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ABSTRACT

This paper analyzes the behavior of Private Equity and Venture Capital (PE/VC) investment funds, known in Brazil as Investment Funds in Participations (IFPs). Being high-risk investments, they invest in a nascent idea or company, to try years later, through divestments, to obtain high returns. CVM (Comissão de ValoresMobiliarios) requires that only qualified investors can be shareholders. The analyzed period addresses the post-Subprime Crisis period and the crisis that occurred in the Brazilian economy from 2014 to 2016. A decrease in MOIC (Multiple of Invested Capital) was observed during the crisis and a decrease in the Holding Period. Some patterns of investor behavior are addressed in the face of economic adversities and regulatory changes that occurred in the period

Keywords: IFPs, Private Equity, Venture Capital, Long Term, Risk Investment.

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1. INTRODUCTION

At the end of 2018, according to ANBIMA[3], there were approximately US$ 1.350 trillion (R$ 3.698167/US$, average rate 2018) in investment funds in Brazil, with just over US$ 67.330 billion in Private Equity/Venture Capital funds (PE/VC), in Brazil called IFPs, Equity Investment Funds. PE/VC funds aim to invest in the financing and development of nascent companies, with high potential for growth and profitability. The institutional investor[4], according to CVM rules, becomes a shareholder in anIFP, which buys a stake in the target company's capital and gains decision-making power (goals, competitive strategies, hiring staff, administrative processes, etc). This new manager injects capital and also brings increased credibility, credit channels and new business possibilities (SILVA, 2010). The investor, assuming the role of manager, brings relationships with large companies to the business, opening new channels of growth and development.

The investment is of low liquidity and great risk, it does not always bring profits. However, low liquidity is beneficial for the invested company, as if the investor needs to leave the business, he does not have the option to redeem his shares immediately, he can only sell them if he finds another interested investor on the market (SILVA, 2010).

The investor assumes the risk of low liquidity when accepting to redeem his participation only within the stipulated time, however changes may occur within this period. If the market heats up due to an unforeseen shock, you can try to speed up processes to anticipate divestment. The same is true in case the market enters a recession or the exit window appears to be impaired (examples: a large movement by the segment leader, or changes in legislation). The manager may propose to delay divestment. However, this is not his exclusive decision, it is necessary to obtain approval from the other stakeholders.

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[3] Data available in http://www.anbima.com.br/pt_br/informar/estatisticas/fundos-de-investimento/fi-consolidado-historico.htm.. Acessedin June 3rd, 2019.

[4] Large investors, usually legal entities, such as large financial institutions or individuals with proven expertise and more than R$ 1,000,000.00 invested in the market, according to article 4, Section II, CVM Instruction 578.

Funds with a forecast of short-term divestment are called quick flippers. There is no consensus on the time to classify these funds, authors such as Cao (2011, apud FERREIRA, 2017) define quick flippers as funds that carry out divestments in less than 12 months from the initial investment and making a profit. Others define quickflippers as having up to 3 years of total time until divestment (INSPER, 2018). This classification is relevant to the study of PE/VC in Brazil, since the percentage of quick-flipper funds in Brazil is more than double the international average (INSPER, 2018).

Schedule changes were analyzed for the Brazilian market by Insper Institute (2017). In Brazil, PE/VC funds showed a 5-time increase in the number of exits in heated economy scenarios, compared to recessionary scenarios.

The PE/VC return is considerably higher than that of other types of funds, Jenkinson and Kaplan (2014). In Brazil, in 2019, according to ANBIMA, IFPs had a real return[5] on equity of 19.33% compared to the 7.98% achieved by fixed income funds (more than half of the assets invested in Brazil are in this modality).

2. CONDITIONS FOR PE/VC FUNDS

This type of investment tends to be closely linked to the economic environment and long-term expectations. Post-crisis economies, in reversion to positive expectations, should show an increase in PE/VC investment because, being long-term and more profitable, they depend on the company's performance and favorable market reception. They also depend on a favorable business environment, economies with barriers to entry and high bankruptcy rate for new companies discourage such investments. Gompers et al (2008) demonstrate that experienced PE/VC investors react quickly and positively to signs of improvement in the stock market, this reaction is slower for less experienced investors. However, since PE/VC funds are high risk investments, however strict the selection criteria may be, the probability of success is smaller. In long

[5] Deflated by IPCA IBGE.

term there are greater probabilities of problems occurring, such as economic crisis, changes in managers, changes in the market (such as product/service becoming obsolete, etc), difficulties in the IPO, etc.

3. RELATIONSHIP BETWEEN PE/VC AND TECHNOLOGICAL INNOVATION

The relationship between PE/VC and innovation was measured by Kortum and Lerner (2000), using the number of patents in the USA as a proxy for innovation, identifying a third correlated factor, technological development. A new technological paradigm increases the number of registered patents, in parallel with investment in PE/VC funds (KORTUM; LERNER, 2000, p. 675-680). Through nonlinear least squares regression, they obtained a correlation coefficient (ρ) very close to 1 for the relationship between Venture Capital and P&D, being highly substitutable. This result shows that encouraging research and development of new ideas brings an increase in investment in VC (KORTUM; LERNER, 2000, p. 680). The offer of PE/VC funds is also influenced by macroeconomic conditions and an entrepreneurial environment (ROMAIN; POTTELSBERGHE, 2004, p. 4).

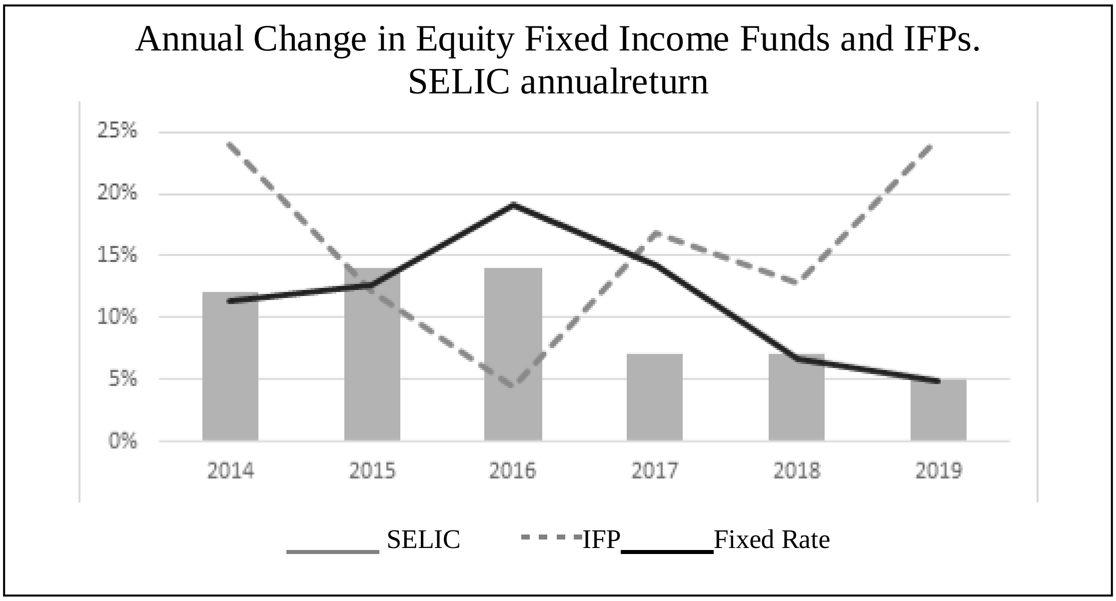
The correlation between investment in innovation and economic development has led to large companies in other countries, job creation and new technologies (FGV, 2011, p. 346). Romain and Pottelsberghe (2004, p. 7 apud GOMPERS; LERNER[6], 1999) show a positive relationship with the short-term interest rate and investment in PE/VC, justifying the use of SELIC for analysis of PE/VC funds in Brazil, as well such as the LTIR (Long Term Interest Rate) defined by the National Monetary Council (CMN).

With the deepening of the Brazilian crisis, the increase in unemployment and the deceleration of the inflationary process (inflation below the bottom in the Inflation Target model), there were cuts in the SELIC Rate by the COPOM (Monetary Policy Committee of the Central Bank) and signals to the market that more

[6] GOMPERS, P. and LERNER, J. What Drives Venture Fundraising? Brooking Papers on Economic Activity, Microeconomics. 1998, p. 149-192.

decreases are to come. These measures had a positive impact on PE/VC funds according to the relationship obtained by Romain and Pottelsberghe (2018):

Graph 1



Source: Own Elaboration

Lower short-term interest rates tend to cause consumption increase and the economy to heat up, using the idle capacity of a country in recession. The increase in consumption favors IFPs in Brazil, investors in companies in the retail sector. The high interest rate was cited by managers and investors in a census published by FGV (2011) as one of the main impeding factors for PE/VC in Brazil, in addition to high taxation. Insper´s study confirms the hypothesis that, if the SELIC rate continues to fall, institutional investors (pension funds, insurance companies, etc.) should increase investments in PE / VC (INSPER, 2018).

4. BRAZILIAN OVERVIEW AND REGULATION

In 2003 CVM created IFPs, by Instruction 391 (CVM, 2003), with the possibility of investing in more flexible ways, without limitations due to the size or characteristics of the company (FREIRE; BURR, 2010). Equity Investment Funds are defined in Chapter 2, Article 2 of Instruction 391:

> Art.2. The Equity Investment Fund (fund), constituted in the form of a closed condominium, is a pool of resources destined to the acquisition of shares, debentures, subscription bonuses, or other bonds and securities convertible or exchangeable into shares issued by companies, open or closed, participating in the decision-making process of the invested company, with an effective influence on the definition of its strategic policy and management, notably through the appointment of members of the Board of Directors. (CVM, 2003)

In addition to IFP, old nomenclatures, IFEC (Investment Funds in Emerging Companies) and IFP/IFEC for the modality are still used. These funds have been supervised by ABVCAP (Brazilian Association of Private Equity and Venture Capital) and ANBIMA (Brazilian Association of Financial and Capital Markets Entities) since 2011, with the publication of the "ABVCAP/ANBIMA Code of Regulation and Best Practices for the IFP and IFEC market", aiming to make them more transparent and standardized.

Today in Brazil, the FGV classification presented in the Brazilian Census on Private Equity and Venture Capital (FGV, 2011, p.177) is used:

Early-Stage Companies

- Seed Capital: The company is still an idea, carrying out market tests and patent registrations, in addition to other legal measures.
- Startup: Companies at this stage already have a consolidated idea, hired employees, carry out market tests and may already be operating with customers.

Companies in Development Stage:

- Venture Capital - Early Stage: Companies with up to 4 years of operation and sales of up to R$ 8 million/year.
- Venture Capital - Later Stage: The company works fully and grows faster than the resources generated internally.

Expansion Stage Companies:

- Private Equity - Growth: Consolidated companies, seeking expansion on research, production plant, working capital or some other similar characteristic. They are generally companies with a sales growth rate above 25% per year.
- Private Equity - Later Stage: Companies that have already reached peak growth and development. In addition to the expansions sought in the Growth stage to provide greater impetus for growth, they may also use capital to acquire other companies. As published by FGV "The investor seeks, in this case, gains with scale or gains arising from the company's organization from a managerial point of view." (FGV, 2011, p. 177)
- Distressed: Companies that have already passed their peak of growth, facing difficulties to remain in the market, or even to leave it (barriers to exit). The objective of this investment is to restructure the company and resume profitability.

In addition to these classifications, two more stages can be found, according to the FGV Private Equity Studies Center, FGVcepe:

- Private Equity - Buyout: Acquisition of companies at a high stage of development, very similar to the PE - Later Stage.

- Mezzanine: Companies with enormous potential for generating cash through subordinated debt, hybrid financing instruments, debentures and subscription rights.
- PIPE: Low liquidity companies already listed on stock exchanges. Similar to Distressed, but generally in better financial situation. (RAMALHO, 2008)

The difference between the two types of investment, Private Equity and Venture Capital, is the company's development stage. Preliminary internships (young companies, experimental or start-ups) are considered Venture Capital, greater return and greater risk, the company's future is more uncertain. Advanced stages or expansions are considered Private Equity, less risk and lower return compared to Venture Capital, the company's future is less uncertain (SILVA, 2016).

At the beginning of the negotiation, the first conflict to be resolved before the business flow network (deal flow) begins is the amount to be invested. Another problem between investor and entrepreneur is the management conflict. The entrepreneur may have different views on the business than the investor, who seeks to apply his accumulated experience from previous projects. Another point of conflict is the moment of divestment. There are several exit modes shown by Ribeiro (2005), such as initial public offering (IPO), sale to a strategic investor or resale of the stake to the entrepreneur (buyback). In Brazil, the exit by IPO, which is more desirable, is difficult for small companies, as it has high costs of preparation and stay on the stock exchange. However, the IPO brings new companies to the stock exchange, innovative ideas and better structured by investor management, expanding the stock market (Ribeiro, 2005).

In Brazil, it is usual to analyze the performance of IFPs and other funds by sector. There is a greater participation of IFPs in certain sectors, but recently in Brazil there have been drastic changes, according to ABVCAP. In 2015, the pharmaceutical sector was the largest, 38% of the total invested in IFPs. This is due to Law No. 13,097/2015 (BRASIL, 2015) which revoked the prohibition on the participation of foreign capital in the health sector. However, the proportion of investments in health fell to just 7% in 2016, with a significant drop in the number of companies (22 to 13). It was due to the large increase in the real estate and civil construction sector caused by government programs, with an increase from 2% to 18% in the participation in total PE/VC investment (ABVCAP, 2018).

Despite the recession, total Brazilian investment in IFPs increased between 2015 and 2016. In addition, there was a slowdown in the pace of growth in net equity, from 13% per year, between 2014 and 2015, to 4.28% between 2015 and 2016[7]. These changes are negative, considering a change in the investment profile. There were increases in some sectors, but there was a big reduction in investments in services such as health and education, signs of greater future growth, areas of valorization of human capital and social well-being. In addition to these sectors in Brazil, the Infrastructure and R&D sectors also really need investments from IFPs.

5. DEVELOPMENT OF PARTICIPATION FUNDS IN BRAZIL POST SUBPRIME

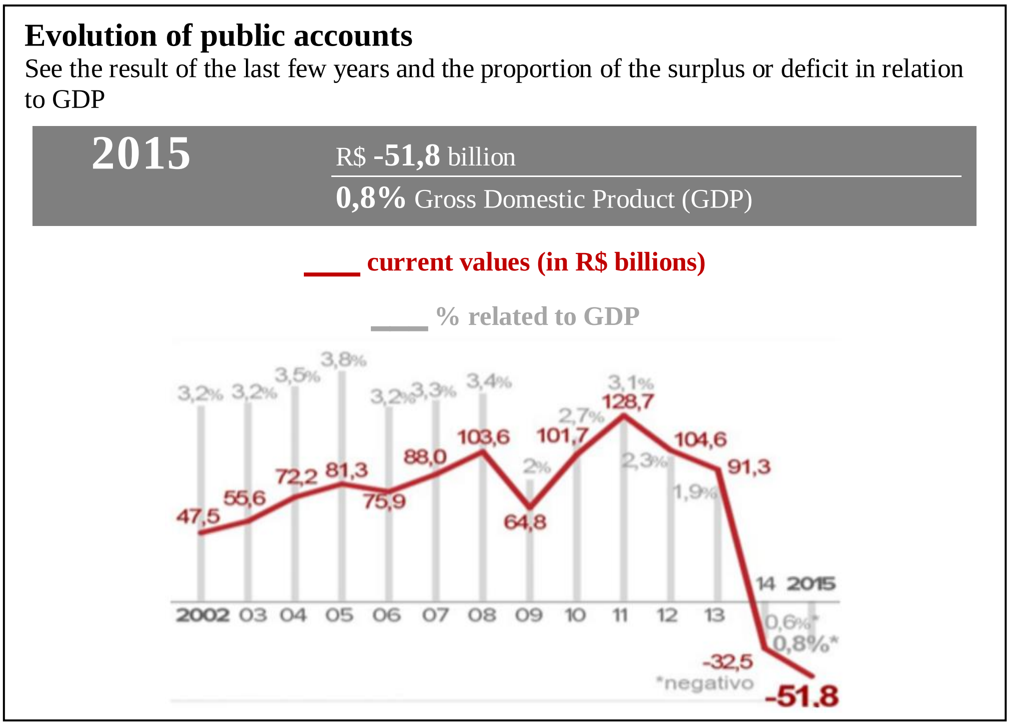
5.1 ECONOMIC CONJUNCTURE

Upon taking office in his first term in 2003, President Luis Inacio Lula da Silva “inherited” from the previous government the “Economic Sustainability Tripod” model (Inflation Target; Fiscal Surplus and Market Exchange). The model's orthodoxy implied austere monetary policy, guaranteeing a primary fiscal surplus. Contrary to expectations of radical changes in economic policy on the left, the Lula government preserved the model, but started a moderate process of income redistribution in Brazil.

Counting on the extremely favorable international environment, a period of “euphoria” before the Subprime crisis, until the first half of 2007, Brazil obtained huge trade balance and current account surpluses, a great growth in Foreign Direct and Portfolio Investments, it caused a fall on interest rates, the highest in the world, and resumed public investments. In this way, President Lula managed to reduce the unemployment rate from 12.4% to 6%, leaving the government in 2010, the best Gini index (2004) in Brazil

7 Data taken from the consolidated historical statistics of ANBIMA.

since the Second World War, real increases in the minimum wage and the expansion of the “Bolsa Familia” income distribution program. However, there was always a concern to maintain the balance of public accounts in his government, as shown in the graph below. This constituted the big difference for the Dilma Rousseff government, which produced large public deficits and caused a serious deterioration of expectations in the Brazilian economy.



Graph 2

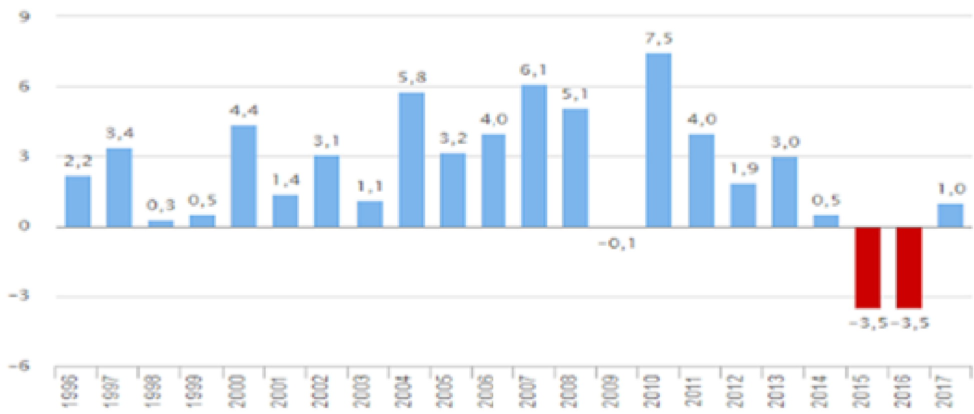
Source: Central Bank (infographic elaborated by 2015/10/27

In the face of the subprime crisis, the measures adopted by the Brazilian government supported the growth of the Brazilian GDP in 2007 (+ 6.1%) and 2008 (+ 5.1%) but were unable to prevent the reversal that occurred in 2009 (-0 ,1) %. Through credit expansion, public investments and tax exemptions in the sectors of Infrastructure, civil construction and building materials, furniture and fixtures, machinery and equipment, etc. and the PAC (Growth Acceleration Program), launched in January/2007, the Brazilian government aimed not only to sustain, but to accelerate economic growth and counteract the global subprime recession, which started in 2007 and worsened in 2008.

Graph 3

GDP Evolution

Variation year by year, in %



Source: IBGE

Confirming the IPEA (Institute of Applied Economic Research) forecasts, the Brazilian economy faced a strong reversal until the third quarter of 2009, resuming growth in the level of activity only in the last quarter, which was not enough to form a positive result. However, 2010 presents a spectacular performance, GDP growth of 7.5%, despite the impact on base year 2009. Brazil had the help of the strong growth of the Global GDP, with a variation of 5.4% in 2010, in addition to the continuation of measures to stimulate domestic demand.

After the exhaustion of installed capacity, inflation threatens the goal of the Inflation Target. As noted in the graph below, inflation in 2010 approaches the ceiling of the “Inflation Target” and ends up reaching it in 2011. All the demand and credit expansion generated since 2007, plus the launch of PAC 2 in March/2010, undermined one of the pillars of the “Sustainability Tripod”, the Fiscal Balance.

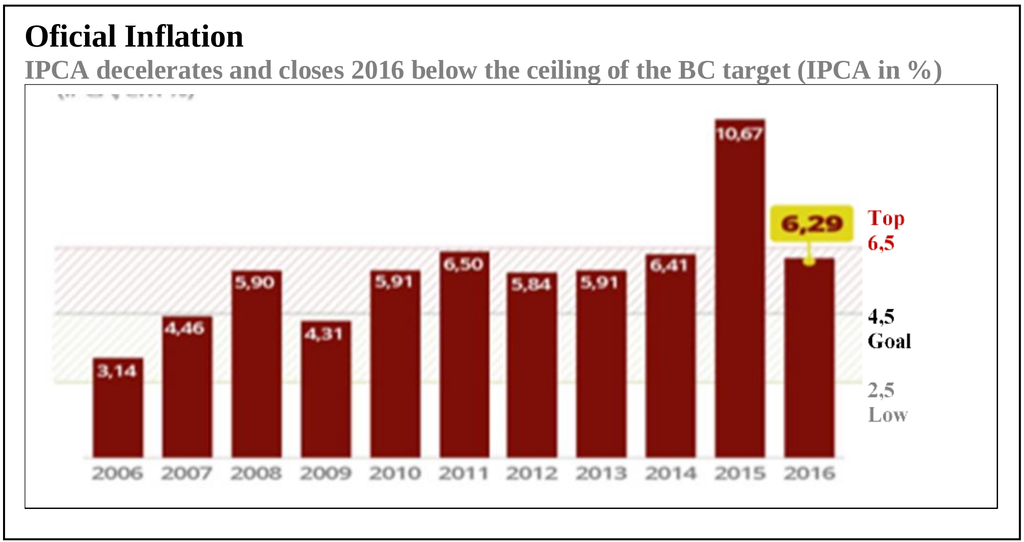
The 2010 (President Lula's last year) was a year of presidential elections. Candidate Dilma Rousseff, supported by President Lula, won the elections. They date back to 2010 accusations against the government for using PAC 2 and other income redistribution programs for electoral purposes.

In 2010, given the inflationary tensions that were beginning to occur in the Brazilian economy, the Lula government decided to adopt the “Macro-prudential Measures”, in order to maintain favorable expectations. They consisted mainly of increases in reserve requirements on demand and time deposits, causing an increase in the basic interest rate, SELIC, and contracting credit.

Upon taking office in 2011, President Dilma Rousseff radically changes economic policy, abandons the “Tripod of Support” orthodoxy, repeals “Macroprudential Measures” and adopts the “New Economic Matrix”, a heterodox, developmentalist program with strong state intervention in the economy, seeking growth in industrial production and infrastructure and increased consumption. However, at the end of 2011, the results obtained were very different from the objectives.

President Dilma Rousseff's mandates were characterized by great turbulence not only economic, but above all, political. In addition to the serious deterioration of public accounts, corruption scandals, which occurred mainly at Petrobras and were made public since March 2014 by Operation Lava Jato, revealed the involvement of former President Lula, ministers, deputies, governors, executives of state-owned companies and contractors, aggravating adverse expectations. As can be seen in graphic 4 above, the Brazilian GDP declines and ends up accumulating in the years 2014 and 2015, the biggest recession in republican history.

After the impeachment of President Dilma decreed on 2016/08/31, Vice President Michel Temer takes over, to complete the term until 2018/12/31. The Temer government promotes a return to the liberal model, but without political representation and also deeply involved with the corruption schemes of Operation Lava Jato at Petrobras and others, it cannot solve the crisis.

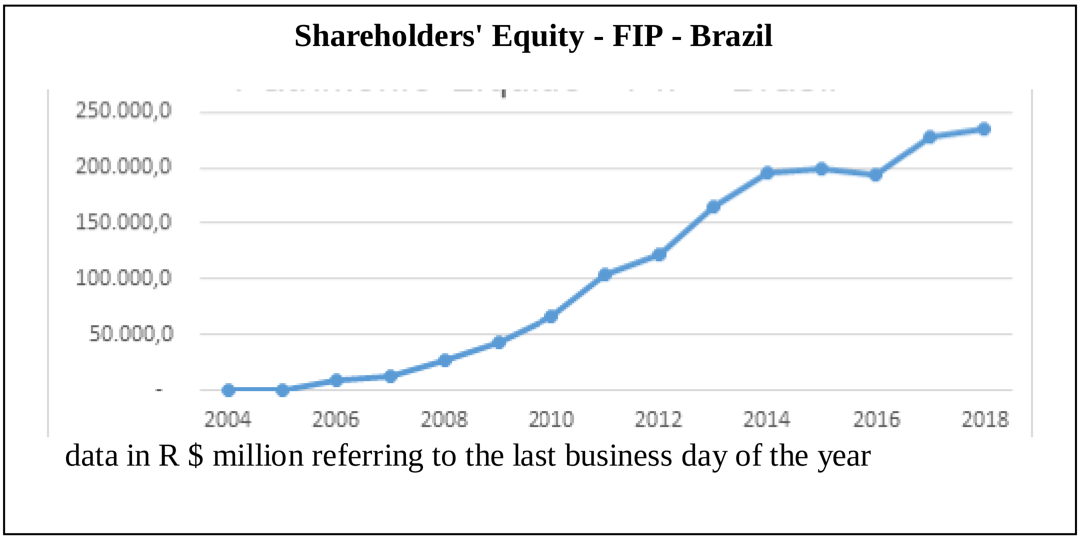


6. RELEVANT ASPECTS TO HIGHLIGHT IN PE/VC IN BRAZIL

Considering the macroeconomic policies adopted in the context of the crisis since 2008, Brazil initially suffered a reduced impact and, with economic expansion until 2013 (exception 2009), PE/VC funds increased equity[8], as shown in Graph 5 as follows:

[8]During this work, two terms are used which, in the context of PE/VC, have the same meaning: Equity and Committed Capital, which for these funds, refer to the total contributions that are paid into the PE/VC funds.

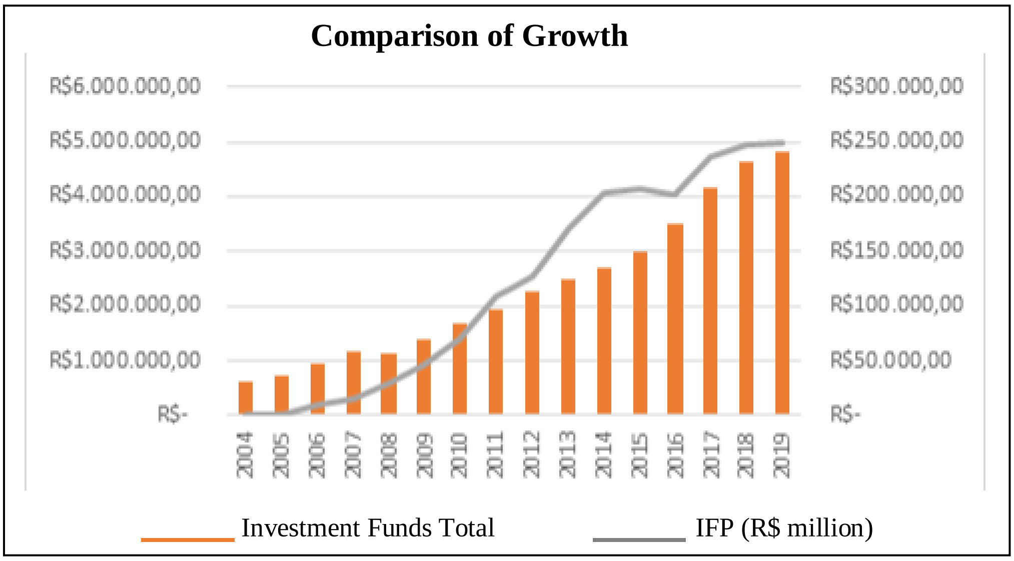
Graph 5 – Equity IFPs - Brazil 2004 – 2018



Source: AMBIMA

It can be seen in Graph 5 an increase in Shareholders' Equity until 2014, where the economic crisis begins and investments decrease until 2016. During the crisis, many companies went bankrupt, leaving gaps in the market for new ventures. This investment does not impact the fixed assets, as the investor's only option during the crisis is to transfer the fund to another, who will assume the management role, since it is difficult to anticipate redemption.

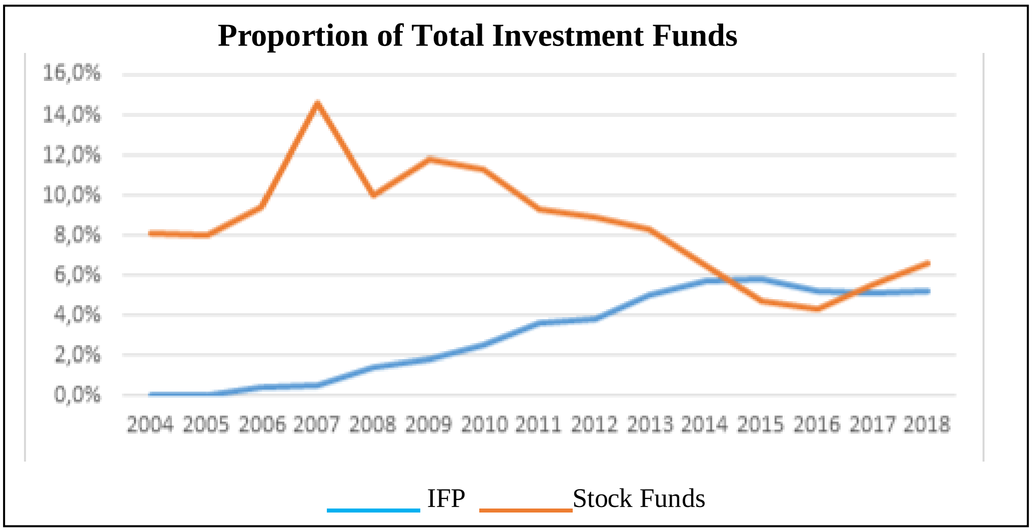
Graph 6 - Behavior of changes in Equity in Brazil of Investment Funds and IFPs: 2004 – 2019



Source: Insper – Spectra (2019)

It is possible to observe in the graph above the differentiated behavior between investment funds in general and IFPs, which did not present a slight loss in funding in 2008 and had a greater evolution until 2016. Growth is resumed in 2017, but at a more cautious pace, that remains until the present moment.

Graph 7 - Proportion of IFPs and Equity Funds in relation to total investment funds in Brazil, by Shareholders' Equity



Source: AMBIMA

During the period observed, Brazil recorded a decrease in funding from equity funds and an increase in PE/VC funds in relation to the country's total investment of funds. IFPs gained space after 2008, a trend only reversed in the financial crisis, between 2014 and 2015. As of 2016, there is an increase in the search for more liquid investments, a reduction in investments in IFPs, due to the impossibility of redemption without making losses, and an increase in investment funds. where portfolios are diversified in terms of risk, make it possible to obtain higher returns in the short term and greater liquidity.

6.1 DIFFICULTIES HIGHLIGHTED BY PE/VC INVESTORS IN BRAZIL

Table 1 - Difficulties reported by PE/VC investors

Factors	%
ContractualNegotiation	23
Strategy and conduction of the exit process (Divestment)	21
Business Monitoring	21
Structuring the business origination network (Deal Flow)	18
Strategy and conducting of the business entry process (Investment)	16
Total	100

Source: FGV, 2011. P.12

In the Brazilian PE/VC - FGV census, in addition to these points of friction, investors and entrepreneurs mention other obstacles to the performance of PE/VC funds in Brazil: high taxation, high interest rates, restrictions imposed by labor laws, informality, capital market costs, among others (FGV, 2011). Despite the obstacles, we have a growing scenario of PE/VC funds in Brazil.

Currently, the taxation of IFPs in Brazil is governed by Law 11.312, of June 27, 2006, more precisely in the second article:

> Art. 2 The income earned on the redemption of shares in Investment Funds in Equities, Investment Funds in Equity Investment Funds and Investment Funds in Emerging Companies, including when resulting from the liquidation of the fund, are subject to income tax at source at a rate of 15% (fifteen percent) levelled on the positive difference between the redemption value and the acquisition cost of the quotas (BRASIL, 2006).

6.2 PUBLIC SECTOR PARTICIPATION, FINEP INOVA AND FINEP STARTUP PROJECTS

The “Inova” Project, initiated on May 3, 2000, and the “FinepInovarBrasil” Program, launched on March 14, 2013, aim to leverage the country's economic growth by fostering technological innovation. Finep Inova Brasil, the oldest project, was based on six principles, described on the Finep website (2019):

- R&D increase in companies;
- Incentive to projects with higher technological risk;
- Integration of financing instruments such as credit, subsidies, company-university integration, non-refundable resources for research centers and universities and investment in participation (start-ups, venture capital);
- Intensified use of the state's purchasing power;
- Decentralization of credit and economic subsidies through transfers to banks, agencies and regional and state foundations to promote research to better reach micro and small companies;
- Reduction of deadlines and administrative simplification.

The Inova Project and ABVCAP work to clarify investors and entrepreneurs about their participation in IFPs in different sectors, such as Inova Energia, Inova Petro, Inova Saude, etc.

In 2017, Finep started an investment program for nascent companies, focused on technology and research, Finep Startup. In addition to reducing mortality for innovative companies in their early stage, their goal is also to encourage investments in Brazil, not only using PE/VC, but also Crowdfunding and Angel Investors. The program's objective is to operate in companies that have passed the idea and project phase but have not yet accessed financing.

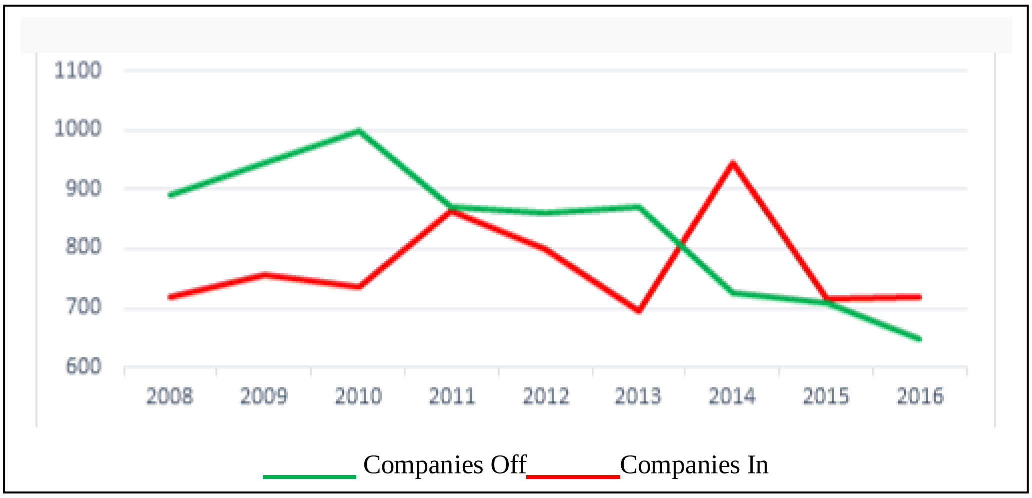
There is enormous potential for growth of PE/VC funds in Brazil, expansion of the number of investors and managers, fostering development mainly in technology, capturing internal and external investments. Having observed the history of IFPs in Brazil and the regulatory scenario for these funds, as well as behavioral trends, it becomes easier to have an idea about the reactions that these funds can demonstrate in a scenario of economic crisis.

7. EMPIRICAL ANALYSIS OF THE BEHAVIOR OF PE/VC FUNDS IN THE PERIOD OF ECONOMIC CRISIS

7.1 PE/VC IN BRAZIL IN A CRISIS SCENARIO

The crisis at the end of 2013 caused the net closing of companies in Brazil. The balance remained negative until the last year published in the IBGE (2018), impairing the resumption of growth. SEBRAE (Brazilian Micro and Small Business Support Service) reported that the survival rate of companies was increasing between 2010 and 2014, from 54% to 77%, but that number includes the Individual Microentrepreneur (MEI). When the MEI is removed from that statistic, there is an increase of only 58%. Thus, the hypothesis of a fall from 2014 onwards becomes permissible, with the worsening of the economic crisis and the net closing of companies (SEBRAE, 2019), according to IBGE data in the table below:

Graph 8 - Entry and Exit of Companies in Brazil - (in thousands of companies)



Source: IBGE

Year	Companies In	Companies Off

2008	889,486	719,915
2009	946,676	755,154
2010	999,123	736,428
2011	871,804	864,035
2012	859,992	799,419
2013	871,663	695,478
2014	726,271	943,958
2015	708,644	713,628
2016	648,474	719,551

Among the biggest reasons for the closing of micro and small companies are: pre-opening planning errors, entrepreneur and employee training, management, control, innovation and quality problems. Entrepreneurs who ended their activities claim that high tax burden is the biggest obstacle to the business (SEBRAE, 2019).

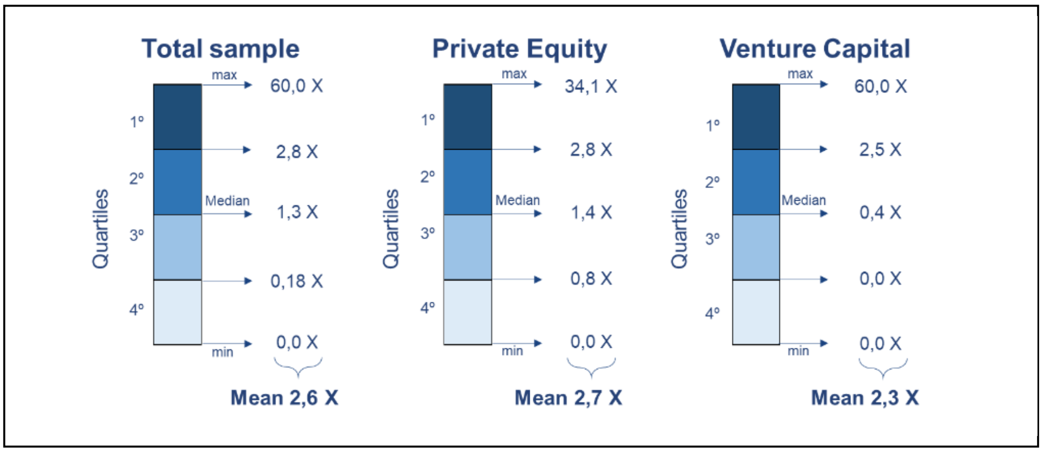
In crisis situations, with increased uncertainty and reduced revenue, credit offer is scarce, reducing the chances of survival of micro and small companies. Companies invested by PE/VC funds have a different situation. As the investor cannot redeem in the market in the short term, there are two options: selling his stake at a great loss or restructuring the company in an adverse situation and waiting for the divestment. This behavior is demonstrated by Minardi, Ferrari and Tavares (2013), using results from the 2008 crisis, the methodology applied in an article by Gompers and Lerner (2003).

PE/VC INCOME IN BRAZIL

One way to measure the return on an investment fund is the MOIC (Multiple of Invested Capital), the ratio between the total amount redeemed over the total amount invested. Research conducted by Insper and Spectra Investments in partnership with ABVCAP, analyzes the impact of the economic crisis on the MOIC of PE/VC funds. The sample was divided into two segments: The average MOIC between 1994 and

2014 and the average for 2015 onwards. The result obtained shows a drop in the MOIC (for divestments in Real) from 3.2 to 2.9 in the post-2015 period. This result is aggravated for foreign investors, in dollars, where the MOIC fell from 2.8 to 1.8 in the post-2015 period, due to the devaluation of the real. In the 1994-2018 sample, more than two-thirds of investments in Brazilian PE/VC funds are of foreign origin (INSPER, 2018). The difference between income from Private Equity funds versus Venture Capital funds was also highlighted:

Graph 9: Performance of PE/VC funds in Brazil, MOIC in dollars, 1994 - 2018.



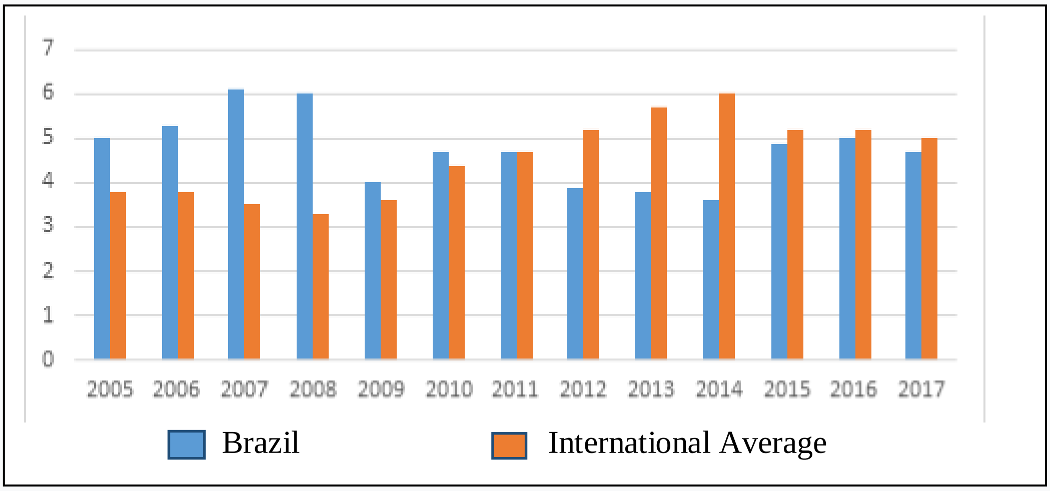
Source: Instituto Insper (2018)

Graph 9 shows the dispersion of MOIC for Private Equity and Venture Capital modalities. In the quartiles that approach Private Equity, it is shown that the 50% of lowest MOIC are varying between 0 and 1.4, while those of highest MOIC vary from 1.4 to 34.1. The 25% with the highest MOIC have the greatest amplitude in the range, going from 2.8 to 34.1. The same reasoning is valid for the Venture Capital quartiles and for the total sample. The graph shows the difference in amplitude between the MOIC of PE and VC funds, which corroborates the theoretical reasoning raised earlier. Private Equity funds invest in more consolidated companies looking to expand or return to the market, have less risk and lower return. Venture Capital funds invest in nascent companies, innovative ideas, startups, etc. Being a riskier type of funds, with a longer projection horizon, uncertainties and risk remuneration increase. On the chart, PE funds show a higher median than the median of VC funds, with a lower percentage of funds that failed to achieve positive profitability. However, the Venture Capital fund with the highest MOIC (60.0) has twice the profitability of the Private Equity fund with the highest MOIC (34.1).

Another form of valuation is the Internal Rate of Return (IRR) for these investments. The average obtained between 1981 and 2010 for Private Equity funds was 22%/year, calculated in dollars. PE/VC IRRs are highly dispersed, due to their high risk and profitability characteristics. In Brazil, in the period analyzed, the IRR for investments in Private Equity ranged from -100% to 159%. After 2002, with improvements in the economic and regulatory environment, the minimum IRR stabilizes just above -20%, in addition to increases in the higher levels of rates (INSPER, 2018).

A characteristic variable of PE/VC funds is called the Holding Period, the time that the manager keeps the companies in its portfolio until the divestment. The international average of the Holding Period is 5 to 6 years for Private Equity funds, while in Brazil, this time is 4.4 years (INSPER, 2018).

Graph 10: Holding period for Private Equity funds in Brazil, 2005 - 2017.



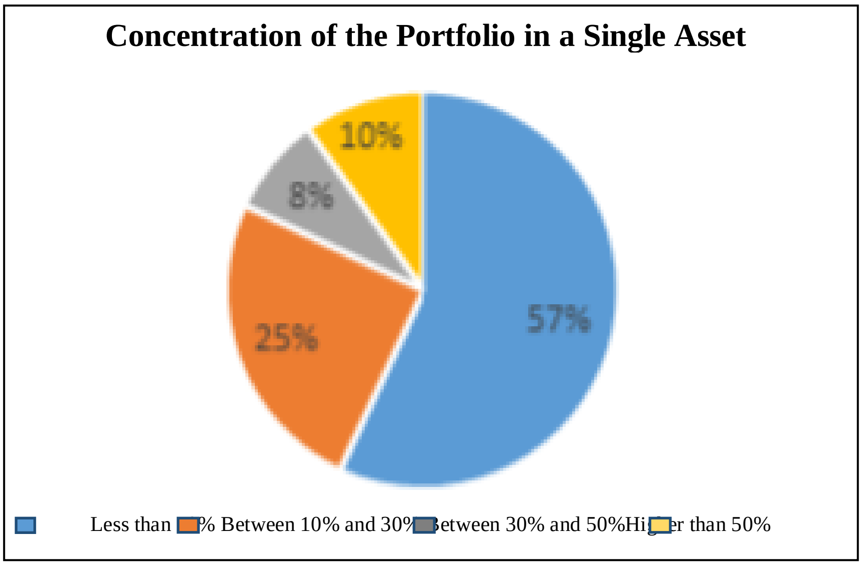
Source: Insper – Spectra (2018)

In the graph, in pre-2008 period, the downward trend of the holding period can be observed, reversed by the subprime crisis. This reflects the international situation that made divestment difficult (INSPER, 2018). With the stabilization of the economic scenario and improvements in the sector's regulation, the trend is for the average holding period to return to pre-crisis values. In the Brazilian case, it is possible to analyze the graph in three different periods, due to the reaction of the economy to international events. Between 2005 and 2008, holding periods were larger and growing. The Insper report (2018) attributes this higher average to the heating of the economy, there were more negotiations with companies that had been in the portfolio for longer, awaiting stabilization of expectations in the national economy. As internal economic policy measures were taken to further heat up the economy in the crisis period to cushion the external impact, there was an increase in negotiations by companies that had been in the holding for less time, or quick flippers (shorter holding), decreasing the average. The third period starts in 2014 with the onset of the Brazilian crisis, where it is possible to see an effect similar to what occurred internationally in 2008, causing greater difficulty in operating outflows, deals and divestments, raising the average of the holding period.

8. CHANGES IN THE IFPS SCENARIO AND PENSION FUNDS IN 2018

As of 2015, there has been an increase in the number of private pension funds investing in IFPs (INSPER, 2016b). Organs responsible for both sectors monitor these activities, demonstrating in 2018 concerns about the way in which Private Equity and Venture Capital funds have been used. In 2016, Insper Institute and Spectra Investments published an analysis of investments in IFPs by pension funds. The work showed a tendency for pension funds to accumulate investments in so-called Monoactive funds, that is, investors in only one asset. This strategy, of course, does not minimize diversifiable risks. In the analyzed sample, Monoactive funds represented 39% of the PE/VC allocation within pension funds.

Graph 11: Concentration of pension funds in MonoactiveIFPs, 2016.



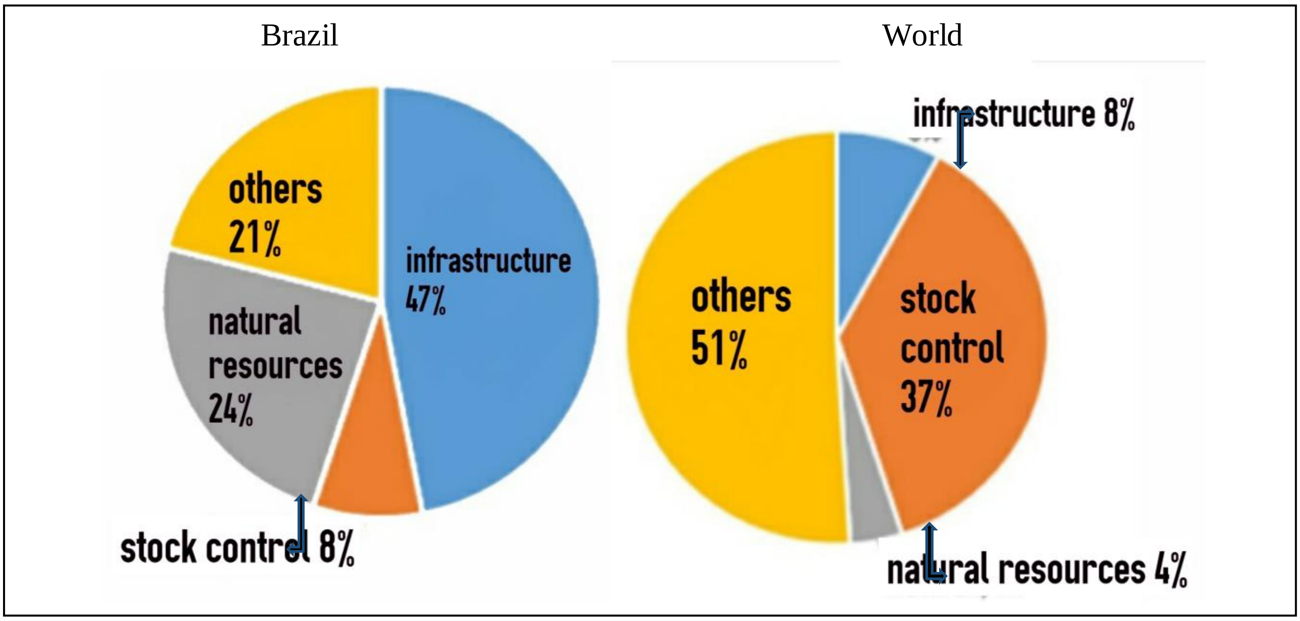
Fonte: Insper – Spectra (2016)

Graph 11 shows private pension funds that invest in MonoactiveIFPs and what proportion this investment represents for the total pension fund. For example, in 10% of pension funds, there is a "portfolio" composed of only one IFP and this "portfolio" represents more than 50% of the total private pension fund investments. Funds like this, which invest in IFPs, represent 10% of national pension funds.

Investments in Private Equity and Venture Capital in pension fund portfolios are not exclusive to Brazil, but the distribution in sectors follows different characteristics from the global trend. The use of PE/VC funds to acquire shareholding control is more used abroad than in Brazil, with 37% on average, against 8% in Brazil. This may indicate a lack of development of the IFP system for better dissemination of this average. Another very striking feature, shown in Graph 12 is the strong presence of PE/VC funds, invested by pension funds, of Oil and Gas companies. The world average for natural resource companies is 4%, while in Brazil it reaches 24%, being 17% only for the Oil and Gas sector (INSPER, 2016b). This situation is due to the great impulse of this sector in the Brazilian economy between the years of 2008 and

2013[9], with the exploration of the Pre-Salt, demanding the development of new technologies. The data presented in graph 12 come from the great potential of the sector in that period. It is important to mention the difficulties, policies and techniques that the Oil and Gas sector faced from 2014 onwards, impacting the diversified risk of pension funds, subsequently leading the National Monetary Council to take measures to contain this risk, such as reducing of the total that a IFP can have in the pension fund.

Graph 12: Distribution of PE/VC investments by sectors, within the Pension Fund portfolios, 2014.



Source: Preqin (2014), prepared by Insper - Spectra (2016) and adapted by authors

In 2018, the National Monetary Council, CMN, expressed concern about pension funds that used IFPs in a risky manner and determined changes. Pension funds are an important part of the Brazilian economy, constituting 13% of GDP in 2018 (VALENTE, 2018). Among the measures implemented is that managers cannot have had relations with the pension fund, the relations must be purely business (FAZENDA, 2018). The amount that can be invested in IFPs by pension funds has been reduced from 20% to 15%.

[9]According to data from the ANP (National Agency of Petroleum, Natural Gas and Biofuels), it is possible to observe growth in production and research, such as increased extraction and refining capacity (productivity) in the period from 2008 to 2013, with decreases from 2014 to 2014. different series.

One of the biggest changes in CMN resolution 4661/18 determines the investment of equity by the IFP manager. Previously, the investor invested capital in the fund managed by the management company, without mandatory application. After the resolution, the managers will have to invest at least 3% of the total, for a more risk-averse management. According to the Ministry of Finance's insurance and pension plan coordinator, Ernesto Serejo, in a note to the newspaper O Globo: “The IFP manager needs to lose some money if the investment is unsuccessful. This loss must be at least 3%. It is not only the investor who loses, but the manager as well” (VALENTE, 2018).

A study by Silva (2016) concluded that expectations for PE/VC funds in Brazil were divided. On the one hand, many investors worried about uncertainties for the year 2018, such as reversal of macroeconomic variables and elections. On the other hand, economic expectations were positive in the long run, GDP signaling future growth and inflation converging towards the target, in addition to the adoption of austere monetary and fiscal policies (SILVA, 2016, p. 59 - 61). However, these expectations were reversed in 2019. The expectation of GDP growth is increasingly lower, reaching less than 1%, disclosed in the Focus Bulletin.

With a long crisis, fiscal fragility, expectations are adverse. The pessimistic scenario is aggravated by unsuccessful IPOs and difficulties in divesting. However, it is important to keep in mind that this is a macroeconomic analysis, there are sectors that are better able and sectors that are less able to recover in the Brazilian economy, as stated by Alvaro Gonçalves, founding partner of Grupo Stratus and mediator of the panel on the ABVCAP situation in 2019:

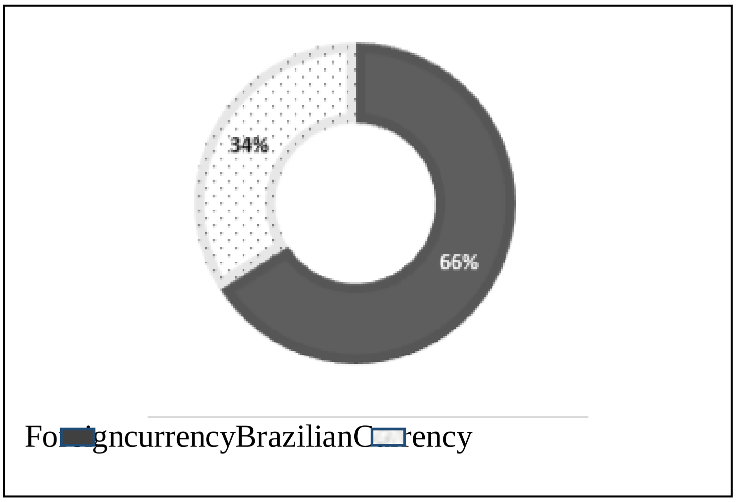
> The growth potential is not uniform. There are sectors with a faster propulsion capacity than others and this will require the ability to understand these sector dynamics and these differences in a deeper way than at other times (ABVCAP, 2019a).

One of the sectors that has shown signs of economic recovery is retail, with sales increasing by 500% in 2018, as stated in the Inside PE 2019 report:

> "As the recession faded, retail sales rose 500% in 2018, confirming the steady recovery process for the retail sector. This trend is also reflected in an upsurge in registered Jobs for this sector, with a return to net store openings after the slump". (ABVCAP, 2019b)

CNC (National Confederation of Trade in Goods, Services and Tourism) foresees the continued growth of sales in this sector, signaling an opportunity for PE/VC funds. A large number of funds invest in retail companies (examples: Ricardo Eletro, Walmart, Hortifruti, among others), while there are also many companies in financial sectors, such as FinTechs, which directly relate to access to credit for individuals. Among the opportunities, besides the increase in sales, there is still the idle capacity of physical capital, as the country tries to recover from a long crisis. An incentive for the entry of foreign companies is the depreciated exchange rate, generating a relative gain for the investor on entry. It is important to analyze the foreign investor, as previously stated, since approximately 2/3 of the capital committed in Private Equity funds is of foreign origin, as shown in graph 13:

Graph 13: Origin of Committed Capital in Brazil in PE, 2018.



Fonte: ABVCAP

9. FINAL CONSIDERATIONS

The objective of this work was to analyze the behavior of PE/VC funds in the Brazilian economic environment. There is a vast international literature on the subject, with historical and quantitative analyzes from different countries. In Brazil, the scarcity of data is detrimental to quantitative analysis, however, it was still possible to understand the characteristics that differentiate this modality from other funds and how its development depends on long-term expectations.

IFPs are a structured way to finance innovative ideas, in the form of start-ups and projects, capable of creating new jobs and technological bases and removing structural bottlenecks that require investment.

Several factors were found that hinder investor interest in IFPs, such as taxation and high interest rates, high economic and political instability, difficult conditions of divestment, among others. In addition to investor qualifications, management companies also require highly qualified and experienced employees, characteristics expected for such a high-risk investment.

In the post-2008 international scenario, there was an improvement in regulation, which led to a decrease in funds that did not reach their goals. Brazil has been undergoing regulatory changes for IFPs, as well as in its taxation and in the participation of these funds in private pension portfolios. Even with their regulation still being structured, Brazilian PE/VC funds attract foreign investments (graph 13) and have a shorter Holding Period than international funds of the same modality (graph 10). It was not possible to make comparisons on the profitability of national and international funds due to the lack of open data on the topic, but a decrease in MOIC (Multiple of Invested Capital) was observed during the crisis period. We leave here this direction for research that will be developed later.

BIBLIOGRAPHY

ABVCAP. *Inside PE 2019: InBrazil Private Equity*. Rio de Janeiro, 2019b.

ABVCAP. *Inside VC 2018: InBrazil Venture Capital*. Rio de Janeiro, 2018. Available in http://www.abvcap.com.br/Download/Estudos/3947.pdf. Acessed by May 8, 2018.

ABVCAP. **Congress ABVCAP 2019 - Section 11**: *What changes in the next 4 years in the long-term investment scenario: macroeconomic analysis*. 2019. Available in: https://www.abvcap.com.br/sala-de-imprensa/noticias-abvcap.aspx?c=pt-BR&id=4147. Acessed by June 19, 2019.

BRASIL. Law No 11.312, from June 27, 2006. Article II. Brasília, DF, June, 2006. Available in https://www2.camara.leg.br/legin/fed/lei/2006/lei-11312-27-junho-2006-543836-publicacaooriginal-54555-pl.html. Acessed by November 1, 2019.

BRASIL. Law No 13.097, fromJanuary 19, 2015. Chapter XI, SecctionXVII. Brasília, DF, January,2015. Available inhttp://www.planalto.gov.br/ccivil_03/_ato2015-2018/2015/lei/l13097.htm. AcessedbyMay 24, 2018.

CARVALHO, A. G.; RIBEIRO, L. L.; FURTADO, C. V. *A indústria de Private Equity e Venture Capital – Primeiro Censo Brasileiro*. 1st ed. São Paulo: Saraiva, 2006.

COTTERILL, Joseph. *Private equity investment in Europe hits post-crisis high*.**The Financial Times**, Londres, p.16-16, May 10th, 2016. Available in: http://go-galegroup.ez24.periodicos.capes.gov.br/ps/i.do?id=GALE%7CA451925065&v=2.1&u=capes&it=r&p=AONE&sw=w. Acessed by: May 22, 2019.

CVM. **CVM Instruction No 209.**March 25, 1994. Available inhttp://www.cvm.gov.br/legislacao/instrucoes/inst209.html . Acessed byJune 19, 2018.

CVM. **CVM Instruction No 391.** July16, 2003. Available inhttp://www.cvm.gov.br/legislacao/instrucoes/inst391.html . Acessed byJune 19, 2018.

CYTRYNOWICZ, Eduardo. *Brazilian Crisis of 2014:Local cause or response to international scenario 2017*. 55 f. Dissertation (Master Degree) –Course of Economics, FundaçãoGetúlio Vargas, São Paulo, 2017. Available in: https://bibliotecadigital.fgv.br/dspace/bitstream/handle/10438/18706/diss_mestrado-ecytrynowicz-vfinal.pdf?sequence=6&isAllowed=y. Acessed by: September 6, 2019.

DHINGRA, Swati et al. *UK trade and FDI: A post-Brexit perspective*.**Papers In Regional Science**, [s.l.], v. 97, n. 1, p.9-24, Dec 22, 2017. Wiley. http://dx.doi.org/10.1111/pirs.12345. Available in: https://rsaiconnect.onlinelibrary.wiley.com/doi/full/10.1111/pirs.12345. Acessed by: May 23, 2019.

ECONOMIST, The. *Feeding frenzy: China's venture titans*.**The Economist**, London, v. 4289103, p.55-55, Aug 4, 2018.

FAZENDA.*CMN modernizes investment rules of closed private complementary pension entities***.***2018.*Available in: http://www.fazenda.gov.br/noticias/2018/maio/cmn-moderniza-regras-de-investimento-das-entidades-fechadas-de-previdencia-complementar. Acessed by: Jun 14, 2019.

FERREIRA, Amanda Sanches. *Private Equity Funds Quick-Flippers andIpo's Performance. 2017*. 37 f. Dissertation (Master Degree) – Course of Administration, InsperTeaching and Research Institute, São Paulo, 2017. Available in: http://dspace.insper.edu.br/xmlui/bitstream/handle/11224/2180/AMANDA%20SANCHES%20FERREIRA_Trabalho.pdf?sequence=1. Acessedby: Oct8, 2019.

FGV. *A Indústria de Private Equity e Venture Capital - 2º censo brasileiro*. Brazilian Agency for Industrial Development: Brasília: Center for Management and Strategic Studies, 2011.

FINEP. *What is Inova Program*. Available in: http://www.finep.gov.br/apoio-e-financiamento-externa/programas-e-linhas/programas-inova/o-que-e-o-programa-inova. Acessedby: May 7, 2019.

FREIRE, José Luis de Salles; BURR, Luciana Maria Agoston. Differencies between FMIEE e IFP. Open Capital, July 1, 2010. Available inhttps://capitalaberto.com.br/boletins/diferencas-entre-fmiee-e-IFP . Acessed byJune 12, 2018.

GOMPERS, Paul A.; LERNER, Josh. The Really Long-Run Performance of Initial Public Offerings: The Pre-Nasdaq Evidence. The Journal of Finance, Online, v. 58, n. 4, p.1355-1392, ago. 2003. Available in: https://onlinelibrary.wiley.com/doi/abs/10.1111/1540-6261.00570. Acessed by: Sept 6, 2019.

GOMPERS, Paul et al. Venture Capital Investment Cycles: The Impact of Public Markets.**Journal of Financials Economics.**Boston, p. 1-23. jan. 2008. Available in: http://www.people.hbs.edu/dscharfstein/vcic_article.pdf. Acessed by: Mar 26, 2019.

HARRIS, Robert S.; JENKINSON, Tim; KAPLAN, Steven N. *Private Equity Performance: What do we know?*

The Journal of Finance. Chicago, p. 1851-1882. out. 2014. Available in: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1932316. Acessed by: Mar 26, 2019.

INSPER. *Hot market in Brazil and the exit rate of Brazilian Private Equity deals*. São Paulo, Sep. 2017. Available inhttps://www.insper.edu.br/wp-content/uploads/2018/09/Hot-market-Brazil-exit-rate-Brazilian-private-equity-deals.pdf. Acessed by: Sep 16, 2019.

INSPER. *Private Equity Investments made by Brazilian Pension Funds*. São Paulo, fev. 2016b. Available inhttps://www.insper.edu.br/wp-content/uploads/2018/09/Investimentos-PE-por-Fundos-Pensao-Brasileiros-Insper-Spectra-Analysis.pdf . Acessed by: Sep 21, 2019

INSPER. *Performance of The Private Equity and Venture Capital Industry In Brazil*. São Paulo, Sep. 2018. Available in: https://www.insper.edu.br/wp-content/uploads/2018/09/Performance-private-equity-venture-capital-industry-Brazil.pdf. Acessed by: Sep 11, 2019.

INSPER. *The profile of the Private Equity professional in Brazil*. São Paulo, set. 2016a. Available inhttps://www.insper.edu.br/wp-content/uploads/2018/09/Profile-of-Private-Equity-professional-Brazil-Insper-Spectra-2EGT-Analysis.pdf . Acessed by: Sep 16, 2019

IPEA. ConjunctureLetter No 15, Dec, 2011. Available in<http://www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=12659. Acessed bySeptember 10, 2019.

JUNG, Jae C.; UGBOMA, Majiri A.; LIOW, Alvin K..*Does Alibaba's Magic Work Outside China?***Perspectives From Practice.**Kansas, p. 505-518. Nov,2015. Available in: https://onlinelibrary-wiley.ez24.periodicos.capes.gov.br/doi/epdf/10.1002/tie.21739. Acessed by: May 12, 2019.

KORTUM, Samuel; LERNER, Josh. *Assessing the Contribution of Venture Capital to Innovation*.The Rand Journal of Economics**.**Santa Monica, p. 674-692. Dec,2000. Available in: http://www.jstor.org/stable/2696354. Acessed by: May 21, 2018.

LOPES, Alexsandro Broedel; FURTADO, Cláudio Vilar. *Private Equity in the Investment Portfolio of Private Pension Entities*.**USP -Especial Atuária**, São Paulo, p.108-126, Dec, 2006. Available in: http://www.scielo.br/pdf/rcf/v17nspe2/v17nspe2a09.pdf. Acessed by: May 5, 2019.

MAHIEUX, Xavier. *Changes in the American Private Equity Industry in the Aftermath of the Crisis*.**Comparative Economic Studies.**Paris, p. 501-517. jun. 2013.

MELO, Luiz Martins de; CARVALHO, Maria Bernadete da Silva. *Innovation Financing and Innovation Indicators: Finep 30 days*. In: ResearchSeminar, 1., 2013, Rio de Janeiro.**Texto do Seminário.**Rio de Janeiro: Ie - Ufrj, 2013. p. 1 - 10. Available in: http://www.ie.ufrj.br/images/pesquisa/pesquisa/textos_sem_peq/texto0312.pdf. Acessed by: Apr 1, 2019.

MINARDI, Andrea Maria Accioly Fonseca; FERRARI, Guilherme Lopes; TAVARES, Pedro Carvalho Araújo. *Performances of Brazilian IPOs backed by private equity*. Journal of Business Research, [s.l.], v. 66, n. 3, p.448-455, Mar,2013. Elsevier BV. http://dx.doi.org/10.1016/j.jbusres.2012.04.012. Available in: https://www-sciencedirect.ez24.periodicos.capes.gov.br/science/article/pii/S0148296312001208. Acessed by: Sep 6, 2019.

PAYNE, Jennifer. *Private Equity and Its Regulation in Europe*.**European Business Organization Law Review**, [s.l.], v. 12, n. 4, p.559-585, dez. 2011. Springer Nature. http://dx.doi.org/10.1017/s1566752911400021. Available in: https://www-cambridge.ez24.periodicos.capes.gov.br/core/journals/european-business-organization-law-review-ebor/article/private-equity-and-its-regulation-in-europe/71D659CA317195C7AE30EEF8402186E2. Acessed by: May 22, 2019.

RAMALHO, C.; FURTADO, C. (2008) *Overview of the Brazilian Private Equity and Venture Capital Industry*, GVcepe – FGV-EAESP Study Center for Private Equity e Venture Capital

RIBEIRO, L.L. *The Brazilian Model of Private Equity and Venture Capital*. Master Degree Dissertation. Administration Department. São Paulo: São Paulo University, 2005.

ROMAIN, Astrid; POTTELSBERGHE; Bruno van. *The Determinants of Venture Capital: Additional Evidence*. Deutsche Bundesbank Discussion Paper No 19, 2004, Frankfurt am Main, p. 1 – 40. 2004. Available inhttp://ssrn.com/abstract=2785064. Acessed by: May 22, 2018.

SEBRAE.Enterprises *Survival*.Available in: https://datasebrae.com.br/sobrevivencia-das-empresas/. Acessed by: May 30, 2019.

SILVA, Karla Rodrigues Tovar. *Private Equity in Brazil*: *The reaction of Agents to teh Current Scenario of Political and Economic Crisis*. Niterói, 2016. 71 f. TCC (Graduation) – School of Economics, Federal Fluminense University, Niterói, 2016.

SILVA, Raphael de Mattos. *Private Equity in Brazil: The Contribution of Private EquityFunds to The BrazilianEconomy*. Niterói, 2010. 54 f. TCC (Graduation) – School of Economics, Federal Fluminense University, Niterói, 2010.

Souza Neto, J. e Stal, E. (1991). *RiskFinancing for the Company´s Technological Innovation*, RAUSP, 26(4), pp.34-74.

VALENTE, Gabriela. *After scandals, government changes investment rules for pension funds*.**O Globo**. 25 maio 2018. Available in: https://oglobo.globo.com/economia/apos-escandalos-governo-muda-regras-de-investimentos-dos-fundos-de-pensao-22719380. Acessed by: Jun 14, 2019.

VALOR. *GP Investimentos reverses losses and profits of US$ 15,56 million in 2016.***Valor Econômico.**São Paulo, p. 1-1. Mar 29, 2017. Available in: https://www.valor.com.br/financas/4919694/gp-investimentos-reverte-prejuizo-e-lucra-us-1556-milhoes-em-2016. Acessed by: May 4, 2019.

VCNEWS Daily. Available in: https://www.vcnewsdaily.com/Uber/venture-funding.php. Acessed by: May 14, 2019.

ZUCCHI, Kristina.*Top 10 Largest Global IPOs Of All Time***.**Available in: https://www.investopedia.com/articles/investing/011215/top-10-largest-global-ipos-all-time.asp. Acessed by: May 12, 2019.