

Divide and Conquer:
Investor Type Diversity in Entrepreneurial Ventures*

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ABSTRACT

Entrepreneurial ventures benefit substantially from close interactions with their resource environment, but dependence on resource providers can cause power imbalances. Prior studies have identified various defense mechanisms by which ventures reduce the risk of opportunistic behavior by equity investors. This study extends our understanding of resource dependence in entrepreneurial ventures by studying how and which ventures protect themselves in their first interaction with key financial resource providers, especially in the absence of established defense mechanisms. Drawing from resource dependence theory and qualitative interview insights, we theorize and show that ventures with higher ex-ante cash levels and prior experience with co-investments between different investor types protect themselves by simultaneously attracting equity from a diverse set of investors.

Keywords: Entrepreneurial Finance, Resource Dependence, Equity Mix

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To ensure their organizational continuity and growth, entrepreneurial ventures rely on critical resources from their external environment, including financial capital from equity investors. However, in interacting with resource providers, entrepreneurs face a trade-off: resource providers can provide valuable resources but dependence on them can lead to power imbalances which might induce opportunistic behavior (Aldrich et al., 2020; Pfeffer & Salancik, 2003; Wasserman, 2017). To prevent this, entrepreneurial ventures resort to various defense mechanisms when partnering with powerful resource providers, including patenting their intellectual property (Katila et al., 2008), postponing or abandoning an investment round involving an opportunistic investor (Katila et al., 2008), strengthening social defenses by reliable existing investors in the venture (Hallen et al., 2014), or even relocating to a richer resource environment (De Prijcker et al., 2019).

The basic premise in the extant resource dependence literature is that ventures rely on defense mechanisms to prevent abuse of power imbalances and, as such, protect their ventures against potential opportunistic behavior (Emerson, 1962; Pfeffer & Salancik, 2003). Ventures, for instance, may partner with powerful investors when their own resources are well protected (Hallen et al., 2014; Katila et al., 2008; Ueda, 2004), or when the risk of misappropriation is smaller (Diestre & Rajagopalan, 2012). Extant work on resource dependence is, however, inattentive of whether and how ventures manage resource dependence in their first interactions with resource providers. Social defenses by existing investors are not available then. Moreover, timing and social defenses are only applicable in subsequent relationships with investors and few ventures have patents or have the means to relocate. Ventures raising a first investment round hence provide an interesting context to study how they manage resource dependencies. Initial formation of relationships is furthermore important as this lays the foundation for subsequent dependence relationships and because many ventures only raise one investment round.

This paper extends our understanding of how ventures manage initial resource dependencies, and which ventures do so. To do so, we draw on resource dependence theory, enriched by qualitative insights from interviews with entrepreneurs and early-stage investors. We propose an additional defense mechanism that has not been advanced before, namely raising equity from multiple (different) types of investors in a first investment round (henceforth “multi-type co-investments”), each of them with their own goals, preferences, and processes. We argue that the amalgamation of heterogeneous goals and preferences in multi-type co-investments allows entrepreneurs to exploit potential dissonance between investors and – in combination with smaller individual equity stakes – dilutes the control of any individual investor. Consequently, multi-type co-investments allow entrepreneurs to retain more control. However, as with other defense mechanisms, not all ventures have the ability to simultaneously attract multiple investor types in a first investment round. Therefore, we ask the following research question: *which ventures raise equity through a diverse set of investor types in their first investment round?*

Our empirical analyses are based on a unique hand-collected data set of 2,280 first equity investment rounds in U.K. early-stage high-tech ventures. We integrate investment data from multiple data sources to identify ventures that received a first equity investment round and supplement this with ventures’ accounting, governance, and patent data. We reveal interesting stylized facts. First, while the entrepreneurial finance literature has predominantly focused on single-type co-investments (i.e., co-investments between, for instance, two or more business angel (BA) investors), our data indicate that multi-type co-investments (e.g., a co-investment between an accelerator and a BA) occur in 28 percent of first investment rounds.¹ In line with our hypotheses, we show that ventures with more cash or founded by entrepreneurs with prior multi-type co-investment experience have a higher propensity to raise a first equity round from multiple types of investors. This suggests that entrepreneurs who have the ability to use this defense mechanism because of their

¹We consider the full spectrum of early-stage investors and include venture capital (VC), BA, private equity (PE), crowdfunding, accelerators/incubators, family offices, hedge funds, sovereign wealth funds, and initial coin offerings (ICOs). We additionally differentiate between the investor’s affiliation (i.e., independent, corporate, bank/insurance, government, or university).

prior experience, or ventures that are less dependent on investors because of their available cash, exploit the opportunity to “divide and conquer” their investor base through involving multiple types of co-investors.

Overall, our study makes several contributions. First, we contribute to resource dependence theory by introducing a novel defense mechanism to protect relatively weak young ventures against powerful investors. We show that a remarkable large set of ventures manage resource dependence by simultaneously attracting initial funding from multiple investor types. This mechanism can be applied when ventures are not able to resort to other frequently applied defense mechanisms such as legal, timing, and social defenses.

Second, we contribute to the entrepreneurial finance literature by considering multiple investor types beyond the current predominant focus on traditional investors like VCs or BAs in isolation. More specifically, recent market developments such as the proliferation of new equity sources (Block et al., 2018), significant investor type heterogeneity (Drover et al., 2017), and increasing interactions between investor types (Cumming et al., 2019) now allow entrepreneurs to raise equity from a more diverse set of equity investors (Bellavitis et al., 2017). We have shown that they often do so simultaneously, rather than in isolation or sequentially. As such, we contribute to the calls for more research on the interactions between capital sources (e.g., Cosh et al., 2009; Cumming et al., 2019; Drover et al., 2017).

Third, because entrepreneurial ventures have a high probability of suffering from a funding gap (Manigart et al., 2020), but the complexity of their funding landscape is not well understood yet, our findings also inform entrepreneurs, investors, and policymakers. More specifically, we show how multi-type co-investments benefit entrepreneurs in managing their resource dependence, and as such, enable their survival, growth, and societal contribution.

LITERATURE REVIEW AND HYPOTHESES

The entrepreneurial finance landscape has recorded a remarkable increase in investor-type diversity over the past years (Block et al., 2018). For instance, while VCs and angel investors were typically considered to be the main equity investors for high-tech entrepreneurship (Bellavitis et al., 2017), new sources of equity finance have emerged including incubators and accelerators, family offices, BA networks, and more recently crowdfund investors (Block et al., 2018) and ICOs (Bertoni et al., 2022), driven by the digital revolution and the growth of private investments as a relevant asset class for various types of investors. Investors are heterogeneous in their investment objectives, funding amounts, value-adding propensities, and time horizons (Drover et al., 2017). To provide larger capital amounts, complementary value-adding actions, and shared monitoring to a single venture, investors increasingly co-invest (e.g., Block et al., 2019; Manigart et al., 2006), and these co-investments are not limited to investors of the same type (e.g., Cumming et al., 2019). Given the expanded range of financing possibilities, many entrepreneurs raise financing from multiple sources, often do so simultaneously, or approach various investors at different points in time (Cumming et al., 2019; Moritz et al., 2016).

While the majority of entrepreneurial finance research has studied distinct investor types in isolation (Wallmeroth et al., 2018), more recent work has started to focus on investors of different types, although most studies either directly juxtapose two or more investor types (i.e., to learn about differences in their investment strategy, target selection, or impact on venture outcomes; see for instance, Block et al., 2020; Hsu et al., 2014; Johnson & Sohl, 2012; Vanacker et al., 2013), examine whether two or more investor types are complements or substitutes (e.g., Chahine et al., 2007; Croce et al., 2018; Hellmann et al., 2021; Stevenson et al., 2019), or study successive funding rounds with different types of investors in each round (e.g., Colombo & Shafi, 2021; Croce et al., 2018; Moedl, 2021; Signori & Vismara, 2018). There are notable exceptions studying simultaneous co-investments, although these remained mainly descriptive. For instance, early work by Harrison & Mason (2000) and more recent work by Hellmann et al. (2021) suggest that VC

and angel co-investments are uncommon and only occur in around 7% of investments. Compared to solo VC investments, co-investments between VC and angel investors are associated with less successful exits (Goldfarb et al., 2013; Hellmann et al., 2021), although it is not clear whether these studies consider simultaneous co-investments between BAs and VCs, or whether they invested consecutively.

Theoretical Framework And Hypotheses

Resource dependence theory starts from the observation that organizations are inherently embedded in networks of interdependencies with resource providers. In order to maintain control over crucial resources, organizations aim to reduce dependence on key resource providers (Pfeffer & Salancik, 2003). Young ventures rely strongly on external equity investors to provide key financial and managerial resources, next to information (De Prijcker et al., 2019). In this relationship, young ventures are typically weaker than their investors. Dependence on investors with strong power differentials can engender opportunistic behavior by the investor, including misappropriation. For example, corporate VCs pursue the strategic objectives of their parent companies which generally operate in the same industry as the entrepreneurial venture (Park & Steensma, 2012). As such, they may on the one hand provide superior industry expertise and relevant social networks to their ventures, but on the other hand they also have strong incentives to misappropriate the venture's resources or imitate its intellectual property for strategic purposes benefiting the parent corporation. Entrepreneurial ventures are well-aware of this and are more likely to partner with a corporate VC if their intellectual property is well protected (Dushnitsky & Shaver, 2009), or if they are in dire need of the corporate VC's unique resources (Katila et al., 2008). This implicit trade-off between risk and reward is not limited to investments by corporate VCs. To limit potential opportunistic behavior from any type of investor, entrepreneurs do their own due diligence on potential investors' past behavior and reputation and only partner with investors who they perceive as being more ethical (Collewaert & Fassin, 2013; Drover et al., 2014), even if this implies having to accept a lower valuation (Hsu, 2004).

As a result, organizations typically shape their resource environment by engaging in various dependence-reducing tactics including board and interorganizational interlocks, mergers and acquisitions, and even political appointments (Hillman et al., 2009). These tactics, however, primarily apply to large and mature firms. Entrepreneurial ventures rely on alternative techniques including legal (e.g., patents), timing (i.e., postponing investment with powerful investors to future investment rounds), and social defenses (i.e., peer monitoring by earlier and reputable investors) to limit resource dependence (Hallen et al., 2014; Katila et al., 2008). Still, few early-stage ventures already have patents, and while the first investment round is a critical and defining event for entrepreneurial ventures, timing and social defenses are primarily relevant in further investment rounds. It is hence important to understand how ventures that cannot use these defense mechanisms manage their dependency on first-round equity investors.

We argue that multi-type co-investments can be a valuable defense mechanism for entrepreneurial ventures to limit dependence on a single type of investor in their first investment round and hence to retain more control. In our interviews, an early-stage investor noted:

Combining funding from angel and crowdfunding investors is often a strategy in small or early-stage investment rounds when the entrepreneur wants to keep control.

Compared to investment rounds with a single investor, co-investments incentivize peer monitoring. That is, co-investments create strong incentives between co-investors to monitor each other in order to safeguard the outcome of their own investment. In VC syndicates, for instance, peer monitoring has been theoretically shown to limit free-rider behavior and consequently results in better exit outcomes (Bayar et al., 2020). Next to limiting free-riding, peer monitoring also demotivates misappropriation because of costly potential repercussions such as loss of reputation. Indeed, social defenses have been shown to be valuable in successive investment rounds, as first investors have strong incentives to ensure proper behavior by following investors (Hallen et al., 2014). In a similar way, investment rounds in which multiple types of co-investors invest together also encourage peer monitoring and hence limit opportunistic behavior by any single investor.

Multi-type co-investments hence build social defenses.

Second, compared with solo investments, co-investments reduce individual investor ownership stakes and hence the power of individual investors. This makes it more difficult for an investor to misappropriate venture resources.

While the previous arguments also apply to traditional syndicated investment rounds involving multiple investors of the same type, multi-type co-investments can even better preserve entrepreneurial autonomy (Chahine et al., 2012). Driven by the amalgamation of various investment goals, visions, strategies, and horizons of investors of different types, there is an even greater probability of dissonance between investors. On the one hand, entrepreneurs can exploit this dissonance. On the other hand, co-investors have even stronger incentives to monitor each other, as misappropriation risks that go against their own interests are bigger. This makes multi-type co-investments an even more powerful mechanism to limit individual investors' power. This was echoed in our interviews by two investors and one entrepreneur, who indicated:

[Entrepreneur] We explicitly looked for different investor types to balance the power between them.

[Investors] From an entrepreneurial viewpoint, co-investments could be a “divide and conquer” strategy to keep more decision power.... All these different investors have different visions.

In general, a diverse equity mix makes it difficult for one particular investor to force his or her agenda (Villanueva & Sapienza, 2009). One VC investor, for instance, mentioned:

We do not like to co-invest with business angels because this often means that the entrepreneur and angel will have more than 50 percent of control rights. Also, having too many angels on the cap[italization] table overly complicates decision-making and governance.

Furthermore, multi-type co-investments allow attracting a more diverse and unique set of resources, while simultaneously preventing power imbalances and, as such, limiting expropriation

risks (Emerson, 1962). Specifically, they allow combining financial, human, and social capital from institutional investors such as VCs or PEs, while protecting entrepreneurial interests via more entrepreneur-friendly investors such as angels or family offices. This was resonated by one investor and by one entrepreneur, respectively, who stated:

[Investor] Friend-angel investors are often purposely demanded by entrepreneurs to co-invest alongside venture capital investors. This gives entrepreneurs a sense of safety.

[Entrepreneur] We explicitly looked for “friendly finance” to complement other investor types with whom we have a more distant connection.

While we argue that raising equity from multiple investor types is a powerful mechanism to mitigate power imbalance risks, it is also a difficult strategy, and hence not all ventures are capable of doing so. We propose that especially (i) more powerful ventures and (ii) entrepreneurs with experience with multi-type investment rounds will have a higher probability of implementing this strategy.

First, ventures that can avoid raising external equity prefer to do so, given the reluctance of many entrepreneurs to give up control (Hsu, 2004; Kirilenko, 2001). Hence, especially ventures with little internal funds or depleted debt capacity raise external equity (Plummer et al., 2016; Vanacker & Manigart, 2010), making equity investors critical financial resource providers. An attractive strategy to manage critical dependence on financial resource providers can therefore be to simultaneously attract a diverse set of investors. In order to manage their critical dependencies, entrepreneurs actively choose their network ties (Hallen & Eisenhardt, 2012), and influence the choice of equity investors (Eckhardt et al., 2006) and formation of co-investments (Zhang, 2019). The choice to attract funding initially lies with the entrepreneurial venture, i.e., investors cannot invest in ventures that shun equity funding. Still, not all entrepreneurs are equally capable of keeping control over their venture (e.g., Wasserman, 2017), or more specifically, have the ability to attract funding from multiple investor types simultaneously. As power is generally decreasing in resource need and increasing in resource availability (Emerson, 1962), entrepreneurs differ based on the

power they have during negotiations with external equity providers (Ewens et al., 2022). We argue that entrepreneurs with more available funds prior to seeking external equity are more powerful and hence are able to attract funding through multi-type co-investments. Indeed, when venture growth and survival are less contingent on obtaining external capital when fundraising, entrepreneurs have a less urgent need for a particular investment round. A considerable financial runway furthermore provides entrepreneurs with the ability to postpone or even abandon an unfavorable investment round and, therefore, gives entrepreneurs negotiating power (Ewens et al., 2022). Entrepreneurs who are able to “time the market” (Cerpentier et al., 2021) benefit from higher investor attention (Que & Zhang, 2021). Our interviews with entrepreneurs who were able to raise equity from multiple investor types provide interesting insights:

[Entrepreneur] We were in a luxury position: we had sufficient resources and no cash drain, which gave us power during negotiations. Looking back, the negotiations for that investment round happened at the right time in our company’s life cycle.

[Entrepreneur] We had some financial means left and our costs were not too high, if we wanted, we could still walk away from the deal.

Alternatively, an entrepreneur who was not able to raise equity from multiple investor types commented:

[Entrepreneur] The fact that we needed the cash, put our backs against the wall.

In all, our theorizing and qualitative insights suggest that having more available funds before fundraising increases entrepreneurs’ ability to leverage their financial resource environment’s heterogeneous and interactive nature by attracting equity from a diverse set of investors, thereby reducing too strong dependence on any single equity investor:

Hypothesis 1 (H1): *Entrepreneurs with ex-ante more available funds attract funding through a more diverse set of investor types in their first investment round*

The ability to proactively manage a diverse investor pool is not only driven by venture characteristics such as ex-ante cash levels but also by entrepreneurial characteristics. Entrepreneurs,

for instance, manage resource dependence and its effects on venture outcomes through learning (Yli-Renko et al., 2020). Prior experience with multi-type co-investments (e.g., through board membership in ventures that attracted multi-type co-investments in the past) could, therefore, be an important driver of how entrepreneurial ventures anticipate and manage resource dependence on their first investors. The effect of prior multi-type co-investment experience was confirmed by one entrepreneur and one investor during interviews:

[Entrepreneur] Based on our network, we quickly found an angel investor to fund part of the round. He knew us and trusted prior mutual co-investors. This allowed us to raise money very fast.

[Investor] There might be a network effect in that multi-type co-investment experience allows tapping into known investors.

The effect of experience can be explained in multiple ways. First, although entrepreneurial ventures benefit from co-investments, searching for suitable co-investment candidates is costly and time-consuming. Prior multi-type co-investment experience suggests that the entrepreneurs developed a network of investors, which should alleviate some of the search costs. Moreover, prior multi-type co-investment experience additionally fosters entrepreneurs' current tendency to attract funding through multi-type co-investments given their benefits. A pre-existing network of diverse equity investors might, furthermore, also indirectly strengthen entrepreneurs' negotiation power. As with *ex-ante* cash levels, entrepreneurs' dependence on a particular investor decreases with the size and strength of the investor network an entrepreneur can fall back upon under unfavorable investment conditions.

Second, prior multi-type co-investment experience also increases entrepreneurs' knowledge of the current state of, and diversity within, their financial resource environment. This is important, as entrepreneurs might not always be fully aware of the full spectrum of available capital sources (Seghers et al., 2012). Multi-type co-investment experience will, therefore, allow entrepreneurs to draw upon valuable knowledge, and as such, will increase the propensity to recurrently engage in multi-type co-investment formation.

Third, prior multi-type co-investment experience also bolsters confidence and perceived capability to manage complex and intricate relationships with multiple resource providers, each with different investment goals and processes. Several interviewed entrepreneurs and investors highlighted how multi-type co-investments entail greater complexity compared to other types of (co-)investments:

[Entrepreneur] Being funded by different investor types provides a good dynamic and multiple insights, but is also very complex and requires balancing various visions.

[Investor] Entrepreneurs often underestimate the complexity and added work of a broad investor base.

The combination of heterogeneous investment visions, strategies, and value-adding propensities, for instance, leads to increased work and communication responsibilities. Entrepreneurs with past multi-type co-investment experience should, therefore, have a higher dexterity in managing the complexities inherent to these investments. Based upon these arguments, we hypothesize:

Hypothesis 2 (H2): *Entrepreneurs with multi-type co-investment experience attract funding through a more diverse set of investor types in their first investment round*

DATA AND METHODS

We collect investment information by combining all equity investments in U.K. early-stage high-tech ventures that were completed after 2005 from Refinitiv Eikon, Crunchbase, and Zephyr. These databases contain investment and investor information on worldwide investments and have been used extensively in prior studies.² Triangulating three data sources allows to capture a more extended range of investor types as, for instance, Refinitiv Eikon has an established coverage on VC and PE investments, whereas Crunchbase has a superior coverage of new and (very) early-stage investors such as ICOs, accelerators, and BAs (Dalle et al., 2017). We complement missing data with information based on web searches, news articles, and company or investor

²Recent examples in the management and entrepreneurship literature include: Bellavitis et al. (2022); Lei et al. (2017); Wadhwa et al. (2016) using Refinitiv Eikon, Kanze et al. (2018); Nuscheler et al. (2019); Wang et al. (2022) using Crunchbase, and Meuleman et al. (2017); Post et al. (2022); Wry et al. (2014) using Zephyr.

websites, for instance, to define the type and affiliation of an investor. We define early-stage high-tech ventures as ventures that were incorporated after 2005 and that are (i) independent, (ii) not older than 10 years at the time of the investment, and (iii) operating in a high-tech industry. After harmonizing key variables such as venture and investor names and eliminating overlapping investments between the three data sources, we obtain nearly 20,000 unique equity investments. Next, we dropped all but the first investment round for each venture. Finally, we dropped all mergers and acquisitions initiated by other ventures. Acquiring ventures have substantially different motives, post-investment behavior, and exit propensities relative to entrepreneurial equity investors. This leaves us with 4,631 first investments in independent U.K. early-stage high-tech ventures by 2,709 distinct investors (i.e., U.K. and non-U.K. investors). We supplement this data with accounting, ownership, and governance information from Orbis and extract patent information via PATSTAT. To ensure maximum comparability, we will report descriptive statistics on the sample for which we have full information (i.e., 2,280 first investment rounds).

Dependent variables. We follow the resource dependence literature (e.g., Hallen et al., 2014) and take the number of distinct investor types that simultaneously invested in the first investment round as our dependent variable. This is an appropriate proxy of investor type diversity as each additional investor type expands the heterogeneity within an investment round. To fully capture the heterogeneous visions, objectives, and strategies, we classify investor types according to their type and affiliation (*detailed classification*). Specifically, we include VC, BA, PE, crowdfunding, accelerators/incubators, family offices, ICOs, sovereign wealth funds, and hedge funds and additionally distinguish between independent, corporate, bank-affiliated, government-affiliated, and university investors. In case of discrepancy between the three data sources, we manually verified investors' type and affiliation based on their websites or Google searches. Our dependent variable ranges from 1 to 7 distinct investor types (1 to 6 for the sample for which we have full information). We also use a more narrow classification (i.e., not differentiating based on investor affiliation) in robustness checks.

Independent variables. We use the amount of available financial capital in the venture to measure entrepreneurial negotiating power. Specifically, we use cash ratio (cash to total assets) one year before the investment. This proxies for negotiating power because sufficient cash allows the entrepreneur to still walk away from the deal if needed, resulting in entrepreneurial power (Ewens et al., 2022). Entrepreneurs indeed have power during negotiations as, for instance, survey evidence on VC investors (arguably one of the more “tenacious” investor types) indicates that entrepreneurs have negotiating power over many contractual terms (Gompers et al., 2020). Next, we measure multi-type co-investment experience by a dummy taking on one if current top management team and/or board members have been active in ventures that received funding through multi-type co-investments prior to the present investment round. We only considered past multi-type co-investment rounds during entrepreneurs’ tenure in those ventures.

Control variables. To reduce spurious variance, we include venture related control variables (measured one year before the investment) that have been identified in prior literature on determinants of ventures’ propensity to raise equity (e.g., Colombo et al., 2019; Cosh et al., 2009; Eckhardt et al., 2006). First, we include the age of the entrepreneurial venture in years (*Venture age*) to account for the stage of the venture (e.g., Hallen et al., 2014) and the natural log of total assets (*Venture size*) to control for the size and financing need of the venture. We furthermore report results with and without the natural logarithm of the deal value (*Deal Value*) as a control variable. Key reasons to not automatically include deal value are the many missing values and the multiple, and sometimes inexplicably large, discrepancies between our three data sources. Furthermore, in contrast to all other variables, the deal value is only observed after the funding has been raised. Next, we control for the asset structure through the ratio of tangible (*Tangibles*) and intangible (*Intangibles*) assets to total assets, and the debt structure through the ratio of short-term (*ST liabilities*) and long-term (*LT liabilities*) liabilities to total assets. This is highly relevant in the present context as high-tangible or low-leveraged ventures might find it structurally easier and less costly to attract bank financing, which consequently reduces the need to partner with investors (Vanacker & Manigart, 2010). To account for observable venture quality, we distinguish between

profitable and nonprofitable ventures (*Profitable*), control for the venture's past average growth rate in total assets (*Past growth rate*), and whether the venture had patents (*Patents*) or received a grant (*Grant received*) prior to its first investment round. Entrepreneurial human capital also matters in investment decisions as it facilitates the search for investors and informs investors of entrepreneurial quality and experience (Ko & McKelvie, 2018; Zhang et al., 2008). We, therefore, control for the number of founders (*Founding team size*) and differentiate between ventures with past entrepreneurial experience (*Entrepreneurial experience*).³ A final venture related control variable is its location, whereby we differentiate between London-based and other ventures (*London*).

Second, we control for the history between co-investors through the number of past shared connections resulting from prior co-investments (*Co-investors' history*). This is relevant because past shared co-investments might motivate – or demotivate – to co-invest again (Alexy et al., 2012). For instance, certain angel investors might have good (bad) experiences on crowdfunding platforms and, therefore, might be more (less) inclined to co-invest again with crowdfund investors. Lastly, we include industry and investment year fixed effects.

Method

To test the relationship between our independent variables and the number of investor types in the first investment round, we run zero-truncated Poisson models. In doing so, we specifically accommodate the structure of our data by specifying a natural lower bound for the dependent variable (as we do not observe non-funded ventures). Next, the value of adding an additional investor type might be decreasing in the number of investor types. That is, the choice to add a second investor type to the equity mix can be completely different compared to adding a third or fourth investor type. To account for these decreasing marginal benefits, we additionally ran ordered logit models to verify the robustness of our findings.

³To construct this variable, we rely on the population of newly founded ventures in the U.K. and capture whether members of the founding team also founded other ventures prior to their current first investment round.

RESULTS

Descriptive Analyses

Table 1 presents the distribution of investors by their type (Panel A) and affiliation (Panel B). VC funds represent the overall majority (67.5 percent) of all investments, followed by BA (14.5 percent), PE (7 percent) and incubator/accelerator funding (7 percent). Likewise, most investors are independent (77 percent) but almost a quarter of investments is made by captive funds. Table 2 integrates both the investor type and affiliation to provide a more detailed overview of investor heterogeneity in the entrepreneurial finance landscape. Half of the investors are independent VCs, 14.5 percent are angel investors, followed by corporate VCs (8 percent), incubator/accelerator (7 percent), bank affiliated VC investors (6 percent), and independent PE investors (5 percent).

Insert Tables 1 and 2 about here

Figure 1 provides an interesting new insight. Although prior literature on co-investments has predominantly focused on single-type co-investments (i.e., co-investment between two or more investors of the same type, for instance two VCs), we find that multi-type co-investment are almost as prevalent as single-type co-investments. Figure 1 differentiates between two investor type classifications; panel A relies solely on the investor type (cf. table 1, panel A); while panel B relies on a more detailed classification as in table 2. Panel A shows that 18 percent of all investments in early-stage high-tech ventures are conducted through multi-type co-investments. Moreover, the share of multi-type co-investments almost equals the share of single-type co-investments (21 percent). The relative prominence of multi-type co-investment is even more striking in panel B. Using a more detailed classification, we find that approximately 27.5 percent of investments are multi-type co-investments, whereas only 11.5 percent are single-type co-investments. While the distribution of co-investment types furthermore fluctuates over time, it has been remarkable stable since 2012 onward – excluding 2020, which also has a smaller overall number of investments.

Insert Figure 1 about here

Table 3 presents summary statistics at the investment round level for the sample for which we have full information (i.e., the sample used in subsequent regression analyses). In their first investment round, early-stage high-tech ventures receive on average funding from 1.20 investor types (1.38 distinct investor types using the detailed classification).

On average, ventures have a cash ratio of 23 percent and 18 percent of ventures have prior multi-type co-investment experience. Both distributions are left skewed as their respective median values are 0.02 and 0. Entrepreneurial ventures are just over two years when they receive their first equity investment. One year before the investment, they have an average total assets of €2.2M, have low tangible, intangible, and long-term liability ratios, but have substantial short-term liabilities (63 percent). 31 percent of ventures are profitable, and the average (median) past growth rate is 1,050 (0) percent. 14 percent of ventures already have one or more patents, and 8 percent received a grant prior to requesting equity funding for the first time. Entrepreneurial ventures have been, on average, founded by between 2 and 3 founders, who, in 38 percent of ventures, have founded another venture prior to request funding. 42 percent of the early-stage high-tech ventures in our sample are located in London. Lastly, investors are highly connected and often co-invest again with past co-investors. Within a given investment round, investors share on average 0.20 past co-investment ties with their current co-investors.

Table 4 further illustrates the distribution of investments based on the number of investor types. Single-type investments (i.e., no co-investments and single-type co-investments) are, in general, most prevalent. However, interestingly, 21 percent of first investments consist of two distinct investor types, six percent of three investor types, and two percent consist of more than three investor types. Using a more narrow investor type classification, still 17 percent of first investments is funded through two investor types. Finally, table 5 presents the correlations between

all variables.

Insert Tables 3, 4, and 5 about here

Regression Analyses

Table 6 presents the results for zero-truncated Poisson regressions on the number of detailed investor types in the first investment round. The models with even numbers differ from those with uneven numbers by additionally controlling for deal value. Models one to four separately include our two independent variables, the next two columns include them simultaneously, and the last two columns include industry \times investment year fixed effects. All specifications support our hypotheses as we find highly significant and positive associations between, on the one hand, ex-ante cash levels (H1) and prior multi-type co-investment experience (H2), and the number of investor types on the other hand. These effects remain statistically similar when controlling for time varying industry effects.

Results for marginal effects analyses plotted in figure 2 reveal that these effects are also economically sizeable. Moreover, ventures with a 20 percent cash-to-total assets ratio have an expected number of distinct investor types of 1.40, which increases with 10 percent to 1.54 for ventures with an 80 percent cash ratio. Ventures without multi-type co-investment experience have an expected number of investor types of 1.36, which increases with 19 percent to 1.62 for ventures with multi-type co-investment experience.

Insert Table 6 and Figure 2 about here

Robustness Checks

To further account for the over-dispersion of zero values, we additionally run zero-inflated Poisson (ZIP) and zero-inflated ordered logit (ZIOL) models (Lambert, 1992). The zero inflation

is modelled through a first stage binary choice model between the zero outcomes on the one hand and non-zero count outcomes on the other hand. Our first stage consists of logit models with deal value as a predictor. To empirically accommodate the lack of zeros (but over-dispersion of ones) in our data, we linearly transform the dependent variable by subtracting the value of one. We find similar results. We additionally verify the statistical validity of our findings by running ordered logit models that explicitly account for the decreasing marginal benefits of adding additional investor types in the equity mix. We did not find different results. Our results are furthermore not driven by the categorization of investor types or by the time frame that we used. Specifically, our results hold when we use the narrow categorization of investor types (i.e., not differentiating based on investors' affiliation), and when only including deals from 2011-2020, when crowdfunding initially appeared and other investor types such as accelerators became more prevalent.

DISCUSSION AND CONCLUSION

Discussion

Raising capital from powerful investors can provide unique resources and substantial added value to entrepreneurial firms but can also cause power imbalances and expose the venture to potential misappropriation risks (Katila et al., 2008) or other opportunistic behavior. This risk exposure is particularly concerning for entrepreneurial ventures as this may hinder their innovative output, growth, and consequently, their significant added value to the real economy (Block et al., 2017; Pahnke et al., 2015). Resource dependence scholars have identified various mechanism that organizations use to limit their dependence on key resource providers (e.g., Hillman et al., 2009). These mechanisms (e.g., board interlocks, mergers and acquisitions, or political appointments) are, however, only relevant during the relationship and less at tie formation, and are not readily available to young entrepreneurial ventures. Other defenses that are more applicable to an entrepreneurial context include legal, timing, and social defenses (Hallen et al., 2014; Katila et al., 2008) or even relocation (De Prijcker et al., 2019). It is, however, not clear from past studies how entrepreneurial ventures manage resource dependence in their first interactions with resource providers, when they

cannot resort to established defense mechanisms. This is important to know, as initial interactions with key resource providers such as investors lay the basis for future dependence relationships and are often even the only dependence on investors.

We have extended resource dependence theory by breaking ground in how ventures manage dependence on their first resource providers (Emerson, 1962). Specifically, we have argued that simultaneously attracting funding from multiple investor types, each with their own idiosyncratic goals, visions, and strategies, allows entrepreneurs to restrain future power imbalances. Moreover, the inherent social defenses, reduced individual investor ownership stakes, and potential exploitation of dissonance between investors in multi-type co-investments increase entrepreneurial control and reduce misappropriation risks.

In particular, we contribute to the growing literature on tie formation in entrepreneurial firms (Hallen et al., 2014; Katila et al., 2021, 2008). By modeling the risk of misappropriation as a function of defense mechanisms, extant studies suggest that ventures first seek defenses and that the effectiveness of existing defenses then influences the amount of misappropriation risk they are willing to take. We extend these studies' contributions by highlighting that ventures already in their first investment round raise equity through multi-type co-investments to limit future power imbalances. We furthermore answer the call of Wry et al. (2013) to step away from dyadic resource dependence structures by specifically considering ventures' complex and intricate resource environments on which they rely for critical resources.

Our results further uncover heterogeneity based on the ventures that use this defense mechanism. Indeed, while potentially favorable to reduce opportunistic investor behaviour, not all ventures have the ability to raise equity from multiple investor types. Our empirical analyses on 2,880 first investment rounds in U.K. entrepreneurial ventures show that ventures with higher ex-ante cash levels and those led by entrepreneurs with prior multi-type co-investment experience are able to attract funding through a more diverse investor base. First, driven by a less urgent resource need, considerable financial leeway provides entrepreneurs with negotiating power as they can still walk

away from unfavorable investment conditions. This allows them to capitalize on the heterogeneity in their resource environment by attracting funding through multi-type co-investments. Second, entrepreneurial multi-type co-investment experience is also important as it reveals valuable knowledge of the financial resource environment and bolsters entrepreneurs' confidence to manage the complexities inherent to multi-type co-investments.

Our contributions further reach beyond resource dependence theory. Moreover, we extended prior entrepreneurial finance research by observing the whole financial equity landscape, rather than focusing on one or two investor types in isolation, and provided new insights in the dynamic and interactive nature of today's entrepreneurial finance environment. Moreover, we have shown that, already in the first investment round, 28 percent of investments are simultaneously funded by various investor types. Our theorizing and interview insights furthermore elucidated entrepreneurs' motivation to engage in multi-type co-investments.

Limitations

As with any study, ours is also not without limitations. First, we have focused on ex-ante cash levels and past experience with multi-type co-investments as measures for entrepreneurial negotiating power. Sufficient financial resources and a relevant network allow entrepreneurs to walk away from unfavorable deals, strengthening their negotiating power. Still, other unobservable entrepreneurial characteristics such as strong investor networks without established investment ties or investor characteristics such as the pressure to invest for fund-based investors might also shape the power balance between investor(s) and entrepreneurs during investment negotiations. Our understanding of resource dependence management at tie formation would benefit greatly from scholarly attention to other sources of relative negotiating power. For instance, our interviews indicated that a friend-investor (such as a befriended angel investor) is also a defense mechanism commonly used by entrepreneurial ventures to protect against potentially opportunistic investors.

Second, insights from resource dependence theory and qualitative interviews suggest that

multi-type co-investments are a technique entrepreneurs purposefully use to prevent resource dependence on their first investors. In this paper, we have not yet empirically validated their effectiveness. That is, while entrepreneurs might be convinced of the benefits of multi-type co-investments, it is not yet clear whether they effectively prevent power imbalances or under what conditions. We leave this for future research. Moreover, we have explicitly focused on the antecedents of first-round investments and have not considered what happens during the relationship. In a future paper we, therefore, aim to elucidate the post-investment effects of multi-type co-investments.

Third, as a result of our extensive data collection strategy, we believe that we were able to capture almost all relevant equity investments during our time frame. It is, nevertheless, possible that some investor types are underrepresented in traditional data sources. This bias would, however, suppress investor type diversity, and as such, strengthen our results.

Conclusion

The present study extends our current understanding of resource dependence in entrepreneurial ventures. Moreover, we have studied how ventures manage their resource dependence on their first key resource providers when they cannot resort to established defense mechanisms. Drawing from resource dependence theory and qualitative interview insights, we have theorized and shown that entrepreneurial ventures with more negotiation power (through higher ex-ante cash levels) and with prior experience with co-investments between different investor types reduce resource dependence by simultaneously attracting equity from a more diverse set of investors. This research has both theoretical and practical relevance as much of the extant literature is noteworthy silent about resource dependence in initial relationships, whereas this matters greatly for all equity-seeking ventures, but also for investors and policy makers.

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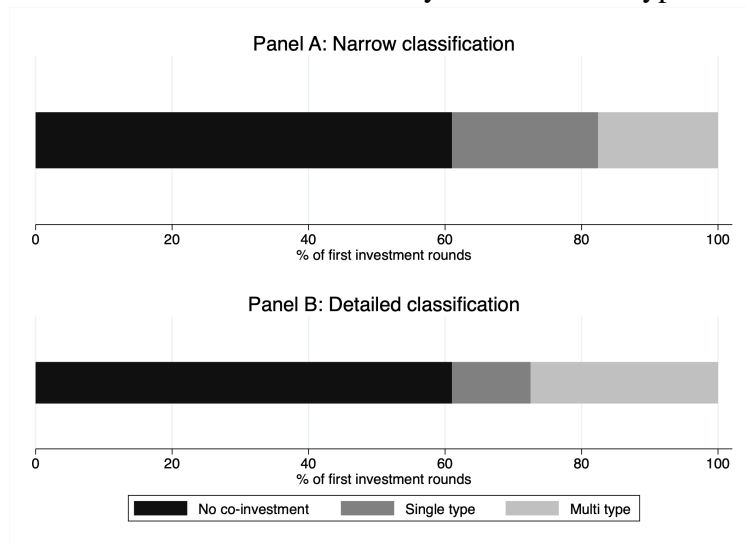
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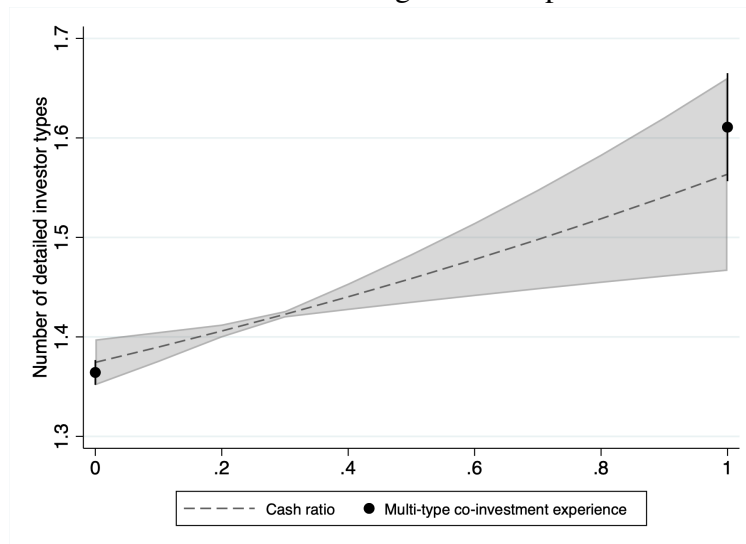
TABLES AND FIGURES

FIGURE 1: Investments by co-investment type



Notes: No co-investments are investments with exactly one investor, single-type co-investments are investments in which multiple investors of the same type co-invest (e.g., two or more angels), multi-type co-investments are co-investments of different investor types (e.g., two angels co-invest with an accelerator).

FIGURE 2: Marginal effect plot



Notes: This figure presents marginal effect plots (including 95% confidence bands) for ex-ante cash levels and prior multi-type co-investment experience after zero-truncated Poisson regressions on the number of detailed investor types (i.e., model 7 in table 6).

TABLE 1: Distribution of investors by (a) type and (b) affiliation

(a)			(b)		
	# inv.	%		# inv.	%
Venture Capital	5,575	67.47	Independent	6,382	76.76
Business Angel	1,191	14.41	Corporate	812	9.77
Private Equity	599	7.25	Bank/Insurance	720	8.66
Incubator/Accelerator	556	6.73	Government	274	3.30
Crowdfunding	312	3.78	University	126	1.52
Family Office	13	0.16			
Initial Coin Offering	9	0.11			
Sovereign Wealth Fund	6	0.07			
Hedge Fund	2	0.02			
N	8,263	100.00	N	8,314	100.00

Notes: This table presents the distribution of investors by their type and affiliation at the investment level. Because a venture can raise equity from more than one investor, we report the distributions on the full sample of included investors. It is generally difficult to find good data on BA investments due to the informal nature. We have nevertheless verified the validity of our data by cross-referencing our investor type distributions with recent industry reports and are confident that we have relied on the best available data.

TABLE 2: Distribution of investors by detailed classification

	# investments	%
Venture Capital	4,144	50.15
Business Angel	1,191	14.41
Corporate VC	671	8.12
Incubator/Accelerator	556	6.73
Bank VC	527	6.38
Private Equity	410	4.96
Crowdfunding	312	3.78
Government VC	233	2.82
Bank PE	159	1.92
Government PE	30	0.36
Family Office	13	0.16
Initial Coin Offering	9	0.11
Sovereign Wealth Fund	6	0.07
Hedge Fund	2	0.02
N	8,263	100.00

Notes: This table integrates the investor type (table 1, panel a) and affiliation (table 1, panel b) to provide a more detailed classification.

TABLE 3: Summary statistics at the investment round level

	Count	Mean	Median	SD	Min	Max
<i>Dependent variables</i>						
Number of investor types	2,280	1.20	1.00	0.44	1.00	4.00
Number of detailed investor types	2,280	1.38	1.00	0.67	1.00	6.00
<i>Independent variables</i>						
Cash ratio	2,280	0.23	0.02	0.32	0.00	1.00
Prior co-investment experience	2,280	0.18	0.00	0.38	0.00	1.00
<i>Control variables</i>						
Venture age	2,280	2.22	1.38	2.45	0.00	9.99
Venture size	2,280	3.10	2.80	3.20	0.00	13.92
Tangibles	2,280	0.05	0.00	0.13	0.00	0.99
Intangibles	2,280	0.08	0.00	0.21	0.00	1.00
ST liabilities	2,280	0.63	0.05	1.77	0.00	14.42
LT liabilities	2,280	0.17	0.00	0.57	0.00	3.42
Profitable	2,280	0.31	0.00	0.46	0.00	1.00
Past growth rate	2,280	10.53	0.00	75.70	-0.93	908.44
Patents	2,280	0.14	0.00	0.34	0.00	1.00
Grant	2,280	0.08	0.00	0.27	0.00	1.00
Founding team size	2,280	2.76	2.00	1.85	1.00	18.00
Entrepreneurial experience	2,280	0.38	0.00	0.48	0.00	1.00
London	2,280	0.42	0.00	0.49	0.00	1.00
Co-investors' history	2,280	0.20	0.00	1.19	0.00	21.00

Notes: This table presents summary statistics on the sample for which we have full information (i.e., on which the most complete regression model will be based). Co-investors' history are the total number of past co-investments between current co-investors in a deal.

TABLE 4: Distribution of investments by number of investor types

#investor types	Detailed classification		Narrow classification	
	#investments	Percent	#investments	Percent
1	1,627	71.36	1,866	81.84
2	485	21.27	378	16.58
3	139	6.10	33	1.45
4	23	1.01	3	0.13
5	5	0.22		
6	1	0.04		
N	2,280	100.00	2,280	100.00

Notes: This table presents the distribution of investments based on the number of investor types for which we have full information. Detailed classification includes investor affiliation (cf. table 2), whereas narrow classification does not (cf. table 1, panel a).

TABLE 5: Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) Cash ratio	1.00																
(2) Prior co-inv. exp.	0.11***	1.00															
(3) Venture age	0.35***	0.05*	1.00														
(4) Venture size	0.50***	0.12***	0.72***	1.00													
(5) Tangibles	0.07**	-0.03	0.25***	0.21***	1.00												
(6) Intangibles	-0.10***	0.05*	0.24***	0.37***	-0.06*	1.00											
(7) ST liabilities	0.14***	-0.02	0.19***	0.07**	0.41***	-0.01	1.00										
(8) LT liabilities	0.14***	-0.00	0.19***	0.18***	0.11***	0.10***	0.06*	1.00									
(9) Profitable	0.33***	0.06**	0.42***	0.47***	0.23***	0.24***	0.20***	0.15***	1.00								
(10) Past growth rate	0.13***	-0.01	0.04	0.10***	0.06*	-0.01	0.10***	0.01	0.07**	1.00							
(11) Patents	0.14***	0.13***	0.24***	0.28***	0.06**	0.20***	0.02	0.12***	0.17***	0.07**	1.00						
(12) Grant received	0.02	-0.02	-0.03	-0.04	-0.04	0.01	-0.02	-0.03	-0.03	0.05*	0.10***	1.00					
(13) Founding team size	-0.11***	0.20***	-0.07**	0.00	-0.07**	0.04	-0.09***	0.01	-0.08***	-0.06*	0.07**	-0.06*	1.00				
(14) Entrepreneurial exp.	-0.09***	0.14***	-0.12***	-0.02	-0.06*	-0.01	-0.08***	-0.02	-0.12***	-0.03	0.02	-0.08**	0.34***	1.00			
(15) London	-0.05*	-0.08***	-0.11***	-0.07**	-0.08***	-0.05	-0.04	-0.04	-0.06*	-0.00	-0.13***	-0.02	-0.03	-0.03	1.00		
(16) Co-investors' history	0.05	0.07**	0.03	0.02	-0.01	0.00	0.01	-0.03	0.01	0.06**	0.08**	0.08**	0.02	0.01	-0.04	1.00	
(17) Deal Value	-0.09***	0.06**	-0.06*	-0.04	-0.04	-0.00	-0.06*	-0.02	-0.07**	0.03	0.02	0.10***	0.05*	0.06*	0.00	0.07**	1.00

Notes: This table presents correlations between independent and control variables on the estimation sample of the last column in table 6; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE 6: Zero-truncated poisson regression results on number of investor types

	DV = number of investor types							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cash ratio	0.42*** (0.12)	0.44*** (0.12)			0.36** (0.11)	0.39*** (0.11)	0.38*** (0.11)	0.42*** (0.12)
Prior co-inv. exp.			0.40*** (0.05)	0.42*** (0.06)	0.44*** (0.05)	0.45*** (0.07)	0.46*** (0.05)	0.47*** (0.06)
Venture age	-0.07*** (0.01)	-0.07*** (0.01)	-0.07*** (0.01)	-0.06*** (0.01)	-0.07*** (0.01)	-0.06*** (0.02)	-0.07*** (0.02)	-0.06*** (0.02)
Venture size	0.04* (0.02)	0.03 (0.02)	0.05*** (0.01)	0.05*** (0.01)	0.03 (0.02)	0.02 (0.02)	0.03 (0.02)	0.02 (0.02)
Tangibles	-0.25 (0.39)	-0.14 (0.39)	-0.23 (0.33)	-0.12 (0.38)	-0.19 (0.41)	-0.07 (0.41)	-0.12 (0.36)	0.08 (0.35)
Intangibles	0.02 (0.20)	0.12 (0.15)	-0.27 (0.21)	-0.19 (0.19)	-0.00 (0.18)	0.08 (0.15)	-0.02 (0.17)	0.17 (0.12)
ST liabilities	-0.01 (0.02)	0.00 (0.02)	-0.01 (0.02)	0.00 (0.03)	-0.01 (0.02)	0.00 (0.02)	-0.01 (0.02)	-0.00 (0.02)
LT liabilities	0.00 (0.01)	-0.00 (0.02)	0.02 (0.02)	0.04 (0.02)	0.02 (0.01)	0.02 (0.02)	0.03* (0.01)	0.03 (0.02)
Profitable	0.04 (0.04)	0.01 (0.05)	0.11* (0.05)	0.06 (0.06)	0.03 (0.04)	-0.00 (0.05)	0.06 (0.04)	-0.01 (0.04)
Past growth rate	0.00 (0.00)	0.00 (0.00)	0.00*** (0.00)	0.00** (0.00)	0.00** (0.00)	0.00 (0.00)	0.00*** (0.00)	0.00* (0.00)
Patents	0.10 (0.09)	0.08 (0.08)	0.10 (0.10)	0.04 (0.09)	0.09 (0.08)	0.07 (0.07)	0.03 (0.09)	0.01 (0.08)
Grant received	0.06 (0.19)	-0.11 (0.18)	0.05 (0.18)	-0.14 (0.18)	0.10 (0.17)	-0.07 (0.17)	0.07 (0.21)	-0.11 (0.21)
Founding team size	0.03** (0.01)	0.02 (0.01)	0.01 (0.01)	0.00 (0.02)	0.01 (0.01)	0.00 (0.02)	0.01 (0.01)	-0.00 (0.02)
Entrepreneurial exp.	-0.02 (0.04)	-0.06 (0.06)	-0.04 (0.05)	-0.08 (0.04)	-0.05 (0.04)	-0.09 (0.06)	-0.06 (0.04)	-0.08 (0.07)
London	0.06 (0.04)	0.09* (0.04)	0.03 (0.06)	0.05 (0.05)	0.07 (0.04)	0.11* (0.04)	0.07 (0.04)	0.08** (0.03)
Co-investors' history	0.10*** (0.01)	0.08*** (0.01)	0.09*** (0.01)	0.08*** (0.01)	0.09*** (0.01)	0.08*** (0.01)	0.10*** (0.01)	0.08*** (0.01)
Deal Value		0.08*** (0.01)		0.07*** (0.01)		0.08*** (0.01)		0.08*** (0.01)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Industry \times year FE	No	No	No	No	No	No	Yes	Yes
N	2,281	1,654	2,498	1,815	2,280	1,654	2,280	1,654
Log Likelihood	-1,738	-1,307	-1,907	-1,434	-1,723	-1,294	-1,662	-1,238
Pseudo R^2	0.20	0.20	0.20	0.21	0.21	0.21	0.23	0.24

Notes: Prior co-inv. exp. denotes prior multi-type co-investment experience. Uneven columns do not control for deal values, whereas even columns do. Robust standard errors in parentheses, clustered at the industry level; constant included but not reported; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$