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How do within-industry CVC investments shape industry concentration?

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ABSTRACT

Corporate venture capital (CVC) investments can shape industry dynamics in different ways. On one hand, they provide financial resources, expertise, and credibility that help new ventures survive and grow, thereby fostering competition. On the other hand, incumbents can use CVC to absorb knowledge and capabilities from entrepreneurial ventures, strengthening CVC investors' market positions and limiting rivalry. Given these opposing forces, it remains an open question whether higher levels of CVC investments raise or lower industry concentration. This paper advances the literature by uncovering three mechanisms underscoring the impact of within-industry CVC investments (i.e., those with both investors and investees operating in the same industry) on industry concentration and conducting an empirical analysis across U.S. industries from 2001 to 2019. Results show that greater salience of within-industry CVC investments leads to higher industry concentration. The findings carry important implications for entrepreneurial ventures, incumbents, and policymakers.

1. Introduction

Corporate Venture Capital (CVC) is a corporate investment strategy wherein established incumbents make minority equity investments in independent entrepreneurial ventures; CVC is often employed as a window on technological innovations (Gompers and Lerner, 2000; Dushnitsky and Lenox, 2005a, 2005b; Dushnitsky and Shaver, 2009; Narayanan et al., 2009; Tong and Li, 2011). Young ventures seek CVC investments to survive, expand operations, and access corporate expertise, networks, and endorsement (Jeon and Maula, 2022). CVC investors are typically well-established corporate entities recognized for their industry-specific expertise, cash flows, brand recognition, and the capacity to bring innovations to markets (Lerner, 2013; The Economist, 2018). Some of the active CVC investors include Google, Salesforce, Samsung, Mitsubishi, and Nvidia (CB Insights, 2025).

CVC investments constitute a substantial share of global venture financing, accounting for nearly 20% of VC deals (CB Insights, 2025) and 36% of total VC deal value worldwide (Bain and Company, 2024). They are prevalent across a broad spectrum of industries, including information technology, financial services, and healthcare (Global Corporate Venturing, 2022). Unlike independent venture capital (IVC), CVC is often motivated to serve corporate parents' strategic interests rather than just pursue financial returns (Chesbrough, 2002; Chemmanur et al., 2014; Pahnke et al., 2015; Winston-Smith, 2009).

Current literature recognizes that incumbents use CVC to access emerging technologies, to monitor entrepreneurial activity, and, ultimately, to strengthen their competitive position by shaping competitive dynamics in their industries (e.g., Kortum and Lerner, 2000; Dushnitsky and Lenox, 2005a, 2005b, 2006; Grimpe and Hussinger, 2008; Benson and Ziedonis, 2009; Wadhwa and Kotha, 2006, Wadhwa et al., 2016; Belderbos et al., 2018). These competitive implications are especially pronounced when incumbents invest *within their own industry*, where CVC not only serves as a window on technologies but also engages established firms with potential rivals in their core markets. These dynamics suggest that *within-industry* CVC can have significant consequences for industry concentration.

Extensive research has examined how CVC affects *firm-level* outcomes such as innovation, venture survival, and acquisition activity (e.g., Dushnitsky and Lenox, 2005a, 2005b, 2006; Benson and Ziedonis, 2009; Park and Steensma, 2012; Chemmanur et al., 2014; Colombo

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and Shafi, 2016; Chen et al., 2023; Jeon and Maula, 2022; Bendig et al., 2024; Wunder and Maula, 2026). However, these studies do not directly address CVC's consequences for industry concentration.

This paper seeks to shed light on the impact of *within-industry* CVC investments (i.e., those where both investor and investee belong to the same industry) on industry concentration. We build on the insights of existing literature and explore the broader industry effects of CVC investments. On one hand, *within-industry* CVC investments can increase industry concentration. Incumbents benefit from CVC investments by gaining privileged access to innovative technologies, knowledge, and talents (Hellmann, 2002; Dushnitsky and Lenox, 2005a, 2005b, 2006; Benson and Ziedonis, 2009; Park and Steensma, 2012; Chemmanur et al., 2014; Colombo and Shafi, 2016; Chen et al., 2023; Bendig et al., 2024; Boyacıoğlu et al., 2024). CVC investors may leverage the acquired knowledge and technological capabilities to commercialize products or technologies that will possibly cut new ventures off the market (Park and Steensma, 2012; Colombo and Shafi, 2016) and, at the same time, boost the competitive advantages vis-à-vis other incumbents (Chen et al., 2023). If these advantages translate into stronger competitive positions, they can ultimately raise industry concentration. We refer to this mechanism as *learning*. In addition, CVC investments help incumbents gather insider information and identify promising ventures as acquisition targets (Katila et al., 2008; Benson and Ziedonis, 2009, 2010; Miric et al., 2021; Kamepalli et al., 2020; Koski et al., 2023; Tong and Li, 2011). Therefore, CVC investments can be used as a stepping stone to acquiring investee ventures. Such acquisitions, in turn, should raise industry concentration because M&As reduce the number of independent competitors in the market. We refer to this mechanism as *M&A*. Both the *learning* and *M&A* mechanisms should lead to increased industry concentration.

On the other hand, *within-industry* CVC investments can reduce industry concentration. Extant literature has documented that CVC-backed ventures benefit not only from financial resources but also from strategic advice, complementary assets, and enhanced credibility, all of which improve venture survival and growth prospects (Katila et al., 2008; Dushnitsky and Shaver, 2009; Park and Steensma, 2012; Colombo and Shafi, 2016; Jeon and Maula, 2022; Wunder and Maula, 2026). Paradoxically, CVC investors that operate within the same industry as new ventures stand in a unique position to nurture and empower new ventures, since CVC investors, equipped with industry-specific expertise, can offer complementary resources and strategic advice that directly address industry challenges (Katila et al., 2008; Dushnitsky and Shaver, 2009; Park and Steensma, 2012; Colombo and Shafi, 2016). This line of reasoning suggests that CVC may lower concentration by fostering the survival and growth of new entrants. We refer to this mechanism as *nurturing*, which should lead to decreased industry concentration.

Due to the above conflicting mechanisms, the role of *within-industry* CVC investments in shaping industry concentration remains theoretically unclear (Brigl et al., 2016). To the best of our knowledge, no prior study has provided direct evidence on this relationship at the industry level. Our study aims to fill this gap by offering an initial answer to this important question: How do *within-industry* CVC investments shape industry concentration?

For this purpose, we assemble a novel panel dataset organized at the industry level, which allows us to measure concentration and aggregate *within-industry* CVC investments, alongside other financial data, across diverse industries in the United States during the period 2001–2019. To mitigate endogeneity and reverse causality concerns, we employ instrumental variable regressions in line with prior studies on industry concentration (Aghion et al., 2005; Bessen, 2020).

Our analyses show a positive and significant relationship between within-industry CVC investments and industry concentration. In other words, *within-industry* CVC activity appears to operate more as a mechanism for raising industry concentration than as a vehicle for promoting competition. Thus, the *nurturing* mechanism receives little empirical support. We take a further step to examine whether the concentration-enhancing effect is attributable to the learning or M&A mechanism. While the effect of *within-industry* CVC as a whole is positive and significant, the effect of *within-industry* CVC investments culminating in M&As is statistically insignificant. We also find rare instances of *within-industry* CVC culminating in M&A. These findings imply that the *learning mechanism* prevails over the *M&A mechanism*.

The contribution of this paper is threefold. First, we provide the first empirical evidence on the industry-level consequences of *within-industry* CVC investments, moving the discussion beyond firm-level outcomes and pointing out that incumbents' use of CVC is not only a tool for firm-level innovation and renewal (Dushnitsky and Lenox, 2005a; Wadhwa and Kotha, 2006; Van de Vrande et al., 2011; Keil et al., 2016; Belderbos et al., 2018) but also a force that can shape industry structure. While recent firm-level studies have examined how CVC influences innovation and learning within industries (Bendig et al., 2024; Wunder and Maula, 2026), our contribution is distinct in that we explore these dynamics at the industry level and examine concentration as the outcome — a macro-level structural consequence that firm-level analyses are not designed to capture.

Second, we elucidate the mechanisms behind the CVC effect. Specifically, we demonstrate that *within-industry* CVC investments that result in acquisition of investee ventures are *not* the main driver of concentration. Instead, the increase in concentration appears primarily attributable to the *learning* mechanism.

Third, we extend the broad literature on industry concentration (Grullon et al., 2019; Covarrubias et al., 2019; Bessen, 2020) by identifying within-industry CVC as a previously underexplored driver of industry dynamics. These contributions not only enrich academic research but also have practical implications for regulators and policymakers, by providing a better understanding of how this form of venture financing can affect industry concentration and, in turn, societal welfare.

The remainder of this paper is organized as follows. Section 2 reviews the literature and presents our theoretical arguments. Section 3 describes the data, variables, and methods. Section 4 reports the empirical results. Section 5 concludes with a discussion of implications, limitations, and avenues for future research.

2. Theory and hypotheses

2.1. Theoretical background

We first examine existing literature that investigated CVC investments at the *firm* level. We then build on the insights from firm-level studies to develop arguments at the *industry* level, in particular on how *within-industry* CVC investments shape industry concentration. We uncover three distinct mechanisms underscoring the impact of CVC on industry concentration: *M&A* (Dushnitsky and Lenox, 2006; Benson and Ziedonis, 2009; Wadhwa et al., 2016), *learning* (Cohen and Levinthal, 1990; Wiklund and Shepherd, 2009; Titus and Anderson, 2018), and *nurturing* (Katila et al., 2008; Park and Steensma, 2012; Basu et al., 2016). While the first two mechanisms (i.e., M&A and learning) tend to increase industry concentration, the third one, nurturing, tends to reduce it. In the following sections, we discuss these mechanisms in detail.

2.2. CVC investments leading to acquisition of investee ventures

Prior research highlights that incumbents often use CVC investments to gain insights into investee ventures (Dushnitsky and Lenox, 2006; Wadhwa et al., 2016) and to identify promising M&A targets, particularly those with disruptive technologies (MacMillan et al., 2008; Benson and Ziedonis, 2009; Sahaym et al., 2010; Colombo and Shafi, 2016). CVC investments enable incumbents to closely track investee ventures' operations, technologies, and trajectory, which effectively provides an

insider perspective on the upside potential of investee ventures and creates a real option to acquire investee ventures subsequently (Dushnitsky and Lenox, 2005b; Benson and Ziedonis, 2009, 2010; Tong and Li, 2011; Van de Vrande and Vanhaverbeke, 2013). Empirical studies confirm that CVC-backed ventures can be acquired by their corporate investors (Benson and Ziedonis, 2009, 2010). Recent examples include Ryder Systems' 2021 investment in Baton, followed by an acquisition in 2022 (Ryder Systems, 2022) and Google's 2016 investment in and subsequent acquisition of the data analytics platform Looker (Konrad, 2017; Nicas, 2019). In sum, CVC investments in entrepreneurial ventures create a strategic acquisition option, enabling incumbents to internalize promising ventures and strengthen incumbents' own competitive position.

2.3. CVC investors learning from investee ventures

CVC investments enable incumbents to familiarize themselves with new technologies and business opportunities (Dushnitsky, 2006; Weber et al., 2016; Dushnitsky and Yu, 2022). Essentially, CVC functions as an alert mechanism that orients corporate top management toward external technology opportunities (Van de Vrande and Vanhaverbeke, 2013; Basu et al., 2016; Schückes et al., 2025) and discontinuous technologies in particular (Maula et al., 2013). In this regard, CVC investments heighten incumbents' awareness of their own capability gaps. Exposure to investee ventures' technologies, processes, and market approaches clarifies where the firm's capability base is deficient, thereby informing where to acquire, develop, or reconfigure capabilities (Keil et al., 2008). Moreover, geographic diversity in CVC portfolios can enhance technological performance by allowing access to a broad array of firms and their networks embedded in local innovation systems, each with distinct knowledge bases and approaches to knowledge development (Belderbos et al., 2018). The effectiveness of this learning process depends on the absorptive capacity of corporate investors (Benson and Ziedonis, 2009).

CVC investments can further facilitate knowledge transfer from investee ventures to corporate investors. This transfer can encompass technological know-how, market insights, and innovative business models (Dushnitsky and Lenox, 2005a, 2005b; Dushnitsky and Shaver, 2009; Ryu et al., 2025). For instance, CVC investors can gain insights into emerging technologies, new market trends, and innovative business practices (Benson and Ziedonis, 2009; Chemmanur et al., 2014; Dushnitsky and Lenox, 2005b, 2006; MacMillan et al., 2008; Narayanan et al., 2009). Learning occurs through various channels, including board representation, rotation of personnel, observer roles, blueprint collaborations, strategic alliances, frequent social interactions, and informal knowledge sharing (Wiklund and Shepherd, 2009; Basu et al., 2011; Basu et al., 2016; Wadhwa et al., 2016).

Schildt et al. (2005) suggest that CVC programs are primarily aligned with exploratory learning tools, especially in competitive and rapidly evolving business environments (Kim et al., 2016). However, Keil et al. (2016) argue that CVC initiatives strike a balance between exploration and exploitation, fostering innovation and leveraging existing resources. Bendig et al. (2024) suggest that the career background of CVC unit heads, specifically their entrepreneurial and engineering experiences, acts as an “attentional filter” that determines whether the parent firm achieves explorative or exploitative breakthroughs. Moreover, Dushnitsky and Yu (2022) suggest that incumbents may use CVC investments not only to activate learning through windows on new technologies, but also to pursue growth through market expansion.

CVC investments can significantly enhance corporate investors' competitive positions through acquired knowledge and capabilities from its portfolio ventures (Maula et al., 2013; Wadhwa and Kotha, 2006; Gaba and Bhattacharya, 2012; Pahnke et al., 2015; Haslanger et al., 2022; Chen et al., 2023). Studies demonstrate that CVC investments boost incumbent innovation performance by providing access to knowledge from CVC-backed ventures, particularly when there is high involvement from corporate investors (Dushnitsky and Lenox, 2005a, 2005b; Wadhwa and Kotha, 2006; Van de Vrande et al., 2011). Moreover, the innovation performance of CVC investors is especially pronounced when corporate investors have diverse CVC portfolios (Wadhwa et al., 2016). Titus and Anderson (2018) find that firms realize material positive valuation gains from CVC investments, especially when they are operationally concentrated and operate in less munificent environments. This suggests that operational concentration may accelerate or amplify learning from CVC investments, as focused firms may be better equipped to assimilate and exploit relevant knowledge due to their depth of expertise in fewer strategic activities. Huang and Madhavan (2021) argue that learning from CVC investments provides an advantageous competitive position, potentially boosting long-term financial value. As incumbents investing through CVC strengthen their competitive positions, they can translate these advantages into greater market power, which in turn can shape industry dynamics.

From another perspective, *within-industry* CVC investments may serve as a strategic tool for incumbents to navigate the challenges of creative destruction, helping them preserve their existing businesses while also gaining access to disruptive innovations, especially in rapidly changing markets (Malerba and Orsenigo, 1995; Hussinger et al., 2018). Incumbents may use *within-industry* CVC investments to explore innovations that might disrupt their own core businesses and experiment with emerging trends. This would allow incumbents to stay at the forefront of technological advancements, which is crucial in securing superior competitive positions in the market (Ahuja and Katila, 2001; Chen et al., 2023). At the same time, a related stream of research has examined how the level of competition alters the propensity to conduct CVC investments. For instance, Kim et al. (2016) and Chen et al. (2023) provide empirical evidence that competitive pressures enhance incumbents' incentives to engage in CVC investments, leading to more CVC activity. In sum, CVC investors invest in innovative ventures to absorb knowledge and reduce obsolescence risks, thereby strengthening their competitive positioning, especially in rapidly changing markets.

2.4. CVC investors nurturing investee ventures

CVC investments can contribute to fostering innovation and growth of young ventures (Katila et al., 2008; Colombo and Shafi, 2016). Beyond financial support, CVC offers complementary and industry-specific resources such as knowledge, strategic advice, and networking opportunities that directly address challenges common to the industry (Katila et al., 2008; Diestre and Rajagopalan, 2012; Maus et al., 2024). This support facilitates new market entries and exerts a positive influence on the growth of new ventures, thus stimulating competition within industries (Di Lorenzo and Van de Vrande, 2019).

CVC investors, with their established market presence, can provide valuable industry-specific knowledge in transforming young ventures' innovations into commercially viable products (Dushnitsky and Lenox, 2005a; Katila e al., 2008; Dushnitsky and Shaver, 2009; Park and Steensma, 2012; Paik and Woo, 2017). This process reflects CVC investors' nurturing orientation toward investee ventures (Basu et al., 2016). Moreover, CVC investors often exhibit a greater tolerance for failure and adopt longer investment horizons, compared to IVC investors (e.g., Chemmanur et al., 2014; Paik and Woo, 2017). This is especially beneficial in industries requiring significant resources for technology development, where CVC allows young ventures to focus more on innovation and growth than on continuous fundraising (Katila et al., 2008; Jeon and Maula, 2022). This nurturing orientation helps ventures overcome common industry challenges through CVC knowledge and market position, stimulates venture growth, and increases the competitiveness of ventures, especially under conditions of uncertainty (Diestre and Rajagopalan, 2012; Park and Steensma, 2012; Balachandran, 2024).

CVC nurturing brings various benefits to investee ventures. Research shows that CVC-backed ventures, compared to IVC-backed ventures,

tend to be more innovative, as reflected in patenting, even though CVC-backed ventures are younger, riskier, and less profitable (Chemmanur et al., 2014). This suggests that CVC investors have a superior ability to select ventures with high innovation potential or nurture innovation after investment (Park and Steensma, 2012; Chemmanur et al., 2014). Research also shows that CVC-backed ventures are at least as successful as IVC-backed ventures in terms of the probability of going public (Gompers and Lerner, 2000). Literature further indicates that CVC investments significantly increase the commercial performance of new ventures (Sabel and Di Lorenzo, 2020), leading to higher venture valuations at initial public offerings (IPOs) and greater takeover premiums for ventures with strategic CVC backing (Ivanov and Xie, 2010). Moreover, in the realm of green innovation, investigating firm-level effects, Wunder and Maula (2026) highlight that CVCs are more prone to nurture new ventures in presence of resource complementarity. These benefits of CVC backing can be attributed to the tailored services and support as well as the endorsement and certification that CVC investors provide (McNally, 1997). In sum, CVC can strengthen young ventures by providing resources, expertise, and credibility, thereby improving their survival and growth prospects.

2.5. Hypothesis development

While existing research has offered significant insights into the impact of CVC investments on firm-level outcomes such as innovation (e.g., Dushnitsky and Lenox, 2006; Benson and Ziedonis, 2009) and performance (e.g., Wadhwa et al., 2016; Ma, 2020), the question remains as to whether and how within-industry CVC investments shape industry dynamics. Our study takes the first step on this task. We build on the preceding discussion at the firm level and uncover three mechanisms linking within-industry CVC activity to changes in industry concentration.

First, CVC's acquisition of investee ventures (M&A) represents the most direct pathway through which within-industry CVC increases industry concentration. By combining an initial minority stake with subsequent acquisition, incumbents can eliminate potential rivals while internalizing the innovations of investee ventures. Prior work suggests that CVC investments create an acquisition option: by making early minority equity investments, incumbents gain insider knowledge about the potential of investee ventures, which generates privileged opportunities to acquire them, while competitors may be deterred by information asymmetry (Benson and Ziedonis, 2009, 2010; Dushnitsky and Lenox, 2005b; Li et al., 2025; Tong and Li, 2011). Unlike conventional M&As between established players, CVC-driven acquisitions might occur earlier in a venture's lifecycle, pre-empting its development into an independent challenger. This dynamic consolidates promising innovations under incumbent control and reduces the number of independent firms in the market. As a result, the *M&A mechanism* could in principle accelerate industry concentration not only through firm exit, but also through the systematic integration of new entrants before they can reshape the industry structure (Ceccagnoli et al., 2018; Katila et al., 2008; Fathollahi et al., 2022).

Second, *learning* is the less intuitive *mechanism* that can increase industry concentration. *Within-industry* CVC investments provide incumbents with access to investee ventures' knowledge and technologies, regardless of whether they subsequently acquire investee ventures. These newfound assets can significantly enhance CVC investors' competitive edge in their industry, not only *vis-à-vis* the new entrants (i.e., the young ventures) but also (and more importantly) *vis-à-vis* other incumbent firms (Benson and Ziedonis, 2009; Chemmanur et al., 2014; Chen et al., 2023; Dushnitsky and Lenox, 2005b, 2006; MacMillan et al., 2008). Specifically, CVC investors may leverage the acquired knowledge and technologies to commercialize products or technologies, potentially sidelining new ventures in the market (Park and Steensma, 2012; Colombo and Shafi, 2016). At the same time, this can exacerbate the competitive disparities among incumbents (Chen et al., 2023), strengthening the market position of those with access to such resources via CVC investments.

Both the *M&A* and *learning* mechanisms point to the same outcome: they strengthen incumbents in ways that ultimately raise industry concentration. When *within-industry* CVC investments become a more salient form of financing relative to other funding sources, they not only increase the likelihood that incumbents will convert minority stakes into acquisitions but also expand the opportunities for them to absorb knowledge from entrepreneurial ventures. Together, these mechanisms reinforce incumbents' competitive advantages and reduce the space for independent rivals. We therefore hypothesize that:

H1a. A higher salience of within-industry CVC investments increases industry concentration.

These concentration-enhancing mechanisms are counteracted by the *nurturing* mechanism. Increased *within-industry* CVC investments will provide more financial resources to young ventures, promoting venture survival in early stages and growth in later stages. More importantly, CVC-backed ventures can benefit from knowledge, strategic advice, and endorsement of incumbents (Katila et al., 2008; Dushnitsky and Shaver, 2009; Park and Steensma, 2012; Colombo and Shafi, 2016). Therefore, when within-industry CVC assumes greater salience relative to other financing sources, young firms gain not only capital but also complementary resources, strategic advice, and reputational endorsement that improve their survival and accelerate their growth. By strengthening new entrants and enabling them to compete more effectively against incumbents, nurturing expands the pool of viable competitors and sustains a more dispersed market structure. We therefore hypothesize that:

H1b. A higher salience of within-industry CVC investments reduces industry concentration.

3. Data & methods

3.1. Data setting

To test the competing hypotheses, we constructed a large panel dataset by aggregating CVC investments and other data at the industry level, while also calculating concentration across industries in the United States from 2001 to 2019. We chose this specific time for several reasons: first, to avoid the Dot-com bubble's peak in 2000 and the effects of COVID-19 pandemic since 2020; second, to capture a meaningful period both before and after the 2007–2008 financial crisis and the subsequent policy changes; and third, to minimize the impact of heightened anti-trust scrutiny on large technology companies, key players in the CVC space, that started in July 2019 when the U.S. Department of Justice opened a broad antitrust review of major technology companies.

We built our sample from four databases: Compustat North America, VentureXpert venture capital funding data, SDC Platinum M&A, and VentureXpert M&A. From Compustat North America we gathered firm-level financial data, which we aggregated at the industry level. Consistent with industry-level studies (e.g., Rajan and Zingales, 1998), we identify industry at the three-digit SIC code level. From VentureXpert, we gathered VC deal-level information, including investee name, investor name, and the date of investment, as well as deal characteristics including whether the investors were CVC or IVC investors. For CVC investments, we were able to distinguish whether the investors and investees were active in the same industry at three-digit, two-digit, and one-digit SIC code levels. Data collected from VentureXpert were then aggregated at three-digit SIC code level. Lastly, we gathered M&A data from SDC Platinum M&A and VenturExpert M&A datasets, and aggregated them at the three-digit SIC code level. We removed CVC deals with SIC codes directly connected to public administration and CVC deals for which we did not have sufficient information to perform our analysis. The final sample comprises an unbalanced panel dataset, consisting of

252 *three-digit* level industries in the United States observed from 2001 to 2019, resulting in a total of 4013 observations.

3.2. Variables

3.2.1. Dependent variable

It is the *Industry Concentration*, measured as the Herfindahl-Hirschman index (HHI) at the three-digit SIC code level for each industry and year. HHI is a widely recognized and reliable metric for assessing market concentration based on sales, with higher values indicating more concentrated markets (Daughety, 1990; Ino and Matsumura, 2012; Nocke and Whinston, 2022).

3.2.2. Independent variable

The primary independent variable is *Within-Industry CVC Salience*, measured as the ratio between the number of *within-industry* CVC investments and the total number of investments received by all entrepreneurial ventures operating in the focal industry in a given year. Specifically, our independent variable is calculated as follows:

$$\textit{Within industry CVC salience}_{it} = \frac{\textit{Within industry CVC Investments}_{it}}{\textit{Total industry attracted investments}_{it}}$$

where *i* indexes industry (at the three-digit SIC level) and *t* indexes each year. The **numerator is** the number of CVC investments in year *t* where both the corporate investor and the entrepreneurial venture belong to the same three-digit SIC code. The **denominator is** the total number of investments received by ventures in industry *i* during year *t*, including (1) within-industry CVC investments, (2) CVC investments from outside industries, and (3) all other investments from IVC investors and other types of investors.

This ratio allows us to estimate the prominence of *within-industry* CVC investments, particularly those made by potential competitors, relative to the entire spectrum of venture investments within a specific industry. This variable is industry-specific and time-varying. In further robustness analyses, we test our results using an alternative measure (*Within-Industry CVC over Total CVC*), where the denominator is the total CVC investments attracted by the industry from within and outside the industry, excluding non-CVC investments (i.e., investments from IVCs and other types of investors).

3.2.3. Control variables

We estimate robust panel fixed effects models, which capture industry-level time-invariant effects. We also control for five industry-level time-varying variables, which we believe account for important industry dynamics influencing industry concentration. First, *Average Industry Attracted Investments* is calculated for each year as the total number of investments (CVC and non-CVC) received by ventures within the focal industry divided by the number of firms operating in that industry. This variable offers insights into the industry's overall capacity to attract investments over time, whether originating from within the industry or from outside (including non-CVC investors). Second, *Average Industry M&As* is computed for each year as the number of M&A deals exclusively involving firms within the focal industry, divided by the total number of firms in that industry. Third, we consider the attractiveness of an industry by calculating the *Industry Sales Growth Rate* on an annual basis. This variable provides insights into the industry's dynamism and potential for growth (in percentage compared to the previous year), which can be associated with shifts in market concentration. Fourth, *Average Industry Sales* captures the average firm size within the industry in a given year (in USD millions). This variable accounts for variations in average firm size across different industries, which may affect market concentration. Fifth, *Average Industry R&D Expenses* measures for each year the mean expenditure of firms on research and development activities (in USD millions) within the focal industry, which accounts for variations of industry concentration that may be related to consolidated technologies and deep patent stock by industry incumbents.[1]

We also include time dummies (*Year 20XX* dummies), one for each year in the sample, to address potential time effects. These dummies help capture any temporal variations that may influence industry concentration.[2]

To strengthen causal interpretation, we apply theory-informed lags to our main variables. The influence of *within-industry* CVC investments on industry concentration is not likely to materialize immediately, unless the M&A mechanism plays a substantial role. It takes time for CVC investors to translate new knowledge and capabilities acquired through CVC into concrete competitive benefits (Dushnitsky and Lenox, 2006). Accordingly, the main independent variable, *Within-Industry CVC Salience*, representing the ratio of CVC investments internal to the focal industry, takes a 2-year lag. Similarly, we take a 2-year lag of the variables *Average Industry Attracted Investments* and *Average Industry R&D Expenses*, since it takes time for investments and expenditures in research and development activities, like within-industry CVC investments, to materialize in innovative technologies that can shape industry concentration (Bajgar et al., 2025). We take a 1-year lag of the variables *Industry Sales Growth Rate* and *Average Industry Sales*, because these variables capture more immediate dynamics: changes in growth rate and sales are expected to influence industry concentration more quickly, as they reflect industry attractiveness and revenue generation capacity (Bajgar et al., 2025; Caves and Porter, 1980). Both are directly tied to the calculation of the Herfindahl–Hirschman Index (HHI), which is based on firms' market shares. The shorter lag duration for these variables reflects their more immediate influence on industry dynamics while also mitigating the possibility of reverse causality. Finally, no lag is applied to *Average Industry M&As*, since their impact on industry concentration is immediate: once an M&A occurs, the market shares of the combined firms are aggregated, directly altering the HHI (Grullon et al., 2019; Nocke and Whinston, 2022). In the robustness test section, we conduct further tests by using uniform and varied lag structures across the explanatory variables. Table 1 presents the descriptive statistics. Table 2 reports the correlation matrix.

4. Results

4.1. Effect of within-industry CVC on industry concentration

We begin our analyses by investigating the effect of CVC investments on industry concentration. A positive and significant coefficient on the variable *Within-Industry CVC Salience* would indicate that the *M&A* and *learning* mechanisms prevail, supporting hypothesis *H1a*. Conversely, a negative and significant coefficient would suggest that the *nurturing* mechanism dominates, consistent with hypothesis *H1b*.

Table 3 presents the results. In the first column, we include only control variables. Notably, *Average Industry M&As* and *Industry Growth Rate* are both positive and statistically significant (Grullon et al., 2019; Stiebale and Szücs, 2022; Testoni, 2022). In the second column of Table 3, we add our variable of interest *Within-Industry CVC Salience*.[3] The coefficient of this variable is positive and significant ($\beta = 0.264$, $p < 0.01$), supporting *H1a*. That is, an increase in the relative salience of *within-industry* CVC investments is related to an increase in industry concentration, suggesting that CVC investments tend to be used as a strategic device to enhance CVC investors' competitive position in their

[1] Other financial variables, such as average industry assets, are not included in the analysis as they exhibit high correlation with the included variables.

[2] In our regression models we apply the logarithm to *Average Industry M&As*, *Average Industry Sales* and *Average Industry R&D Expenses*.

[3] Results are largely robust to an alternative specification of our independent variable as reported in the third column of Table 3 as well as in Tables 6 and 7, and discussed in greater details in the robustness tests section.

Table 1
Sample descriptive statistics.

Descriptive Statistics				
Variables for the main analysis	Mean	Std. Dev.	Min	Max
Industry Concentration	0.361	0.272	0.0003	1.000
Within-Industry CVC Salience	0.001	0.011	0.000	0.333
Average Industry Attracted Investments	0.785	2.162	0.000	58.563
Average Industry M&As	1.337	1.975	0.000	33.750
Average Industry R&D Expenses (USD millions)	43.153	106.957	0.000	1760.522
Average Industry Sales (USD millions)	3307.700	7509.323	0.027	129,025.000
Industry Sales Growth Rate	0.102	0.365	−0.999	7.347
Variables for IV regression models	**Mean**	**Std. Dev.**	**Min**	**Max**
External Financial Dependence	0.022	0.830	−1.992	21.948
DoddFrank	0.415	0.492	0.000	1.000
Manufacturing Industry	0.061	0.240	0.000	1.000
Variables for additional analyses	**Mean**	**Std. Dev.**	**Min**	**Max**
Within-Industry CVC over Total CVC	0.015	0.089	0.000	1.000
Average Industry CVC Attracted Investments	0.045	0.173	0.000	3.563
Average Industry non-CVC Attracted Investments	0.739	2.015	0.000	55.000
Average Industry M&As from same CVC investors	0.000	0.001	0.000	0.029
Average Industry M&As from CVC investors' competitors	0.000	0.003	0.000	0.118
Average Industry M&As from outside the industry	0.000	0.005	0.000	0.250
Average Industry M&As unrelated to within-industry CVC	1.312	1.980	0.000	33.750

industry, rather than as a tool to nurture venture growth.

4.2. Learning or M&A?

We turn our attention to disentangling which of the two mechanisms is more likely to explain the positive relationship between within-industry CVC investments and industry concentration: *M&A* or *learning*.

We start by examining the direct impact of the M&A mechanism on industry concentration. Drawing from the databases at our disposal, we were able to distinguish (1) acquisition of *within-industry* CVC-backed ventures where the acquiror was the original CVC investor (*Average Industry M&As from same CVC investors*), (2) acquisition of *within-industry* CVC-backed ventures carried out by a competitor of the investor (*Average Industry M&As from CVC investors' competitors*), and (3) acquisition of *within-industry* CVC-backed ventures by firms from outside the focal industry (*Average Industry M&As from outside industry*), in addition to (4) acquisition of all other types in the industry that are unrelated to *within-industry* CVC investments (*Average Industry M&As unrelated to within-industry CVC*), namely those where the target company had no prior CVC investment from a within-industry incumbent.

We found that acquisitions by the original CVC investor were rare in our sample, with only 39 cases, and acquisitions by competitors or outside firms were also relatively limited in number (348 and 295, respectively). Table 4 reports the regression results. None of these types of acquisitions following *within-industry* CVC investments (i.e., acquisitions by the investors, by their rivals, or by outside firms) exerts a statistically significant effect on industry concentration. By contrast, we observe a positive and significant effect of M&As unrelated to *within-industry* CVC investments, on industry concentration; this result is

Table 2
Correlation matrix.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Industry Concentration																
2	Within-Industry CVC Salience	−0.08*															
3	Average Industry Attracted Investments	−0.01	0.06*														
4	Average Industry M&As	0.07*	−0.04*	0.24*													
5	Average Industry R&D Expenses	−0.10*	0.14*	0.05*	−0.11*												
6	Average Industry Sales	−0.06*	0.02	−0.08*	−0.02	0.38*											
7	Industry Sales Growth Rate	0.07*	−0.02	0.03	0.01	−0.07*	0.02										
8	External Financial Dependence	0.11*	0.01	0.02	−0.05*	−0.01	−0.19*	0.02									
9	DoddFrank	0.03	−0.00	0.03*	0.11*	0.12*	0.20*	−0.04*	−0.07*								
10	Manufacturing Industry	−0.12*	−0.02	−0.07*	−0.12*	−0.04*	−0.11*	−0.03	0.12*	0.02							
11	Within-Industry CVC over Total CVC	−0.13*	0.84*	0.10*	−0.04*	0.18*	0.01	−0.02	0.03	0.00	−0.02						
12	Average Industry CVC Attracted Investments	−0.04*	0.11*	0.86*	0.17*	0.06*	−0.07*	0.02	0.01	0.01	−0.06*	0.12*					
13	Average Industry non-CVC Attracted Investments	−0.01	0.06*	0.99*	0.24*	0.05*	−0.08*	0.03	0.02	0.04*	−0.07*	0.09*	0.84*				
14	Average Industry M&As from same CVC investors	−0.05*	0.06*	0.08*	−0.01	0.06*	−0.01	−0.00	−0.02	−0.02	−0.01	0.09*	0.07*	0.08*			
15	Average Industry M&As from CVC investors' competitors	−0.10*	0.17*	0.30*	0.02	0.11*	−0.02	−0.00	0.01	0.01	−0.03	0.25*	0.32*	0.29*	0.15*		
16	Average Industry M&As from outside industry	−0.05*	0.07*	0.16*	0.05*	0.08*	−0.01	0.01	0.01	0.02	−0.02	0.13*	0.16*	0.16*	0.05*	0.16*	
17	Average Industry M&As unrelated to within-industry CVC	−0.44*	0.13*	0.25*	0.66*	0.12*	0.02	−0.02	−0.05*	0.03	−0.05*	0.21*	0.21*	0.25*	0.07*	0.19*	0.12*

For ease of exposition, we do not report the correlation coefficients involving the temporal dummies. However, these coefficients are never higher than 0.07.
* $p < 0.05$.

Table 3
Fixed effects regression models.*

	Only controls	*Including Within-Industry CVC Salience*	*Including Within-Industry CVC over Total CVC*
Within-Industry CVC Salience (2-lag)	–	0.264*** (0.094)	0.022 (0.016)
Average Industry Attracted Investment (2-lag)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Average Industry M&As (1-lag) (ln)	0.059*** (0.014)	0.060*** (0.014)	0.059*** (0.014)
Average Industry R&D Expenses (2-lag) (ln)	−0.003 (0.007)	−0.003 (0.007)	−0.003 (0.007)
Average Industry Sales (1-lag) (ln)	0.013 (0.011)	0.013 (0.011)	0.013 (0.011)
Industry Sales Growth Rate (1-lag)	0.021*** (0.008)	0.021*** (0.008)	0.021*** (0.008)
Year dummies	Included	Included	Included
Industry fixed effects	Included	Included	Included
Constant	0.176** (0.071)	0.176** (0.071)	0.176** (0.071)
N. obs	4013	4013	4013
N. 3-digit SIC code industries	252	252	252
F (p-value)	0.000	0.000	0.000
R^2 *within*	0.116	0.117	0.117
R^2 *between*	0.022	0.023	0.024
R^2 *overall*	0.006	0.006	0.005

The dependent variable in these models is *Industry Concentration.* Robust standard errors in parentheses.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

Table 4
Fixed effects regression models for M&A mechanisms.*

	M&As variables as absolute values	*M&As variables as ratio of total M&As*
Average Industry M&As from same CVC investors	−0.329 (0.951)	0.026 (0.060)
Average Industry M&As from CVC investors' competitors	−0.140 (0.180)	−0.139 (0.214)
Average Industry M&As from outside the industry	−0.039 (0.108)	−0.061 (0.181)
Average Industry M&As unrelated to within-industry CVC	0.048*** (0.013)	–
Average Industry M&As	–	0.059*** (0.014)
Average Industry Attracted Investment (1-lag)	0.002 (0.002)	0.001 (0.002)
Average Industry R&D Expenses (2-lag) (ln)	−0.003 (0.007)	−0.003 (0.007)
Average Industry Sales (1-lag) (ln)	0.014 (0.011)	0.015 (0.011)
Industry Sales Growth Rate (1-lag)	0.021*** (0.008)	0.021*** (0.008)
Year dummies	Included	Included
Industry fixed effects	Included	Included
Constant	0.177** (0.071)	0.176*** (0.071)
N. obs	4013	4013
N. 3-digit SIC code industries	252	252
F (p-value)	0.000	0.000
R^2 *within*	0.111	0.116
R^2 *between*	0.030	0.021
R^2 *overall*	0.005	0.006

The dependent variable in both models is the same as in Table 3: *Industry Concentration.* Robust standard errors in parentheses.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

consistent with prior literature on M&A and industry structure (Grullon et al., 2019; Nocke and Whinston, 2022).

The above findings are consistent with the idea that ventures acquired after receiving CVC funding are typically younger firms with smaller revenues relative to their acquirors and the industry at large. CVC investments, by design, prioritize early-stage deals (CB Insights, 2025) and focus on ventures that are younger and smaller than industry incumbents (Jeon and Maula, 2022). Recent research indicates that CVC-backed ventures tend to be younger, riskier, and less profitable than IVC-backed ventures at financing and IPO (Chemmanur et al., 2014). Policy reports explicitly note that acquisitions of innovative start-ups with low turnover often escape revenue-based acquisition thresholds and rely on transaction-value thresholds; this is especially the case in digital and pharma industries, where targets are commonly pre-revenue or early-revenue (OECD, 2020). For these reasons, it is reasonable to expect that acquisition of CVC-backed ventures does not materially alter competitive balances within the industry, at least in the short-medium term.

Taken together, the results indicate that *within-industry* CVC culminating in M&A, irrespective of the acquiror, does not significantly increase industry concentration. Although the learning mechanism is difficult to observe directly, the evidence allows us to rule out acquisition as the operative mechanism. This leaves learning as the more plausible mechanism.

4.3. Instrumental variable estimation

The relationship between industry concentration and *within-industry* CVC investments, as well as other investments attracted by the industry, may be endogenous for two reasons. First, some firm-level studies highlight that more competitive industries (e.g., industries with lower concentration) may induce higher levels of CVC (and other investments in the industry). If so, reverse causality is a concern (Fulghieri and Sevilir, 2009; Kim et al., 2016; Chen et al., 2023). Second, higher levels of industry concentration, *within-industry* CVC investments, and other investments attracted by the industry may be driven by common unobserved factors, possibly leading to omitted variables bias. Below, we address the potential endogeneity of two variables in the model, namely *Within-Industry CVC Salience* and *Average Industry Attracted Investments*, by estimating two-stage models with instrumental variables.

To identify instruments, we take advantage of a key legislative change that occurred in the US during our sample period: the Dodd-Frank Wall Street Reform and Consumer Protection Act, formally proposed on June 2009 and later enacted on July 21, 2010. This Act overhauled regulation on financial markets in response to the 2007–2008 financial crisis. It is particularly well-suited as an instrumental variable, due to its nature as an exogenous shock to the economy (Aghion et al., 2005; Bessen, 2020). This legislative shift is likely to have affected the overall levels of investments, including *within-industry* CVC investments, as it altered the regulatory landscape and influenced investment dynamics. The idea is that the legislative change has altered industries' access to capital, including CVC funding. In turn, the amount of available capital shapes the structure of these industries, with some companies increasing their market power, and others being forced to exit the business.

While the legislative change is not industry-specific, its impact may well vary across industries depending on different industry characteristics. First, its impact may depend on the external financial dependence of an industry. Research shows that industries differ in their level of dependence on external finance, relative to internal resources, to fund their capital expenditures (Rajan and Zingales, 1998). Since the Dodd-Frank Act is a law influencing the provision of financial resources, it is reasonable to expect that industries with a higher degree of external financial dependence will experience a more pronounced impact from this legislative change, and so will their level of CVC investments. Second, we believe that the average size of firms in an industry is expected

to influence the magnitude of changes resulting from this Act. Industries with different average firm sizes may experience different ripple effects from the regulatory shifts introduced by the law due to their different scale and ability to respond to changes. Finally, due to their elevated need for capital investment, manufacturing industries (SIC codes 20–39) are more exposed than other industries (e.g., services) to the impact of the law (Raddatz, 2006; Larrain, 2006; Manganelli and Popov, 2015).

Our empirical strategy is thus to consider the interaction effects between the legislative change reflected in the Dodd-Frank Act, and industry characteristics, in estimating Instrumental Variables (IVs) fixed effects regression models. By incorporating the level of external financial dependence, as well as the size and type of industry, we aim to better account for the heterogeneity in the impact of the Dodd-Frank Act across industries. Accordingly, in the first stage regression, we include three interaction terms: *External Financial Dependence x DoddFrank*, *Average Industry Sales x DoddFrank*, and *Manufacturing Industry x DoddFrank*. The variable *DoddFrank* is a dummy that takes value 0 for years prior to the formal proposition of the law and 1 since the proposition. *External Financial Dependence* is measured as the fraction of the capital expenditures not covered by the net cash flow from operations (Rajan and Zingales, 1998). *Manufacturing Industry* takes value 1 for SIC codes from 20 to 39 (i.e., those indicating manufacturing industries), and 0 otherwise. The variable *External Financial Dependence* is also introduced in the first stage regression.[4] The inclusion of these three interaction terms in the IV regression model leads to a reduction in the sample size to 3396 observations, due to missing data in constructing the variable *External Financial Dependence* as well as the presence of outliers in the same variable when compared to the values available in Rajan and Zingales (1998), especially regarding the negative values of this variable. Based on the above considerations, we believe these instruments satisfy the exclusion restriction condition.[5]

The first two columns of Table 5 report the results of the first stage regressions. The supposedly endogenous variables, *Within-Industry CVC Salience* and *Average Industry Attracted Investments*, are regressed against the instrumental variables and control variables. The first-stage coefficients on the instruments are largely significant, thus supporting their relevance.[6] The third column of Table 5 reports the results of the second stage regression. The coefficient of the variable *Within-Industry CVC Salience* remains positive and significant, lending further support for *H1a*.

Table 5
Instrumental variables fixed effects regression models.

	1st Stage	1st Stage	2nd Stage
Dependent variable	*Within-Industry CVC Salience*	*Average Industry Attracted Investment*	*Industry concentration*
Within-Industry CVC Salience (2-lag)	–	–	12.824** (6.370)
Average Industry Attracted Investment (2-lag)	–	–	0.153** (0.062)
Average Industry M&As	−0.003** (0.001)	0.129 (0.150)	0.067** (0.033)
Average Industry R&D Expenses (2-lag)	0.000 (0.000)	−0.085 (0.059)	0.006 (0.011)
Industry Sales Growth Rate (1-lag)	0.000 (0.000)	−0.059 (0.069)	0.028** (0.013)
Average Industry Sales (1-lag)	−0.001 (0.001)	0.197 (0.141)	−0.010 (0.021)
Year dummies	Included	Included	Included
Industry fixed effects	Included	Included	Included
External Financial Dependence x DoddFrank (2-lag)	0.002** (0.001)	−0.167 (0.124)	–
Average Industry Sales x DoddFrank (2-lag)	0.001* (0.004)	−0.081 (0.054)	–
Manufacturing Industry x DoddFrank (2-lag)	−0.002* (0.002)	−0.271*** (0.090)	
External Financial Dependence (2-lag)	−0.001 (0.001)	0.147 (0.102)	
N. obs	3396	3396	3396
N. 3-digit SIC code industries	247	247	247
F-test (p-value)	–	–	0.000
SW - F-test of excluded instruments (p-value)	0.031	0.004	–
Anderson-Rubin Wald test (p-value)	–	–	0.000
Hansen J statistic (p-value)	–	–	0.744
PK Under-identification test	–	–	0.022

The dependent variable in the second stage is the same as in Table 3: *Industry Concentration.* Robust standard errors in parentheses.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

4.4. Robustness checks

We conduct additional tests to gauge the robustness of our findings. Specifically, we re-run our regressions with the inclusion of alternative independent variables, alternative lag structures and with the inclusion of additional control variables.

4.4.1. Alternative independent variable

We begin by varying the way we capture the salience of our independent variable, *within-industry CVC investments*. In the main analysis, this variable is measured relative to all investments received by the focal industry. Here, we instead use as a denominator only the CVC investments received by the focal industry. Put differently, we measure the salience of within-industry CVC investments relative to all CVC investments in the industry (i.e., from within and outside the industry). In this specification, we also control for the number of CVC investments and the number of non-CVC investments received by the focal industry jointly through the variable *Average Industry Attracted Investments*. The results in the third column of Table 3 and the entire Table 6 are largely consistent with our baseline estimates. In particular, the coefficient of the alternative independent variable exhibits the same direction although slightly losing significance ($p = 0.177$) in Table 3, but it is significant and positive in Table 6 where IVs are employed.

[4] We take the logarithm transformation of the external financial dependence. Moreover, note that the variable *DoddFrank* is automatically dropped from the first stage due to the presence of year dummies in our fixed effects regression model.

[5] Although the exclusion restriction condition cannot be directly tested for all instruments (Larcker and Rusticus, 2010), the Hansen overidentification test in Table 5 supports the exogeneity of *n-1* instruments. For the two supposedly endogenous variables, we have four instruments, the three interaction terms plus *External Financial Dependence*. Note that *Manufacturing Industry* may also be viewed as an instrument, but it drops automatically in the fixed effects estimations as it is not time-varying. Moreover, as discussed, our argument in favor of the exogeneity of our instruments is that they together reflect the impact of an exogenous policy shock, the Dodd Frank Act, on industry concentration across industries with differing characteristics (Aghion et al., 2005; Bessen, 2020).

[6] The Sanderson–Windmeijer multivariate F test in Table 5 indicates that our excluded instruments are jointly relevant for the endogenous regressors. However, the conditional F-statistics do not exclude potential concerns about weak instruments. To address this, we also performed the Anderson–Rubin Wald test, which is robust to weak instruments (Andrews et al., 2019). The test strongly rejects the null ($p < 0.001$), indicating that the coefficients on the endogenous regressors are jointly different from zero. Taken together, these results suggest that our IV estimates are not unduly biased by potentially weak instruments and that the main conclusions of our analysis remain robust.

Table 6
Instrumental variables fixed effects regression models with alternative measure of CVC salience.

	1st Stage	1st Stage	2nd Stage
Dependent variable	*Within-Industry CVC over Total CVC*	*Average Industry Attracted Investment*	*Industry concentration*
Within-Industry CVC over Total CVC (2-lag)	–	–	1.737** (0.820)
Average Industry Attracted Investment (2-lag)	–	–	0.128** (0.057)
Average Industry M&As	−0.014** (0.007)	0.129 (0.150)	0.060** (0.028)
Average Industry R&D Expenses (2-lag)	0.004 (0.003)	−0.085 (0.059)	0.002 (0.010)
Average Industry Sales (1-lag)	−0.005* (0.003)	0.197 (0.141)	0.002 (0.016)
Industry Sales Growth Rate (1-lag)	0.000 (0.002)	−0.059 (0.069)	0.023** (0.012)
Year dummies	Included	Included	Included
Industry fixed effects	Included	Included	Included
External Financial Dependence x DoddFrank (2-lag)	0.013*** (0.005)	−0.167 (0.124)	–
Average Industry Sales x DoddFrank (2-lag)	0.003** (0.002)	−0.081 (0.054)	–
Manufacturing Industry x DoddFrank (2-lag)	−0.021* (0.012)	−0.271*** (0.090)	
External Financial Dependence (2-lag)	−0.005 (0.004)	0.147 (0.102)	
N. obs	3396	3396	3396
N. 3-digit SIC code industries	247	247	247
F (p-value)	–	–	0.000
SW - F-test of excluded instruments (p-value)	0.010	0.001	–
Anderson-Rubin Wald test (p-value)	–	–	0.000
Hansen J statistic (p-value)	–	–	0.804
PK Underidentification test	–	–	0.018

The dependent variable in the second stage is the same as in Table 3: *Industry Concentration.* Robust standard errors in parentheses.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

4.4.2. Alternative lag structures

In Table 7, we revisit the lag structure used in our main models. The main specifications adopt a differentiated lag structure to reflect the distinct timing with which different variables are likely to influence industry concentration. To further test the robustness of this approach, we re-estimated our models using a uniform lag structure, applying no lag, a one-year lag, and a two-year lag to both explanatory and control variables. The results, presented in Table 7, confirm that the effect of *Within-Industry CVC Salience* is positive and significant only at the two-year lag. In the same table we also show robustness when considering the alternative measure *Within-Industry CVC over Total CVC*. These results are fully consistent with our baseline findings, suggesting that the invoked dominant mechanism (i.e., *learning*) requires time to materialize in terms of observable changes in industry concentration (Dushnitsky and Lenox, 2006). The estimated effects of the control variables remain largely in line with the original models, again supporting the notion of differentiated impacts across predictors.

4.4.3. Additional control variables

In both baseline and IV regression models, we already control for *Average Industry Attracted Investments*, which captures the potential impact of higher investments received by industries on industry concentration. In this section we conduct a robustness check by introducing an additional control variable, the average number of CVC investments that industries make in other industries, denoted as *Average Industry CVC Investments in Other Industries*. This addition allows us to consider the influence that investments made by the focal industry in other industries might have on the focal industry concentration, as they might be strategically employed by some incumbents to absorb knowledge and technological capabilities from outside the industry and enhance their competitive position at the detriment of other competitors, which will result in an increased concentration of the focal industry. Tables 8 and 9 report the results obtained under the base and IV regression models, showing that our results are robust.

Table 7
Fixed effects regression models with uniform lag structure.

	Only controls	*Including Within-Industry CVC Salience*	*Including Within-Industry CVC over Total CVC*
Within-Industry CVC Salience (No lag)	–	0.066 (0.092)	−0.015 (0.019)
(1-lag)	–	0.069 (0.111)	0.015 (0.016)
(2-lag)	–	0.321*** (0.109)	0.026* (0.016)
Average Industry Attracted Investment (No lag)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
(1-lag)	−0.001 (0.001)	−0.001 (0.001)	−0.001 (0.001)
(2-lag)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
Average Industry M&As (No lag)	0.047*** (0.013)	0.047*** (0.013)	0.047*** (0.013)
(1-lag)	0.013 (0.010)	0.013 (0.010)	0.013 (0.010)
(2-lag)	−0.002 (0.011)	−0.002 (0.011)	−0.002 (0.011)
Average Industry R&D Expenses (No lag)	0.001 (0.006)	0.000 (0.006)	0.001 (0.006)
(1-lag)	0.012** (0.006)	−0.012* (0.006)	−0.012** (0.006)
(2-lag)	0.005 (0.005)	0.005 (0.005)	0.005 (0.005)
Average Industry Sales (No lag)	0.052*** (0.013)	0.053*** (0.013)	0.053*** (0.013)
(1-lag)	−0.042* (0.022)	−0.043** (0.022)	−0.042* (0.022)
(2-lag)	0.025 (0.022)	0.025 (0.022)	0.025 (0.022)
Industry Sales Growth Rate (No lag)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
(1-lag)	0.034** (0.017)	0.034** (0.017)	0.034** (0.017)
(2-lag)	0.002* (0.001)	0.002* (0.001)	0.002* (0.001)
Year dummies	Included	Included	Included
Industry fixed effects	Included	Included	Included
Constant	0.037 (0.096)	0.035 (0.096)	0.035 (0.096)
N. obs	3866	3866	3866
N. 3-digit SIC code industries	247	247	247
F (p-value)	0.000	0.000	0.000
R^2 within	0.138	0.139	0.139
R^2 between	0.030	0.032	0.032
R^2 overall	0.004	0.004	0.004

The dependent variable in these models is the same as in Table 3: *Industry Concentration.* Robust standard errors in parentheses.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

5. Discussion

The findings of this study provide the first evidence that *within-industry* CVC investments exert a significant and positive influence on industry concentration, ultimately leading to a more consolidated

Table 8
Fixed effects regression models controlling for CVC supplied to other industries.*

	Only controls	*Including Within-Industry CVC Salience*
Within-Industry CVC Salience (2-lag)	–	0.215** (0.097)
Average Industry Attracted Investment (2-lag)	0.001 (0.002)	0.001 (0.002)
Average Industry CVC to other Industries (2-lag)	0.064*** (0.024)	0.062** (0.024)
Average Industry M&As (1-lag)	0.059*** (0.014)	0.060*** (0.014)
Average Industry R&D Expenses (2-year)	−0.004 (0.007)	−0.004 (0.007)
Average Industry Sales (1-lag)	0.013 (0.011)	0.013 (0.011)
Industry Sales Growth Rate (1-lag)	0.021*** (0.008)	0.021*** (0.008)
Year dummies	Included	Included
Industry fixed effects	Included	Included
Constant	0.207** (0.071)	0.175** (0.071)
N. obs	4013	4013
N. 3-digit SIC code industries	252	252
F (p-value)	0.000	0.000
R^2 *within*	0.119	0.119
R^2 *between*	0.019	0.020
R^2 *overall*	0.006	0.006

The dependent variable in these models is the same as in Table 3: *Industry Concentration.* Robust standard errors in parentheses.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

Table 9
Instrumental variables fixed effects regression models controlling for CVC supplied to other industries.

	1st stage	1st Stage	2nd Stage
Dependent variable	*Within-Industry CVC Salience*	*Average Industry Attracted Investment*	*Industry concentration*
Within-Industry CVC Salience (2-lag)	–	–	12.667** (6.306)
Average Industry Attracted Investment (2-lag)	–	–	0.154** (0.063)
Average Industry CVC to other Industries (2-lag)	0.011** (0.005)	0.707** (0.294)	−0.185* (0.111)
Average Industry M&As	−0.003** (0.001)	0.131 (0.150)	0.066** (0.033)
Average Industry R&D Expenses (2-lag)	0.000 (0.001)	−0.095 (0.059)	0.009 (0.011)
Average Industry Sales (1-lag)	−0.000 (0.001)	0.192 (0.141)	−0.009 (0.020)
Industry Sales Growth Rate (1-lag)	−0.000 (0.000)	−0.057 (0.069)	0.028** (0.013)
Year dummies	Included	Included	Included
Industry fixed effects	Included	Included	Included
External Financial Dependence x DoddFrank (2-lag)	0.002** (0.001)	−0.167 (0.124)	–
Average Industry Sales x DoddFrank (2-lag)	0.001* (0.000)	−0.080 (0.054)	–
Manufacturing Industry x DoddFrank (2-lag)	−0.002* (0.001)	−0.270*** (0.091)	
External Financial Dependence (2-lag)	−0.001 (0.001)	0.145 (0.102)	
N. obs	3396	3396	3396
N. 3-digit SIC code industries	247	247	247
F (p-value)	–	–	0.000
SW - F-test of excluded instruments (p-value)	0.033	0.005	–
Anderson-Rubin Wald test (p-value)	–	–	0.000
Hansen J statistic (p-value)	–	–	0.718
PK Under-identification test	–	–	0.023

The dependent variable in the second stage is the same as in Table 3: *Industry Concentration.* Robust standard errors in parentheses.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

industry landscape. Leveraging insights from the CVC literature, we have elaborated on the dynamics at play. Specifically, by favoring knowledge and technology absorption, *within-industry* CVC investments can be viewed as a conspicuous mechanism through which incumbents endeavor to consolidate their competitive positions within their industries.

Our findings have important implications for the extant literature. First, they underscore the industry-level consequences of *within-industry* CVC investments, complementing the traditional firm-level analyses in prior CVC research (e.g., Dushnitsky and Lenox, 2005a, 2005b, 2006; Benson and Ziedonis, 2009; Chemmanur et al., 2014; Chen et al., 2023; Bendig et al., 2024; Wunder and Maula, 2026). By demonstrating that *within-industry* CVC significantly increases industry concentration, our study shows how firm-level investment behavior aggregates to reshape industry structure. Second, we elucidate the mechanisms driving these effects. While the *M&A* mechanism is theoretically the most direct pathway to rising concentration (Benson and Ziedonis, 2009, 2010; Miric et al., 2021), we demonstrate that its role is minimal in practice, as acquisitions of small ventures rarely shift market shares in a significant way. Instead, our findings imply that the positive relationship between *within-industry* CVC and industry concentration may primarily be driven by the *learning* mechanism, through which incumbents appropriate knowledge and technologies from investee ventures and strengthen their competitive position. Our findings suggest that this mechanism also prevails over the *nurturing* mechanism, which would instead imply lower industry concentration through support of new entrants (Katila et al., 2008; Jeon and Maula, 2022). Third, by positioning *within-industry* CVC as a novel determinant of industry concentration, we contribute to the broader literature on industry dynamics, complementing work on the drivers of concentration such as technological factors and lax antitrust enforcement of mergers among large incumbents (Grullon et al., 2019; Covarrubias et al., 2019; Bessen, 2020).

Our results carry important implications for entrepreneurs, incumbents, and policymakers. For entrepreneurs, they underscore the double-edged nature of CVC. While CVC provides capital, expertise, and credibility, it also exposes ventures to risks of knowledge appropriation and may ultimately reinforce the dominance of incumbents. Entrepreneurs should therefore carefully weigh the benefits of access to resources against the potential competitive risks (Katila et al., 2008; Dushnitsky and Shaver, 2009; Diestre and Rajagopalan, 2012; Colombo and Shafi, 2016). For incumbents, our findings highlight the strategic value of CVC as a tool to strengthen their competitive positions. However, our analysis also suggests that firms not engaging in CVC may face growing disadvantages as rivals leverage CVC investments to absorb external knowledge and capabilities.

Our findings have clear relevance for policymakers concerned with competition and welfare. Research in industrial organization has long emphasized that the relationship between industry concentration and welfare is not monotone: both very low and very high concentrations can reduce welfare, whereas intermediate levels are often associated with stronger incentives for innovation and efficiency (Daughety, 1990; Aghion et al., 2005; Ino and Matsumura, 2012; Hashmi, 2013; Covarrubias et al., 2019). In light of this evidence, our findings that *within-industry* CVC investments tend to raise concentration highlight the importance of considering their welfare consequences in relation to existing market structures. In particular, whether CVC-induced increases in concentration are beneficial or harmful requires careful assessment. Combining our results with prior studies on industry

concentration and welfare, it is likely that such increases reduce welfare in both low- and high-concentration industries but may enhance welfare in industries with intermediate levels of concentration. Accordingly, regulators may benefit from monitoring *within-industry* CVC activity relative to other sources of funding, identifying industries where rising concentration could be detrimental, and supporting those where higher concentration may be socially beneficial. Such vigilance would help prevent adverse effects on competition and economic welfare while ensuring that innovation continues to thrive.

Further, in industries where greater concentration from CVC is likely to harm welfare, fostering alternative sources of financing, such as independent or government-backed venture capital, could reduce entrepreneurs' dependence on CVC and limit the risk that incumbents strategically deploy it to raise their market power. By contrast, in industries where higher concentration enhances innovation or efficiency, constraining CVC activity may be less appropriate, as such investments could generate important benefits. In addition, policy makers should account for the role of CVC on industry concentration, even in the absence of M&A. Our evidence indicates that *within-industry* CVC can raise concentration, e.g., through a *learning* mechanism, even when no acquisition occurs. Merger control aimed solely at blocking M&A may therefore miss an important route to market power. Our paper suggests that *within-industry* CVC deserves more attention under certain conditions. The cumulative competitive effects of CVC ties are also worth analyzing in market studies (e.g., whether repeated CVC links among leading incumbents and key entrants confer durable advantages or foreclose rivals). Finally, policy makers could consider targeted remedies when risks are identified, such as limits on exclusivity clauses, non-exclusive IP and licensing commitments, and restrictions on data access arising from governance roles. This risk-based approach preserves the innovation benefits of CVC while addressing learning-driven consolidation that can harm welfare even in the absence of M&A.

Despite its insights, this study is not without limitations. Future studies could explore alternative ways to measure relevant variables or industry characteristics. For example, examining the number of new entries into industries in relation to the level of *within-industry* CVC investments could further shed light on the competitive dynamics of these investments. Importantly, this study is the first attempt to link CVC investments to industry concentration, a relationship in which endogeneity is naturally difficult to rule out. Future research could further corroborate our findings by adopting identification strategies capable of supporting sharper causal claims. Moreover, while we have identified industries by means of SIC classification following consolidated approach (Aghion et al., 2005; Bessen, 2020), future studies may consider employing alternative industry classification systems to corroborate our insights. This is especially relevant in the ICT sector, where many firms (e.g., Meta, Amazon, Microsoft) often operate as platforms spanning multiple markets and ecosystems, making industry boundaries increasingly fluid. Such organizational forms often transcend traditional classifications, suggesting that novel approaches may capture more accurately the competitive dynamics shaped by within-industry CVC. Future research could examine how the relationship between *within-industry* CVC investments and industry concentration is influenced by certain industry characteristics or by the institutional environment.

6. Conclusion

This paper has examined how *within-industry* CVC investments shape industry concentration. By integrating insights from firm-level studies into an industry-level framework, we theorized three mechanisms, namely *M&A*, *learning*, and *nurturing*. We then tested the industry effects of *within-industry* CVC investments across U.S. industries from 2001 to 2019. Our results demonstrate that *within-industry* CVC salience significantly increases industry concentration, with evidence pointing to learning rather than M&A as the more plausible mechanism. In doing so, we provide the first large-scale empirical evidence that (*within-industry*) CVC is not only a vehicle for firm-level innovation but also a structural force reshaping competitive dynamics. These findings enrich the literature on CVC and industry concentration by clarifying how corporate investments in entrepreneurial ventures can reverberate beyond individual firms, ultimately altering market structure and competitive balance.

CRediT authorship contribution statement

Muntaser Mohamed Nuttah: Writing – review & editing, Writing – original draft, Validation, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Paolo Roma:** Writing – review & editing, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Cristiano Bellavitis:** Writing – review & editing, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Yong Li:** Writing – review & editing, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Giovanni Perrone:** Writing – review & editing, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

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

Data availability

Data will be made available on request.

References

Aghion, P., Bloom, N., Blundell, R., Griffith, R., Howitt, P., 2005. Competition and innovation: an inverted-U relationship. Q. J. Econ. 120 (2), 701–728.
Ahuja, G., Katila, R., 2001. Technological acquisitions and the innovation performance of acquiring firms: A longitudinal study. Strateg. Manag. J. 22 (3), 197–220.
Andrews, I., Stock, J.H., Sun, L., 2019. Weak instruments in instrumental variables regression: theory and practice. Annual Review of Economics 11, 727–753.
Bain & Company, 2024. Global Venture Capital Outlook: The Latest Trends. Retrieved from. https://www.bain.com/insights/global-venture-capital-outlook-latest-trends-snap-chart/ (web archive link, 11 February 2025). Last accessed on 02/11/2025.
Bajgar, M., Criscuolo, C., Timmis, J., 2025. Intangibles and industry concentration: a cross-country analysis. Oxf. Bull. Econ. Stat. https://doi.org/10.1111/obes.12659.
Balachandran, S., 2024. The inside track: entrepreneurs' corporate experience and startups' access to incumbent partners' resources. Strateg. Manag. J. 45 (6), 1117–1150.
Basu, S., Phelps, C., Kotha, S., 2011. Towards understanding who makes corporate venture capital investments and why. J. Bus. Ventur. 26 (2), 153–171.
Basu, S., Phelps, C., Kotha, S., 2016. Search and integration in external venturing: an inductive examination of corporate venture capital units. Strateg. Entrep. J. 10, 129–152.
Belderbos, R., Jacob, J., Lokshin, B., 2018. Corporate venture capital (CVC) investments and technological performance: geographic diversity and the interplay with technology alliances. J. Bus. Ventur. 33 (1), 20–34.
Bendig, D., Göttel, V., Eckardt, D., Schulz, C., 2024. Human capital in corporate venture capital units and its relation to parent firms' innovative performance. Res. Policy 53 (6), 105003.
Benson, D., Ziedonis, R.H., 2009. Corporate venture capital as a window on new technologies: implications for the performance of corporate investors when acquiring startups. Organ. Sci. 20 (2), 329–351.
Benson, D., Ziedonis, R.H., 2010. Corporate venture capital and the returns to acquiring portfolio companies. J. Financ. Econ. 98 (3), 478–499.
Bessen, J., 2020. Industry concentration and information technology. J. Law Econ. 63 (3), 531–555.
Boyacıoğlu, B., Özdemir, M.N., Karim, S., 2024. Acqui-hires: redeployment and retention of human capital post-acquisition. Strateg. Manag. J. 45 (2), 205–237.
Brigl, M., Roos, A., Schmieg, F., Wu, X., 2016. Corporate Venturing Shifts Gears. Retrieved from. https://www.bcg.com/publications/2016/innovation-growth-corporate-venturing-shifts-gears-how-largest-companies-apply-tools-innovation. Last accessed on 02/11/2025.

Caves, R.E., Porter, M.E., 1980. The dynamics of changing seller concentration. J. Ind. Econ. 29 (1), 1–15.
CB Insights, 2025. State of CVC 2024 Report. https://www.cbinsights.com/research/report/corporate-venture-capital-trends-2024/. Last accessed 10/1/2025.
Ceccagnoli, M., Higgins, M.J., Kang, H.D., 2018. Corporate venture capital as a real option in the markets for technology. Strateg. Manag. J. 39 (13), 3355–3381.
Chemmanur, T.J., Loutskina, E., Tian, X., 2014. Corporate venture capital, value creation, and innovation. Rev. Financ. Stud. 27 (8), 2434–2473.
Chen, T., Chen, J., Miller, D., Le Breton-Miller, I., Chen, M.-J., 2023. Corporate venture capital and interfirm rivalry: A competitive dynamics perspective. Strateg. Entrep. J. 17, 210–236.
Chesbrough, H.W., 2002. Making sense of corporate venture capital. Harv. Bus. Rev. 80 (3), 90–99.
Cohen, W.M., Levinthal, D.A., 1990. Absorptive capacity: a new perspective on learning and innovation. Adm. Sci. Q. 35, 128–152.
Colombo, M., Shafi, K., 2016. Swimming with sharks in Europe: when are they dangerous and what can new ventures do to defend themselves? Strateg. Manag. J. 37 (11), 2307–2322.
Covarrubias, M., Gutiérrez, G., Philippon, T., 2019. From good to bad concentration. US industries over the past 30 years. NBER Macroecon. Annu. 34 (1), 25983, 1–46.
Daughety, A.F., 1990. Beneficial concentration. Am. Econ. Rev. 80 (5), 1231–1237.
Di Lorenzo, F., Van de Vrande, V., 2019. Tapping into the knowledge of incumbents: the role of corporate venture capital investments and inventor mobility. Strateg. Entrep. J. 13 (1), 24–46.
Diestre, L., Rajagopalan, N., 2012. Are all "sharks" dangerous? New biotechnology ventures and partner selection in R&D alliances. Strateg. Manag. J. 33 (10), 1115–1134.
Dushnitsky, G., 2006. Corporate venture capital: past evidence and future directions. In: The Oxford Handbook of Entrepreneurship, pp. 387–432.
Dushnitsky, G., Lenox, M.J., 2005a. When do firms undertake R&D by investing in new ventures? Strateg. Manag. J. 26 (10), 947–965.
Dushnitsky, G., Lenox, M.J., 2005b. When do incumbents learn from entrepreneurial ventures? Corporate venture capital and investing firm innovation rates. Res. Policy 34 (5), 615–639.
Dushnitsky, G., Lenox, M.J., 2006. When does corporate venture capital investment create firm value? J. Bus. Ventur. 21 (6), 753–772.
Dushnitsky, G., Shaver, J.M., 2009. Limitations to interorganizational knowledge acquisition: the paradox of corporate venture capital. Strateg. Manag. J. 30 (10), 1045–1064.
Dushnitsky, G., Yu, L., 2022. Why do incumbents fund startups? A study of the antecedents of corporate venture capital in China. Res. Policy 51 (3), 104463.
Fathollahi, M., Harford, J., Klasa, S., 2022. Anticompetitive effects of horizontal acquisitions: the impact of within-industry product similarity. J. Financ. Econ. 144 (2), 645–669.
Fulghieri, P., Sevilir, M., 2009. Organization and financing of innovation, and the choice between corporate and independent venture capital. J. Financ. Quant. Anal. 44 (6), 1291–1321.
Gaba, V., Bhattacharya, S., 2012. Aspirations, innovation, and corporate venture capital: A behavioral perspective. Strateg. Entrep. J. 6 (2), 178–199.
Global Corporate Venturing, 2022. Booming CVC is about to get a reality check. May 18. Available at https://globalventuring.com/corporate/cvc-investment-boom-bust/. Last accessed on 02/11/2025.
Gompers, P., Lerner, J., 2000. The determinants of corporate venture capital success: Organizational structure, incentives, and complementarities. In: Concentrated Corporate Ownership. University of Chicago Press, pp. 17–54.
Grimpe, C., Hussinger, K., 2008. Pre-empting technology competition through firm acquisitions. Econ. Lett. 100 (2), 189–191.
Grullon, G., Larkin, L., Michaely, R., 2019. Are US industries becoming more concentrated? Rev. Financ. 23 (4), 697–743.
Hashmi, A.R., 2013. Competition and innovation: the inverted-u relationship revisited. Rev. Econ. Stat. 95 (5), 1653–1668.
Haslanger, P., Lehmann, E.E., Seitz, N., 2022. The performance effects of corporate venture capital: a meta-analysis. J. Technol. Transf. 48, 2132–2160.
Hellmann, T., 2002. A theory of strategic venture investing. J. Financ. Econ. 64, 285–314.
Huang, P., Madhavan, R., 2021. Dumb money or smart money? Meta-analytically unpacking corporate venture capital. Strateg. Entrep. J. 15, 403–429.
Hussinger, K., Dick, J.M.H., Czarnitzki, D., 2018. Ownership concentration and innovativeness of corporate ventures. Res. Policy 47 (2), 527–541.
Ino, H., Matsumura, T., 2012. How many firms should be leaders? Beneficial concentration revisited. Int. Econ. Rev. 53 (4), 1323–1340.
Ivanov, V.I., Xie, F., 2010. Do corporate venture capitalists add value to start-up firms? Evidence from IPOs and acquisitions of VC-backed companies. Financ. Manag. 39, 129–152.
Jeon, E., Maula, M., 2022. Progress toward understanding tensions in corporate venture capital: A systematic review. J. Bus. Ventur. 37 (4), 106226.
Kamepalli, S.K., Rajan, R., Zingales, L., 2020. Kill zone. National Bureau of Economic Research. https://doi.org/10.3386/w27146. Working Paper 27146.
Katila, R., Rosenberger J., D., Eisenhardt, K.M., 2008. Swimming with sharks: technology ventures, defense mechanisms and corporate relationships. Adm. Sci. Q. 53 (2), 295–332.
Keil, T., Autio, E., George, G., 2008. Corporate venture capital, disembodied experimentation and capability development. J. Manag. Stud. 45, 1475–1505.
Keil, T., Zahra, S.A., Maula, M., 2016. Explorative and exploitative learning from corporate venture capital: A model of program-level determinants. In: Zahra, S.A., Neubaum, D.O., Hayton, J.C. (Eds.), handbook of research on corporate entrepreneurship, ch. 9. Elgar publishing, pp. 259–289.
Kim, K., Gopal, A., Hoberg, G., 2016. Does product market competition drive CVC investment? Evidence from the U.S. IT industry. Inf. Syst. Res. 27 (2), 259–281.
Konrad, A., 2017. Looker eyes ownership of crowded business intelligence field with $81.5M from alphabet. Forbes. https://www.forbes.com/sites/alexkonrad/2017/03/30/looker-bi-raises-81-5m-alphabet/#74c2784f7bd4. Last accessed 02/11/2025.
Kortum, S., Lerner, J., 2000. Assessing the contribution of venture capital to innovation. RAND J. Econ. 31 (4), 674–692.
Koski, A., Kässi, O., Braesemann, F., 2023. Killers on the road of emerging start-ups - implications for market entry and venture capital financing. Working paper. https://doi.org/10.2139/ssrn.4390546.
Larcker, D.F., Rusticus, T.O., 2010. On the use of instrumental variables in accounting research. J. Account. Econ. 49 (3), 186–205.
Larrain, B., 2006. Do banks affect the level and composition of industrial volatility? J. Financ. 61 (4), 1897–1925.
Lerner, J., 2013. Corporate venturing. Harv. Bus. Rev. 91 (10), 86–94.
Li, Y., Chi, T., Lan, S., Wang, Q., 2025. Venture capital exit after venture IPO. Strateg. Entrep. J. 19 (1), 111–144.
Ma, S., 2020. The life cycle of corporate venture capital. Rev. Financ. Stud. 33 (1), 358–394.
MacMillan, I., Roberts, E., Livada, V., Wang, A., 2008. Corporate Venture Capital (CVC): Seeking Innovation and Strategic Growth. National Institute of Standards and Technology, U.S. Department of Commerce, Washington, DC. https://www.usrts.org/eao/gcr_08_916_nist4_cvc_073108_web.pdf (Last accessed 02/11/2025).
Malerba, F., Orsenigo, L., 1995. The dynamics and evolution of industries. Ind. Corp. Chang. 5 (1), 51–87.
Manganelli, S., Popov, A., 2015. Financial development, sectoral reallocation, and volatility: international evidence. J. Int. Econ. 96 (2), 323–337.
Maula, M., Keil, T., Zahra, S.A., 2013. Top management's attention to discontinuous technological change: corporate venture capital as an alert mechanism. Organ. Sci. 24, 926–947.
Maus, C., Greven, A., Kurth, N., Brettel, M., 2024. How do investor characteristics of business angels and venture capitalists predict the occurrence of co-investments? J. Bus. Econ. 94 (5), 763–811.
McNally, K., 1997. Corporate Venture Capital: Bridging the Equity Gap in the Small Business Sector. Routledge.
Miric, M., Pagani, M., El Sawy, O.A., 2021. When and who do platform companies acquire? Understanding the role of acquisitions in the growth of platform companies. MIS Q. 45 (4), 2159–2174.
Narayanan, V.K., Yang, Y., Zahra, S.A., 2009. Corporate venturing and value creation: A review and proposed framework. Res. Policy 38 (1), 58–76.
Nicas, J., 2019. Google to buy data analytics company despite new antitrust scrutiny. New York Times. https://www.nytimes.com/2019/06/06/technology/google-data-analytics-looker-acquisition.html (Last accessed on 02/11/2025).
Nocke, V., Whinston, M.D., 2022. Concentration thresholds for horizontal mergers. Am. Econ. Rev. 112 (6), 1915–1948.
OECD, 2020. Start-ups, Killer Acquisitions and Merger Control. https://www.oecd.org/en/publications/start-ups-killer-acquisitions-and-merger-control_dac52a99-en.html?utm_source=chatgpt.com. Last accessed on 02/11/2025.
Pahnke, E.C., Katila, R., Eisenhardt, K.M., 2015. Who takes you to the dance? How partners' institutional logics influence innovation in young firms. Adm. Sci. Q. 60, 596–633.
Paik, Y., Woo, H., 2017. The effects of corporate venture capital, founder incumbency, and their interaction on entrepreneurial firms' R&D investment strategies. Organ. Sci. 28 (4), 670–689.
Park, H.D., Steensma, H.K., 2012. When does corporate venture capital add value for new ventures? Strateg. Manag. J. 33 (1), 1–22.
Raddatz, C., 2006. Liquidity needs and vulnerability to financial underdevelopment. J. Financ. Econ. 80 (3), 677–722.
Rajan, R., Zingales, L., 1998. Financial dependence and growth. Am. Econ. Rev. 88 (3), 559–586.
Ryder Systems, 2022. Ryder Acquires Logistics Technology Start-Up Baton. Retrieved from https://newsroom.ryder.com/news/news-details/2022/Ryder-Acquires-Logistics-Technology-Start-Up-Baton/default.aspx. Last accessed on. 02/11/2025.
Ryu, W., Bae, J., Brush, T.H., 2025. Where to invest? Effects of technological capabilities on corporate venture capital investments. Strateg. Entrep. J. 19 (1), 83–110.
Sabel, C.,.A., Di Lorenzo, F., 2020. When Are Sharks Dangerous? Timing of CVC Investments and Ventures' Commercial Performance. Working paper. https://ssrn.com/abstract=3800117.
Sahaym, A., Steensma, H.K., Barden, J.Q., 2010. The influence of R&D investment on the use of corporate venture capital: an industry-level analysis. J. Bus. Ventur. 25 (4), 376–388.
Schildt, H.A., Maula M., V., Keil, T., 2005. Explorative and exploitative learning from external corporate ventures. Entrepreneurship Theory Pract. 29 (4), 493–515.
Schückes, M., Unger, B., Gutmann, T., Fels, G., 2025. Innovation at the interface: A configurational approach to corporate venture capital. J. Bus. Ventur. 40 (1), 106438.
Stiebale, J. and, Szücs, F., 2022. Mergers and market power: evidence from rivals' responses in European markets. RAND J. Econ. 53, 678–702.
Testoni, M., 2022. The market value spillovers of technological acquisitions: evidence from patent-text analysis. Strateg. Manag. J. 43 (5), 964–985.
The Economist, 2018. American tech giants are making life tough for startups. Retrieved from. https://www.economist.com/business/2018/06/02/american-tech-giants-are

-making-life-tough-for-startups (web archive link, 11 February 2025). Accessed on 02/11/2025.
Titus, V.K., Anderson, B.S., 2018. Firm structure and environment as contingencies to the corporate venture capital-parent firm value relationship. Entrepreneurship Theory Pract. 42 (3), 498–522.
Tong, T.W., Li, Y., 2011. Real options and investment mode: evidence from corporate venture capital and acquisition. Organ. Sci. 22 (3), 659–674.
Van de Vrande, V., Vanhaverbeke, W., 2013. How prior corporate venture capital investments shape technological alliances: A real options approach. Entrep. Theory Pract. 37 (5), 1019–1043.
Van de Vrande, V., Vanhaverbeke, W., Duysters, D., 2011. Additivity and complementarity in external technology sourcing: the added value of corporate venture capital investments. IEEE Trans. Eng. Manag. 58 (3), 483–496.
Wadhwa, A., Kotha, S., 2006. Knowledge creation through external venturing: evidence from the telecommunications equipment manufacturing industry. Acad. Manag. J. 49 (4), 819–835.
Wadhwa, A., Phelps, C., Kotha, S., 2016. Corporate venture capital portfolios and firm innovation. J. Bus. Ventur. 31 (1), 95–112.
Weber, C., Bauke, B., Raibulet, V., 2016. An empirical test of the relational view in the context of corporate venture capital. Strateg. Entrep. J. 10 (3), 274–299.
Wiklund, J., Shepherd, D.A., 2009. The effectiveness of alliances and acquisitions: the role of resource combination activities. Entrep. Theory Pract. 33 (1), 193–212.
Winston-Smith, S., 2009. The company they keep: innovation returns to corporate venture capital in the medical device industry, entrepreneurial clinicians, and competitive coinvestors. Entrepreneurial clinicians, and competitive Coinvestors august 2009.
Wunder, D., Maula, M., 2026. Harvesting or nurturing? Corporate venture capital and startup green innovation. Res. Policy 55 (2), 105380.