

When missing skills kill the deal: evidence from venture capital write-offs

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Abstract

Purpose – This paper investigates whether skill gaps in portfolio ventures influence the likelihood of write-offs when ventures are backed by well-qualified venture capitalists, contrasting the VC value-adding perspective with the venture absorptive capacity perspective and examining whether VCs' ability to convert uncertainty into risk moderates this relationship.

Design/methodology/approach – Using human capital and absorptive capacity theories, we provide evidence that insufficient absorptive capacity undermines the mutual value creation process between investors and investees. Empirically, we analyze 460 European VC managers from the 2023 EIF VC Survey.

Findings – Perceived skill gaps in portfolio ventures significantly increase the likelihood that VCs exit via write-off. This effect is stronger for more experienced investors, who more quickly recognize non-viable trajectories.

Research limitations/implications – Evidence is based on self-reported perceptions of investee skills and cross-sectional data, which constrain causal inference. Future research should match survey responses with deal-level performance and founder skill metrics.

Practical implications – Founder human capital is both a value driver and an exit trigger. Assessing teams' ability to internalize investor guidance becomes central to portfolio monitoring, capital allocation and LP governance expectations.

Social implications – Ventures lacking managerial and technical capacity are more readily abandoned, potentially amplifying regional or demographic inequality in entrepreneurial ecosystems. Policy attention to founder capability-building is therefore warranted.



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1. Introduction

The importance of skills in fostering resilient economies and societies has received considerable attention from public agencies. In Europe, the Organization for Economic Co-operation and Development (OECD) or the European Commission have implemented several initiatives to promote skill development at both the individual and organizational levels. Examples include the “Future of Education and Skills (2030)” project, the “European Year of Skills (2023)” or the “Pact of Skills” to cite some of them. In management research, the critical role of skills in entrepreneurial development and growth has been widely recognized (Becker, 1964; Brunello and Wruuck, 2021; Margolis, 2014), with its foundation rooted in the seminal work of Schumpeter (1934) and further developed by Penrose (1959). Human capital is considered crucial for various aspects of venture development, including opportunity recognition (Gruber *et al.*, 2012; Marvel, 2013), radical innovativeness (Marvel and Lumpkin, 2007), patenting behavior (Allen *et al.*, 2007), the establishment of reputation and legitimacy (Packalen, 2007) and the ability to access external financial resources (Beckman *et al.*, 2007), among others.

In this stream of literature, the role of human capital has been specifically applied to the context of venture capitalists (VCs) as it offers a valuable setting for analyzing the importance of skills under different lenses, both at the entrepreneur- and investor-level. On one side, it is acknowledged that skilled entrepreneurial teams are more likely to receive VC funding and succeed in the market as they are more capable of navigating the challenges of starting and scaling a business (Standaert *et al.*, 2022). Indeed, while ideas are important, the ability to execute them is even more critical. On the other side, VCs are active, highly specialized investors who offer strategic guidance and mentorship to their portfolio companies (Svetek, 2022). Beyond financial capital, they provide a broad range of value-added services: securing legal, accounting, marketing and investment banking support; identifying strategic partners; recruiting managers; participating in strategic decision-making; and offering technical and operational advice (Amit *et al.*, 1990, 1993, 1997; Gompers and Lerner, 1999; MacIntosh, 1994; Meglio *et al.*, 2017; Sahlman, 1988; Schefczyk and Gerpott, 2001a). The financial intermediation literature suggests that the performance of VCs is highly dependent on the human capital of their teams (Bottazzi *et al.*, 2008; Dimov and Shepherd, 2005; Hellmann, 2000; Knockaert *et al.*, 2006, 2010; Milosevic, 2018; Zarutskie, 2010) and provides empirical evidence that the presence of a valuable VC leads to an increase in venture performance (Arthurs and Busenitz, 2006; Bertoni *et al.*, 2013; Croce *et al.*, 2013; Davila *et al.*, 2003; Meglio *et al.*, 2017; Rosenbusch *et al.*, 2013; Vanacker *et al.*, 2013).

Although these studies offer interesting insights into the role of skills in the VC context, they typically focus either on the skill set of the entrepreneurs or on that of the VC managers. This approach is valuable as it enables a deep exploration of how skills influence the performance of either the entrepreneur or the VC. However, VC transactions are characterized by strong interactions and mutual learning between investors and the ventures they finance (Bengtsson and Hsu, 2020), and the success of both depends on the effectiveness of such a relationship along the financing process. The extant literature has largely disregarded this perspective, which we instead adopt to analyze the relational and complementary nature of human capital and absorptive capacity within the venture capital–portfolio venture dyad.

More precisely, VCs provide ventures with a pool of heterogeneous competences to enhance their quality and probability of success (Pfeffer and Salancik, 1978). Entrepreneurs, in turn, attempt to internalize these resources in order to develop their skills and improve the profitability of their businesses. We capture these dynamics by drawing on the resource-based view of the firm and the theory of absorptive capacity, as they emphasize not only the

possession of valuable resources and skills but also the ability to recognize, assimilate and effectively leverage complementary knowledge across organizational boundaries. The ongoing exchange of resources, trust and support strengthens the relationship and aligns the interests of both parties. However, misalignments in skills between investors and portfolio firms, as well as a lack of absorptive capacity within ventures, may critically shape strategic outcomes, including divestment decisions. Thus, we address the following research questions: *Do venture skill gaps affect the write-off decisions of highly-skilled VCs? To what extent do VC-specific characteristics shape this relationship?*

Although the literature suggests that talented investors have a stronger impact on venture growth compared to less well-endowed VCs (Svetek, 2022), the provision of resources by well-qualified VCs may not be sufficient to ensure venture success. It is equally essential that ventures are able to absorb (Cohen and Levinthal, 1990) the information and guidance provided by VCs and effectively translate them into action. If this does not occur, due to previously unnoticed skill gaps that may emerge during the investment relationship, VCs might determine that the team is no longer capable of creating value. As a result, they might judge the investment no longer profitable, prompting them to end the relationship. Thus, we test two competing hypotheses: one based on the VC value-adding perspective, and the other on the venture absorptive-capacity lens. Moreover, we suggest that this dynamic is likely to be more pronounced when VCs are better positioned to recognize a venture's inability to leverage its skills for growth, such as when they have greater experience, industry specialization, larger management teams or a focus on early-stage ventures.

To answer our research questions, we use data from a unique survey conducted by the European Investment Fund (EIF) in 2023 – the EIF VC Survey – which is the largest combined annual survey among General Partners at the pan-European level (Krämer-Eis and Croce, 2023). Drawing on responses from 460 European VC managers, we find that when portfolio ventures are unable to convert the financial and managerial resources provided by investors into value due to the presence of skill gaps, investors are more likely to opt for a write-off exit. Moreover, this effect is stronger when the VC has greater experience, enabling a more comprehensive assessment of venture progress and a heightened ability to identify situations where investments are no longer profitable, thereby prompting divestment.

Our paper offers several contributions to the literature on entrepreneurship and entrepreneurial finance, in particular. First, the extant literature has mainly emphasized the importance of VC skills for the success of invested ventures, thanks to the managerial expertise provided to the portfolio ventures. However, the VC–entrepreneur tie is a social interaction that needs a bidirectional lens of analysis. We argue that being supported by highly skilled VCs is a necessary, but not sufficient, condition for venture success. The pool of skills owned by the ventures is also a significant factor, as the investor's input is unlikely to yield tangible results in the absence of these skills. Second, most of the literature has focused primarily on the role of investor and entrepreneur skills in the pre-investment phase, examining VC decisions to fund a venture or the venture's ability to attract VC interest during the scouting process. With our paper, we move to the post-investment phase to investigate the role of skills once an investor–venture relationship has been established, and to understand how human capital affects the continuation of such a relationship. The existing literature indicates that a VC typically exits an investment when the expected marginal value added from the VC's involvement is less than the expected marginal cost of such involvement at any given assessment interval (Cumming and MacIntosh, 2003). In our work, we extend this view by moving beyond financial considerations and highlighting that skill gaps on the venture side can contribute to the emergence of unfavorable marginality for the investor. Finally, while previous studies have acknowledged the inherent heterogeneity of VCs – considering factors such as expertise, reputation, size and investment diversification – that shape their ability to support venture performance (Gompers *et al.*, 2009; Hochberg *et al.*, 2007; Kaplan and Schoar, 2005; Sørensen, 2007), our paper shifts focus. Rather than examining the positive impact of VC expertise on firm growth, we explore how investor expertise can serve as a key factor in identifying investments that fail to meet initial expectations.

2. Theoretical positioning and research hypotheses

We draw on human capital theory and absorptive capacity to shed light on the interplay between the provision of skills by VCs, the presence of skill gaps at the venture level and venture performance. According to human capital theory (Becker, 1964; Gimmon and Levie, 2010; Marvel *et al.*, 2016; Sevilir, 2010; Unger *et al.*, 2011), human capital constitutes a central source of heterogeneity in venture performance and innovation outcomes. Scholars in this stream argue that individuals are endowed with heterogeneous skills, knowledge and experiences that, particularly in the early stages of firm development, constitute critical endowments affecting venture survival and growth (Shrader and Siegel, 2007).

At the individual level, the bundle of skills, knowledge and accumulated experience has been shown to foster creativity and innovative behavior throughout the opportunity identification process (Dimov, 2010; Marvel and Lumpkin, 2007). Human capital also plays a key role in venture creation by enabling entrepreneurs to rely on heuristics and cognitive shortcuts in decision-making (Einhorn, 1980), which help them make decisions under conditions of uncertainty, assess the alignment between entrepreneurial opportunities and market conditions and identify avenues for scalable growth (Colombo and Grilli, 2010). Venture creation thus critically depends on how entrepreneurial skills, experience and cognitive capabilities are accumulated and deployed over time.

The relationship between VCs and ventures can be understood within this theoretical framework. When entrepreneurs engage with VCs, experiential learning processes are enriched through access to external knowledge, feedback and support activities provided by the investors (Cope, 2005; Taylor and Thorpe, 2004). Through these interactions, VCs' skills and experience are then transferred to portfolio ventures, potentially complementing existing entrepreneurial human capital. This perspective is, then, closely related to the concept of "absorptive capacity" (Cohen and Levinthal, 1990), defined as a venture's capacity to identify, assimilate and exploit external knowledge (Cohen and Levinthal, 1990). Absorptive capacity is widely acknowledged as a pivotal factor in effectively leveraging external knowledge to create valuable assets for the organization (Kostopoulos *et al.*, 2011; Todorova and Durisin, 2007; Zahra and George, 2002). In this sense, the knowledge and skill set of VCs can be conceptualized as a transferable capability that may enhance entrepreneurs' ability to identify and act upon growth opportunities. However, the extent to which entrepreneurial learning derived from such knowledge transfer remains idiosyncratic or becomes cumulative and scalable depends critically on the venture's absorptive capacity and is further strengthened through repeated interactions between VCs and entrepreneurs (Politis, 2005; Taylor and Thorpe, 2004).

VCs seek to invest in emerging businesses that require substantial capital and demonstrate significant growth potential in order to guarantee high rates of return to investors (Gompers and Lerner, 2004). One of the primary challenges faced by VCs is ensuring the continued growth of the ventures they have supported until they can execute an exit plan (e.g., through an initial public offering (IPO) or by a trade sale to a prominent corporation or a private equity entity). VCs address gaps in the internal skills of portfolio ventures by performing important "coach" activities. VCs play a pivotal role in providing coaching and guidance to ventures that often lack internal capabilities, thereby aiding in their managerial development and professional growth. In fact, VCs are said to channel their skills in offering advisory support to invested ventures in areas such as strategic planning, marketing, finance, accounting and human resource management (Barney *et al.*, 1996; Colombo and Grilli, 2010; Di Pietro *et al.*, 2021; Sapienza, 1992). The transfer of knowledge and skills constitutes an important mechanism of entrepreneurial learning, as knowledge flows from investors to entrepreneurs enable the latter to more effectively test ideas, interpret market conditions and enhance their decision-making capabilities. Access to the expertise and networks provided by VCs plays a fundamental role in shaping how human capital is mobilized within ventures.

This perspective aligns with the human capital view, which posits that the presence of distinctive and valuable competencies facilitates enhanced growth. This approach has been employed in entrepreneurial finance to elucidate how VC investors add value to ventures,

expanding their access to a broader range of opportunities, which, in turn, enhances venture performance (Colombo and Grilli, 2010). VCs expect that the skills and capabilities they transfer to portfolio ventures, when consolidated through experiential learning processes, will strengthen the venture's human capital base and ultimately enhance its future performance. VCs anticipate that the venture will be able to generate returns within a five-to-seven-year period (Gompers and Lerner, 2004). However, VC activity is inherently uncertain due to the fact that VCs invest in nascent ventures that lack a substantial track record, tangible assets, products or clients. The absence of historical performance data cannot ensure that valuations will be met and thus that the venture will perform as expected. This might happen even if expectations about superior returns have become common knowledge and shared between the VC and the venture. Should the venture underperform with respect to the key performance indicators (KPIs) agreed upon by the VC, a write-off may occur.

In principle, the coaching provided by VCs and the transfer of their skills can lead to a reconfiguration of target ventures' distinctive capabilities, enabling them to access high-level competencies that would otherwise be beyond their reach. Under this view, VCs may be willing to invest in ventures with substantial skill gaps if these ventures offer the potential for higher returns. In other words, VCs evaluate investment opportunities based not only on inherent venture characteristics but also on their own ability to provide guidance and support through coaching. Through this transfer of human capital, VCs can function as external providers of complementary capabilities that ventures lack internally, enabling the venture to better leverage the coaching and improve its chances of success. When ventures exhibit skill gaps that match the expertise of their investors, the VC's ability to create value becomes particularly salient. The presence of such gaps creates opportunities for VCs to deploy their knowledge, experience and networks to address weaknesses in the venture's organizational capabilities. Through board participation, mentoring and strategic intervention, well-qualified VCs can help compensate for missing skills, thereby improving the venture's strategic decision-making and operational effectiveness. Consequently, ventures that display a greater number of skill gaps but are backed by VCs possessing the corresponding expertise, may benefit more strongly from the investors' value-adding role. In these cases, the complementarity between the venture's needs and the VC's capabilities enhances the effectiveness of the investment relationship, reducing the likelihood that ventures fail or are written off. Accordingly, we expect that the presence of skill gaps in ventures backed by well-qualified VCs is associated with a lower incidence of write-offs, as investors can actively mitigate these deficiencies. We, therefore, propose the following hypothesis:

- H1a.* (The VC value-adding mechanism). The greater the number of skill gaps in portfolio ventures backed by well-qualified VCs (i.e., VCs endowed with the skills missing at the venture level), the lower the incidence of write-offs.

However, this potential benefit depends on the venture's ability to absorb and implement the skills and knowledge provided by the VC. Ventures with limited capabilities may struggle to internalize external tacit knowledge and apply it effectively in strategic decision-making, which can negatively affect performance. Skill gaps may hinder a venture's capacity to innovate, scale or withstand competitive pressures. In other words, the anticipated benefits of external knowledge inputs for venture growth may vary according to the venture's capacity to internalise and exploit such knowledge, as the "absorptive capacity" (Cohen and Levinthal, 1990) perspective predicts. A venture lacking the requisite skills may fail to exploit the competencies offered by VCs, potentially leading to suboptimal performance or even write-offs. Moreover, large capability gaps between the venture and the VC may create communication barriers and cognitive distance, making it more difficult for founders to understand or operationalize the recommendations provided by investors. Prior research suggests that effective learning from external partners depends not only on the availability of valuable knowledge but also on the receiving organization's internal knowledge base and learning capabilities (Lane and Lubatkin, 1998; Zahra and George, 2002). When ventures lack these capabilities, external advice may fail to translate into improved performance.

Consequently, although well-qualified VCs may possess the skills required to address deficiencies within their portfolio ventures, ventures characterized by numerous skill gaps may lack the absorptive capacity needed to leverage this expertise. In such cases, the inability to effectively internalize and apply investor-provided knowledge may increase the likelihood of poor performance and eventual failure, leading to a higher incidence of write-offs. This reasoning leads to the following competing hypothesis:

- H1b.* (The venture absorptive-capacity constraint). The greater the number of skill gaps in portfolio ventures backed by well-qualified VCs (i.e., VCs endowed with the skills missing at the venture level), the higher the incidence of write-offs.

When VCs select a venture to invest in, they are aware that they will have to deal with the inherent uncertainty associated with the investment. This uncertainty can manifest in various ways, including concerns about the management of the venture (i.e., the quality and commitment of the founders), the product (i.e., the quality of the product and market potential), the market and the financials (i.e., the ability of the venture to generate sufficient cash to maintain solvency) (Ferrary, 2010; Hellmann and Puri, 2000). By advancing and nurturing investments through a coaching approach that enhances competencies and skills, investors transform uncertainty into manageable risk (Ferrary, 2010). This idea aligns with Knight's (1921) differentiation between uncertainty and risk, where uncertainty is deemed unquantifiable due to its unique and unrepeatable nature, while risk is measurable as the outcome distribution in a set of instances is identifiable. VC investment decisions are more aligned with a scenario of uncertainty rather than risk, due to the unique nature of each venture being invested in (Ferrary, 2010). However, as the invested venture matures and investors become more involved in its operational management, uncertainty gradually transitions into risk. This shift occurs as VCs gather more information on how ventures are leveraging the skills and support provided by the investor, thereby enabling a more informed assessment of the risks involved in the investment.

VCs work alongside entrepreneurs to enhance the necessary skills and competencies of the venture through a process known as "learning by interaction" (Nonaka, 1994). This process involves VCs gaining knowledge about the venture's progress along its growth path. The knowledge that VCs acquire is twofold: tacit knowledge, stemming from their deep engagement with the venture and "explicit or codified" knowledge (Polanyi, 1966), derived from observing how the venture translates acquired competencies into successful actions. We argue that VCs that are better able to quickly convert this uncertainty into risk are also more qualified to anticipate whether a venture will underperform, potentially leading to liquidation, or, conversely, whether it can succeed, allowing them to provide effective support and guidance. The vertical knowledge of a sector, combined with experience accumulated over time, places VCs in a stronger position to evaluate how a venture can leverage their skills to generate growth and identify promising business opportunities. We argue that older, sector-specialized VC funds, as well as VCs with larger management teams (i.e., more partners involved), are better equipped to assess a venture's capacity to achieve KPIs based on their accumulated knowledge and prior experience. Additionally, VCs that focus on the earlier stage are better able to deal with uncertainties (Ferrary, 2010), as in seed and early investments there is no real information about the market and the technology because the venture often does not yet exist. These VCs are better at turning uncertainty into assessable risk and at anticipating the trajectory a venture is likely to follow as it matures. In other words, they are better positioned to foresee whether a venture is likely to succeed or fail, allowing them to intervene, provide guidance, or, if necessary, convert their investment into a liquidation. Based on this reasoning, we propose the following hypothesis:

- H2.* The relationship between the number of skill gaps in the portfolio ventures backed by well-qualified VCs (i.e., VCs endowed with the skills missing at the venture level) and the number of write-offs is more pronounced when VCs have a greater ability to

convert uncertainty into risk (e.g., VCs that are older, more specialized in certain sectors, with larger management teams, with a focus on earlier investment stages).

3. Data and methodology

3.1 Sample selection and definition of the variables

The data employed in this analysis are derived from the EIF VC Survey developed by the authors of this study with EIF representatives, which, to our knowledge, is the largest combined annual survey among General Partners at a pan-European level (Krämer-Eis and Croce, 2023). The data are anonymous and were collected between 17th July 2023 and 4th September 2023 via an online questionnaire and include responses from 472 VC fund managers from both EIF-backed and non-EIF funds (of 2,525 VC firms reached, i.e., a response rate of 18.69%). Most of the respondents hold the position of CEO or Managing/General Partner, suggesting that their responses reflect the views of the decision-makers in their respective VC firms. Of the 472 total respondents, 460 responses were complete and therefore included in the analysis.

In Table 1, we report the key characteristics of the VC firms included in our sample. The VC firms involved in the survey are evenly spread across all European regions. In particular, we follow the classification of European countries commonly used by European institutions such as the EIF [1]. Regarding the most represented regions, 17.39% of VC investors come from the DACH region (Germany, Austria and Switzerland), 16.09% from the Benelux and 15.87% from the South. In terms of stage of development and industry, the respondents mostly focus on

Table 1. VC firm characteristics

	<i>n</i>	<i>%</i>		<i>n</i>	<i>%</i>
<i>Geographical area</i>			<i>Industry focus</i>		
Benelux	74	16.09%	Biotech	67	14.57%
CESEE	72	15.65%	Energy and Environment	63	13.70%
DACH	80	17.39%	Health	34	7.39%
France	47	10.22%	ICT	193	41.96%
Nordics	46	10.00%	Other Products	27	5.87%
South	73	15.87%	Other Services	30	6.52%
UKIre	51	11.09%	No clear sector focus	46	10.00%
USAOthers	17	3.70%			
<i>Investment stage focus</i>			<i>VC foundation</i>		
Pre-seed	76	16.51%	Before 2000	39	8.48%
Seed	147	31.96%	2000–2004	51	11.09%
Early	155	33.70%	2005–2009	77	16.74%
Later	82	17.83%	2010–2014	95	20.65%
			2015–2019	155	33.70%
			After 2020	43	9.35%
<i>VC size (AUM)</i>			<i>Partners number</i>		
<10 million Euro	15	3.26%	<3	57	12.39%
10–29 million Euro	38	8.26%	3	104	22.61%
30–49 million Euro	36	7.83%	4	99	21.52%
50–99 million Euro	78	16.96%	5	75	16.30%
100–199 million Euro	108	23.48%	6–10	100	21.74%
200–499 million Euro	104	22.61%	>10	25	5.43%
500–999 million Euro	37	8.04%			
≥1,000 million Euro	44	9.56%			
<i>Total</i>	<i>460</i>	<i>100%</i>	<i>Total</i>	<i>460</i>	<i>100%</i>

Note(s): The table reports the distribution of interviewed VCs by geographical location, industry focus, investment stage focus, VC foundation year, VC size in terms of Asset Under Management (AUM) and number of VC partners

seed (31.96%) and early-stage (33.70%) investments, while 41.96% focus on investments in Information and Communication Technology (ICT), aligning the sample to the average VC industry distribution [2]. More than half (63.70%) of the funds were established after 2010, as expected given the impact of the 2007–2008 global financial crisis and the period of recovery and expansion of the VC sector that followed (Kelly and Kraemer-Eis, 2011). The size of the VC firms in the sample, measured in terms of both Assets Under Management (AUM) and number of partners, highlights the comprehensive coverage of a wide variety of VC firms. Most VCs are of medium to large size, with more than EUR 100 million AUM (63.70%) and more than 3 partners (65%).

The overall survey administered to VC firms consists of 98 questions. In addition to socioeconomic characteristics regarding the respondents (in terms of both VC managers and their VC funds), the survey provides detailed information on the funds' recent activity, performance, market perception, as well as skills and skill gaps at both fund manager and portfolio venture level [3]. The survey also includes questions related to the number of exits in the last 12 months by detailing the typology of exit. In particular, respondents are asked to indicate the number of exits in the last 12 months via the following exit routes: (1) sale to trade buyers, (2) IPO/sale of listed stocks, (3) sale to another VC/PE firm, (4) Sale to financial institution, (5) Management/owner buyback, (6) Repayment of preference shares/loans or mezzanine, (7) Continuation fund, (8) Other/s and (9) Insolvency/liquidation/write off. As, in this paper, we are interested in the write-off decisions, we resort to the logarithm of the number of reported Insolvencies/liquidations/write-offs as our principal dependent variable ($\log_Writeoff_n$).

Moreover, following the initiative launched by the European Commission in declaring 2023 (and extending into 2024) the European Year of Skills, the EIF 2023 VC Survey wave had a special focus on the role of human capital (particularly skills) in the European VC market. In this paper, we focus on the survey questions related to skills, asking VCs: (1) Which skills are missing (at both the VC management team level and the entrepreneurial team level) and (2) Which skills are important (at both the VC management team level and the entrepreneurial team level) [4]. The list of skills included in the survey was developed by taking into consideration the main theoretical frameworks on VC and venture skills (for ventures: Loué and Baronet, 2012; Mamabolo and Myres, 2020; Pepple and Enuoh, 2020; for VC firms: Siegel *et al.*, 1988; Schefczyk and Gerpott, 2001b). The comprehensive list of skills was reviewed by a panel of experts composed of both academics and practitioners (identified as key partners by the EIF). The resulting list comprises 13 skills at VC firm level and 15 at venture level. In detail, the 13 VC firm level skills are: (1) Accounting and Finance knowledge, (2) Analytical skills, (3) Communication skills, (4) Industry knowledge, (5) Leadership and people management skills, (6) Legal skills, (7) Negotiation skills, (8) Problem-solving skills, (9) Professional networking, (10) STEM (Science, Technology, Engineering and Math) skills, (11) Strategic planning skills, (12) Sustainability-related knowledge/skills (e.g., specific scientific and technical green skills or knowledge and understanding of sustainability and climate action), (13) Other/s [5]. Two additional skills (14) Commitment/Passion and (15) Selling/pitching skills are added at venture level.

Table 2 presents descriptive statistics on the answers to these survey questions related to skills, describing the perceived skill gaps and their importance at both the VC management team level and the entrepreneurial team level. Specifically, we report statistics based on survey responses indicating whether a given skill is considered missing and the relative importance attributed to that skill by the respondent, both at the portfolio company level and at the VC management team level. At the VC management team level, Sustainability-related knowledge (28.5%) and STEM skills (18.7%) are the skills that VC investors consider to be most lacking in their team, followed by Legal skills (12.6%) and Industry knowledge (12%). At the entrepreneurial team level, Leadership and People Management skills are the ones considered as missing the most by respondents (47%) in their ventures, followed by Selling/Pitching skills (42.4%).

Table 2. Skill gaps

Skill gaps	N. obs	Mean	S.d
VC management team level			
Accounting and finance knowledge	460	0.065	0.247
Analytical	460	0.041	0.199
Communication	460	0.076	0.265
Industry knowledge	460	0.120	0.325
Leadership and people management	460	0.098	0.297
Legal	460	0.126	0.332
Negotiation	460	0.039	0.194
Problem-solving	460	0.033	0.178
Professional networking	460	0.080	0.272
STEM	460	0.187	0.390
Strategic planning	460	0.057	0.231
Sustainability-related knowledge	460	0.285	0.452
<i>Average</i>	<i>460</i>	<i>0.101</i>	<i>0.103</i>
Entrepreneurial team level			
Accounting and finance knowledge	460	0.307	0.462
Analytical	460	0.093	0.291
Commitment/passion	460	0.048	0.214
Communication	460	0.259	0.438
Industry knowledge	460	0.109	0.312
Leadership and people management	460	0.470	0.500
Legal	460	0.124	0.330
Negotiation	460	0.137	0.344
Problem-solving	460	0.137	0.344
Professional networking	460	0.146	0.353
Selling/pitching	460	0.424	0.495
STEM	460	0.039	0.194
Strategic planning	460	0.341	0.475
Sustainability-related knowledge	460	0.139	0.346
<i>Average</i>	<i>460</i>	<i>0.198</i>	<i>0.115</i>

Note(s): The table reports descriptive statistics of the survey questions related to the presence of skill gaps attributed by interviewed VCs, at both VC management team level and entrepreneurial team level

As the aim of our study is to test the relationship between the presence of skill gaps at the entrepreneurial team level and the number of write-offs among well-endowed (in terms of skills) VC firms, we need to identify the situations in which the capabilities at the venture level are limited. According to our competing hypotheses, ventures that display a greater number of skill gaps, but are backed by VCs possessing the corresponding expertise, may benefit more strongly from the investors' value-adding role since the complementarity between the venture's needs and the VC's capabilities enhances the effectiveness of the investment relationship, reducing the likelihood that ventures fail or are written off (H1a). On the other hand, ventures with limited capabilities may hinder the effective absorption of the competences and skills provided by the VC. As a result, VC investors may judge the investment to be no longer profitable and decide to terminate the relationship (H1b). Starting from these evaluations of skills at both portfolio company and VC firm management team level, we thus define our principal independent variable, *count_gap_venture*, as the count of skills that VC investors declare as missing at venture level but that are considered as present at VC firm level, thus indicating the size of skill gaps in ventures invested by skilled VC firms [6]. According to our H1a, the higher presence of skill gaps in ventures backed by well-qualified VCs is associated with a lower incidence of write-offs, while, according to H1b, a venture lacking the requisite skills may be unable to leverage the competencies provided by the VCs, potentially resulting in suboptimal performance and, in extreme cases, a write-off.

Since the write-off decision rests with the VC and consistent with the theoretical framework employed in this study, it is the presence of skill gaps within portfolio ventures that are backed by skilled VCs that primarily drives this decision. However, we also control for the number of skills that are considered missing at VC firm level but that are present at venture level (*count_gap_VC*) as a proxy of the size of skill gaps in a VC firm investing in skilled ventures. Similarly, we also control for the number of skills that are considered as missing at both VC fund and venture levels (*count_gap_both*), which proxies the presence of skill gaps from both sides. Both these variables may influence the number of write-offs and, for this reason, are included in the model as controls.

3.2 Econometric models

In order to test our H1, we estimate the following econometric model:

$$\begin{aligned} \log_Writeoff_n = & count_gap_venture + count_gap_VC + count_gap_both \\ & + \log_VCAge + \log_Npartners + \log_Nexits \\ & + d_largeVC + dummies \end{aligned} \quad (1)$$

where *log_Writeoff_n* is the number of write-offs in logs, and the principal independent variable is *count_gap_venture*, indicating the number of skill gaps in the entrepreneurial team invested by skilled VCs. In terms of skill gaps, we also control for *count_gap_VC* and *count_gap_both*. All these variables have been introduced and described in [Section 3.1](#).

Additionally, we control for VC firm age, measured as the log value of years since firm establishment (*log_VCAge*) and VC management team size, measured by the log value of the number of partners (*log_NPartners*). We also control for the intensity of recent investment activity measured by the log value of the number of total exits achieved in the last year by the VC firm (*log_Nexits*) and for VC firm size measured by the dummy *d_largeVC* indicating firms with AUM equal or greater than EUR 100 million [7]. Finally, we include geographical, sectorial and investment-stage dummies [8]. According to H1a, we expect the coefficient of *count_gap_venture* being negative and significant, while a positive and significant coefficient of *count_gap_venture* would confirm H1b.

In order to test H2, we modify the previous econometric specification by including several moderators to capture the ability of VCs to convert uncertainty into risk, such as VC age (*log_VCAge*), VC industry specialization, measured by the number of industries on which the VC declares to focus its investment activity (*n_Invested industries*), VC investment team size, measured by the number of VC partners (*log_NPartners*) and VC investment stage focus, i.e., a dummy variable indicating whether the VC focuses its investments on earlier-stages versus later stages (*d_earlier investment stages*). We thus estimate the following model to test H2:

$$\begin{aligned} \log_Writeoff_n = & count_gap_venture + moderator + count_gap_venture * moderator \\ & + count_gap_VC + count_gap_both + \log_VCAge + \log_NPartners \\ & + \log_Nexits + d_largeVC + dummies \end{aligned} \quad (2)$$

The moderator variable is alternatively defined as *log_VCAge*, *log_NPartners*, *n_Invested industries* and *d_earlier_investment_stages*. To correctly interpret whether and how the presence of skill gaps in ventures backed by skilled VCs affects the number of write-offs, we estimate the marginal effects of *count_gap_venture* at different values of the moderator variables. More specifically, we compute the predicted number of write-offs at different percentiles of each moderator, corresponding to alternative values assumed by the specific moderator included in the model.

Descriptive statistics and correlation matrix for our dependent and the main independent variables used in our empirical models are reported in Table 3.

On average, respondents indicate 0.619 write-off decisions in the last 12 months, with a minimum of 0 and a maximum of 10. The average number of skills for which respondents said they had identified gaps in the entrepreneurial team but not in their own VC management team (*count_gap_venture*) is 2.435 (minimum 0, maximum 11).

Interestingly, as to the count of skill gaps that we use as controls in our model, the average number of skills that VC managers report as missing in their own management team but present in the entrepreneurial team of their portfolio ventures is relatively low, at 0.87 (ranging from 0 to 5). The average is even lower, at 0.337 (ranging from 0 to 3), when considering skills that are missing simultaneously at both the VC management team and entrepreneurial team levels.

Finally, Table 4 provides descriptive statistics of the control variables included in the econometric models.

4. Results

4.1 Main results

We provide first evidence on our research hypotheses by comparing the number of write-offs according to the different percentiles of the variable *count_gap_venture*, measuring the

Table 3. Descriptive statistics and correlations on write-offs and count of skill gaps

Variable	Description	Obs	Mean	S.d	Min	Max	1	2	3	4
<i>n. Write-offs</i>	<i>Number of write-offs in the last 12 months</i>	460	0.619	1.155	0	10				
<i>log_Writeoff_n</i>	Number of write-offs in the last 12 months in logs	460	0.325	0.507	0	2.398	1			
<i>count_gap_venture</i>	Number of skills that are present in the VC management team but are missing in the entrepreneurial team	460	2.435	1.520	0	11	0.119***	1		
<i>count_gap_VC</i>	Number of skills that are missing in the VC management team but are present in the entrepreneurial team	460	0.870	0.968	0	5	0.067	−0.067	1	
<i>count_gap_both</i>	Number of skills that are missing both in the VC management team and in the entrepreneurial team	460	0.337	0.651	0	3	0.153***	−0.07	0.122***	1

Note(s): The table reports descriptive statistics and the correlation matrix for the dependent variable (*log_Writeoff_n*) and its unlogged value (reported in italics in the first row), as well as for the main independent variable (*count_gap_venture*). Statistics related to the number of skill gaps at the VC fund level and jointly at the entrepreneurial and VC levels are also reported (in the last two rows). Stars denote significance (*p*-value): *** 0.01, ** 0.05 and * 0.1

Table 4. Descriptive statistics for control variables

Variable	N. obs	mean	S.d	Min	Max
<i>Age</i>	460	12.123	8.486	0	51
<i>log_VCAge</i>	460	2.362	0.690	0	3.951
<i>NPartners</i>	460	5.302	6.016	0	99
<i>log_NPartners</i>	460	1.693	0.473	0	4.605
<i>Large VC</i>	460	0.637	0.481	0	1
<i>Nexits</i>	460	1.296	3.033	0	36
<i>Log_Nexits</i>	460	0.515	0.690	0	3.611
<i>Region</i>					
<i>Benelux</i>	460	0.161	0.368	0	1
<i>CESEE</i>	460	0.157	0.364	0	1
<i>Dach</i>	460	0.174	0.379	0	1
<i>France</i>	460	0.102	0.303	0	1
<i>Nordics</i>	460	0.100	0.300	0	1
<i>South</i>	460	0.159	0.366	0	1
<i>UK and Ireland</i>	460	0.111	0.314	0	1
<i>USA</i>	460	0.037	0.189	0	1
<i>Sector</i>					
<i>Services</i>	460	0.065	0.247	0	1
<i>Products</i>	460	0.059	0.235	0	1
<i>Biotech</i>	460	0.146	0.353	0	1
<i>ICT</i>	460	0.420	0.494	0	1
<i>Energy and env</i>	460	0.137	0.344	0	1
<i>Health</i>	460	0.352	0.478	0	1
<i>No focus</i>	460	0.100	0.300	0	1
<i>Stage</i>					
<i>Pre-seed</i>	460	0.165	0.371	0	1
<i>Seed</i>	460	0.319	0.467	0	1
<i>Early</i>	460	0.337	0.473	0	1
<i>Later</i>	460	0.178	0.383	0	1

Note(s): The table reports descriptive statistics for control variables (and their unlogged value in italics when necessary)

number of skill gaps at the entrepreneurial team level in skilled VC firms. The results of the univariate analysis reported in Table 5 indicate that the higher the number of skill gaps in the entrepreneurial team of ventures backed by skilled VCs, the higher the number of write-offs, at least until the 75° percentile, thus providing a preliminary confirmation of our research hypothesis H1b.

The results of our econometric estimations are reported in Table 6. In Column I, we report the results of Model 1 representing our baseline, while the other columns refer to Model 2 using the different moderators included in our analysis. More in details, since we suggest that our explored dynamics may be more pronounced when VCs are in a better position to recognize the inability of ventures to leverage their skills to drive growth, we test in Column II the moderating effect of VC experience (i.e., VC firm age) and in Column III the moderating effect of VCs with larger management teams (i.e., VC number of partners), while, in Column IV, we explore the role exerted by VC industry diversification. Finally, in Column V, we focus on the moderating effect of VC investment focus on early stages. Table 7 reports the marginal effects of *count_gap_venture* on the dependent variable (n. write-offs) according to the different values of the moderating variables.

Regarding the control variables, results indicate that, as expected, the higher the number of total exits, the higher the number of write-offs. Interestingly, the higher the number of gaps at

Table 5. Univariate analysis: count of skill gaps in the entrepreneurial team and number of write-offs

Count_gap_venture	Number of skill gaps	N. Write-offs
1° percentile	0	0.470
10° percentile	1	0.473
25° percentile	1	0.473
Median	2	0.525
75° percentile	3	0.798
90° percentile	4	0.689
99° percentile	7	0.714

Note(s): This table refers to a univariate analysis showing the average value of the dependent variable (i.e., number of write-offs) for different levels of our principal independent variable (i.e., count_gap_venture)

Table 6. Regression results

	Baseline I	VC firm Age II	VC N. partners III	Industry diversification IV	Earlier investment stages V
count_gap_venture	0.051*** (0.015)	−0.004 (0.055)	−0.012 (0.060)	0.087*** (0.026)	0.010 (0.038)
log_VCAge	0.110*** (0.037)	0.053 (0.066)	0.110*** (0.037)	0.106*** (0.036)	0.114*** (0.037)
count_gap_venture*log_VCAge		0.023 (0.023)			
log_NPartners	0.063 (0.051)	0.065 (0.051)	−0.020 (0.093)	0.063 (0.051)	0.060 (0.051)
count_gap_venture*log_NPartners			0.038 (0.036)		
n. Invested industries				0.065*** (0.020)	
count_gap_venture*n. Invested industries				−0.011** (0.005)	
d_early stage					0.064 (0.114)
count_gap_venture*d_earlier inv stages					0.048 (0.041)
count_gap_VC	0.024 (0.023)	0.023 (0.023)	0.024 (0.023)	0.024 (0.023)	0.024 (0.023)
count_gap_both	0.125*** (0.035)	0.131*** (0.036)	0.132*** (0.036)	0.116*** (0.035)	0.121*** (0.036)
log_Nexits	0.122*** (0.034)	0.121*** (0.034)	0.122*** (0.034)	0.112*** (0.034)	0.122*** (0.034)
Large VC	0.025 (0.054)	0.028 (0.054)	0.024 (0.054)	0.024 (0.054)	0.021 (0.054)
Regional dummies	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes
Investment stage dummies	Yes	Yes	Yes	Yes	Yes
Const	−0.420** (0.156)	−0.654** (0.229)	−0.649** (0.229)	−0.872*** (0.201)	−0.699*** (0.205)
N. obs	460	460	460	460	460

Note(s): The table reports OLS estimates. Results of Model 1 are reported in the first column, while the remaining columns refer to Model 2 using different moderators. The dependent variable is the number of write-offs in logs. For the sake of brevity, we do not report the estimated coefficients for the regional, industry focus or investment stage focus dummies. Robust standard errors in parentheses. Coefficients and standard errors have been rounded to three decimal places. Significance levels: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Table 7. Marginal effects of count of skill gaps

Percentiles of moderator	VC firm Age	VC N. partners	Industry diversification	Earlier investment stages
0	−0.004 (0.055)	−0.012 (0.060)	0.087*** (0.026)	
10° percentile	0.034 (0.022)	0.030 (0.024)	0.077*** (0.022)	
25° percentile	0.042** (0.017)	0.041** (0.017)	0.055*** (0.016)	
50° percentile	0.052*** (0.015)	0.050*** (0.015)	0.044*** (0.015)	
75° percentile	0.063*** (0.020)	0.062*** (0.019)	0.022 (0.018)	
90° percentile	0.070*** (0.024)	0.072*** (0.025)		
Later stages				0.010 (0.038)
Earlier stages				0.058*** (0.016)

Note(s): The table shows, for Model 2, the average marginal effects of *count_gap_venture* at different percentiles of moderator variables. Significance levels: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

both entrepreneurial team and VC management levels (e.g., coefficient of *count_gap_both*), the higher the number of write-offs, thus confirming the importance of skilled partnerships for the success of an investment.

Regarding our first hypothesis (H1), we proposed two competing predictions about the expected sign of the coefficient associated with the number of skill gaps (H1a and H1b). Under H1a (i.e., the VC value-adding mechanism), we would expect a negative and significant coefficient, indicating that investor coaching successfully compensates for venture skill gaps and reduces the incidence of write-offs. Under H1b (i.e., the venture absorptive-capacity constraint), we would expect a positive and significant coefficient, indicating that ventures unable to absorb the knowledge provided by VCs are more likely to be written off. The estimates reported in Column I of Table 6 allow us to discriminate between the two hypotheses: the coefficient on *count_gap_venture* is positive and statistically significant. We, thus, reject H1a and find empirical support for H1b. Therefore, according to the results shown in column I, the higher the number of gaps in the entrepreneurial team invested by well-endowed VCs, the higher the number of write-offs. We can interpret this result by stating that a venture lacking the necessary skills may not be able to take advantage of the skills provided by the VCs, resulting in suboptimal performance such as a write-off. In other words, the greater the number of skill gaps at the venture level among firms backed by highly skilled VCs (i.e., the higher the value of *count_gap_venture*), the higher the likelihood that ventures are unable to absorb the information and guidance provided by VCs and to carry out tasks accordingly. These previously unnoticed skill gaps may emerge during the investment relationship, leading VCs to conclude that the team is no longer capable of effective execution. As a result, investors may judge the investment to be no longer profitable and decide to terminate the relationship, ultimately resulting in a higher number of write-offs, in accordance with our H1b.

We then proceed to analyze the effects of the moderators shown in estimates in Columns II–V. Specifically, we aim to assess whether the correlation between the presence of skill gaps and a higher number of write-offs is stronger when the VC has greater experience. Greater experience provides a more comprehensive understanding of venture progress and enhances the ability to identify situations in which investments are no longer profitable, prompting the decision to divest.

To capture this effect, we examine the marginal effects reported in Table 7, which illustrate the impact of skill gaps on the number of write-offs across different levels of the moderating variables considered in our analysis. The results indicate that the higher the VC firm age and the number of partners (results shown in the first two columns of Table 7), the greater the positive effect of the presence of venture skill gaps on the number of write-offs. In other words, older VC firms, as well as those with a larger number of partners involved, are consequently in a stronger position (given their accumulated knowledge) to assess the failure of the venture to meet the KPIs and, as a consequence, are better able to quickly convert uncertainty into risk, anticipating that a venture might not perform as expected, leading to the liquidation of the investment.

Similarly, as depicted in the third column of Table 7, there is a correlation between industry diversification and the effect of the presence of skill gaps in the entrepreneurial team on the number of write-offs: the lower the industry diversification (i.e., higher industry focus in VC investment strategy), the higher the number of liquidations. We attribute this outcome to the depth of vertical knowledge within the sector and the experience accumulated over time, which empower VCs to gather insights on how ventures can leverage their skills for growth potential. This helps to identify business opportunities more effectively.

Finally, when analyzing the stage of investments, this moderator is a dummy variable. Therefore, we examine the marginal effect of *count_gap_venture* at the two possible values of this moderator: 1, when the VC focuses on early-stage investments, and 0, when the VC focuses on later-stage investments. The findings indicate that the effect of *count_gap_venture* is both positive and significant for VCs focusing on earlier stages of investment. In other words, when a VC focuses on early-stage investments, a higher presence of skill gaps in the ventures it backs is associated with an increased likelihood of write-offs. We interpret this result by considering the ability of early-stage-focused VCs to manage the uncertainties inherent in such investments. In earlier stages, there is typically limited information available about the market, technology and the entrepreneur, often because the venture is still in its infancy. These VCs excel at transforming uncertainty into manageable risk and discerning the trajectory the venture will follow as it matures. In essence, these investors are skilled at anticipating scenarios where their investment might not yield expected returns, leading them to convert their investment into a liquidation.

In summary, our results show that when portfolio ventures are unable to convert the financial and managerial resources provided by investors into value, due to the presence of skill gaps, investors are more likely to have a write-off exit. Moreover, this finding is more pronounced when the VC has greater experience, which provides a more comprehensive understanding of venture progress and the ability to identify situations where investments are no longer profitable, prompting the decision to divest.

4.2 Additional evidence: skill importance and market relevance

As stated in Section 3.1, the survey includes questions asking VC managers to indicate the importance they assign to any specific skill at both VC firm and portfolio venture level. We consider the importance assigned to individual skills to provide additional evidence to our principal findings. More in detail, we resort to two alternative definitions of skill gaps that explicitly account for: a) the perceived importance of individual skills and b) the market-wide relevance of individual skills, as elicited from the survey responses.

Table 8 presents descriptive statistics on the perceived importance of skills at both the VC management team level and the entrepreneurial team level.

At the VC management team level, when considering importance, legal skills are considered particularly important by 91.5% of respondents. Strategic planning skills, Accounting and Finance knowledge, Professional networking and STEM skills are also considered important in more than 70% of cases. At the entrepreneurial team level, Leadership and People Management skills are also among the most appreciated (77.4%) skills in portfolio

Table 8. Skills importance

Skill importance	N. obs	Mean	S.d
<i>VC management team level</i>			
Accounting and Finance knowledge	460	0.717	0.451
Analytical	460	0.680	0.467
Communication	460	0.659	0.475
Industry knowledge	460	0.596	0.491
Leadership and people management	460	0.552	0.498
Legal	460	0.915	0.279
Negotiation	460	0.585	0.493
Problem-solving	460	0.641	0.480
Professional networking	460	0.707	0.456
STEM	460	0.704	0.457
Strategic planning	460	0.750	0.433
Sustainability-related knowledge	460	0.537	0.499
<i>Average</i>	<i>460</i>	<i>0.670</i>	<i>0.247</i>
<i>Entrepreneurial team level</i>			
Accounting and Finance knowledge	460	0.167	0.374
Analytical	460	0.330	0.471
Commitment/Passion	460	0.670	0.471
Communication	460	0.463	0.499
Industry knowledge	460	0.615	0.487
Leadership and people management	460	0.774	0.419
Legal	460	0.041	0.199
Negotiation	460	0.243	0.430
Problem-solving	460	0.609	0.489
Professional networking	460	0.291	0.455
Selling/pitching	460	0.502	0.501
STEM	460	0.309	0.462
Strategic planning	460	0.446	0.498
Sustainability-related knowledge	460	0.098	0.297
<i>Average</i>	<i>460</i>	<i>0.397</i>	<i>0.180</i>

Note(s): The table reports descriptive statistics of the survey questions related to the importance of skills attributed by interviewed VCs, at both VC management team level and entrepreneurial team level

ventures' management team. Other skills considered as important by more than half of the respondents are Commitment/Passion (67%), Industry knowledge (61.5%) and Problem-solving skills (60.9%). The importance assigned to skills at the entrepreneurial team level is in accordance with EIF VC survey results (Krämer-Eis and Croce, 2023), indicating Management team as one of the most important investment selection criteria for VC investors.

We first include consideration of the importance of skills in additional analyses by defining, for each skill, a dummy variable taking value 1 when the focal skill is considered important by the respondents [9]. Then, we define the variable *count_imgap_venture* as the number of missing skills at venture level in well-qualified VC firms (similarly to the definition used for *count_gap_venture*) but only for skills considered important by the respondent. Similarly, we define *count_imgap_VC* as the number of gaps in important skills at the VC management team level and *count_imgap_both* as the number of gaps in important skills at both VC management team and entrepreneurial team levels.

Second, as a further analysis, we examine the relevance assigned to various skills in the VC market by starting from the average values of the importance attributed to these skills by all the interviewed VCs, reported in the last rows of Table 8. These average importance rates provide insight into the collective perception within the VC market regarding the relevance of these skills, that is, the overall relevance of a skill in the VC market. According to the statistics, we

identify the skills to which respondents assigned, on average, an importance higher than the average value estimated on all skills, both at VC management team and entrepreneurial team levels. For instance, regarding skills at the VC level, the average importance assigned to all skills is 0.670 as shown in Table 8: we then regard a skill as notably relevant in the VC market if the importance attributed to that specific skill exceeds this average value. For example, Accounting and Finance knowledge has an average importance of 0.717, which is higher than the overall average of 0.670 and is thus classified as relevant in the market at the VC management team level. Using the same approach, we classified all relevant skills at both the VC management team and entrepreneurial team levels. Importantly, the relevance threshold is computed separately for each side: skills at the VC management team level are classified as relevant when their average importance exceeds the VC-side average of 0.670, while skills at the entrepreneurial team level are classified as relevant when their average importance exceeds the venture-side average of 0.397 (see the bottom rows of Table 8). This within-side approach ensures that the relevance classification reflects the perceived importance of skills within each context, since the venture-side average is materially lower than the VC-side average and a common threshold would systematically distort the classification on one of the two sides. In Table 9, we list the skills considered as relevant on average in the VC market.

The only skill considered to be highly relevant at both the VC management team and the entrepreneurial team level is Strategic planning, which is considered to be necessary for the success of the investment in both cases. This is consistent with the view that a VC team and an entrepreneurial team are complementary parties with a common long-term goal.

Skills such as Accounting and Finance knowledge, Analytical skills, Legal skills, Professional networking and STEM skills are judged as relevant at VC team level, while Commitment/Passion, Communication skills, Industry knowledge, Leadership and people management skills, Problem-solving skills and Selling/pitching skills are considered relevant from an entrepreneurial team point of view.

We then estimate the variable *count_relgap_venture*, as the number of gaps at the entrepreneurial team level in skills considered as relevant, on average, in the VC market (i.e., Commitment/Passion; Communication skills; Industry knowledge; Leadership and people management skills; Problem-solving skills; Selling/pitching skills; Strategic planning skills). Similarly, we define *count_relgap_VC* as the number of gaps at the VC management team level in skills considered as relevant, on average, in the VC market, and *count_relgap_both* as the number of gaps at both VC management team and entrepreneurial team levels in skills considered as relevant, on average, in the VC market.

Descriptive statistics of the variables used in our additional analyses are shown in Table 10.

Table 9. Classification of VC skills and venture skills by relevance in the VC industry

Level	High relevance skills
VC management team	• Accounting and Finance knowledge • Analytical skills • Legal skills • Professional networking • STEM skills • Strategic planning skills
Entrepreneurial team	• Commitment/Passion • Communication skills • Industry knowledge • Leadership and people management skills • Problem-solving skills • Selling/pitching skills • Strategic planning skills

Table 10. Descriptive statistics on important/relevant skill gaps

Variable	Description	Obs	Mean	S.d	Min	Max
count_impgap_venture	Number of skills considered important by the respondent at entrepreneurial team level that are present in the VC management team but are missing in the entrepreneurial team	460	1.352	1.506	0	11
count_impgap_VC	Number of skills considered important by the respondent at the VC management team level that are missing in the VC management team but are present in the entrepreneurial team	460	0.269	0.580	0	3
count_impgap_both	Number of skills considered important by the respondents and are missing both in the VC management team and in the entrepreneurial team	460	0.098	0.375	0	3
count_relgap_venture	Number of skills considered as relevant, on average in the VC market, that are present in the VC management team but are missing in the entrepreneurial team	460	1.015	1.332	0	7
count_relgap_VC	Number of skills considered as relevant, on average, in the VC market, that are missing in the VC management team but are present in the entrepreneurial team	460	0.061	0.273	0	2
count_relgap_both	Number of skills considered as relevant on average, in the VC market, that are missing both in the VC management team and in the entrepreneurial team	460	1.267	1.750	0	7

Note(s): The table reports descriptive statistics on the variables used in the additional analyses described in [Section 5](#)

We then estimate Model 1, our Baseline model, by replacing our main independent variable (*count_gap_venture*) and its associated controls (*count_gap_VC* and *count_gap_both*) with two alternative sets of variables. First, we use variables reflecting the importance of skills as attributed by the focal VC investor (*count_impgap_venture*, *count_impgap_VC* and *count_impgap_both*), as shown in Column 1 of [Table 11](#). Second, we use variables reflecting the relevance of skills as determined by the overall VC market (*count_relgap_venture*, *count_relgap_VC* and *count_relgap_both*). The aim is to evaluate, respectively, the role of venture-important skill gaps and market-relevant skill gaps in well-endowed VC investments on the probability of write-offs. The results of these estimates are reported in [Table 11](#). The last column of [Table 11](#) reports results of our principal model (Baseline) for comparison purposes.

The results of these estimates confirm the findings in our principal analyses since the coefficients of *count_impgap_venture* and *count_relgap_venture* are both positive and significant. Therefore, [H1b](#) is also confirmed when focusing only on the skills considered important by the respondents (i.e., *count_impgap_venture*) or the skills considered relevant on average in the VC market (i.e., *count_relgap_venture*). Comparing the estimated coefficients with those of the Baseline model, we find that venture-level skill gaps have a stronger effect on the number of write-offs when they involve skills that are considered relevant in the overall VC market. Specifically, the coefficient for relevant venture-level skill gaps (0.066) is larger than the corresponding coefficient in the Baseline model (0.051), which does not account for skill relevance. Conversely, for VC-level skill gaps, the effect becomes stronger when the analysis incorporates the importance assigned to skills by the focal VC investor. In particular, the coefficient for relevant VC-level skill gaps (0.038) exceeds the corresponding Baseline coefficient (0.024), which does not consider the importance attributed to individual skills.

The results suggest that not all skill gaps have the same consequences for investment outcomes. Rather, their impact depends on the importance of the missing skills. At the venture level, the absence of capabilities that are widely valued by investors as strategically important

Table 11. Additional analyses on important/relevant skill gaps

	Importance attributed by the respondent	Average relevance in the VC industry	Baseline
count_impgap_venture	0.042*** (0.015)		
count_impgap_VC	0.038 (0.040)		
count_impgap_both	0.193*** (0.062)		
count_relgap_venture		0.066*** (0.022)	
count_relgap_VC		0.017 (0.088)	
count_relgap_both		0.078*** (0.016)	
count_gap_venture			0.051*** (0.015)
count_gap_VC			0.024 (0.023)
count_gap_both			0.125*** (0.035)
log_Firm Age	0.096*** (0.037)	0.110*** (0.037)	0.110*** (0.037)
log_Npartners	0.066 (0.051)	0.057 (0.051)	0.063 (0.051)
log_Nexits	0.130*** (0.034)	0.120*** (0.034)	0.122*** (0.034)
Large VC	0.013 (0.054)	0.038 (0.054)	0.025 (0.054)
Regional dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Investment stage dummies	Yes	Yes	Yes
Const	−0.321** (0.151)	−0.432*** (0.153)	−0.420** (0.156)
N. obs	460	460	460

Note(s): The table reports OLS estimates. Results of Model 1 are reported: in the first column, the model includes the count of skill gaps for skills considered important by the respondents, while in the second column the model includes the count of skill gaps for skills considered as relevant, on average, in the VC market. For comparison purposes, we report in the last column, the results of our principal model using the count of skill gaps as defined in our principal model. For the sake of brevity, we do not report the estimated coefficients for the regional, industry focus or investment stage focus dummies. Robust standard errors in parentheses. Coefficients and standard errors have been rounded to three decimal places. Significance levels: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

competencies is particularly detrimental to investment success. At the VC level, the effect of skill gaps becomes stronger when the missing skills are those that the focal VC investor considers particularly important: a VC's ability to effectively support and add value to its portfolio companies depends on possessing the specific expertise that it regards as most important. When such competencies are lacking, the risk of investment failure increases.

Taken together, these findings point to a nuanced role of skills in investment success. Venture-level skill gaps appear to be especially harmful when they concern capabilities that are broadly valued by the VC market, whereas VC-level skill gaps are particularly detrimental when they involve competencies that are central to the focal investor's investment and value-creation approach. More generally, the results highlight that the effect of skill gaps is not uniform but depends on the strategic importance of the missing skills within the relevant context.

5. Discussion

The empirical findings reported in [Section 4](#) provide strong support for the venture absorptive-capacity constraint ([H1b](#)) and reject the competing prediction of the VC value-adding mechanism ([H1a](#)). When well-qualified VCs back ventures whose teams lack the skills the investors themselves possess, the relationship is significantly more likely to end in a write-off. In other words, “the venture absorptive-capacity constraint” prevails over “the VC value-adding mechanism”: a venture lacking the requisite skills may fail to exploit the competencies offered by VCs, leading to suboptimal performance (i.e., write-offs). Our analysis thus provides confirmation to previous studies suggesting that effective learning from external partners depends not only on the availability of valuable knowledge but also on the receiving organization’s internal knowledge base and learning capabilities ([Lane and Lubatkin, 1998](#); [Zahra and George, 2002](#)). Although well-qualified VCs may possess the skills required to address deficiencies within their portfolio ventures, ventures characterized by numerous skill gaps may lack the absorptive capacity needed to leverage this expertise, leading to a higher incidence of write-offs.

This pattern is consistent with the core proposition of absorptive capacity theory ([Cohen and Levinthal, 1990](#); [Zahra and George, 2002](#)): the value of external knowledge inputs depends critically on the receiving organization’s capacity to recognize, assimilate and apply that knowledge. Our results extend this insight from the corporate R&D and inter-organizational learning literature, where most prior tests have been conducted, into the specific dyadic setting of the VC–venture relationship.

Our findings align with and extend recent evidence on the role of absorptive capacity in entrepreneurial ventures. [Brandenburg et al. \(2026\)](#) show that founders’ prior exposure to VC investors helps them build absorptive capacity in their subsequent ventures, mediating the link between founding experience and innovation outcomes. Their evidence (i.e., that VC exposure cultivates the organizational design choices and knowledge-management routines underlying absorptive capacity) complements our finding by addressing the opposite side of the same mechanism: when those routines are absent, the value-adding role of investors fails to translate into venture success and the dyadic relationship is more likely to dissolve in a write-off. Together, the two studies suggest that absorptive capacity is the central transmission channel through which the VC–venture relationship generates-or fails to generate-value.

The moderator analysis adds a second layer to this story by showing that not all VCs are equally well-positioned to detect absorptive-capacity limitations in their portfolio companies. Consistent with [Ferrary’s \(2010\)](#) characterization of VC coaching as a process of converting uncertainty into measurable risk, we find that older VC firms, those with larger partner teams, those more specialized in particular industries and those focused on early-stage investments are more likely to act on the diagnosis of skill gaps by exiting via write-off. This is consistent with the idea that experienced and specialized investors are better equipped to read the signals of a venture’s inability to absorb external knowledge, and to do so earlier in the investment cycle. From a theoretical standpoint, this finding confirms that the absorptive-capacity mechanism operates through investor cognition and judgment, which are themselves heterogeneous across the VC population.

These results contribute to the European entrepreneurial-finance literature in two ways. First, while much of the prior work on VC value creation has been based on US samples, our pan-European evidence highlights that the absorptive-capacity constraint binds even in a market context characterized by smaller funds, fewer serial entrepreneurs and a more fragmented investor base than the US ([Bertoni et al., 2013](#); [Croce et al., 2013](#)). Second, prior European studies have largely emphasized the positive side of the VC-venture interaction-knowledge transfer, certification and growth ([Colombo and Grilli, 2010](#)). Our results introduce an asymmetric counterpart: when complementarity in the skill bundle fails to materialize, the same investor expertise that should drive value creation becomes a diagnostic tool for early termination.

6. Conclusions

Our study reframes the venture capital-venture relationship as a bidirectional learning process in which the absorptive capacity of the entrepreneurial team is decisive. When that capacity is insufficient, even the most experienced and well-resourced investors are more likely to terminate the relationship through a write-off. By identifying the conditions under which investor expertise translates into early termination rather than value creation, the paper offers a new lens on VC exit decisions and underscores that human capital in entrepreneurial finance is best understood as a dyadic, complementary endowment rather than a one-sided attribute of either party.

6.1 Implications

A central implication of our study is that value creation in VC-backed entrepreneurship hinges on the fit between investor and venture skill endowments, rather than on the absolute level of either. The same investor expertise that strengthens a well-equipped venture can become a basis for terminating an investment when the venture cannot absorb what the investor offers. This reframes the conventional advice that entrepreneurs should seek experienced, well-resourced investors: experience and resources matter, but they are not unconditionally beneficial.

Implicit in our results is also the recognition that entrepreneurs are not passive recipients of VC capital—they choose with whom to partner just as VCs choose what to fund. The risk of mismatch therefore needs to be addressed from both sides. Founders need to assess realistically whether their team can absorb the kind of guidance a given investor will offer; investors, in turn, would benefit from explicit *ex ante* diagnostics of teams' absorptive capacity, not just their headline skills. Our analyses show that both parties share a partly common, partly divergent view of which skills matter most, making the misalignment risk diagnosable in principle if both sides are open about expectations.

For ecosystem actors who train entrepreneurs—accelerators, incubators, university-affiliated venture programmes and capacity-building initiatives such as those run by national promotional banks and the EIF, these findings argue for a shift in emphasis from formal skill formulation (curriculum design, competency frameworks) toward skill implementation: structured exercises in absorbing external advice, role-played investor interactions and post-mentoring debriefs that build the organizational routines for converting outside knowledge into action. Programmes that pair venture teams with seasoned investor-mentors should explicitly evaluate whether teams can act on feedback, not just whether they receive it.

For the venture capital industry, our results indicate that the most experienced and specialized investors are not slower (and may in fact be faster) at terminating underperforming relationships. This finding has implications for limited partner (LP) expectations regarding portfolio turnover and the timing of write-offs, particularly in funds that emphasize hands-on coaching and value-added services.

6.2 Limitations and future research

Our study is subject to some limitations. First, we rely on self-reported data from VCs, particularly regarding the number of write-offs and their assessment of missing entrepreneurial skills. Such self-assessments may introduce bias. In particular, VCs' assessments of the management teams' skill gaps may already reflect their perceptions of whether those teams were open to and capable of benefiting from coaching. While primary data collection offers the advantage of capturing firsthand insights, it may also introduce the risk of biases, such as over- or underreporting and selective nonresponse. In this specific context, it is plausible that VCs with the poorest performance might have been less inclined to participate due to potential embarrassment or their exit from the market. As a result, portfolios with higher failure rates or pronounced skill deficiencies may be systematically

underrepresented in the dataset. Similarly, an overconfidence effect may occur, such that when things go wrong, VCs are more likely to attribute failure to entrepreneurs' skill deficiencies rather than to their own actions. However, it is important to note that the survey was conducted anonymously, which should mitigate some of these concerns by reducing the pressure on respondents to provide overly favorable answers or to refrain from participation. A related limitation of the data is that the survey questions on skills availability (i.e., at both the venture and VC level) do not specify a time frame. As a result, the skills gap measured in the EIF survey may capture the *ex ante* similarity of skills between VCs and entrepreneurial teams before the investment. Alternatively, it may reflect how effectively VCs were able to coach these teams, and how well the teams responded, after the investment was made.

Future research could mitigate this bias by triangulating self-reported survey measures with independently constructed indicators of skill endowments and post-investment performance. Promising directions include matching VC survey responses with deal-level outcome data from commercial databases (e.g., PitchBook, Crunchbase, Dealroom), constructing founder skill metrics from professional profiles or CV data and conducting in-depth case studies or semi-structured interviews with both sides of selected VC-venture dyads. Such triangulation would help separate *ex ante* skill-matching from ex-post learning dynamics and reduce reliance on a single, perception-based source. Second, to investigate how the presence of skill gaps in ventures affects write-off frequency, we adopt a portfolio-level approach instead of focusing on individual ventures. As a result, we are not able to disentangle the complex interrelations among different investments within the portfolio. For instance, certain ventures may indirectly influence the outcomes of others and portfolio-level dynamics, such as risk diversification strategies or the interdependence of investment outcomes, may obscure the specific impact of skill gaps in individual ventures. This limitation prevented us from fully understanding how the performance of individual investments may be shaped by, or contribute to, the success or failure of other investments within the same portfolio. Finally, future research could address these intricacies by accounting for such interdependencies, shedding light on how portfolio-level considerations and interactions among investments impact VC investment decisions. For instance, VCs with larger portfolios could be more patient with certain, typically more promising and investments, while opting to write off others that fail to meet their success criteria more quickly.

Related to the previous point, the focus on skill gaps in the overall VC portfolio allowed us to make general considerations on the frequency of disinvestments for the VC firm, but not on the single VC–venture tie. Future research could be more precise in this sense and investigate the role of skills at both the venture and the VC level for each pair. This could lead to more precise considerations on the decision to exit investments. An additional point of attention is that there could be other causes of failures which we are not able to take into consideration in our research, given the type of data used. For instance, external factors such as macroeconomic conditions, industry-specific challenges, competitive dynamics or sudden shifts in market trends could significantly influence the success or failure of ventures. Future research could address these gaps by incorporating more comprehensive datasets that capture additional variables, such as timing, industry-specific factors, market growth rates and even qualitative insights from case studies or interviews. Finally, our paper focuses on the role of skills in reaching the final decision to stop an investment. However, VC deals consist of a sequence of intertwined steps, both pre- (i.e., deal origination, screening, evaluation, structuring) and post-investment (i.e., monitoring and value-adding). Each step leads to different intermediate decisions (i.e., selecting promising innovative ideas) that require different skills. In our study, we are not able to distinguish among the different investment phases to identify the role of specific skills at each stage. Future research could explore this issue in greater depth.

Data availability statement

The EIF Survey data are not publicly available, and any related queries should be addressed to the EIF.

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Notes

1. Benelux comprises Belgium, Netherlands and Luxembourg; Centre-East and South-East Europe (CESEE) includes Bulgaria, Croatia, Cyprus, Czechia, Estonia, Greece, Hungary, Latvia, Lithuania, Poland, Romania, Türkiye and Ukraine; DACH includes Austria, Germany, Liechtenstein, and Switzerland; France represents France; Nordics refers to Denmark, Finland, Iceland, Norway and Sweden; Southern includes Italy, Portugal and Spain; and UKIre comprises the United Kingdom and Ireland.
2. For terms of comparison of the EU VC sector, please consider: Invest Europe (2023), “Venture Capital: Fuelling European Innovation”, <https://www.investeurope.eu/research/vc-fuelling-european-innovation/>.
3. The 2023 survey also includes customary questions on issues related to market sentiment analysis together with scale-up financing and European strategic autonomy. The questions investigate the perception of the current situation, developments in the recent past and expectations for the future, highlighting substantial challenges but also opportunities as perceived by survey participants.
4. The related questions were formulated as follows: “Please indicate the importance of the following skills for a VC team.” (answers on a Likert scale with base 5), “Among the skills that you perceive important, which ones are missing at the moment in your VC team?” “Which are the most important skills for the management team of your portfolio companies?” “Which are the most common skill gaps of the management team of portfolio companies you have interacted with?”.
5. The option “*Other/s (please specify)*” did not produce any relevant result either at the VC firm or at the venture level, further corroborating the exhaustiveness of the selected skills included in the list.
6. Note that Commitment/Passion and Selling/Pitching are listed among the skills evaluated at the company level. However, these skills do not enter the construction of our main variables such as *count_gap_venture*, defined as the number of skills considered as missing at the venture level but present at the VC firm level, because they are not included in the list of skills assessed at the VC firm level.
7. As a robustness check, we also control for the total number of investments made by the focal VC, as an additional proxy for VC size and investment activity intensity. The results are consistent with those presented in Section 4. For the sake of brevity, these estimates are not reported in the text but are available from the authors upon request.
8. In unreported estimates we excluded these VC firm fixed effects (geographical, sectorial and investment stage dummies) obtaining results that are in line with those shown in Section 4. These estimates are not reported in the text for the sake of brevity but are available from the author upon request.
9. More specifically, we define a skill as “important” at VC level if respondents assigned a value higher than 3 based on a 5-point Likert scale, while we define a skill as “important” at venture level if it is ranked among the top five.

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