Early individual stakeholders, first venture capital investment, and exit in the UK startup ecosystem[☆]

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ABSTRACT

We create a novel, comprehensive dataset of UK-based startups with extensive information on ownership, control, and valuation. Our database provides unique descriptive evidence about the relevance of individual stakeholders in startups, particularly before the entry of venture capital institutional investors. We compare the influence of two comparable characteristics of various groups of pre-institutional individual stakeholders: size and experience. We show that the quantity as well as the experience, of founders, directors, and other individual investors correlate with the startup's type of, and value at, exit. Success results are very different across types of diversity: functional diversity appears to have a positive relationship with success whereas that of demographic diversity is negative.

1. Introduction

Startups are a major source of innovation and technological development and thus key drivers of economic growth. The early stages of the startup, particularly before the entry of the venture capital (VC) institutional investors, are crucial (Bernstein et al., 2017). In this "pre-institutional" period, the individual stakeholders, i.e., founders, directors, and other individual investors, including the business angels (BA), play a paramount role.[1] Still, each of these groups of individuals plays a different role in the startup, and there may be thus differences in how they impact startup performance. Despite their relevance, we have very little evidence on the varying importance and differential influence of each of these individual stakeholder groups in the early stages of the startups.

Using a novel dataset of UK-based VC-backed startups, this paper investigates and compares the links between the characteristics of the different groups of pre-institutional individual stakeholders and the startups' eventual success, both directly and indirectly, through the characteristics of the VC investors. We show in particular that the quantity, which has been used as a proxy of diversity, as well as the startup experience, of founders, directors, and other individual investors correlate with startup's type of, and value at, exit. But, more importantly, we show that the different types of individual stakeholders matter in different ways. The number of founding and non-founding directors has a significant positive relationship with success. In contrast, for the other individual investors, it is the experience, particularly the presence of BAs, which is positively related with success. Finally, we show our results differ across more precise measures of team diversity: while higher levels of functional diversity correlate positively with higher likelihoods of success, gender and national diversity measures correlate negatively.

So far, there exists very little systematic information and data about the individual stakeholders of the startups. This is for at least two reasons. First, individuals (e.g., BAs) may be reluctant to reveal their identity and share information about their activities, both for strategic reasons and to avoid personal exposure (Kaplan and Lerner, 2016). Investments made individually are not subject to regulatory disclosure requirements in many countries (e.g., in the US). Second, most databases on startups, such as VentureXpert and Venture Source, emanate from surveys of venture capital firms (Da Rin et al., 2013). As a result, they contain relatively good information about the VCs and their investments, but they possess much less information about individual investors, founders, or directors, particularly before the introduction of VC investment.[2]

To analyse the relevance of the individual stakeholders in the startup ecosystem, we have created a novel, comprehensive dataset of UK-based startups with extensive information on ownership, control, and valuation. In contrast to many other countries, the UK requires all private companies –even the very small ones– to submit mandatory filings to Companies House, the registrar of companies.[3] Among others, each company has to fill in extensive details on the identities of its shareholders and directors, and, before 2009, extensive details on share issuances, including the allottees and the share price, which determines the valuation of the startup. Unfortunately, the registrar of companies (which includes about 4 million companies, from small restaurants to large multinationals) does not identify which companies are startups and which are not.

Our sampling strategy consists of selecting, from the entire universe of companies in the UK, all those also included in the VentureXpert database. From this sample of startups, which are by construction VC-backed, we obtained all their available information in Companies House from incorporation until up to 5 years after the first-VC investment. To the best of our knowledge, our database will be the first including a broad sample of VC-backed startups in any country that has information on the identity of all the shareholders and directors at each point in time and on the number and value of the shares owned by each shareholder at each point in time. Moreover, given the legal nature of the source documents, the information we collected should be more accurate than the data obtained through surveys, which is the usual source of information of most of the existing startup databases (Da Rin et al., 2013).

Our database provides, first, descriptive evidence about the relevance, in VC-backed startups, of the individual stakeholders, such as founders, non-founding directors, and other individual investors. Despite accounting for only 11% of the total investment, these individuals represent 84% of the body of startup investors, while institutions account for 81% of the investment but only 11% of the number of investors. In terms of characteristics, the founders and non-founding directors have a wide range of occupations but the ratios of females and foreigners are very low (9.5% and 8.7%, respectively). Concerning the institutional investors, our database includes, in addition to Independent VCs (IVCs) and Corporate VCs (CVCs), as most databases, less structured and organized institutional investors, such as corporate venture investors. We define corporate venture investors as companies that invest in startups without a formal venture capital fund structure. Corporate venture investors represent an important part of the number of institutional investors (29%), although they account only for 4% of their total investment.

In terms of startup exit, about 39% of the companies in our database can be considered "successful", defined, following prior literature (e.g., Sørensen, 2008; Dushnitsky and Shapira, 2010), as exiting in the form of Initial Public Offering (IPO) or Merger and Acquisition (M&A) (6% and 33%, respectively), whereas the rest end up dissolved or remain "active" without exit (44% and 17%, respectively). Given that we use legally binding data, we can also assess the accurateness of the attributions of exit routes and institutional investments performed by the standard VentureXpert database. Not surprisingly, the most inaccurate exit assignment in the VentureXpert database is the "active" category. Instead, the classifications of the firms exiting through IPOs and those ending dissolved are the most accurate, in the sense that those classified as such by VentureXpert are indeed actual IPOs and dissolutions, respectively.

Our data also allow us to construct two simple but comparable characteristics across stakeholder groups: size and experience. The team science literature has often associated the number of individuals in a group with group diversity (Wuyts et al., 2005; Uzzi et al., 2013). There are reasons to believe, but little systematic evidence, that size and experience of each of these stakeholder groups may correlate with startup success (Colombo and Grilli, 2005). The diversity literature argues that larger groups are more likely to integrate multiple and divergent perspectives, thus improving performance (Singh and Fleming, 2010; Falk-Krzesinski et al., 2011). Productivity can be increased because of a greater set of skills and a wider network of social and business contacts (Brinckmann and Hoegl, 2011). But in other settings there is either no increase or even a decrease in performance as group size increases (for

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[2] A few papers (e.g., Hellmann and Puri, 2000; Hsu, 2004) also use hand-collected data, primarily through surveys or proprietary databases. However, the scope of some of these studies may be limited by the size of the sample, and the private source of the data makes the analysis difficult to replicate.

[3] As acknowledged by Kaplan and Lerner (2016), VCs are typically not required to submit much information to the United States Securities and Exchange Commission or other regulators after the Investment Company Act of 1940.

a review, see Von Tunzelmann et al., 2003). Productivity can be decreased because of the needs of coordination and the usual incentive problem of teams sharing a venture (Backes-Gellner et al., 2015).

Other scholars argue that stakeholders gain essential insights from previous experience, thereby improving business opportunity identification and exploitation (Corbett, 2005; Baron and Ensley, 2006). Still, other papers question the benefit of experience (Camerer and Lovallo, 1999; Cassar and Craig, 2009; Landier and Thesmar, 2008). In any case, it is important to know, from a practical and policy perspective, if diversity and experience actually improve startup performance and should be advocated (Cassar, 2014). So far, we have limited systematic evidence on the influence of these characteristics of each of the different stakeholders, let alone on a comparison across stakeholders groups.

Our regression results show that the characteristics of the startup's early individual stakeholder groups, i.e., founders, non-founding directors, and other individual investors, are directly related to the likelihood that a VC-backed startup exits through an IPO or an M&A. Success is more likely in startups that have had larger founding teams, appointed a larger number of non-founding directors, and included experienced BAs among its investors before first-VC investment. Diversity, as long as it is captured by team size, seems to be important for management, whereas experience is essential for non-managing investors. Decomposing the success outcomes on IPOs and M&As, we show that these characteristics of the early individual stakeholders are also linked with the likelihood of M&A significantly more than the one of IPO, and thus, among the successful startups, make M&A as opposed to IPO more likely. The same three startup features are also positively related with startup valuation at 3 and 5 years since first-VC investment and startup final valuation, whenever it occurred.

We construct and analyse more precise measures of diversity of the team of founders and non-founding directors. Diversity may, in principle, be applied to a wide number of personal attributes. But, as suggested by Williams and O'Reilly (1998) and Cummings (2004), the most critical difference across types of diversity is between "demographic diversity"—differences in readily detectable attributes such as sex and nationality—and "functional diversity"—differences in less visible underlying attributes that are more job-related. Teams in our database exhibit low levels of demographic diversity but relatively high levels of functional diversity. Our regression results on startup success differ across these two types of diversity. While higher levels of functional diversity correlate positively with higher likelihoods of success, gender and national diversity measures correlate negatively. The result of the overall measure of diversity is thus dominated by that of functional diversity, as the effects of demographic diversity pull in the other direction.[4]

We find that the quantity and experience of the early individual stakeholders are also related to the characteristics of the first-VC investment in terms of type, quantity, and quality of the first-VC investors. We show, for instance, that startups with more and thus more diverse founding and non-founding directors are more likely to have IVCs as first-VC investors. The presence of an experienced BA investor makes it more likely that the startup will have an IVC but less likely that it will have a CVC. As the individual stakeholders are related to the characteristics of the first-VC investment, there are not only direct but also indirect relationships with success. Indeed, the diversity of the founders and non-founding directors, as well as the presence of a seasoned BA investor, make it more likely that the startup will have an IVC at first-VC investment, and the presence of an IVC increases the likelihood of IPO or M&A. We show that most but not all these indirect relationships work in the same direction as the direct ones, and thus complement the direct ones of the early individual stakeholders with the success of the startup.

Our startup success regressions include an unprecedented range of characteristics of the pre-institutional stakeholders and first-VC investors. They also include a combination of industry, year, and location fixed effects, making the startups we compare in our regression analysis more similar. Still, there may be unobserved characteristics, such as the quality of the project, that prevent us from interpreting the relationships between the startup's stakeholders and startup success as causal. In this sense, we do not claim that by including a BA, the startup will be more likely to be successful but, instead, that if a startup has a BA, it is more likely to be successful, either because the BA makes it more likely to be successful or because the BA is more likely to choose a project with higher quality.

Our paper contributes, first, to the scant literature that studies the relationships between the pre-institutional stakeholders on the startups' eventual success. To our knowledge, our paper is the first that compares the influence of founders, directors, and other early individual investors between each other. Some papers consider the size of the founding team, but they mostly use very small samples (Cooper and Bruno, 1977; Roure and Madique, 1986). In terms of experience, Gompers et al. (2010) compare the success outcomes of experienced (serial) entrepreneurs with entrepreneurs for the first time. Colombo and Grilli (2005) find a positive relationship between prior work experience in the same industry and growth. Gonzalez-Uribe and Paravisini (2017), using data for the UK as we do, highlight the role of the individual investors and show that young firm's total assets grow much faster after raising equity from new investors than after raising it from existing equity holders. Kerr et al. (2014), for the US, and Lerner et al. (2018), for a heterogeneous set of 21 countries, find that firms that received BA funding are more successful overall.[5] While previous literature has considered specific types of stakeholders, ours is an attempt to provide a broad perspective on the relevance of the pre-institutional individual stakeholders.

We also have little evidence on the relationships between the individuals and institutional investors and the type of exit, among successful VC-backed startups. Most of the analyses in this area compare the effects of IVC and CVC investment. Because of their preferences and the differences in the type of support they provide to new ventures, some authors have argued that the likelihood

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[4] Banal-Estañol et al. (2019) also find differences between functional and demographic diversity in the grant allocation process for academic Engineering departments in the UK, where the ratios of women and foreign applicants are also very low. In this context, while evaluating panels are biased against functionally diverse teams, they are not against demographically diverse teams.

[5] In contrast, Goldfarb et al. (2013) find that mixing BAs and VCs may hurt startup performance.

of IPO exit should be lower than the likelihood of acquisition in the presence of CVC funding (Hellmann, 2002; Riyanto and Schwienbacher, 2006). Cumming (2008) and Kim and Park (2017) confirm this intuition, whereas Gompers and Lerner (2000) find the opposite result.[6] Our results suggest that the characteristics of the individuals, and not only of the VCs, may also favour one type of exit or the other.

Our paper is also the first that makes a comparative analysis of the relationships between the individual stakeholders' characteristics and the type of VC financing. Previously, the type of VC funding has been studied, to our knowledge, only by Sørensen (2007).[7] As Sørensen (2007), we do not address the question of which startups obtain VC financing. We investigate the characteristics of the individual stakeholders that make a VC-backed startup more likely to receive financing by a particular type of VC than another. Some studies have investigated the likelihood of receiving VC funding and, in particular, the effects of the presence of BA investors on the likelihood of obtaining VC funding.[8] However, we know very little about the characteristics of the startups that lead, for instance, to CVC instead of IVC financing, that appeal to top VCs, or that attract large VC syndicates. Our paper is the first attempt to make progress in this direction.

Finally, our paper is also the first paper to document a wide range of indirect relationships between the pre-institutional individual stakeholder attributes and startup success through the characteristics of the venture capital investors. The positive relationship between the presence of institutional investors and startup performance is well documented (see, for instance, Giot and Schwienbacher, 2007; Chemmanur et al., 2011; Puri and Zarutskie, 2012; Bertoni and Tykvová, 2015). However, how the specific characteristics of these VCs correlate with the venture's success is much less well understood. The issue that has received most attention is, again, the difference between IVCs and CVCs. IVC funds are said to provide significant monetary contributions, whereas CVC funds provide relatively more of the non-financial resources (Riyanto and Schwienbacher, 2006). This has been found to affect differently the startups they each finance. Chemmanur et al. (2014) find indeed that CVC-backed firms are more innovative, as measured by their patenting outcome, although they are younger, riskier, and less profitable than IVC-backed firms. Dushnitsky and Shapira (2010), on the other hand, find that CVC investors exhibit better performance, as measured by the rate of successful portfolio exits. Dushnitsky and Lenox's (2006) results suggest that CVCs create greater firm value when their parent companies harness novel technology. A few other papers have studied the effect of VC syndication on startups.[9] Brander et al. (2002) and Cumming and Walz (2010) show that syndicated investments have higher returns than standalone investments, suggesting that VCs add managerial value to the startup. Still, VC syndication may also result in conflicts of interest among VC syndicate members (Chahine et al., 2012). Our paper highlights the relationships via the type of VC investor (e.g., IVC vs. CVC) and VC syndication as indirect channels of influence of the pre-institutional individual stakeholders.

The rest of the paper is organized as follows. Section 2 describes our database. Section 3 provides details on the definition of the variables. Section 4 presents the results. Section 5 concludes.

2. Data and descriptive evidence: a unique database

To create a comprehensive dataset of UK-based startups, we used both VentureXpert, to select our sample, and Companies House, the registrar of companies, to obtain all the relevant information. This section describes this unique database and provides descriptive evidence of the individual stakeholders in startups, as well as an assessment of the institutional investments and exit classifications offered by the VentureXpert database.

2.1. Sample definition

We first had to identify our sample of startups within the universe of UK firms included in Companies House (about 4 million companies). To do so, we selected all the UK-based companies that are included in the VentureXpert database.[10] By construction, all of these companies received at some point VC investment.[11] According to Maats et al. (2011), VentureXpert has the most comprehensive investment coverage of the two longstanding startup databases (VentureXpert and Venture Source), so our investment-based search should guarantee that we obtain a large sample of VC-backed startups.[12]

We identified all the UK-headquartered companies of the VentureXpert database that received, in particular, their first-VC investment between 1999 and 2005 (both inclusive) and were incorporated on or after 1995. We obtained all the available

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[6] Guo et al. (2015) find that CVC funding influences the choice between IPO and acquisition through two channels: CVC-backed startups receive larger investment levels (which leads to more IPO exits) and have a longer duration before exit (which pushes towards more acquisitions).

[7] Sørensen (2007) uses a structural model based on the two-sided matching model to separate the effects of funding by an experienced VC due to sorting from those due to its differential added value.

[8] Lerner et al. (2018) and Lindsey and Stein (2018) suggest the existence of complementarities between the two sources of financing. Kerr et al. (2014) find no significant effects, while Hellmann et al. (2017) find a substitutes pattern between BAs and VCs. Other studies on the likelihood of receiving VC funding find that the characteristics of founders and non-founding directors also influence VC's selection decisions (MacMillan et al., 1985; Shane and Stuart, 2002; Hsu, 2007; Beckman et al., 2007; Bernstein et al., 2017; Gompers et al., 2020).

[9] Syndication of VCs in startups is common, even at the first round of investments (Lerner, 1994).

[10] We excluded companies in Northern Ireland because they use a different type of document in Companies House, which was not provided to us. Throughout, when we refer to the UK, we mean Great Britain (i.e., the UK excluding Northern Ireland).

[11] Startup, as an empirical phenomenon, is difficult to define, and it is therefore difficult to design a sample selection strategy. Many of the employees of the startups do not have a clear definition of what it means, or have definitions that are inconsistent or contradictory (Cockayne, 2019). Clearly defined technical definitions of the term are absent too from academic literature.

[12] Kaplan and Lerner (2017) provide a comparison of VentureXpert and Venture Source with more recent data sources.

information from the (often hand-written) pdfs submitted by these companies to Companies House (described below), from incorporation until up to 5 years after first-VC investment. Although they still need to file annual returns, UK companies are not required, since October 1st, 2009, to report the details of the "allottees" (investors that bought shares at issuance). Therefore, we collected information on firms receiving first-VC investment up to 2005 (and not more recent ones) to have full information for at least 4 years since first-VC investment. We ended up with a sample of 1044 unique UK-based startups.[13]

2.2. Source documents and investors

For each company, we obtained, from incorporation date until 5 years after the first-VC investment or "exit date" (both to be defined below), whichever came earlier:

•   The Return of Allotment of Shares[14] forms i.e., the share issuances, which include, for each allottee, the name as well as the number, class (e.g., common, preferred, etc.), nominal value, and price paid for the shares issued, as well as the date. They are submitted whenever there is a share issuance.

•   The Annual Return[15] forms, which include the (accumulated) number, class, and nominal value of the shares held by each shareholder as well as the date. They are submitted one year after incorporation and each year thereafter.[16]

We dropped 134 companies because of missing/inconsistent information.[17] Our final sample includes thus 910 companies.

We manually classified the investors identified in the documents into "individuals" and "institutions".[18] Panel *A* of Table 1 shows the distribution of (unique) investors in our database, both in terms of the number of investors and the size of their investments. Individual investors account for 84% of the number of investors and bring 11% of the total investment. Despite being only 11% of the body of investors, institutions account for 81% of the total investment. The rest of the investors (5%), which include those in tax-haven countries or "nominee" companies (intermediary financial companies created to hold shares on behalf of third parties), are unknown/undisclosed (they could be institutions or individuals).

2.3. Founders, non-founding directors, and other individual investors

We obtained the list of the directors of our startups from the FAME database, which collects part of the information of Companies House.[19] For each director in each company, we obtained his/her appointment date and resignation date (if any).[20] We identified unique directors across companies and matched these data with the individual investor data, taking into account that the names across companies may be slightly different. The directors of a given company can be investors of that company or not. We use all this information to separate individual stakeholders into founders, non-founding directors, and "other" (i.e., non-director) individual investors.

We rely on the returns specified above, rather than the incorporation documents, to identify the startup founders, as many startups are set up through the acquisition of a "shelf" company.[21] We considered a director of the company a founding director or a "founder" if either (i) s/he is an investor in the first year, or (ii) s/he was appointed in the first 45 days of the company.[22]

Panel *B* of Table 1 shows the number and the investment of the different types of individuals in our database. Note that the individuals in this table are not unique, but they appear as many times as the companies they are present in. The same person may, for instance, be a founding director in one company and an "other individual investor" in another one.

Not surprisingly, founders represent an important source of investment for the startups in relative terms by investing 26% of the total individuals' investment while representing only 10% of the number of individuals. A proportion of 15% of them never invests in the company, though. Non-founding directors represent a large part of the individuals in our database (35%); the average

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[13] We identified a sequence of different Companies House's companies with the same shareholders, directors, and, sometimes, the same or similar company names. In other words, some companies have "precursor" and/or "sequel" companies which, despite being legally different entities, should in practice be considered the same company. We merged all the information of precursor and sequel companies into one single company (94 companies have at least one precursor/sequel).

[14] Formally called form 88(2) before October 2009 and form SH01 thereafter.

[15] Also known as form 363 before October 2009 and form AR01 thereafter.

[16] Note that sales of shares between investors do not have to be submitted in Companies House. These transactions can be identified from the annual forms in two subsequent years, but we do not have the transaction price. Therefore, valuations can only be done based on the price reported at issuance. Moreover, we cannot identify two subsequent share transfers within the same year, although it should happen in rare cases in startups.

[17] We made sure that the total number of shares of each class held by all the investors is equal to the number of shares displayed in the Annual Return's "Statement of Capital".

[18] We manually identified unique investors across companies. We also considered the same investor the subsidiaries of the same corporate investor and the funds of the same VC firm. To identify the funds of the VC firms, we made use of the information available in VentureXpert about the VC firms that invest in our companies.

[19] Financial Analysis Made Easy (FAME), a database published by Bureau van Dijk (BdV), contains financial and other company information for 3.8 million companies in the UK and Ireland.

[20] We classify all the individuals who have been or will be directors at some point in the company. Therefore, being "director" or not is a static attribute of a person in a company. Still, the same person may be a director of a company but a (non-director) individual investor of another.

[21] A shelf company is a company that has been incorporated and "put on the shelf", without having ever traded, for its later sale. An actual trading company can purchase it later to save time and skip the –sometimes tedious– incorporation process.

[22] If the first-VC invested within the first year, s/he is considered a founder if s/he is an investor strictly before the VC invested. If the first-VC invested within the first 45 days, s/he is considered a founder if s/he is appointed strictly before the first-VC investment.

Table 1
Individuals and institutional investors.

Panel A				
Investors (unique)	Number	Percentage	Total investment (£m)	Percentage of investment
Individuals	16,408	84.47%	617	11.02%
Institutions	2051	10.56%	4552	81.25%
Unknown/Undisclosed	966	4.97%	433	7.73%
Total	19,425	100.00%	5602	100.00%
Panel B				
Individuals (not unique)	Number	Percentage	Total investment (£m)	Percentage of investment
Founders	2465	9.89%	158.927	25.74%
Non-founding directors	8670	34.80%	119.849	19.42%
Other individual investors	13,781	55.31%	338.575	54.84%
Total	24,916	100.00%	617.351	100.00%
Panel C				
Institutional investors (unique)	Number	Percentage	Total investment (£m)	Percentage of investment
Independent VC	1188	57.92%	3924.605	86.22%
Corporate VC	86	4.20%	331.787	7.29%
Corporate venture investment	602	29.35%	196.183	4.31%
Organization VC	38	1.85%	57.346	1.26%
Other institutional investors	137	6.68%	41.891	0.92%
Total	2051	100.00%	4551.812	100.00%

This table presents the importance of the different types of investor in our database. Panel A shows the number of unique investors and their total investment for each type and the percentage they represent of the total number of investors and the total investment. Panel B (resp., Panel C) summarizes similar information about the different types of individuals (resp., institutional investors) in our database.

company has 9.5 of them, as opposed to 2.7 founders. Although only one out of five invests in the startup they direct, when they do invest, they invest similar quantities as founders: an average of £76K for founders vs. £64K for non-founding directors. Other individual investors represent the most important category with more than half of the number and investment (6% of the total, institutions included). Each of these individuals invests on average £25K per company.

2.4. Characteristics of the individuals

Panel *A* in Table 2 shows the number of founders, non-founding directors, and individual investors in our database. We have also identified which directors have "experience" in directing startups and which individual investors have extensive investing experience, i.e., which of them are BAs. In the case of founders and non-founding directors, we define experience as having previously been a director in one of the companies in our database. According to this definition, 5% of the founders, and 12.5% of the non-founding directors, have experience directing. We consider that an individual investor has experience, i.e., s/he is a BA, if s/he (i) has invested, throughout our database, in 2 or more companies and has invested, in total, £100K or more, or (ii) has invested in 6 or more companies. According to this definition, 6% of the individual investors (828 out of 13,781) are BAs.[23]

Our regressions use the information of the subset of individuals present in the early stages of the startup, before first-VC investment (see next subsection for a formal definition). Panel *B* shows the number of the different types of individuals in the pre-institutional period. The numbers of non-founding directors and BAs are substantially lower than those of the overall database, shown in Panel *A*. Still, the proportion of those with experience is similar: 10% for the non-founding directors and 4.5% for the BAs.

The FAME database collects further information from Companies House about the characteristics of the founders and non-founding directors. Panel *C* in Table 2 shows the gender (male/female) and nationality (UK/foreign) as well as the number of different occupations (including, for instance, engineering or accounting) of each of these two types of individuals present in the pre-institutional period. The number of different occupations is relatively high, but the demographics of both types of individuals are really homogeneous: females represent only around 9.5% of the directors, while foreigners make up for 8% of the founders and 11% of the non-founding directors.[24]

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[23] Identifying "business angels" is always problematic, and whether an individual should be considered a BA or just an investor is somehow arbitrary. Mason and Harrison (2008) review several approaches to measure the investing behaviour of BAs.

[24] The VC world is also renowned for its lack of diversity. According to Lerner and Nanda (2020), 80% of partners in the VC firms are male and, among the set of partners with at least one board seat, 91% are male.

Table 2
Characteristics of the individuals.

Panel A		
Individuals	Number	Percentage
Founders	2465	
of which experienced	126	5.11%
Non-founding directors	8670	
of which experienced	1091	12.58%
Other individual investors	13,781	
of which business angels	828	6.01%

Panel B		
Early individuals	Number	Percentage
Founders	2465	
of which experienced	126	5.11%
Non-founding directors	871	
of which experienced	87	9.99%
Other individual investors	2297	
of which business angels	105	4.57%

Panel C		
Early directors	Number	Percentage
Founders	2465	
of which male	2235	90.67%
of which female	230	9.33%
of which UK nationals	2271	92.13%
of which non-UK nationals	194	7.87%
# different occupations	307	
Non-founding directors	871	
of which male	784	90.01%
of which female	87	9.99%
of which UK nationals	774	88.86%
of which non-UK nationals	97	11.14%
# different occupations	174	

This table reports characteristics of the individual stakeholders. Panel A shows information about their experience in other startups. Panel B does the same for those present prior to first-VC investment. Panel C gathers details about both the demographic and functional diversity of the directors present at first-VC investment.

2.5. Institutional investors and first-VC investment

We classified institutional investors into independent venture capital (IVC), corporate venture capital (CVC), corporate venture investment (CVI), and organization venture capital (OVC). To do so, we first matched the institutional investors with the companies in the Orbis database. A matched investor is considered an IVC if its NACE code in Orbis is in the finance or management consulting areas. A matched investor in any other NACE code is considered a CVC or a CVI. We distinguish CVCs, corporations investing in startups through structured and organized funds, by searching whether they are present in the overall VentureXpert database (that is, investing in any startup included in VentureXpert, not only those in our sample). Not-for-profit/government organizations are categorized as OVC.[25]

Panel *C* of Table 1 depicts the distribution of (unique) institutional investors in our database, both in terms of number as well as the size of their investments. IVCs represent the main body of institutional investors, accounting for more than half of the investors and 86% of the investment. Despite representing only 4% of the institutional investors, CVCs account for 7% of the institutional investors' investment. CVIs, on the other hand, represent 29% of the investors but only 4% of the investment.

We define it as first-VC investment, the first time a VC has invested in the startup. Note that this may be earlier than the first-VC investment according to the VentureXpert database. This is because some of the IVC/CVC investments in the startups are not included in VentureXpert or because the first institutional investor is a CVI (see above).

2.6. Investment, ownership, and valuation

We computed the overall cumulative investment in each company at each point in time. To do so, we added the money invested by all the investors in all share classes in all the share issuances up to that point in time, where money invested is defined as the product of the "price paid" and the "number of shares allotted" in that form. In our data, the cumulative investment is, on average,

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[25] Other institutional investors include research institutions and employee schemes. We do not classify them (or use them to define first-VC investment) because they do not participate in the money disbursement. Research institutions, for instance, often get ownership in exchange for technology transfer.
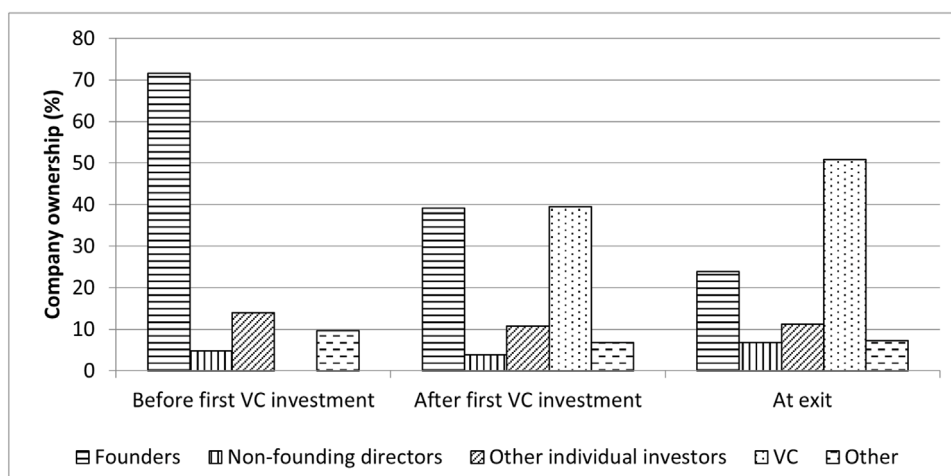
Fig. 1. Average ownership structure. This figure shows the percentage of ownership of founders, non-founding directors, other individual investors, VCs and Other prior to first-VC investment, at first-VC investment and at exit for the average company.

£124*K* just before first-VC investment, £1.4*m* at first-VC investment, and £5.4*m* at 5 years after first-VC investment or exit, whichever came earlier.

We computed the ownership structure at each point in time by computing the fraction of the overall nominal capital held by each investor.[26] Nominal capital for each investor at each point in time is computed by multiplying her/his number of shares by their nominal value (and adding the nominal capital of her/his ordinary, preferred, and other shares). We computed the end-of-the-year nominal capital from the Annual Returns. We also computed the nominal capital at intermediate dates whenever shares were issued. Fig. 1 depicts the ownership structure for the average company prior to first-VC investment, at first-VC investment, and exit.

We valued the companies at each issuance. To do so, we first constructed a "premium multiplier" for the ordinary shares of each Return of Allotment of Shares, defined as the (maximum) ratio of the price paid per share divided by the nominal capital of that share.[27] We compute the valuation by multiplying the overall (i.e., company-wide) nominal ordinary capital by the premium multiplier to which we added the nominal preferred and other capital.[28] The valuation for the average startup is £1.8*m* just before first-VC investment (the pre-money valuation), £2.6*m* at first-VC investment (the post-money valuation), and £8*m* 5 years after first-VC investment or exit, whichever came earlier.

2.7. Type of exit and final valuation

We now explain how we identified the type of "exit" of each startup, which may be earlier or later than the 5 years after first-VC investment. We identified the 55 *IPOs* in our dataset, representing 6% of the startups (see Fig. 2), with a search in the major stock exchanges (although almost all of the IPOs in our database are in the London Stock Exchange). We identified the 298 *M&As* (33% of the companies) as cases in which another company buys all the startup's shares (or, in sporadic cases, a majority controlling stake). Finally, we identified the 400 *dissolutions* (i.e., 44% of our sample) as an administrator/liquidator appointment, as this is when the company stops trading (final closure usually happens several years later). If none of these outcomes occurs by the end of 2017, the company is considered *active*.[29]

We computed the final valuation, at exit, independently if this occurred before or after 5 years from first-VC investment, as follows. For IPOs, we took the market capitalization at the end of the first trading day. For M&As, we manually searched for the

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[26] We cannot use the number of shares as there are shares of different nominal values. For instance, 10 ordinary shares at a nominal value of 2 are worth twice as much as 10 ordinary shares at a nominal value of 1.

[27] Note that different investors may pay different prices, so we took the maximum price paid. We did not count (i) shares issued to directors, as they may contain options, (ii) shares whose price paid was equal to the nominal value, or allotments where (iii) the total investment was lower than £20,000 or (iv) the capital issued was less than 5% of the total capital.

[28] We chose this method because the preferred and other capital behave like debt (multipliers larger than 1 are rare for non-ordinary shares). We have run regressions using other definitions of valuation, including a premium multiplier that used information from preferred shares. The results of the regressions are very similar to those reported in the next sections, even though the magnitude of the valuation is different.

[29] We identified 57 (6%) companies that exited through a management buy-out/buy-in or a repurchase. Management buy-out/buy-ins were identified as cases in which a company owned by the directors of the same company (for buy-outs) and from another company (for buy-ins) acquired all the startup's shares. Repurchase happens when the VC exits the company but the company is still independent and active (sometimes the shares are redeemed, or they are bought back by the company). We include them in the active category, following VentureXpert's approach.
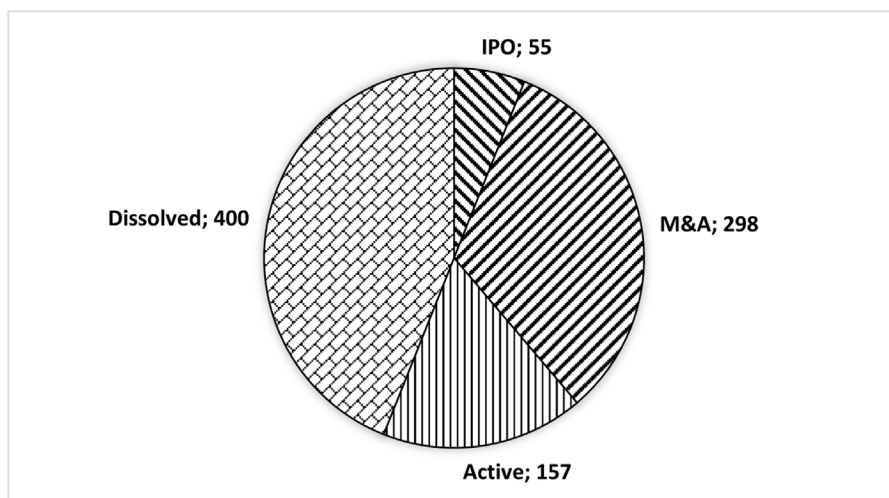
Fig. 2. Company exit. This figure reports the number of startups by type of exit.

acquisition price in press releases about the acquirers and complemented it through a web search.[30] In case of dissolution, we assigned a final value of 0. We could not compute a final valuation for "active" companies (the assigned value is thus missing).

Fig. 3 shows the cumulative investment and the valuation before the first-VC investment, at the first-VC investment, and at the exit for the average company in each type of exit.

Cumulative investments, despite being substantially different at the end across exit types (in order, IPO, M&A, active, and dissolved), are relatively similar at the first-VC investment. The average investment at first-VC investment is not significantly different between eventually successful (IPOs and M&As) and unsuccessful ventures (active and dissolved): t-statistic = −0.13 and p-value = 0.90.

We also observe that companies exiting through M&A and IPOs, despite having higher final valuations, have similar valuations at first-VC investment than the other companies. The average valuation at first-VC investment is not significantly different between eventually successful and unsuccessful ventures: t-statistic = 0.19 and p-value = 0.85.

2.8. Comparison with the VentureXpert database

Given the legal nature of the Companies House documents, our information should be more accurate than that obtained through surveys, which is the usual source of information of most of the existing startup databases (Da Rin et al., 2013). We now compare the exit routes, and the number and the investments of IVCs and CVCs, for the companies in our database with those identified by VentureXpert for the same companies. Note that individual investors and CVIs are not included in VentureXpert.

Table 3 compares the exit routes according to VentureXpert (columns) with the actual exit routes (rows), both defined as of the end of 2017. Not surprisingly, the most inaccurate category in the VentureXpert database is the "active" category: 287 out of the 509 companies classified as active by VentureXpert at the end of 2017 were actually dissolved at that date. Only 124 out of this 509 were correctly classified as active. 202 out of the 292 companies classified as exiting through an M&A had actually exited through an M&A. The classification of the firms exiting through IPOs or ending up dissolved is more accurate: 33 out of 36 were correctly classified as IPO, and 60 out of 73 were correctly classified as dissolved. There are, however, 22 startups that exited through an IPO and 340 startups that were dissolved whose exit is not correctly identified in VentureXpert.

Panel A of Table 4 compares the number and overall investment of three (out of the four) types of institutional investors in the set of firms in our database with those attributed by the VentureXpert database. To compute the overall investment according to VentureXpert, we use VentureXpert's investor variable "Fund Estimated Equity Invested in Company at Investment Date" to identify the size of all the investments in these companies of these investors.

The table shows that VentureXpert contains 416 out of the 1188 IVC investors of our database. But the IVC investments it includes are the largest and, in fact, VentureXpert overestimates their overall investment (101% of our recorded amount). In terms of CVC investment, VentureXpert covers 54 out of the 86 investors, representing 99% of the overall investment by this type of VC in our database. Finally, VentureXpert includes 10 out of the 38 OVC investors, representing 60% of the overall investment by this type of VC.

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[30] If milestones or any type of variable payment are included in the deal, we introduced the maximum possible amount, as variable payments occur relatively often. Still, in more than 50% of the M&A cases, the price was not disclosed by the acquirer, or it is unknown.

(a) Average investment by exit
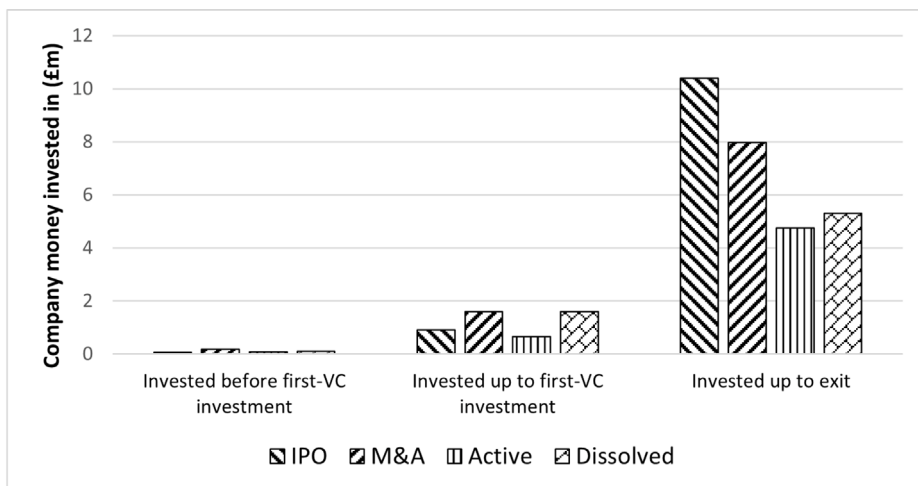
(b) Average valuation by exit
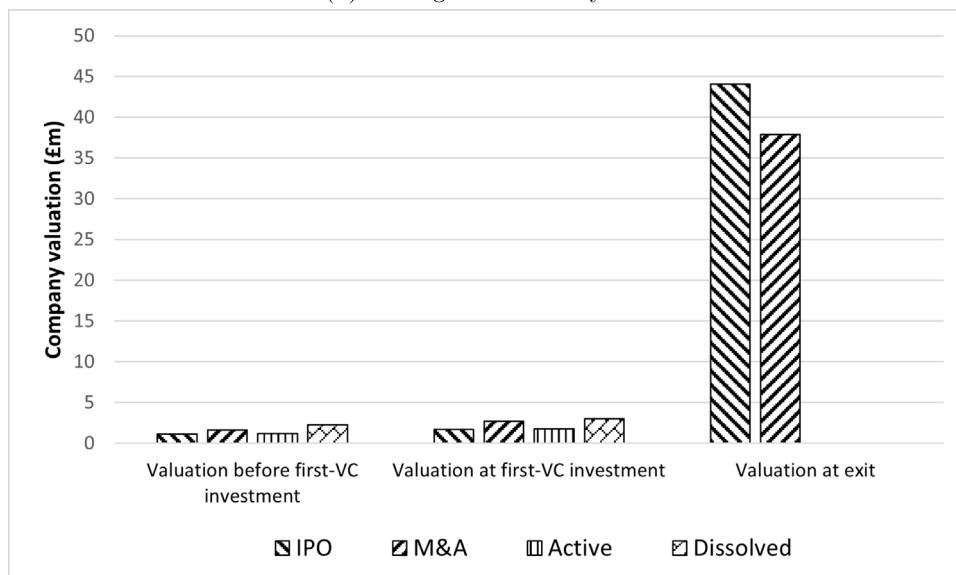
Fig. 3. (a) Average investment by exit. This figure shows the cumulative investment prior to first-VC investment, at first-VC investment and at exit for the average company that exits through an IPO, an M&A, remains active, has other type of exit, or ends up dissolved. (b) Average valuation by exit. This figure shows the valuation prior to first-VC investment, at first-VC investment and at exit for the average company that exits through an IPO, an M&A, remains active, has other type of exit, or ends up dissolved.

Panel A does not take into account that over- and underestimation might cancel out across companies. This is why we report in Panel B how often the VentureXpert investment data matches the size of the investment in our startups, allowing for an error margin of ±20%. We report the number and percentage of startups for which VentureXpert matches, underestimates, and overestimates each investor's investment size. VentureXpert does well in capturing the overall VC investment, but, at the individual-firm level, most of the investments included in VentureXpert either overestimate or underestimate the figures reported by firms to Companies House.

3. Variables and descriptive statistics

We now describe the variables used in the empirical analysis. We provide a summary description of the variables in Table 5 and descriptive statistics and correlations of the main variables in Tables 6 and 7, respectively.

Table 3

Comparison of the exit routes according to VentureXpert with the actual exit route.

Startup exit	Startup exit according to VentureXpert				Total
	Active	M&A	IPO	Dissolved	
Active	124	28	0	5	157
M&A	87	202	1	8	298
IPO	11	11	33	0	55
Dissolved	287	51	2	60	400
Total	509	292	36	73	910

This table shows the comparison between the exits found by VentureXpert (taken from the variable "Company Status") and the ones we found by displaying how many companies were classified in each category, both by VentureXpert and us. The rows show our classification and the columns show the VentureXpert classification. The M&A category for VentureXpert includes: "Acquisition", "Pending Acquisition", "Merger", and "LBO". The Active category for our classification includes: "Active", "MBO/MBI", and "Repurchase".

Table 4

Comparison of coverage of institutional investors by VentureXpert and our database.

Panel A						
	Number			Investment (£m)		
	Ours	VX	VX Coverage	Ours	VX	VX Coverage
Independent VC	1188	416	35.02%	3924.61	3982.45	101.47%
Corporate VC	86	54	62.79%	331.79	327.22	98.62%
Organization VC	38	10	26.32%	57.35	34.18	59.60%

Panel B[a]						
	Number of startups			Percentage of startups		
	Match	Ours is higher	VX is higher	Not investing	% Match	% Underestimate	% Overestimate
Independent VC	244	178	287	19	34.41%	25.11%	40.48%
Corporate VC	66	15	39	608	55.00%	12.50%	32.50%
Organization VC	66	7	13	642	76.74%	8.14%	15.12%
All investors	188	190	350		25.82%	26.10%	48.08%

This table shows the comparison of our data with that of VentureXpert regarding institutional investors. Panel A compares the magnitudes for each type of institutional investor, both in terms of number of investors and total investment in the startups of our sample. The "Investment" columns show the total investment of each type of investor across our sample, both according to our database and to VentureXpert (VX). The "VX Coverage" column shows the percentage ratio between the last two. Panel B compares, for each startup, the investment magnitude found in VentureXpert with the one we have found for every type of institutional investor, and shows whether there is a match, an overestimation or an underestimation by VentureXpert. We allowed a ±20% error margin. The results are presented in number of companies and in percentage.

[a]182 companies were not used due to lack of data; therefore N is 728.

3.1. Pre-institutional period

We construct variables describing both the "quantity", as a first proxy of diversity, and "experience" of the three types of individual stakeholders. In terms of quantity, we define the count variables "num members founding team", "num early non-founding directors", and "num other early individual investors". As shown in Table 6, on average, the startups in our sample have 2.71 founders and 0.96 non-founding directors.[31] The total (3.67) is similar to the 3.6 average number of board members reported by Ewens and Malenko (2020) in the U.S.-based VC-backed startups. Moreover, our startups have an average of 2.52 other early investors prior to first-VC investment. In terms of correlation, Panel *A* in Table 7 shows a negative correlation between the size of the founding team and the number of early non-founding directors.

To construct more detailed measures of diversity, we use Blau's (1977) index of heterogeneity, which is a standard construct of the diversity literature, based on the Herfindahl–Hirschman Index (HHI) of concentration. To maximize the number of observations, we group the teams of the founders and the non-founding directors to construct these measures of diversity. We define "functional diversity" as $1 - \sum s_i^2$, where s_i is the share of directors in occupation *i*, such as *i = engineer* or *i = accountant*. Similarly, we define "gender diversity" as $1 - \sum s_i^2$, where s_i is the share of team members in gender *i* for *i = male* or *i = female*. Finally, we define "national diversity" as $1 - \sum s_i^2$, where s_i is the share of team members in nationality *i* for *i = UK* and *i = foreign*.[32] Table 6 reports that the average functional diversity is 0.43, whereas gender and national diversities are much lower (0.11 and 0.08, respectively).

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[31] A few startups have zero founders because they were created with VC investment. All our results are similar if we drop those startups from the sample.

[32] Similar results are obtained if, instead of Blau's (1977) indices of heterogeneity of gender and nationality, we had used the ratio of females and foreign directors.

Table 5

List of variables.

Name of variable	Definition of variable
Num members founding team	# of individuals who are founders
Presence founder with experience in directing	Dummy equal to 1 if at least a founder has previous experience as director
Num early non-founding directors	# of individuals who are directors before first-VC but who are not founders
Presence experienced early non-founding director	Dummy equal to 1 if at least a non-founding director has previous experience as director
Num other early individual investors	# of individual investors who are not founders or directors before first-VC
Presence early business angel	Dummy equal to 1 if at least an early investor is a seasoned investor
Num early directors	# of individuals who are directors before first-VC
Presence experienced early director	Dummy equal to 1 if at least a director has previous experience as director
Functional diversity	1 minus the HHI of occupations within the team
Gender diversity	1 minus the HHI of gender within the team
National diversity	1 minus the HHI of nationalities within the team, with all foreign directors considered together
Start-Up age at first VC (years)	Difference between date of first-VC and date of incorporation (in years)
Money inv before first VC (logs)	Log of the total amount invested before first-VC
Presence early research institution	Dummy equal to 1 if at least a research institution is present before first-VC
Presence IVC at first VC	Dummy equal to 1 if at least an IVC invests at first-VC
Presence CVC at first VC	Dummy equal to 1 if at least a CVC invests at first-VC
Presence CVI at first VC	Dummy equal to 1 if at least an CVI invests at first-VC
Presence OVC at first VC	Dummy equal to 1 if at least an OVC invests at first-VC
Presence top IVC at first VC	Dummy equal to 1 if at least a top IVC investment at first-VC
Num VCs at first VC	# of VCs investing at first-VC
VC money inv at first VC (logs)	Log of the total amount invested by VCs at first-VC
% ownership by VCs at first VC	percentage of ownership taken by all the VCs at first-VC
VC director App at first VC	Dummy equal to 1 if a new director is appointed at first-VC
Success	Dummy equal to 1 if the company exists through IPO or M&A
IPO	Dummy equal to 1 if the company exists through IPO
M&A	Dummy equal to 1 if the company exists through M&A
Valuation at year 3 (logs)	Log of market value of common shares plus nominal value of preferred shares 3 years after first-VC
Valuation at year 5 (logs)	Log of market value of common shares plus nominal value of preferred shares 5 years after first-VC
Final valuation (logs)	Log of the company valuation at exit date

In this table, we report the variables we use in the regressions and their definition.

This is not surprising given the relatively high number of occupations and the low ratios of females and foreigners, as shown in Table 2.[33]

We created variables to characterize the experience of each of the various types of individuals in the startup. In the case of the founding team and the set of early non-founding directors, we created dummy variables that identify the presence of one with experience as a director. In our dataset, 11% of the startups have a founder with experience in directing, and 7% have an early non-founding director with that experience. We also created a dummy variable that identifies the presence of a BA individual investor in the startup (see the definition of BA in Section 2.3). Around 12% of our startups have a BA before the first-VC investment. As Panel *A* in Table 7 shows, the presence of experienced, BA investors is positively correlated with the presence of experienced founders and non-founding directors.

As control variables, we include the "startup age at first VC", in terms of the number of years since incorporation, and the "money inv before first VC" as the (cumulative) investment just before first-VC investment (including the small investments of research institutions and unknown investors). On average, our startups are 1.52 years old at first-VC investment and got 124*K* pounds worth of investment. We also include a dummy for the presence of a research institution in the pre-institutional period. Around 11% of the startups include a research institution before the first-VC investment.[34]

3.2. First-VC investment

We characterize the type, quantity, and quality of the institutions investing at first-VC investment. We created four dummy variables that indicate whether the first-VC investment includes an IVC, a CVC, a CVI, and an OVC, respectively. As a measure of quality, we create a dummy variable for the presence of a "top IVC", defined as (i) being in the top 5% of the IVCs in terms of overall investment within our dataset, and/or (ii) being in the top 25% in terms of capital under management within the VentureXpert

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[33] We have checked that our regression results are not driven by the presence of some "truly diverse firms" (or outliers). The maximum number of founders for the firms in our database is not very large (10). Still we have re-run the regressions dropping the observations of the upper tail of the distribution of diversity, i.e., the most diverse teams. Results do not change qualitatively.

[34] Unfortunately, we cannot control for the total assets at first-VC investment. Since our companies are very young when they receive the first-VC investment, only 271 of them (out of 910) have filed an annual account before that date. We have run several robustness exercises that suggest that the relationship between total assets and our measures of performance is not significant and that controlling for total assets does not modify the coefficient and significance of the other variables.

Table 6
Descriptive statistics.

Variables	(1) N	(2) mean	(3) median	(4) sd	(5) min	(6) max
Num members founding team	910	2.71	2	1.59	0	10
Presence founder with experience in directing	910	0.11	0	0.31	0	1
Num early non-founding directors	910	0.96	0	1.62	0	17
Presence experienced early non-founding director	910	0.07	0	0.26	0	1
Num other early individual investors	910	2.52	1	4.92	0	58
Presence early business angel	910	0.12	0	0.33	0	1
Num early directors	910	3.67	3	2.06	0	19
Presence experienced early director	910	0.17	0	0.38	0	1
Functional diversity	893	0.43	0.5	0.28	0	0.89
Gender diversity	893	0.11	0	0.18	0	0.5
National diversity	893	0.08	0	0.17	0	0.5
Start-Up age at first VC (years)	910	1.52	0.87	1.73	0	10.54
Money inv before first VC (£m)	910	0.12	0.00	0.78	0	15.85
Presence early research institution	910	0.11	0	0.31	0	1
Presence IVC at first VC	910	0.82	1	0.38	0	1
Presence CVC at first VC	910	0.06	0	0.25	0	1
Presence CVI at first VC	910	0.24	0	0.42	0	1
Presence OVC at first VC	910	0.06	0	0.23	0	1
Presence top IVC at first VC	910	0.37	0	0.48	0	1
Num VCs at first VC	910	1.63	1	1.18	1	13
VC Money at First VC (£m)	645	1.15	0.31	4.40	0.01	103.06
% ownership by VCs at first VC	910	39.59	30.77	31.04	0.00	100.00
VC director appointed at first VC	910	0.48	0	0.50	0	1
Success	910	0.39	0	0.49	0	1
IPO	910	0.06	0	0.24	0	1
M&A	910	0.33	0	0.47	0	1
Valuation at year 3 (£m)	722	6.67	1.33	23.70	0	434.61
Valuation at year 5 (£m)	679	7.97	0.84	26.63	0	434.61
Final valuation (£m)	590	12.70	0	39.28	0	434.61

In this table, we report the descriptive statistics for the dependent and independent variables that we use in the regressions of this paper. All variables are defined in Table 4.

database (to keep IVCs that, despite being large and experienced, do not invest heavily in the UK).[35] Roughly 10% of the IVCs in our database are considered top IVCs. Finally, we define the "number of VC investors" as the count of VCs (of any of the four types) at first-VC investment.

As control variables, we include the following investment, ownership, and governance variables. "VC money inv at first VC" includes the overall amount of money invested by VCs at first-VC investment. "% ownership by VCs at first VC" is defined as the percentage ownership stake obtained by all the VCs at first-VC investment. "VC director app at first VC" is a dummy variable that identifies whether the VC investors appointed a director at first-VC investment. We consider that VC investors appoint a director if a new director is appointed precisely at the date of the first-VC investment.

3.3. Exit

As measures of performance, we define, according to the exit routes of the startup, the dummy variables "IPO", "M&A", and "success". Following prior literature, success includes exits as both IPO and M&A.[36] We also use the "final valuation", as described in the previous section (which can be before or after year 5). Finally, we also use the "valuation at year 3" and "valuation at year 5" since first-VC investment, defined as the linearly-interpolated value between the valuations at the closest issuance (and using a value of 0 at incorporation and the final valuation at exit). The value of these variables is equal to the final valuation if exit occurs before.

4. Results

We analyse, first, the links between the pre-institutional individual stakeholders and a successful exit, taking the characteristics of the first-VC investment into account. Second, we investigate the links between the same pre-institutional individual stakeholders and the characteristics of the first-VC investment, which creates an indirect relationship between the pre-institutional individual stakeholders and success.

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[35] Experience is relevant for VCs since, as Sørensen (2008) points out, VCs learn from past investments.

[36] Most papers interpret IPOs and M&As as success events and consider it a failure if the company closed down or remains active after several years (see, e.g., Da Rin et al., 2013).

Table 7

Correlations.

Panel A					
	Num members founding team	Num early non-founding directors	Num other early individual investors	Presence founder with experience in directing	Presence experienced early non-founding director
Num early non-founding directors	−0.17***				
Num other early individual investors	0.13***	0.08**			
Presence founder with experience in directing	0.19***	−0.03	0.05		
Presence experienced early non-founding director	−0.06*	0.38***	0.06*	0.03	
Presence early business angel	0.17***	0.08**	0.32***	0.13***	0.14***

Panel B				
	Presence IVC at first VC	Presence CVC at first VC	Presence CVI at first VC	Presence OVC at first VC
Presence CVC at first VC	−0.16***			
Presence CVI at first VC	−0.53***	−0.10***		
Presence OVC at first VC	−0.18***	−0.03	−0.02	
Presence top IVC at first VC	0.35***	0.00	−0.18***	0.00

Panel C				
	Presence top IVC at first VC	Presence CVC at first VC	Presence CVI at first VC	Num VCs at first VC
Num members founding team	0.13***	0.01	−0.08**	0.02
Num early non-founding directors	0.04	0.06*	0.02	0.08**
Num other early individual investors	0.05	0.02	0.03	0.16***

Panel D			
	Success	IPO	M&A
Num members founding team	0.10***	−0.02	0.11***
Num early non-founding directors	0.08**	−0.01	0.09***
Num other early individual investors	0.03	0.00	0.03
Functional diversity	0.07**	0.02	0.07**
Gender diversity	−0.04	−0.02	−0.03
National diversity	−0.01	−0.07**	0.03
Start-Up age at first VC (years)	0.07**	−0.02	0.09***
Money inv before first VC (£m)	0.04	−0.02	0.05
Presence early research institution	−0.05	0.00	−0.06*
Presence IVC at first VC	0.09***	0.00	0.09***
Presence CVC at first VC	−0.04	−0.01	−0.03
Presence CVI at first VC	−0.07**	0.03	−0.09***
Presence OVC at first VC	−0.07**	0.00	−0.07**
Presence top IVC at first VC	0.07**	−0.08**	0.12***
Num VCs at first VC	−0.03	0.01	−0.04
VC money inv at first VC (£m)	0.00	−0.02	0.02
% ownership by VCs at first VC	0.01	−0.05	0.03
VC director appointed at first VC	0.08**	−0.01	0.09***

This table shows correlations between some of the variables that we use in the regressions.

***Indicate significance at the 1% level.

**Indicate significance at the 5% level.

*Indicate significance at the 10% level.

4.1. Early individual stakeholders, first-VC investment, and exit

Table 8 describes the results of regressing several indicators of startup performance against the characteristics of the early stakeholders and the first-VC investment, using probit, multilogit, and OLS regressions. In all regressions we control for the characteristics of the startup, such as age and investment at first-VC investment, as well as location and industry-year fixed effects.[37] We cluster the standard errors at the industry level.

As shown by Column 1, a startup is more likely to be successful if it is founded by a large team and if it appoints a greater number of non-founding directors. The coefficients associated with both variables are very similar (and they are not significantly

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[37] We obtained, from the VentureXpert database, (i) the city location of the headquarters and (ii) the main industry. In the final dataset, 45% of companies are from London, Cambridge, and Oxford, 43% from the rest of England, and 12% from the rest of the UK, whereas 58% are in Information Technology, 15% in Medical/Health/Life Science, and 27% in Non-High Technology. Year refers to the year of incorporation.

Table 8

Effects of pre-institutional features and first-VC investment on exit and valuation.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Success	Success	IPO	M&A	IPO	M&A	IPO vs. M&A	IPO vs. M&A	Valuation at year 3	Valuation at year 5	Final valuation
Num members founding team	0.089***	0.090***	−0.017	0.179***	0.012	0.174***	−0.117***	−0.084***	0.094	0.249**	0.371**
	(0.019)	(0.022)	(0.017)	(0.036)	(0.032)	(0.039)	(0.038)	(0.032)	(0.050)	(0.051)	(0.059)
Presence founder with experience in directing	0.178	0.212	0.638	0.258*	0.721	0.229*	0.088	0.125	0.493	0.797*	1.131
	(0.151)	(0.147)	(0.517)	(0.141)	(0.574)	(0.136)	(0.444)	(0.486)	(0.343)	(0.195)	(0.959)
Num early non-founding directors	0.088***	0.093***	0.019	0.181***	0.023	0.189***	−0.131	−0.151	0.244**	0.296**	0.313
	(0.009)	(0.018)	(0.155)	(0.024)	(0.133)	(0.023)	(0.114)	(0.105)	(0.032)	(0.047)	(0.163)
Presence experienced early non-founding director	−0.056	−0.089	0.631	−0.382**	0.786	−0.430***	0.396	0.459	−0.293	−0.263	−0.124
	(0.212)	(0.260)	(1.339)	(0.158)	(1.332)	(0.154)	(0.751)	(0.764)	(0.278)	(0.386)	(0.634)
Num other early individual investors	−0.005	−0.003	0.021**	−0.009	0.014**	−0.011	0.018***	0.020***	−0.016	−0.012	−0.010
	(0.006)	(0.008)	(0.009)	(0.014)	(0.006)	(0.013)	(0.005)	(0.007)	(0.015)	(0.031)	(0.037)
Presence early business angel	0.186***	0.174***	−0.501**	0.424***	−0.537***	0.444***	−0.603***	−0.625***	0.601***	0.682	0.727*
	(0.048)	(0.051)	(0.201)	(0.096)	(0.299)	(0.094)	(0.189)	(0.249)	(0.077)	(0.255)	(0.221)
Presence IVC at first VC		0.208***	0.993*	0.221***			0.432		−0.148	0.339	0.459
		(0.061)	(0.532)	(0.069)			(0.451)		(0.341)	(0.354)	(0.646)
Presence CVC at first VC		−0.224**	0.037	−0.459***	−0.615	−0.503***	0.727	0.482	−0.170	0.763	0.073
		(0.098)	(0.988)	(0.029)	(0.725)	(0.049)	(0.978)	(0.819)	(0.273)	(0.505)	(0.683)
Presence CVI at first VC		−0.025	0.579	−0.170	−0.163	−0.218**	0.416	0.238	0.285	0.496	0.324
		(0.094)	(0.575)	(0.130)	(0.447)	(0.109)	(0.310)	(0.175)	(0.261)	(0.302)	(0.591)
Presence OVC at first VC		−0.118	0.251	−0.259	−0.233	−0.318	0.459	0.465	0.069	0.310*	0.822
		(0.128)	(0.282)	(0.303)	(0.501)	(0.295)	(0.496)	(0.534)	(0.359)	(0.085)	(1.122)
Presence top IVC at first VC					−0.727	0.331***		−0.602**			
					(0.635)	(0.087)		(0.297)			
Num VCs at first VC		−0.069**	0.008	−0.141**	0.181**	−0.146**	0.103	0.140*	−0.156*	−0.230***	−0.200
		(0.035)	(0.099)	(0.057)	(0.076)	(0.071)	(0.100)	(0.073)	(0.039)	(0.014)	(0.074)
Presence early research institution	−0.502***	−0.485***	−0.442	−0.878***	−0.429	−0.900***	0.613**	0.641**	0.336	−0.047	−1.706*
	(0.153)	(0.197)	(0.582)	(0.304)	(0.582)	(0.301)	(0.254)	(0.254)	(0.296)	(0.664)	(0.405)
Start-Up age at first VC investment (years)	0.060	0.049	−0.229***	0.144**	−0.216***	0.150**	−0.173***	−0.194***	−0.229**	−0.248**	−0.001
	(0.041)	(0.044)	(0.076)	(0.075)	(0.073)	(0.075)	(0.061)	(0.052)	(0.054)	(0.070)	(0.252)
Money inv before first VC (logs)	−0.005	0.001	−0.035	0.003	−0.022	−0.004	−0.059	−0.051	−0.013	0.044	−0.016
	(0.017)	(0.013)	(0.044)	(0.022)	(0.046)	(0.021)	(0.044)	(0.047)	(0.048)	(0.055)	(0.058)
% ownership by VCs at first VC		−0.000	−0.010***	0.002	−0.008**	0.001	−0.005**	−0.003	−0.006	−0.000	−0.007*
		(0.000)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.002)	(0.007)	(0.010)	(0.002)
VC Money at First VC (logs)		0.054**	−0.018	0.100**	0.039	0.075*	−0.106**	−0.065	0.108	0.067	0.202
		(0.027)	(0.069)	(0.039)	(0.078)	(0.040)	(0.042)	(0.045)	(0.089)	(0.028)	(0.119)
VC director App at first VC		0.237***	0.262	0.439***	0.259	0.430***	−0.122	−0.132	0.660***	0.807*	1.001
		(0.050)	(0.323)	(0.070)	(0.326)	(0.082)	(0.118)	(0.109)	(0.033)	(0.274)	(0.682)
Location and Industry-year controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−1.030***	−1.163***	−2.084***	−2.695***	−1.264***	−2.649***	0.102	0.305	−1.380	−3.050	−6.044***
	(0.084)	(0.074)	(0.176)	(0.074)	(0.197)	(0.030)	(0.405)	(0.473)	(0.906)	(1.052)	(0.387)
Observations	908	908	910	910	910	910	317	317	722	679	590
R-squared									0.102	0.123	0.123

Standard errors in brackets.

This table shows the effect of both the early stage and the first-VC investment on several measures of the performance of the startup. Columns 1 and 2 consider the likelihood of a successful exit, understood as an IPO or an M&A, as opposed to any other exit route. Columns 3 and 4 (and columns 5 and 6) show the results of a multinomial logit model on the likelihood of an IPO or an M&A exit, understood as an IPO or M&A as opposed to any other exit route. Columns 7 and 8 show the results of a probit model on the likelihood of an IPO in the set of successful exits. Finally, columns 9 to 11 report the results of OLS regressions on the valuation of the startup 3 and 5 years after the first-VC investment, as well as on the final valuation. All the regressions control for location and industry-year. We cluster the standard errors at the industry level. Dummy variables were regressed using a maximum likelihood probit or multinomial logit model, while numerical variables were regressed using a robust OLS.

***Indicate significance at the 1% level.

**Indicate significance at the 5% level.

*Indicate significance at the 10% level.

different), which suggests that the diversity of the non-founding directors is as important as the diversity of the founders. A startup is also more likely to be successful if it involves BA investors before first-VC investment.[38]

As shown by Column 2, the presence of an IVC at first-VC investment increases the likelihood of success, whereas the presence of CVC investors significantly decreases it. Receiving CVI or OVC, on the other hand, does not seem to be significantly related to success in either way. Finally, the number of VCs decreases the likelihood of success. In this sense, our results suggest that syndication is negative for startup performance. Hence, they are more aligned with the conclusions of Chahine et al. (2012), and the potential conflict of interests among VC syndicate members, than those of Brander et al. (2002) and Cumming and Walz (2010).

Columns 3 and 4 use multinomial logit models to decompose the results of the variable "success" on the variables of IPO and M&A. We show first that a larger founding team, or a greater number of non-founding directors and the presence of a BA investor, have a positive relationship with success but only through M&As, not through IPOs. Interestingly, the presence of an experienced BA investor, despite being positively linked with success, decreases the likelihood of IPO.[39] Most of the effects of the first-VC investment on success are also due to the effects on M&A. For instance, having a CVC significantly decreases the likelihood of M&A but not of

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[38] Note that the presence of a research institution among the early shareholders decreases the prospect of success.

[39] Although we do not find a significant relationship between experience of the founders and success, this experience significantly increases the likelihood of M&A. This is in line with results by Colombo and Grilli (2005, 2010). They find a positive effect on startup growth of founders' previous experience (measured in terms of past entrepreneurial activity and university education).

IPO. Having received IVC investment correlates positively with exiting through both IPO and M&A. However, as shown in columns 5 and 6, which replicate the results of columns 3 and 4 but substituting IVC by top IVC, the presence of a top IVC is no longer more conducive to IPO.

Columns 7 and 8 test the links between the individual (and VC) characteristics and the type of exit among the successful ventures.[40] They report the results of probit regressions on the likelihood of an IPO on the subset of successful startups. They show that an IPO is more likely when BAs are not involved in the startup. They also show that an IPO is more likely when the percentage of ownership taken by VCs is smaller (which also means that the percentage retained by individuals is larger), an experienced, top IVC is not involved, the number of teams of founders and non-founding directors are smaller (although the coefficient for the non-founding directors is marginally insignificant), and the number of VCs (for a given level of investment) is larger. The coefficients of the founders' experience are not significant. Overall, the results suggest that powerful founders and directors, in terms of control rights and cohesion, increase the likelihood that a successful startup is an IPO, whereas powerful VCs and experienced investors increase the likelihood that it is an M&A.

Note that the results concerning the choice between IPO and M&A are significant even though we use the characteristics of the individuals and institutional investors at the first-VC investment and not at the exit date. They suggest that the first-VC investment has profound implications for the sharing of control over the life of the startups.

Finally, columns 9 to 11 display the links between the pre-institutional features, as well as first-VC investment, and valuation. We show that startups with a larger number of founders and non-founding directors, and being financed by BAs have a higher valuation at the three points in time, often with significant coefficients. On the other hand, obtaining finance from syndicated VCs is negatively related to valuation. Thus, the number of VCs present at first-VC investment not only decreases the likelihood of successful exit, mainly due to the negative impact on the likelihood of M&A, but it also leads to lower valuations.

4.2. Types of diversity of founders and non-founding directors

We now decompose the effects of diversity of the previous subsection, proxied by the number of founders and non-founding directors, by type of diversity. Table 9 describes the regression results of the indicators of startup performance against measures of the functional and demographic diversity of the team of founders and non-founding directors. All the regressions include the characteristics of the first-VC investment and the other controls of the previous table, such as age and investment at first-VC, location, and industry-year fixed effects. We cluster the standard errors again at the industry level.

We first show that the results of the main specification of the previous section (column 2 of Table 8) do not change if we group the founders and the non-founding directors in the variables "Num Early Directors" and "Presence Experienced Early Director". Column 1 shows that for the overall team of founders and non-founding directors, it is the number and, therefore, the diversity that matters, whereas, for the other individual investors, it is the experience. This is not surprising, as the separate coefficients of founders and non-founding directors are very similar across all regressions of the previous section, both in magnitude and significance.

We then show that the overall results are very different across types of diversity. Column 2 (of Table 9) first shows that higher levels of functional diversity correlate positively and significantly with higher likelihoods of success. Instead, measures of demographic diversity negatively correlate with success. The coefficient of gender diversity is negative but not significant, whereas the coefficient of national diversity is negative and significant. The result of the overall measure of diversity is thus dominated by that of functional diversity, as the effects of demographic diversity pull in the other direction.

Columns 3 and 4 show the results of a multinomial logit model that separates the variable success on the variables IPO and M&A. The results on IPO and M&A are both qualitatively the same as the results on overall success. All the coefficients of functional diversity are positive and significant, whereas all the coefficients of gender and national diversity are negative. The coefficients (and significance of national diversity) are larger for IPO than for M&A.

Finally, column 5 shows that the results for the final valuation are similar to those of the success dummy. Functional diversity is again positive, whereas both gender and national diversity are negative. Here, though, the coefficient of functional diversity is no longer significant.

4.3. Indirect relationships through the first-VC investment

We now argue that there are also indirect relationships between the pre-institutional features and startup exit, through the characteristics of the first-VC investment. We show below that the number and experience of the early individual stakeholders are linked to the characteristics of the first-VC investment, which in turn, as shown in the previous subsection, are linked with startup success. Table 10 shows the results of regressing the characteristics of the first-VC investors against the characteristics of the early stakeholders, separating again founders and non-founding directors, using probit and OLS regressions. As before, we control for startup characteristics and cluster the standard errors at the industry level.

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[40] Aghion and Bolton (1992) highlight that different stakeholders may have different preferences regarding the exit strategy. Founders may obtain private benefits from becoming managers of a publicly listed firm (Black and Gilson, 1998; Hellmann, 2006). Instead, VC investors, particularly IVCs, care about fast financial returns and faster exit routes. Therefore, VCs may have a preference for an M&A exit ceteris paribus (Cumming, 2008). BAs' financial incentives should be more closely aligned to those of the VCs. This argument is consistent with the results of a survey in Canada (Carpentier and Suret, 2013), in which BAs report that they see M&A as their most preferred exit mode.

Table 9

Effects of pre-institutional features, first-VC investment, and diversity on exit and valuation.

Variables	(1)	(2)	(3)	(4)	(5)
	Success	Success	IPO	M&A	Final valuation
Num early directors	0.087***				
	(0.018)				
Functional diversity		0.465***	0.969***	0.754**	1.222
		(0.172)	(0.334)	(0.318)	(0.655)
Gender diversity		−0.585	−1.702	−0.811	−1.867
		(0.438)	(1.258)	(0.761)	(0.915)
National diversity		−0.313**	−2.986***	−0.188	−0.997***
		(0.137)	(0.940)	(0.218)	(0.080)
Presence early experienced director	0.118	0.215	0.760	0.224	1.128
	(0.214)	(0.200)	(0.882)	(0.195)	(0.795)
Num other early individual investors	−0.003	−0.002	0.022	−0.007	−0.004
	(0.009)	(0.008)	(0.016)	(0.013)	(0.035)
Presence early business angel	0.175***	0.213***	−0.599***	0.499***	0.796*
	(0.050)	(0.050)	(0.218)	(0.105)	(0.220)
Presence IVC at first VC	0.206***	0.232***	1.109*	0.250***	0.700
	(0.056)	(0.082)	(0.614)	(0.053)	(0.765)
Presence CVC at first VC	−0.210**	−0.190**	0.031	−0.392***	0.253
	(0.082)	(0.078)	(0.947)	(0.044)	(0.591)
Presence CVI at first VC	−0.018	0.017	0.705	−0.107	0.451
	(0.087)	(0.038)	(0.546)	(0.082)	(0.449)
Presence OVC at first VC	−0.132	−0.156	0.445	−0.368	0.700
	(0.123)	(0.138)	(0.421)	(0.290)	(0.909)
Num VCs at first VC	−0.068**	−0.062	0.025	−0.126**	−0.211
	(0.033)	(0.038)	(0.120)	(0.060)	(0.073)
Presence early research institution	−0.488**	−0.503***	−0.653	−0.863***	−1.741**
	(0.197)	(0.169)	(0.564)	(0.251)	(0.382)
Start-up age at first VC Investment (years)	0.043	0.060	−0.247***	0.157**	0.036
	(0.046)	(0.045)	(0.087)	(0.074)	(0.314)
Money inv before first VC (logs)	0.001	0.015	−0.026	0.029	0.060
	(0.012)	(0.012)	(0.042)	(0.019)	(0.052)
% ownership by VCs at first VC	−0.000	−0.000	−0.009**	0.002	−0.006
	(0.000)	(0.000)	(0.004)	(0.001)	(0.003)
VC Money at First VC (logs)	0.053**	0.065***	−0.029	0.122***	0.216
	(0.027)	(0.023)	(0.053)	(0.037)	(0.106)
VC director App at first VC	0.238***	0.217***	0.329	0.385***	0.935
	(0.048)	(0.047)	(0.360)	(0.066)	(0.697)
Location and industry-year controls	Yes	Yes	Yes	Yes	Yes
Constant	−1.126***	−0.926***	−2.196***	−2.128***	−4.847**
	(0.069)	(0.123)	(0.123)	(0.159)	(1.079)
Observations	908	891	893	893	579
R-squared					0.112

Standard errors in brackets.

This table shows the effect of the early stage, the first-VC investment, and the diversity of the team on several measures of the performance of the startup. Columns 1 and 2 consider the likelihood of a successful exit, understood as an IPO or an M&A, as opposed to any other exit route. Columns 3 and 4 show the results of a multinomial logit model on the likelihood of an IPO or an M&A exit, understood as an IPO or M&A as opposed to any other exit route. Finally, column 5 reports the result of an OLS regression on the final valuation of the startup. All the regressions control for location and industry-year. We cluster the standard errors at the industry level. Dummy variables were regressed using a maximum likelihood probit or multinomial logit model, while numerical variables were regressed using a robust OLS.

***Indicate significance at the 1% level.
**Indicate significance at the 5% level.
*Indicate significance at the 10% level.

The results of the table allow us to put forward indirect relationships between the characteristics of the early individual stakeholders and startup success, through the type of VC investment. As an example, Column 1 shows that the size of the founding team, the number of non-founding directors, and the presence of a BA are, all, positively related to the likelihood of having an IVC as a first-VC investor. Column 2 of Table 8 shows, in turn, that the presence of an IVC is positively related to the likelihood of success. These indirect relationships, between the number and experience of the individual stakeholders and startup success,

Table 10
Effects of pre-institutional features on first-VC investment.

Variables	(1) Presence IVC at first VC	(2) Presence CVC at first VC	(3) Presence CVI at first VC	(4) Presence OVC at first VC	(5) Presence Top IVC at first VC	(6) Number VCs at first VC
Num members founding team	0.096*** (0.005)	0.040 (0.074)	−0.086*** (0.021)	−0.082*** (0.032)	0.092* (0.051)	0.017 (0.040)
Presence founder with experience in directing	−0.128 (0.172)	−0.035 (0.178)	0.191*** (0.039)	−0.059 (0.195)	0.095 (0.155)	−0.010 (0.135)
Num early non-founding directors	0.059** (0.028)	0.159** (0.066)	0.064*** (0.020)	−0.377*** (0.120)	0.019 (0.053)	0.100* (0.033)
Presence experienced early non-founding director	0.252* (0.151)	−0.788* (0.431)	−0.359** (0.162)	0.626*** (0.239)	0.300** (0.124)	−0.234 (0.201)
Num other early individual investors	−0.014** (0.006)	0.014*** (0.003)	0.008 (0.007)	0.006 (0.011)	0.005 (0.012)	0.034** (0.007)
Presence early business angel	0.151*** (0.049)	−0.300*** (0.068)	0.127*** (0.030)	0.497** (0.205)	−0.029 (0.238)	0.162** (0.035)
Presence early research institution	−0.033 (0.169)	0.296 (0.202)	−0.114 (0.086)	0.777*** (0.239)	−0.016 (0.249)	0.104 (0.214)
Start-Up age at first VC investment (years)	0.134*** (0.016)	−0.031 (0.070)	−0.201*** (0.018)	0.014 (0.065)	−0.002 (0.012)	−0.053 (0.032)
Money inv before first VC (logs)	−0.029* (0.016)	−0.040 (0.068)	0.014 (0.026)	−0.017 (0.024)	0.047*** (0.005)	−0.027 (0.018)
Location and Industry-year controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−0.233 (0.149)	−1.888** (0.806)	0.300 (0.270)	−2.185*** (0.372)	−0.743*** (0.150)	1.642** (0.226)
Observations	902	734	900	793	908	910
R-squared						0.088

Standard errors in brackets.
This table shows the effects of the characteristics of the start-up in its early stage, i.e., at the stage prior to the VC, on the first-VC investment. The set of independent variables includes the number of members of the founding team, early non-founding directors, and early investors, dummy variables indicating the presence of an experienced individual in those categories, as well a dummy variable indicating the presence of a research institution before first-VC investment. Other independent variables are the start-up age at the first-VC investment and the logarithm of the amount invested before the first-VC investment. As for dependent variables, "Presence IVC/CVC/CVI/OVC/top IVC at First VC" (columns 1–5) are dummy variables that indicate whether this type of VC is investing in the first-VC investment. Column 6 states the effect on the number of VCs. All the regressions control for location and industry-year. We cluster the standard errors at the industry level. Dummy variables were regressed using a maximum likelihood probit model, while numerical variables were regressed using a robust OLS.
***Indicate significance at the 1% level.
**Indicate significance at the 5% level.
*Indicate significance at the 10% level.

have the same sign as the direct ones. Indeed, as shown by Column 1 of Table 8, the size of the founding team, the number of non-founding directors, and the presence of a BA are all directly related to the likelihood of success.

There are some indirect relationships, though, that have the opposite sign of the direct ones. For instance, having a BA is also positively related to the number of VCs (Column 6 of Table 10).[41] And, in turn, the number of VCs is negatively related to the likelihood of success (Column 2 of Table 8). In total, this goes in the opposite direction of the positive relationship between the presence of BA funding and success. Still, the indirect relationships seem to be either relatively weak or cancel each other. Indeed, as shown by comparing the results of Columns 1 and 2 of Table 8, the significance and even the magnitude of the coefficients of the pre-institutional features are similar, independently of the inclusion or not of the characteristics of the first-VC investment. Thus, the inclusion of the indirect relationships through first-VC investment does not alter the sign nor the magnitude of the links between the pre-institutional features and startup success.[42]

Table 10 describes other relationships between the pre-institutional stakeholder characteristics and the type of first-VC investor. Columns 3 and 4 show that CVIs and OVCs are more likely to be financing a startup that includes BAs and a small founding team. On the other hand, the presence of an experienced founder and the number of inexperienced non-founding directors are positively related to the presence of CVIs at the first-VC investment. In contrast, the presence of OVCs is negatively related. A larger founding team and the presence of experienced non-founding directors are not only related to the presence of an IVC but also to the presence of a top IVC.

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[41] One third of the first-VC investments in our dataset are syndicated. A probit regression on a dummy variable that takes a value of 1 if the number of VCs is larger than 1 and 0 otherwise generates similar qualitative results as those presented in column 6.
[42] This is consistent with the results of Sørensen (2007), who shows that the effect of VC funding on success is more due to sorting than to treatment.

5. Conclusion

Despite their importance, the relevance and the differential influence of the various types of individual stakeholders of the startups have received scant attention from previous literature. The main reason seems to be the absence of systematic information on the individual stakeholders, particularly in the pre-institutional environment. Individuals are typically reluctant to reveal their identity and share information about their activities and, in many countries, such as the US, they are not subject to regulatory disclosure requirements. This may explain why most of the common databases on startups possess very little information on founders, directors, and individual investors.

We present and use a unique database of UK-based VC-backed startups based on the mandatory filings to the registrar of companies. Our database reveals previously unknown characteristics of the startups. For instance, founding and non-founding directors represent around half of the body of individual stakeholders and around half of their investment in the startups, while the other individual investors make up for the rest. IVCs account for more than half of the number of institutional investors and the majority of the investment, while CVIs represent an important fraction of the institutional investors.

We also show that several pre-institutional features have long-lasting consequences for the startup, especially in terms of startup type of, and value at exit. We argue that the individual characteristics have a direct relationship with startup success, but also an indirect one via the characteristics (but not the size) of the first-VC investment, which are also related to success. Direct and indirect relationships may sometimes pull in the opposite directions, but the indirect ones are either relatively weak or cancel each other. Indeed, the coefficients of the pre-institutional variables are similar, independently of the inclusion or not of the characteristics of the first-VC investment.

We build comparable measures of size and experience of the various types of individual stakeholders in the early stages of the startup. We show, consistently, that governance (founding and non-founding directors) is important in terms of number, whereas investment (other individual investors) is important in terms of experience. As they have to work together, the more members the teams of founders and non-founding directors have, the more expertise the team has. Instead, in terms of investors, it is important to have at least one of them with previous experience in investing. We also show that success results are very different across types of diversity. Functional diversity appears to be a positive determinant of success whereas demographic diversity is negative.

Data availability

Data is commercial but publicly accessible.

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