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Few but mighty: How the number of pre-unicorn status VCs and their prestige influence time-to-unicorn and value

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ABSTRACT

Unicorns, privately held ventures valued at one billion dollars or more, differ widely in how fast they reach the threshold and at what valuation, yet research has examined why ventures cross it rather than how quickly and at what price. We ask how the configuration of the venture capital investors that back a venture before the unicorn event, namely the syndicate size and their prestige, shapes time-to-unicorn and the valuation recorded at the threshold. The unicorn setting places two established arguments in tension. In ordinary venture settings, the backing of investors signals venture quality, and an external market later sets the price. At the unicorn threshold there is no such market: the valuation is set by the terms of a round that the investors themselves negotiate. As a result, adding investors signals little, while coordinating a larger group of investors becomes costlier as late-stage rounds grow in size and frequency. Prestige, by contrast, certifies without adding parties to the decision. Using 2,043 unicorns founded between 1995 and 2023, we find that a larger syndicate is associated with a slower crossing of the threshold, whereas its prestige is associated with both a faster crossing and a higher valuation. The results are robust to alternative specifications and to bounding for unobserved confounding. The results show that the two dimensions of syndicate configuration, usually treated as joint expressions of quality, separate at the unicorn scale.

Keywords: Unicorns, VC syndication, Time to unicorn, post-money valuation

INTRODUCTION

In April 2016, Bill Gurley — a general partner at Benchmark Capital and an early investor in Uber and Snapchat — told the investment community that something had changed. "*There has been a fundamental sea-change in the investment community*", he said, "*that has made the incremental unicorn investment a substantially more dangerous and complicated practice*"[1]. The pressures he described were specific to the category: lofty paper valuations, burn rates that forced repeated returns to the market, and exit windows that had narrowed to the point where the usual route to liquidity was no longer available. His conclusion was blunt: *the unicorn phenomenon had put backers' fortunes at risk*.

The warning is worth taking seriously because it comes from the side of the market that produces unicorns rather than the side that observes them. For a venture capital firm, a billion-dollar private valuation in the portfolio is simultaneously the most valuable signal it can display to its limited partners and the position with the most asymmetric downside. Gornall and Strebulaev (2020) show that unicorn valuations are, on average, substantially above the fair value implied by the terms of the deals that produce them, and Cable (2021) documents how frequently ventures that cross the threshold subsequently exit below it.

This is what distinguishes unicorns from high-growth ventures more generally, and it is a distinction of kind rather than of degree. Research on high-growth ventures has long treated rapid expansion as a continuous outcome observed after the fact (e.g. Bhidé, 2003). The unicorn threshold is different: it is discrete, it is conferred by the investors themselves rather than recorded by an external market, and it becomes public at the moment it is crossed. Although unicorns are statistically rare, they exert influence on capital markets, policy agendas and public discourse out of all proportion to their number (e.g. Kuckertz, Scheu and Davidsson, 2023): rarity is a reason to study the category on its own terms, not a reason to fold it into the wider population.

[1] https://www.businessinsider.com/bill-gurley-has-sounded-an-alarm-on-dangerous-unicorns-2016-4

Within this category, outcomes vary enormously. In our sample of 2,043 unicorns founded between 1995 and 2023, the time from founding to the unicorn event ranges from zero months to more than twenty-six years, with a median of 77 months and an interdecile range of 29 to 156 months. The valuation recorded at that event ranges from the one-billion-dollar threshold itself to sixty-six billion. This heterogeneity is not a nuisance to be averaged away: it is precisely what founders raising capital and investors allocating it are trying to anticipate. Yet the literature on unicorns has concentrated on why ventures cross the threshold (Bock and Hackober, 2020; Brown and Wiles, 2020) rather than on how fast they cross it and at what price, with the recent exceptions of Kotha, Shin and Fisher (2022) and Venancio, Picoto and Pinto (2023) on timing, and Cristofaro et al. (2024) on speed as a competitive mechanism.

Venture capital literature shows that the configuration of the investor group matters along two dimensions, i.e. prestige and size. Prestige certifies venture quality to subsequent audiences and improves IPO performance, time to IPO, survival, and investment returns (Megginson and Weiss, 1991; Hsu, 2004; Chang, 2004; Hochberg, Ljungqvist and Lu, 2007; Nahata, 2008; Krishnan et al., 2011). Larger syndicate pools capital, expertise and networks (Tian, 2012; Kim and Park, 2021). However, increasing syndicate size multiplies the parties whose consent is required, generating free-riding in monitoring, divergent incentives, and renegotiation costs (Lerner, 1994; Gompers, 1995; Brander, Amit and Antweiler, 2002; Nanda and Rhodes-Kropf, 2018). There are three reasons to doubt that these findings apply to the unicorn setting. First, in ordinary venture settings investors determine outcomes, such as an IPO or an acquisition, whose price is set by an external market; the unicorn threshold is different, because the post-money valuation that confers it is not observed in a market but written into the terms of the threshold round, which the lead investors themselves negotiate (Kaplan and Strömberg, 2003; Gornall and Strebulaev, 2020). The composition of the investor group is therefore not an antecedent of the event but a constitutive element of it. Second, the evidence that larger syndicates perform better rests on syndication being a choice: a partner is added because it brings a second opinion on venture quality or complementary

skills, so syndicate size is informative about the venture itself (Lerner, 1994; Brander et al., 2002). Assembling a billion-dollar private valuation, however, requires rounds larger than a single fund can prudently commit to one position, so the marginal investor may enter because its capital is needed rather than because the venture was judged worth backing (Manigart et al., 2006): syndicate size then reflects capital requirements as much as venture quality. Investor prestige is not exposed in the same way, since a prestigious investor's participation remains a bilateral choice. Third, the markets in which unicorns typically operate — platforms, network-effect businesses, winner-take-all races — make delay especially costly (Arthur, 1989; Rietveld and Schilling, 2021), so coordination frictions that would be tolerable elsewhere (Wright and Lockett, 2003) may be critical here.

Taken together, these arguments suggest that the number of lead investors and their prestige may operate through different channels and with different signs than the literature on ordinary venture-backed firms would predict. We therefore ask how the number of lead venture capital investors that back a firm before it crosses the billion-dollar threshold, and their prestige, shape two distinct outcomes — how quickly the threshold is reached, and how high the valuation is once it is crossed. We address this question by integrating two theoretical streams: the signaling and social capital literature (e.g., Spence, 1978; Connelly et al., 2011; Ozmel, Reuer and Gulati, 2013) and the literature on internal cost of syndication (e.g., Lerner, 1994; Nanda and Rhodes-Kropf, 2018). We expect syndicate size and prestige to influence the time to cross the unicorn threshold and the valuation recorded when said threshold is crossed.

To test our hypotheses we employed a cross-sectional dataset of 2,043 unicorns founded between 1995 and 2023, drawing on Crunchbase and triangulating every unicorn event and valuation against the financial press and independent commercial databases. Our results well support three of our four expectations. A larger syndicate is associated with a slower crossing of the threshold but not with the price at which it is crossed. Prestige operates on both outcomes and suggests ventures backed by the most prestigious investors reach the threshold earlier and record higher valuations.

The study makes three contributions. First, it advances research on unicorn outcomes, which has established time-to-unicorn as a theoretically meaningful outcome and related its heterogeneity to founder, venture and ecosystem characteristics (Kotha, Shin and Fisher, 2022; Venancio, Picoto and Pinto, 2023; Cristofaro et al., 2024), but has examined neither the configuration of the investor group that finances the trajectory nor the price at which the threshold is crossed. We address both outcomes jointly and introduce the pre-unicorn lead-investor core as a driver of each. Second, it contributes to the venture capital syndication literature, which has established that syndicate composition shapes venture outcomes such as IPO performance, survival and growth, but has studied those outcomes where an external market sets the price. We extend this literature to a setting in which the outcome is the price the syndicate itself negotiates, and we show that the two dimensions it usually treats jointly separate: the number of lead investors bears on the clock, their standing on both. Third, it contributes to the status and certification perspective on interorganizational affiliation (Stuart, Hoang and Hybels, 1999; Podolny, 2001; Hochberg, Ljungqvist and Lu, 2007) by showing that certification benefits persist at the extreme end of the private valuation distribution, where the certifier and the price-setter coincide.

LITERATURE REVIEW

Venture capital, speed, and valuation: what we know and what we do not

Venture capital has long been recognized as a key driver of high-growth entrepreneurship, providing not only financial capital but also strategic guidance, governance, networks and legitimacy (Gompers and Lerner, 2001): VC-backed firms grow faster (Davila et al., 2003; Guo and Jiang, 2013), internationalize earlier (Fernhaber and McDougall-Covin, 2009), innovate more and operate more efficiently (Chemmanur et al., 2011). In the unicorn literature, however, VC involvement is typically treated as a necessary condition rather than examined through a syndication lens. Bock and Hackober (2020) relate the reputation of the lead investor to the likelihood of becoming a unicorn, and Brown and Wiles (2020) discuss VC-backed unicorns

primarily in terms of their implications for capital markets. Kotha et al. (2022) include VC centrality among the correlates of time-to-unicorn but find no significant association, and they do not consider the size of the investor group. The unicorn literature has therefore neither theorized investor prestige as a driver of speed and valuation nor separated it from the number of investors – a separation that, as we argue below, may account for why its role has remained elusive.

This relative neglect is surprising given the extensive literature documenting the importance of the structure of VC syndication has on the expected outcome of the backed new ventures such as IPO performance (Megginson and Weiss, 1991; Gulati and Higgins, 2003), acquisition likelihood (Ragozzino and Blevins, 2016; Nguyen and Vu, 2021), post-IPO survival (Krishnan et al., 2011) and growth (Davila, et al., 2003). However, while syndicates may provide greater access to resources and risk-sharing, they may also introduce coordination challenges and strategic conflicts (Lerner, 1994; Brander, Amit, and Antweiler, 2002) that can undermine performance. In high-growth contexts, these trade-offs may directly affect the pace at which ventures scale and the valuations they command in subsequent funding rounds.

A careful analysis of the unicorn and syndication literatures reveals two interrelated gaps.

First, research on *time-to-unicorn* has documented how widely ventures differ in the speed with which they reach the threshold (Kotha, Shin and Fisher, 2022) and has located part of this variation in the ecosystems in which they operate (Venancio, Picoto and Pinto, 2023), but has related that variation to investors only through a few investment characteristics, finding no significant role for investor centrality and leaving the size of the investor group unexamined.

Second, although valuation defines the category, unicorn research has treated the billion-dollar mark as a binary event (Bock and Hackober, 2020; Kotha, Shin and Fisher, 2022) and has largely ignored how far above it a venture is priced when it crosses it – a range that, in our sample, extends from the threshold itself to sixty-six times it.

Third, the VC syndication literature has established that the size and the prestige of the investor group shape venture outcomes, but it has done so for outcomes priced by a third party – an IPO, an

acquisition, post-IPO survival – and has typically treated size and prestige as joint expressions of syndicate quality. Kotha et al. (2022) themselves note that it remains unclear why investors agree to valuations above the threshold that are difficult to justify, and conjecture that doing so signals their competence and status.

We therefore treat the number of lead investors and their prestige as two distinct dimensions of the pre-unicorn syndicate.

THEORETICAL FRAMEWORK

VCs' syndication size, time-to-unicorn and value

We argue that the size of the pre-unicorn syndicate influences time-to-unicorn and value through two mechanisms with opposite implications, the *certification* and *coordination mechanisms*. The *certification mechanism* suggests that each additional lead investor adds an observable and costly signal from which it is possible to infer the venture's unobservable quality. Signaling theory holds that observable signals whose credibility rests on their cost can reduce the information asymmetry between differently informed parties (Spence, 1978; Connelly et al., 2011). New ventures are a paradigmatic case of such information asymmetry (Stiglitz, 2002), and the commitment of capital by a VC is one of the most credible signals available, because the lead investor bears the cost of a wrong judgment with its own funds and reputation (Megginson and Weiss, 1991; Stuart, Hoang and Hybels, 1999). Thus, syndicate size matters because each lead investor in the syndicate is a separate certifier. Syndication has been interpreted as a request for a second opinion: each lead investor that joins a venture adds its own independent assessment to those of the investors already present (Lerner, 1994; Brander, Amit and Antweiler, 2002), so that the presence of several investors provides multiple, concordant signals that the venture has passed separate screenings (Connelly et al., 2011). Beyond its signaling value, syndication also pools complementary capital, expertise and contacts (Manigart et al., 2006; Kim and Park, 2021), and syndicated ventures have been found to create more value (Tian, 2012). In ordinary venture settings, these arguments predict that a larger

syndicate should accelerate the venture's progress and raise the price that subsequent investors are willing to pay.

At the unicorn scale, however, the signaling conditions on which the certification channel rests are progressively eroded. First, a signal is informative only if it separates high-quality from low-quality senders, so the second-opinion logic requires each additional investor's participation to be a discretionary judgment on the venture. On the path to a billion-dollar valuation, rounds become larger than any single fund can prudently commit to one position, and additional lead investors are increasingly brought in because the round needs their capital and the risk needs to be shared, rather than because their opinion is sought (Lerner, 1994; Manigart et al., 2006). The entry of a new lead investor thus comes to reflect the venture's capital requirements more than its quality, and the related signal loses its separating power. Second, a signal is credible only to the extent that the sender has no interest in emitting it, regardless of underlying quality (Connelly et al., 2011). At the unicorn threshold, this condition is weakened, because the valuation that confers unicorn status is negotiated by the lead investors themselves rather than set by an external market (Gornall and Strebulaev, 2020), and investors may have reasons of their own, such as signaling their status through the unicorn threshold achievement, to agree to such valuations (Kotha, Shin and Fisher, 2022).

The *coordination mechanism* suggests that each additional lead investor adds a party whose consent is required for the decisions that move the venture toward the threshold, so larger syndicates face frictions that can slow major scaling decisions. Free-rider monitoring arises when each lead investor's marginal incentive to expend costly governance effort weakens, especially under staged financing structures that presuppose active oversight (Gompers, 1995; Nanda and Rhodes-Kropf, 2018). Moreover, divergent incentives reflect differences in fund size, age, and carry positions, generating heterogeneity in risk appetite and exit horizons and complicating agreement on growth strategy and timing (Nanda and Rhodes-Kropf, 2018; Brander, Amit, & Antweiler, 2002). Furthermore, hold-up/renegotiation risk follows from the allocation of cash-flow and control rights:

pivotal moments (rounds, pivots, exits) can trigger veto points, delays, or demands for revised terms; more investors typically mean more potential veto power and a higher probability of gridlock (Kaplan and Strömberg, 2003; Nanda and Rhodes-Kropf, 2018).

These frictions are amplified on the path to unicorn status. First, reaching a billion-dollar valuation typically requires a sequence of large and closely spaced rounds, and staged financing turns each of them into a moment at which existing investors must agree on whether, when, and on what terms to proceed (Gompers, 1995). Second, the stakes and the heterogeneity of lead investors' claims are greater. Late-stage rounds layer liquidation preferences, anti-dilution protections and protective provisions that differ from round to round (Kaplan and Strömberg, 2003; Gornall and Strebulaev, 2020), so that investors who entered at different stages hold claims of different seniority and value and, accordingly, different preferences over the price and structure of the next round. The divergence in fund vintages and exit horizons also becomes more consequential when ventures remain private for long periods and early investors approach the end of their funds' lives (Nanda and Rhodes-Kropf, 2018). Third, delay is costlier. Unicorns typically compete in platform and network-effect markets, where an early lead tends to become self-reinforcing and a delay of a few months may cede the market to a rival (Arthur, 1989; Rietveld and Schilling, 2021); frictions that would be tolerable in ordinary ventures (Wright and Lockett, 2003) may therefore be decisive here. Because the certification benefit of each additional lead investor declines at the unicorn scale and coordination costs rise, larger syndicates lengthen the time required to assemble the financing needed to reach each valuation milestone, increasing the time to unicorn.

The same mechanisms bear on the valuation at which the threshold is crossed. The price of the threshold round is negotiated between the venture, its existing investors and the new investors who lead the round, and a larger syndicate weakens the venture's position in that negotiation in three ways. First, when coordination frictions delay rounds, the venture is more likely to raise capital when it needs it rather than when conditions are most favorable, and a shorter runway reduces its bargaining power vis-à-vis new investors. Second, the pre-emptive rights and protective provisions

held by a larger number of existing investors (Kaplan and Strömberg, 2003) reduce the room left to new investors, limiting the competition for the deal that tends to raise private valuations (Gompers and Lerner, 2000). Third, because a larger syndicate is, at this scale, a weaker and less separating certification signal, it gives prospective investors less reason to pay a premium. We therefore expect a larger lead-investor syndicate size to be associated not only with a slower crossing of the threshold, but also with a lower valuation when it is crossed.

H1. The higher the number of lead VCs syndicating a new venture investment before the new venture achieves unicorn status, the slower it will achieve unicorn status.

H2. The higher the number of lead VCs syndicating a new venture investment before the new venture achieves unicorn status, the lower its valuation will be upon achieving unicorn status.

VCs' syndication prestige, time-to-unicorn and value

We reason that the prestige of the pre-unicorn syndicate influences time-to-unicorn and value. In uncertain markets characterized by high levels of information asymmetry (Stiglitz, 2002), such as the new-venture market, affiliation with prominent (high-status) actors serves as an endorsement/certification signal (Sorenson & Stuart, 2001), reducing perceived risk, facilitating access to resources, including partners, customers, talent, and later-stage capital, and increasing the likelihood of exit via IPOs or acquisitions (Koka & Prescott, 2008; Hsu, 2006; Alexy et al., 2012; Özmel, Reuer and Gulati, 2013; Ozmel, Robinson and Stuart, 2013; Ragozzino and Blevins, 2016). In signaling terms, affiliation with prestigious lead investors is a certification signal par excellence, and it is precisely in this respect that prestige differs from size. The credibility of a certifier rests on the reputational capital it puts at stake when it vouches for the quality of a venture: the greater that capital, the higher the cost the certifier would bear from endorsing a low-quality venture, and the more credible its endorsement (Megginson and Weiss, 1991; Podolny, 2001; Connelly et al., 2011). Prestigious VCs have the most reputational capital to lose, and the evidence consistently associates their backing with superior venture outcomes (Nahata, 2008; Krishnan et al., 2011; Lee, Pollock

and Jin, 2011). Unlike syndicate size, moreover, the conditions on which this certification rests are not eroded at the unicorn scale. Whereas an additional lead investor may be brought in because the round needs its capital, the participation of a prestigious investor remains a discretionary, bilateral choice: prestigious investors are the scarce party, to the point that entrepreneurs pay to obtain their affiliation (Hsu, 2004), and they can select the ventures they back. Their presence therefore continues to separate higher- from lower-quality ventures. Indeed, since a prestigious lead investor's reputation extends well beyond a single deal, it has more to lose than to gain from endorsing a valuation it cannot defend, which preserves the credibility of its certification even when investors negotiate the price.

Crucially, and again unlike syndicate size, the certification benefits of prestige are not offset by coordination costs, for four reasons. First, prestige does not add parties to the decision: it concerns the standing of the lead investors, not their number, so a more prestigious pool of investors does not multiply veto points or the heterogeneity of claims discussed above. Second, high status reduces transaction costs of exchange, because counterparts to a high-status actor defer to its judgment and require less monitoring and negotiation (Podolny, 1993). Within a syndicate, a prestigious lead investor acts as a focal coordinator: reputable investors enjoy greater discretion in selecting their syndicate partners (Plagmann and Lutz, 2019) and play the central role in managing the syndicate (Wright and Lockett, 2003), which concentrates rather than disperses decision rights. Third, prominent investors are embedded in dense networks of prior co-investment, and repeated collaboration builds the trust and reciprocity that lower the cost of reaching agreement (Sorenson and Stuart, 2001; Hochberg, Ljungqvist and Lu, 2007; Wang, Pahnke and McDonald, 2022). Fourth, reputation acts as a bond against opportunistic behavior: reputable investors have more to lose from hold-up or free-riding, which mitigates agency problems within the syndicate (Meuleman et al., 2009). Prestige therefore operates predominantly through the certification channel, while its effect through the coordination channel is weak and, if anything, favorable.

Accordingly, we hypothesize that affiliation with prominent lead VCs in the pre-unicorn phase allows startups to achieve unicorn status earlier and at higher valuations. In fact, prominent VCs can rapidly syndicate later-stage funding rounds, reducing capital constraints and compressing the time-to-unicorn. Moreover, access to experienced executives via prestigious VC networks enhances organizational learning and accelerates execution. Furthermore, the legitimacy provided by prominent VCs acts as a social shortcut for customers, employees, regulators, and future investors, who can infer quality without costly due diligence, thereby facilitating customer adoption, hiring, and partnership negotiations. Finally, high-status affiliation elevates the startup's perceived rank within the entrepreneurial ecosystem and reduces the risk perceived by follow-on investors, enabling faster capital inflows at increasingly higher valuations. This argument is consistent with Hsu's (2004) evidence that entrepreneurs accept a discount to affiliate with reputable investors: that discount is paid in the round in which the prestigious investor enters, whereas the unicorn valuation is set in the threshold round, where the certification provided by an already-present prestigious core strengthens the venture's position vis-à-vis new investors.

All these things considered, we hypothesize:

H3. The higher the prestige of the lead VCs investing in a new venture before the new venture achieves unicorn status, the faster it will achieve unicorn status.

H4. The higher the prestige of the lead VCs investing in a new venture before the new venture achieves unicorn status, the higher its valuation will be upon achieving unicorn status.

DATA AND METHODS

To test our theoretical framework, we constructed a cross-sectional dataset comprising 2,043 startups founded between 1995 and 2023 and attained unicorn status (i.e., private company valuation exceeding $1 billion) as reported in the Crunchbase unicorn list by June 2025. Data were collected primarily from Crunchbase, a widely adopted source in entrepreneurial research (Wang et

al., 2022; Kotha, Shin, and Fisher, 2022), and enriched with additional information from Google Patents and other online sources.

Dependent variables

We used two dependent variables. The first is time-to-unicorn, *time-to-U*, measured as the number of months between the founding date and the date on which the startup achieved unicorn status (Kotha, Shin, and Fisher, 2022; Venancio, Picoto, and Pinto, 2023). Using Crunchbase financial data, we traced each startup's funding rounds chronologically up to the first round with a post-money valuation of at least $1B and recorded its date. We then sought confirmation in reputable financial outlets (e.g., Forbes, Bloomberg, TechCrunch, Financial Times, Wall Street Journal) that covered the unicorn event; if sources conflicted, we triangulated the data with PitchBook and Dealroom and left the variable blank when we could not resolve the conflict. We used the same procedure for the second dependent variable, the post-money valuation at the unicorn event, *U_value*. Because *U_value* is severely right-skewed (skewness of 12.2, against 1.9 in logs), with valuations ranging from $1 to $66 billion, we log-transformed it; the resulting distribution is left-censored at the $1B threshold, where 26.2% of the observations lie.

Independent variables

We used two independent variables. The first is the number of lead VCs, *nVC_preU*, investing in the focal startup during the pre-unicorn phase, i.e., from the founding date to the date preceding the unicorn event (excluding the investment that triggered the unicorn event). We focused on lead VCs because they are the core actors that structure syndicates, select partners, and provide the most consequential monitoring, advising, and certification; focusing on this core captures the economically most relevant part of the syndicate while reducing noise from minor or inconsistently reported co-investors (Hochberg, Ljungqvist, and Lu, 2007; Plagmann and Lutz, 2019). Syndication is defined at the venture level: *nVC_preU* counts the lead VCs that invested in the focal startup at

any point in the pre-unicorn phase and remained on the cap table until the unicorn event, whether they entered in the same funding round or in successive ones. This definition follows Hopp (2010), who includes in the syndicate investors joining across different rounds, since VC relationships are built through formal and informal interactions such as board participation. Information on the lead VCs of each unicorn was obtained from the financial section of Crunchbase.

The second independent variable, *EigVC_preU*, captures the prestige of the lead-investor core. Following network scholars (Koka and Prescott, 2008; Ozmel, Reuer, and Gulati, 2013; Ragozzino and Blevins, 2016), we measure prestige as network prominence, using eigenvector centrality (Bonacich, 1972). We built, year by year, the co-investment network of the lead VCs investing in unicorns, computed each VC's eigenvector centrality from the annual adjacency matrix, and averaged it across the lead VCs that invested in the focal startup before the unicorn event. Throughout the paper, we therefore use the terms prestige and prominence interchangeably.

Control variables

We control for several dimensions that can influence our dependent variables. We control for the age of the new venture, measured in months since the startup's founding date, because the literature has clearly shown that it can influence the amount of funds raised (Islam et al., 2018). We log-transformed the variable *age* due to its high skewness. Extant literature has shown that the ecosystem can play an important role in determining unicorn events (Bock and Hackober, 2020; Kotha, Shin, and Fisher, 2022; Venancio, Picoto, and Pinto, 2023), so we control for the ecosystem in which the startup has been founded; thus, in line with prior research (Berger & Kuckertz, 2016), we identified the most mature startup ecosystems globally using the 2024 Global Startup Ecosystem Ranking. Thus, the variable *ecosys* was coded as 1 if the new venture is in one of the top 10 mature ecosystems—namely Silicon Valley, New York City, London, Los Angeles, Tel Aviv, Boston, Beijing, Singapore, Shanghai, or Seattle—and 0 otherwise. We also control for the nationality of the

new venture, as extant literature has examined the potential impact of this variable on the likelihood of securing funds (e.g. Jeng and Wells, 2000).

We also include dummies for whether the startup, in the pre-unicorn phase, received angel funds *(angel_preU*) or seed funds *(seed_preU)* and undertook an acceleration path *(acc_preU)*, as these events are associated with fundraising (Hellmann et al., 2021; Assenova and Amit, 2024), and, following Bock and Hackober (2020), for the presence of Corporate Venture Capital (*CVC_preU*) and for acquisitions undertaken by the venture (*acq_preU*). The above information was all obtained from Crunchbase. Because patents constitute a quality signal for startups and can drive significant funding (Conti et al., 2013), we include the log-transformed number of patents obtained before the unicorn event, *pat_preU*, collected via Google Patents. We also control for founding team characteristics: the number of founders, *n_founders* (Beckman et al., 2007) founders' education (Ratzinger et al., 2018), i.e., whether any of them held a bachelor's degree, *f_BD*, a master's degree, *f_MD*, or a PhD, *f_PhD*; the presence of a female founder, *f_female* (Ewens and Townsend, 2020) and previous experience as a serial entrepreneur, *f_serial* (Hsu, 2007; Zhang, 2011). This information was obtained from Crunchbase and LinkedIn. Finally, since media coverage can affect new venture funding (Zhou et al., 2025) and unicorn events (Kotha et al., 2022), the dummy *article_preU* equals 1 if an article on the focal startup appeared in a reputed outlet (e.g., Forbes, Bloomberg, Reuters, The Wall Street Journal, TechCrunch) in the pre-unicorn phase, as identified through a manual Google search based on the startup's name, founding date, headquarters and unicorn event date.

We further include three sets of fixed effects. First, for industry, we manually searched the 3-digit US SIC code of each start-up through the Google search engine. When no US SIC code was available, we asked ChatGPT-5 for its best guess based on the start-up's name, founding date, headquarters and Crunchbase description, and validated each guess by manually comparing the SIC code description with the start-up description. We introduced dummies for the SIC codes of the industries representing 70% of the sample, and a dummy variable *other_SIC* for all the others.

Second, we introduced country dummies covering approximately 90% of the sample and a dummy *other_country* for the others. Third, we introduced founding-year dummies: as shown in Figure 1, the time to unicorn has steadily decreased over the years. Because nine of the earliest cohorts contain twenty or fewer ventures, we group the 1995-2003 founding years into a single dummy and include separate indicators for each year from 2004 to 2022, with the 2023 cohort as the reference category. Founding-year fixed effects absorb cohort-specific conditions (e.g., technological regimes, capital market cycles) that systematically shape venture trajectories.

Finally, we control for the variation in gross domestic product, compared with the previous year, of the startup's country in the unicorn year, *gdp_uy*, retrieved from the World Bank repository.

Table 1 presents the summary statistics for all variables, and Table 2 provides the correlation analysis among them. The only variable showing a correlation greater than 0.6 is the control variable *age* with the dependent variable *time-to-U*, so they will not be used in the same regression. Also, the variable *other_SIC* has been omitted for collinearity. With these precautions, our data do not suffer from multicollinearity, and, in fact, the Variance Inflation Factor (VIF) is well below the threshold of 10 for all regressions (Greene, 1991).

Since *time-to-U* is a count of months and is over dispersed, and the Pearson goodness-of-fit test confirms that the Poisson model does not fit the data, we estimate negative binomial regressions. Ventures enter our sample only if their valuation reaches one billion dollars, so the distribution of the dependent variable *U_value* is a continuous log-transformed variable left-censored by construction at a bound that, in logs, falls exactly at zero; 26.2% of the estimation sample sits at that bound. We therefore estimate a Tobit model on log valuation, left-censored at zero, rather than an OLS, which would treat the point mass as genuine variation and attenuate the estimates.

RESULTS

Table 3 reports the negative binomial regression results for *time-to-U*. Model 1 includes only controls. Angel and seed funding in the pre-unicorn phase, *angel_preU* and *seed_preU*, are

associated with a longer time-to-unicorn. CVC investments in the pre-unicorn phase are also associated with a longer time-to-unicorn. Pre-unicorn acquisitions, *acq_preU*, and patents, *pat_preU*, both high-quality signals (Bock and Hackober, 2020; Conti et al., 2013), shorten time-to-unicorn. Contrary to Kotha et al. (2022), larger founding teams, *n_founders*, reach unicorn status faster. Having a PhD in the founding team, *f_PhD*, increases time-to-unicorn, whereas serial entrepreneurs, *f_serial*, speed up the achievement of unicorn status (Hsu, 2007; Zhang, 2011). The presence of an article in a reputed magazine in the pre-unicorn phase, *article_preU*, is associated with a longer time-to-unicorn.

Model 2 introduces *nVC_preU*, which is positive and significant ($p<0.001$): the higher the number of lead VCs in the pre-unicorn phase, the longer the new venture takes to become a unicorn, supporting H1. Model 3 replaces *nVC_preU* with dummies for each number of lead VCs from 1 to 5 (the maximum). With a single lead VC, time-to-unicorn is shorter (-0.0730, $p<0.1$), whereas with four and five lead VCs the coefficients become positive and significant (0.0524^{+} and 0.0695^{*}, respectively), suggesting that the association is non-linear and emerges at larger core sizes. Model 4 introduces the average prestige of the lead VCs, *EigVC_preU*, which is undefined for ventures with no pre-unicorn lead VC; this accounts for the smaller sample size in the models that include it. Its coefficient is negative and significant ($p<0.001$): the higher the average prestige of the lead VCs, the shorter the time to unicorn status, supporting H3. Model 5 includes both independent variables and confirms the results of the previous models.

Table 4 reports Tobit regression results for the logarithm of *U_value*. Model 6 includes only controls. Seed funding is associated with a lower valuation. Patents (Conti et al., 2013) and pre-unicorn acquisitions are associated with a higher valuation at the unicorn event, whereas female founders are associated with a lower one (Ewens and Townsend, 2020). Favorable macroeconomic conditions have a positive but weak association with valuation.

Model 7 shows a weak negative association between *nVC_preU* and valuation, and Model 8 indicates that valuations are lower when the number of lead VCs reaches three to five, again

suggesting a non-linear association. Together, Models 7 and 8 provide only weak support for H2. Model 9 shows that a higher average prestige of the lead VCs, *EigVC_preU*, is associated with a higher valuation at the unicorn event ($p<0.001$), supporting H4, and Model 10 confirms this result. We have conducted extensive robustness and endogeneity checks, who are reported in Appendix A. Results in Table 5-7 (Appendix A) provide a support of that reported in Table 3.

DISCUSSION AND CONCLUSIONS

The results of this paper provide empirical support for the theoretical framework underpinning our hypotheses and show that the two dimensions of the pre-unicorn syndicate, its size and its prestige, operate in opposite directions when investigating time-to-unicorn and the valuation recorded at the unicorn event.

Our most distinctive result concerns lead-investors syndicate size. In ordinary venture settings, the syndication literature associates larger syndicates with better outcomes, because syndication pools capital, expertise and networks and conveys a second opinion on venture quality (Lerner, 1994; Brander, Amit and Antweiler, 2002; Tian, 2012; Kim and Park, 2021). In the unicorn setting, we found the opposite. Consistent with free-rider monitoring, divergent incentives, and coordination costs theories (Lerner, 1994; Gompers, 1995; Brander, Amit and Antweiler, 2002; Nanda and Rhodes-Kropf, 2018), our results confirm that a larger number of lead VC investors syndicating the investment in the pre-unicorn phase is associated with a significantly longer time-to-unicorn. Each additional lead investor lengthens time-to-unicorn by approximately 2.9%, and ventures with four or five lead investors reach the threshold some six months later than comparable ventures with two or fewer lead investors. A larger syndicate is also associated with a lower valuation at the unicorn event. This second association is weaker than the first: it is significant only at the 10% level in our main specification, is concentrated among ventures with three to five lead investors and loses significance in the robustness checks. However, its sign is negative in all parametric specifications, and the bounding analysis indicates that unobserved confounding would have to be several times more

important than the observed controls to overturn it ($\delta = 3.75$). Taken together, these results indicate that, at the unicorn scale, the size of the syndicate is a liability rather than an asset: clearly for the speed with which the threshold is crossed and, more tentatively, for the price at which it is crossed. This suggests that, while syndication may broaden the resource base available to a startup, the organizational frictions it generates, including misaligned incentives among co-investors and increased coordination costs, can meaningfully slow a startup's trajectory toward the unicorn milestone and weaken its position when the threshold round is priced. Our framework explains why the relationship reverses in this setting: as rounds grow beyond what a single fund can commit, additional investors increasingly enter because their capital is needed rather than because they endorse the venture, so that the certification value of size fades, while the coordination costs of a larger core are amplified by the frequency and stakes of late-stage rounds and by the high cost of delay in winner-take-all markets.

At the same time, our results corroborate signaling, social capital, and status theories (Spence, 1978; Stuart, Hoang, & Hybels, 1999; Podolny, 2001; Connelly et al., 2011; Lee, Pollock, & Jin, 2011; Özmel, Reuer and Gulati, 2013) by demonstrating that the prestige of the VC team exerts a dual positive effect. In fact, it accelerates the time-to-unicorn and is positively associated with the startup's valuation at the unicorn event. Unlike the result on size, this result is in line with the evidence on ordinary venture-backed firms: prestige works at the unicorn threshold as it does elsewhere, because the participation of a prestigious lead remains a discretionary choice whose certification value is not eroded by scale, and because prestige does not multiply the parties whose consent is required. The association with valuation is the more robust of the two; the association with time-to-unicorn, while consistent across specifications, is the most exposed to unobserved confounding ($\delta = 0.39$), suggesting that part of the speed advantage of prestigiously backed ventures may reflect venture qualities that prestigious investors select rather than add. This dual effect underscores the pivotal roles investor reputation and network centrality play not only in attracting subsequent financing rounds and

strategic partners, but also in shaping market perceptions of startup quality, reducing information asymmetries, and compressing the path to extraordinary valuation thresholds.

Theoretical and managerial implications

These results contribute to the literature in several ways. First, this study advances the nascent yet growing stream of research on understanding extreme startup outcomes (Kotha et al., 2022; Cristofaro et al., 2024). This study introduces syndicate configuration as a driver of unicorn outcomes. Kotha et al. (2022) included investor centrality among their correlates, but found no significant association and did not consider the number of investors; by separating size from prestige and theorizing their distinct channels, we show that both matter, and in opposite directions. By doing so, our study advances the emerging set of drivers explaining heterogeneity in unicorn outcomes, and extends prior research from the timing of the threshold to the price at which it is crossed.

Second, and most importantly, this study contributes to the VC syndication literature (e.g., Kim and Park, 2021; Kang, 2019; Kang et al., 2022). This literature highlights a tension between syndicate size and the advantages startups can achieve when backed by multiple investors. While these studies suggest that startups backed by larger syndicates reach better performance by gaining access to a broader pool of resources, expertise, and investor networks (e.g., Kim and Park, 2021; Tian, 2012), the same literature warns that these benefits may come at the cost of increasing coordination frictions, monitoring effort, and strategic conflicts among co-investors, which can ultimately hamper the startup's outcomes (Kim and Park, 2021; Kang, 2019; Kang et al., 2022). Our result is consistent with this latter effect, showing that, in the unicorn context, as the number of lead syndicating VC firms increases, the time-to-unicorn lengthens and, more tentatively, the valuation at the unicorn event declines. This study extends previous insights to the extreme end of the growth distribution, showing that coordination costs dominate resource-pooling benefits precisely where the stakes and complexity of investment decisions are exceptionally high. More broadly, it shows that the consequences of syndicate size cannot be inferred from evidence on outcomes priced by an external market, such as

IPOs and acquisitions: where the outcome is the price the syndicate itself negotiates, the informational value of syndicate size declines, and the two dimensions of syndicate configuration that the literature typically treats as joint expressions of quality separate.

Third, regarding investor prestige, our findings align with and extend a well-established body of evidence showing that investors' reputations and status serve as powerful signals that improve venture growth trajectories (e.g., Gulati and Higgins, 2003; Chang, 2004; Hochberg et al., 2007; Hsu, 2004). Our results extend this evidence to the unicorn context, confirming that prominent VC teams not only accelerate time-to-unicorn but also enhance valuation at unicorn debut, therefore suggesting that the certification and signaling benefits of high-status investors operate even at the extreme end of the valuation spectrum, where the certifier and the price-setter coincide and where, for that reason, one might have expected them to dissolve.

Our findings also carry practical implications. For founders aspiring to unicorn status, our findings suggest that syndication strategy in the pre-unicorn phase matters: a lead investor team composed of a few prominent VCs is associated with faster access to unicorn status and higher valuations, whereas a larger syndicate may paradoxically delay the very outcome it was assembled to accelerate. For VC investors, these results inform co-investment decisions: when targeting extreme growth outcomes, prioritizing the reputational quality of syndicate partners over the number of participating firms is likely to yield superior results. For policymakers and ecosystem designers, our findings imply that programs aimed at facilitating startups' access to high-status investors, rather than simply maximizing the volume of VC connections, may be more effective in accelerating the emergence of high-value ventures within innovation ecosystems. Because our estimates are conditional associations rather than causal effects, these implications should be read as indications rather than prescriptions.

Limitations and further research

Our study is not without limitations, which also define avenues for future research. First, our sample includes only ventures that reached unicorn status. As a consequence, our data cannot tell whether a

larger or more prestigious lead core affects the probability of becoming a unicorn in the first place. Studies comparing unicorns with VC-backed ventures that did not reach the threshold could address this question. Second, our cross-sectional design captures the cumulative structure of the VC syndication team without modeling the round-by-round sequence through which individual investors enter across successive funding stages. However, investigating temporal micro-mechanisms represents a complementary research direction that requires micro-level data and a different unit of analysis.

Third, our eigenvector centrality measure is computed on the co-investment network formed within our unicorn sample rather than the broader VC market. While this captures prominence within the high-growth venture ecosystem specifically, a measure constructed on the full universe of VC investments might yield additional insights. Relatedly, we measure pre-unicorn VC participation using the top lead investors per startup, consistent the theoretical focus on lead VCs as core syndicate actors (Hochberg et al., 2007; Plagmann and Lutz, 2019). This cap compresses variation across very large syndicates, likely attenuates the estimated effect, making our results conservative.

Moreover, as is common in observational VC research, definitive causal identification remains challenging (Hill et al., 2021). Future research employing quasi-experimental designs, such as regulatory shocks affecting VC syndication rules in specific jurisdictions, could provide stronger identification. Finally, our valuation measure is the post-money valuation reported at the unicorn event, which reflects the terms negotiated by investors and may overstate fair value (Gornall and Strebulaev, 2020); future research could use contract-adjusted valuations to assess whether the associations we document extend to the economic value of unicorns.

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TABLES

	Obs	Mean	Std dev	Min	Max	Type
time-to-U	2041	86.473	52.279	0.000	319	count
U value	2038	0.478	0.582	0.000	4.188	log-transformation
nVC preU	2042	2.834	1.648	0.000	5.000	count
EigVC preU	1710	0.238	0.196	0.000	1.000	Floating [0, 1]
age	2043	4.894	0.457	2.944	5.900	log-transformation
ecosys	2043	0.557	0.497	0.000	1.000	dummy
angel preU	2043	0.122	0.327	0.000	1.000	dummy
seed preU	2043	0.396	0.489	0.000	1.000	dummy
acc preU	2043	0.149	0.356	0.000	1.000	dummy
CVC preU	2043	0.198	0.398	0.000	1.000	dummy
acq preU	2043	0.334	0.472	0.000	1.000	dummy
pat preU	2043	0.210	0.785	0.000	7.824	log-transformation
n founders	2041	2.490	1.438	0.000	18.000	count
f BD	2039	0.804	0.397	0.000	1.000	dummy
f MD	2039	0.388	0.487	0.000	1.000	dummy
f PhD	2039	0.156	0.363	0.000	1.000	dummy
f female	2041	0.122	0.328	0.000	1.000	dummy
f serial	2041	0.620	0.485	0.000	1.000	dummy
article preU	2043	0.156	0.363	0.000	1.000	dummy
gdp_uy	1918	4.099	3.123	-10.940	16.258	continuous

Table 1. Descriptive statistics

	time-to-U	*U_value*	*nVC_preU*	*EigVC_preU*	*age*	*ecosys*	*angel_preU*	*seed_preU*	*acc_preU*	*CVC_preU*	*acq_preU*	*pat_preU*	*n_founders*	*f_BD*	*f_MD*	*f_PhD*	*f_female*	*f_serial*	*ticle_preU*	*gdp_uy*
time-to-U	1.000																			
U_value	-0.005	1.000																		
nVC_preU	-0.057*	-0.071**	1.000																	
EigVC_preU	-0.061*	0.070**	0.102***	1.000																
age	0.774***	0.009	-0.100***	-0.009	1.000															
ecosys	-0.102***	0.003	0.143***	0.107***	-0.064**	1.000														
angel_preU	-0.005	0.019	-0.178***	-0.002	-0.019	0.013	1.000													
seed_preU	-0.143***	-0.042	0.134***	-0.061*	-0.251***	0.084***	0.039	1.000												
acc_preU	-0.076**	0.000	0.111***	0.205***	-0.071**	0.092***	0.134***	0.047	1.000											
CVC_preU	-0.055*	0.031	-0.089***	-0.148***	-0.082***	-0.014	-0.010	0.058*	-0.050*	1.000										
acq_preU	-0.041	0.128***	-0.100***	0.073**	0.125***	-0.054*	0.037	-0.138***	0.027	0.043	1.000									
pat_preU	0.045	0.118***	-0.074**	0.028	0.173***	0.028	0.017	-0.143***	-0.032	0.063*	0.131***	1.000								
n_founders	-0.083***	-0.048	0.076**	0.123***	-0.041	0.051*	-0.003	-0.076**	0.046	-0.030	0.021	-0.022	1.000							
f_BD	0.051*	-0.031	0.076**	0.159***	0.110***	0.046	-0.012	-0.126***	0.056*	-0.045	-0.048	0.002	0.270***	1.000						
f_MD	-0.013	0.035	-0.031	0.059*	0.009	0.036	0.004	-0.061*	0.015	0.012	-0.012	-0.009	0.167***	0.309***	1.000					
f_PhD	-0.029	0.023	-0.007	-0.052*	-0.068**	0.081***	0.031	0.002	-0.001	0.015	-0.063*	0.022	0.102***	0.188***	0.514***	1.000				
f_female	-0.037	-0.050*	0.029	-0.017	-0.033	0.057*	-0.003	-0.010	0.002	-0.008	-0.020	-0.011	0.209***	0.074**	0.043	0.025	1.000			
f_serial	-0.088***	0.011	0.037	0.076**	-0.023	0.021	-0.038	-0.085***	0.034	-0.034	0.025	0.050*	0.270***	0.181***	0.085***	0.027	0.053*	1.000		
article_preU	0.069**	0.025	0.101***	0.084***	0.083***	0.057*	0.018	-0.031	0.066**	-0.013	-0.031	-0.030	0.004	0.114***	0.020	0.002	-0.003	0.025	1.000	
gdp_uy	-0.095***	0.069**	0.017	-0.030	-0.082***	-0.027	0.027	0.111***	-0.055*	0.042	0.028	-0.056*	-0.040	-0.081***	-0.008	-0.037	0.034	-0.065**	-0.089***	1.000

*$p<0.05$, **$p<0.01$, ***$p<0.001$

Table 2. Correlation matrix

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Time-to-U	*Time-to-U*	*Time-to-U*	*Time-to-U*	*Time-to-U*
ecosys	-0.0270	-0.0367^{+}	-0.0379^{+}	0.00357	-0.00606
	(0.0206)	(0.0207)	(0.0207)	(0.0211)	(0.0211)
angel_preU	0.0603**	0.0735***	0.0765***	0.0614**	0.0816***
	(0.0217)	(0.0219)	(0.0221)	(0.0231)	(0.0232)
seed_preU	0.0599***	0.0513***	0.0517***	0.0584***	0.0501**
	(0.0154)	(0.0155)	(0.0155)	(0.0157)	(0.0158)
acc_preU	-0.0124	-0.0193	-0.0194	-0.0000170	-0.00621
	(0.0180)	(0.0180)	(0.0180)	(0.0188)	(0.0187)
CVC_preU	0.0372*	0.0358^{+}	0.0388*	0.0420*	0.0472*
	(0.0190)	(0.0188)	(0.0190)	(0.0196)	(0.0195)
acq_preU	-0.104***	-0.103***	-0.102***	-0.101***	-0.0979***
	(0.0175)	(0.0175)	(0.0175)	(0.0185)	(0.0184)
pat_preU	-0.0564***	-0.0563***	-0.0558***	-0.0528***	-0.0514***
	(0.0117)	(0.0119)	(0.0119)	(0.0123)	(0.0124)
n_founders	-0.0192**	-0.0209***	-0.0206***	-0.0151*	-0.0161**
	(0.00588)	(0.00585)	(0.00579)	(0.00625)	(0.00618)
f_BD	0.00194	-0.000729	0.00130	-0.0167	-0.0175
	(0.0233)	(0.0232)	(0.0231)	(0.0241)	(0.0240)
f_MD	-0.0140	-0.0100	-0.0125	-0.00910	-0.00555
	(0.0169)	(0.0170)	(0.0170)	(0.0176)	(0.0176)
f_PhD	0.0558*	0.0552*	0.0581*	0.0295	0.0307
	(0.0230)	(0.0231)	(0.0232)	(0.0231)	(0.0233)
f_female	-0.0251	-0.0266	-0.0265	-0.00522	-0.00580
	(0.0229)	(0.0227)	(0.0226)	(0.0222)	(0.0220)
f_serial	-0.0470**	-0.0445**	-0.0454**	-0.0576***	-0.0569***
	(0.0155)	(0.0155)	(0.0155)	(0.0161)	(0.0160)
article_preU	0.0415*	0.0355^{+}	0.0359^{+}	0.0348*	0.0295^{+}
	(0.0182)	(0.0185)	(0.0185)	(0.0176)	(0.0178)
gdp_fy	0.00218	0.00131	0.00114	0.00413^{+}	0.00299
	(0.00202)	(0.00201)	(0.00201)	(0.00216)	(0.00213)
Industry dummies	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES
Founding years dummies	YES	YES	YES	YES	YES
nVC_preU		0.0201***			0.0283***
		(0.00531)			(0.00653)
1. nVC_preU			-0.0730^{+}		
			(0.0390)		
2. nVC_preU			0.0140		
			(0.0324)		
3. nVC_preU			0.0324		
			(0.0309)		
4. nVC_preU			0.0524^{+}		
			(0.0301)		
5. nVC_preU			0.0695*		
			(0.0317)		
EigVC_preU				-0.218***	-0.223***
				(0.0431)	(0.0430)
_cons	2.636***	2.609***	2.645***	2.729***	2.666***
	(0.115)	(0.115)	(0.117)	(0.118)	(0.119)
/					
lnalpha	-2.356***	-2.365***	-2.370***	-2.499***	-2.511***
	(0.0554)	(0.0552)	(0.0550)	(0.0609)	(0.0607)
N	1912	1911	1911	1648	1647
pseudo R^2	0.1186	0.1193	0.1197	0.1246	0.1256

Robust standard errors in parentheses
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3. Time-to-unicorn negative binomial regressions

	Model 6	**Model 7**	**Model 8**	**Model 9**	**Model 10**
	U_value (log)	*U_value (log)*	*U_value (log)*	*U_value (log)*	*U_value (log)*
age	-0.257	-0.249	-0.245	-0.383	-0.379
	(0.446)	(0.446)	(0.445)	(0.481)	(0.481)
ecosys	-0.0228	-0.0124	-0.0143	-0.0473	-0.0418
	(0.0436)	(0.0439)	(0.0439)	(0.0464)	(0.0466)
angel_preU	-0.0159	-0.0301	-0.0185	-0.0108	-0.0217
	(0.0513)	(0.0518)	(0.0523)	(0.0532)	(0.0544)
seed_preU	-0.0966**	-0.0868*	-0.0878*	-0.0690+	-0.0633+
	(0.0365)	(0.0368)	(0.0368)	(0.0373)	(0.0376)
acc_preU	0.0271	0.0343	0.0333	0.00909	0.0119
	(0.0475)	(0.0477)	(0.0476)	(0.0481)	(0.0483)
CVC_preU	-0.0236	-0.0226	-0.0112	0.0170	0.0139
	(0.0426)	(0.0426)	(0.0430)	(0.0440)	(0.0441)
acq_preU	0.110**	0.108**	0.110**	0.102**	0.100*
	(0.0374)	(0.0374)	(0.0374)	(0.0392)	(0.0392)
pat_preU	0.0792***	0.0815***	0.0834***	0.0669**	0.0682**
	(0.0212)	(0.0213)	(0.0214)	(0.0216)	(0.0217)
n_founders	-0.0123	-0.0107	-0.0105	-0.0153	-0.0150
	(0.0128)	(0.0128)	(0.0128)	(0.0133)	(0.0133)
f_BD	0.00976	0.0126	0.0133	-0.00902	-0.00815
	(0.0498)	(0.0498)	(0.0498)	(0.0528)	(0.0528)
f_MD	0.0796+	0.0766+	0.0759+	0.0571	0.0566
	(0.0412)	(0.0413)	(0.0413)	(0.0426)	(0.0427)
f_PhD	-0.00376	-0.00323	-0.000420	0.0223	0.0208
	(0.0558)	(0.0558)	(0.0558)	(0.0574)	(0.0574)
f_female	-0.113*	-0.114*	-0.113*	-0.0797	-0.0801
	(0.0521)	(0.0521)	(0.0520)	(0.0539)	(0.0538)
f_serial	0.0595+	0.0571	0.0565	0.0596	0.0594
	(0.0360)	(0.0360)	(0.0360)	(0.0377)	(0.0377)
article_preU	0.0745	0.0811+	0.0793+	0.0761	0.0786+
	(0.0463)	(0.0464)	(0.0464)	(0.0466)	(0.0467)
gdp_uy	0.0113+	0.0122*	0.0122*	0.0153*	0.0158*
	(0.00589)	(0.00591)	(0.00590)	(0.00634)	(0.00636)
Industry dummies	YES	YES	YES	YES	
Country dummies	YES	YES	YES	YES	
Founding years dummies	YES	YES	YES	YES	
nVC_preU		-0.0211+			-0.0145
		(0.0114)			(0.0150)
1. nVC_preU			-0.113		
			(0.0734)		
2. nVC_preU			-0.105		
			(0.0645)		
3. nVC_preU			-0.156*		
			(0.0618)		
4. nVC_preU			-0.129*		
			(0.0608)		
5. nVC_preU			-0.131*		
			(0.0657)		
EigVC_preU				0.435***	0.437***
				(0.0986)	(0.0985)
_cons	1.610	1.611	1.657	1.999	2.020
	(1.485)	(1.483)	(1.483)	(1.593)	(1.593)
/					
var(e.U_value)	0.467***	0.466***	0.465***	0.428***	0.427***
	(0.0184)	(0.0184)	(0.0183)	(0.0182)	(0.0182)
N	1909	1908	1908	1644	1643
Pseudo R^2	0.0446	0.0455	0.0464	0.0528	0.0532

Robust standard errors in parentheses
+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Unicorns value tobit regressions

FIGURE

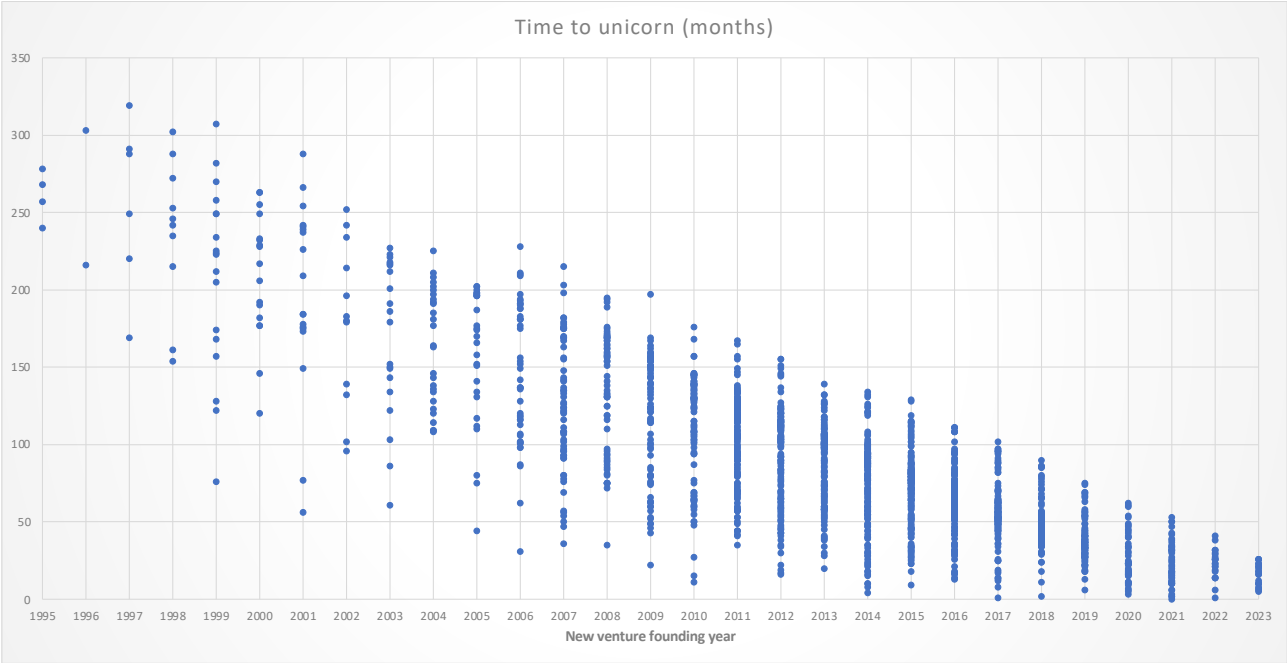

Figure 1. Time to unicorn along the years

APPENDIX A. ROBUSTNESS AND ENDOGENEITY CHECKS

Our sample consists exclusively of ventures that reached unicorn status. This follows from our research question, which concerns heterogeneity within the unicorn population rather than the determinants of attaining unicorn status, but it has an identification consequence that is, conditioning on an outcome can induce associations among its determinants, and this feature of the design cannot be removed by instrumenting the composition of the lead-investor core. We therefore do not claim to identify causal effects of core size or lead prominence on time-to-unicorn and on the valuation reached at the threshold. We ask instead whether the associations we document are robust to the two threats that can be assessed: dependence on modeling choices and confounding by unobserved venture characteristics.

We first assess whether our duration estimates, time-to-unicorn, depend on modeling choices.

As a first robustness check, we re-estimate Model 5 of Table 3 as a Cox proportional hazards model and as an accelerated failure time (AFT) model. The Cox model leaves the baseline hazard unrestricted, addressing the concern that a duration should not be modeled as a count. The AFT model is fully parametric and models log duration directly, so that its coefficients are on the same scale as our negative binomial estimates. In the Cox model (Model 11, Table 5), the hazard ratio is below 1 for *nVC_preU* (0.926, p<0.001) and above 1 for *EigVC_preU* (2.202, *p<0.001*), indicating that a larger lead core is associated with a longer time-to-unicorn, and a more prestigious one with a shorter time-to-unicorn. In the Weibull AFT model (Model 12), the coefficient of *nVC_preU* is positive and that of *EigVC_preU* is negative, both highly significant. Finally, restricting the sample to ventures founded up to 2019, 2017 and 2015 (Models 13-15) leaves the sign and significance of *nVC_preU* and *EigVC_preU* unchanged. These checks further support H1 and H3.

As a non-parametric check for *nVC_preU*, we compared ventures with four or five pre-unicorn lead investors against ventures with two or fewer. Because ventures that assemble a large lead core differ systematically from the others (e.g., in angel and accelerator backing, patent stocks, countries and industries), we estimate average treatment effects on the treated by inverse-probability weighting,

using a propensity score that includes all controls and fixed effects; after weighting, the two groups are well balanced across all covariates. Ventures with a large lead core reach unicorn status 6.39 months later than observationally equivalent ventures with a small one (Model 16, Table 5), a magnitude consistent with the 2.9% per additional lead investor implied by Table 3. Applying the same strategy to *EigVC_preU*, ventures whose lead VCs are in the highest tertile of prestige reach unicorn status 10.22 months earlier than those in the lowest tertile (Model 17, Table 5). These results further confirm H1 and H3.

We also assess the robustness of the valuation results (Table 6). Because one third of the unicorn events in our sample occurred in 2021, we re-estimate the Tobit model omitting ventures that became unicorns that year (Model 18): the coefficient on nVC_preU is negative but not significant, whereas that on *EigVC_preU* remains positive and highly significant. We then test whether H2 and H4 hold for valuations well above the threshold, using a logit model on a dummy equal to 1 if the valuation reaches at least $2 billion, a cut-off that corresponds to the third quartile of the valuation distribution and to twice the valuation that defines unicorn status (Model 19). *EigVC_preU* is again positive and highly significant, while *nVC_preU* has the expected sign but is not significant. Finally, the weighting-based comparisons show no appreciable valuation difference between ventures with four or five lead VCs and those with two or fewer (Model 20), whereas ventures backed by lead VCs in the highest tertile of prestige achieve valuations about 17% higher than those in the lowest tertile (Model 21). These checks confirm H4, but not H2.

To assess confounding by unobserved variables, we do not instrument the endogenous regressors, since in a sample defined on the outcome even a valid instrument would not remove the associations induced by conditioning on that outcome. We instead adopt the bounding approach of Oster (2019), which addresses the same concern without requiring an instrument. The method summarizes this in a single quantity, δ, which states how important selection on unobservables would have to be, relative to selection on the full set of observed controls, to drive the estimate to zero. Values of δ at or above one are conventionally taken to indicate robustness.

Table 7 reports, for each hypothesis, the coefficient with fixed effects only, the coefficient with the full set of controls and the implied δ. Three of the four estimates clear the conventional threshold of 1 (H1, H2 and H4). The exception is the association between lead prominence and time-to-unicorn, for which δ is 0.39: here the coefficient moves by a quarter when the observed controls are added, and confounding of moderate magnitude would be sufficient to account for it. We therefore conclude that H3 is the most vulnerable to endogeneity problems.

	Model 11 *Time-to-U Cox Hazard ratios*	**Model 12** *Time-to-U AFT log duration*	**Model 13** *Time-to-U Founded ≤ 2019 Nbreg*	**Model 14** *Time-to-U Founded ≤ 2017 Nbreg*	**Model 15** *Time-to-U Founded ≤ 2015 Nbreg*	**Model 16** *Time-to-U (4-5 VCs vs 0-2VCs)*	**Model 17** *Time-to-U (Highest vs lowest tercile)*
nVC_preU	0.926***	0.020***	0.029***	0.030***	0.028***	6.387**	
	(0.020)	(0.005)	(0.007)	(0.007)	(0.008)	(2.362)	
EigVC_preU	2.202***	-0.179***	-0.227***	-0.208***	-0.233***		-10.223**
	(0.323)	(0.037)	(0.043)	(0.046)	(0.051)		(3.305)
N	1646	1646	1541	1368	1118	1249	1101

Robust standard errors in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 5. Robustness checks on *time-to-U* (H1 and H3)

	Model 18 *U_value Tobit model with no 2021 unicorns*	**Model 19** *U_value>=2 Logit model*	**Model 20** *U_value (4-5 VCs vs 0-2VCs)*	**Model 21** *U_value (Highest vs lowest tercile)*
nVC_preU	-0.015	-0.045	0.011	
	(0.019)	(0.051)	(0.037)	
EigVC_preU	0.412***	1.268***		0.159***
	(0.126)	(0.336)		(0.040)
N	1092	1634	1247	1097

Robust standard errors in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 6. Robustness check on *U_value* (H2 and H4)

	β (only FE)	β (all controls)	*R_max*	R^2 (only FE)	R^2 (all controls)	δ
H1: nVC_preU ->Time-to-unicorn	0.040	0.038	0.913	0.669	0.704	1.173
H2: nVC_preU ->U_value	-0.018	-0.015	0.145	0.071	0.111	3.752
H3: EigVC_preU -> Time-to-unicorn	-0.314	-0.243	0.913	0.671	0.703	0.387
H4: EigVC_preU -> U_value	0.377	0.328	0.145	0.084	0.111	2.803

Table 7. Endogeneity check with Oster (2019)