BAR Brazilian Administration Review

ANPAD

Research Article

A Venture Perspective of Different Investor Effects in the Brazilian VC Market

Raoni Arruda Bacelar da Silva[1], Fábio de Oliveira Paula[1], Jorge Ferreira da Silva[1]

[1] Pontifícia Universidade Católica do Rio de Janeiro, IAG Escola de Negócios, Rio de Janeiro, RJ, Brazil

How to cite: Silva, R. A. B., Paula, F. O., & Silva, J. F. (2024). A venture perspective of different investor effects in the Brazilian VC market. *BAR-Brazilian Administration Review, 21*(2), e230093.

DOI: https://doi.org/10.1590/1807-7692bar2024230093

Keywords:
entrepreneurship finance; venture capital; corporate venture capital; angels; accelerator

JEL Code:
M1, M13, O36

Received:
August 14, 2023.
This paper was with the author for one revision.

Accepted:
March 02, 2024.

Publication date:
May 29, 2024.

Corresponding author:
Raoni Arruda Bacelar da Silva
Pontifícia Universidade Católica do Rio de Janeiro,
IAG Escola de Negócios
Rua Marquês de São Vicente, n. 225, Gávea,
CEP 22451-900, Rio de Janeiro, RJ, Brazil

ABSTRACT

Objective: Venture capital has garnered global interest, attracting policymakers, investors, and entrepreneurs. However, its implementation in emerging nations, particularly in the challenging seed-stage segment, requires adaptive strategies from investors. This article investigates whether these adaptations lead to performance differences among various VC investor types. **Methods:** We examine the impact of different investor types on the performance of seed-stage ventures in Brazil, comparing our findings to existing literature on the United States. Analyzing investments in the Brazilian seed-stage VC market from 2000 to September 2022, we evaluate outcomes for ventures supported by IVCs, CVCs, Angels, and Accelerators. **Results:** The results reveal significant disparities in the performance of these entities in Brazil compared to the United States. **Conclusions:** We conclude that these differences likely stem from unique Brazilian market dynamics that have shaped investor profiles and operational approaches distinct from those in developed nations.

Data Availability: The data employed in the research and analysis for this publication is proprietary to Crunchbase™. The use of Crunchbase data is governed by specific terms and conditions that restrict unauthorized sharing, distribution, and commercial use outside the agreed-upon purposes. This data is available to paying users in the following link: https://www.crunchbase.com/
BAR – Brazilian Administration Review encourages data sharing but, in compliance with ethical principles, it does not demand the disclosure of any means of identifying research subjects.

Plagiarism Check: BAR maintains the practice of submitting all documents received to the plagiarism check, using specific tools, e.g.: iThenticate.

Peer review: is responsible for acknowledging an article's potential contribution to the frontiers of scholarly knowledge on business or public administration. The authors are the ultimate responsible for the consistency of the theoretical references, the accurate report of empirical data, the personal perspectives, and the use of copyrighted material. This content was evaluated using the double-blind peer review process. The disclosure of the reviewers' information on the first page is made only after concluding the evaluation process, and with the voluntary consent of the respective reviewers.

INTRODUCTION

The venture capital (VC) industry has played a crucial role in the development of some of the most advanced startup ecosystems in the world (e.g., the United States and Israel). As a source of funding for early-stage companies, VC investors enable entrepreneurs to bring their innovative ideas to fruition and scale their businesses. The supply of VC capital in an area has been linked to more startup creation, employment, and aggregate income (Popov & Roosenboom, 2013; Samila & Sorenson, 2011). Additionally, productivity growth and innovation have been connected to the industry, due to mechanisms like better capital allocation in high-potential technologies and technological spillovers to other companies not directly invested by the VCs (Keuschnigg, 2004; Schnitzer & Watzinger, 2022).

In the United States, the independent venture capital (IVC) firm, operated by professional third-party capital managers, has stood as the premier investor type for decades, offering the most promising outlook for startup outcomes (Gompers & Lerner, 2001; Hellmann & Puri, 2002; Rosenbusch et al., 2013). Other investor categories face limitations that hinder their positive impact on venture growth. Corporate venture capital (CVC), while equipped with substantial resources to fuel portfolio company growth, tends to shy away from introducing potential competitors into markets where they are already established (Katila et al., 2008; Kim et al., 2019). In contrast, angel investors and accelerators possess fewer resources and organizational capabilities to effectively support entrepreneurs in technical and managerial tasks (Crisan et al., 2019; Cumming & Zhang, 2019; Kerr et al., 2014). Consequently, these alternatives to the IVC model have generally underperformed in advancing the market objectives of major ventures (Crisan et al., 2019; Cumming & Zhang, 2019; Kerr et al., 2014; Uzuegbunam et al., 2019).

In emerging markets, the development of the VC industry must deal with challenges facing the business environment. Factors like smaller capital markets, higher cost of capital, higher taxes, labor market rigidity, less enforceable legal rights, and fewer investor and IP protections have been shown to restrict the industry's growth (Groh & Wallmeroth, 2016; Jeng & Wells, 2000). Ultimately, these factors can also influence how VC investments in the country perform. In Brazil, professional managers who have tried to duplicate the VC model have had to adapt in several ways, like concentrating on late-stage investments to avoid higher risks and finding ways other than IPOs to exit their investments (Ribeiro & Carvalho, 2008). This has left the seed-stage segment of the VC market in the country to be attended by smaller investors, like angels and accelerators. These actors have characteristics that connect them to younger ventures, but also make it harder for them to deliver the services and guidance they need (Choi & Kim, 2018; Cumming & Zhang, 2019; Yu, 2020). More recently, this situation has started to change, with a growing interest from IVCs and corporate venture capital (CVC) in the seed-stage scenario (Associação Brasileira de Private Equity e Venture Capital [ABVCAP], 2021). The beginning of the 2020s has been marked by a spur in seed-stage funding in Brazil, with more options for early ventures that seek capital and an increasingly competitive scenario for investors.

The question is posed, then, whether VC investors like IVCs, CVCs, angels, and accelerators are affecting their portfolio ventures in a positive way for them to grow and achieve their goals in Brazil, and if this is in line with what the literature has shown in developed countries, mainly the US. To answer, we examined the investments made in the Brazilian seed-stage VC market between 2000 and September 2022, and the outcomes for ventures that received investments from IVCs, CVCs, angels, and accelerators. Our results show that there are significant differences in the observed performance of these actors in Brazil and what has been indicated from mainstream literature from the US. For one, IVCs have not shown a pervasive presence in this market as in that country, and the expected positive performance was only true for ventures backed by highly experienced IVCs. CVCs, whose presence is still modest in the segment, have boosted M&As but performed poorly on specific seed-stage goals. Angel investors were a positive surprise, revealing the best performance for ventures to secure more funding, while accelerators confirmed the worst performance, except for the highly experienced ones. These results indicate that there are factors in the Brazilian market that distinguishes these performances from what has been shown in the United States, possibly by shaping different profiles for the investors themselves or how they operate in the country.

This research aims to enhance our comprehension of the evolution of the venture capital industry in Brazil, addressing its responses to challenges in a developing market and examining its impact on entrepreneurial ventures. The findings provide a comprehensive overview of the industry's current state, offering valuable insights for entrepreneurs and investors contemplating involvement. This article is organized in the following way: We explore the scenario for the venture capital industry in Brazil, the environmental factors influencing its impacts, the various actors involved in the seed-stage segment, and their expected influence on

ventures. We then explain our data, methodology, and variables, followed by a presentation of our results. Finally, we discuss the implications of our findings and provide our conclusions.

LITERATURE REVIEW

Contextualization: Technological evolution and venture capital

Since the 1990s we have seen an exponential growth in the importance of new technology companies in our lives. Given the amount of information and trust we give to companies like Google, Facebook, Uber, among many others, it is amazing how vaguely we remember that these companies were not in our midst a few years ago. Similarly, the importance of younger technological companies has also grown enormously in the financial markets. Anthony et al. (2018) showed that the average term of US companies in the S&P 500 index dropped from 33 years in 1964 to 24 years in 2016 and is forecasted to shrink to just 12 years by 2027. The average life of companies listed on the S&P 500 has also dropped from nearly 60 years in the 1950s to less than 20 years more recently (Sheetz, 2017). At the current turnover rate, about half of the S&P 500 companies will be replaced in the next ten years.

The current scenario is a result of the boom of technology ventures that took place in the late 1990s and early 2000s, driven by the internet and other technologies, but also by the emergence of the venture capital (VC) industry. Venture capital (VC) investors offer financial support and strategic guidance to startup companies characterized by both high growth potential and considerable uncertainty. These companies usually have limited tangible assets and operate in swiftly evolving markets. VCs aim at assisting them in leveraging market opportunities and navigating the challenges associated with their growth (National Venture Capital Association [NVCA], 2020). Existing research has indicated the pivotal involvement of venture capital (VC) investors in both the screening process and post-investment monitoring of portfolio firms (Gompers & Lerner, 1998, 2001). VCs contribute value-added services, including coaching, mentoring, and facilitating access to investment bankers (Sorensen, 2007). Moreover, firms supported by VCs gain advantages from the extensive network of contacts that reputable and well-connected VCs can provide (Gompers & Lerner, 2001; Hellmann & Puri, 2002).

In the United States, of the 1.339 companies that went public (through an initial public offer — IPO) between 1974 and 2015, 42% were backed by venture capital investment firms. Furthermore, these 556 companies accounted for 63% of total market capitalization and 85% of research and development (R&D) investments (Gornall & Strebulaev, 2015). Similarly, Kaplan and Lerner (2010) pointed out that of the true startups (companies that started from scratch, and not because of some corporate movement, such as spin-offs) that came to carry out an IPO between 1999 and 2009, more than 60% had some investment from VC funds.

The Brazilian startup ecosystem and venture capital industry

Brazilian entrepreneurs and investors must deal with the country's challenges and limitations. Ribeiro and Carvalho (2008) highlighted some of those that most affect the entrepreneurial environment and VC industry: the country's labor market rigidity; highly bureaucratic procedures for opening a business, getting a license, or paying taxes, which lead to corruption; a high tax burden, both in costs and complexity, which also increases the risk of fiscal and labor liabilities; the inefficiency of a legal system that is hard and costly to enforce, partially overturned by arbitration practices; insufficient infrastructure; and relatively small capital markets, which constrains potential exists through IPOs. We should also add to the list a poor educational system that contributes to the restriction of qualified labor; and one of the highest income and wealth inequality rates in the world, which limits both the number of high potential entrepreneurs and investors (Chancel et al., 2022).

Despite these challenges, the venture capital industry began to develop in the country in the 2000s, in part due to government support from developing agencies and legislative changes. On the regulatory side, there was the passing of the Innovation Law (2004), the Law of Good (2005), the Science, Technology, and Innovation (CT&I) Code (2016), and the CT&I's New Legal Mark (2015-18). These changes boosted the amount of capital that flowed to R&D efforts, fostered the link between universities and business, and the development of incubators, accelerators, and technology parks (Gonzalo et al., 2022). Moreover, the regulation changes that created the Investment Participation Funds (FIPs) and the promotion of pension funds participation in the VC industry expanded the amount of available capital (Leonel, 2019). Also important was the creation of the sectorial funds in the early 2000s, and government initiatives like the INOVAR program and the CRIATEC funds, which were composed of pioneer investments made by government actors such as FINEP and BNDES. These programs provided funding for the first VC managers in the country to begin to op-

erate (Associação Nacional de Entidades Promotoras de Empreendimentos Inovadores [ANPROTEC], 2019; Gonzalo et al., 2022).

The industry grew alongside Brazil's best economic performance years in decades in the 2000s and seemed to have suffered less than expected from the 2015-2016 recession. In the following years, it spiked following the high interest in technology companies before and during the pandemic, a growing flow of foreign capital to the industry, and the consolidation of new players like CVCs. According to the Brazilian Association of Venture Capital (ABVCAP, 2021), Brazil's VC industry, which accounts for more than 50% of the investments in Latin America, surpassed private equity (PE) for the first time in history in 2020 with a total amount of R$ 14.6 billion in investments, up from just R$ 0.9 billion in 2017. The number of startups funded annually has also risen to 200, with an average investment of around R$ 70 million. This number is highly skewed due to success stories in the industry, such as Acesso Digital, Credits, Fazenda Futuro, Loft, Nelogica, Nubank, Tembici, Zee.dog, among others (ABVCAP, 2021). The year of 2020 has also witnessed the debut of VC-backed Enjoei and Meliuz at the Brazilian stock exchange, despite successful IPO stories like these still being exceptions in the industry.

Environmental factors that affect the VC industry

There has been extensive research on the determinants for the development of the private equity and venture capital (PE/VC) industry in a region or country (Dalal, 2022; Dias & Silva, 2016; Groh & Wallmeroth, 2016; Jeng & Wells, 2000). The determinants are usually divided into the ones that affect the supply of capital from investors and the ones that affect the demand for this type of investment from entrepreneurs and startups. Supply-side determinants include (1) pension funds participation in PE/VC (which often requires regulatory changes), (2) volume of IPOs and M&As (which are the preferable ways to exit investments), (3) capital markets capitalization, liquidity, and growth, (4) capital tax reduction, (5) investor protection in the legal environment, and (6) government programs and public policy. Demand-side determinants include (1) technological and innovation opportunities, (2) GDP growth, (3) labor market rigidities, (4) intellectual property (IP) protection, and (5) social and cultural factors.

There is reason to believe that at least some of these factors would affect not only the growth of the available funding going toward VC and deal formation but also the behavior of investors and the expected results for ventures. For instance, the volumes of IPOs and M&As in a country have been proven to be some of the factors with the greatest impact on the flow of new VC capital (Dias & Silva, 2016; Jeng & Wells, 2000). But this impact has also been found to be reduced in emerging economies, where capital markets are usually less developed (Groh & Wallmeroth, 2016). It is possible, then, that VC investors in these countries find other ways to exit their investments with proper returns. The authors also found that the historical volume of IPOs does not have the same impact on the formation of early-stage VC deals as for late-stage, probably because ventures at this stage are still far from an IPO possibility, and VCs may seek shorter-term goals, like further and bigger investment rounds.

The different VC investor types in Brazil

The growing importance of venture investing has encouraged more actors to enter the VC industry, increasing the diversity of the funding scenario in Brazil and giving startups more options for different profiles of investors. Traditionally, the industry, molded in the United States (US), was dominated by independent venture capital (IVC) firms, which are professional managers investing in and supporting young ventures. These managers usually come from an investment background or their own previous experience as successful entrepreneurs. They usually operate with dedicated funds in a limited liability partnership model, with a limited lifespan of around 8 to 12 years and raising capital from third-party investors (e.g., pension funds, government funds, and previous successful entrepreneurs) (NVCA, 2020). In the VC literature, IVCs are considered the most advantageous type of investors for startups, for they provide support not only with capital but also in value-added services, guidance, and connections (Gompers & Lerner, 2001; Hellmann & Puri, 2002). They also created mechanisms to deal with issues concerning early investing, like information asymmetries and agency cost, such as making staged investments, using convertible contracts, taking place on portfolio companies' boards of directors, participating in investments syndication, using compensation schemes for managers that are aligned with funds' returns, etc. (Brander et al., 2002; Gompers & Lerner, 1998, 2001; Hellmann & Puri, 2002).

When investigating the Brazilian VC market, Ribeiro and Carvalho (2008) noted that IVC firms in that country hold similarities with the US model in how they are organized, like maintaining independent management of third-party capital (as FIPs), employing highly qualified managers, concentrating regionally and sectorally. But also had to adapt to Brazilian peculiarities, so they

focused on later-stage investments, avoiding uncertainty, and, since credit was scarce and the capital market underdeveloped, they relied less on leverage buyouts (LBOs) and IPOs to exit their investments. In more recent years, we begin to see a change in behavior from this type of investor, with an increasing interest in earlier stages, mimicking the same movement of IVCs in the US (ABVCAP, 2021; NVCA, 2020). With the same organizational model and background, we expect IVC to maintain its status as the reference for investing in startup ventures and hold the best performance among its newer VC investor peers. Therefore, we propose:

Hypothesis 1a. IVC investors will positively influence ventures in getting to an M&A deal in Brazil.

Hypothesis 1b. IVC investors will positively influence ventures in securing subsequent funding in Brazil.

Corporate venture capital (CVC) is a type of big investor that has recently grown in Brazil. According to a 2018 study by Altivia Ventures, there are over 97 corporate venturing initiatives operating in the country, with 19% being CVCs that invest in new ventures (Matos & Radaelli, 2020). CVCs are known for providing large capital pools and industry-specific resources to their portfolio companies (Chesbrough, 2002; Park & Steensma, 2012). However, concerns have been raised about their intentions, as they answer to a parent company that operates in the same market as the companies they invest in (Katila et al., 2008; Kim et al., 2019). CVC-backed ventures tend to increase R&D-related outcomes but may not be as effective in boosting market innovation outcomes. This is because corporations often treat these ventures as extended R&D departments without developing their go-to-market capabilities (Uzuegbunam et al., 2019). In contrast, IVC-backed ventures are incentivized to grow sales immediately after investment (Bertoni et al., 2013). Overall, we expect that most early-stage ventures will be negatively influenced by CVCs, as corporations may prevent their growth to avoid competition in their markets. Therefore, we propose:

Hypothesis 2a. CVC investors will negatively influence ventures in getting to an M&A deal in Brazil.

Hypothesis 2b. CVC investors will negatively influence ventures in securing subsequent funding in Brazil.

When considering early-stage funding, angels are arguably the investor type that has been around the longest for startups. They are usually rich individuals, sometimes with previous venturing or industry experience, that invest in ventures in their very early years (Kerr et al., 2014). The amount of angel investments in Brazil has risen recently from R$ 851 million in 2016 to R$ 1 billion in 2021, recovering to pre-pandemic levels. At the same time, the number of angel investors rose 13% that year to around 7.8 thousand (Anjos do Brasil, 2022). Still, the number of angels in the country is a fraction of the 300 thousand reported in the US (Matos & Radaelli, 2020). Angels are not typically seen in the venture capital world as a distinct investor type that offers differentiated performance. The category is too broad because angels range from friends and family of entrepreneurs to experienced investors with industry knowledge. They are generally less resourceful than institutional investors and have limited monitoring capabilities. Additionally, unlike IVC and CVC managers, angels invest their own money and often use fewer formal monitoring practices, which can lead to behavioral biases (Cumming & Zhang, 2019; Kerr et al., 2014). Angel groups and business angel networks (BANs) attempt to overcome the limitations of individual angels by increasing formalization and organization. However, even when organized, angels often struggle to deliver meaningful outcomes such as IPOs, M&As, and additional financing for their portfolio companies (Cumming & Zhang, 2019; Dutta & Folta, 2016; Kerr et al., 2014). As a result, we expect angels to exert a negative influence on their invested ventures in the Brazilian VC market. Therefore, we propose:

Hypothesis 3a. Angel investors will negatively influence ventures in getting to an M&A deal in Brazil.

Hypothesis 3b. Angel investors will negatively influence ventures in securing subsequent funding in Brazil.

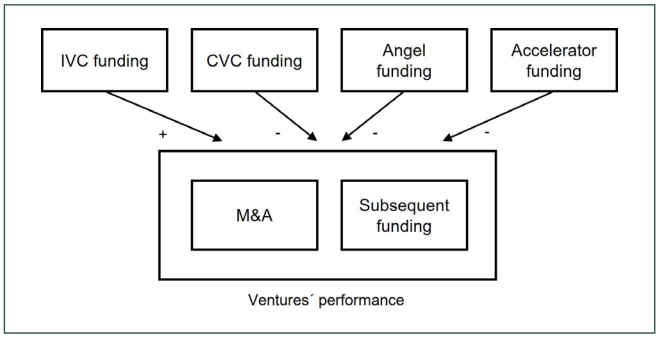
One of the most recent investor types in the VC industry, accelerators are organizations that offer support programs for new ventures to better refine their business models and market strategies, and sometimes seed funding in exchange for equity (Cohen et al., 2019; Shetty et al., 2020). They differ from incubators in the way that they are more focused on go-to-market activities, offer a shorter period program, and provide fewer physical resources and more networking (Cohen et al., 2019; Crisan et al., 2019). In a broad study, ANPROTEC (2019) identified 57 startup accelerators actively operating in Brazil in 2019, most of which were created after 2010. Like angels, accelerators also target ventures in their earliest stages, testing their products and business

models to the point of having the entrepreneurs decide whether to follow through with their plan, abandon it, or pivot to a new one. As a result, evaluations of accelerators' impact often consider getting to a subsequent funding round or getting an idea validated as goals for ventures (Crisan et al., 2019). Recent studies have found that accelerator-backed ventures' performance vary according to different types of accelerators, that offer distinct services and operate under various backgrounds (government, private, corporate, etc.) (Choi & Kim, 2018; Crisan et al., 2019; Shetty et al., 2020; Yu, 2020). In Brazil, many accelerators were developed under an umbrella of government and university programs, which have been found to particularly underperform on these measures, and just recently corporate-backed programs are growing larger (Crisan et al., 2019; Gonzalo et al., 2022; Shetty et al., 2020). Hence, when looking at the performance of accelerator-backed ventures, we expect a poor general performance, that is alleviated for the most experienced players. Therefore, we propose:

Hypothesis 4a. Accelerator investors will negatively influence ventures in getting to an M&A deal in Brazil.

Hypothesis 4b. Accelerator investors will negatively influence ventures in subsequent funding in Brazil.

To summarize our hypotheses, we propose a theoretical model (Figure 1) for the expected relationships between our investor types and ventures' performance measures based on the previous literature.



Source: Developed by the authors.

Figure 1. Theoretical model.

RESEARCH METHOD

Data source and sample

To analyze our hypothesis concerning the Brazilian VC market, we gathered all the data from the Crunchbase database on VC investments in the country, dating from 2000 to September 2022. We considered investments made in Brazilian ventures from investors of any nationality. This consisted of 5,137 rounds initially, which we filtered for only the first investment rounds and categorized at the seed stage by the platform (Crunchbase Data, 2022). The result was a sample of 1,937 investment rounds with a maximum of $30 million in a round. To run our models, though, rounds with missing data for our instrumental variables described below had to be discarded, leaving us with 784 cases for those analyses.

Variables and statistical analysis

Our dependent variables are (1) a dummy for successful exit by M&A, (2) a dummy for successful achievement of subsequent funding over the $1 million mark, and (3) total subsequent funding, conditional on achieving a second round of any amount. The reason for segregating subsequent funding into two variables is that a large portion (approximately 80%) of companies never successfully secure further funding after their first investment. Failing to achieve such a mark can be interpreted as a failure for a venture in the VC market. So, while the second dependent variable measures the ability of the venture not to prematurely fail, the third measures how successful it ultimately becomes. We consider that these goals do a good job for analyzing the performance of seed-stage VC investments in a developing country.

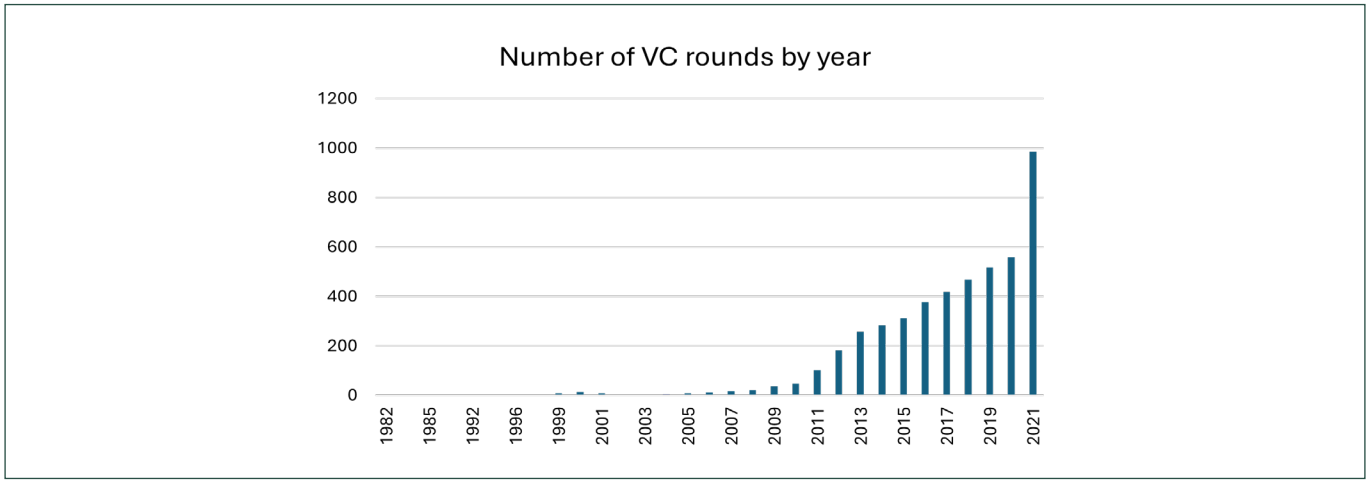
Our independent variables of interest are dummies for the presence of each type of funding investor (i.e., IVC, CVC, angel, and accelerator). We also control for investment round year, venture's home estate in Brazil, venture's industry group, and previous experience for each type of investor, when assigned by Crunchbase as the lead investor in a round. The previous experience variable is measured as the natural log for the count of previous rounds for an investor. These controls have also been employed before in this type of study on ventures performance (Crisan et al., 2019; Kerr et al., 2014; Park & Steensma, 2012; Yu, 2020).

To account for endogeneity issues, we employ an instrumental variable (IV) approach that consists of a two-stage logistic (2SL) estimation method for our binary dependent variables (1 and 2) and a logistic-OLS method for our continuous dependent variable (3). In the first stage, our independent variables of interest (dummies) are regressed on six instrumental variables: the natural log of the ventures' age at financing (in months); the natural log of the number of investors in the investment round; the natural log of the disclosed equity amount invested in the round; investment round year; ventures' estate in Brazil; and ventures' industry group. Afterward, the resulting fitted probabilities

are used in the second-stage regression (for the dependent variables) together with the control variables. This approach is similar to the two-stage least squares approach described by Bascle (2008), the most commonly used IV estimator.

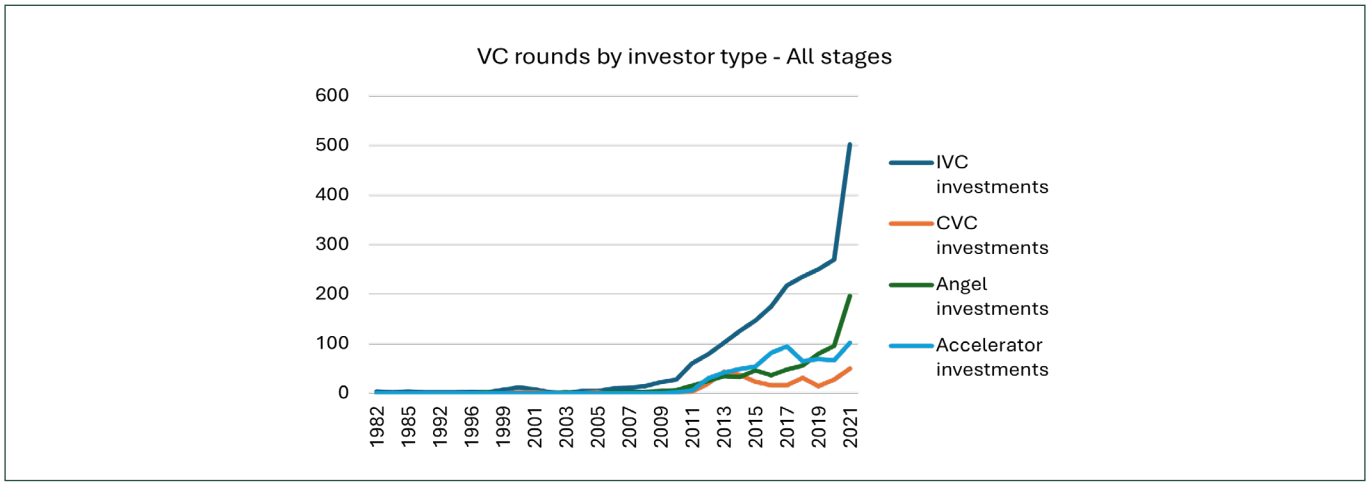
EMPIRICAL RESULTS

First, we present an overview of the general data (until 2021, since data for 2022 was available only until September). Figure 2 displays the distribution of the 5,137 VC investment rounds in Brazil by their announcement year. We can see that the industry took off in the late 2010s and spiked at the beginning of this decade. From Figure 3, we can see that IVCs led the way in industry development. When considering only ventures' first round of investments at the seed stage, the picture changes. We can see from Figure 4 that IVCs became predominant at this stage just in the mid-2010s, whereas before that accelerators disputed the leadership, while angels came second. The significant number of investments by accelerators in the 2010s is possibly a result of the regulatory and policy efforts made by the government in those years and before. On the other hand, the holdback from IVCs in seed-stage rounds was symptomatic of the problems facing a developing market, which pushed them to later rounds (Ribeiro & Carvalho, 2008). Thus, the more recent increase of IVC and angel rounds at this stage is an indication of how the VC, and more broadly the capital market, is growing in the country. The downside is the still shy stake of CVC investments, which can also be seen as an opportunity for many established companies that are starting to notice this market.



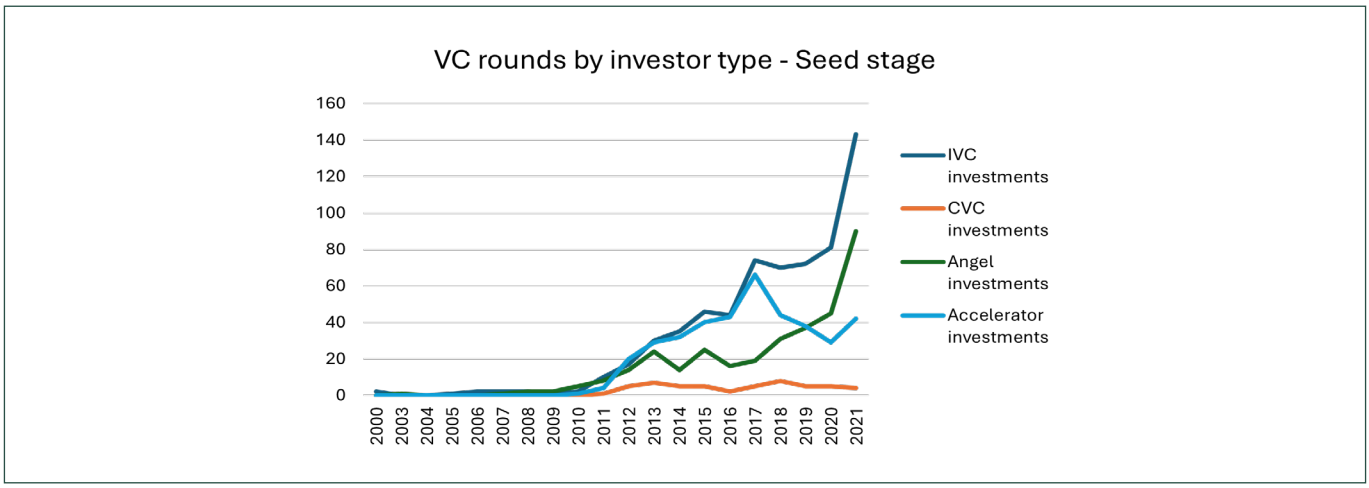
Source: Developed by the authors.

Figure 2. Number of VC investment rounds in Brazil each year.



Source: Developed by the authors.

Figure 3. Number of VC rounds per investor type in Brazil by year.



Source: Developed by the authors.

Figure 4. Number of VC rounds per investor type in Brazil by year — First round and seed-stage only.

Focusing on the selected sample, Table 1 presents the descriptive statistics for this group. We can see in Panel A that on average these investments involve equity of less than $1 million, from 1-2 investors and in ventures that are about five years old. These numbers are largely dispersed, though, as is the total amount companies ultimately get in subsequent funding. There are also highly skewed, which is expected in the VC context, where success histories can achieve exponential growth. Consistent with what we saw before, IVCs are the ones with the most previous experience, closely followed by accelerators. In contrast, angels do not present the expected experience. In Panel B we observe that only about 8% of the ventures in the sample achieve an M&A deal, while about 17% managed to get to a subsequent round of investment above the $1 million mark. These rates of achievement are below what is observed in developed markets like the US (Silva et al., 2022). However, we must consider that most investments were made in the last few years and have had less time to mature. Also different is that the presence of IVCs, although higher than its peers, is far from the 75% observed in that market (Silva et al., 2022).

Table 1. Descriptive statistics.

Panel A. Descriptive statistics for continuous variables			
	Mean	SD	Skewness
Total subsequent funding	8,461,273.06	100,073,299.81	31.92
Company age at financing	66.13	232.01	5.59
Number of firms in the investment round	1.68	1.61	4.43
Equity amount disclosed	681,947.13	1,595,926.21	7.98
Previous experience IVC	94.54	349.02	4.16
Previous experience CVC	10.94	112.60	10.42
Previous experience angel	1.64	13.27	15.76
Previous experience accelerator	79.59	463.10	7.87
Panel B. Frequencies for dichotomous variables			
	Valid cases	% of total	
Successful exit by M&A	153	7.90%	
Successfully achieved subsequent funding (over $1 million)	332	17.14%	
Funding by IVC	689	35.57%	
Funding by CVC	56	2.89%	
Funding by angel	369	19.05%	
Funding by accelerator	403	20.81%	

Note. Developed by the authors. This table reports descriptive statistics for the sample of 1,937 VC-backed ventures that received their first investment round at the seed stage.

Table 2 presents the results of Pearson's correlations between variables for the same sample. It is possible to observe positive relations between the three dependent variables (indicated as 1-3) and IVCs, and a positive relation between subsequent funding above $1 million and angels. At the same time, there was a negative

relationship between accelerators and subsequent funding. CVCs presented no significant relations to our dependent variables. Notably, highly experienced angels were associated with M&As and subsequent funding, which is not what we expected based on the literature.

Table 2. Correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Successful exit by M&A	1													
2. Successfully achieved subsequent funding (over $1 million)	.076**	1												
3. Total subsequent funding	-0.031	.142**	1											
4. Company age at financing	-0.035	-.073**	-0.012	1										
5. No. of firms in the investment round	-0.007	.137**	0.054	-.061*	1									
6. Equity amount disclosed	-0.038	.156**	.126**	0.015	.469**	1								
7. Funding by IVC	.054*	.155**	.111**	.059*	.278**	.244**	1							
8. Funding by CVC	-0.005	0.012	-0.006	-0.020	.062*	0.022	0.033	1						
9. Funding by angel	0.024	.098**	-0.005	-.046*	.381**	.096**	-0.028	-0.037	1					
10. Funding by accelerator	-0.023	-.087**	-0.044	.062**	-.068**	-.140**	-.152**	-.066**	-.171**	1				
11. Previous experience IVC	0.039	.126**	.102**	.052*	.099**	.259**	.707**	-0.002	-.094**	-.243**	1			
12. Previous experience CVC	-0.002	-0.007	-0.014	-0.017	-0.044	-0.035	-.069**	.682**	-0.036	-.060**	-.063**	1		
13. Previous experience angel	.047*	.046*	-0.004	-0.015	-.056*	-0.037	-.146**	-0.041	.462**	-.121**	-.126**	-0.028	1	
14. Previous experience accelerator	-0.015	-.081**	-0.034	.046*	-.125**	-.161**	-.172**	-.076**	-.176**	.858**	-.235**	-.052*	-.105**	1

Note. Developed by the authors. ** Correlation is significant at the 0.01 level (two-tailed). * Correlation is significant at the 0.05 level (two-tailed).

Table 3 presents the results for the first-stage logistic regression models. We can see that the instrumental variables that are most relevant for determining the type of investors to fund a venture are the number of investors in the round and the equity amount of the round. The latter is more important to differentiate the investor types, since it is expected that IVCs would make bigger investments, while angels and accelerators would make smaller ones. This is in part observed here.

Table 3. First-stage logistic regression models.

	IVC		CVC		Angel		Accelerator	
Constant	-11.629	(1.00)	-24.037	(1.00)	-37.888	(1.00)	53.015	(1.00)
Company age at financing	0.119	(0.12)	0.002	(0.99)	-0.157**	(0.04)	0.150	(0.07)
No. of firms in investment round	1.353***	(0.00)	0.798**	(0.02)	1.729***	(0.00)	1.005***	(0.00)
Equity amount disclosed	0.788***	(0.00)	0.184	(0.24)	-0.142	(0.06)	-1.065***	(0.00)
Year dummies	Yes		Yes		Yes		Yes	
Industry dummies	Yes		Yes		Yes		Yes	
Estate dummies	Yes		Yes		Yes		Yes	
Observations	784		784		784		784	
Pseudo-R square	0.56		0.38		0.40		0.52	

Note. Developed by the authors. This table reports the results of the first-stage logistic regression models for the independent variables of interest. P-values are reported in parentheses. *** and ** indicate significance at 1% and 5%, respectively.

Table 4 presents the results of the second-stage logistic regression analysis for different investors' effects on ventures' successful exit by M&A. Model 1 includes only our independent variables of interest (after adjusting for the instrumental variables) and the control dummies, while in Model 2 the previous experience controls are also included. The results show that the presence of CVC funding was positively related to a venture getting to an M&A deal. This result contradicts our hypothesis 2a. Furthermore, only highly experienced IVCs sustained a positive relation with this goal, not supporting our hypothesis 1a. No significant effects were visible from angels or accelerators, something that does not support our hypotheses 3a and 4a.

Table 4. Successful exit by M&A.

	(1)		(2)	
Constant	8.575	(1.00)	8.469	(1.00)
Funding by IVC	-1.210	(0.34)	-1.786	(0.18)
Funding by CVC	5.795**	(0.05)	7.367**	(0.02)
Funding by angel	-.413	(0.78)	-.044	(0.98)
Funding by accelerator	-2.453	(0.06)	-2.135	(0.14)
Previous experience IVC			0.249***	(0.01)
Previous experience CVC			-.077	(0.72)
Previous experience angel			.465	(0.12)
Previous experience accelerator			.057	(0.66)
Year dummies	Yes		Yes	
Industry dummies	Yes		Yes	
Estate dummies	Yes		Yes	
Observations	784		784	
Pseudo-R square	0.37		0.40	

Note. Developed by the authors. This table reports the results of logistic regression models for successful exit by M&A. P-values are reported in parentheses. *** and ** indicate significance at 1% and 5%, respectively.

Table 5 shows the results of the second-stage logistic regression analysis for different investors' effects on ventures' successfully achieving subsequent funding over the $1 million mark. Both models resulted in a positive influence of angel investors, once again different from what we projected, and not supporting hypothesis 3b, and a negative influence from accelerators, aligned with hypothesis 4b. In addition, the only significance observed for IVCs came from highly experienced ones, with a positive impact, different from what we expected in hypothesis 1b. CVCs did not present any significant impact, failing to support our hypothesis 2b.

Table 5. Successfully achieved subsequent funding over $1 million.

	(1)		(2)	
Constant	-53.682	(1.00)	-53.732	(1.00)
Funding by IVC	.131	(0.88)	-.262	(0.78)
Funding by CVC	-1.497	(0.48)	-1.087	(0.61)
Funding by angel	3.706***	(0.00)	3.994***	(0.00)
Funding by accelerator	-5.57***	(0.00)	-5.603***	(0.00)
Previous experience IVC			0.235***	(0.00)
Previous experience CVC			.003	(0.98)
Previous experience angel			.224	(0.21)
Previous experience accelerator			.135	(0.06)
Year dummies	Yes		Yes	
Industry dummies	Yes		Yes	
Estate dummies	Yes		Yes	
Observations	784		784	
Pseudo-R square	0.50		0.52	

Note. Developed by the authors. This table reports the results of logistic regression models for successfully achieving subsequent funding of over $1 million. P-values are reported in parentheses. *** and ** indicate significance at 1% and 5%, respectively.

Lastly, Table 6 presents the results of the second-stage OLS regression analysis for different investors' effects on ventures' total subsequent funding, conditional on having achieved a subsequent round of any amount. Like before, we see that angel investors sustained a positive relation to this goal, refuting our hypothesis 3b. Together, the results from Tables 5 and 6 indicate that the role played in Brazil by angel investors is substantially different from what has been the case in the US. Accelerators presented a base negative impact, which supported hypothesis 4b, although the positive influence by the high-experienced ones may mitigate that. Such divergence among accelerators has been previously reported (Choi & Kim, 2018; Crisan et al., 2019; Yu, 2020). Moreover, it is more clearly indicated that any positive influence from IVCs came from its higher experienced ones since the base effect from the first model was transferred to them in the second. The result only partially supported hypothesis 1b. Finally, previously experienced CVCs exerted a negative influence here, but the baseline result was not significant, failing to support hypothesis 2b.

Table 6. Total subsequent funding.

	(1)		(2)	
Constant	11.943	(0.00)	12.913	(0.00)
Funding by IVC	1.736**	(0.04)	1.285	(0.13)
Funding by CVC	-3.447	(0.07)	-2.084	(0.27)
Funding by angel	2.658***	(0.01)	2.656***	(0.00)
Funding by accelerator	-4.016***	(0.00)	-4.303***	(0.00)
Previous experience IVC			0.137**	(0.02)
Previous experience CVC			-0.272***	(0.01)
Previous experience angel			-.012	(0.94)
Previous experience accelerator			0.184***	(0.01)
Year dummies	Yes		Yes	
Industry dummies	Yes		Yes	
Estate dummies	Yes		Yes	
Observations	279		279	
Adjusted-R square	1.77		1.71	

Note. Developed by the authors. This table reports the results of logistic regression models for total subsequent funding. P-values are reported in parentheses. *** and ** indicate significance at 1% and 5%, respectively.

ROBUSTNESS TEST

To evaluate the robustness of our results, we conducted propensity score matching (PSM) analyses as a different method for addressing the endogeneity issues. The logic behind PSM is to construct balanced subsamples through matching cases based on a single propensity score of being selected. The score is built out of regressing the treatment variable on chosen covariates. We applied as covariates the same instrument variables used in the previous analyses, so the results for the selection models are the same in Table 3. Then, the probabilities of selection for each of the investor types were used to construct a subsample of matching treatment and control cases for each of them. Note that the subsamples used in each PSM model may vary and be smaller than our original sample of 784 ventures, due to

differences in the number of ventures funded by each investor type.

Table 7 presents the results of PSM logistic regression analysis for different investors' effects on ventures' successful exit by M&A. The results corroborate our analysis of IVCs, indicating that only previously experienced ones displayed a positive relationship with M&A, which does not support hypothesis 1a. The output for CVCs was different from the previous analysis and does not show significant coefficients, which does not support hypothesis 2a, but also does not contradict it. In this case though, we should be careful not to jump to conclusions, since the estimations for CVC were affected by a reduced sample size. Results for angels and accelerators also failed to present significant coefficients, leaving hypotheses 3a and 4a with no support.

Table 7. Propensity score matching — Successful exit by M&A.

	PSM IVC		PSM CVC		PSM AG		PSM AC	
Constant	4.257	(1.00)	-22.982	(1.00)	4.205	(1.00)	32.632	(1.00)
Funding by IVC	-.101	(0.87)						
PE IVC	0.246**	(0.03)						
Funding by CVC			1.381	(1.00)				
PE CVC			-1.711	(1.00)				
Funding by angel					-.017	(0.99)		
PE angel					-.026	(0.95)		
Funding by accelerator							-18.151	(1.00)
PE accelerator							.430	(0.27)
Year dummies	Yes		Yes		Yes		Yes	
Industry dummies	Yes		Yes		Yes		Yes	
Estate dummies	Yes		Yes		Yes		Yes	
Observations	694		82		466		474	
Pseudo-R square	0.37		1.00		0.54		0.66	

Note. Developed by the authors. This table reports the results of PSM logistic regression models for successful exit by M&A. P-values are reported in parentheses. *** and ** indicate significance at 1% and 5%, respectively.

Table 8 shows the results of the PSM logistic regression analysis for different investors' effects on ventures' successfully achieving subsequent funding over the $1 million mark. Different from our original analysis, IVCs were found to exert a positive significant effect for this measure, supporting hypothesis 1b. CVCs remained insignificant, not supporting hypothesis 2b. Angels were also not significant, failing to support hypothesis 3b, and accelerators presented a positive influence, opposite from what we expected in hypothesis 4b.

Table 8. Propensity score matching — Successfully achieved subsequent funding over $1 million.

	PSM IVC		PSM CVC		PSM AG		PSM AC	
Constant	-63.299	(1.00)	-22.250	(1.00)	-52.895	(1.00)	-44.747	(1.00)
Funding by IVC	1.411***	(0.00)						
PE IVC	0.141**	(0.04)						
Funding by CVC			.367	(1.00)				
PE CVC			-6.588	(1.00)				
Funding by angel					.071	(0.84)		
PE angel					-.163	(0.38)		
Funding by accelerator							1.276**	(0.04)
PE accelerator							-.127	(0.19)
Year dummies	Yes		Yes		Yes		Yes	
Industry dummies	Yes		Yes		Yes		Yes	
Estate dummies	Yes		Yes		Yes		Yes	
Observations	694		82		466		474	
Pseudo-R square	0.49		0.97		0.41		0.39	

Note. Developed by the authors. This table reports the results of PSM logistic regression models for successfully achieved subsequent funding over $1 million. P-values are reported in parentheses. *** and ** indicate significance at 1% and 5%, respectively.

Lastly, Table 9 presents the results of the PSM OLS regression analysis for different investors' effects on ventures' total subsequent funding, conditional on having achieved a subsequent round of any amount. IVCs have shown significant positive influence, once again supporting hypothesis 1b. The observed outper-

formance from highly experienced IVCs in our original analysis was not present with this method, which is more encouraging for IVCs in general. CVCs showed no significance, probably impacted by the reduced sample size. Furthermore, angels and accelerators displayed no significant coefficients. The results failed to support hypotheses 2b, 3b, and 4b. Note that the number of cases was further reduced here due to the condition of having achieved a subsequent round of any amount.

Table 9. Propensity score matching — Total subsequent funding.

	PSM IVC		PSM CVC		PSM AG		PSM AC	
Constant	13.245	(0.00)	12.860	(1.00)	14.273	(0.00)	13.432	(0.00)
Funding by IVC	1.337***	(0.00)						
PE IVC	.114**	(0.15)						
Funding by CVC			4.552	(1.00)				
PE CVC			-1.197	(1.00)				
Funding by angel					.488	(0.35)		
PE angel					-.391	(0.12)		
Funding by accelerator							.763	(0.33)
PE accelerator							-.090	(0.44)
Year dummies	Yes		Yes		Yes		Yes	
Industry dummies	Yes		Yes		Yes		Yes	
Estate dummies	Yes		Yes		Yes		Yes	
Observations	244		19		145		110	
Pseudo-R square	0.38		-		0.12		0.19	

Note. Developed by the authors. This table reports the results of PSM logistic regression models for total subsequent funding. P-values are reported in parentheses. *** and ** indicate significance at 1% and 5%, respectively.

Considering the previous results, Table 10 summarizes the findings for our hypotheses.

Table 10. Summary of hypotheses' results.

Hypothesis	M&A	Subsequent funding
(H1) VC	Not supported	Partially supported
(H2) CVC	Not supported	Not supported
(H3) Angel	Not supported	Not supported
(H4) Accelerator	Not supported	Supported

Note. Developed by the authors.

DISCUSSION

Our analysis of the seed-stage VC market in Brazil yielded some results that are remarkably different from what we expected according to the literature based on the United States. Firstly, IVCs did not outperformed the other investor types like in the US. What we observed, however, is a consolidated leading role of experienced IVCs in all three success measures. This agrees with previous studies that indicated that the overall good performance attributed to IVCs is due to a large share of success from the highest experienced ones (Chemmanur et al., 2011; Fitza et al., 2009; Nahata, 2008; Sorensen, 2007). Although not as leading as in the US, the IVC model still held promising results, and some of the difference may be due to smaller presence of this investor type in the seed-stage segment of the market in Brazil. We can only expect, then, that the role of the IVC investor will remain an important differentiator for ventures, as this type of investor increases its presence at seed-stage VC in Brazil and accumulate more experience. The results from our robustness tests corroborate this trend.

The results for CVCs were ambiguous. On the one hand, this type of investor benefited ventures getting to an M&A deal, but on the other, they weren't relevant for further investments. These are better results than what we observed in the US market, where CVC was linked to less subsequent funding (Silva et al., 2022). The M&A results may be influenced by the propensity of corporations to acquire their own portfolio companies, in line with previous findings that incumbents may use invested ventures as extended R&D departments and try to incorporate their intellectual property (Katila et al., 2008; Kim et al., 2019; Uzuegbunam et al., 2019). This hypothesis needs further investigation, though. Likewise, a lack of incentives for ventures to search for further investments may be a way for CVCs to diminish competition for their products. This would be also consistent with a view of CVCs as a drag for ventures on market-related outcomes, such as trademarks and product launches (Uzuegbunam et al., 2019). We note, however, that these results should be taken with caution, as they are based on still a small presence of CVCs in this segment of the market.

Our analysis results for angel investors were the ones that differed the most from what is reported in previous literature, which is mostly from developed countries. Previously reported as disorganized, unresourceful, and biased, angel investors in Brazil were most effective in

helping ventures secure additional funding. We speculate that this is due to profile differences from angels in the United States. Some of the market characteristics seen in developing markets must influence the profile of VC investors in ways that differ from the developed world. For instance, a less developed capital market is also a result of fewer individual investors and a culture prone to be more risk-averse (Ribeiro & Carvalho, 2008). With a reduced number of individual investors in the capital markets, there should be a further reduced number of angel investors in a region, since VC investments are riskier than investing in publicly traded companies (Kerr et al., 2014). As presented before, Brazil shows a relatively small number of angels, only around 0.04% of the population, compared to around 1% of the US. As a result, it is possible that the average profile of an angel investor in Brazil, when compared to the United States, is of relatively higher net worth, better connected with other investors, and with more industry and venturing experience. This profile should help angels deliver better services to ventures, leading to higher performance. This proposition needs further investigation, though.

Lastly, we found little difference in outcomes from accelerators as to what was expected from the literature. This was the worst-performing investor type for seed ventures, especially considering the important goal of obtaining more funding at this stage. There was, however, a silver lightning as highly experienced accelerators perform better. This is in line with what has been observed in the US (Silva et al., 2022). Additionally, previous studies have hinted toward the difference in performance among accelerators, with results varying according to the types of contexts in which they operate and services they provide to ventures (Choi & Kim, 2018; Crisan et al., 2019; Gonzalez-Uribe & Leatherbee, 2018).

The overall findings suggest that the Brazilian venture capital industry has not reached the level of development seen in the United States. More sophisticated investors, such as IVCs and CVCs, are not yet as deeply involved in the early-stage scenario as their American counterparts, while angels and accelerators continue to maintain their positions. It is conceivable, however, that if the industry continues to grow at the same pace as in recent years, the Brazilian market may eventually evolve toward a market structure similar to that of their counterparts in the US.

CONCLUSIONS

This is the first study, as far as our knowledge goes, to broadly state the comparative performance of different investor types in the Brazilian seed-stage venture capital market, while taking the view from the invested ventures. Our results indicate that there are significant differences in performance when comparing developing market investors from what is reported by the literature in the United States. These differences are probably due to environmental and market peculiarities of developing nations (like underdeveloped capital markets, high bureaucracy, corruption costs, higher cost of capital, etc.) that affect the profiles of investors or their ability to operate in the same model as in rich countries. The main difference we encountered is the outperformance of angel investors in the Brazilian market, which we attribute to profile differences between this kind of investor in that country and the one in the United States. Moreover, there was no clear predominance of the IVC model, like is reported in the United States, for instance. We show, however, a clear distinction between regular IVCs and highly experienced IVCs, which outperformed every goal. The results for CVCs were ambiguous, with good results for M&As but not in specific seed-stage goals. This may be due to fewer cases from these investors, as they have begun to grow just recently in the country. Lastly, accelerators performed in proximity to what was expected from previous literature and confirmed poor perspectives for ventures that relied on them, at least in the baseline scenario.

The impression gleaned from this comparative analysis suggests that, to some extent, the Brazilian market appears to be following a trajectory like that of the United States. The presence of IVC investors in the early-stage segment is not yet widespread, with angels and accelerators maintaining significant positions. However, it is conceivable that if the industry continues its recent growth momentum, the two markets may eventually exhibit similarities. The same trend appears to hold for CVC, as interest in this practice seems to be on the rise in the country. These shifts in the market present a significant opportunity for emerging startups seeking investment partners to cultivate their businesses. The most notable among them stand to benefit not only from an influx of capital but also from the accompanying value-added services.

Our study contributes to expanding the knowledge of diverse VC investor types in settings different from where they are usually pictured. By demonstrating the distinctions in performance from each investor in a developing country, we improve the understanding of how the problems and challenges concerning these markets will affect the development and impact of the VC industry. The choice of the Brazilian case for comparison to the US is intriguing, as it illustrates the challenges of a developing market while embodying Western values and boasting a significant capital mar-

ket. There is ample evidence indicating variations in investor effects between the two countries, which can be attributed to differences in market environments and stages of development. Our study contributes to the ongoing efforts to comprehend the Brazilian market through international comparison. For practitioners, we contribute by delivering a clearer picture of the state of the VC industry in Brazil. Entrepreneurs can also find our results useful when reflecting on which type of funding to seek, and investors can compare their performance to the average in the industry. CVCs, for example, may want to consider the ways they can improve how their portfolio companies get more funding from other investors and continue to grow.

Nonetheless, our analysis comes with some limitations. For one, we were unable to include exits by IPOs as a performance measure, due to the lack of cases with all the data needed. This is a shortcoming, due to the importance of this goal in the VC industry. But we have indicated that this importance is reduced in the seed stage (since these ventures are seeking shorter-term goals) and in developing countries (where investors have been found to procure other means to get a return on their investments). Finally, we note that our analysis does not consider nuances in the investor-venture dyad, like level of involvement, specific services, or resources allocated that should interfere with ventures' achievements. Likewise, we make no distinction between investors of the same type (like different accelerators models), beyond the previous experience controls. We have not done so to avoid overreaching in a study that already includes four different investor types, but these are factors that have been proven relevant previously and should be considered in future research. Further studies can also explore issues raised in this study, like if CVCs' parent companies have a propensity for acquiring their portfolio ventures, leading to higher M&A deals for those ventures, and if the average profile of the Brazilian angel investor significantly differs from the one in developed countries, like de United States. Such investigations would help understand the Brazilian VC industry more clearly.

REFERENCES

Anjos do Brasil. (2022). *Crescimento do Investimento Anjo: Pesquisa 2022 ano base 2021*. https://www.anjosdobrasil.net/blog/category/pesquisa-e-dados

Anthony, B. S., Viguerie, S. P., Schwartz, E. I., & Landeghem, J. V. (2018). 2018 Corporate Longevity Forecast: Creative Destruction is Accelerating. INNOSIGHT. https://www.innosight.com/wp-content/uploads/2017/11/Innosight-Corporate-Longevity-2018.pdf

Associação Brasileira de Private Equity e Venture Capital. (2021). *Inside VC – Venture Capital in Brazil*. https://www.abvcap.com.br/pesquisas/estudos.aspx?c=en-us

Associação Nacional de Entidades Promotoras de Empreendimentos Inovadores. (2019). *Mapeamento dos mecanismos de geração de empreendimentos inovadores no Brasil*. https://anprotec.org.br/site/wp-content/uploads/2019/09/Mapeamento_Empreendimentos_Inovadores.pdf

Bascle, G. (2008). Controlling for endogeneity with instrumental variables in strategic management research. *Strategic Organization*, *6*(3), 285-327. https://doi.org/10.1177/1476127008094339

Bertoni, F., Colombo, M. G., & Grilli, L. (2013). Venture capital investor type and the growth mode of new technology-based firms. *Small Business Economics*, *40*, 527-552. https://doi.org/10.1007/s11187-011-9385-9

Brander, J. A., Amit, R., & Antweiler, W. (2002). Venture-capital syndication: Improved venture selection vs. the value-added hypothesis. *Journal of Economics and Management Strategy*, *11*(3), 423-452. https://doi.org/10.1111/j.1430-9134.2002.00423.x

Chancel, L., Piketty, T., Saez, E., & Zucman, G. (2022). *World Inequality Report 2022*. World Inequality Lab. https://wir2022.wid.world/www-site/uploads/2023/03/D_FINAL_WIL_RIM_RAPPORT_2303.pdf

Chemmanur, T. J., Krishnan, K., & Nandy, D. K. (2011). How does venture capital financing improve efficiency in private firms? A look beneath the surface. *Review of Financial Studies*, *24*(12), 4037-4090. https://doi.org/10.1093/rfs/hhr096

Chesbrough, H. W. (2002). Making sense of corporate venture capital. *Harvard Business Review*. https://hbr.org/2002/03/making-sense-of-corporate-venture-capital

Choi, Y., & Kim, D. (2018). The effects of investor types on investees' performance: Focusing on the seed accelerator. *Cogent Economics and Finance*, *6*(1), 1550870. https://doi.org/10.1080/23322039.2018.1550870

Cohen, S., Fehder, D. C., Hochberg, Y. V., & Murray, F. (2019). The design of startup accelerators. *Research Policy*, *48*(7), 1781-1797. https://doi.org/10.1016/j.respol.2019.04.003

Crisan, E. T., Salanta, I. I., Beleiu, I. N., Bordean, O. N., & Bunduchi, R. (2019). A systematic literature review on accelerators. *Journal of Technology Transfer*, *46*, 62-89. https://doi.org/10.1007/s10961-019-09754-9

Crunchbase Data. (2022). *Cruchbase DataBase*. http://data.crunchbase.com

Cumming, D., & Zhang, M. (2019). Angel investors around the world. *Journal of International. Business Studies*, *50*, 692-719. https://doi.org/10.1057/s41267-018-0178-0

Dalal, A. (2022). Meta-analysis of determinants of venture capital activity. *Entrepreneurial Business and Economics Review*, *10*(1), 113-128. https://doi.org/10.15678/EBER.2022.100108

Dias, R. S., & Silva, M. A. (2016). Private equity and venture capital funds: What drives the demand and supply? *Brazilian Administration Review*, *13*(2), e150058. https://doi.org/10.1590/1807-7692bar2016150058

Dutta, S., & Folta, T. B. (2016). A comparison of the effect of angels and venture capitalists on innovation and value creation. *Journal of Business Venturing*, *31*(1), 39-54. https://doi.org/10.1016/j.jbusvent.2015.08.003

Fitza, M., Matusik, S. F., & Mosakowski, E. (2009). Do VCS matter? The importance of owners on performance variance in startup firms. *Strategic Management Journal*, *30*(4), 387-404. https://doi.org/10.1002/smj.748

Gompers, P., & Lerner, J. (1998). *The determinants of corporate venture capital success organizational structure, incentives, and complementarities* [Working Paper No 6725]. National Bureau of Economic Research. Cambridge, MA, USA. https://doi.org/10.3386/w6725

Gompers, P., & Lerner, J. (2001). The venture capital revolution. *Journal of Economic Perspectives*, *15*(2), 145-168. https://doi.org/10.1257/jep.15.2.145

Gonzalez-Uribe, J., & Leatherbee, M. (2018) The effects of business accelerators on venture performance: Evidence from startup Chile. *Review of Financial Studies*, *31*(4), 1566-1603. https://doi.org/10.1093/rfs/hhx103

Gonzalo, M., Guimaraes Alves, N., Federico, J., Szapiro, M., & Kantis, H. (2022). Venture capital industry emergence and development in India and Brazil: The role of the state and challenges for the global south countries. *Innovation and Development*, *14*(1), 67-88. https://doi.org/10.1080/2157930X.2022.2065721

Gornall, W., & Strebulaev, I. A. (2015). *The economic impact of venture capital: Evidence from public companies* [Working Paper No 3362]. Standford Business.

Groh, A. P., & Wallmeroth, J. (2016). Determinants of venture capital investments in emerging markets. *Emerging Markets Review*, *29*, 104-132. https://doi.org/10.1016/j.ememar.2016.08.020

Hellmann, T., & Puri, M. (2002). Venture capital and the professionalization of start-up firms: Empirical evidence. *Journal of Finance*, *57*(1), 169-197. https://doi.org/10.1111/1540-6261.00419

Jeng, L. A., & Wells, P. C. (2000). The determinants of venture capital funding: Evidence across countries. *Journal of Corporate Finance*, *6*(3), 241-289. https://doi.org/10.1016/S0929-1199(00)00003-1

Kaplan, S. N., & Lerner, J. (2010). It ain't broke: The past, present, and future of venture capital. *Journal of Applied Corporate Finance*, *22*(2), 36-47. https://doi.org/10.1111/j.1745-6622.2010.00272.x

Katila, R., Rosenberger, J. D., & Eisenhardt, K. M. (2008). Swimming with sharks: Technology ventures, defense mechanisms and corporate relationships. *Administrative Science Quarterly*, *53*(2), 295-332. https://doi.org/10.2189/asqu.53.2.295

Kerr, W. R., Lerner, J., & Schoar, A. (2014). The consequences of entrepreneurial finance: Evidence from angel financings. *Review of Financial Studies*, *27*(1), 20-55. https://doi.org/10.1093/rfs/hhr098

Keuschnigg, C. (2004). Venture capital backed growth. *Journal of Economic Growth*, *9*(2), 239-261. https://doi.org/10.1023/B:JOEG.0000031428.35711.fc

Kim, J. Y., Steensma, H. K., & Park, H. D. (2019). The influence of technological links, social ties, and incumbent firm opportunistic propensity on the formation of corporate venture capital deals. *Journal of Management*, *45*(4), 1595-1622. https://doi.org/10.1177/0149206317720722

Leonel, S. (2019). O papel e as contribuições da indústria de venture capital no Brasil. *Revista Economia Ensaios*, *33*, 125-142. https://doi.org/10.14393/REE-v33n0a2019-50418

Matos, F., & Radaelli, V. (2020). *Ecossistema de startups no brasil: Estudo de caracterização do ecossistema brasileiro de empreendedorismo de alto impacto*. Banco Interamericano de Desenvolvimento. https://doi.org/10.18235/0002222

Nahata, R. (2008). Venture capital reputation and investment performance. *Journal of Financial Economics*, *90*(2), 127-151. https://doi.org/10.1016/j.jfineco.2007.11.008

National Venture Capital Association. (2020). *National Venture Capital Association Yearbook*. PitchBook. Washington, DC, USA. https://nvca.org/wp-content/uploads/2020/04/NVCA-2020-Yearbook.pdf

Park, H. D., & Steensma, H. K. (2012). When does corporate venture capital add value for new ventures?. *Strategic Management Journal*, *33*, 1-22. https://doi.org/10.1002/smj.937

Popov, A., & Roosenboom, P. (2013). Venture capital and new business creation. *Journal of Banking and Finance*, *37*(12), 4695-4710. https://doi.org/10.1016/j.jbankfin.2013.08.010

Ribeiro, L. D. L., & Carvalho, A. G. (2008). Private equity and venture capital in an emerging economy: Evidence from Brazil. *Venture Capital*, *10*(2), 111-126. https://doi.org/10.1080/13691060801946121

Rosenbusch, N., Brinckmann, J., & Müller, V. (2013). Does acquiring venture capital pay off for the funded firms? A meta-analysis on the relationship between venture capital investment and funded firm financial performance. *Journal of Business Venturing*, *28*(3), 335-353. https://doi.org/10.1016/j.jbusvent.2012.04.002

Samila, S., & Sorenson, O. (2011). Venture capital, entrepreneurship, and economic growth. *Review of Economics and Statistics*, *93*(1), 338-349. https://doi.org/10.1162/REST_a_00066

Schnitzer, M., & Watzinger, M. (2022). Measuring the spillovers of venture capital. *Review of Economics and Statistics*, *104*(2), 276-292. https://doi.org/10.1162/rest_a_00937

Sheetz, M. (2017). *Technology killing off corporate America: Average life span of companies under 20 years*. https://www.cnbc.com/2017/08/24/technology-killing-off-corporations-average-lifespan-of-company-under-20-years.html

Shetty, S., Sundaram, R., & Achuthan, K. (2020). Assessing and comparing top accelerators in Brazil, India and USA: Through the lens of new ventures' performance. *Entrepreneurial Business and Economics Review*, *8*(2), 153-177. https://doi.org/10.15678/EBER.2020.080209

Silva, R., Paula, F., & Silva, J. (2022, June 15-17). *The effects of different entrepreneurial equity financing sources on seed and early-stage ventures performance*. EURAM 2022 Conference, Winterthur, Switzerland.

Sorensen, M. (2007). How smart is smart money? A two-sided matching model of venture capital. *Journal of Finance*, *62*(6), 2725-2762. https://doi.org/10.1111/j.1540-6261.2007.01291.x

Uzuegbunam, I., Ofem, B., & Nambisan, S. (2019). Do corporate investors affect entrepreneurs' IP portfolio? Entrepreneurial finance and intellectual property in new firms. *Entrepreneurship: Theory and Practice*, *43*(4), 673-696. https://doi.org/10.1177/1042258717738247

Yu, S. (2020). How do accelerators impact the performance of high-technology ventures? *Management Science*, *66*(2), 503-1004. https://doi.org/10.1287/mnsc.2018.3256

Authors

Raoni Arruda Bacelar da Silva
Pontifícia Universidade Católica do Rio de Janeiro, IAG Escola de Negócios
Rua Marquês de São Vicente, n. 225, Gávea, CEP 22451-900, Rio de Janeiro, RJ, Brazil
raoni.bacelar@gmail.com

Fábio de Oliveira Paula
Pontifícia Universidade Católica do Rio de Janeiro, IAG Escola de Negócios
Rua Marquês de São Vicente, n. 225, Gávea, CEP 22451-900, Rio de Janeiro, RJ, Brazil
fabioop@iag.puc-rio.br

Jorge Ferreira da Silva
Pontifícia Universidade Católica do Rio de Janeiro, IAG Escola de Negócios
Rua Marquês de São Vicente, n. 225, Gávea, CEP 22451-900, Rio de Janeiro, RJ, Brazil
shopshop@iag.puc-rio.br

Author's contributions

1st author: conceptualization (lead), data curation (lead), formal analysis (lead), investigation (lead), methodology (lead), project administration (lead), software (lead), validation (equal), writing – original draft (lead), writing – review & editing (lead).

2nd author: conceptualization (supporting), data curation (supporting), formal analysis (supporting), funding acquisition (supporting), investigation (supporting), methodology (supporting), project administration (lead), resources (supporting), software (supporting), supervision (lead), validation (lead), visualization (lead), writing – original draft (supporting), writing – review & editing (supporting).

3rd author: funding acquisition (lead), project administration (supporting), resources (lead), supervision (supporting), validation (supporting), visualization (supporting).