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Jockeys, horses or teams? The selection of startups by venture capitalists

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ABSTRACT

How do venture capitalists select startups? Most research to date has focused on the attributes of either the founders (the jockey) or the business idea (the horse) as the determinants of selection. Connecting information from VentureXpert to the Danish registry data allows us to extend this analysis to include information on all employees of startups (the team). To assess the importance of these factors to access to venture capital, our analysis compares startups that received funding to other startups founded at the same time and in the same industry. Consistent with the jockey hypothesis and prior research, we find that firms with more and better educated founders have a higher probability of receiving venture capital. However, high-quality employees appear to matter even more than founders to the probability of being funded.

1. Introduction

Venture capital (VC) has been seen as critical to the success of many startups and as an important element in entrepreneurial ecosystems. Companies receiving investments from venture capital firms have faster cash flow and sales growth, patent at higher rates, hire more employees, have more productive employees, and survive longer (e.g., Hellmann and Puri, 2002; Davila et al., 2003; Bottazzi et al., 2008; Bertoni et al., 2011; Croce et al., 2013). Regions receiving larger infusions of venture capital produce more inventions and jobs and enjoy faster economic growth (Samila and Sorenson, 2011).

But only a small fraction of startups, those that investors (venture capitalists) perceive as having the most potential, receive these cash infusions. How do venture capitalists select among them? Most of the literature to date has focused on what has often been referred to as the "jockey" versus the "horse" debate (Kaplan et al., 2009). In other words, to what extent do investors weigh the attributes of the founders or the top management team (the jockey) relative to business-related factors (the horse) in their decisions? Whether based on surveys of venture capitalists or on revealed preferences in their apparent choices of companies to fund, the most common conclusion has been that venture capitalists put more weight on the founders and managers, the jockeys, in their selection processes (e.g., Hsu, 2007; Franke et al., 2008; Bertoni et al., 2011; Bernstein et al., 2017; Gompers et al., 2020).

We extend and complement this existing literature by documenting the investment decisions of venture capitalists in Denmark. Connecting information from the VentureXpert database on all VC investments made to companies headquartered in Denmark to the Danish registry data, we compare the attributes of companies receiving investments to a counterfactual population of companies that

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could have been funded, startups founded at the same time and in the same industries as those receiving VC.

The registry data allow us to extend the set of characteristics considered as potentially relevant to selection in two ways. Whereas prior research has only been able to examine the human capital of the founders and executives, the registry data include information on all employees of these startups. We also have detailed career history information, allowing us to consider aspects of their prior experience – such as whether they had been employed at small or large companies – not usually available in studies estimating revealed preferences.

Consistent with the prior literature (e.g., Beckman et al., 2007; Bertoni et al., 2011; Plummer et al., 2016), startups with more and better educated executives had higher odds of being funded. Even after accounting for the managers, however, investors still preferred startups with more educated employees, with employees who had earned more in their previous jobs, and with employees with prior experience at large firms. Although venture capitalists invested more frequently in companies that had already enjoyed some business success, after accounting for the human capital of the managers and employees, these business factors add little to predicting the probability of receiving an investment.

Our results contribute to the literature in at least two important ways. First and foremost, our analysis extends the range of human capital characteristics considered as potential factors in funding decisions beyond the founders and managers to the entire set of individuals employed by the startup. Our estimates suggest that this human capital not only matters to funding decisions but also appears even more important than that of founders and managers in predicting these decisions.

Second, the registry data also allow us to parameterize a larger range of management team attributes than have typically been available in prior research. These variables reveal some interesting patterns. For example, investors in Denmark appear to interpret top management team age as a negative despite the fact that older founders have higher probabilities of being successful (Dahl and Sorenson, 2012; Zhang and Acs, 2018; Azoulay et al., 2020). Investors also have a clear preference for experience in large firms (Burton et al., 2002). They may see this experience as being critical to scaling, to being able to deliver the product or service reliability, consistently, and profitably.

2. Venture capital sourcing and screening

Our understanding of how venture capitalists choose their investments comes from a variety of sources. Much of the earliest evidence came from interviews (e.g., Wells, 1974). In describing what they looked for in investments, venture capitalists would point to a variety of factors from the perceived commitment of the entrepreneur to the attractiveness of the market being targeted. Much of the relevant literature has classified these factors into two broad buckets: the "jockey" versus the "horse" (e.g., Kaplan et al., 2009). The jockey has referred to the human side of the equation, generally the attributes of the founders or of the top management team. The horse, meanwhile, has been shorthand for elements of the business, including the size of the potential market, the nature of the business model, and the realized success of the startup.

Systematic evidence on the relative importance of these factors has come from two main sources: surveys and revealed preferences (i.e., estimates of the predictors of venture capital funding). In surveys, investors report that they pay attention to a range of people- and business-side factors, from the commitment of the entrepreneurs, to their experience and reputation in the industry, to the novelty of the idea, to the size and expected growth of the demand for the proposed product or service (e.g., Macmillan et al., 1985; Fried and Hisrich, 1994; Shane and Cable, 2002; Gompers et al., 2020).

Although the early survey research often did not require respondents to rank the importance of these various attributes, more recent research has (for a partial review, see Franke et al., 2008). In one of the most recent surveys on the topic, Gompers et al. (2020), for example, asked respondents to name the most important factor in their decisions. Nearly half named the founders. Business factors meanwhile came in a distant second. Gompers et al. (2020) report that only about one-third of VC partners ranked a business characteristic as the most important factor in their investment decisions: product or service (13%), business model (10%), market (8%), and industry (6%).

Several recent surveys have also employed conjoint designs to elicit relative preferences. These questionnaires force respondents to choose between hypothetical investments with different attributes. Interestingly, in these forced-choice experiments, investors often place the horse ahead of the jockey. Hoenig and Henkel (2015), for example, found that venture capitalists, especially in Germany, preferred a patent or an established sales alliance to an experienced management team. Block et al. (2019) similarly found that early-stage investors placed higher value on revenue growth and the perceived value-add of the product than on the experience of the management team.

Another set of studies – in an approach similar to that used here – use samples of firms that received and that did not receive venture capital to estimate investors' revealed preferences for particular attributes of startups.[1] Many of these papers use hand-collected samples. Burton et al. (2002) and Beckman et al. (2007), for example, use data from the Stanford Project on Emerging Companies, an in-depth retrospective analysis of nearly 200 tech companies in Silicon Valley in the early-1990s. Colombo and Grilli (2010) and Bertoni et al. (2011) draw on a database of roughly 500 high-tech companies in Italy.

Estimates of revealed preferences suggest that investors bet more on the jockey than on the horse. Burton et al. (2002), for example, found the prior senior management experience of the founders to be the strongest predictor of being funded (see also Beckman et al., 2007; Plummer et al., 2016). Hsu (2007) reports that repeat founders had some of the highest odds of success. Colombo and Grilli

[1] Another set of studies focus on the "extensive margin" – in other words, to what extent do various factors predict the amount of venture capital received, conditional on being funded (e.g., Baum and Silverman, 2004).

Table 1
Sample summary.

Top 10 Industries with venture capital investments		No. of investments	Share of investments
No.	Industry		
1	Business services	67	27.46%
2	Education, research, and knowledge creation	47	19.26%
3	Marketing, design, and publishing	17	6.97%
4	Automotive	16	6.56%
5	Video production and distribution	15	6.15%
6	Distribution and electronic commerce	12	4.92%
6	Information technology and analytical instruments	12	4.92%
7	Financial services	9	3.67%
8	Biopharmaceuticals	7	2.87%
8	Production technology and heavy machinery	7	2.87%
	Total sum	**209**	**85.65%**

VC investments over time

Year	Number of investments	Year	Number of investments
1995-1999	7	2008	17
2000	11	2009	15
2001	10	2010	22
2002	5	2011	27
2003	19	2012	19
2004	22	2013	12
2005	13	2014	8
2006	7	2015	11
2007	11	2016	8
	Total sum		**244**

Firm age at the time of investment			**Team Size**		
No.	**Frequency**	**Percentage**	**No.**	**Frequency**	**Percentage**
0	104	42.60%	1	177	72.50%
1	50	20.50%	2	35	14.30%
2	34	13.90%	3	13	5.30%
3	29	11.90%	4+	19	7.80%
4	16	6.60%			
5	11	4.50%			
Total sum	**244**	**100%**		**244**	**99.9%**

(2010) and Bertoni et al. (2011) found that the number of employees, founder education, and founder managerial experience positively predicted the receipt of VC.

Business factors have been found to matter in some of these studies. Engel and Keilbach (2007) and Haeussler et al. (2014), for example, report that firms with patents had higher probabilities of being funded. But other studies that have included information on patents have failed to find a relationship (e.g., Burton et al., 2002; Hsu, 2007; Bertoni et al., 2011). Overall, business-level attributes have been inconsistent predictors of investment.

Two main explanations have been given for the apparent importance of the attributes of the founders or the management team. First and foremost, these individuals execute the business plan. Human capital has long been seen as one of the main assets of fledgling firms, a central driver of survival and success (Beckman et al., 2007; Colombo and Grilli, 2010; Bernstein et al., 2017). Also, since startups frequently pivot – the business plan changes – the founding team may represent the more stable and therefore more informative component of a startup (e.g., Kaplan et al., 2009).

Second, the people may also have value as a signal (Spence, 1974). Hiring high-quality people costs more. Only the strongest businesses and entrepreneurs can afford the expense. Able managers also have outside options. The fact that they would join and stay at a startup suggests that they see it as particularly promising. Whether or not these individuals contribute directly to startup success, they may therefore act as a signal of difficult-to-observe factors that do (Connelly et al., 2011).

3. Data and methods

We construct our sample by manually matching historical investment data from VentureXpert to the registers maintained by Statistics Denmark.[2] Using the company name, address, and founding year, we identified the company's CVR number, a tax identifier, from publicly-available records. We only include companies that received their first investment in their first five years of operation.

[2] VentureXpert has been used in hundreds of studies and has been found to have some of the most complete coverage available (Kaplan and Lerner, 2016; Nanda et al., 2020).

Table 2
TMT measures.

	Venture-backed		Matched controls		Difference	
	mean	sd	mean	sd	b	t
Ln (TMT, number of members)	0.86	0.34	0.81	0.24	0.05**	(2.36)
Ln (TMT, age)	3.64	0.23	3.67	0.28	−0.03*	(-1.92)
Ln (TMT, prior job pay, 1000s DKK)	5.25	1.34	4.44	1.71	0.81***	(8.00)
Ln (TMT, years of education)	2.82	0.17	2.64	0.18	0.18***	(13.74)
Ln (TMT, unemployment history)	3.17	3.06	4.60	3.24	−1.43***	(-6.48)
Ln (TMT, Industry experience)	0.55	0.79	0.86	0.98	−0.31***	(-5.34)
Ln (TMT, TMT experience)	0.46	0.69	0.41	0.76	0.04	(0.83)
Ln (TMT, Young firm experience)	1.72	0.71	1.75	0.72	−0.03	(-0.56)
Ln (TMT, Small firm experience)	1.64	0.78	2.01	0.82	−0.37***	(-6.56)
Ln (TMT, Large firm experience)	1.99	0.81	1.53	0.96	0.46***	(7.75)
Observations	239		1155		1394	

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Our sample has 244 companies that received at least one round of investment between 1995 and 2016.

Table 1 describes this venture-backed sample. Business services, which includes consulting, legal services, engineering consulting, etc., represents the largest group of firms. Education, research and knowledge creation, the second largest group, includes medical technology (MedTech), as well as research and development in biotechnology and engineering. Together these two groups account for 36.7% of the firms. The table also displays the distribution of first-round investments for each year, the age of the firm at the time of its first investment, and the founding team size. Nearly three-quarters of our sample consists of solo founders; 42.6% of the companies received funding within their first year.

We matched each case to five controls, for a total of 1220 control companies. To construct a counterfactual set of companies that could have received funding but that did not, we matched each company receiving VC to five other companies in the same industry founded in the same year. If more than five companies met these criteria, we selected five at random from all eligible.

Relative to the datasets used in most prior studies of revealed preferences, our sample has two principal advantages. First and foremost, connecting to the registry data allows us to characterize the entire set of founders and employees connected with each startup over their entire pre-startup careers. Second, when choosing counterfactuals, we can select from the entire population of firms, improving our ability to identify a plausible "risk set" of companies that could have been funded. Our approach, however, also has shortcomings. Most notably, our business-side information misses many of the more prospective and subjective aspects of the business, such as the innovativeness of the venture, the nature of its value proposition, and the expected growth of the opportunity.

For each set of factors – the managers, the employees, and the business – we begin by describing a set of measures and the differences between funded and unfunded companies on those measures. We then estimate linear probability models (LPMs) – that is, regressions with an indicator dependent variable for receiving venture capital – to assess which of these attributes most strongly predicts being funded. Finally, we estimate LPMs to assess the relative importance of each set of set of factors.

4. Results

4.1. Top management team

Venture capitalists routinely name the founders, or the top management team (TMT), for a startup as one of the most important elements in their decisions. These founding and management teams have been defined in various ways. Some definitions focus on ownership; others on when people joined the startup; yet others on who has executive-level titles (Ruef, 2010).

For our analysis, we define the TMT in terms of who holds an executive role prior to a potential investment. We do not require these "founders" either to have been employed by the startup in its first year of operation or to have ownership (though a large share of these executives would satisfy both criteria). Investors presumably interact with and evaluate the executives of the startup rather than focusing on those who had been with it from day one. Although investors in the United States might prefer the TMT to have ownership – to have "skin in the game" – Denmark taxes options as income at the time of their awarding, meaning that those joining a private company after its founding generally prefer cash bonuses to equity awards (Eriksson, 2001; Sorenson et al., 2021).

Investors would ideally observe the true technical and managerial ability of the management team and would have direct insight into their commitment to the venture. But those factors are hard to observe. Investors rely on signals. Prior experience and education, for example, may indicate that people have expertise in a technology or an industry or in managing (Burton et al., 2002; Dimov and Shepherd, 2005).

We calculate a total of ten measures of the TMT human capital. We log these variables to reduce skewness (for a correlation matrix,

see appendix). *Ln (TMT, number of members)* counts the number of members of the top management team for the startup. *Ln (TMT age)* calculates their average age in years. *Ln (TMT, prior job wage, 1000s DKK)* captures the average amount that they earned each week in their prior jobs (in thousands of Danish kroner).

Education and experience have been defined in many ways in the prior research. Some studies have examined industry experience (Franke et al., 2008; Gompers et al., 2020), others entrepreneurial experience (Hsu, 2007), yet others management experience (Beckman et al., 2007; Bertoni et al., 2011; Plummer et al., 2016). *Ln (TMT, years of education)* averages the number of years of education received by each member of the TMT. *Ln (TMT, Industry experience)* calculates the logged average years of industry experience, and *Ln (TMT, TMT experience)* the logged average years of executive-level experience. held by the TMT. *Ln (TMT, unemployment history)* counts the average number of weeks that the TMT spent in unemployment immediately prior to joining the venture, potentially providing insight into whether necessity had pushed them into entrepreneurship.

Our final three variables capture information about the TMT's previous employers. Have they spent their careers in large, established firms, in small businesses or in startups? Experience in startups and small firms might lead to the development of broader skill sets, useful to the needs of startups (Lazear, 2005; Sorenson et al., 2021). Experience in large employers, by contrast, builds a narrower range of abilities but also an understanding of how to organize for accountability and reliability (Sorenson et al., 2021). Prior employment at prominent firms may also give TMTs legitimacy in the eyes of investors (Burton et al., 2002; Bidwell et al., 2015). *Ln (TMT, young-firm experience)* captures the number of years, on average, that the TMT spent at firms of five years or less of age; *Ln (TMT, small-firm experience)* the average years those same individuals spent at firms with fewer than 50 employees; and *Ln (TMT, large-firm experience)* the average years at firms with 50 or more employees.

Table 2 reports the mean levels of these measures for the firms that received funding and for those that did not, as well tests of whether those means differ. Funded companies had larger teams than unfunded ones. Those receiving funding had slightly younger TMT members, TMTs that had earned roughly 16% more in their previous jobs, and TMTs with more years of education than their unfunded peers. The funded companies surprisingly had TMTs with less industry experience, on average, than their unfunded peers and who more commonly had had careers at larger employers.

Table 3 then reports LPMs to determine which TMT characteristics most strongly predict funding. TMT years of education has the strongest effect. Increasing TMT education by one standard deviation predicts a nearly 11 percentage-point higher probability of being funded. Larger TMTs and TMTs with more managerial experience, more experience in large firms, and higher pay in their prior jobs also have higher odds of attracting venture capital. A one-standard-deviation increase on each of these dimensions corresponds to a 3–4 percentage-point higher probability of being funded.

TMT time spent in unemployment and experience at small firms predict lower probabilities of receiving VC. Most surprisingly, given that both of these factors have been associated with startup success (Dahl and Sorenson, 2012; Zhang and Acs, 2018; Azoulay et al., 2020), both industry experience and TMT age also appear negatively associated with funding.

4.2. Employees

Connecting to the registry data also allows us to characterize the human capital embodied in all employees of these startups, not just that held by the founders and managers. To assess the importance of the employees beyond the founding team, we construct the same ten measures for the non-TMT employees. We include both full-time and part-time employees in these measures (though in Denmark, most employees are hired full-time).

Table 4 parallels Table 2 (for the correlation matrix, see appendix). Across all these dimensions the non-TMT employees of funded startups differ from those of their unfunded peers in exactly the same ways that their TMTs do. Funded startups had more employees than their unfunded peers, more than twice as many on average. They also had more educated non-TMT employees and non-TMT employees who had earned more in their previous jobs. Surprisingly, the non-TMT employees of companies receiving venture capital also had less industry experience than those at unfunded companies.

Table 5 then includes these variables in LPMs to measure the partial correlations of the employee characteristics to funding. Interestingly, this model has more predictive power than the TMT model. Because both sets of regressions have the same dependent variable, we can compare the R-squared statistics for the models. Whereas the TMT attributes explain just over 20% of the probability of being funded, the employee attributes account for more than 30%.

In order of the magnitude that a one standard deviation increase in each dimension would increase the predicted probability of being funded, the strongest predictors are: the number of non-TMT employees, their years of education, and their pay at previous employers. A one standard deviation increase in the number of employees corresponds to a roughly 15 percentage-point increase in the probability of receiving VC. Increasing the non-TMT education by one standard deviation meanwhile predicts a 9 percentage-point higher probability of being funded. As with the TMT, industry experience and small-firm experience among the non-TMT employees has a negative association with being funded.

4.3. Business factors

Compared to the research on human capital (the jockey), prior research on the business side (the horse) has been less consistent in what has been measured and included as potential predictors of investment. In interviews and surveys, investors point to the

Table 3
Linear probability models for p(venture capital) for startups (TMT).

	M1	M2	M3
Ln (TMT, number of members)	0.108***	0.144***	0.131***
	(0.040)	(0.041)	(0.040)
Ln (TMT, age)	−0.154***	−0.138***	−0.179***
	(0.041)	(0.045)	(0.051)
Ln (TMT, prior job pay, 1000s DKK)	0.021***	0.022***	0.022***
	(0.006)	(0.007)	(0.007)
Ln (TMT, years of education)	0.760***	0.718***	0.638***
	(0.057)	(0.058)	(0.059)
Ln (TMT, unemployment history)		−0.015***	−0.014***
		(0.003)	(0.003)
Ln (TMT, Industry experience)		−0.044***	−0.025**
		(0.011)	(0.011)
Ln (TMT, TMT experience)		0.028*	0.050***
		(0.016)	(0.016)
Ln (TMT, Young firm experience)			0.026
			(0.023)
Ln (TMT, Small firm experience)			−0.075***
			(0.019)
Ln (TMT, Large firm experience)			0.038***
			(0.014)
Constant	−1.498***	−1.382***	−1.031***
	(0.249)	(0.255)	(0.264)
Cohort dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
R^2	0.16	0.20	0.23
Observations	1185	1162	1162

Note: Standard errors are in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 4
Employee measures.

	Venture-backed		Matched controls		Difference	
	mean	sd	mean	sd	b	t
Ln (Number of FTE employees)	1.56	1.01	0.76	0.70	0.80***	(11.80)
Ln (Empl, age)	3.55	0.23	3.52	0.32	0.03	(1.48)
Ln (Empl, prior job pay, 1000s DKK)	5.21	1.01	4.51	1.17	0.70***	(8.48)
Ln (Empl, years of education)	2.76	0.14	2.58	0.20	0.18***	(14.28)
Ln (Empl, unemployment history)	4.94	2.33	5.15	2.94	−0.21	(-1.09)
Ln (Empl, Industry experience)	0.48	0.59	0.67	0.81	−0.19***	(-3.72)
Ln (Empl, TMT experience)	0.24	0.43	0.23	0.51	0.01	(0.33)
Ln (Empl, Young firm experience)	1.55	0.53	1.47	0.70	0.08*	(1.77)
Ln (Empl, Small firm experience)	1.58	0.55	1.74	0.78	−0.16***	(-3.33)
Ln (Empl, Large firm experience)	1.87	0.57	1.43	0.83	0.45***	(8.84)
Observations	244		1220		1464	

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

importance of the size and growth of the market, the innovativeness and "disruptiveness" of the product or service, and the attractiveness and scalability of the business model (e.g., Wells, 1974; Burton et al., 2002; Block et al., 2019; van Balen et al., 2019). Databases and even hand-collected samples, however, rarely have variables that correspond to these features. Instead, research on the business side has most consistently estimated the importance of easier-to-measure attributes, such as patents and revenue.

The registry data allow us to assess the financial strength and realized success – the "traction" – of these companies on several dimensions. We develop six measures to capture aspects of the business side (see Table 6). The first simply captures whether the firm has been *incorporated*. *Ln (Equity, 100k DKK)* calculates the value of all assets owned by the firm minus its debt. *Ln (Fixed assets, 100k DKK)*, meanwhile, captures the tangible long-term assets of property, plant, and equipment (PP&E).

We calculated three measures of sales traction. *Ln (Turnover, 100K)* measures the annual sales of the company in logged hundreds of thousands of Danish kroner; *Ln (Exports, 100K DKK)* captures the amount of these sales coming from outside of Denmark; and *Ln (Gross profits, 100K DKK)* records the net profits associated with the business.

Firms that received venture capital are more likely to have been incorporated than those that did not. Companies receiving venture capital also had more assets, higher sales, more exports, and greater profitability than companies in the same industries that did not get funded.

Table 7 reports LPMs relating these business-side factors to the probability of receiving VC. Perhaps not surprisingly, conditional on profits, assets have no relationship to funding. More interestingly, annual sales (turnover) are *negatively* associated with VC. However,

Table 5
Linear probability models for p(venture capital) for startups (Employees).

	M1	M2	M3
Ln (Number of FTE employees)	0.135***	0.159***	0.153***
	(0.018)	(0.019)	(0.019)
Ln (Empl, age)	−0.151***	−0.074	−0.060
	(0.054)	(0.063)	(0.073)
Ln (Empl, prior job pay, 1000s DKK)	0.051***	0.052***	0.053***
	(0.014)	(0.014)	(0.014)
Ln (Empl, years of education)	0.784***	0.742***	0.669***
	(0.079)	(0.079)	(0.081)
Ln (Empl, unemployment history)		−0.017***	−0.014**
		(0.006)	(0.006)
Ln (Empl, Industry experience)		−0.089***	−0.064***
		(0.019)	(0.019)
Ln (Empl, TMT experience)		0.029	0.055*
		(0.031)	(0.032)
Ln (Empl, Young firm experience)			0.025
			(0.037)
Ln (Empl, Small firm experience)			−0.114***
			(0.029)
Ln (Empl, Large firm experience)			0.041*
			(0.024)
Constant	−1.701***	−1.760***	−1.643***
	(0.304)	(0.308)	(0.331)
Cohort dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
R^2	0.26	0.29	0.32
Observations	762	759	759

Note: Standard errors are in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 6
Business measures.

	Venture-backed		Matched controls		Difference	
	mean	sd	mean	sd	b	t
Incorporated firm	0.78	0.42	0.49	0.50	0.29***	(9.52)
Ln (Equity, 100 K DKK)	3.02	1.45	1.50	1.22	1.51***	(13.85)
Ln (Gross profits, 100 K DKK)	3.19	1.30	2.31	1.02	0.88***	(9.41)
Ln (Exports, 100 K DKK)	0.63	1.38	0.23	0.84	0.39***	(4.21)
Ln (Turnover, 100 K DKK)	3.44	1.57	2.59	1.35	0.85***	(7.75)
Ln (Fixed assets, 100 K DKK)	2.62	1.49	1.48	1.25	1.14***	(10.64)
Observations	244		1220		1464	

Note: * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 7
Linear probability models for p(venture capital) for startups (Business).

	M1	M2	M3
Incorporated firm	0.179***	0.088***	0.089***
	(0.020)	(0.022)	(0.022)
Ln (Equity, 100 K DKK)		0.103***	0.108***
		(0.010)	(0.014)
Ln (Gross profits, 100 K DKK)		0.015	0.074***
		(0.013)	(0.025)
Ln (Exports, 100 K DKK)		0.010	0.017
		(0.011)	(0.011)
Ln (Turnover, 100 K DKK)			−0.062***
			(0.022)
Ln (Fixed assets, 100 K DKK)			−0.005
			(0.013)
Constant	0.048	−0.379**	−0.333*
	(0.151)	(0.178)	(0.178)
Cohort dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
R^2	0.05	0.19	0.20
Observations	1464	1161	1161

Note: Standard errors are in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 8
Linear probability models for p(venture capital) for startups.

	TMT	TMT + Empl	TMT + Firm	TMT + Empl+Firm
Ln (TMT, number of members)	0.131***	0.063	0.130***	0.102*
	(0.040)	(0.049)	(0.045)	(0.054)
Ln (TMT, age)	−0.179***	−0.143**	−0.172***	−0.217***
	(0.051)	(0.072)	(0.057)	(0.081)
Ln (TMT, prior job pay, 1000s DKK)	0.022***	0.021**	0.016**	0.017*
	(0.007)	(0.008)	(0.007)	(0.009)
Ln (TMT, years of education)	0.638***	0.434***	0.506***	0.392***
	(0.059)	(0.088)	(0.065)	(0.097)
Ln (TMT, unemployment history)	−0.014***	−0.010**	−0.008**	−0.006
	(0.003)	(0.005)	(0.004)	(0.005)
Ln (TMT, Industry experience)	−0.025**	−0.020	−0.023*	−0.004
	(0.011)	(0.018)	(0.012)	(0.019)
Ln (TMT, TMT experience)	0.050***	0.014	0.036**	0.022
	(0.016)	(0.022)	(0.018)	(0.024)
Ln (TMT, Young firm experience)	0.026	0.035	0.013	0.038
	(0.023)	(0.030)	(0.024)	(0.033)
Ln (TMT, Small firm experience)	−0.075***	−0.089***	−0.068***	−0.088***
	(0.019)	(0.025)	(0.021)	(0.029)
Ln (TMT, Large firm experience)	0.038***	0.022	0.033**	0.028
	(0.014)	(0.019)	(0.015)	(0.021)
Ln (Number of FTE employees)		0.126***		0.119***
		(0.019)		(0.035)
Ln (Empl, prior job pay, 1000s DKK)		0.031**		0.037**
		(0.013)		(0.015)
Ln (Empl, years of education)		0.588***		0.529***
		(0.100)		(0.110)
Ln (Empl, unemployment history)		−0.011**		−0.011*
		(0.005)		(0.006)
Ln (Empl, Industry experience)		−0.054**		−0.048**
		(0.022)		(0.024)
Ln (Empl, TMT experience)		0.027		0.023
		(0.027)		(0.032)
Incorporated firm			0.059**	0.031
			(0.026)	(0.035)
Ln (Equity, 100 K DKK)			0.081***	0.069***
			(0.012)	(0.015)
Ln (Gross profits, 100 K DKK)			0.027	−0.057
			(0.026)	(0.037)
Ln (Turnover, 100 K DKK)			−0.020	−0.016
			(0.023)	(0.031)
Constant	−1.031***	−2.191***	−1.037***	−1.832***
	(0.264)	(0.370)	(0.305)	(0.427)
Cohort dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
R^2	0.23	0.40	0.32	0.42
Observations	1162	728	927	602

Note: Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

that negative relationship only appears after conditioning on gross profits. It may therefore reflect a preference for high-margin businesses or that these companies have the ability to bootstrap their capital needs.

4.4. Full model

What matters most? Table 8 reports the results of LPMs that include management, employee, and business attributes. We only included variables that had been predictive in Tables 3 and 5, or 7.[3]

These models suggest some interesting patterns. First, although nearly all of the TMT characteristics appear important by themselves, after accounting for employee quality and business strength, many of these characteristics have little predictive power. Only the size of the TMT, their average age and level of education, and their prior small-firm experience continue to predict funding. Strong TMTs may matter in large part for the extent to which they can recruit better employees.

Second, the human capital of the employees (the team) has more predictive power than either the attributes of the TMT (the jockey) or the strength of the business (the horse). These employee characteristics can explain 32% of the variance on their own. TMT characteristics only add eight percentage points of explanatory power, financial resources another two.

Third, although many papers have pointed to the importance of corporate form as an indicator/signal of potential (e.g., Dahl and Sorenson, 2012; Guzman and Stern, 2015), incorporation status has no predictive power once the attributes of the employees have been included.

5. Discussion and conclusion

Despite ample research on VC screening and selection processes, almost no attention has been given to the importance of human capital beyond that held by the founders or the managers. Using Danish registry data, we construct a novel dataset of 244 venture-backed startups headquartered in Denmark and 1220 matched controls founded in the same industries at the same time that could have received VC but that did not. We used this dataset to examine the revealed preferences of VC investors in Denmark for attributes of the management teams, the employees, and the business strength of the startup.

In many ways, the results mirror prior research. Having a larger team of more educated executives predicts a higher probability of being funded. But our findings also depart from earlier studies. Most notably, employees appear to play a large role in attracting investors, an even larger role than the executives. That does not mean that founders do not matter. But it may mean that they represent something like a necessary-but-not-sufficient condition. Having high-quality founders does not guarantee that they can recruit others to their vision. The quality of the employees may therefore serve as a critical indicator of the management team's ability to recruit, retain, and motivate others.

Surprising, TMT age, and TMT and employee industry experience had negative associations with getting funded. Investors may have a bias against those with too much experience, seeing them as being unwilling to disrupt the status quo. Southwest, for example, famously hired people without prior airline experience, not wanting those already steeped in the existing routines in the industry.

The fact that investors prefer TMTs and employees with large firm experience also seems interesting. Instead of focusing on entrepreneurial experience, venture capitalists may instead have an eye to the future, for whether a startup appears well-situated to scale. People who understand how to organize activities at scale may therefore be more attractive to investors.

Conditional on the caliber of the founding team and the early employees, business success itself had little predictive power on funding. Granted, our estimates cannot capture many of the more qualitative elements that may attract investors. Still, the revealed preferences of investors appear consistent with claims that investors may undervalue these attributes relative to their ability to predict the success of startups (Kaplan et al., 2009; Lyonnet and Stern, 2022).

Returning to the jockey versus the horse debate. Although we find support for the importance of both, consistent with prior research, the attributes of the jockey appear more important to investors. But the untold tale is the employees. Maybe it's not the jockey or the horse but the entire team. Early employees have received far less attention in the entrepreneurship literature than either TMTs or business attributes. Their importance here suggests that they deserve far more.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix

[3] The multiple measures of experience raise questions about multicollinearity. However, all of the variables have Variance Inflation Factors (VIFs) of less than 3, well below the level where it would become a concern.

Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
(1) TMT, size	1.00																									
(2) TMT, age	−0.02	1.00																								
(3) TMT, prior job pay	0.10	0.11	1.00																							
(4) TMT, years of edu	−0.09	0.18	0.19	1.00																						
(5) TMT, unemp hist	0.19	0.14	−0.07	−0.14	1.00																					
(6) TMT, industry exp	0.09	0.12	−0.00	−0.04	0.09	1.00																				
(7) TMT, TMT exp	0.06	0.38	−0.10	0.04	−0.10	0.08	1.00																			
(8) TMT, young firm exp	−0.00	0.53	0.10	0.13	0.15	0.23	0.35	1.00																		
(9) TMT, small firm exp	0.05	0.31	0.03	−0.06	0.17	0.35	0.32	0.62	1.00																	
(10) TMT, large firm exp	0.04	0.32	0.19	0.28	0.10	−0.06	0.03	0.38	−0.05	1.00																
(11) No of FTE empl	0.27	0.00	0.07	0.13	−0.02	0.11	0.08	0.07	0.03	0.09	1.00															
(12) Empl, age	−0.11	0.32	0.12	0.14	−0.01	0.02	0.08	0.13	0.08	0.13	−0.00	1.00														
(13) Empl, prior job pay	0.01	0.14	0.22	0.22	−0.05	0.02	0.06	0.12	0.01	0.23	0.20	0.35	1.00													
(14) Empl, years of edu	−0.09	0.14	0.11	0.55	−0.20	−0.10	0.04	0.04	−0.12	0.23	0.12	0.27	0.32	1.00												
(15) Empl, unemp hist	0.05	0.02	−0.04	−0.07	0.19	0.08	−0.00	0.06	0.11	−0.00	0.27	0.34	0.15	−0.01	1.00											
(16) Empl, industry exp	0.03	0.10	0.03	−0.04	0.05	0.55	0.02	0.10	0.18	−0.07	0.11	0.22	0.06	0.04	0.13	1.00										
(17) Empl, TMT exp	−0.08	0.11	0.04	0.02	0.00	0.00	0.02	0.06	0.07	−0.00	−0.04	0.40	0.04	0.07	−0.02	0.12	1.00									
(18) Empl, young firm exp	−0.07	0.21	0.10	0.07	−0.04	0.07	0.08	0.22	0.18	0.16	0.08	0.70	0.31	0.23	0.31	0.26	0.39	1.00								
(19) Empl, small firm exp	−0.06	0.14	0.06	−0.05	0.05	0.16	0.11	0.22	0.35	0.01	0.07	0.51	0.19	0.07	0.35	0.36	0.32	0.69	1.00							
(20) Empl, large firm exp	−0.00	0.18	0.18	0.25	−0.08	−0.03	0.04	0.12	−0.01	0.33	0.16	0.51	0.37	0.39	0.31	0.08	0.13	0.51	0.19	1.00						
(21) Incorporated firm	−0.25	0.00	0.06	0.13	−0.15	0.00	0.04	0.06	−0.02	0.06	0.28	0.12	0.20	0.17	0.06	0.06	0.08	0.16	0.14	0.16	1.00					
(22) Equity	0.12	0.08	0.15	0.28	−0.16	−0.06	0.11	0.08	−0.03	0.14	0.57	0.15	0.27	0.28	0.11	−0.01	0.08	0.18	0.08	0.26	0.22	1.00				
(23) Gross profits	0.24	0.03	0.09	0.15	−0.04	0.07	0.07	0.07	0.02	0.10	0.82	0.07	0.24	0.15	0.23	0.11	0.00	0.10	0.09	0.19	0.20	0.67	1.00			
(24) Exports	0.05	0.02	0.04	0.06	−0.04	−0.00	0.06	0.01	0.02	0.03	0.30	−0.01	0.10	0.07	0.08	0.01	−0.06	0.03	0.02	0.07	0.10	0.22	0.30	1.00		
(25) Turnover	0.22	−0.07	0.03	0.05	0.06	0.12	−0.00	0.03	0.08	0.05	0.70	−0.04	0.17	0.04	0.25	0.10	−0.04	0.05	0.08	0.09	0.22	0.61	0.92	0.34	1.00	
(26) Fixed assets	0.16	0.05	0.11	0.13	−0.08	−0.03	0.12	0.08	0.02	0.09	0.48	0.14	0.23	0.17	0.13	0.06	0.09	0.18	0.11	0.21	0.15	0.79	0.60	0.16	0.54	1.00

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