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Article

The financialization of corporate venture capital investment? The corporation as a venture capitalist

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Abstract

Recent trends in corporate venture capital (CVC) activities have added to the size and complexity of the financial system. Intuition suggests that in a period marked by spectacularly increasing start-up valuations, the opportunity to earn large capital gains increases the importance of corporate investors' financial motivations. Drawing on interviews with 12 Silicon Valley-based CVC units of global industrial companies, we examine if new trends in CVC investment represent a diversion from incumbents' traditional focus on improving the competitive advantage of their core businesses. Building on the theory of the financialization of non-financial companies, we investigate the relationship between the strategic and financial motivations of CVC investing. We extend theory by distinguishing between developments at the extensive and intensive margins. We argue that the commonly applied quantitative measures capture financialization only at the extensive margin. Qualitative data indicate that the hypothesis of financialization does not hold at the intensive margin.

Key words: financialization, corporate venture capital, firm strategy, technological change

JEL classification: O16 financial markets, saving and capital investment, corporate finance and governance, G32 financing policy, financial risk and risk management, capital and ownership structure, value of firms and goodwill, O32 management of technological innovation and R&D

1. Introduction

One of the assumptions that scholars in strategy, technology and knowledge management and open innovation equally subscribe to is the view that incumbent corporations are driven by strategic motivations when engaging in corporate venture capital (CVC) activities

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(e.g. Chesbrough, 2002; Dushnitsky and Lenox, 2005, 2006; Benson and Ziedonis, 2009; Pinkow and Iversen, 2020). Discussing the ways in which incumbents and new technology-oriented start-ups 'divide entrepreneurial labor' (Buckley and Prashantham, 2016) and 'align complementarities' (Weiblen and Chesbrough, 2015), studies point out that CVC investments are key enablers of incumbent companies' innovation, adaptation to technological change and strategic renewal (Maula *et al.*, 2013). CVC investments, that is, minority equity investments made by established firms in entrepreneurial ventures (Gompers and Lerner, 2000), have been considered a means of incumbents' open innovation efforts that facilitate the exploration of new technology-related business opportunities and help corporations identify the relevant and potentially disruptive technologies and industry trends (Benson and Ziedonis, 2009; Weiblen and Chesbrough, 2015).

While some studies note that obtaining financial benefits is also a legitimate motivation of CVC investments (e.g. Gompers and Lerner, 2000; Dushnitsky and Lenox, 2005; Röhm *et al.*, 2018), prior research is ambiguous in this respect. Studies focus mainly on strategic implications, such as innovation, business development, entry in new markets, talent acquisition and incorporation of entrepreneurial practices in established managerial procedures (Benson and Ziedonis, 2009; Basu *et al.*, 2016; Dushnitsky and Yu, 2022). Elaborating on the potential role of financial motivations, both academics (e.g. Chesbrough, 2002; Weber and Weber, 2005; Kang *et al.*, 2021) and consulting firms such as BCG and McKinsey (Brigl *et al.*, 2018; Banholzer *et al.*, 2022) would conclude that financial and strategic objectives need to be separated since CVC units (CVCs) cannot effectively pursue both.

Indeed, even the theories that frame the studies on CVC investments, e.g. the resource-based/dynamic capabilities-based theory of incumbents' adaptation to technological change, the theory of open innovation, absorptive capacity and the theory of ambidexterity as a driver of CVC success, implicitly suggest that incumbents invest in start-ups for strategic motives (Dushnitsky and Lenox, 2005; Hill and Birkinshaw, 2014; Eggers and Park, 2018; De Groote and Backmann, 2020).

However, especially with the upswing in CVC investments up to 2021, this restricted view of incumbents' motivations seemed to be increasingly biased by a narrow focus on strategic considerations (Huang and Madhavan, 2021). CVC funding exhibited a straightforward upward trend over the 2010s and CVC-backed deals climbed to new records year by year (see Section 5). Intuition suggests that in a period marked by spectacularly increasing valuations of start-ups and a proliferation of unicorns,[1] the opportunity to earn large capital gains increases the importance of financial motivations. Therefore, CVCs would do their best to select investees with a high future valuation potential (Huang *et al.*, 2017). This reasoning is substantiated by the increased sectoral diversity of industrial incumbents' portfolio companies (PCs) (Lin and Lee, 2011; Wadhwa *et al.*, 2016). For example, the CVCs of the largest industrial corporations frequently invested in apparently unrelated sectors, such as health technology, telecommunication, financial services, and media (Andonov, 2022b).

Against this background, we examine whether it is adequate to use the concept of financialization (Epstein, 2005; Krippner, 2005) when evaluating the features of and current developments in CVC investments. CVC investments represent a dimension of corporate behavior hitherto ignored by the scholarship on financialization. While this concept is applied

1 Unicorns are start-ups with explosive growth reaching a valuation of $1 billion (Bock and Hackober, 2020).

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to frame a variety of socio-economic themes and heterogeneous practices (Klinge *et al.*, 2021), in this article, we consider only one aspect, namely the financialization of non-financial companies (NFCs) (Orhangazi, 2008; Van der Zwan, 2014). The purpose of this article is to (a) examine whether the rapid growth of CVC investments can be associated—among others—with the financialization of NFCs, (b) extend the theory of financialization by distinguishing between developments at the extensive and intensive margins and (c) critically evaluate whether the new trends in CVC investment represent a diversion from incumbents' traditional focus on improving the competitive advantage of their core businesses.

The empirical analysis triangulates interview data conducted with 12 Silicon Valley-based CVCs of established, global industrial incumbents, three expert interviews, descriptive statistics, and analysis of archival data.

To anticipate our findings, we contend that neither the ascendance of financial motives nor incumbents' increased activity in the financial markets can unambiguously be interpreted as the financialization of CVC investments. While some definitions of financialization apply to the uncovered new phenomena, other aspects cast serious doubts. We show that financialization applies only at the extensive margin, while developments at the intensive margin unsettle the financialization conjecture. Considering the developments at the intensive margin, incumbent industrials' venture capital practices promote rather than hinder the innovation-driven renewal of their core activities.

This study makes three contributions. First, it contributes to the research on financialization by critically evaluating the application of this concept to a hitherto neglected domain of corporate behavior and proposing a novel analytical approach that distinguishes between developments at the extensive and intensive margins of financialization.

Second, it contributes to the CVC literature by drawing on unique qualitative data, obtained from interviews with the heads of the CVCs of top global industrial companies. Practitioners' insights into incumbent industrial companies' CVC activities help capture the motivations and practices of corporate venturing in a more in-depth manner than pure quantitative-oriented studies. We show that financial and strategic motivations are intertwined in a way that financial considerations would not undermine but rather reinforce the strategic ones.

Third, by collecting data on the sectoral specifics of the PCs and analyzing their technological relatedness to corporate parents' core businesses and the factors behind the lack thereof, we highlight the real-life ambiguity of the relation between technological relatedness and strategic/financial motivations of CVC investments.

The remainder of this article is structured as follows. First, we briefly summarize prior literature on the financialization of NFCs and point to a gap in this literature. Next, we introduce our approach to measuring and interpreting financialization in the context of the subject of this article. This is followed by the description of our research method and a summary of data on industrial incumbents' CVC investments. These data challenge the prevailing assumption that incumbent industrial corporations are driven nearly exclusively by strategic motives when investing in start-ups. In the subsequent sections, we present our qualitative findings and discuss the data by evaluating the applicability of the concept of financialization. The concluding section provides summary and discusses the limitations of the results.

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2. Theoretical context: the financialization of NFCs

Financialization is a broad, multidimensional concept indicating diverse economic phenomena arising from the increasing role of financial markets, actors and institutions in the economy (Epstein, 2005). Narrowing down the focus, our approach draws on the research stream that focuses on changes in NFCs' accumulation practices (Orhangazi, 2008; Van der Zwan, 2014; Tori and Onaran, 2018). New accumulation practices refer to incumbent corporations' increased activity in the financial markets (Stockhammer, 2004) and accumulation of financial assets, often at the expense of investment in fixed (productive) assets (Davis, 2018). This shift in NFCs' accumulation behavior is driven by the recognition that profits accrue primarily through financial channels (Krippner, 2005). Accordingly, financial income is given eminence over income from core (productive) activities in NFCs' investment decisions (Lapavitsas and Powell, 2013).

Managerial focus on financial market-based performance indicators leads to short-termism hampering the development of a long-term growth strategy based on investment in real assets (Froud *et al.*, 2006; Orhangazi, 2008). Lee *et al.* (2020, p. 263) offered a clear summary of this point, claiming that 'managers are forced to focus more on short-term profitability and stock price management than on long-term corporate competitiveness.' Firms accrue their profit through short-term strategic steps like downsizing and offshoring (Milberg, 2008) and an aggressive strategy of mergers and acquisitions (Erturk, 2020). Accordingly, profit becomes increasingly decoupled from accumulation (Durand and Gueuder, 2018). Relatedly, the increased shareholder value orientation in corporate behavior implies a shift from retaining and reinvesting profits to distributing it to shareholders (Lazonick and O'Sullivan, 2000; Lazonick *et al.*, 2013; Lazonick, 2014).

This change of the regime in profit accumulation (Boyer, 2005) has detrimental consequences for fixed capital formation, investment in R&D and corporate innovation (Stockhammer, 2004; Milberg, 2008; Davis, 2018). The strategic considerations associated with financialization crowd out long-term investment in R&D (Tulum and Lazonick, 2018; Hahn, 2019; Shaikh and Randhawa, 2022). Moreover, financialization may have a lasting impact on the patterns of corporate R&D and on firms' innovation objectives, causing them to focus on short-term incremental innovation rather than on high-risk, breakthrough innovations (Lee *et al.*, 2020).

While the literature on financialization is witnessing an unwavering expansion for some decades (Arrighi, 1994; Magdoff and Sweezey, 1987), papers introducing a more nuanced approach to this phenomenon are also proliferating (e.g. Knafo and Dutta, 2020; Auvray *et al.*, 2021; Klinge *et al.*, 2021; Soener, 2021). Criticisms addressing issues relevant to this study call the decline of real investment into question (Brenner, 2006; Klinge *et al.*, 2021), refute the claim that financial revenues have become predominant within NFCs' total revenues (Rabinovich, 2019; Soener, 2021) or point out that financialization in the form of increased shareholder pay-outs is accounted for by a minority of firms: only by the largest, most powerful and most internationalized ones (Soener, 2021).

Davis (2017) and Rabinovich (2021) argue that NFCs' financial activities can actually support their core activities—instead of crowding them out. Other contributions question the direction of causality and claim that it is rather the megatrends affecting the real sector, such as globalization, digitalization and abundant liquidity that allow for financialization (Soener, 2021). Falling investment may be the consequence of industrial overcapacity

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(Brenner, 2006) and high dividend payout ratios may be the consequence (and not the cause) of slow investment (Auvray *et al.*, 2021; Davis and McCormack, 2021).

The straightforward negative relation between financialization and investments in R&D (or firms' focus on innovation) has also been questioned. Since financial markets tend to associate patents with higher-than-average returns, so firms' stock market valuation would increase with patenting, financialization may enhance (patent registration-oriented) R&D activity (Hall *et al.*, 2005; Lee *et al.*, 2020).

This brief review suggests that our understanding of the financialization of NFCs and the implications of this phenomenon are still limited. Much ambiguity remains in terms of what constitutes financialization, how it is manifested and what the implications will look like.

This calls for additional research to uncover the motives behind some new aspects of corporate strategy. By investigating whether financial motivations gain in importance driving the CVC investments of established industrial companies, this article addresses this research gap. The case of incumbent industrial companies' CVC practices is particularly suitable for exploring new aspects of financialization because it captures the manifold and dynamic interrelations between the financial sector and the real economy. It demonstrates that scrutinizing the financial sector detached from and/or superimposed on the real economy is an obsolete approach—no matter whether finances are viewed as 'lubricants' supporting the functioning of the real economy (King and Levine, 1993) or as 'exploiters' that siphon off its profit (Lapavitsas, 2014). The financial sector and the real economy are more intertwined than ever (Knafo and Dutta, 2020).

3. Engaging with the indicators

As it is often the case, growing scholarly interest has led to a proliferation of different perspectives and conceptualizations of financialization (Mader *et al.*, 2020). An expanding set of indicators have been used to measure this process and its outcomes. In turn, the rich and expanding scholarship prompted meta-reviews trying to systematize the different approaches (Davis, 2017; Gutman, 2019; Huang and Madhavan, 2021).

As for the classification of the indicators measuring financialization, Klinge *et al.* (2021) distinguished between analyses based on hard metrics and studies analyzing soft indicators, such as NFCs' financial behavior and the specifics of the institutional setting. Reviews would group hard metrics into flow- and stock-based indicators (Davis, 2017), for example, financial profits or financial assets related to total profits/assets. Another grouping distinguishes between assets and liabilities-related indicators, where the latter group includes indicators such as debt/total assets or financial payments/gross operating surplus. A further approach to classifying indicators is Karwowski *et al.* (2020) who distinguished between 'activity measures' that capture financial income (flows) from 'vulnerability measures' such as (stock of) total debt.

To the best of our knowledge, so far, no contributions tried to group measures according to the extensive versus intensive margins of financialization. This classification is prevalent in analyses of international trade (e.g. Hummels and Klenow, 2005). Accordingly, the growth of exports on the extensive margin refers to new export products and destinations, whereas the intensive margin captures the growing number of exporting sectors. Other approaches attempting to decompose the dynamics of trade flows into extensive/intensive margins were concerned with the range of traded goods (extensive margin) and the size of

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exports (intensive margin) (Chaney, 2008; Helpman *et al.*, 2008). Krugman (1980) considered the number of trading partners and the number of sectors or goods traded as indicators that capture the extensive margin of growth in trade flows, and the volume of trade or the average export per exporting firm as indicators referring to the intensive margin.

The differentiation between the extensive and intensive margins was used in other themes as well, e.g. in analyses of the *labor supply*, where the extensive margin measures the number of individuals at work and the intensive margin refers to total hours worked (Blundell *et al.*, 2011). In *entrepreneurship*, the extensive margin is measured by the number of people starting a business, aka entry into entrepreneurship and the intensive margin captures the performance of entrepreneurs in terms of employment or income growth, or productivity (Buera, 2009; Kerr and Nanda, 2010).

The distinction between developments at the extensive and intensive margins is present also in studies on foreign direct investment (FDI), where scholars consider firms' decisions whether to invest abroad or the range of countries where they invest to define the extensive margin of growth in FDI flows. Conversely, the amount of FDI flows or stocks capture the dynamics of FDI at the intensive margin (e.g. Nguyen, 2019). Analyses of firms' financial practices also employ this distinction. With respect to venture capital funding, for example, Brander *et al.* (2015) define the extensive margin as the number of enterprises receiving funding, whereas the intensive margin refers to the amount of VC funding per enterprise.

These examples lead us to argue that evaluating financialization at the extensive and intensive margins can improve our understanding of its nature and implications. In the context of the financialization of CVC investments, developments at the extensive margin are defined as changes in NFCs' participation in CVC activities and/or changes in the volume of their CVC investments. Developments at the intensive margin denote a diversion of investments from core productive activities toward financial ones. In our conceptualization, it is this diversion, together with its adverse impact on parent companies' innovation-based competitive strategy, that captures the 'financial turn in NFCs' accumulation' (Rabinovich, 2019).[2]

4. Research approach

To address the research question and determine whether and to what extent the concept of financialization is appropriate for interpreting the ascendance of financial motives in industrial incumbents' CVC investments, we gathered quantitative and qualitative data on industrial incumbents' CVC practices. The period considered was 4 years, between 2018 and 2021: record years in global venture funding (CB Insights, 2021).

We conducted our research in two phases. In the first phase, we mapped the available evidence on industrial incumbents' CVC transactions. This kind of information is scattered

2 In fact, these approaches to distinguishing between developments at the extensive and intensive margins call for a different procedure. Accordingly, in the context of this study, the intensive margin should be captured as the share of capital gains derived from the exit of PCs (and from dividends on equity) in parent firms' total income. However, since this kind of data is not available and given that with a rapid growth in the number of CVC deals, the distribution of PCs is skewed toward companies that were recently integrated in the portfolio, and hence the incidence of exits is not very high, we opted for capturing the intensive margin through the analysis of qualitative data.

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and thus requires a review of the business press and the gray literature reporting on CVC investments. Gray literature refers to analyses and insights produced by non-academic actors and published in non-peer-reviewed outlets. Examples include white papers and reports produced by consultancy firms, blogposts and case studies by practitioners and industry experts. According to Mahood *et al.* (2014) inclusion of gray literature can broaden the evidence base of the research, which is particularly important in the case of complex and emergent research topics, such as the subject of this article. Accordingly, we mapped publication channels including Techcrunch, CB Insights, www.globalcorporateventuring.com and www.medium.com. Additionally, we participated in webinars (organized by CB Insights and Global Corporate Venturing) on CVC trends and new developments.

Evidence mapping was complemented with qualitative data collection from interviews with heads of the CVC units of some of the largest global industrial corporations. These interviews, each of them lasting one hour on average, were conducted between July 2020 and April 2022. The interviewees elaborated on their strategy, focus areas, start-up selection practices, motivations, relations with the parent company, mistakes and factors of success. Based on purposeful sampling (Patton, 1990), involving the selection of illuminative and information-rich cases, we selected a sample of 12 CVCs based in the Silicon Valley (Table 1). We also conducted three expert interviews, discussing new trends in global corporate venturing with an academic researcher, a founder of a consultancy firm serving some of the largest CVC funds and a representative of Global Corporate Venturing Institute, an institute dedicated to the professional development, certification and benchmarking of CVC actors.

To triangulate these qualitative data, we hand-collected a set of archival data about the PCs of the firms in the sample, including websites, business press news and published interviews. We looked for data about their collaboration with parent companies, customers, further financing rounds and exits. We gathered data on PCs' technology specialization, with

Table 1 The characteristics of the empirical data

Number of CVC units interviewed	12
Expert interviews	3 (MACH49, GCV Institute, academic researcher)
Executives interviewed	President/CEO/managing director of CVC, investment director
Location of CVC[a]	Silicon Valley
Sectors of parent companies[b]	Automotive and mobility, aerospace, industrial technology, consumer goods, electronics, building technology, industrial tools, robotics,
Location (headquarters) of parent companies	USA, Japan, Germany, France, Switzerland
Date of CVC foundation	2007–2015: four CVCs; 2016–2020: eight CVCs
Average number of PCs (2021)	31.8

[a]Several CVCs have multiple offices besides the one in the USA: for example, in China, Korea, Japan, Europe, Israel and India.
[b]The parent companies of several CVCs are conglomerates, active in multiple industries.

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special attention to the relatedness of their technologies to the core businesses of sample CVCs' parent companies.[3]

The second phase (data analysis) started with qualitative content analysis involving the reduction of the rich material to its core content to identify both similar patterns and differences (Miles and Huberman, 1994; Krippendorff, 2004).

The core part of the analysis involved the reflective analysis and interpretation of the uncovered real-life phenomena, to capture their essence (Patton, 1990). In practice, we decomposed financialization into developments at the extensive and intensive margins. To capture financialization at the extensive margin, we used traditional measures (number of CVC units established by incumbent industrial companies, number of deals and volume of CVC investments).

To establish whether we can speak of financialization at the intensive margin, we analyzed whether the qualitative data on CVC practices suggest a diversion of investments from productive toward financial purposes (Van der Zwan, 2014; Davis, 2017). Financialization at the intensive margin is ascertained if data confirm this diversion and its stated impacts on parent companies' innovation-based competitive strategy.

5. Results from the quantitative data collection: new trends in industrial companies' CVC investments

While funding from corporates to start-ups surpassed prior records nearly every year over the past decade, 2021 stood out in terms of the number (5047) and size of deals (the median CVC deal size was $16 million) and the total amount invested ($298.1 billion) (source: GCV Analytics and CB Insights). A plethora of new CVC funds emerged: the number of active corporate investors increased from 369 in 2011 to 2909 in 2021 (GCV Analytics). First time investors accounted for more than 50% of CVC deals over the period between April 1, 2020, and December 31, 2021, which indicates that the size of and competition in the 'market for technology' (Arora *et al.*, 2001; Arora and Gambardella, 2010) have grown spectacularly. CVC investments have practically caught up in terms of the total value of deals with independent VCs: the average share of corporate-backed deals in total deal value was 46% between 2015 and 2021.

Although the venture capital funds of 'Big Tech' (e.g. Google, Apple, Microsoft), and other digital corporations (e.g. Coinbase, Salesforce, Bytedance), ICT companies (e.g. Intel, Deutsche Telecom, Vodafone) and pharmaceutical companies figure high in the list of top investors, the number of traditional industrial companies associated with private equity transactions involving technology start-ups keeps increasing. According to recent data (Andonov, 2021, 2022b), the number of venture capital deals involving corporate investors from the industrial sector increased from 107 in 2011 to 573 in 2021. The total amount of the related funding was $29.68 billion in 2021 ($2.34 billion in 2011).

According to a recent survey of 106 US CVCs, completed by Silicon Valley Bank (SVB, 2021), there are several new developments in the CVC realm. One of them is the growing *investment velocity*—the speed at which companies embrace new business activities, which

3 We conducted targeted search to access press releases about and expert analyses of investment deals. Additionally, some 'Why we invested in'-type articles posted on medium.com proved to be valuable sources of information.

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accounts for the sectoral diversity of PCs aka the *increasing scope of investments*. Incumbent industrial companies' key focus areas include IT (e.g. big data analytics, enterprise software, artificial intelligence and cybersecurity), transport technology (start-ups developing connected, autonomous, shared and electric vehicle technology), digital technology-enhanced consumer products, advanced manufacturing technology (3D printing, robotics and other smart manufacturing equipment), health (e.g. pharmaceuticals, smart medical devices, artificial intelligence-based software for health data analysis) and financial technology. A further hot area concerns emerging services. Industrial companies invest, for example, in logistics and supply chain services technology, digital marketing or advertising technology, vehicle marketplaces and platforms and human resources management technology (Andonov, 2022a).

Another trend is the increasing share of early-stage ventures in CVC portfolios. Seventy-four per cent of the surveyed US companies target companies in pre-seed, seed or series A rounds (SVB, 2021), which contradicts the conventional wisdom that CVCs usually participate in later-stage rounds.

A further ongoing development is the diversification of intermediaries bridging incumbents and start-ups (Gutmann, 2019; De Groote and Backmann, 2020; Corvello *et al.*, 2021). Industrial corporations engage with start-ups not only bilaterally through their CVC funds and other start-up scouting units (e.g. accelerators, incubators) or through a variety of non-equity forms of collaboration such as joint development programs, calls for proposal in certain problem areas, venture client models and start-up supplier programs. Start-up financing is a multi-actor undertaking: CVCs form syndicates with third party (corporate and independent) venture funds and/or become limited partners in funds set up by independent VC firms. Sometimes they even raise third-party capital for their own CVC's funds. The growing number of industrial companies' funding vehicles and co-investment partnerships (strategic alliances with third party investors) evoke the metaphor of a spaghetti bowl, referring to corporates' direct and indirect, equity and non-equity ties with start-ups and co-investors.

Regarding capital gains, the number of CVC-backed exits also exhibits an impressive growth. While GCV Analytics documented 130 exits in 2011, this number grew gradually each year (with some minor and sporadic year-on-year setbacks) to reach 381 in 2020 and 642 in 2021. The total capital involved in these exits grew more than 15 times, from $13.2 billion in 2011 to $207.7 billion in 2021 (GCV Analytics).

6. Results from the qualitative data collection

Analysis of the obtained qualitative data added nuance to the quantitative data presented above. We sorted and organized the data around three themes: (a) the motivations driving incumbent industrial companies to set up a CVC unit and the perceived importance of financial returns, (b) the relatedness of investments to the core technological specialization of the parent company and (c) the attributes of CVCs' practices, that is, whether they resemble to those of independent VC firms, as suggested by Krippner (2005) and Klinge *et al.* (2020).

6.1 Strategic versus financial? Rather strategic and financial!

Regarding motivations, the most conspicuous commonality in interviewees' accounts was the perceived *imperative* of setting up a CVC unit. The imperative of integrating CVC investments in the operating model of the corporations was perceived to be so strong that it

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compares with the (prior and ongoing) imperative to engage in digital transformation: the opportunity costs of missing out are considered similarly prohibitively high. [To remain competitive] 'you have no choice but to monitor what is happening in the ecosystem of technology start-ups' (expert interview). 'First-mover advantage in a winner-take-it-all business environment is more important than ever' (CVC: industrial technology).

Interviewees, even the ones who elaborated on the specifics of (and did not outright deny) their financial motivations, considered the 'raison d'être' of their CVC units strategic. They regarded their activity as an enabler of learning for their parent companies about a wide set of emerging technologies, new trends, new markets and new ways of business development. In this vein, CVC investments complemented and facilitated the internal R&D efforts of the parent companies. The following quotes illustrate:

> The reason for setting up our CVC?: to add an additional dimension of learning besides internal R&D. (CVC: automotive)
> We translate the technology of the startups into new business (areas) for [the corporation]. (CVC: consumer goods)
> We are the eyes and ears of [the corporation] by putting relatively little money in a wide set of start-ups. Our parent company is a learning organization. (CVC: conglomerate)

Our data indicate that CVCs enact a very specific role within the corporate division of labor, as illustrated by the head of a CVC of an electronics company:

> The focus of the business groups is to deliver on existing products in existing markets. The R&D team is responsible for developing new technologies (and new products) for our existing markets. The mergers and acquisitions (M&A) team focuses on expanding our existing technologies and products to new markets. However, before the setting up of our unit, no one was looking at new markets and new technologies combined, although that's where the wave of disruption is most massive.

Other comments, however, acknowledged the importance of financial motivations: 'Once you decide to invest, your relationship with the start-up changes. It is not simply a proof-of-concept relation or a joint development relation anymore: you want the start-up to win.' (CVC: automotive industry). This remark is in accordance with the claim made by another corporate venture capitalist (not included in the sample): 'It's critical to keep in mind that as investors, we are buying a piece of the start-up's *business*, not the product or service, and not the technology. While the product, service, and technology are important, these factors are secondary to evaluating the business opportunity itself.' (Lenet, 2022).

An expert added nuance, claiming that these investments are about 'option value and not net present value' (consultant: MACH49) that is, the purpose of incumbents' investments in start-ups is not short-term profits, rather, generation of new revenue sources (new growth opportunities) for the parent company.

Moreover, when touching upon the question how *meaningful* the capital gains are for the parent company, interviewees were unanimous in stating that even high returns on investments would not 'move the needle' for corporate parents. Parent companies' total revenues from the core activities are by orders of magnitude higher than the capitalization of their CVCs. As illustrated by the head of a CVC (industrial technology):

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> Creating a new business opportunity through leveraging the technology of a portfolio company may result in 10 billion dollars revenue increase for [the corporation]. Compare that with, say, a 3x return multiple of a CVC fund of USD 50 million! In terms of individual investments, even if I do ten times the money on an investment, the strategic impact may be far larger for our corporation's billion-dollar operations than the financial gain!
> The head of a CVC (electronics industry) clarified the same point in a different way: 'The market insights that we provide help the mothership prioritize among multiple possible future R&D initiatives. The R&D group of the corporation comes out with all sorts of interesting ideas. We can provide valuable information whether the parent company has a chance in the proposed space. If there are already ten established start-ups specialized in the proposed technology, it makes no sense for us to spend millions to reinvent the wheel.'

This idea was shared by other interviewees, claiming that stopping or not engaging in an R&D activity (because the CVC points to start-ups whose achievements render the parent company's related efforts and R&D activity meaningless) would *save substantial financial resources*.

Nevertheless, the high capital lockup that characterizes CVCs operations makes financial sustainability fundamental: a CVC must exhibit good financial performance for survival (e.g. to survive the change of the chief executive officer of its parent company and/or adverse turns in the business cycle). 'You can always argue that these investments are invaluable for promoting corporate innovation but in the longer run, if you are not profitable you will have problems' (CVC: conglomerate). CVCs would thus invest in start-ups that are at the intersection between the ones that are strategically important and the ones in the case of which investment makes sense financially. As it was phrased by the head of a CVC of a global electronics company, 'My minimum job is to show a reasonable return on the portfolio. If I can't achieve this, I am gone. What really matters, however, is that we know what is going on in the world. We flag new areas the corporation should look at and put on its R&D roadmap.'

Accordingly, the second commonality we identified in our qualitative data is that financial and strategic motivations are closely intertwined. While some interviewees expressed this connectedness of motivations in general terms, for example, 'We cannot look at financial or strategic independently.' (CVC: electronics); 'We should never compromise, neither on financial nor on strategic.' (CVC: industrial tools); 'We have to reconcile the strategic imperative with financial discipline.' (CVC: robotics), another answer added more nuance to these explanations. It shows that indeed, CVCs wear two hats: their strategic investments are at the same time financial transactions.

> For me an optimal scenario is if in five years, the technology of the portfolio company is integrated in our offerings or augments our corporation in another way … and… from the perspective of our equity, we see the portfolio company grow through all the rounds of a start-up's lifecycle and exit! (CVC: automotive)

More importantly, sample CVCs consider the financial performance of their PCs closely related to their strategic value.

> If you are successful at picking the future winners in a given technology category, these winners will be able to fulfil your strategic objectives and ensure a good return on your investment. Underperformers and distant followers are not the ones you could learn from. (CVC: electronics)

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Table 2 Examples of PCs' specialization by relatedness categories

Solutions that enhance general-purpose capabilities	Solutions that deepen market-specific capabilities[a]
Predictive maintenance technology, Enterprise drone technology, Warehouse automation technology, A solution allowing for long-range wireless remote control for industrial machinery, Industrial cybersecurity technology, Edge analytics technology, 3D technology; a rapid liquid 3D printing solution, Identity and access management technology, An AI-powered solution that automates the preparation of quotes for custom parts, A data wrangling solution promising better data quality for analytics, Advanced virtualization technology, Next-generation materials for industrial applications, Lightweight flexible electric circuit technology for power electronics, AI-powered video analytics for insights from the factory floor, A 3D computer vision technology, Advanced memory technology for embedded AI, electronic, and computing applications, AI chip technology, Quantum computing technology.	Nano-reinforced aluminum alloys for greater strength and improved wear resistance of lightweight components in aerospace and other industries (aerospace), High-performance bio-based lubricants for outdoor power equipment; a corrosion-identifying robot combined with data analytics designed to address corrosion in manufacturing plants (industrial tools), Automotive cybersecurity and data management platform for connected vehicles; a gel-based nanocoating technology protecting electronics from environmental degradation (automotive and mobility), An AI-based solution that speeds up and facilitates the programming of robots and other industrial control systems (robotics and industrial equipment), Advanced coatings for industrial and consumer applications; recycling technology that recovers the polymer and/or aluminum laminate of packaging (consumer goods), Carbon nanotube-based material designed to lower device temperatures and dissipate heat in electronic and industrial applications; a geospatial imaging solution for positioning and navigation services (automotive and mobility).
Seemingly unrelated technological solutions with high business potential	
Hands-free chargers for electric vehicles (industrial tools), A public transportation application (automotive and mobility), A virtual reality platform; an over-the-air software update solution for automotive software (electronics), An insurtech start-up; a banking-as-a-service platform (Samsung Catalyst Fund), A biomanufacturing solution that leverages algae (electronics + industrial systems), A robotic companion for children that promotes social, emotional, and cognitive learning; a reusable launch vehicle (foundational infrastructure for space applications) providing access to space at a fraction of previous costs; a fintech company enabling decentralized borrowing with no collateral (automotive and mobility) A workforce training app and software service for industrial companies; a smart home solution for energy optimization (industrial technology and building technology), A local air quality and greenhouse gas measurement solution; a drone monitoring solution for construction (industrial technology), A company developing virtual health care solutions (electronics), A start-up specialized in cell-cultured protein (automotive and mobility).	

[a]The previously listed examples of product/market-specific solutions are deliberately omitted here.

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It is hard to overestimate the importance of this claim, since it shows that instead of weakening or undermining the strategic purposes of CVC investments, financial considerations would actually support and reinforce them.

The inseparability of motivations is no surprise if considered from the perspective how difficult it is to measure and quantify strategic value. It is usually hardly possible to relate the CVC's investment in a start-up to the increase in the parent company's turnover or profit. Although some PCs can indeed help incumbents solve specific technical challenges, the strategic value of CVC activities is rarely straightforward, in terms of culminating in the acquisition of the start-up or integration of its solution in the offerings of the parent company. Rather, it is often soft, captured by terms such as such as 'insights' or 'inspiration' (e.g. for new directions in business or in technology development).

The inseparability between strategic and financial objectives is reflected also by the fact that more and more CVCs position themselves as hybrid in terms of motivations (i.e. both strategic and financial): according to SVB (2021) data, in 2020, nearly 50% of total. This finding is in line with Röhm *et al.* (2018) criticism of the simplistic black and white approach to determining incumbents' motivations, in terms of *either* financial *or* strategic. Röhm *et al.* (2018) point out that corporations may have distinct case-specific motivations and multiple motivations may apply to specific PCs.

6.2 Technological relatedness

Before turning to the findings concerning the second question, the relatedness between the focus areas of PCs and the technological specialization of the corporate parent, a short explanation is deemed necessary. We assumed that technology relatedness is a proxy for strategic motivations. Our working hypothesis was that financial motivations are at play if CVCs invest in start-ups specializing in highly diverse technological areas that are unrelated to the parent company's core technological specialization.

The reviewed data indicate that the specialization of the PCs is highly heterogeneous. The majority of the new technological solutions introduced by these start-ups support some general-purpose capabilities (Pisano, 2017) related to the digital transformation of production (cross-industry technologies). There are other solutions that are also classified as strategic since they are deemed to enhance the product/market-specific capabilities of the corporate parent. In the case of the CVC units of automotive firms, for example, product/market-specific capability enhancing technologies include advanced battery technology, shared mobility, autonomous driving technologies or driver behavior analysis technologies. Similarly, PCs' solutions that complement or enhance incumbents' existing products or the solutions that use incumbents' existing products belong to this category. However, over and beyond these two categories, our data mining revealed the presence of non-core investments in start-ups specialized in apparently unrelated albeit trendy technological areas. Table 2 provides examples of these three categories.

Several interviewees elaborated on the diversity of PCs' technological areas and the relatedness of investments. Their explanation of the reasons behind the incidence of heterogeneous and seemingly unrelated technological areas made us reject the hypothesis that these attributes of the portfolio can be used as a proxy for financial considerations. One of the convincing arguments was that the scope of potentially relevant technologies aka the technological context of corporations' activities is much broader than it used to be and keeps expanding (expert interview: academic researcher). It is therefore imperative that

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incumbents monitor what is going on in the start-up ecosystem in a wide range of frontier technologies and consider what might be relevant/disruptive to their businesses. Accordingly, large industrial incumbents often commit resources in emerging technology fields, such as artificial intelligence, 5G, additive manufacturing, blockchain, cyber security and quantum computing—simply to learn about the specifics of these fields and determine how these technologies may become relevant for their businesses in the future. The following quotes illustrate these arguments:

> All of this huge complexity makes it mandatory to access a huge network of niche experts. It would be impossible to keep up with technological progress alone, whatever resources and whatever organic R&D you might have. (CVC: conglomerate).
> Placing small bets by making minority investments in a wide range of emerging technologies enables [the corporation] to keep pace with technological progress. (CVC: robotics)
> Working with start-ups enables you to look into a much broader universe of technology and experiment early stage before you would invest millions in relevant R&D developments. (CVC: industrial technology)

These arguments notwithstanding, our interviewees acknowledged that they often face difficult-to-decide choices, namely whether they can sometimes be opportunity-driven or should strictly focus on their investment thesis since many opportunities come up in unrelated technological areas.

6.3 CVC practices: resemblance to independent VCs

The hypothesis of a growing resemblance between CVC practices and those of independent venture capital funds was confirmed by the qualitative data. As CVCs have undergone substantial professionalization—marked by a standardization of selection, investment and start-up management procedures, their practices converged with those of independent venture capital firms. The number of start-ups screened, the speed of decision-making, the size of investments, the partnering with external actors in financing rounds and the incidence of follow-on funding, aka provision of additional funding as the investee grows, equally suggest that the practices of CVCs and independent VCs have converged.

Interviewees indicated that over time, they developed standard routine procedures for selecting start-ups and managing PCs. Sample CVCs would screen 500–2000 start-ups annually, to invest in 5–10 of them. Over and beyond evaluating the strategic fit, they appraise the viability of the start-up's technology and whether it is capable to generate revenue. They assess the characteristics of the problem the start-up would solve and the related commercial potential. They would check the quality of the team (e.g. managerial attributes, team integrity, domain knowledge, size of network, go-to-market strategy)—just like independent venture capital funds.

Due to their exposure to thousands of technology ventures, sample CVCs gained significant domain-specific expertise in a variety of technological domains, and more importantly, regarding the art and profession of making venture capital investments. Interviewees pointed out that building the required complex expertise in this latter domain involves years of learning by trial and error about the practices of the VC industry. The accumulated expertise in the field of evaluating ventures, determining the amount and conditions of investment, devising an adequate monitoring and coordination strategy, managing a two-way knowledge transfer and devising an appropriate value capture strategy enabled the CVCs to improve

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their bets on future winners and thus achieve both strategic and financial returns. Relatedly, several interviewees stressed that investment bets need to be to some extent counter-intuitive: a high probability of success attracts many investors and raises the valuation of the given start-up to prohibitive levels. Consequently, the required amount of investment will be far higher and the expected return lower. This reasoning indicates not only that incumbent companies are poised to take on higher risks and invest in earlier-stage companies than previously, but it also indicates the importance of financial returns.

A further sign of financial motivations is the increased incidence of CVCs' commitment to follow-on funding (previously, this practice used to be prevalent mainly among independent VCs). Several interviewees commented on the importance of follow-on funding and some of the surveyed CVCs have even stipulated a percentage of reserves dedicated to follow-on rounds. It is fair to claim that CVCs' follow-on investments are driven by financial considerations, since the strategic goal of obtaining insights into a new technology or a new business model is achieved already with the initial funding round. Follow-on investments enable CVCs to leverage the business success of their PCs.

7. Discussion

When trying to determine whether the concept of financialization is applicable to explain these results, our point of departure is that the recent trends in CVC activities have added to the size and complexity of the financial system. Elaborating on the concept of financialization, Dávila-Fernández and Punzo (2020) stressed the growing importance of financial practices in traditional activities. Indeed, if established industrial incumbents set up CVCs, the financial content per unit of output produced will definitely increase—in accordance with a classical definition of financialization (Epstein, 2005). In this sense and more generally, our quantitative data, specifically the soaring number of industrial companies setting up CVCs and their increased capital commitment—manifested in the number and size of CVC deals—at first glance indicate that CVC investments are associated with financialization.[4]

However, these data substantiate a phenomenon that we refer to as financialization at the extensive margin. To acknowledge financialization at the intensive margin, we have to examine how the surveyed CVC activities shape and transform the production and innovation-driven growth trajectories of their industrial company owners.

One approach to answering this question is the evaluation of the importance of financial gains, derived from CVC activities. While interviewees acknowledged that indeed, financial returns matter,[5] they strongly denied that they are meaningful in terms of *directly* improving the bottom line of parent companies (Section 6.1). Allegations that financial returns on CVC

4 As one of the anonymous reviewers of this study pointed out, our definition of the extensive margin—if the financial content per unit of output produced increases—implies a sort of by-definition financialization since this measure cannot capture the intent behind the investment. Note that a logical analogy is servitization or technologization. This suggests that financialization at the extensive margin needs to be considered without automatically associating it with the pejorative connotations associated with the financialization concept.

5 It needs to be emphasized, however, that the perceived importance of financial returns should not be conflated with the incidence of high returns. This latter issue remained unclear, which is due to the lack of data on financial income from the exit of portfolio companies.

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investments compensate for declining operating income or for falling rates of return on fixed capital (e.g. Davis and McCormack, 2021) were also renounced. Instead, our qualitative data indicate that learning about emerging trends, potentially relevant technologies and new ways of business development may have a meaningful—albeit indirect—impact on incumbents' bottom line. From this perspective, it seems safe to infer that the activities of the surveyed CVCs do not imply a diversion from the corporations' core businesses.

Another approach is to evaluate the findings regarding the heterogeneity of PCs' technologies and assess the relatedness of these technologies to incumbents' core businesses. While at first sight, many of the PCs' solutions seem unrelated to the core focuses of the corporate parents,[6] data in Table 2 reveal straightforward associations, albeit not necessarily with incumbents' core products themselves. For example, the solutions classified as general-purpose capability enhancing are relevant to (strategic for) incumbents from the point of view of the ongoing digital transformation of their production and business processes. While the evaluation of the third group comprising (seemingly) unrelated solutions requires a case-by-case analysis that is beyond the scope of this article, there are three arguments to suggest that not even these solutions can be unambiguously considered as unrelated.

First, it needs to be born in mind that the core specialization of incumbent companies keeps evolving. Automotive companies, for example, would nowadays label themselves as mobility services providers, specialized in software-intensive solutions and energy. What seemed to be unrelated to the core businesses of established incumbents 10 years ago may already be related to their current focuses. Second, the ascendance of investments in environmental, social and governance (ESG) projects is a clear trend of the past couple of years. Sustainability is a stated focus area of all CVCs in the sample and some of them have even set up dedicated funds focusing on cleantech and climate tech investments. While these investments enable incumbents to showcase their commitment to ESG goals, they increase the heterogeneity of PCs. Third, in some cases exhibiting an apparent lack of any relation to the core, 'the missing link' is that start-ups build on incumbents' existing products/solutions or provide valuable lessons in terms of business model, real-life application of a specific technology or go-to-market strategy. All in all, however heterogeneous the portfolios of the surveyed CVCs are, they do not indicate a diversion from incumbents' core businesses. In this regard, the hypothesis of financialization does not hold at the intensive margin.

A third approach to providing a more definitive answer to whether the observed developments can be considered as financialization at the intensive margin is to answer the following questions. Do the activities of the surveyed CVCs imply a diversion from industrial owners' historic quest to improve competitive abilities in their core businesses in a qualitative, innovation-based manner? Do real economy actors turn toward financial activities because the innovation-driven growth potential of the real economy has been exhausted? Do CVC investments promise better financial returns than high-risk, long-term investments in innovation?

Our qualitative data suggest a negative answer. Indeed, at a time of digitalization-induced accelerating technological change, the innovation intensity of competitiveness and growth has significantly increased. Through their CVC units, incumbent industrial corporations explore nascent technologies and new business models. However, instead of diverting

6 It is only the relatedness of the solutions enhancing product/market-specific capabilities that is obvious.

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incumbents from pursuing a core businesses-related, innovation-based growth strategy, CVCs have rather become a mainstream innovation strategy instrument for their corporate owners (Benson and Ziedonis, 2009; Weiblen and Chesbrough, 2015). Exploring where the industry is heading, which technologies will become relevant in the medium term and accumulating knowledge in these technological areas, CVC activities support incumbent corporations' core businesses. They help corporations find out how to *sustain the competitiveness of the core businesses* in a dynamically changing business environment.

The value of CVCs for improving corporations' innovation-based competitive abilities in their core businesses is even more straightforward if we distinguish deal flows (total investment opportunity) from investments. Since the number of start-ups with relevant and promising technologies that had been screened and positively evaluated by sample CVCs (deal flows) is typically by an order of magnitude higher than the number of their investments, the potential of CVC activities for accumulating knowledge in certain technological domains is enormous. Echoing the words of a famous critic of financialization, who called for a 'fundamental re-direction of financial capital from incumbent to new technologies and practices' (Perez, 2003), it is fair to claim that CVC practices are perfectly in accordance with this call. Incumbent industrials' venture capital practices promote rather than hurt innovation-driven growth.

8. Concluding remarks

This article analyzed whether the concept of financialization is adequate to use when evaluating incumbent industrial companies' intensifying CVC activities. To develop an appropriate appreciation of the surveyed CVC practices, we proposed to categorize the developments that suggest financialization along two dimensions, distinguishing developments at the extensive margin and intensive margin.

We found that while the observed phenomena correspond to the quantitative-oriented interpretations of financialization, they are not in accordance with—what we referred to as financialization at the intensive margin: a deviation from corporations' strategic objectives toward purely financial ones, that is, a diversion from industrial incumbents' traditional focus on improving the competitive advantage of core businesses.

Our quantitative evidence mapping exercise indicated that indeed, a rapidly increasing number of incumbent industrial companies have become engaged in CVC activities. They allocate more resources to CVC investments than previously, as reflected by the growing number and average size of deals (SVB, 2021; Andonov, 2022a). Moreover, besides obtaining 'strategic dividends', sample CVCs acknowledged the importance of financial motivations. These developments, however, do not reflect a financial turn in their accumulation. Our data indicate that CVC activities do not divert incumbent industrials from their core specialization, they rather support core activities. These investments complement incumbents' fixed investments and the resulting technological capital is paramount for competitive advantage in core activities. Moreover, instead of siphoning resources out and away from innovation, CVC activities represent a meaningful instrument for incumbents' exploratory innovation efforts. In summary, while some features of CVC activities may give an impression of financialization, the pejorative connotations associated with the concept, such as the deviation from industrial incumbents' historic quest to gain and sustain innovation-based competitive advantage, do not apply.

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While our approach will certainly not eliminate the intransigent controversies around the interpretation of financialization, we believe that some of the ambivalences surrounding the concept of financialization can be traced back to the fact that most studies associate the rising importance of finances exclusively and uncritically with harmful corporate practices and their detrimental economic effects. We hope that the exploration of incumbent industrial companies' CVC practices and the decomposition of financialization into developments at the extensive and intensive margins improve our understanding of the phenomenon, or at least it illustrates where the bones of contention lie and how the associated controversies might be interpreted and possibly reconciled.

As it is the case in most qualitative studies, this study is not without some notable limitations. One of them is the small size of the sample and our narrow focus on large incumbent industrial companies. Notwithstanding, in accordance with Soener's (2021) argument that specific aspects of financialization apply only to the largest and most powerful companies, the scope of our study does not necessarily exclude generalization. Yet, our results permit generalization mainly for this category of firms: global industrial incumbents.

Another limitation is that this study offers a snapshot view of CVC activities. We focused on established CVCs, in an era marked by a sharp rise in new CVC entrants. While the most recent data on CVC activities indicate that even in the current era of geopolitical turmoil, looming recession and plummeting VC investments, CVC deal numbers fell only slightly (Andonov, 2023), further longitudinal research is required to monitor shifts in CVC activities and behavior. More evidence is needed about the attributes of PCs' exits and whether the new technological solutions developed and commercialized by the start-ups are indeed integrated in the offerings of the corporate parents.

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