entrepreneurs is still higher than that reported elsewhere (e.g., Gompers et al., 2010; Bengtsson and Sensoy, 2011). When companies register their prospectuses and publicly report most information for the first time, they are on the verge of an IPO which is an important milestone for the firm, its management, and the outside investors and directors. As well, the prospectuses are carefully scrutinized by potential investors to assess the prospects of an equity investment (Colombo et al., 2019). By relying on prospectuses, although my data collection procedure may introduce a bias in favor of having more information on previously successful founders, it is not apparent that it affects the main thrust of my analysis which is on prior founding experience and entrepreneurial learning.

Oftentimes, the prospectuses disclose the outcome of previous companies founded by serial entrepreneurs. If they were taken public or sold via an M&A deal, I classify the serial founders as previously successful, which is consistent with most VC literature (e.g., Hochberg et al. (2007), Cumming (2008), Gompers et al. (2008), Nahata (2008), Gompers et al. (2009), and Nahata et al. (2014) among others). Investors in VC-backed companies generate most of their profits from the subsample of IPOs and acquisitions (also called successful exits), whereas companies that remain private are generally considered unsuccessful. When the prospectuses make no mention of the fate of serial entrepreneurs' previous companies, I look for that information through Web searches (using Google, Factiva) to determine whether the companies were successful or not.

Of the 357 serial entrepreneurs, 274 are determined previously successful which reflects, at least in part, their skill. The remaining 83 serial founders, whose skills remain unverifiable given that they have not been as successful, do possess the benefit of prior entrepreneurial experience.[10] Whether or not this enables them to obtain better contracts than the novice founders is one of the subjects of analysis in this study.

A few salient differences emerge between previously successful and unsuccessful founders. First, 52% of the previously successful entrepreneurs received VC funding in their *prior* startups whereas only 18% of the previously unsuccessful founders did, the difference being statistically significant. Thus the median serial entrepreneur who was previously successful obtained VC funding in his/her *prior* startup which is not true of previously unsuccessful founders. Second, the median (average) time between founding of the sample startup and the prior company is 7 (7.7) years for previously successful founders which is significantly different from the 5 (5.7) years for previously unsuccessful entrepreneurs. This makes sense because while previously successful founders take longer to float their most recent startups as they may still be involved with their prior ventures, previously unsuccessful founders move on sooner as their prior companies go out of business earlier. This observation is interesting for another reason: even though failure is usually a distressing experience for entrepreneurs and it enhances their difficulty in reentering the harsh world of startups, yet previously unsuccessful founders are able to float another startup in a reasonable timeframe and also obtain VC backing. Finally, the average geographical distance between their most recent startup and its lead VC investor is 1370.45 km for previously successful founders, which is significantly higher than the 924.97 km for previously unsuccessful entrepreneurs.[11] Lead VCs prefer to be geographically closer when initially investing in startups founded by previously unsuccessful entrepreneurs. Taken together, the differences in outcomes of salient variables–prior VC backing, time taken to start the most recent startup, and VC-startup geographical distance–across the two samples of serial founders, help validate the scheme used to distinguish previously successful from unsuccessful entrepreneurs.

Finally, I also account for the general business experience of the top executive for which I hand-collect information on CEO age from the IPO prospectuses.

One possible concern is that VC-backed IPOs are not randomly selected since firms going public are generally the most successful

[10] In my sample, the serial founders' prior entrepreneurial experience is related to the present business in 89% of the cases. The relatedness of prior entrepreneurial ventures and current business is based on whether they belong to the same industry. This high correlation of 89% accounts for, at least in part, the success of the most recent startups that all went public, which is supportive of industry experience and prior learning being important factors in entrepreneurial success (Chatterji, 2009; Eggers and Song, 2015; Lafontaine and Shaw, 2016).

[11] As mentioned above, the geographical distance between the company headquarters and its lead VC investor is computed using the average latitude and longitude data for the two states in which they are reported to be based.

of VC investments. This raises the question that the relation between serial entrepreneurship and deal terms could be because of the startup's performance, which can create a selection bias. In other words, superior performance of serial entrepreneur backed startups confers greater negotiating power on the founders, resulting in more company-favorable contracts.

I address this issue by analyzing the startups' performance across serial and novice entrepreneurs. While a detailed analysis follows in Section 4, it suggests that the contractual differences do not appear to be driven by pre-IPO startup performance. (For robustness, analysis of post-IPO performance follows in Section 6 and yields similar conclusions.) Second, by examining *only* successful startups (IPOs) that have attracted VC investments and by controlling for cross-sectional differences within the sample of VC-backed IPOs, I limit the concern that the relation between serial entrepreneurship and deal terms is the result of firm performance. While analyzing only the VC-backed IPOs–due to data constraints–remains a limitation of the study, at least their performance is likely to be more homogeneous given they all went public. Third, the allocations of shareholdings and board seats, and equity purchase prices (or negotiated valuations) are determined before it is known if the startup is going public. Finally, the focus is on contractual terms and not on performance which is much more likely to be affected by the selection biases.

It is actually quite likely that the results obtained using the IPO sample comprising of most successful companies understate the true strength of the hypothesized relation between serial entrepreneurship and financial contracting. This is possible since unsuccessful companies are less likely to be backed by serial founders (Gompers et al., 2010) and more likely to have VC-favorable contracts due to companies' inferior performance (Kaplan and Stromberg, 2003). Conversely, not only are serial entrepreneurs expected to obtain more favorable contracts by virtue of their experience and skill (Kaplan et al., 2009; Gompers et al., 2010) but also are more likely to be associated with IPOs (Gompers et al., 2010).[12] I therefore believe that absent the data on the non-IPO sample comprising acquisitions and liquidations, the coefficient estimates obtained using the analyses of IPOs are likely to represent the lower bound of their “true” values.

Although I cannot completely alleviate the concern about non-random nature of my sample I do not believe that the analysis of more successful startups is likely to be a serious problem at least in the context of this study. On the other hand, absent a representative sample of detailed contracts (or term sheets), the data must be hand-collected from IPO prospectuses.[13] Consequently, the resultant dataset is extensive, much cleaner, and conducive for richer analysis. It allows me to address important questions that would be difficult to answer otherwise.

3.2. Sample properties and descriptive statistics

Table 1A provides information on VC-backed IPOs in the 1996–2011 period. Over these 16 years, about one in four companies (28%) were backed by serial entrepreneurs. The frequency of VC-backed IPOs peaks in 1999–2000 and is markedly higher than other sample years. Although there is a stable trend in serial entrepreneurship across much of the sample period, the fraction of serial founder led IPOs seems to have increased post-2002 in the aftermath of the Sarbanes-Oxley (SOX) Act (I discuss more on this in Section 5).

Table 1B reports frequency of serial entrepreneurs by most active industries. In absolute terms, most serial entrepreneurs are in business services (2-digit SIC: 73) followed by biological products and chemicals (2-digit SIC: 28), electrical and electronic equipment (2-digit SIC: 36), manufacturing instruments (2-digit SIC: 38), and communication services (2-digit SIC: 48). Combined, in these five industries, 28% of the companies are backed by serial entrepreneurs as well. Although there does not appear to be a significant industry influence on serial entrepreneurship, I control for industry fixed effects in my analysis.

Table 2A reports descriptive statistics on the distribution of shareholdings, board seat allocations, and founder status. Pre-IPO equity ownership of all outside investors (including VCs) averages 53.42% of shares outstanding while total VC ownership (including venture arms of corporations and banks) averages 51.56%. The median board comprises 7 members. Company insiders – CEO and other company executives – hold 2 while the VCs hold 3 board seats. In terms of proportional board representation, the median board has 40% representation by the VCs and nearly 29% by the insiders. In 48% of startups, founders are also the CEOs at the IPO. That many of the founders are no longer the CEOs is consistent with earlier evidence (Hellmann and Puri, 2002) that VCs exert considerable influence and frequently replace founder-CEOs with more capable managers when such change is warranted.

Table 2B presents other VC- and startup-specific characteristics. The median company received 4 rounds of VC funding and had 6 firms in its VC syndicate although there is a lot of variation in the two variables. About 67% of the companies received their first VC funding in the early developmental stage (seed or early stage as classified by VentureXpert). Finally, the median startup was a year old at the time of its first VC investment.

Table 3 reports sample statistics by entrepreneur types. First, startups backed by serial founders, whether previously successful or

[12] From the investors' perspective, VCs facing severe adverse selection risk and high search costs are likely to favor investing in serial founder backed startups as repeat entrepreneurs have greater propensity to create successful public firms, the preferred VC exit. In these companies with better growth prospects, VCs are likely to attain or may have to settle for relatively less-favorable contracts, ceteris paribus. Conversely, companies with relatively inferior growth prospects (non-IPOs) are likely to have a lower proportion of serial founders and also more favorable VC contracts as aforementioned.

[13] Kaplan and Stromberg (2003) also acknowledge that their data on financial contracts come from VC firms that are likely better than average. Most empirical studies on VC contracts are based on selected samples, in major part due to the unavailability and unreliability of contracting data in commercial datasets (Kaplan and Stromberg, 2003; Bengtsson and Sensoy, 2015).

Table 1
Annual frequency and industry distribution of VC-backed IPOs.
The sample includes 1262 VC-backed IPOs by U.S. firms completed in the 1996–2011 period and listed on major U.S. stock exchanges.

Panel A: Annual frequency of VC-backed IPOs in United States

Year	Number of VC backed IPOs	Number of Serial Entrepreneurs	Average number of Serial Entrepreneurs per IPO
1996	201	50	0.25
1997	117	24	0.21
1998	73	18	0.25
1999	241	73	0.30
2000	221	54	0.24
2001	27	9	0.33
2002	18	5	0.28
2003	24	4	0.17
2004	79	24	0.30
2005	42	12	0.29
2006	50	15	0.30
2007	77	29	0.38
2008	7	4	0.57
2009	10	4	0.40
2010	43	14	0.33
2011	32	18	0.56
Total	1262	357	0.28

Panel B: Industry distribution of VC-backed IPOs in United States

2-digit SIC	Number of IPOs	Number of Serial Entrepreneurs
73	455	127
28	160	44
36	137	36
38	117	36
48	73	23
87	68	20
35	38	12
59	36	9
80	30	7
Others	148	43
Total	1262	357

not, have significantly smaller VC shareholdings than novice entrepreneur backed startups. In fact, I find that VCs invest significantly more in serial entrepreneur backed startups, yet receive less equity.[14] This finding also aligns with the negative, although not consistently significant, relation between serial founders and VCs' cash flow rights reported in Bengtsson and Sensoy (2011, 2015).

Turning to board seat allocation, we observe that insiders hold more board seats in startups founded by serial entrepreneurs. In fact, even previously unsuccessful founders retain greater board control than novice entrepreneurs. This pattern of greater control over their companies is also evident in the founders' CEO status at the IPO. In 64% of the companies serial founders continue to be the CEOs at the IPO, while only 41% of the novice entrepreneurs manage to retain their CEO positions. Previously unsuccessful entrepreneurs also maintain their CEO positions in 59% of the companies. These results are also interesting given that serial founder backed startups were younger when they received their first VC funding. The overall evidence suggests that prior entrepreneurial experience matters for future fundraising, even for previously unsuccessful founders. Notably, none of the deal terms–VC ownership, insider board representation, founder-CEO duality–differs significantly across previously successful and unsuccessful serial founders.

4. Empirical results

In this section, I employ multivariate analysis for testing my hypotheses. I first present implications of prior founding experience for allocation of equity and control rights among VCs and startup insiders. I follow it up with an analysis of founder status at IPO and then relate serial entrepreneurship to the prices paid (or valuations negotiated) by the VCs for startup equity. Finally, I provide evidence that the relation between serial entrepreneurship and deal terms is not because of startup performance.

[14] Aggregate VC investment in serial founder backed startups averages $81.3 M which is significantly greater than the average of $56.4 M for startups backed by novice founders. The corresponding medians are $46.8 M and $37.1 M respectively for serial founder and novice founder backed startups, and are significantly different as well. These differences are however driven by previously successful entrepreneurs as the aggregate VC investment in startups founded by previously unsuccessful entrepreneurs (average and median of $58.1 M and $33.9 respectively) is not different from that in novice founder backed startups.

Table 2
Summary statistics for VC-backed IPOs.

The sample of VC-backed IPOs comprises of completed offerings by U.S. firms that list on major U.S. exchanges over the 1996–2011 period. Panel A presents shareholdings and board representation of the VCs, insider board representation, and an indicator variable denoting whether the founder is the CEO at the IPO. Apart from VCs, other outside investors include proprietorships, consulting firms, non-VC arms of insurance companies, hedge funds, investment management firms, hospital foundations, trusts, and retirement funds. Shareholdings, board seats, and founder-CEO duality are measured at IPO and are taken from the IPO prospectuses. Panel B presents other VC-specific characteristics including number of funding rounds received by the portfolio company, VC syndicate size, startup age when it first received venture funding, and whether the startup received its first VC investment in its early stage of development. The data in Panel B are sourced from the VentureXpert database.

Panel A: Shareholdings, Board representation, and Founder-CEO duality at IPO

	Mean	Median	Minimum	Maximum	Standard Deviation
Total VC shareholding %	51.56	52.35	5.60	96.60	22.25
Total outside investor shareholding % (including VCs)	53.42	54.70	5.60	96.60	22.38
Total VC board seats	2.78	3.00	0.00	8.00	1.42
Insider board seats	1.92	2.00	1.00	9.00	0.92
Total board seats	6.91	7.00	1.00	43.00	1.98
VC board representation (%)	40.22	40.00	0.00	100.00	17.63
Insider board representation (%)	29.02	28.57	10.00	100.00	14.03
Founder is the CEO (0/1)	0.48	0.00	0.00	1.00	0.50

Panel B: Other VC-specific characteristics

	Mean	Median	Minimum	Maximum	Standard Deviation
Number of rounds of VC funding	4.34	4.00	1.00	23.00	2.68
VC syndicate size	6.96	6.00	1.00	31.00	4.50
Early stage investment by VC (0/1)	0.67	1.00	0.00	1.00	0.47
Startup age at first VC investment (number of years)	3.05	1.00	0.00	23.00	5.31

Table 3
Venture capital funding and contracting categorized by portfolio company entrepreneurs.

The table presents shareholdings of the VCs, insider board representation, an indicator variable denoting whether the founder is the CEO at the IPO, and the startup age when it first received venture funding–classified by types of entrepreneurs. Serial entrepreneurs have founded businesses before. Previously unsuccessful serial entrepreneurs are founders whose previous businesses remained private, i.e. neither went public nor were acquired. Shareholdings, insider board representation, and founder-CEO duality are measured at the IPO and are taken from IPO prospectuses, while the startup age is sourced from the VentureXpert database. Information on whether entrepreneurs have founded businesses before is sourced from their biographies in the IPO prospectuses. Prospectuses and detailed Web searches inform us whether serial entrepreneurs were previously successful, i.e. their previous businesses were either acquired or went public. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels respectively. The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges.

Entrepreneurs	Total VC shareholding %		Insider board representation %		Founder-CEO duality		Startup age at first VC investment (years)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
All serial entrepreneurs (N = 357)	48.40	49.40	31.55	30.00	0.64	1.00	1.83	1.00
Previously unsuccessful serial entrepreneurs (N = 83)	47.63	48.60	33.76	33.33	0.59	1.00	2.06	1.00
Novice entrepreneurs (N = 905)	52.81	53.50	28.03	25.00	0.41	0.00	3.54	1.00
Tests of equality (p-value)								
All serial entrepreneurs vs. Novice entrepreneurs	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Previously unsuccessful vs. Novice entrepreneurs	0.04**	0.04**	0.00***	0.00***	0.00***	0.00***	0.00***	0.04**

4.1. Total VC ownership

To test hypotheses H_{1A} and H_{1B} in a rigorous multivariate framework, I regress total VC ownership on a set of explanatory variables including a dummy variable denoting a serial founder. The control variables include an indicator denoting whether the startup received its first VC investment in early development stage, number of funding rounds, VC syndicate size, lead VC's reputation, indicators for lead VC firm type (bank VC, corporate VC, or state-owned), lead VC fund size, geographical distance between the locations of the company headquarters and its lead VC investor, an indicator denoting whether the CEO is also the founder, startup's age at the time of initial VC funding, total VC investment in the startup, and a proxy for industry conditions–the median market-to-book ratio in the startup's industry–at the time of first VC investment.

The number of funding rounds, VC syndicate size, geographical distance, and startup age are measured in natural logs. Lead VC reputation is based on the cumulative market capitalization of portfolio companies taken public until the year prior to VC firm's first investment in the startup (see Nahata (2008) for details). For calculating industry market-to-book ratios, firms are drawn from the Compustat universe based on their primary 2-digit SIC codes. The market to book ratio is measured by the sum of book value of assets plus market value of equity minus book value of equity, divided by book value of assets.

I also introduce an indicator variable denoting whether the serial founder is a portfolio entrepreneur, and dummy variables for the five most-active law firms associated with the companies in my sample. These five law firms serve between 3% and 14% of the companies in this study. Furthermore, I include CEO age that proxies for the business experience of the top executive.[15] I include industry and year fixed effects and the robust standard errors account for both heteroscedasticity and clustering by the lead VC firm. The industry effects are based on companies' 2-digit SIC codes and year effects on the time of first VC investment in the startup.

Table 4 reports estimates for eight OLS regression models. The first four models include all founders, whereas the last four exclude previously successful founders. The exclusion allows for analyzing whether previously unsuccessful entrepreneurs also part with less equity in their startups. An alternate way is to introduce an indicator variable denoting prior success/failure of serial founders. However, this indicator is highly correlated with the dummy variable denoting serial entrepreneur; hence I do not adopt this specification. Models 1 and 5 exclude the portfolio entrepreneur indicator. Models 3, 4, 7 and 8 include total VC investment in the startup as another independent variable, while models 4 and 8 also control for lead VC's fund size. Introduction of total VC investment and VC fund size reduces the number of observations.

In all the eight models, we observe a significantly negative coefficient on the serial entrepreneur indicator, which is consistent with the prediction of hypotheses H_{1A} and H_{1B} that startups suffer less dilution of equity when their founders are serial entrepreneurs. As models 5 through 8 indicate, this holds true for previously unsuccessful serial founders also.

Turning to the other explanatory variables in Table 4, the coefficients on number of funding rounds and VC syndicate size are positive and significant in all models demonstrating their direct relation with VC equity ownership. However, after controlling for number of funding rounds and syndicate size, VC investment does not emerge significant in explaining VC share ownership. When founders are also the CEOs of their companies, they relinquish less equity to VCs. In a similar vein, the significantly negative coefficient on startup's age suggests that insiders in older and more established startups have greater influence in their negotiations with VCs. Interestingly, CEO's general business experience (measured by CEO age) is positively correlated with VC share ownership. However, this result appears to be driven by companies that are not headed by founder CEOs (the founder-CEO indicator and CEO age are significantly negatively correlated.) Finally, as reported in 6 of the 8 models, startups that receive their first VC investment when industry market-to-book ratios are high, relinquish less equity to VCs. Founders have more bargaining leverage when their startups belong to industries with greater growth options. Notably, not only are these results along expected lines and economically meaningful, they also explain about 22–25% variation in equity ownership of the VCs.

A notable observation in Table 2 is that in a majority of IPO companies, the VC syndicate holds greater than 50% equity stake and controls the company. For robustness, I repeat my analysis of Table 4 by dividing the sample into two parts: i) companies in which VCs own 50% equity or more, and ii) companies in which they do not. In both the subsamples comprising all entrepreneurs, the coefficient on serial entrepreneur indicator retains its sign and statistical significance in explaining VC equity ownership.[16] (These results are not reported for brevity.)

4.2. Insider board representation

In this section I evaluate the predictions of hypotheses H_{2A} and H_{2B} that insiders have greater board representation in serial entrepreneur founded startups. In a multivariate framework that controls for other deal and company characteristics, I use a similar setup as discussed in the previous section. The dependent variable is insider board representation which is defined as the ratio of insiders' board seats to board size. Most explanatory variables are identical to the ones used previously. One exception is that instead of total VC investment, I include total VC ownership in the regression specifications.

I estimate eight OLS regression models whose specifications are similar to those in Table 4. I exclude total VC ownership in four of the eight models because of potential endogeneity concerns.[17] In models 4 and 8, I also include lead VC's fund size. Table 5 reports the findings.

Across all the eight models, the serial entrepreneur indicator obtains a significantly positive coefficient which indicates that insiders retain greater board control in serial founder backed startups. This result also holds when previously successful entrepreneurs are excluded.

Other significant findings are as follows. First, the VC syndicate size is negatively related to insider board representation which is similar in spirit to its impact on VC share ownership. Second, and as expected, insider board representation reduces with VC equity ownership. Third, lead VC's fund size and insider board representation are positively related; it is plausible that larger VC funds match

[15] I do not introduce the interaction of CEO age with founder-CEO indicator because the interaction term is highly correlated ($\rho = 0.97$) with the founder-CEO dummy itself.

[16] When previously successful founders are excluded the serial entrepreneur indicator retains its expected negative sign but loses its statistical significance, presumably because of the reduced power of tests on the smaller subsamples.

[17] For robustness, I employ a simultaneous two-equation system explaining insider board representation and total VC ownership; this discussion is reported in Section 6.

Table 4
Total VC share ownership.

The table presents OLS estimation of total share ownership of VCs in the portfolio company. The key explanatory variable is an indicator variable denoting whether or not the company founder is a serial entrepreneur. Serial entrepreneurs have founded businesses before. Previously successful serial entrepreneurs are founders whose previous businesses either went public or were acquired, i.e. *did not* remain private. The definitions of the other control variables are in Appendix 1. Robust p-values adjusted for lead VC firm clustering are in brackets beneath the parameter estimates. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels respectively. The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges.

Determinants of total VC share ownership at IPO

	Total VC share ownership							
	OLS: All entrepreneurs				OLS: Excluding previously successful entrepreneurs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Serial entrepreneur	−5.902***	−5.807***	−6.085***	−4.974***	−4.791**	−4.988**	−4.492*	−4.654*
	[0.00]	[0.00]	[0.00]	[0.00]	[0.04]	[0.04]	[0.07]	[0.07]
Early stage investment by VC	1.694	1.691	1.648	0.457	1.085	0.966	0.852	−0.050
	[0.20]	[0.20]	[0.22]	[0.76]	[0.46]	[0.52]	[0.57]	[0.97]
ln startup's total funding rounds	4.656***	4.649***	4.482***	5.063***	5.508***	5.374***	4.406***	5.210***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
ln VC syndicate size	5.952***	5.959***	5.577***	5.237***	6.346***	6.461***	5.703***	5.406***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lead VC reputation	−40.455	−40.595	−43.696	−124.780*	−15.896	−15.928	−9.233	−104.227*
	[0.40]	[0.40]	[0.36]	[0.08]	[0.69]	[0.69]	[0.81]	[0.09]
Founder-CEO	−4.420***	−4.425***	−4.340***	−2.959***	−5.026***	−5.073***	−5.105***	−3.643***
	[0.00]	[0.00]	[0.00]	[0.01]	[0.00]	[0.00]	[0.00]	[0.01]
CEO Age	0.144**	0.143**	0.132*	0.208***	0.173**	0.170**	0.156*	0.228***
	[0.04]	[0.04]	[0.06]	[0.00]	[0.04]	[0.04]	[0.07]	[0.01]
Portfolio entrepreneur		−0.648	−1.058	1.560		2.382	2.485	−4.593
		[0.84]	[0.75]	[0.67]		[0.74]	[0.72]	[0.55]
ln geographical distance	0.268	0.268	0.275	0.224	0.284	0.291	0.282	0.245
	[0.11]	[0.11]	[0.11]	[0.22]	[0.15]	[0.14]	[0.16]	[0.25]
ln startup age at first VC funding	−3.558***	−3.549***	−3.403***	−3.322***	−3.250***	−3.323***	−3.175***	−3.412***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Industry market-to-book ratio	−3.387	−3.383	−3.946*	−5.685**	−8.428***	−8.609***	−9.385***	−9.004***
	[0.14]	[0.14]	[0.08]	[0.03]	[0.00]	[0.00]	[0.00]	[0.00]
ln Total VC investment			0.664	1.131			1.225	1.135
			[0.36]	[0.15]			[0.13]	[0.20]
ln Lead VC fund size				0.880*				0.554
				[0.10]				[0.42]
Intercept	30.360***	30.259***	24.765**	9.892	19.409	20.062	10.367	5.466
	[0.01]	[0.01]	[0.05]	[0.49]	[0.18]	[0.16]	[0.48]	[0.77]
Lead VC type indicator (Bank, Corporate, Government)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Law Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1262	1262	1244	942	988	988	973	732
Adjusted R^2	21.82%	21.75%	21.93%	25.02%	23.74%	23.66%	23.16%	26.78%

with bigger or less risky companies in which insiders are able to retain a greater fraction of board seats.

Interestingly, when previously successful founders are excluded from the analysis, the coefficient on portfolio entrepreneur indicator carries a significantly negative sign. This means that insider board representation is significantly lower in startups that are led by previously unsuccessful founders who are concurrently involved with another firm of theirs.

Finally, I repeat my analysis of Table 5 by partitioning the sample into two parts based on VC equity ownership ($\geq$50% or $<$ 50%) in the company. In both subsamples, the coefficient on serial entrepreneur indicator is significant and positively related to insider board representation. I also divide the sample by VC board representation based on the sample median of 40% (Table 2): i) companies in which VCs have 40% or more board seats and ii) companies in which they do not. Again in both subsamples, the coefficient on serial entrepreneur indicator retains its positive sign and statistical significance in explaining insider board representation (these results are not reported to conserve space).

4.3. Founder-CEO duality

Apart from insider board representation, another important channel through which inside executives can exercise greater control over their firms is the CEO-Chair duality. A somewhat parallel concept applicable to private companies is the founder-CEO duality – founders who are also the CEOs wield more power in their companies. In this section I evaluate the relation between founder-CEO

Table 5
Insider board representation.

The table presents OLS estimation of insider board representation in the company. The key explanatory variable is an indicator variable denoting whether or not the company founder is a serial entrepreneur. Serial entrepreneurs have founded businesses before. Previously successful serial entrepreneurs are founders whose previous businesses either went public or were acquired, i.e. *did not* remain private. The definitions of the other control variables are in Appendix 1. Robust p-values adjusted for lead VC firm clustering are in brackets beneath the parameter estimates. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels respectively. The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges.

Determinants of insider board representation at IPO

	Insider board representation							
	OLS: All entrepreneurs				OLS: Excluding previously successful entrepreneurs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Serial entrepreneur	0.053***	0.054***	0.043***	0.039***	0.064***	0.079***	0.071***	0.069***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Early stage investment by VC	−0.003	−0.003	0.000	0.009	−0.006	−0.006	−0.004	0.006
	[0.75]	[0.75]	[0.98]	[0.37]	[0.57]	[0.57]	[0.66]	[0.59]
ln startup's total funding rounds	−0.019**	−0.019**	−0.011	−0.007	−0.018**	−0.019**	−0.011	−0.009
	[0.02]	[0.02]	[0.21]	[0.42]	[0.05]	[0.04]	[0.26]	[0.40]
ln VC syndicate size	−0.047***	−0.047***	−0.037***	−0.038***	−0.051***	−0.051***	−0.041***	−0.046***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lead VC reputation	−0.049	−0.050	−0.121	0.099	0.107	0.101	0.077	0.584
	[0.90]	[0.90]	[0.76]	[0.85]	[0.81]	[0.82]	[0.86]	[0.37]
Founder-CEO	−0.007	−0.007	−0.014*	−0.020**	0.002	0.002	−0.006	−0.012
	[0.42]	[0.42]	[0.07]	[0.02]	[0.82]	[0.82]	[0.51]	[0.23]
CEO Age	−0.001	−0.001	0.000	0.000	−0.001*	−0.001	−0.001	0.000
	[0.22]	[0.22]	[0.44]	[0.56]	[0.09]	[0.13]	[0.28]	[0.94]
Portfolio entrepreneur		−0.005	−0.006	0.018		−0.123***	−0.120***	−0.100***
		[0.82]	[0.77]	[0.45]		[0.00]	[0.00]	[0.01]
ln geographical distance	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.001
	[0.96]	[0.96]	[0.64]	[0.34]	[0.78]	[0.78]	[0.94]	[0.40]
ln startup age at first VC funding	0.005	0.005	−0.002	0.003	0.002	0.003	−0.002	0.004
	[0.38]	[0.38]	[0.75]	[0.55]	[0.70]	[0.63]	[0.69]	[0.48]
Industry market-to-book ratio	0.006	0.006	0.000	−0.001	0.010	0.011	−0.002	−0.002
	[0.69]	[0.69]	[0.99]	[0.93]	[0.56]	[0.54]	[0.89]	[0.92]
Total VC share ownership			−0.002***	−0.002***			−0.002***	−0.002***
			[0.00]	[0.00]			[0.00]	[0.00]
ln Lead VC fund size				0.007***				0.009***
				[0.01]				[0.00]
Intercept	0.401***	0.399***	0.453***	0.338***	0.555***	0.545**	0.576***	0.463***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lead VC type indicator (Bank, Corporate, Government)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Law Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1262	1262	1262	955	988	988	988	743
Adjusted R^2	11.79%	11.71%	17.72%	17.02%	14.08%	14.51%	18.82%	19.47%

duality and serial entrepreneurship. One possible reason why serial founders retain their CEO positions more often is because of company-favorable terms in VC deals. Conversely, when contracts are more investor friendly, it may be easier to fire founders from their CEO positions. To test hypotheses H_{3A} and H_{3B} in a multivariate framework, I use a logit model. The dependent variable is whether or not founders were also the CEOs at the IPO.

In Table 6, I present six models three of which exclude previously successful founders. In all specifications I strongly find that serial entrepreneurs are more likely to retain their CEO positions. Taken together with the evidence on total VC ownership and insider board representation, the results suggest that serial entrepreneurs, including previously unsuccessful ones, are able to negotiate contracts whose provisions strongly complement each other.[18] In line with Kaplan and Stromberg (2003) the contract terms do not appear to be substitutes whereby, for example, in order for insiders to have greater board representation, they sacrifice on equity ownership. This is also evident in the finding that the incidence of founder-CEO duality reduces with VC share ownership. It is more difficult for the founders to survive in their CEO positions when VCs possess increased leverage through greater equity ownership.

Among other findings, founder-CEO duality reduces with lead VC's reputation although this result is significant only in the full

[18] Although not reported, similar multivariate analyses show that previously successful founders also obtain better deal terms–VC share ownership, insider board representation, founder-CEO duality–compared to novice founders.

Table 6
Founder CEO duality.

The table presents Logit estimation of Founder-CEO Duality at the company's IPO. The key explanatory variable is an indicator variable denoting whether or not the company founder is a serial entrepreneur. Serial entrepreneurs have founded businesses before. Previously successful serial entrepreneurs are founders whose previous businesses either went public or were acquired, i.e. *did not* remain private. The definitions of the other control variables are in Appendix 1. Robust p-values adjusted for lead VC firm clustering are in brackets beneath the parameter estimates. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels respectively. The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges.

Determinants of founder CEO duality at IPO

	Founder CEO duality					
	Logit: All entrepreneurs			Logit: Excluding previously successful entrepreneurs		
	(1)	(2)	(3)	(4)	(5)	(6)
Serial entrepreneur	1.114***	1.156***	1.259***	0.763***	0.626**	0.774**
	[0.00]	[0.00]	[0.00]	[0.01]	[0.04]	[0.05]
Early stage investment by VC	0.046	0.045	−0.028	0.083	0.085	−0.024
	[0.77]	[0.78]	[0.88]	[0.68]	[0.67]	[0.91]
ln startup's total funding rounds	−0.140	−0.142	−0.057	−0.265	−0.249	−0.197
	[0.37]	[0.36]	[0.74]	[0.14]	[0.17]	[0.36]
ln VC syndicate size	−0.113	−0.110	−0.113	−0.032	−0.036	−0.023
	[0.38]	[0.39]	[0.47]	[0.83]	[0.81]	[0.90]
Lead VC reputation	−14.982**	−15.048**	−19.566*	−12.155	−12.086	−19.065
	[0.02]	[0.02]	[0.06]	[0.14]	[0.14]	[0.22]
CEO Age	−0.043***	−0.044***	−0.052***	−0.049***	−0.049***	−0.055***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Portfolio entrepreneur		−0.272	−0.154		−0.128	0.492
		[0.43]	[0.72]		[0.86]	[0.68]
ln geographical distance	0.013	0.013	−0.009	0.015	0.015	0.002
	[0.52]	[0.52]	[0.70]	[0.49]	[0.50]	[0.93]
ln startup age at first VC funding	0.025	0.029	−0.022	0.082	0.085	−0.007
	[0.77]	[0.74]	[0.83]	[0.39]	[0.38]	[0.95]
Industry market-to-book ratio	0.306	0.308	0.101	0.176	0.184	−0.150
	[0.29]	[0.29]	[0.78]	[0.61]	[0.60]	[0.72]
Total VC share ownership	−0.012***	−0.012***	−0.010***	−0.015***	−0.015***	−0.013***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
ln Lead VC fund size			0.130**			0.147**
			[0.03]			[0.04]
Intercept	1.279	1.229	1.313	1.871	1.921	2.055
	[0.38]	[0.40]	[0.49]	[0.31]	[0.29]	[0.36]
Lead VC type indicator (Bank, Corporate, Government)	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Law Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1262	1262	955	988	988	743
−2 Log Likelihood	1512.61	1511.98	1109.27	1177.67	1179.77	867.20

sample comprising all entrepreneurs. Finally, consistent with earlier results, CEO age is inversely related and lead VC's fund size is positively related with the incidence of founder-CEO duality.

VCs and entrepreneurs negotiate sophisticated contracts that contain several deal terms. The finding that the deal terms are complementary alleviates the concern about lack of analysis of detailed contracts since others terms are likely to correlate similarly with serial entrepreneurship (Kaplan and Stromberg (2003) find that cash flow incentives, control rights, and contingencies are used more as complements than as substitutes in VC contracts.) While limited in scope of enquiry this study does provide evidence that important deal terms such as VC ownership, insider board representation, founder-CEO duality–reasonable measures of cash flow and control rights–and valuation (see below) are systematically related to prior founding experience. These are precisely the terms that are likely to be greatly influenced by relative bargaining leverage in negotiations.

4.4. Valuation of startups at VC funding

In addition to the allocation of equity ownership and control rights, startup insiders also negotiate the pricing terms for selling shares to the VCs. The analysis so far reveals more favorable non-monetary terms for the serial founders. But do they tradeoff by accepting lower valuations from the VCs? Hsu (2004) shows that start-ups are often willing to turn down higher valuation offers in favor of more reputable VCs even if their valuation offers are lower.

As per the hypotheses H_{4A} and H_{4B}, the valuations negotiated by serial founders are likely to be greater–in line with the other non-monetary terms. To analyze startup valuation, I first compute the average purchase prices paid by VC investors for their shares and

Table 7
Startup equity purchase price paid by the VC syndicate.

The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges. The first variable of interest is the average price per startup share (inflation-adjusted in year 2011 dollars) paid by the VC syndicate across all funding rounds. This is calculated as the total investment made in the startup by the VC syndicate divided by the number of shares held as of the IPO date. The number of shares outstanding is sourced from the CRSP database. The next set of figures shows the average share purchase price divided by the offer price at the IPO. Finally, the average price paid per percent of equity ownership (total investment by the VC syndicate divided by percent share ownership; inflation-adjusted in year 2011 dollars) comprises the last set of figures. All prices are winsorsized at the 5 and 95 percentiles to adjust for outliers. The entrepreneurs are segregated into three groups: all serial entrepreneurs, previously unsuccessful serial entrepreneurs, and novice entrepreneurs. Serial entrepreneurs have founded businesses before. Previously unsuccessful serial entrepreneurs are founders whose previous businesses remained private, i.e. neither went public nor were acquired. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels respectively.

Entrepreneurs	Avg. share purchase price $ (inflation-adjusted)			Avg. share purchase price relative to IPO offer price			Price paid per % of equity ownership (inflation-adjusted)		
	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median
All serial entrepreneurs	352	7.60	5.55	352	0.50	0.36	352	1.95	1.33
Previously unsuccessful serial entrepreneurs	83	6.88	4.78	83	0.44	0.32	83	1.50	0.88
Novice entrepreneurs	884	6.58	4.81	884	0.43	0.29	884	1.42	0.99
Tests of equality (p-value) (All serial entrepreneurs vs. novice entrepreneurs		0.00***	0.02***		0.00***	0.00***		0.00***	0.00***
Tests of equality (p-value) (Previously unsuccessful serial entrepreneurs vs. novice entrepreneurs)		0.86	0.66		0.64	0.56		0.69	0.83

relate it to the type of entrepreneurs. While VentureXpert identifies round-wise VC investments in startups it does not track the price paid per share in each funding round. However, since it does report the total VC investment in a startup I can divide that amount by the startup shares held by VCs at the IPO date, to arrive at the average share price paid by the VC syndicate. The number of shares held by the VCs is computed by multiplying VC equity ownership with the number of shares outstanding drawn from the CRSP database.

In Table 7, we observe that the average purchase price paid per startup share (inflation-adjusted in year 2011 dollars) is significantly higher for serial founder backed startups. On average, VCs pay $7.60 ($6.58) per share for serial (novice) entrepreneur backed startups. The corresponding median numbers are $5.55 and $4.81 per share respectively. The differences in mean and median share purchase prices are statistically significant across the serial and novice founders. However, these price differences may be caused in part by differences in firm characteristics across the two samples. For a more meaningful comparison, I divide VCs' average purchase price per share by the startup's IPO offer price to control for differences in otherwise unobserved startup characteristics. On average, the ratio of share purchase price to IPO offer price is 0.50 for serial entrepreneur backed startups, which is significantly higher than the ratio of 0.43 for novice entrepreneur backed startups. I also obtain a statistically significant difference in the median ratio of share purchase price to IPO offer price, which equals 0.36 for serial entrepreneur backed startups and 0.29 for novice entrepreneur backed startups.

Finally, I measure the price paid by VC investors for each percent of the outstanding shares they receive and relate this variable to the entrepreneur type. The purchase price per 1% of equity, measured as total investment by the VC syndicate divided by VCs' share ownership, is akin to a startup's implied “post-money” valuation, a standard valuation measure in the VC industry. The so-called post-money valuation measures startup value based on the equity stake purchased by the investor, which is what my variable captures, albeit averaged across all funding rounds. Since VentureXpert's coverage of post-money (and pre-money) valuation at VC funding events is quite incomplete and it does not report prices paid per share in individual funding rounds either, I am unable to meaningfully analyze round-wise startup valuations.[19]

I find, on average, VCs pay $1.95 million (inflation-adjusted in year 2011 dollars) for each shareholding percentage in serial founder backed startups which is significantly more than the $1.42 million (inflation-adjusted in year 2011 dollars) for each shareholding percentage in novice entrepreneur backed startups. This also represents an economically significant difference.

One major difference from previous findings on ownership and control rights is that when previously successful founders are excluded from the analysis, there is no difference in valuations or equity purchase prices (negotiated by VCs) for startups backed by novice and previously unsuccessful entrepreneurs. While this finding rejects hypothesis H_{4B}, it aligns with Gompers et al. (2010) who show that previously successful founders (but not previously unsuccessful) are likely to fare better in their subsequent ventures. Thus, previously unsuccessful entrepreneurs by virtue of their prior track record bear some cost (compared to the previously successful founders), namely lower valuations for their startup shares[20]; however for most terms they fare better than the novice entrepreneurs.

[19] For instance, about 72% of the companies report pre-money valuations in the last VC funding round in my sample, the percentage being significantly lower in the earlier funding rounds. Analysis of this limited data reveals results that are in line with the reported findings below. The discussion is presented in Section 6.

[20] The average share purchase price by IPO offer price ratio and purchase price per 1% of equity for previously successful (unsuccessful) serial

Table 8
Startup valuation.

The table presents OLS estimation of equity price paid by the VCs in their portfolio companies. The key explanatory variable is an indicator variable denoting whether or not the company founder is a serial entrepreneur. Serial entrepreneurs have founded businesses before. The definitions of the other control variables are in Appendix 1. Robust p-values adjusted for lead VC firm clustering are in brackets beneath the parameter estimates. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels respectively. The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges.

Determinants of equity purchase price paid by the VC syndicate						
	OLS All entrepreneurs					
	Average share purchase price/ IPO offer price	Average share purchase price/ IPO offer price	Average share purchase price/ IPO offer price	*ln* Price paid per % of equity ownership (inflation-adjusted)	*ln* Price paid per % of equity ownership (inflation-adjusted)	*ln* Price paid per % of equity ownership (inflation-adjusted)
	(1)	(2)	(3)	(4)	(5)	(6)
Serial entrepreneur	0.062**	0.044*	0.018	0.167***	0.180***	0.151**
	[0.02]	[0.08]	[0.52]	[0.00]	[0.00]	[0.02]
Early stage investment by VC	−0.014	−0.013	−0.012	−0.107**	−0.108**	−0.051
	[0.57]	[0.59]	[0.67]	[0.05]	[0.05]	[0.40]
ln startup's total funding rounds	0.134***	0.135***	0.144***	0.487***	0.487***	0.477***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
ln VC syndicate size	0.034*	0.033*	0.037*	0.399***	0.400***	0.443***
	[0.08]	[0.10]	[0.07]	[0.00]	[0.00]	[0.00]
Lead VC reputation	0.292	0.310	1.014	5.863***	5.850***	3.903
	[0.72]	[0.70]	[0.37]	[0.00]	[0.00]	[0.14]
Founder-CEO	−0.007	−0.007	−0.027	0.073*	0.072*	0.015
	[0.72]	[0.74]	[0.24]	[0.10]	[0.10]	[0.75]
CEO Age	0.001	0.002	0.000	0.003	0.003	−0.002
	[0.33]	[0.28]	[0.91]	[0.31]	[0.32]	[0.56]
Portfolio entrepreneur		0.120	0.095		−0.089	−0.227
		[0.11]	[0.28]		[0.51]	[0.13]
ln geographical distance	0.004	0.004	0.004	0.016**	0.016**	0.014*
	[0.20]	[0.20]	[0.23]	[0.02]	[0.02]	[0.06]
ln startup age at first VC funding	0.028**	0.027**	0.034***	−0.018	−0.017	0.012
	[0.03]	[0.04]	[0.01]	[0.58]	[0.61]	[0.75]
Industry market-to-book ratio	0.086*	0.086*	0.136***	0.234***	0.233***	0.213**
	[0.07]	[0.07]	[0.01]	[0.01]	[0.01]	[0.03]
ln Lead VC fund size			0.017**			0.093***
			[0.04]			[0.00]
Intercept	−0.071	−0.056	−0.168	10.547***	10.536***	10.471***
	[0.71]	[0.77]	[0.42]	[0.00]	[0.00]	[0.00]
Lead VC type indicator (Bank, Corporate, Government)	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Law Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1236	1236	936	1236	1236	936
Adjusted R^2	17.65%	17.91%	20.75%	36.27%	36.24%	42.11%

This also indicates that the relation between startup valuation at VC funding and VC equity stake is not simply mechanical because while previously unsuccessful founders relinquish lower share ownership to the VCs they do not obtain more favorable valuations relative to the first-time entrepreneurs. Another possible explanation for why previously unsuccessful founders suffer only on valuations while receiving similar other terms as the previously successful founders is rooted in the critical significance of entrepreneurial effort in early stage ventures. Given their prior entrepreneurial experience, it is plausible that VCs chose to provide these founders with high powered incentives via cash flow and control rights while simultaneously extracting the cost through lower valuations.

Table 8 presents the multivariate analysis of startup valuations using all three founder types. I use six specifications with two different dependent variables as proxies for startup valuations. In the first three models, the dependent variable is the average share purchase price paid by the VC syndicate, divided by the IPO offer price.[21] In the last three models, the dependent variable is the

(*footnote continued*)
founders are 0.51 (0.44) and $2.1 M ($1.5 M) respectively. These differences across the two types of founders are significant at conventional statistical levels. The median values also obtain a similar pattern and statistical significance.

[21] The significance of the serial entrepreneur dummy is slightly stronger when the dependent variable is the (inflation-adjusted) average purchase

(inflation-adjusted) price paid by the VC syndicate for each shareholding percentage. All prices are winsorsized at the 5 and 95 percentiles to adjust for outliers.

In five of the six specifications, the coefficient on the serial entrepreneur dummy is positive and statistically significant. The inclusion of portfolio entrepreneur indicator along with the serial founder dummy appears to affect the power of the tests in which the dependent variable is the ratio of share purchase price to the IPO offer price. Importantly though, and consistent with the univariate statistics reported in Table 7, the multivariate analysis supports the hypothesis H_{4A} and indicates that startup insiders extract higher valuations from VCs when founders have the benefit of prior entrepreneurial experience. However, this finding is driven by previously successful serial founders since the results (not reported for space reasons) are stronger upon excluding startups founded by previously unsuccessful founders (see also Section 6 and Table 12). This is not surprising given the insignificant difference in VCs' equity purchase prices in startups backed by novice and previously unsuccessful serial founders (Table 7).

Among other significant results, I find that the number of funding rounds is positively related to startup valuations. This is expected given that my sample consists of successful IPO firms in which later venture rounds are typically funded at higher purchase prices. VC syndicate size is also consistently associated with higher valuations. Not surprisingly, valuations are greater when startups receive their first VC investment in periods of high industry market-to-book ratios, presumably because of presence of stronger growth opportunities.

Additionally, VCs invest in older startups at higher valuations, although this finding is limited to the first three models. Better reputable VCs appear to invest at greater valuations as well but the coefficient is statistically significant in only two of the six models. Larger VC funds also invest at higher valuations. Finally, VC transactions in distantly located companies (from their lead VCs) materialize at higher valuations as well, which is similar in spirit to Cumming et al. (2009), Chen et al. (2010), and Nahata et al. (2014).

4.5. Other startup characteristics (timing of initial VC funding; startup's operating performance)

Arranging timely capital for their startups is one of the major challenges that entrepreneurs face. Early access to funding is often vital for startups that look to maintain a first mover advantage and gain a competitive edge.[22] In Table 9, I model the startup's age when it first received VC investment. In keeping with the earlier findings and also consistent with Gompers et al. (2010), I find that startups backed by serial entrepreneurs (including previously unsuccessful ones) are funded by VCs earlier. While not directly related to most contractual features this finding is remarkable because although the serial founder backed startups are younger when they first receive venture capital, they obtain better deal terms than other startups.

Expectedly I also find that the startups are younger when VCs initially invest in their seed/ early development stage. Portfolio entrepreneur backed startups are older at the time of first round funding but this result is statistically significant in only the full sample comprising all founders. On the other hand, startups are younger when they are initially funded by larger VC funds. Finally, startups are older when they receive their initial funding from distantly-located lead VCs.

Since VC-backed IPOs are not a random sample, one possible concern is that the relation between entrepreneur type and deal terms could be because of startups' operating performance. For example, superior performance of startups backed by serial founders may increase their bargaining leverage, resulting in more company-favorable contracts.

To ascertain if serial entrepreneur backed startups also exhibit better operating performance at VC funding, I analyze three related performance metrics – profit margin, return on assets (ROA), and asset turnover ratio – before the startup goes public. Since startup characteristics such as equity ownership, board allocation, founder-CEO duality, and valuation are determined from the IPO prospectuses, the pre-IPO measures of performance are reasonable for assessing whether they matter for contractual differences across the startups.[23] For obtaining necessary data to analyze the pre-IPO performance, I use the Compustat database and IPO prospectuses.

The profit margin is defined as the ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to revenues. ROA is the ratio of EBITDA to total assets. Asset turnover ratio is the ratio of revenues to total assets. All three performance metrics are industry-adjusted and measured in the year before the IPO. In Table 10A, I present the univariate comparisons. Surprisingly, I find that the median profit margin of startups backed by serial founders is -0.52 which is significantly lower than the median profit margin of -0.31 for novice founder backed firms. The median profit margin of startups backed by previously unsuccessful entrepreneurs is also lower than that for novice founder backed firms but not statistically different. I find a similar pattern for the asset turnover ratio. Finally, the median ROA for serial entrepreneur backed startups is lower as well but the differences across founder types are not statistically significant.

In Table 10B I estimate the determinants of industry-adjusted profit margin in a multivariate framework with the primary variable

(*footnote continued*)

price paid per share by the VC syndicate. While this variable directly captures the average valuation ($ per share) offered by VCs at funding, it may not fully account for startup differences as aforementioned.

[22] The chief technology officer of Hewlett-Packard once highlighted the importance of speed-to-market, noting that getting a product to the marketplace 1 month earlier was typically worth more to H—P than its entire engineering and development cost. Reaching the market either 6 months earlier or 6 months later increased or decreased, respectively, a product's lifetime profits by one-third.

[23] When I include these performance measures as explanatory variables in regressions of contractual terms including startup valuations (Tables 4–6 and 8), none of them emerge significant, while the coefficients on the serial entrepreneur indicator continue to be qualitatively and statistically similar to the tabulated results. I do not report these regressions because I lose a few observations due to data unavailability on some of the performance metrics.

Table 9
Startup age at first VC funding.

The table presents OLS estimation of startup age at the company's initial VC funding. The key explanatory variable is an indicator variable denoting whether or not the company founder is a serial entrepreneur. Serial entrepreneurs have founded businesses before. Previously successful serial entrepreneurs are founders whose previous businesses either went public or were acquired, i.e. *did not* remain private. The definitions of the other control variables are in Appendix 1. Robust p-values adjusted for lead VC firm clustering are in brackets beneath the parameter estimates. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels respectively. The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges.

Determinants of startup age at initial VC funding

	ln startup age at first VC funding					
	OLS: All entrepreneurs			OLS: Excluding previously successful entrepreneurs		
	(1)	(2)	(3)	(4)	(5)	(6)
Serial entrepreneur	−0.304***	−0.337***	−0.321***	−0.192**	−0.227***	−0.278***
	[0.00]	[0.00]	[0.00]	[0.03]	[0.01]	[0.00]
Early stage investment by VC	−0.657***	−0.654***	−0.699***	−0.681***	−0.671***	−0.716***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lead VC reputation	−0.478	−0.444	−3.487*	1.114	1.172	−2.970
	[0.77]	[0.79]	[0.06]	[0.61]	[0.60]	[0.26]
Portfolio entrepreneur		0.234**	0.262**		0.242	0.371
		[0.03]	[0.05]		[0.33]	[0.22]
ln geographical distance	0.018***	0.018***	0.015**	0.023***	0.024***	0.017**
	[0.00]	[0.00]	[0.03]	[0.00]	[0.00]	[0.04]
Industry market-to-book ratio	−0.007	−0.009	−0.005	−0.065	−0.075	−0.098
	[0.93]	[0.92]	[0.96]	[0.55]	[0.49]	[0.43]
ln Lead VC fund size			−0.051***			−0.063***
			[0.01]			[0.01]
Intercept	1.819***	1.861***	2.527***	2.158***	2.187***	2.834***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lead VC type indicator (Bank, Corporate, Government)	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1262	1262	955	988	988	743
Adjusted R^2	18.99%	19.17%	20.85%	17.88%	17.89%	18.99%

of interest being the serial entrepreneur indicator.[24] I exclude previously unsuccessful founders from this analysis because their startups' performance is not significantly different from that of the startups founded by novice founders (Table 10A). As well, my focus is on contrasting the operating performance of previously successful serial founder- and novice entrepreneur-backed companies. I use four specifications. Models 1 and 3 exclude the portfolio entrepreneur indicator while models 3 and 4 control also for lead VC fund size.

In three of the four specifications, the serial entrepreneur indicator is significant and carries a negative coefficient. This indicates that the pre-IPO performance of startups founded by previously successful serial entrepreneurs is inferior compared to that of other startups. In contrast, startups founded by previously unsuccessful serial entrepreneurs do not perform any better or worse than novice founder backed startups (Table 10A). These findings suggest that the variation in contractual terms is likely not caused by firm performance.

The evidence on startup performance is also interesting for the following two implications. First, rather than company performance, it appears to be prior entrepreneurial experience that leads to more company-favorable contracts. In fact, despite poorer (or similar) operating performance, startups founded by previously successful serial entrepreneurs manage to obtain more favorable deal terms relative to novice entrepreneurs.

Second, relative to other founders when VCs fund previously successful serial entrepreneurs the 'jockey' (founder) seems to be weighted more than the 'horse' (startup). On the other hand, when previously unsuccessful serial entrepreneurs are funded, VCs do not appear to rely on the founders to the same extent; startup performance is important as well (see also Kaplan et al., 2009). At the very least, VCs seem to care that the performance of startups founded by previously unsuccessful serial entrepreneurs is not any worse than that of the startups founded by novice entrepreneurs. Overall, these results are consistent with the Hart-Moore-Holmstrom and resource-based theories of the firm that stress importance of both human and nonhuman capital.

In summary, the results on the timing of initial VC investment and startup performance are suggestive of prior entrepreneurial experience and learning being important in negotiations with the VCs. This is also true of previously unsuccessful founders whose ability/quality remains unproven on account of undistinguished prior and current performance, yet are able to obtain quicker VC funding and better contracts relative to the novice entrepreneurs.

[24] The serial entrepreneur indicator is not significant when industry-adjusted asset turnover is the dependent variable.

Table 10
Company performance before the IPO.

Panel A presents summary statistics of company's industry-adjusted operating performance before its IPO. Company's industry-adjusted operating performance is measured on three key metrics: excess profit margin measured as industry-adjusted ratio of operating profit (EBITDA) to sales, excess ROA measured as industry-adjusted ratio of EBITDA to total assets, and excess asset turnover measured as industry-adjusted ratio of sales to total assets. The data on sales, operating profit, and assets are sourced from Compustat and IPO prospectuses. The key explanatory variable is a dummy variable denoting whether or not the company founder is a serial entrepreneur. Serial entrepreneurs have founded businesses before. Previously unsuccessful serial entrepreneurs are founders whose previous businesses remained private, i.e. neither went public nor were acquired. Panel B presents OLS estimation of company's excess profit margin in the year before its IPO. I winsorsize the excess profit margin at 1% and 99% levels to adjust for outliers and use a logarithmic transformation, ln (1000 + excess profit margin), as the dependent variable. The definitions of the other control variables are in Appendix 1. Robust p-values adjusted for lead VC firm clustering are in brackets beneath the parameter estimates. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels respectively. The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges.

Panel A: Company's industry-adjusted profit margin, ROA, and asset turnover before IPO

	EBITDA/Sales Median	Obs.	EBITDA/Assets Median	Obs.	Sales/Assets Median	Obs.
All serial entrepreneurs	−0.52	324	−0.32	357	−0.29	354
Previously unsuccessful serial entrepreneurs	−0.41	80	−0.34	83	−0.29	83
Novice entrepreneurs	−0.31	826	−0.27	902	−0.13	895
Tests of equality (p-value)						
All serial entrepreneurs vs. novice entrepreneurs	0.00***		0.19		0.00***	
Previously unsuccessful vs. novice entrepreneurs	0.23		0.32		0.54	

Panel B: Determinants of company's industry-adjusted (excess) profit margin in the year before IPO

	OLS: Company's industry-adjusted performance (Excess profit margin)			
	Excluding previously unsuccessful entrepreneurs			
	(1)	(2)	(3)	(4)
Serial entrepreneur	−0.009**	−0.008*	−0.009*	−0.006
	[0.05]	[0.10]	[0.07]	[0.24]
Early stage investment by VC	0.002	0.002	0.000	0.001
	[0.50]	[0.48]	[0.92]	[0.80]
ln startup's total funding rounds	−0.006	−0.006*	−0.004	−0.004
	[0.11]	[0.10]	[0.33]	[0.24]
ln VC syndicate size	0.000	0.000	0.000	0.000
	[0.99]	[0.98]	[0.88]	[0.94]
Lead VC reputation	−0.036	−0.038	−0.144	−0.153
	[0.69]	[0.67]	[0.40]	[0.36]
Founder-CEO	0.003	0.003	0.004	0.003
	[0.22]	[0.22]	[0.23]	[0.26]
CEO Age	0.000	0.000	0.000	0.000
	[0.81]	[0.86]	[0.59]	[0.49]
Portfolio entrepreneur		−0.007		−0.021
		[0.62]		[0.30]
ln geographical distance	0.000	0.000	0.000	0.000
	[0.52]	[0.53]	[0.39]	[0.40]
ln startup age at first VC funding	0.005***	0.005***	0.003**	0.004***
	[0.00]	[0.00]	[0.02]	[0.01]
Industry market-to-book ratio	−0.019***	−0.019***	−0.015**	−0.016***
	[0.00]	[0.00]	[0.02]	[0.01]
Total VC share ownership	0.000	0.000	0.000	0.000
	[0.32]	[0.32]	[0.83]	[0.72]
ln Lead VC fund size			0.000	0.000
			[0.64]	[0.65]
Intercept	6.957***	6.957***	6.968***	6.969***
	[0.00]	[0.00]	[0.00]	[0.00]
Lead VC type indicator (Bank, Corporate, Government)	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Law Firm fixed effects	Yes	Yes	Yes	Yes
Observations	1070	1070	808	808
Adjusted R^2	4.38%	4.36%	3.96%	4.53%

Taken together, the evidence in this section indicates that the previously successful serial entrepreneurs obtain the most favorable contracts, overall, in negotiations with the VCs, followed by previously unsuccessful founders and novice entrepreneurs in that order.

5. Adjusting for sample selection

In my sample of VC-backed entrepreneurs, one of the concerns relates to unobservable characteristics, company quality for example, driving both i) the likelihood of a serial entrepreneur founded firm and ii) the contracts one is likely to negotiate with the VCs. If this is the case, the OLS framework would fail to incorporate the role that omitted variables could have on the outcome equations, i.e. contractual terms. As one of my robustness checks, I use the Heckman procedure to correct for the sample-induced endogeneity and generate consistent model estimates. In the first-step probit model, I determine the likelihood that among my sample of VC-backed IPOs, the firm is founded by a serial entrepreneur. The independent variables in the first step selection equation (probit model) include the population of the state when the startup was founded and is headquartered, the market to book ratio in the startup's industry in the year of its *founding,* and industry fixed effects. The principal instrumental variable in the selection equation is the state population which is unlikely to directly affect the contractual details. Areas with greater population are likely to have a better developed commercial ecosystem (e.g., labor market) that is more conducive to starting new businesses. Serial founders that are well-versed with the challenges of starting and running businesses are more likely to be present in populous areas to launch their firms. Anecdotally as well, in US, more populous states such as California, Texas, and New York are hotbeds of entrepreneurial activity.

As expected, I find that serial entrepreneurs tend to come from more populous states.[25] As well, they are likely to float their startups in better industry conditions. Gompers et al. (2010) argue that the serial entrepreneurs' timing capability (when to float their startups) can also be construed to be a proxy, albeit an extremely coarse and single-dimensional one, for their innate ability/skill. While it is difficult to measure inherent ability/skill and distinguish it from learning by doing (as they can build on each other) there exists some literature in entrepreneurship that tries to investigate their performance implications, an analysis where such distinction is perhaps important. In this study, I do not separate the two to determine their individual impact on contractual terms. Instead, I adopt the reasonable view that prior founding experience encompasses ability/skill as well as previous learning, and is expected to broadly incorporate facets of each. The overall evidence also indicates that entrepreneurial ability (or quality) is unlikely to fully explain the findings. First, if serial entrepreneurs were all of higher quality, they should receive funding more often from VCs that had already backed their previous ventures but only 33% of the serial founders do (see Section 6 below). Second, the evidence on previously unsuccessful serial entrepreneurs suggests also a learning-based story rather than purely a quality-based explanation, given that in 89% of cases the serial founders' prior venture and current business are in the same industry (see also Eggers and Song, 2015). While they may not be as reputable or able as previously successful serial founders on account of their prior track record, their more favorable contracts relative to those of first-time entrepreneurs point toward previous entrepreneurial learning being an important factor in negotiations with the VCs.

In the second-step regression, I include the inverse Mills ratio obtained from the first-step estimation as an additional regressor in the models of Tables 4–6 and 8. I find the second-step estimates to be qualitatively and statistically similar to those reported in these tables. The inverse Mills ratio is statistically significant in a few specifications, which indicates that adjustment for possible endogeneity due to unobservable variables is important. (The Heckman correction results are not reported to conserve space but available upon request.)

To further control for possible selection bias, I adopt a second approach by creating comparable samples of serial entrepreneur-backed and novice entrepreneur-founded startups using the propensity score matching technique. The serial entrepreneur backed startups may have features different from other startups, as shown for example, by the Heckman correction procedure. Also as noted earlier, VCs tend to fund serial founder backed startups sooner. For creating comparable samples, propensity scores are used to select 'control' units that are most like the 'treatment' units across a variety of characteristics (Dehejia and Wahba, 2002). The 'treatment' and 'control' units for the purpose of this analysis and subsequent discussion are serial entrepreneur-founded and novice entrepreneur-founded startups respectively.[26]

The first step in propensity score matching is to estimate a logistic regression predicting whether the VC-funded startup going public is backed by a serial entrepreneur or not. The dependent variable equals 1 if the startup is founded by serial entrepreneur and 0 otherwise. The explanatory variables used in the matching criteria are: population of the state when the startup was founded and is headquartered, the market to book ratio in the startup's industry in the year of its *founding*, startup age when it first received VC funding, lead VC's reputation, and a post-SOX indicator denoting whether or not the IPO occurred post 2002. Startup age and lead VC reputation are deal specific[27] and in part may reflect the quality of the startups also. Plausibly, better quality startups are financed by

[25] In an alternate first-stage specification, instead of state population, I include an indicator variable denoting whether the startup was based in the states of California or Massachusetts–states most active in VC investments. This variable also significantly drives serial entrepreneurship, thus highlighting a thriving ecosystem in these states, which is much conducive to starting new ventures. I do not include the California-Massachusetts dummy along with state population in the first-stage specification because they are highly correlated ($\rho = 0.65$). Also, when included in the second stage regressions involving insider board representation, VC equity ownership, founder-CEO duality, and startup valuation, this indicator variable (or separate dummy variables for California and Massachusetts) never emerges significant.

[26] A notable feature of the method is that once the samples are matched on several relevant characteristics, the remaining unmatched comparison sample is discarded, and is not directly used in estimating the treatment impact. The more comparable the two samples are across the relevant characteristics, the less biased are the estimates based on traditional estimation techniques such as the OLS.

[27] These two variables are excluded from the first stage of Heckman procedure that models the likelihood of a serial entrepreneur founded firm, because that event predates the initial VC transaction.

more reputable VCs and are also funded sooner. By also matching on these two variables, I alleviate the concern that the underlying quality of serial entrepreneur backed startups may be driving the results. Of course, propensity score matching can only use observable characteristics whereas the underlying quality is largely a latent variable. The post-SOX indicator controls for the possibility that the passage of Sarbanes-Oxley Act may have affected the propensity of serial entrepreneur backed startups (relative to novice founder backed firms) to go public.[28] Iliev (2010), for instance, finds that SOX compliance has led to a significant increase in costs which are likely to be even more burdensome for younger firms. On the other hand, Johnston and Madura (2009), Ekkayokkaya and Pengniti (2012), and Akyol et al. (2014) find that the IPO underpricing costs have declined post-enactment of corporate governance reforms like SOX. The regulatory requirements can thus have implications for the quality of firms debuting in the public markets.

To match the 'treatment' and 'control' samples, I first estimate the propensity scores for each serial entrepreneur- and novice entrepreneur-backed startup. The propensity scores are derived from the logistic model estimates combined with the values of the five regressors. For each 'treatment' observation I seek the match from the 'control' sample, using the nearest-neighbor method without replacement. The matching follows the following criteria: choose the matched observations based on the minimal absolute difference in propensity scores of 'treatment' and 'control' firm, subject to industry matching on 2-digit SIC codes (in a few cases when the 2-digit SIC code matches are unavailable the matching is by single-digit SIC codes.)

The differences in characteristics (including the propensity scores) across the two samples of matched startups are statistically insignificant thus ensuring that the two samples are well-matched, including on industry. More importantly, on estimating the models of Tables 4–6 and 8 in the reduced but carefully-matched samples comprising *all* entrepreneurs (including previously successful), I find the results to be qualitatively similar to those reported in these tables.[29] (These findings are also not reported for brevity but available upon request.)

6. Additional tests

In this section, I evaluate robustness of the results to some more tests. One major difference from previous research (e.g., Gompers et al., 2010; Bengtsson, 2013) is that my sample includes all entrepreneurs whether or not they received VC funding in the past. If a few serial entrepreneurs were VC-backed earlier, then it is quite likely that they received funding from the same firm that also financed their current venture. This raises the question: does relationship investing – repeat entrepreneur-VC deals across more than one startup – have an impact on deal terms? For example, contracts between mutually better-informed VCs and entrepreneurs because of their prior financial relationships (Gompers et al., 2010) may look different due to reduced adverse selection risk.

I find that of the 357 serial entrepreneurs, 158 (44%) received VC funding for their previous startups. And 52 of the 158 (33%) startups were backed by the same VC firm that financed the serial founders' current venture also; the 33% being similar to the findings in Bengtsson (2013) but higher than the percentage reported in Gompers et al. (2010).[30] I create two dummy variables denoting i) whether a serial entrepreneur received VC funding in the past, and ii) whether the funding came from the same VC firm. Upon including them in the regressions, the two indicators are mostly insignificant in explaining the deal terms. On the other hand, the analysis in Tables 4–6 and 8 continues to be very robust barring one aforementioned exception – the introduction of portfolio entrepreneur dummy alongside the serial entrepreneur indicator in the valuation regression explaining average share purchase price to IPO offer price seems to affect the power of the tests and the statistical significance of the serial entrepreneur indicator. Overall however, the positive impact of prior founding experience on startup valuation remains significant.

Second, I analyze the impact of serial entrepreneurship on VC board representation (ratio of VC board seats to the board size) to determine if VC influence reduces with prior entrepreneurial experience. If VCs receive lower board representation in serial founder backed startups, it would align with the findings on both insider board representation and VC share ownership.[31] In Table 11, I report the analysis of VC board representation. Across all the specifications, I find that VCs receive a significantly lower fraction of board seats in startups backed by serial founders.

Third, to address potential endogeneity between VC ownership and insider board representation, as they may be jointly determined, I estimate a simultaneous two-equation system modeling the two. I allow VC ownership as an independent variable in the model for insider board representation and vice versa. My earlier findings about the significant impact of prior entrepreneurship on both VC equity ownership and insider board representation continue to hold.

Fourth, although VentureXpert's coverage of pre-money (and post-money) valuation at VC funding events is extremely incomplete, yet I gather data on these valuations at the last round before IPO for analyzing the impact of serial entrepreneurship on the *reported* pre-money valuations. This analysis is meant to provide further robustness to the earlier reported results that were based on imputed valuations.[32] In Table 12, the dependent variable is the natural log of pre-money valuation in the last round before IPO. I report six models, three including all founders and three excluding previously unsuccessful entrepreneurs. In five of the six models, I find that serial entrepreneurs, particularly those that are successful, obtain higher pre-money valuations. Among other results, startups run by

[28] The fraction of serial entrepreneur backed IPOs shows an increasing trend in the post-2002 period (Table 1).

[29] Exclusion of previously successful entrepreneurs results in a matched sample of only 166 observations comprising previously unsuccessful and novice founders, making it difficult to have a meaningful empirical analysis.

[30] See also Wright et al. (1997) for evidence on VCs' repeated interactions with serial entrepreneurs including those that were funded by the same VC firm.

[31] Given a relatively low correlation of −0.38 between insider and VC board representation in my sample, the analysis of VC board representation is not moot despite the findings on insider board representation.

[32] The pre-money valuations are winsorsized at the 1% and 99% cutoffs. The results using post-money valuations instead are qualitatively identical.

Table 11
VC board representation.

The table presents OLS estimation of VC board representation in the company. The key explanatory variable is an indicator variable denoting whether or not the company founder is a serial entrepreneur. Serial entrepreneurs have founded businesses before. Previously successful serial entrepreneurs are founders whose previous businesses either went public or were acquired, i.e. *did not* remain private. The definitions of the other control variables are in Appendix 1. Robust p-values adjusted for lead VC firm clustering are in brackets beneath the parameter estimates. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels respectively. The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges.

Determinants of VC board representation at IPO

	VC board representation							
	OLS: All entrepreneurs				OLS: Excluding previously successful entrepreneurs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Serial entrepreneur	−0.044***	−0.038***	−0.038***	−0.042***	−0.047**	−0.046*	−0.046**	−0.068***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.04]	[0.06]	[0.05]	[0.01]
Early stage investment by VC	0.001	0.001	0.001	−0.003	−0.006	−0.006	−0.005	−0.001
	[0.93]	[0.95]	[0.91]	[0.82]	[0.60]	[0.59]	[0.67]	[0.92]
ln startup's total funding rounds	0.022**	0.021**	0.025***	0.023*	0.028***	0.028***	0.031***	0.030**
	[0.02]	[0.02]	[0.01]	[0.06]	[0.00]	[0.00]	[0.00]	[0.02]
ln VC syndicate size	0.066***	0.066***	0.070***	0.073***	0.067***	0.067***	0.072***	0.079***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lead VC reputation	−0.381	−0.390	−0.336	−0.042	−0.448	−0.448	−0.396	−0.651
	[0.15]	[0.14]	[0.22]	[0.91]	[0.16]	[0.16]	[0.23]	[0.27]
Founder-CEO	−0.006	−0.006	−0.005	0.019*	−0.006	−0.006	−0.006	0.016
	[0.52]	[0.49]	[0.56]	[0.06]	[0.52]	[0.52]	[0.55]	[0.15]
CEO Age	0.001	0.000	0.000	0.001**	0.000	0.000	0.000	0.001
	[0.41]	[0.45]	[0.51]	[0.05]	[0.58]	[0.57]	[0.65]	[0.18]
Portfolio entrepreneur		−0.044	−0.046*	−0.024		−0.007	−0.009	−0.097*
		[0.11]	[0.10]	[0.40]		[0.93]	[0.91]	[0.08]
ln geographical distance	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001
	[0.15]	[0.15]	[0.11]	[0.21]	[0.26]	[0.26]	[0.21]	[0.54]
ln startup age at first VC funding	−0.023***	−0.023***	−0.021***	−0.023***	−0.021***	−0.021***	−0.020***	−0.021***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Industry market-to-book ratio	0.002	0.002	0.002	−0.009	−0.009	−0.009	−0.009	0.001
	[0.92]	[0.91]	[0.92]	[0.68]	[0.66]	[0.67]	[0.68]	[0.96]
ln Total VC investment			−0.004	0.001			−0.004	−0.003
			[0.51]	[0.83]			[0.56]	[0.69]
ln Lead VC fund size				−0.006				−0.005
				[0.15]				[0.29]
Intercept	0.239***	0.232***	0.262***	0.152	0.135	0.134	0.164	0.147
	[0.00]	[0.00]	[0.01]	[0.15]	[0.18]	[0.18]	[0.14]	[0.24]
Lead VC type indicator (Bank, Corporate, Government)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Law Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1262	1262	1244	942	988	988	973	732
Adjusted R^2	15.63%	15.77%	15.38%	17.07%	17.42%	17.33%	17.07%	20.62%

founder CEOs receive higher valuations and so do companies that are older, receive funding over greater number of rounds, and are funded by larger VC syndicates. Predictably, companies funded in earlier stages of development receive lower pre-money valuations on account of their greater risk. As well, startups backed by portfolio entrepreneurs receive lower valuations at VC funding.

Fifth, a likely concern is that the relation between serial entrepreneurship and contracting could be driven by expected long-run startup performance, which is not yet reflected in pre-IPO performance. So, I also evaluate startups' post-IPO performance for additional robustness.

I analyze Tobin's Q, return on assets, profit margin, and asset turnover ratio, 5 years post-IPO. For example, for firms that went public in 2011, the variables are measured at year-end 2016. The Tobin's Q is measured as (total assets – book value of equity + market value of equity)/total assets, and is based on Compustat data, while the other variables are as defined earlier. The four variables are available for firms that do not delist within 5 years of their IPOs. In line with the pre-IPO performance, I find that the median values of all four performance metrics distinguished by serial and novice founders are statistically indistinguishable.

I also contrast the 3-year post-IPO patent counts and citations for startups backed by serial and novice founders. The patents' data are available until 2010 and drawn from Kogan et al. (2017).[33] Patents-based measures of innovation output are quite pertinent for

[33] I thank the authors for making the data publicly available for future research.

Table 12
Startup pre-money valuation.

The table presents OLS estimation of pre-money valuation at the last VC round before the IPO. The key explanatory variable is a dummy variable denoting whether or not the company founder is a serial entrepreneur. Serial entrepreneurs have founded businesses before. Previously unsuccessful serial entrepreneurs are founders whose previous businesses remained private, i.e. neither went public nor were acquired. The definitions of the other control variables are in Appendix 1. The variables, whether the VC investment occurred at startup's seed/early developmental stage, startup age, and the industry market to book ratio, are computed at the time of the funding round. Robust p-values adjusted for lead VC firm clustering are in brackets beneath the parameter estimates. ***, **, and * indicate statistical significance at the 1, 5, and 10% levels respectively. The sample includes VC-backed IPOs completed in the 1996–2011 period by U.S. firms that list on major U.S. stock exchanges.

Determinants of Pre-Money valuation at the last VC funding round before IPO

	All entrepreneurs			Excluding previously unsuccessful entrepreneurs		
	OLS: *ln* pre-money valuation at the last VC funding round before IPO (inflation-adjusted)					
	(1)	(2)	(3)	(4)	(5)	(6)
Serial entrepreneur	0.150**	0.221***	0.114	0.238***	0.320***	0.162*
	[0.04]	[0.00]	[0.20]	[0.00]	[0.00]	[0.10]
Early stage investment by VCs at the funding round	−0.436***	−0.427***	−0.506***	−0.369***	−0.356***	−0.433***
	[0.00]	[0.00]	[0.00]	[0.01]	[0.01]	[0.01]
ln startup's total funding rounds	0.376***	0.362***	0.383***	0.396***	0.384***	0.423***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
ln VC syndicate size	0.280***	0.284***	0.394***	0.258***	0.264***	0.370***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lead VC reputation	4.969	4.976	3.859	1.588	1.621	0.324
	[0.13]	[0.13]	[0.20]	[0.72]	[0.72]	[0.92]
Founder-CEO	0.126**	0.121**	0.150**	0.125**	0.119*	0.148**
	[0.04]	[0.05]	[0.03]	[0.05]	[0.07]	[0.05]
Portfolio entrepreneur		−0.467***	−0.601***		−0.515***	−0.558***
		[0.00]	[0.00]		[0.00]	[0.00]
ln geographical distance	0.006	0.006	−0.001	0.004	0.004	−0.002
	[0.55]	[0.52]	[0.96]	[0.70]	[0.66]	[0.86]
ln startup age at the funding round	0.109*	0.109*	0.180***	0.119*	0.120*	0.187***
	[0.07]	[0.07]	[0.01]	[0.07]	[0.07]	[0.00]
Industry market-to-book ratio at the funding round	−0.103	−0.101	−0.113	−0.071	−0.071	−0.086
	[0.25]	[0.25]	[0.21]	[0.47]	[0.47]	[0.38]
ln Lead VC fund size			0.076***			0.070**
			[0.00]			[0.02]
Intercept	10.909***	10.815***	10.673***	10.878***	10.771***	10.616***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Lead VC type indicator (Bank, Corporate, Government)	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Law Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	904	904	670	842	842	631
Adjusted R^2	24.06%	24.59%	30.56%	23.97%	24.51%	29.83%

evaluating performance of young firms. Consistent with the results based on traditional measures of financial and operating performance, I find that both patent counts and citations are also indistinguishable across startups backed by serial and novice founders.

Finally, I analyze the delisting frequencies of startups over the subsequent 5 years after IPO. About 47.8% of novice founder backed startups and 45.7% of serial entrepreneur backed firms are delisted during the 5 year period, the percentages being statistically indistinguishable as well. Overall, the evidence on post-IPO performance again indicates that the variation in deal terms is driven primarily by prior entrepreneurial experience and not by startup performance.

A few results in this section are not reported to save space but they are available on request.

7. Discussion and conclusion

Prior founding experience matters. In this study I empirically investigate the impact of serial entrepreneurship on one important dimension of fundraising, namely, the deal terms negotiated by the providers and recipients of capital. The main finding is that in VC-backed startups founded by serial entrepreneurs, the contracts are more company-favorable. This manifests in multiple ways. Founders and other insiders retain not only greater board control but also suffer less dilution of equity in their dealings with VCs. Second, serial founders are more likely to retain their CEO positions. Third, startups are able to extract higher valuations from the VCs, although this finding is confined to companies founded by previously successful founders who also obtain the best contracts. Interestingly, these results obtain despite poorer performance of serial entrepreneur backed startups and VCs funding them sooner. Finally, even previously unsuccessful serial entrepreneurs obtain generally better contracts than first-time founders, which again

highlights the importance of prior entrepreneurial learning and experience.

These results remain robust even after controlling for the possibilities that serial founders were VC-backed in their earlier ventures or had received VC funding from the same firm. In fact, relationship investing (which can potentially lower adverse selection risk due to prior financial relation) is not significant in explaining any of the deal terms. Other tests that include Heckman correction, propensity score matching, and controls for startup performance also do not qualitatively alter the primary findings. As well, company or entrepreneur's quality, while important, seems unlikely to be the sole driver of reported results. This suggests that prior founding experience and entrepreneurial learning are important to the outcomes of contract negotiations between entrepreneurs and the VCs.

It is worth noting two key differences from prior studies that are closest to this paper. First, unlike Kaplan and Stromberg (2003) and Bengtsson and Sensoy (2011, 2015) in which the primary emphasis is not on serial entrepreneurship, I consistently find that serial founders obtain better deal terms. Second, my finding that even previously unsuccessful serial founders obtain better contracts than novice entrepreneurs is novel and has not been presented in earlier work.

In reflecting on these findings, a few issues merit discussion. First, it is possible that serial founders, particularly successful, are wealthy and thus may not require the same amount of VC investment. Moreover, their deeper pockets may enhance their bargaining leverage in discussions with VCs. If so, their contracts are likely to be less investor-favorable. While I lack information on founders' personal wealth, it is worth noting that even previously unsuccessful entrepreneurs – who may not have deep pockets – negotiate better contracts than first-time entrepreneurs. Notably also, most contractual terms obtained by previously successful and unsuccessful *serial* founders are very similar and so are the timing of first VC investment and the pre-IPO performance in their startups. Previously successful serial founders may be wealthier by virtue of their earlier success but they obtain very similar contracts as previously unsuccessful entrepreneurs. This alleviates the concern that founders' personal wealth is the primary driver of the observed variation in deal terms. Finally, companies founded by serial entrepreneurs are younger when they receive their initial VC investment, which seems contrary to the expectation that wealthy entrepreneurs are likely to approach VCs later given the personal wealth at their disposal.

Second, my findings are conditional on companies receiving venture capital. There may be serial entrepreneurs, previously successful, who are just not interested in raising VC although they are likely to be much advantaged in doing so. There may also be previously unsuccessful founders who are simply unable to raise venture financing given their checkered past. Although I am unable to observe such entrepreneurs, extant evidence suggests that previously successful founders receive venture funding more often and that even previously unsuccessful entrepreneurs are as likely to raise venture capital as novice founders (Hsu, 2007). As such, given the data limitation regarding non-VC-backed serial founders, this paper is about serial entrepreneurship in VC-backed firms. And the overall evidence – including on previously unsuccessful founders who did raise venture funding – indicates that prior entrepreneurial experience, even if it did not result in success, matters for future entrepreneurship.

Looking to future extensions, it would be interesting to analyze the role of preplanned exits (Cumming and Johan, 2008) in the formation of VC-entrepreneur contracts with particular focus on serial founders. Are the preplanned exit expectations of the investors based, for instance, on the manner of prior exits (IPOs, acquisitions, or failures) by the serial entrepreneurs? Second, while my findings are limited to U.S. data, cross-country analysis of financial contracting with emphasis on serial founders may also be a fruitful avenue for future research in the fields of finance and entrepreneurship.

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Appendix 1. List of variables

Variable	Explanation	Data sources
Average share purchase price	VC syndicate's average purchase price for startup shares measured as the total VC investment divided by total shares held in the startup by the VCs as of the IPO date	– IPO Prospectus – VentureXpert Database – CRSP
Average share purchase price relative to IPO offer price	Average share purchase price divided by the IPO offer price	– IPO Prospectus – VentureXpert Database – CRSP
CEO age	Age of Company's CEO at the IPO	– IPO Prospectus
Early stage investment by VC	An indicator variable denoting whether the startup first received VC investment in its seed/early developmental stage	– VentureXpert Database
Founder-CEO	An indicator variable denoting whether the CEO is also the founder	– IPO Prospectus

Geographical distance	Geographical distance between the states of company headquarters and its lead VC firm	– VentureXpert Database – Web Searches – State's average Latitude and Longitude data
Industry-adjusted asset turnover	Ratio of Sales to Total assets in the year prior to the IPO minus the median Sales/Total assets ratio in the startup's industry in the same year	– Compustat – IPO Prospectus
Industry-adjusted profit margin	Ratio of EBITDA to Sales in the year prior to the IPO minus the median EBITDA/Sales ratio in the startup's industry in the same year	– Compustat – IPO Prospectus
Industry-adjusted ROA	Ratio of EBITDA to Total assets in the year prior to the IPO minus the median EBITDA/Total assets ratio in the startup's industry in the same year	– Compustat – IPO Prospectus
Industry market-to-book ratio	Median annual market-to-book in the startup industry at the time of initial VC investment in the startup	– Compustat
Insider board representation	Officer-director board seats divided by total board seats	– IPO Prospectus
Lead VC fund size	Size of (lead) VC fund that invested in company	– VentureXpert Database
Lead VC reputation	Reputation of the lead VC firm measured by the (normalized) cumulative market capitalization of portfolio companies taken public by the VC firm as of the year-end prior to the VC's first investment in the startup. (Nahata, 2008)	– VentureXpert Database – CRSP
Pre-Money Valuation	Price paid per share in the financing round multiplied by the shares outstanding prior to the financing round	– VentureXpert Database
Portfolio entrepreneur	An indicator variable denoting whether the serial entrepreneur is concurrently running another private firm he/she founded earlier.	– IPO Prospectus – Web Searches
Price paid per % of equity ownership	Total investment by the VC syndicate divided by percent share ownership	– VentureXpert Database – IPO Prospectus
Startup age at first VC funding	Age of the startup when the VC first invested in the startup	– VentureXpert Database – IPO Prospectus
Startup's total funding rounds	Number of funding rounds received by the startup	– VentureXpert Database
Serial entrepreneur	An indicator variable denoting whether or not the company founder is a serial entrepreneur. Serial entrepreneurs have founded businesses before	– IPO Prospectus
Total VC investment	Total investment by all VCs in the startup	– VentureXpert Database
Total VC share ownership	Total shareholdings (%) of all VCs in the startup	– IPO Prospectus
VC board representation	Board seats held by VCs divided by total board seats	– IPO Prospectus
VC syndicate size	Size of the total VC syndicate	– VentureXpert Database – IPO Prospectus

References

Admati, A., Pfleiderer, P., 1994. Robust financial contracting and the role of venture capitalists. J. Financ. 49, 371–402.
Akyol, A.C., Cooper, T., Meoli, M., Vismara, S., 2014. Do regulatory changes affect the underpricing of European IPOs? J. Bank. Financ. 45, 43–58.
Alvarez, S.A., Barney, J.B., 2007. Discovery and creation: alternate theories of entrepreneurial action. Strateg. Entrep. J. 11–26.
Armour, J., Cumming, D., 2006. The legislative road to Silicon Valley. Oxf. Econ. Pap. 58, 596–635.
Baron, R.A., 1998. Cognitive mechanisms in entrepreneurship: why and when entrepreneurs think differently than other people. J. Bus. Ventur. 13, 275–294.
Begley, T.M., Tan, W.L., 2001. The socio-cultural environment for entrepreneurship: a comparison between East Asian and Anglo-Saxon countries. J. Int. Bus. Stud. 32, 537–553.
Bengtsson, O., 2013. Relational venture capital financing of serial founders. J. Financ. Intermed. 22, 308–334.
Bengtsson, O., Hsu, D., 2015. Ethnic matching in the U.S. venture capital market. J. Bus. Ventur. 30, 338–354.
Bengtsson, O., Sensoy, B., 2011. Investor abilities and financial contracting: evidence from venture capital. J. Financ. Intermed. 20, 477–502.
Bengtsson, O., Sensoy, B., 2015. Changing the nexus: the evolution and renegotiation of venture capital contracts. J. Financ. Quant. Anal. 50, 349–375.
Berglöf, E., 1994. A control theory of venture capital finance. J. Law Econ. Org. 10, 247–267.
Blanchflower, D., Oswald, A., 1998. What makes an entrepreneur? J. Labor Econ. 16, 26–60.
Brigham, K., 2001. Entrepreneurship and Cognitive Fit. PhD Dissertation. University of Colorado.
Brigham, K.H., DeCastro, J.O., 2003. Entrepreneurial fit: the role of cognitive misfit. In: Katz, J.A., Shepherd, D.A. (Eds.), Cognitive Approaches to Entrepreneurship Research. Elsevier, Oxford, pp. 37–71.
Busenitz, L.W., Barney, J.B., 1997. Differences between entrepreneurs and managers in large organizations: biases and heuristics in strategic decision-making. J. Bus. Ventur. 12, 9–30.
Cardon, M.S., Stevens, C.E., Potter, D.R., 2011. Misfortunes or mistakes? Cultural sensemaking of entrepreneurial failure. J. Bus. Ventur. 26, 79–92.
Casamatta, C., 2003. Financing and advising: optimal financial contracts with venture capitalists. J. Financ. 58, 2059–2086.
Cave, F.D., Eccles, S.A., Rundle, M., 2001. An exploration of attitudes to entrepreneurial failure: a learning experience or an indelible stigma? In: Proceedings of the 2001 Babson College-Kauffman Foundation Entrepreneurship Research Conference: Jonkoping, Sweden.
Chatterji, A., 2009. Spawned with a silver spoon? Entrepreneurial performance and innovation in the medical device industry. Strateg. Manag. J. 30, 185–206.
Chen, H., Gompers, P., Kovner, A., Lerner, J., 2010. Buy local? The geography of successful venture capital cxpansion. J. Urban Econ. 67, 90–102.
Colombo, M., Meoli, M., Vismara, S., 2019. Signaling in science-based IPOs: the combined effect of affiliation with prestigious universities, underwriters, and venture capitalists. J. Bus. Ventur. 34, 141–177.
Cope, J., 2005. Toward a dynamic learning perspective of entrepreneurship. Enterp. Theory Pract. 29, 373–398.
Cope, J., 2011. Entrepreneurial learning from failure: an interpretative phenomenological analysis. J. Bus. Ventur. 26, 604–623.
Cope, J., Cave, F., Eccles, S., 2004. Attitudes of venture capital investors towards entrepreneurs with previous business failure. In: Venture Capital: An International Journal of Entrepreneurial Finance, pp. 147–172.

Corbett, A., 2005. Experiential learning within the process of opportunity identification and exploitation. Enterp. Theory Pract. 29, 473–491.
Coval, J.D., Moskowitz, T.J., 1999. Home bias at home: local equity preference in domestic portfolios. J. Financ. 54, 2045–2074.
Coval, J.D., Moskowitz, T.J., 2001. The geography of investment: informed trading and asset prices. J. Polit. Econ. 109, 811–841.
Cumming, D.J., 2006. Corporate venture capital contracts. J. Altern. Invest. 9, 40–53.
Cumming, D.J., 2008. Contracts and exits in venture capital finance. Rev. Financ. Stud. 21, 1947–1982.
Cumming, D.J., Dai, N., 2010. Local bias in venture capital investments. J. Empir. Financ. 17, 362–380.
Cumming, D.J., Dai, N., 2011. Fund size, limited attention and valuation of venture capital backed firms. J. Empir. Financ. 18, 2–15.
Cumming, D., Johan, S., 2008. Preplanned exit strategies in venture capital. Eur. Econ. Rev. 52, 1209–1241.
Cumming, D.J., Fleming, G., Schwienbacher, A., 2009. Style drift in private equity. J. Bus. Financ. Acc. 36, 645–678.
Cumming, D., Walz, U., Werth, J.C., 2016. Entrepreneurial spawning: experience, education, and exit. Financ. Rev. 51, 507–525.
De Bettignies, J.E., 2008. Financing the entrepreneurial venture. Manag. Sci. 54, 151–166.
Dehejia, R.H., Wahba, S., 2002. Propensity score matching methods for non-experimental causal studies. Rev. Econ. Stat. 84, 151–161.
Eggers, J.P., Song, L., 2015. Dealing with failure: serial entrepreneurs and the costs of changing industries between ventures. Acad. Manag. J. 58, 1785–1803.
Ekkayokkaya, M., Pengniti, T., 2012. Governance reform and IPO underpricing. J. Corp. Finan. 18, 238–253.
Evans, D., Jovanovic, B., 1989. An estimated model of entrepreneurial choice under liquidity constraints. J. Polit. Econ. 97, 808–827.
Evans, D., Leighton, L., 1989. Some empirical aspects of entrepreneurship. Am. Econ. Rev. 79, 519–535.
Giannetti, M., 2011. Serial CEO incentives and the structure of managerial contracts. J. Financ. Intermed. 20, 633–662.
Gompers, P.A., 1995. Optimal investment, monitoring, and the staging of venture capital. J. Financ. 50, 1461–1489.
Gompers, P., Lerner, J., 2000. The determinants of corporate venture capital successes: organizational structure, incentives and complementarities. In: Morck, R. (Ed.), Concentrated Corporate Ownership. University of Chicago Press for the National Bureau of Economic Research, pp. 17–50.
Gompers, P., Kovner, A., Lerner, J., Scharfstein, D., 2008. Venture capital investment cycles: the impact of public markets. J. Financ. Econ. 87, 1–23.
Gompers, P., Kovner, A., Lerner, J., 2009. Specialization and success: evidence from venture capital. J. Econ. Manag. Strateg. 18, 817–844.
Gompers, P., Kovner, A., Lerner, J., Scharfstein, D., 2010. Performance persistence in entrepreneurship. J. Financ. Econ. 96, 18–32.
Gudell, S., 2011. Serial CEOs and their Career Concerns. PhD Dissertation. University of Rochester.
Hart, O., 1995. Firms, Contracts, and Financial Structure. Oxford University Press, Oxford.
Hart, O., Moore, J., 1990. Property rights and the nature of the firm. J. Polit. Econ. 98, 1119–1158.
Hart, O., Moore, J., 1994. A theory of debt based on the inalienability of human capital. Q. J. Econ. 109, 841–879.
Hellmann, T., 1998. The allocation of control rights in venture capital contracts. RAND J. Econ. 29, 57–76.
Hellmann, T., 2002. A theory of strategic venture investing. J. Financ. Econ. 64, 285–314.
Hellmann, T., Puri, M., 2002. Venture capital and the professionalization of start-up firms: empirical evidence. J. Financ. 57, 169–197.
Hellmann, T., Lindsey, L., Puri, M., 2008. Building relationships early: banks in venture capital. Rev. Financ. Stud. 21, 513–541.
Higgins, M.C., Gulati, R., 2006. Stacking the deck: the effects of top management backgrounds on investor decisions. Strateg. Manag. J. 27, 1–25.
Hochberg, Y., Ljungqvist, A., Lu, Y., 2007. Venture capital networks and investment performance. J. Financ. 62, 251–301.
Holmstrom, B., 1979. Moral hazard and observability. Bell J. Econ. 10, 74–91.
Holmstrom, B., 1999. The firm as a subeconomy. J. Law. Econ. Orga. 15, 74–102.
Holmstrom, B., Roberts, J., 1998. Boundaries of the firm revisited. J. Econ. Perspect. 12, 73–94.
Holtz-Eakin, D., Joulfaian, D., Rosen, H., 1994. Entrepreneurial decisions and liquidity constraints. RAND J. Econ. 108, 604–631.
Hsu, D., 2004. What do entrepreneurs pay for venture capital affiliation? J. Financ. 59, 1805–1844.
Hsu, D., 2007. Experienced entrepreneurial founders, organizational capital, and venture capital funding. Res. Policy 36, 722–741.
Humphery-Jenner, M., 2012. Private equity fund size, investment size, and value creation. Rev. Financ. 16, 799–835.
Iliev, P., 2010. The effect of SOX section 404: costs, earnings quality, and stock prices. J. Financ. 65, 1163–1196.
Johnston, J., Madura, J., 2009. The pricing of IPOs post-Sarbanes-Oxley. Financ. Rev. 44, 291–310.
Kaplan, S., Stromberg, P., 2001. Venture capitalists as principals: contracting, screening, and monitoring. Am. Econ. Rev. 91, 426–430.
Kaplan, S., Stromberg, P., 2003. Financial contracting theory meets the real world: an empirical analysis of venture capital contracts. Rev. Econ. Stud. 70, 281–315.
Kaplan, S., Stromberg, P., 2004. Characteristics, contracts and actions: evidence from venture capitalist analyses. J. Financ. 59, 2177–2210.
Kaplan, S., Martel, F., Strömberg, P., 2007. How do legal differences and experience affect financial contracts? J. Financ. Intermed. 16, 273–311.
Kaplan, S., Sensoy, B., Stromberg, P., 2009. Should investors bet on the jockey or the horse? Evidence from the evolution of firms from early business plans to public companies. J. Financ. 75–115.
Kogan, L., Papanikolaou, D., Seru, A., Stoffman, N., 2017. Technological innovation, resource allocation, and growth. Q. J. Econ. 132, 665–712.
Koskinen, Y., Rebello, M., Wang, J., 2014. Private information and bargaining power in venture capital financing. J. Econ. Manag. Strateg. 23, 743–775.
Lafontaine, F., Shaw, K., 2016. Serial entrepreneurship: learning by doing? J. Labor Econ. 34, 217–254.
Landier, A., 2006. Entrepreneurship and the Stigma of Failure. Working Paper.
Lazear, E.P., 2005. Entrepreneurship. J. Labor Econ. 23, 649–680.
Lerner, J., 1994. The syndication of venture capital investments. Financ. Manag. 23, 16–27.
Lerner, J., 1995. Venture capitalist and the oversight of private firms. J. Financ. 50, 301–318.
Lerner, J., 1999. The government as venture capitalist: the long-run effects of the SBIR program. J. Bus. 72, 285–297.
MacMillan, I., 1986. To really learn about entrepreneurship, let's study habitual entrepreneurs. J. Bus. Ventur. 1, 241–243.
Masulis, R., Nahata, R., 2009. Financial contracting with strategic investors: evidence from corporate venture capital backed IPOs. J. Financ. Intermed. 18, 599–631.
McGrath, R., 1999. Falling forward: real options reasoning and entrepreneurial failure. Acad. Manag. Rev. 24, 13–30.
Mitchell, R.K., Busenitz, L., Lant, T., McDougall, P.P., Morse, E.A., Smith, J., 2002. Toward a theory of entrepreneurial cognition: rethinking the people side of entrepreneurship research. Enterp. Theory Pract. 27, 93–104.
Nahata, R., 2008. Venture capital reputation and investment performance. J. Financ. Econ. 90, 127–151.
Nahata, R., Hazarika, S., Tandon, K., 2014. Success in global venture capital investing: do institutional and cultural differences matter? J. Financ. Quant. Anal. 49, 1039–1070.
Politis, D., 2008. Does prior start-up experience matter for entrepreneur's learning? A comparison between novice and habitual entrepreneurs. J. Small Bus. Enterp. Dev. 15, 472–489.
Politis, D., Gabrielsson, J., 2009. Entrepreneurs' attitudes towards failure: an experiential learning approach. Int. J. Entrep. Behav. Res. 5, 364–383.
Rajan, R., Zingales, L., 2001a. The influence of the financial revolution on the nature of firms. Am. Econ. Rev. 91, 206–212.
Rajan, R., Zingales, L., 2001b. The firm as a dedicated hierarchy: a theory of the origins and growth of firms. Q. J. Econ. 805–850.
Sarasvathy, S., Menon, A., Kuechle, G., 2013. Failing firms and successful entrepreneurs: serial entrepreneurship as a temporal portfolio. Small Bus. Econ. 40, 417–434.
Shepherd, D.A., 2003. Learning from business failure: propositions of grief recovery for the self-employed. Acad. Manag. Rev. 28, 318–328.
Singh, S., Corner, P., Pavlovich, K., 2007. Coping with entrepreneurial failure. J. Manag. Organ. 13, 331–344.
Spivack, A.J., McKelvie, A., Haynie, J.M., 2014. Habitual entrepreneurs: possible cases of entrepreneurship addiction? J. Bus. Ventur. 29, 651–667.
Stuart, R.W., Abetti, P.A., 1990. Impact of entrepreneurial and management experience on early performance. J. Bus. Ventur. 5, 151–162.
Tian, X., 2011. The causes and consequences of venture capital stage financing. J. Financ. Econ. 101, 132–159.
Tian, X., 2012. The role of venture capital syndication in value creation for entrepreneurial firms. Rev. Financ. 16, 245–283.
Ucbasaran, D., Wright, M., Westhead, P., 2003. A longitudinal study of habitual entrepreneurs: starters and acquirers. Entrep. Reg. Dev. 15, 207–228.
Ucbasaran, D., Shepherd, D., Lockett, A., Lyon, S.J., 2013. Life after business failure: the process and consequences of business failure for entrepreneurs. J. Manag. 39, 163–202.

Wernerfelt, B., 1984. A resource based view of the firm. Strateg. Manag. J. 5, 171–180.
Westhead, P., Wright, M., 1998. Novice, portfolio and serial founders: are they different? J. Bus. Ventur. 13, 173–204.
Westhead, P., Ucbasaran, D., Wright, M., 2003. Differences between private firms owned by novice, serial and portfolio entrepreneurs: implications for policymakers and practitioners. Reg. Stud. 37, 187–200.
Westhead, P., Ucbasaran, D., Wright, M., 2005a. Decisions, actions, and performance: do novice, serial, and portfolio entrepreneurs differ? J. Small Bus. Manag. 43, 393–417.
Westhead, P., Ucbasaran, D., Wright, M., 2005b. Experience and cognition: do novice, serial and portfolio entrepreneurs differ? Int. Small Bus. J. 23, 72–98.
Wiklund, J., Shepherd, D.A., 2008. Portfolio entrepreneurs: habitual and novice founders, new entry, and modes of organizing. Entrep. Theory Pract. 32, 701–725.
Wise, S., Valliere, D., 2014. The impact on management experience on the performance of start-ups within accelerators. J. Priv. Equity 18, 9–19.
Wright, M., Robbie, K., Ennew, C., 1997. Venture capitalists and serial entrepreneurs. J. Bus. Ventur. 12, 227–249.
Zingales, L., 2000. In search of new foundations. J. Financ. 55, 1623–1653.