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HEDGE FUNDS AND THE MARKET RETURN

FUNDOS DE HEDGE E RETORNO DO MERCADO

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[1, 2, 3] Conceptualization
[1, 2, 3] Data collect
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This paper investigates if the equity stake, along with hedge funds, generates value for target companies in highly concentrated markets, such as the Brazilian one. In a sample with 324 Brazilian companies listed in São Paulo Stock Market (B3) that are actively participating in the Anbima Hedge Fund Index (IHFA), between 2007 and 2016, we found that the equity stake of hedge funds generates value in Brazilian invested companies, despite the market being more concentrated. We capture the hedge fund effect on invested companies in terms of: (i) how much the firms' market capitalization is maintained by hedge funds and its percentage change between t and t-1; (ii) how many funds invest in a determined company each period and its percentage change between t and t-1. We defined target firm value creation using two proxies: abnormal return and effective stock return. To derive our results, we performed linear regressions with funds' fixed effects and a set of fund characteristics acting as controls. We found a positive and significant relationship between the equity stake of hedge funds and the value generation in invested companies, despite the Brazilian market being more concentrated. Our results suggest that the hedge fund activism is increasing in Brazil, with fund managers influencing firms' decisions and corporate governance mechanisms.

Keywords: hedge funds; market return; target companies.

Este artigo investiga se a participação acionária, juntamente com os fundos de hedge, gera valor para as empresas-alvo em mercados altamente concentrados, como o brasileiro. Em uma amostra de 324 empresas brasileiras listadas na Bolsa de Valores de São Paulo (B3) que participam ativamente do Índice Anbima Hedge Fund (IHFA), entre 2007 e 2016, descobrimos que a participação acionária da os fundos de hedge geram valor nas empresas brasileiras, apesar de o mercado estar mais concentrado. Capturamos o efeito do fundo de hedge nas empresas investidas em termos de: (i) quanto a capitalização de mercado das empresas é mantida por fundos de hedge e sua variação percentual entre t e t-1; (ii) quantos fundos investem em uma determinada empresa a cada período e sua porcentagem varia entre t e t-1. Definimos a criação de valor-alvo da empresa usando dois proxies: retorno anormal e retorno efetivo das ações. Para derivar nossos resultados, realizamos regressões lineares com efeitos fixos dos fundos e um conjunto de características do fundo que atuam como controles. Encontramos uma relação positiva e significativa entre a participação acionária dos fundos de hedge e a geração de valor nas empresas investidas, apesar de o mercado brasileiro estar mais concentrado. Nossos resultados sugerem que o ativismo dos fundos de hedge está aumentando no Brasil, com os gerentes de fundos influenciando as decisões das empresas e os mecanismos de governança corporativa.

Palavras-chave: hedge funds; retorno de mercado; empresas-alvo.

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INTRODUCTION

The heritage managed by the regulated investment funds industry worldwide has doubled in the past decade, surpassing the $ 49 trillion dollars' mark of total net assets at year-end 2017 (ICI, 2018). The U.S owns almost half of these resources, followed by Europe and Asia. The increasing interest in these funds is not a trend restricted to developed countries. Emerging market hedge funds have been improving their activities in short selling, derivatives instruments, arbitrage, and activist strategies to deliver higher diversification benefits to institutional and small investors (ELING; FAUST, 2010; CHEN, 2011; ABUGRI; DUTTA, 2009).

Prior research has been exploiting emerging markets as one among a big number of investment strategies in hedge funds, focusing on performance measurements, but not in how they can add value to the invested companies (FUNG; HSIEH, 2001; CAPOCCI; HUBNER, 2004; ACKERMANN; MCENALLY; RAVENSCRAFT, 1999). By their nature, emerging markets exhibit economic and political risks, information asymmetry costs, and stock volatility; in contrast, they provide growth opportunities (AL-DEEHANI; MOOSA, 2006). In this sense, emerging markets are targets to hedge funds managers, who tend to avoid participation in less profitable and weakly governed firms (CLIFFORD, 2008; BRAV; JIANG; PARTNOY; THOMAS 2008; GREENWOOD; SCHOR, 2009; GANTCHEV, 2013; BEBCHUK; BRAV; JIANG, 2015).

On the other hand, in developed markets, where the majority of stocks are not held by few investors and insider information occurs less frequently (BALL; KOTHARI; ROBIN, 2000), main studies document the existence of a positive relation between hedge funds and value creation in invested firms (CLIFFORD, 2008; BRAV et al., 2008; BECHT; FRANKS; GRANT; WAGNER, 2017). For instance, Bessler, Drobetz and Holler (2015) documented that hedge funds enhanced the stock value in German companies, both short and long term. Recently, Becht, Franks, Grant, and Wagner (2017) found evidence in 23 developed countries that hedge funds generate an average positive alpha in big companies.

Then, we ask if highly concentrated markets in emerging economies mimic this phenomenon. This paper investigates if the equity stake alongside hedge funds generates value to invested firms (hereafter, target companies) in the Brazilian market. We use Brazil as an experiment due to its increasing position as one important asset in the global portfolio based on emerging markets. The Brazilian domestic funds industry has grown 17.3% in 2016, in net assets, in comparison to 2015, and reached almost 60% of the nominal GDP of 2016, despite the high tax burden on capital gains (ANBIMA, 2017).

In the U.S. market, hedge funds' target firms experience improvements in their operating performance, CEO turnover and payout policies, under funds managers' activism (BRAV et al., 2008). This reveals that hedge funds are able to monitor and intervene on corporate governance in invested companies, increasing value for the shareholders. In general, fund managers around the world have a substantial piece of their compensation from incentive fees: they receive bonuses only when they obtain a positive portfolio return, and after making up all previous losses (FUNG; HSIEH, 1997). Done this way, hedge fund activism can generate value to investors, reducing information asymmetry costs to them.

We capture the hedge fund effect on invested companies in terms of: (i) how much the firms' market capitalization is maintained by hedge funds and its percentage change between t and t-1; (ii) how many funds invest in a determined company each period and its percentage change between t and t-1. We defined target firm value creation using two proxies: abnormal return and effective stock return.

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In a sample with 324 Brazilian companies listed in São Paulo Stock Market (B3) that are actively participating in the Anbima Hedge Fund Index (IHFA), between 2007 and 2016, we found that the equity stake of hedge funds generates value in Brazilian invested companies, despite the market being more concentrated. This effect is conditional positive to the growth of hedge funds participation in emerging market firms, and it is a conditional negative to the participation of hedge funds solely. This negative effect endorses the argument that funds look to the emerging market searching undervalued firms (BRAV et al., 2008). To derive our results, we performed linear regressions with funds' fixed effects and a set of fund characteristics acting as controls.

This study contributes to academic and practical discussion of the addressed theme, since it shows evidence that investor activism is growing in emerging markets, despite inefficiencies caused by market concentration. In addition, our results imply that hedge funds signal, somehow, what kind of undervalued firms represent a good alternative of investment in emerging markets.

The remainder of the paper is organized as follows: Section 2 provides a background on investment funds and hedge portfolios. Section 3 describes the research activism design and the sample, while Section 4 focuses on our results and robustness checks. Section 5 concludes.

BACKGROUND

Hedge Funds Equity Stake

O Although hedge funds may gather significant participation in target companies (BESSLER; DROBETZ; HOLLER, 2015), these participations would not influence managers' investment decisions if there is no bargaining power. Bradley and Chen (2011) and Tirole (2006) suggest that bargaining power in this context depends on the investors' ability to convince other shareholders about their proposals' accomplishments. According to Becht et al. (2017), hedge funds may accumulate relevant equity stakes, and the effects of it are particularly strong if the institutional investor has a good reputation for being able to identify companies with growth potential.

The Brazilian Securities Commission CVM instruction number 358, of January 3rd, 2002, is responsible for promoting information about acquisition and disposal of relevant equity stakes. This rule establishes that relevant negotiations, when higher than 5% of the heritage, must be followed by bulletins informing the company about the purpose of the participation and, when this is the case, declaring that the business does not want to change structure in control or management in ownership.

It is not different around the world. All 23 countries analyzed by Becht et al. (2017), require that shareholders announce when participation reaches a minimum limit. In most countries, this limit is 5% of the equity. Germany, Italy, Switzerland and the UK have limits lower than 2% or 3%, while Canada has a limit higher than 10%. The United States requires more restrictive guidelines. American investors that have specific plans able to significantly affect the company, or its management in the future, are called active block investors and forced to disclose it (BESSLER et al., 2015; CLIFFORD, 2008).

Hedge funds have important advantages in comparison to other types of institutional investors. Hedge funds managers have more incentives to generate positive returns than their counterparties, since hedge funds charge a performance fee, based on the fund's observed profitability. Those funds are also able to use leverage strategies and derivatives that are forbidden for many institutional investors (BRAV et al., 2008).

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These mechanisms, according to Shleifer and Vishny (1997), ensure hedge funds against anticipated withdrawals and reduce agency problems between fund managers and investors, signaling that they can participate in capital restructured processes in the long run (BRAV et al., 2008). However, hedge funds managers have more incentives to engage in riskier activities with high leverage strategies, sometimes compromising the target companies performance (KLEIN; ZUR, 2009).

Bessler et al. (2015) also relate that agreements on the payment of hedge funds managers are directly related to their performance, which generates strong incentives to find profitable investments and actively monitor target companies. Besides this, funds regulations can predict specific deadlines for redemption or even blockages. In this sense, Brav, Jiang, Partnoy and Thomas (2008) suggest that limits on trading the invested capital enables hedge funds to apply their resources in less profitable assets in the short run, but with a potential future effect on valuation.

Brav et al. (2008) reveal that hedge fund monitoring and its interventions on corporate governance in target companies increase value for the shareholder. Using data collected between the years of 2001 and 2006, Brav et al. (2008) found out that the most active role (activism) of American hedge funds propose strategic, operational and financial solutions. Results point out success in two thirds of the cases and abnormal return of stocks after the announcement of approximately 7% of activism.

Klein and Zur (2009) also provide evidence of rising prices in stocks from target companies in the short and long run. Greenwood and Schor (2009) suggest that hedge funds get a specialization in identifying badly managed target companies by searching for them, directing them, and grouping them. Clifford (2008) reports that companies that are directed by asset funds generate abnormal positive returns and improvements on the performance measured by Return on Asset (ROA), in comparison to the group of companies directed by the same hedge funds for liability purposes.

Gillan and Starks (2007) shows that activism of institutional investors is not a new phenomenon. In the mid-twentieth century, American financial institutions, such as insurance companies, investment funds and banks were asset participants in corporate governance, acting in corporate services and taking important roles in the strategic direction of the company. Decades ago, Smith (1996) emphasized that shareholders' activism is highly successful in changing the governance structure and results in a statistically relevant increase in shareholders' wealth.

Given this background, we hypothesize that hedge funds can generate value for shareholders in highly concentrated markets also.

H1: The overall equity stake of hedge funds generates value for target companies in highly concentrated markets, like the Brazilian one.

Brazilian Investment Funds

The CVM instruction number 555, of December 17th 2014, defined the classification of investment funds in fixed income, exchange or multimarket. About 2015, the Brazilian Association of Financial and Capital Markets Entities (Anbima), in order to increase transparency and allow comparison between funds, announced a booklet named New Investment Funds Classification. This document sought to detail each one of the new classifications, as well as the benefits of this market change, and the decision-making process steps.

Among the classification defined in the CVM instruction number 555, the category that is more similar to a traditional hedge fund portfolio is the multimarket funds (JOAQUIM;

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PASSARELLI; MOURA, 2011; MALAQUIAS; EID, 2014; DUARTE; MEDEIROS, 2016; MALAQUIAS; PONTES, 2018). It is an investment category that involves many risk factors, without the commitment of concentrating on any factor in particular (ANBIMA, 2017), besides other characteristics such as the adoption of leveraged positions, derivatives operations and performance rate payment (MALAQUIAS; EID, 2013).

TABLE 1 - NEW FUNDS CLASSIFICATION – ANBIMA

This chart presents Level 1 – Asset Class: the classification of investment funds, according to the CVM instruction number 555, of December 17th 2014; Level 2 – Types of Management and Risks: the types of management and the associated risks to each one; Level 3 – Strategies: details specific strategies that funds may adopt.

Regulation (CVM-Instruction number 555/14)	**Autoregulation (ANBIMA)**	
Level 1	**Level 2**	**Level 3**
Asset Class	**Types of Management and Risks**	**Strategies**
Fixed Income Stocks Multimarkets Foreign Exchange	Indexed Assets Foreign Investment	According to the Strategy

Source: CVM instruction number 555 adapted

The New Classification of Investment Funds (ANBIMA, 2017) defines three levels. Tables 1 and 2 show it. The first level highlights the asset classes that follow the adopted classification by CVM in instruction number 555. The second level identifies the management type and the risks associated with that management. The third level details the fund strategies.

TABLE 2 - MULTIMARKET FUNDS CLASSIFICATION

This chart presents categories and subcategories of multimarket funds, according to the CVM instruction number 555, of December 17th 2014; the categories where types of management and associated risks are defined; and the subcategory that details specific strategies that these funds may adopt.

Asset Class	**Category**	**Subcategory**
Multimarket	Allocation	Ballanced
		Dynamic
	Strategy	Macro
		Trading
		Neutral *Long and Short*
		Directional *Long and Short*
		Interest rate and Currencies
		Free
		Protected Capital
		Specific Strategy
	Foreign Investment	Foreign Investment

Source: CVM instruction number 555 adapted

In addition, The Anbima Hedge Funds Index (IHFA) was created in 2008 to intensify the monitoring activities of this segment. This index value is a reflection of the evolution of a hypothetic application of quotas in baskets of funds selected according to specific criteria. Funds that are part of the multimarket class and with more than one year of operation belong to the IFHA. Besides that, the methodology adopted by Anbima (2017) excluded funds that:

- Constituted by the closed condominium form, exclusive;
- That do not charge a performance tax;

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- That average a number of holders in the quarter that precedes the rebalancing date of the index that are lower than ten;
- That do not disclose the quota value updated daily;
- Investment fund quotas that do not have, at least, 95% of its equity invested in a single investment fund;

- That have equity averages in the quarter that precedes the rebalancing date of the index that are inferior to the median value of the sample;
- That has annualized volatility – taking as a basis the variability of observed daily returns – in the quarter that precedes the rebalancing date of the index which is inferior to the first quarter of the sample.

The theoretical portfolio of IHFA has a quarterly balancing and validity to periods from January to March, April to June, July to September and October to December, and it is calculated from provided data by CVM.

DATA AND METHODOLOGY

Sample

In order to assess the relation between the joint equity stake of Brazilian hedge funds and the generation of value for target companies in terms of stocks return, we used data of 324 companies, listed in São Paulo Stock Market (B3) that had participation in multimarket funds from the IHFA index. Overall, 555 funds are part of the IHFA index since the beginning of the series, which started in the last quarter of 2007, being 499 investment funds (FI) and 56 investment funds in investment funds quota (FIFIC).

The selection of the samples used in this study considers funds that are part of the IHFA index (data requested by Anbima) and information collected in Economática and Quantum Axis for the period of 2007 to 2016. In Economática, there was information as: stock return, profitability, beta, volatility, debt and market value – reference to stocks listed in markets that have shareholders as Brazilian hedge funds.

The companies selected are listed in 20 sectors according to the classification of the software Economatica@ and were categorized as Agriculture, Livestock and Fishing; Food and Beverage; Commerce; Construction; Electronics; Electric Energy; Finance and Insurance; Industrial Machines; Mining; Non-Metallic Minerals; Paper and Cellulose; Oil and Gas; Chemistry; Steel and Metallurgy; Software and Data; Telecomunications; Textile; Transport and Vehicles.

In Quantum Axis databank, we extracted information about the composition of portfolios in funds, such as stock implementations and stock loans. By the composition of portfolios, it is possible to identify sectors, and companies that the investment fund uses as their resources, the number of stocks in portfolios or borrowed at the end of each period and the financial volume used in each strategy. The Table below details the number of hedge funds in each economic sector from 2007 to 2016, period of analysis in this research.

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TABLE 3 - TOTAL AMOUNT AND ANUAL AVERAGE OF *HEDGE FUNDS* PER ECONOMIC SECTOR

This table presents the allocation in variable income of resources in investment funds classified as multimarket, inserted in IHFA – Anbima index per economic sector (categories defined by the software Economática).

Economic Sector (Economática)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Commerce	47	68	66	43	53	72	59	61	42	22
Construction	47	70	113	76	52	115	51	53	23	12
Electric Energy	89	108	119	89	72	121	104	101	68	47
Finance and Insurance	73	62	90	98	62	88	90	101	86	42
Mining	37	30	50	36	33	59	23	26	23	15
Chemistry	18	25	23	23	12	13	10	27	11	8
Telecommunications	49	76	67	36	21	34	35	27	15	6
Textile	11	0	2	12	11	19	13	18	4	5
Vehicles and auto parts	15	14	14	22	13	24	26	23	18	14
Paper and Cellulose	20	26	31	25	17	30	20	21	26	16
Electronics	2	8	7	2	0	0	0	0	0	0
Software and Data	7	8	12	17	10	6	13	22	15	9
Food and Beverages	36	42	38	61	38	71	44	62	51	23
Steel and Metallurgy	72	56	75	62	37	60	38	41	19	20
Agriculture, Livestock and Fishing	4	0	2	1	0	0	1	0	0	0
Transport and Services	41	34	51	44	25	38	23	33	20	9
Oil and Gas	45	44	56	49	46	52	30	32	29	13
Non-metallic Minerals	2	0	2	3	1	0	0	0	0	0
Industrial Machines	2	5	3	8	5	4	1	6	7	2
Total	**697**	**744**	**959**	**886**	**624**	**991**	**721**	**822**	**541**	**325**
Average	**34,9**	**37,2**	**48**	**44,3**	**31,2**	**49,6**	**36,1**	**41,1**	**27,1**	**16,3**

Font: Elaborated by the author

As can be seen in Table 3, hedge funds were more present in the stock market between 2007 and 2009, where a rise occurred in the participation of electric, paper and cellulose, and oil and gas sectors. However, immediately following this period, a reduction of hedge funds performance can be seen, which can be related to the global crisis of 2008 and political-economic instability experienced in Brazil since 2015.

Between 2015 and 2016, the Brazilian economic indicators show a severe economic recession, with inflation larger than the maximum bandwidth of the target of 6.5% established by the National Monetary Council (CMN) and basic interest fees reaching 14.25% per year. With the addition of political instability to these factors, there was a decrease in foreign investment and the capital market outflow, which raised the concentration of investments in fixed income securities. These factors may justify, then, the sublease in Stock Market by multimarket funds.

Research Design

Our research design intends to capture the effect of the joint participation of hedge funds on Brazilian firms' market value, as shown in equation 1.

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(1)

$$y_{it} = \beta_0 + \beta_1 PartHF_{it} + \beta_2 NHF_{it} + \beta_3 \Delta PartHF_{it} + \beta_4 \Delta NHF_{it} + \beta_5 EHF_{it} + \beta_6 SHF_{it} + \sum_{k=1}^{N} \beta_k \boldsymbol{C}_{it} + \omega_i + \boldsymbol{\theta}_t + \varepsilon_{it}$$

The dependent variable y_{it} is defined using three proxies for shareholder value: RA_{it} is the abnormal return; RE_{it} is the actual stock return; and Vol_{it} is the stock volatility. C_{it} is the vector of control variables. The table below presents the variables description. Further information about the returns variable definitions are in equations 2 and 3.

TABLE 4 - VARIABLES DESCRIPTION

Variables	Description	Calculation Formula	Period
RA	Abnormal Stock Return	Further explanations in item 3.2.1 and equation 4	Monthly
RE	Effective Stock Return	Ratio between the stock price in period t and stock price in period t-1	Monthly
Vol	Stock Volatility	Standard deviation of company return i in period t	Monthly
PartHF	Participation *of hedge funds* in percentage	How much, in percentual terms of market value of company i in period t, is owned jointly by hedge funds;	Monthly
NHF	Number of *hedge funds* investing in each target firm	Quantity of funds that invest in a determined company i at the end of period t	Monthly
ΔPartHF	Percentage Change of participation *of hedge funds*	Difference between the variable PartHF in period t and period t-1	Monthly
ΔNHF	Variation in amount of *hedge funds* in numbers	Difference between the variable QtdHF in period t and period t-1	Monthly
MktCap	Market Cap	Napierian logarithm (ln) of stock price at the end of period i multiplied by the number of stocks in the company at the same period	Monthly
BTM	Book-to-Market	Ratio between PT and market value of company i in period t	Monthly
Beta	Beta	Ratio between covariance of market return of company i in period t and the market return by the variance of market return	Monthly
ROE	Return on Equity	Ratio between the net profit of company i in period t by the equity account of period t-1	Quarterly
Debt	Leverage	Ratio of total demandable by equity account of company i in period t	Quarterly
Liq	General Liquidity	Ratio between total asset and liability of company i in period t	Quarterly
LiqMkt	Market Liquidity	Ratio between medium negotiated volume and market value of company i in period t	Monthly
EHF	Entry *Dummy*	Equal to 1 for company i that had hedge fund output in period t and 0, if otherwise	Monthly
SHF	Output *Dummy*	Equal to 1 for company i that had hedge fund output in period t and 0, if otherwise	Monthly

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We used Campbell, Lo and MacKinlay (1997) to calculate the abnormal return and the CAPM model to estimate the predicted return.

$$E(R)_{it} = \beta\left(Rm_{it} - Rf_{it}\right) + Embi_t + \varepsilon_{it} \quad (2)$$

where

$E(R)_{it}$ = expected return rate of stock *i* in period *t*

Rm_{it} = Monthly return of American Market measured by the variation in index points of S&P.

Rf_{it} = Monthly return of fixed income titles of American market (*t-bond of 10 years)*.

$Embi_t$ = Monthly average country risk measure denominated *EMBI+*

The abnormal return RA_{it} was calculated by the difference between the expected return $E(R)_{it}$ estimated by CAPM model and the effective stock return.

RESULTS AND SAMPLE CHARACTERISTICS

Descriptive Statistics

Table 5 brings the descriptive statistics of variables in the model. All variables were winsorized at 2.5%. The sample Book-to-Market median is smaller than one, supporting the common argument that hedge funds acquire participations in undervalued companies. The abnormal return (RA) and the change variables (ΔPartHF and ΔNHF) have negative average values, while the stock effective return (RE) presents, on average, positive values. The firms' market value (MktCap) owns a more symmetrical distribution. Regarding the market liquidity (LiqMkt), the median is near the first quartile and relatively lower than the average rate, indicating that companies that are in the third and fourth quartile have a high liquidity in the stock market, while the biggest part of listed companies have low liquidity.

TABLE 5 - DESCRIPTIVE STATISTICS OF VARIABLES

This table presents the descriptive statistics of variables used in models detailed in equations 1, 2 and 3, the number of observations and the measures of position and dispersion, with information of companies listed in São Paulo Stock Market (B3) that have or do not have participation in hedge funds from 2007 to 2016.

Variable	Obs.	Mean	SD	Median	Min.	Q1	Q3	Max.
PartHF	27300	0.00	0.02	0.00	0.00	0.00	0.00	0.88
NHF	27300	2.46	4.12	0.00	0.00	0.00	4.00	34.00
ΔPartHF	26280	-0.00	0.33	0.00	-53.37	0.00	0.00	0.66
ΔNHF	27148	-0.00	1.42	0.00	-12.00	0.00	0.00	13.00
EHF	27300	0.02	0.13	0.00	0.00	0.00	0.00	1.00
SHF	27300	0.02	0.14	0.00	0.00	0.00	0.00	1.00
RE	27300	0.01	0.12	0.00	-0.25	-0.06	0.07	0.32
RA	27300	-0.02	0.11	-0.03	-0.26	-0.09	0.04	0.28
MktCap	27300	21.15	2.00	21.36	16.68	19.78	22.65	24.86
BTM	27300	1.23	1.51	0.72	0.09	0.41	1.34	7.85
Vol	27300	0.01	0.02	0.00	0.00	0.00	0.01	0.12
Beta	27300	0.74	0.45	0.70	-0.06	0.41	1.02	1.78
ROE	27300	0.04	0.14	0.04	-0.47	0.00	0.10	0.37
Debt	27300	0.37	0.27	0.30	0.02	0.16	0.53	1.00
Liq	27300	0.01	0.01	0.01	0.00	0.01	0.01	0.03

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LiqMkt	27300	0.04	0.06	0.02	0.00	0.00	0.05	0.24

PartHF - how much in percentual terms of market value in company, i, listed in São Paulo Stock Market (B3) in a period t is detained by *hedge funds*; NHF quantity of funds that invest in a company i at the end of period t; ΔPartHF – difference between the variable PartHF in period t and period t-1; ΔNHF – difference between the variable NHF in period t and period t-1;EHF – dummy entry variable – equal to 1 for company i in period t that owns *hedge fund* and 0, if otherwise; SHF – dummy output variable – equal to 1 for company i in period t that does not have a hedge fund participation and 0, if otherwise; RE – effective return of stock calculated by the ratio between stock price in period t and the stock price in period t-1; RA – abnormal return calculated by the different between stock returns of company i in period t and the expected return (equation 4); MktCap – Napierian logarithm (ln) of price of final stock in period i multiplied by the number of stocks in the company at the same period; Book-to-Market – ratio between the PL and market value of company i in period t; Vol – standard deviation of return of company i in period t; Beta – ratio between the covariance of return of company i in period t and the market return by variance of market return; ROE – ratio between the net profit of company i in period t by the equity of period t-1; Debt – ratio of total demandable by the equity of company i in period t; Liq – General liquidity index - ratio between the asset and liability of company i in period t; LiqMkt - ratio between the medium negotiated volume and market value of company i in period t.

Source: Resource data adapted by the author himself

Table 6 presents mean comparison group tests. We compare firms with participation of hedge funds to companies with no hedge funds participation. The variables RE and abnormal return RA have no significant mean difference, which signals that, on average, there are no statistically differences between effective and abnormal return between companies that own hedge funds participations and companies that do not.

TABLE 6 - MEAN TESTS

The table below presents the difference of means test between month-companies listed in São Paulo Stock Market (B3) with participation of hedge funds in any month of the year versus month-companies also listed in B3 with no participation of hedge funds during the year. The objective is to analyze if there are any initial significant differences between groups with and without hedge funds participation. For that, the dependent variables of models presented in equations 1, 2 and 3 (RA, RE and Vol) and control variables were compared between 2007 and 2016.

Variable	With HF participation		Without HF participation		Average Difference	P-Value
	Mean	SD	Mean	SD		
RE	0,0073	0,1104	0,0074	0,1219	0,0002	0,9145
RA	-0.0212	0,1056	-0,0214	0,1188	-0,0003	0,8468
MktCap	22.1049	1,5106	19,7948	1,8229	-2,3101	0,0000
BTM	0,9400	1,1174	1,6386	1,8655	0,6987	0,0000
Vol	0,0098	0.0196	0,0106	0,0237	0,0008	0,0028
Beta	0,8474	0.4401	0,5964	0,4203	-0,2510	0,0000
ROE	0,0619	0.1279	0,0141	0,1524	-0,0477	0,0000
Debt	0,3148	0.2350	0,4562	0,3041	0,1414	0,0000
Liq	0,0101	0,0057	0,0110	0,0066	0,0009	0,0000
LiqMkt	0,0542	0,0590	0,0183	0,0405	-0,0359	0,0000

RE – effective return of stock calculated by the ratio between stock price in period t and the stock price in period t-1; RA – abnormal return calculated by the different between stock returns of company i in period t and the expected return (equation 4); MktCap – Napierian logarithm (ln) of price of final stock in period i multiplied by the number of stocks in the company at the same period; Book-to-Market – ratio between the PL and market value of company i in period t; Vol – standard deviation of return of company i in period t; Beta – ratio between the covariance of return of company i in period t and the market return by variance of market return; ROE – ratio between the net profit of company i in period t by the equity of period t-1; Debt – ratio of total demandable by the equity of company i in period t; Liq – General liquidity index - ratio

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between the asset and liability of company i in period t; LiqMkt - ratio between the medium negotiated volume and market value of company i in period t.
Source: Research data adapted by the author himself

In terms of stock volatility groups (Vol), there are statistically significant differences with a trust level of 99%. This result indicates that, on average, the hedge funds seek companies with more profitability and liquidity in stocks that follow the market variation (beta), following Bessler et al. (2015).

Results

To derive our results, we used a panel with funds fixed effects model. Table 7 presents the regression of Equation 1, using the abnormal return as a dependent variable. We split the stocks into ordinary (ON), preferential (PN) and other classes. For each class, it is presented the coefficient and the p-value (P>|t|) of regression.

The results of these estimates indicate that the explanatory variables, participation and quantity of hedge funds, in most cases, negatively affect the abnormal return of companies. However, the effect is positive when the analysis is based on variables that measure the variation of participation and quantity of hedge funds. This is evidence that the rise of participation or quantity of funds generates value for the company and, consequently, a raise of abnormal return. As it is presented in literature (CLIFFORD, 2008; BRAV et al., 2008; GREENWOOD; SCHOR, 2009; GANTCHEV, 2013; BEBCHUK et al., 2015), it was expected that these two variables had a positive impact in return.

The variable of control related to profitability (ROE) also presented positive and significant signs of 99% of trustworthiness for ordinary and preferential classes, and 95% of trustworthiness for the classes left. The variable Market Cap presents a positive and significant sign for stocks ON and PN, following Clifford (2008), Bessler et al. (2015) and Becht et al. (2017), indicating that companies that have good indexes of profitability present for their shareholders good results/returns. In the same way, companies that own market values higher than accounting values also generate positive returns.

Our results are aligned to Clifford (2008), Brav et al. (2008), Bessler et al. (2015) and Becht et al. (2017), indicating that the actions of hedge funds affect the return of target companies, by the participation or by the number of funds invested in the stock market.

TABLE 7 - LINEAR REGRESSION – ABNORMAL RETURN

The table below presents results of regression presented in equation 1.

Variables	Common Stocks - ON		Preferred Stocks - PN		Other Stocks	
	Coef.	*P>|t|*	Coef.	*P>|t|*	Coef.	*P>|t|*
PartHF	-0,1389	0,0340**	-0,0681	0,5260	1,9278	0,0050***
NHF	-0,0007	0,0090***	-0,0022	0,0000***	-0,0015	0,0500**
ΔPartHF	0,0189	0,8170	0,0045	0,0000***	-0,8295	0,0140**
ΔNHF	0,0017	0,0030***	0,0026	0,0020***	0,0051	0,0030***
EHF	0,0160	0,0180**	-0,0071	0,5870	0,0109	0,6100
SHF	-0,0041	0,4810	-0,0137	0,2700	-0,0108	0,7680
MktCap	0,0016	0,0240**	0,0038	0,0000***	0,0050	0,1780
BTM	-0,0073	0,0000***	-0,0031	0,0070***	0,0055	0,0310**
Vol	-0,0317	0,5370	0,0844	0,4190	2,5421	0,0020***
Beta	0,0052	0,0140**	-0,0030	0,4710	0,0065	0,5450
ROE	0,0650	0,0000***	0,0619	0,0000***	0,0592	0,0380**
Debt	0,0019	0,6210	0,0060	0,3480	0,0114	0,5920
Liq	0,1577	0,2610	-0,1231	0,5790	-0,0282	0,9740
LiqMkt	-0,0609	0,0060***	0,1004	0,0280**	-0,0880	0,4970

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N	17.397	6.529	1.183
R-squared	0,0245	0,0177	0,0357

PartHF - how much in percentual terms of market value in company, i, listed in São Paulo Stock Market (B3) in a period t is detained by *hedge funds*; NHF quantity of funds that invest in a company i at the end of period t; ΔPartHF – difference between the variable PartHF in period t and period t-1; ΔNHF – difference between the variable NHF in period t and period t-1;EHF – dummy entry variable – equal to 1 for company i in period t that owns *hedge fund* and 0, if otherwise; SHF – dummy output variable – equal to 1 for company i in period t that does not have a hedge fund participation and 0, if otherwise; RE – effective return of stock calculated by the ratio between stock price in period t and the stock price in period t-1; RA – abnormal return calculated by the different between stock returns of company i in period t and the expected return (equation 4); MktCap – Napierian logarithm (ln) of price of final stock in period i multiplied by the number of stocks in the company at the same period; Book-to-Market – ratio between the PL and market value of company i in period t; Vol – standard deviation of return of company i in period t; Beta – ratio between the covariance of return of company i in period t and the market return by variance of market return; ROE – ratio between the net profit of company i in period t by the equity of period t-1; Debt – ratio of total demandable by the equity of company i in period t; Liq – General liquidity index - ratio between the asset and liability of company i in period t; LiqMkt - ratio between the medium negotiated volume and market value of company i in period t.***, **, *: Significance levels of 0,1%, 1% e 5%

Source: Research data adapted by the author himself

Table 8 repeats the same prior regression but with one more proxy for shareholder value, effective return. The results are qualitatively the same when comparing the hedge funds effect on effective returns and on abnormal returns.

TABLE 8 - ADDITIONAL TESTS: HEDGE FUNDS EFFECT ON EFFECTIVE RETURNS

The table below presents results of regression that aim to measure the effect of hedge funds participation in effect return of companies listed in São Paulo Stock Market (B3).

Variables	Common Stocks - ON		Preferred Stocks - PN		Other Stocks	
	Coef.	*P>|t|*	Coef.	*P>|t|*	Coef.	*P>|t|*
PartHF	-0,1355	0,0410**	-0,0980	0,3320	1,6040	0,0290**
QtdHF	-0,0007	0,0240**	-0,0021	0,0000***	-0,0015	0,0720
ΔPartHF	0,0104	0,9050	0,0048	0,0000***	-0,9205	0,0390**
ΔNHF	0,0021	0,0010***	0,0036	0,0000***	0,0062	0,0010***
EHF	0,0170	0,0130**	-0,0092	0,4960	0,0051	0,8440
SHF	-0,0081	0,1800	-0,0136	0,2880	0,0007	0,9840
MktCap	0,0015	0,0390**	0,0030	0,0080***	0,0044	0,2580
BTM	-0,0062	0,0000***	-0,0017	0,1590	0,0067	0,0120**
Vol	-0,0839	0,1170	0,0289	0,7940	1,9623	0,0230**
Beta	0,0095	0,0000***	0,0014	0,7500	0,0044	0,6960
ROE	0,0637	0,0000***	0,0616	0,0000***	0,0545	0,0680**
Debt	0,0012	0,7560	0,0020	0,7660	0,0136	0,5400
Liq	0,2234	0,1270	0,0003	0,9990	-0,2037	0,8190
LiqMkt	-0,0459	0,0480**	0,1078	0,0230	-0,0400	0,7660
N	17.397		6.529		1.183	
R-squared	0,0206		0,0133		0,0305	

PartHF - how much in percentual terms of market value in company, i, listed in São Paulo Stock Market (B3) in a period t is detained by *hedge funds*; NHF quantity of funds that invest in a company i at the end of period t; ΔPartHF – difference between the variable PartHF in period t and period t-1; ΔNHF – difference between the variable NHF in period t and period t-1;EHF – dummy entry variable – equal to 1 for company i in period t that owns *hedge fund* and 0, if otherwise; SHF – dummy output variable – equal to 1 for company i in period t that does not have a hedge fund participation and 0, if otherwise; RE – effective return of stock calculated by the ratio between stock price in period t and the stock price in period t-1; RA –

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abnormal return calculated by the different between stock returns of company i in period t and the expected return (equation 4); MktCap – Napierian logarithm (ln) of price of final stock in period i multiplied by the number of stocks in the company at the same period; Book-to-Market – ratio between the PL and market value of company i in period t; Vol – standard deviation of return of company i in period t; Beta – ratio between the covariance of return of company i in period t and the market return by variance of market return; ROE – ratio between the net profit of company i in period t by the equity of period t-1; Debt – ratio of total demandable by the equity of company i in period t; Liq – General liquidity index - ratio between the asset and liability of company i in period t; LiqMkt - ratio between the medium negotiated volume and market value of company i in period t.***, **, *: Significance levels of 0,1%, 1% e 5%

Source: Research data adapted by the author himself

FINAL REMARKS

This research brought evidence that the equity stake of hedge funds generates value for target companies in highly concentrated markets like Brazil. The contribution of this research is related to academic and practical discussion of the theme exposed, not only under the view of value generation for shareholders associated with the hedge funds, but also in the sense of understanding the relation between the equity stake of this segment and the price rise of target companies. Our results endorse research of Clifford (2008), Bessler et al. (2015) and Becht et al. (2017) and confirm a positive and significant relation between investment funds and value generation for target companies.

It is recommended that in future research studies with this design be developed, involving all funds classified in the multimarket segment and in other segments that may reinforce the result found in this research. In addition, it is indicated that the analysis period should be extended to capture possible market fluctuations such as interest rate increases and economic crises.

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