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Multimarket investment funds: does manager's discretion matter?

Fundos de investimento multimercado: a liberdade de ação do gestor importa?

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Keywords
Multimarket Investment Funds.
Free strategy.
Manager discretion.

Abstract

This study seeks to understand if the discretionary nature of free strategy multimarket investment funds in Brazil is related to better performance when compared to other funds classified in the same class. Previous studies on the US fund industry show that greater discretion is associated with better returns. The results corroborate the international literature, demonstrating that free strategy funds are associated with better performance. However, there was no evidence of an association between free strategy funds and risk. The research used data of 3499 multimarket funds from January 2016 to January 2019, collected from the Quantum Axis database. Performance was measured using the Sharpe and Sortino Index, and risk was assessed using VaR, CVaR, and Downside risk.

Palavras-chave
Fundos de Investimento Multimercado.
Estratégia livre.
Discrição do gestor.

Resumo

O presente trabalho busca compreender se a discricionariedade dos fundos Multimercado Estratégia Livre está relacionada a um melhor desempenho quando comparado aos demais de sua classe. Na indústria de fundos norte-americana, estudos anteriores mostram que maior discricionariedade está associada a melhores retornos. Os resultados estão em linha com a literatura estrangeira onde os Fundos Estratégia Livre estão associados a melhor desempenho, porém não se pode afirmar o mesmo quanto ao risco. Foram utilizados dados da base Quantum Axis, no total de 3499 fundos multimercado durante o período de janeiro de 2016 a janeiro de 2019. Desempenho foi mensurado pelo Índice de Sharpe e Sortino, e o risco por VaR, CVaR (Conditional Value at Risk) e Downside risk.

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Practical implications

This study offers performance and risk variables to help investors choose multimarket investment funds based on analysis of the discretion of fund managers.

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1 INTRODUCTION

This research aims to understand whether the discretion of free strategy Brazilian multimarket investment funds is related to better performance when compared to other similar funds. Investment fund managers seek returns using various market strategies, while investors seek the best option for themselves. According to Lo (2001), the interests of these two actors may be conflicting and create tensions. Internationally, hedge funds are the most similar arrangement to Brazilian multimarket funds, as they adopt similar strategies and seek long-term returns (Joaquim & Moura, 2011; Maestri & Malaquias, 2018). The literature on developed markets indicates that greater fund manager discretion is associated with higher returns (Agarwal, Daniel, & Naik, 2009). However, there is still scarce evidence on this issue in Brazil. The country's little capacity to enforce contracts (Doing Business, 2018), for example, makes it doubtful whether this freedom would lead to better performance or simply allow managers to extract income from shareholders.

Fund managers may use privileged information gained due to the market's information asymmetry for their own benefit (Moreira, Tavares, & Malaquias, 2017). Although the regulation provides on stating the funds' level of risk, the numerous performance and risk measures can be manipulated, leading to conflict of interest between investors and managers (Goetzmann, Ingersoll, Spiegel & Welch, 2007). The fiduciary relationship is damaged when the manager decides to prioritize their interests to the detriment of shareholders' expectations. This may happen, for example, in managers' attempt to inflate stocks at the end of the semester to maximize their remuneration based on performance (Roquete, Maranho, Klötzle, & Pinto, 2016).

The investor aims to receive the highest possible risk-adjusted return, and the fund manager aims to increase revenues (Gil-Bazo, Ruiz-Verdú, & Santos, 2010). This study is based on the premise that Brazil's little capacity to enforce contracts could lead to different results from those found in the international literature.

In general, studies in this area seek to explain the return using factors inherent to the fund, such as management fees (Filho & Sousa, 2015), performance fees (Ackermann, Mcenally, & Ravenscraft, 1999; Matos, Penna, & Silva, 2015), and fund size (Maestri & Malaquias, 2018; William, & Rochman, 2009). The discussion in this work intends to contribute by discussing the fund managers' behavior, particularly observing the relation between their discretion and the funds' performance.

The Brazilian fund industry is positioned as the most important among developing countries (Klapper, Sulla, & Vittas, 2004; Varga & Wengert, 2011). According to the Brazilian Financial and Capital Markets Association (ANBIMA, 2019) reports, the Brazilian fund industry recorded an amount of BRL 5 trillion in June 2019, which represents 74% of the 2018 GDP. Growth in the last three years was BRL 1.5 trillion, while in mid-1994, less than BRL 300 billion was allocated to this industry.

For Lo (2001), the fund manager must have ample discretion to obtain the best possible risk and return ratio, and trading strategies must be guarded, so they are not copied by others and result in losses for the fund. This research examines the association between managers' discretion and better performance by considering ANBIMA'S classification of funds. The study focuses on funds in the class (first level) multimarket, classified in the category (second level) strategy, and its subcategories (third level), listed in subsection 2.1 of this article. The analysis considering the classification in the third level will emphasize the multimarket funds in subcategory free (free strategy), which in theory would offer greater discretion to the manager. Thus, the research will also observe whether funds classified in the subcategory free strategy present better performance than funds in the same category (strategy) but classified in other subcategories related to fixed strategies.

The data collection was conducted using the Quantum Axis database, obtaining data on Brazilian multimarket funds from 2016 to 2019. This period was selected because the instruction of the Brazilian securities and exchange commission CVM 555 in December 2014 led to changes in the structure and classification of multimarket investment funds, which came into effect in 2016. The sample was formed of all 3,499 Brazilian multimarket funds, including closed-ended and exclusive funds, and applying multiple regression with monthly fixed effects. Performance variables (gross return, Sharpe and Sortino) and risk (volatility, downside risk, VaR, and Conditional VaR) were evaluated.

The free strategy funds proved to be superior and statistically significant at the level of 1% in at least one of the performance variables, with the exception of trading funds. As for risk, the free strategy funds presented positive significance in all variables compared to the specific strategy subcategory, which, in theory, is the subcategory that grants less discretion to the manager.

The results corroborate the international literature by Agarwal, Daniel, and Naik (2009), who found better results in funds with a higher level of managerial discretion. Also, the findings contribute to the Brazilian literature on multimarket investment funds, particularly regarding performance analysis; from the risk perspective, the study did not find evidence of a relationship between the manager's discretion and risk. Finally, the findings of this research help investors assess the many multimarket investment funds better when setting up their investment portfolio.

2 THEORETICAL FRAMEWORK

2.1 Investment Fund Industry in Brazil

Due to globalization, internationalization of large financial groups, and the good performance of stocks and long-term bonds, the investment fund markets grew exponentially in the 1990s (Klapper, Sulla, & Vittas, 2004). In Brazil, this expansion was also influenced by more specific reasons, such as inflation control after the Plano Real, an economic plan that stabilized the economy and the Brazilian capital market (Tizziani, Klotzle, Jr & Motta, 2010).

The Brazilian fund industry is considered the best positioned among the other emerging countries (Klapper, Sulla & Vittas, 2004; Varga & Wengert, 2011). The industry has improved, showing constant evolution in regulation, an increase in the number of qualified managers, and the variety of financial instruments available in the capital market. Thus, Brazilian investors have shown greater interest in the fund industry compared to traditional investments such as savings (Varga & Wengert, 2011).

ANBIMA's reports (2019) suggest the funds' industry growth in Brazil. The multimarket investment funds stand out, representing 21% of the total equity (BRL 1 trillion) of the investment fund industry in Brazil in May 2019. This growth led to changes in funds' classification in 2014 in order to simplify the industry, facilitate understanding, and expand it to the general public. According to the Brazilian Securities and Exchange Commission's instruction CVM 555 in December 2014, the funds were classified into four classes (level 1): fixed income, multimarket (balanced/mixed), stocks, and foreign exchange.

The investment funds are classified, in a second level, into three categories: allocation, strategies, and investments abroad. Finally, the classification advances to a third level (subcategories). Funds classified as strategies in the second level are separated into the following eight subcategories in the third level (according to strategies they adopt): protected capital, specific strategy, interest and currencies, free, long and short neutral, long and short directional, macro, and trading. The multimarket investment funds in the subcategory free strategy form the most comprehensive group of this class of funds, concentrating more than 7% of the entire net equity of the fund industry (ANBIMA, 2019).

2.2 Empirical Evidence on Fund Performance

Matos, Penna, and Silva (2015) found that, in Brazilian equity funds, the superior results are associated with lower management fees and collection of performance fees. The authors also observed an inverse relationship between the funds' maturity and profitability. In multimarket investment funds, Maestri and Malaquias (2018) found evidence of better returns associated with new managers, with the possible explanation that younger managers suffer from the behavioral bias of overconfidence and have a lower level of risk aversion (Chevalier & Ellison, 1999; Li, Zhang, & Zhao, 2011).

In addition, Maestri and Malaquias (2018) suggest that better performance is associated with funds with a higher share of fixed income and funds with higher net worth. This evidence converges with the findings of William Rochman (2009), who observed better performance in stock funds and multimarket investment funds, with higher net assets and longer duration. The performance rate explains part of the superior performance, but not the increase in total risk (Ackermann, Mcenally, & Ravenscraft, 1999). As for performance, Filho and Sousa (2015) found that management fees were more relevant than performance fees and Treynor, Sharpe, and Modigliani indices.

Fonseca (2012) is one of the few works that cover the ANBIMA subcategories in Brazil. The author showed that the managers of long and short funds and balanced funds demonstrated market timing and selectivity abilities in the period from 2005 to 2010. Also, Fonseca (2012) observed better returns associated with multi-strategy funds and macro funds. This work is shown in the context of the new CVM instruction 555 and differs by measuring performance from the manager's perspective of discretion and identifying possible conflicts of interest.

2.3 Possible Conflicts of Interest

Managers may try to benefit from the asymmetry of information existing in the investment fund industry (Moreira, Tavares & Malaquias, 2017). Performance measures can be manipulated (Goetzmann, Ingersoll, Spiegel, & Welch, 2007), and there are several studies, such as Roquete, Maranho, Klötzle, and Pinto (2016), that try to understand the abnormal movement of resources prior to the half-yearly closing, which can be interpreted as the manager's attempt to inflate stocks, even if artificially, in the period before the measurement of the performance rate.

Roquete, Maranho, Klötzle, and Pinto (2016) argue that there are agency problems in Brazilian multimarket funds. The authors found evidence of abnormal post-semester negative returns, suggesting a forced sale of positions taken prior to the half-yearly closing. The excessive turnover of portfolios can cause losses to the market due to the artificial inflation of asset prices, and brokerage costs are unnecessarily absorbed by investors (Wilner, 2000). Huang, Sialm, and Zhang (2009) report that stable funds perform better than funds with greater volatility and conclude that managers tend to act according to the incentive received.

In Brazil, Sanematsu (2013) found that attempts to inflate stocks at the end of the semester are common in funds directed to the general public, while in funds directed to qualified investors, managers tend to operate regularly in half-yearly closings, which shows the existing agency conflict. Chevalier and Ellison (1999) highlight that managers receive a fixed percentage of the fund's equity in addition to performance fees. Hence, it is possible that at some point, a new non-explicit contract will be generated based on the flow-performance relationship. When considering the poor enforcement of this contract, the alignment of interests between investor and manager may be compromised.

2.4 Managers' Discretion

Getmansky (2012) studied the life cycle of hedge funds, finding a positive relationship between performance and fund size. The author also observed that the fund's survival is tied to being in the right category at the right time. Therefore, managers will likely capture the best opportunities according to market movements. The free strategy fund has this premise, so it is necessary to understand whether managers can extract wealth at different times in the economy.

Agarwal, Daniel, and Naik (2009) studied the role of managerial incentives and discretion related to hedge funds' performance. The authors associated the manager's discretion with the fund's lockup period (grace period) and the redemption period (or the frequency with which investors can withdraw from the fund – either at the end of a determined period or with prior redemption notice, which is the time required to liquidate the shares and for the investor to withdraw the money). Agarwal, Daniel, and Naik (2009) found a positive relationship between managerial discretion and the performance of North American Hedge Funds.

Based on these results, managers with greater discretion to make the fund's strategic decisions should achieve better performance. Thus, we present the following hypothesis:

H_1: Free strategy funds perform better than funds with a defined strategy.

Funchal, Lourenço, and Motoki (2016) found evidence that qualified investors are associated with lower risks while managers of funds aimed at the general public opt for greater risk exposure. There may also be an agency conflict between managers and shareholders regarding risk-taking. The authors argue that closed-end funds, which provide greater discretion to the manager, had a higher level of risk, which may be related to the fund's long-term strategy.

Given that managers with greater discretion must produce better performance, it is crucial to understand whether this freedom results in less risk to the fund since managers are not tied to fixed strategies. Thus, we present the following hypothesis:

H_2: Free strategy funds present a lower level of risk than funds with a defined strategy.

3 METHODOLOGY

Data on Brazilian multimarket funds were collected from the Quantum Axis database, gathering information on monthly profitability, performance measures, and risks of funds active during the period from January 2016 to January 2019. This period was selected because the instruction of the Brazilian Securities and Exchange Commission CVM 555 in December 2014 led to significant changes in the structure and classification of multimarket funds, which came into effect in 2016. The sample was composed of 3499 multimarket funds, including closed-end, exclusive, and single shareholder funds.

3.1 Econometric Model

The study was developed using a pooled OLS multiple regression technique with monthly fixed effects.

The econometric model used for the study was:

$$Performance^{j}_{(i,t)} = \beta_o + \sum^{a}_{(k=1)} \beta_\kappa VarInt\ t^{k}_{(i,t)} + \sum^{b}_{(l=1)} y_l Control\ t^{l}_{(i,t)} + \varepsilon \quad (3.1)$$

$$Risk^{j}_{(i,t)} = \beta_o + \sum^{a}_{(k=1)} \beta_\kappa VarInt\ t^{k}_{(i,t)} + \sum^{b}_{(l=1)} y_l Control\ t^{l}_{(i,t)} + \varepsilon \quad (3.2)$$

Where $Performance^{j}_{(i,t)}$ = {gross return,Sharpe,Sortino} and $Risk^{j}_{(i,t)}$ = {Volatility,DR,VaR,CVaR} are the risk measures for each category of fund i in month t. The variables of interest are represented by $VarInt\ t^{k}_{(i,t)}$ *They correspond to the subcategories free, protected capital, interest and currencies, long and short neutral, long and short directional, macro, and trading. The control variables, represented by* $Control\ t^{l}_{(i,t)}$ sare presented in subsection 3.3. Finally, the regression error is added.

The free strategy multimarket fund was used as a model reference, so its effect was absorbed by the constant. When using the free strategy subcategory as a basis, all the regression results for the other subcategories of funds are expressed in relation to the free strategy fund. In addition, this subcategory provides greater discretion to the manager and, in theory, brings the best benefit to investors (better performance and lower level of risk).

3.2 Performance and Risk Measures

Despite the variety of benchmarks that multimarket funds may have, the interbank deposit rate (CDI) was used to calculate performance and risk measures such as the minimum return required by the investor and the risk-free rate of return. According to Varga (2001), it is possible to use the CDI as a risk-free rate in the market because it is the most appropriate asset in Brazil and has adherence to the profitability of federal public securities linked to the country's reference tax rate (Selic).

Dependent Variables for performance: gross return (which measures the return discounting the management fee), Sharpe (measures the risk and return ratio based on the standard deviation), and Sortino (complements Sharp by measuring the risk ratio and return based on downside risk). Risk variables: downside risk (which measures the negative volatility of the assets), VaR (measures the maximum loss in normal market situations), CVaR (complements VaR, measuring the risk beyond the confidence interval), and Volatility (calculated by estimating the standard deviation of the fund's historical returns). Details on the methodology for calculating the dependent variables are available in Appendix A.

3.3 Control Variables

The existing literature guided the inclusion of a set of fund characteristics as control variables that may affect the fund's performance. Figure 2 (Appendix B) shows the aspects that can influence the fund's performance and risk.

Several control variables were adopted, such as management fee, performance fee, shareholders' equity, grace period, and closed-end funds. The methodology for calculating the variables is available in Appendix B.

4 RESULTS

4.1 Descriptive Statistics

Table 1 shows the distribution of multimarket investment funds according to the ANBIMA classification and their representativeness in absolute and percentage values. The free strategy funds are predominant, representing approximately 70% of the frequency in the distribution of the entire category of multimarket strategies.

Table 1. Distribution of Multimarket Investment Funds – ANBIMA Classification/subcategories

ANBIMA classification/ subcategories	Frequency	Percentual	Accumulated
Free	68,520	67.84	67,84
Protected Capital	1,214	1.2	69,05
Specific Strategy	4,966	4.92	73,96
Interest/Currency	6,439	6.38	80,34
Long and Short Direcional	2,225	2.2	82,54
Long and Short Neutro	913	0.9	83,45
Macro	16,091	15.93	99,38
Trading	627	0.62	100
Total	100,995	100.00	

Source: elaborated by the authors based on data from funds of the Quantum Axis database.

Table 2 shows the descriptive statistics of the performance and risk variables that were 0.50% winsorized in each tail.

Table 2. Descriptive Statistics of Performance and Risk Variables

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Return	100,995	0.89	2.03	-11.13	11.49
Sharpe	100,995	8.77	79.87	-952.24	80.51
Sortino	100,995	6.04	27.01	-15.49	275.37
Volatility	100,995	4.33	7.66	0.00	69.94
Downside Risk	100,995	0.83	0.36	0.44	3.26
VaR 95%	100,995	2.06	3.64	0.00	33.21
Conditional VaR	100,995	0.37	0.71	-0.06	6.13

Source: elaborated by the authors based on fund data from the database Quantum Axis.

Note: The data presented were winsorized to 0.5% for each tail. The interbank deposit (CDI) rate was adopted as the risk-free rate..

4. 2 Regression Model

The results obtained and presented in Table 3 answer the hypothesis that managers with greater operational freedom obtain better results since the free strategy funds demonstrated better performance and lower risk than the other funds with fixed strategies.

Table 3. Estimates of performance and risk determinants

	(1) Retorno	(2) Sharpe	(3) Sortino	(4) Volat.	(5) DR	(6) VaR 95%	(7) VaR C
Variables							
Protected capital	0.13	4.75	-4.3***	1.18	0.01	0.56	0.15**
	(1.41)	(0.66)	(-3.26)	(1.55)	(0.50)	(1.55)	(2.06)
Specific strategy	-0.01	-39.0***	-1.00	1.52**	0.05***	0.72**	0.13**
	(-0.19)	(-3.06)	(-0.77)	(2.43)	(2.66)	(2.43)	(2.36)
Interest/currency	-0.15***	0.23	1.50	-1.03***	-0.00	-0.49***	-0.09***
	(-5.10)	(0.05)	(1.22)	(-3.25)	(-0.34)	(-3.25)	(-2.84)
Long and short directional	0.20*	-2.79	-1.8***	0.43	0.00	0.20	0.01
	(1.65)	(-1.25)	(-3.12)	(0.56)	(0.08)	(0.56)	(0.28)
Long and short neutral	-0.23***	4.15	-2.3***	-2.26***	-0.07***	-1.07***	-0.22***
	(-2.64)	(1.35)	(-3.24)	(-3.81)	(-4.18)	(-3.80)	(-3.70)
Macro	-0.01	0.49	-2.0***	0.10	-0.00	0.05	0.02
	(-0.25)	(0.25)	(-4.12)	(0.34)	(-0.03)	(0.34)	(0.83)
Trading	0.18	-1.55	2.57	0.52	0.00	0.25	0.02
		(-0.40)	(0.57)	(0.38)	(0.02)	(0.38)	(0.12)
Characteristic of control variables							
Net redemption days	-0.00***	0.00	0.00	-0.01	-0.00*	-0.00	-0.00*
	(-3.89)	(0.39)	(1.07)	(-1.40)	(-1.67)	(-1.40)	(-1.72)
Management fee %	0.17***	0.96	-0.42	1.89***	0.06***	0.90***	0.18***
	(6.61)	(0.57)	(-1.11)	(4.15)	(3.29)	(4.15)	(4.25)
Performance fee %	0.00	0.17	0.15***	-0.00	0.00	-0.00	-0.00
	(0.55)	(0.36)	(2.85)	(-0.01)	(0.06)	(-0.01)	(-0.09)
Redemption fee %	0.02***	-0.18	-0.3***	0.06*	0.00	0.03*	0.01**
	(4.01)	(-0.50)	(-4.29)	(1.65)	(0.22)	(1.65)	(2.13)
Nl (Net equity)	0.06***	2.42***	0.88***	-0.12*	-0.01***	-0.06*	-0.01
	(6.51)	(2.68)	(6.04)	(-1.71)	(-3.14)	(-1.71)	(-1.60)
Age (months)	-0.00***	-0.02	-0.0***	-0.00***	-0.00*	-0.00***	-0.00***
	(-4.86)	(-1.60)	(-7.43)	(-3.54)	(-1.71)	(-3.54)	(-3.08)
Leverage	0.37***	17.56***	-3.2***	1.10***	0.02*	0.52***	0.12***
	(10.17)	(3.80)	(-3.97)	(4.09)	(1.84)	(4.09)	(5.01)
Big4	0.10	30.02***	-0.4052	-5.00***	-0.15***	-2.37***	-0.39***
	(1.06)	(2.80)	(-0.32)	(-6.37)	(-5.90)	(-6.37)	(-5.48)
Closed-end	0.48**	-24.23*	-7.92**	6.25	0.22*	2.97	0.66*
	(2.44)	(-1.72)	(-2.04)	(1.48)	(1.73)	(1.48)	(1.74)
High-water mark (performance fee)	-0.16	-1.22	-2.27**	-1.23	-0.04	-0.58	-0.11
	(-1.60)	(-0.13)	(-2.46)	(-1.21)	(-1.27)	(-1.21)	(-1.13)
Others	-0.29	-10.75	-4.8***	-1.07	-0.03	-0.51	-0.10
		(-0.66)	(-3.82)	(-0.59)	(-0.63)	(-0.59)	(-0.60)

Table 3. Estimates of performance and risk determinants (continued)

	(1) Return	(2) Sharpe	(3) Sortino	(4) Volat.	(5) DR	(6) VaR 95%	(7) CVaR
Benchmark							
RF Pre/Index	0.32***	21.81***	1.36	-0.01	-0.02	-0.01	0.01
	(3.00)	(2.63)	(1.18)	(-0.01)	(-0.74)	(-0.01)	(0.12)
RF General	0.45***	34.36***	-1.65	0.52	-0.03*	0.25	0.06
	(7.04)	(3.05)	(-1.29)	(0.75)	(-1.88)	(0.75)	(1.12)
Stock index	1.11***	-1.42	-0.98	9.35***	0.29***	4.44***	0.90***
	(5.38)	(-0.18)	(-1.06)	(5.81)	(4.60)	(5.81)	(5.57)
Stock index	0.23***	7.36	-1.46**	1.34**	0.04*	0.63**	0.11**
	(2.79)	(1.54)	(-2.03)	(2.22)	(1.85)	(2.22)	(2.05)
Others	0.09***	-0.05	0.40	1.17***	0.04***	0.55***	0.11***
	(2.97)	(-0.02)	(0.73)	(4.53	(4.04)	(4.53)	(4.55)
Grace	-0.19	-7.92	-2.63*	0.01	0.01	0.00	-0.01
		(-0.93)	(-1.67)	(0.01)	(0.42)	(0.01)	(-0.07)
Target public							
Exclusive managers	0.15***	-0.91	-0.81	1.31***	0.03**	0.62***	0.13***
	(3.33)	(-0.35)	(-0.85)	(3.68)	(2.36)	(3.68)	(3.69)
Exclusive pension	0.06	1.95	-1.63	-0.00	-0.00	-0.00	0.01
	(1.05)	(0.40)	(-1.29)	(-0.01)	(-0.51)	(-0.01)	(0.23)
Investors in general	0.23***	8.47***	-3.5***	0.48	0.01	0.23	0.07*
	(4.40)	(2.88)	(-4.09)	(1.18)	(0.60)	(1.18)	(1.73)
Institutional investors	0.03	9.83***	-0.68	-0.38	-0.02	-0.18	-0.03
	(0.60)	(3.11)	(-0.33)	(-0.93)	(-1.48)	(-0.93)	(-0.79)
Non-resident investors	0.69	-22.99***	-7.12**	5.46	0.17	2.59	0.55
	(1.31)	(-2.95)	(-2.23)	(1.55)	(1.39)	(1.55)	(1.62)
Private investors	0.15	13.05***	-4.3***	0.44	0.01	0.21	0.06
	(1.61)	(3.02)	(-2.82)	(0.74)	(0.52)	(0.74)	(1.16)
Professional investors	-0.29***	-14.17	2.63	-0.21	0.00	-0.10	-0.04
	(-3.58)	(-0.94)	(0.94)	(-0.30)	(0.11)	(-0.30)	(-0.60)
Qualified investors	0.20***	2.42	0.33	1.30***	0.03**	0.62***	0.13***
	(3.31)	(0.52)	(0.31)	(2.68)	(2.05)	(2.68)	(2.86)
Adjusted R^2	0.45	0.07	0.17	0.10	0.48	0.10	0.12
Number of funds	3,499	3,499	3,499	3,499	3,499	3,499	3,499
Observations	100,995	100,995	100,995	100,995	100,995	100,995	100,995

Source: Elaborated by the authors based on fund data from the database Quantum Axis.

Notes: The table presents estimates for the OLS model pooled OLS regression with monthly fixed effects and the effect of the funds classified in the free strategy subcategory was absorbed in the model constant. Standard errors clustered by fund (N = 100,995), 3,499 different funds measured in the Brazilian market between 2016 and 2019. The dependent variables are gross return, Sharpe index, Sortino index, Volatility (Volat.), Downside Risk (DR), Value at Risk (VaR), Conditional Value at Risk (CVaR). The t statistics are in parentheses. *, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively. All dependent variables winsorized at 0.5% on each tail. The variables of interest are dummies, and correspond to the subcategories of multimarket investment funds: protected capital is 1, specific strategy is 1, interest and currencies is 1, long and short directional is 1, long and short neutral is 1, macro is 1, trading is 1. Management fee (%) is the fee charged by the fund's manager per year. Performance fee is the fee paid as a percentage of the fund's return that exceeds the variation of a previously determined performance index. Net redemption is the minimum term for the redemption of capital in days. Redemption rate is the rate levied on the amount redeemed when redemption occurs before the term established in regulation. Redemption fee (%) is the fee levied on the amount redeemed when redemption occurs before the term established in regulation. Nl (net equity) is the natural logarithm of the fund's net worth in BRL. Age (months) is the age of the fund in months, on the date the data were obtained. Leverage is 1 if it is a leveraged fund. Big4 is 1 if fund is audited by Big 4 audit companies (Deloitte, Ernst and Young, KPMG, or Pricewaterhouse Coopers). Closed-end is 1 when it is a closed-end fund. Exclusive pension is 1 if it is a pension investment fund. Fund with high-water mark is 1 and 0 for the fund without high-water mark. Grace period is 1 if the fund has a grace period. Benchmark is 1 when the benchmark was used to calculate the fund's performance. Exclusive to managers is 1 when the fund is destined to managers. Exclusive investor is 1 if the fund is destined to only one shareholder. Institutional investor is 1 if fund destined to institutional investors. Private Investors is 1 if a fund is intended for private investors. Professional investor is 1 if fund destined to professional investors. Qualified Investor is 1 when the fund is destined for qualified investors.

The specific strategy fund is the most static among the subcategories of funds, where the manager has a lower level of discretion since, at the time of launching, the objective and how to achieve it are defined. Therefore, it is possible to say these funds are the antithesis of the free strategy funds. When comparing these two subcategories, the specific strategy funds have statistically significant levels of risk. As for performance, it was significant only in Sharpe. Thus, it is possible to assume that when fund managers have more discretion, the fund presents a lower level of risk.

When comparing the free strategy fund with the protected capital fund, we see worse levels of performance and risk that were significant in Sortino and Conditional VaR in this category. As for risk, the result is contrary to what was expected since the fund has the premise of protecting part or all net worth. Thus, further studies are needed to explore better the protected capital funds' promises regarding risk mitigation.

Contrary to what was found by Fonseca (2012), the subcategory macro did not result in high risk when compared to the free strategy. However, it presented worse performance when measured using Sortino. This type of fund makes medium and long-term investments, so the manager has less discretion than the free strategy funds. It is possible to assume that the result found by Fonseca (2012) was influenced by the macroeconomic environment of the period (2005 to 2010). As the data analyzed in this study comprised the period from 2016 to 2019, it is possible to assume that the low level of manager's discretion significantly affected the fund's performance.

The funds in the subcategory trading, in turn, were not significant in any of the indicators. There was an expectation that this category would be more adherent to the results of the free fund, as the manager is conducting short-term operations, taking advantage of market fluctuations. It is possible to consider that their level of discretion is higher than the others presented so far. In addition, it is characteristic of trading funds to use derivatives for leverage purposes, which translates into greater managerial discretion. In this situation, according to Nanda, Narayanan, and Warther (2000), high and significant levels of risk were expected, but no relationship was found.

The funds in the interest and currencies subcategory also underperformed the free strategy funds, as evidenced by gross return, but showed better risk indices in most indicators, as expected. The manager of this subcategory is limited to the interest and currency market and is exposed to fewer risk factors.

The long and short neutral funds showed a performance below the free strategy funds in gross return and Sortino, but demonstrating lower risk indices in all indicators. Risk is in line with expectations, as the manager of this subcategory considers similar assets in long and short positions to neutralize the risks. Finally, in the funds classified in the long and short directional subcategory, the manager weighs the parts bought and sold asymmetrically, presented a higher gross return. However, the Sortino index is lower in comparison with the free strategy. No relationship was found in the risk variables.

This data set may lead to the assumption that the manager's discretion is important for the fund to perform well. The results corroborated the international literature, as observed in Agarwal, Daniel, and Naik (2009) when studying the behavior of North American Hedge Funds and concluding that funds, where managers have more discretion, generate better results. Regarding risk, it is not possible to state that free strategy fund managers can offer a lower level of risk than managers operating in funds classified in other subcategories. This happens because some multimarket investment funds are exposed to fewer risk factors than those observed in funds classified in the free strategy subcategory. This statement can be supported by the results found in the subcategories long and short neutral and interest and currencies.

5 FINAL CONSIDERATIONS

This study demonstrated a relationship between managerial discretion and performance in multimarket funds, finding that free strategy funds outperformed most funds of their class. However, the research did not find evidence of a relationship regarding risks. Specific strategy funds were found to be the riskiest, which corroborates the international literature. As for performance, Agarwal, Daniel, and Naik (2009) carried out a study on the managers' discretion and hedge fund's performance, finding better results in funds with a higher level of managerial discretion.

In addition, evidence of a higher level of risk in funds with higher management fees was highlighted. In most cases, the control variables highlight the expected effect. With these data, it is possible to understand better the functioning of the multimarket fund industry in Brazil and help investors select their financial assets. As established in the international literature, greater managerial discretion brings benefits related to the fund's performance.

The study's limitations include the fact that free strategy multimarket funds have very different portfolios. Thus, over time, significant distortions in returns may occur, which may influence future studies. Another limitation is to relate multimarket funds to different risk exposures.

Future studies should emphasize risks since this work already found evidence regarding performance. Another suggestion is to explore whether free strategy equity funds perform better and are less risky than funds in other subcategories. Finally, future studies could examine whether protected capital funds fulfill their risk mitigation promise, as these funds presented a higher level of risk than the free strategy funds when measured using conditional VaR.

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APPENDIX A – Performance and risk measures

Variable	Formula	Description	Reference
Return	$Return_{T1,Tn} = (1 + R_{T1,Tn}) / ((1 - T_{Man} * (N / NT)) - 1$	Where, GReturnT1,Tn: Gross return of the fund in the period between the dates T1 and Tn; RT1,Tn: Return of the fund in the period between the dates T1 and Tn; Tman: Annualized fund management fee; N: number of subperiods in the period between dates T1 and Tn; NT: number of total subperiods in month. Note: The definition of the gross return of the market does not discount the management fee. This is a definition of the Quantum database.	Varga (2001)
Sharpe	$SI_{T1,Tn} = ((AGR_{T1,Tn} - RFA_{T1,Tn}) / FV_{T1,Tn}) * NT$	Where: SIT1,Tn: Sharpe index of the fund in the period between the dates T1 and Tn; AGRT1,Tn: Average gross return of the fund in the period between the dates T1 and Tn; RFAT1,Tn: Average return on risk-free assets (CDI) in the period between dates T1 and Tn; NT: Number of total sub-periods in a year; FVT1,Tn: Fund volatility in the period between T1 and Tn. Note: The higher the Sharpe Index, the better the risk-return ratio, based on the standard deviation.	Sharpe (1966)
Sortino	$SOI_{T1,Tn} = ((ART_{T1,Tn} - RFA_{T1,Tn}) / DR_{T1,Tn}) * N$	Where: SOIT1,Tn: Sortino index of the fund in the period between the dates T1 and Tn; ART1,Tn: Average return of the fund in the period between the dates T1 and Tn; RFAT1,Tn: Average return on risk-free assets in the period between dates T1 and Tn; NT: Number of total subperiods in a year; DRT1,Tn: Downside risk of the fund in the period between dates T1 and Tn. Note: It complements the Sharpe index. The higher the Sortino Index, the better the risk and return ratio, based on the Downside Risk, therefore, it considers the volatility of negative returns.	Sortino and Satchel (2001)
Downside risk	$DR_{T1,Tn} = \sqrt{((\sum^{n}_{i=2} \min(0, GR_{T\,i-1,\,Ti} - RFA_{T\,i-1,\,Ti})^2 / N-1) * \sqrt{NT}}$	Where, DRT1,Tn: Downside risk of the fund in the period between dates T1 and Tn.; N: Number of subperiods in the period between dates T1 and Tn.; GRTi-1,Ti: Gross return of the fund in the subperiod between the given Ti-1 and Ti.; RFATi-1,Ti: Risk-free return of an asset in the period between the dates Ti-1 and Ti; NT: Number of total subperiods in a year. Note: Measures the negative volatility of returns.	Le Sourd (2007)
VaR	$VaR_{95\%,T1,Tn} = (V_{T1,Tn} / \sqrt{12}) * \alpha_{95\%}$	Where, VaR95%T1,Tn: Value at risk of the fund for 1 month, with 95% confidence, considering the historical volatility of the same fund in the period between dates T1 and Tn. VT1,Tn: Annualized volatility of the fund in the period between dates T1 and Tn. α95%: 95% of the standard normal distribution rounded to 3 decimal places. Note: Measures the maximum loss in normal market situations in a given period within a defined confidence interval.	-

Variable	Formula	Description	Reference
CVaR	$CVaR_{T1,Tn} = - (R_F)$	Where, CVaRT1,Tn: Conditional VaR of the fund in the period between dates T1 and Tn; F: Set with the lowest 5% fund returns in the period between dates T1 and Tn; ARF: Average return on the fund considering the 5% lower returns in the period between dates T1 and Tn. Note: Complementary to the VaR, it measures the risk beyond the confidence interval.	(Rockafellar and Uryasev, 2000)
Volatility	$V_{T1,Tn} = \sqrt{((\sum^{n}_{i=2} GR_{T\ i-1,\ Ti} - AR_{T1,Tn})^2) / N-1)} * \sqrt{NT}$	Where, CVaRT1,Tn: Conditional VaR of the fund in the period between dates T1 and Tn; F: Set with the lowest 5% fund returns in the period between dates T1 and Tn; ARF: Average return on the fund considering the 5% lower returns in the period between dates T1 and Tn. Note: Complementary to the VaR, it measures the risk beyond the confidence interval.	

Source: Definitions extracted from the database Quantum Axis and elaborated by the author

APPENDIX B – Control variables, fund characteristics

Discretionary variables	Definition	Expected Effect	Author
Net redemption days	Number of days for the resource to be made available to the investor after requesting the redemption	The longer the term, the more discretion the manager has and the better the performance must be	Agarwal, Daniel and Naik (2009)
Management fee %	Fee charged by the fund's manager, provisioned daily measured per year	The higher the fee, the lower the risk level. The lower the rate, the better the performance	Agarwal, Daniel and Naik (2009); Gil-Bazo, Ruiz-Verdú and Santos (2010)
Performance fee %	Fee paid by shareholders as a bonus for manager performance that exceeds established benchmark	Funds charged with a performance fee should perform better	Agarwal, Daniel and Naik (2009); Basak and Park (2006); Brown, Harlow and Starks (1996)
Redemption fee %	Fee levied on the amount redeemed when redemption occurs before the contracted term	The higher the fee charged on the amount redeemed the better the performance	Agarwal, Daniel and Naik (2009); Nanda, Narayanan and Warther (2000)
Nlog (net equity)	Result of the use of the Neperian Logarithm to decrease non-linearity due to the dispersion of the net equity volumes of the sample funds	The larger the fund size, the lower its performance and risk	Agarwal, Daniel and Naik (2009); Funchal, Lourenço and Motoki, (2016); Getmansky (2012); Pollet and Wilson (2008)
Leverage	Dummy variable used to determine whether the fund is leveraged or can be leveraged at a time the manager deems necessary. Assumes 1 for leveraged and 0 for unleveraged. Leveraged funds may lose more than the total equity of the fund	Leveraged funds will have higher gross return and greater risk	Almazan, Carlson, Brown and Chapman (2003); Nanda, Narayanan and Warther (2000); Yoshinaga, Castro and Pozzi (2009)
Closed-end	Dummy variable to determine closed-end funds. Assuming 1 for open and 0 for closed-end. A closed-end fund is one that cannot receive redemption requests or contributions. It has a stable financial flow, and the manager has greater discretionary power	Closed-end funds will have better performance and a higher level of risk.	Agarwal, Daniel and Naik (2009); Funchal, Lourenço and Motoki (2016); Wu, Wermers and Zechner (2015)
High-water mark	Dummy variable used to determine whether the investment fund has a high-water mark. Assuming 1 for high-water mark and 0 for the fund without high-water mark. High-water mark is a metric for the payment of the performance fee; if the manager exceeds this mark positively, they will be remunerated for the good result (if this is stipulated in the fund's regulation)	In funds with high-water mark, it is expected that the manager will take less risk and the performance will be consistent	Agarwal, Daniel and Naik (2009)

Discretionary variables	Definition	Expected Effect	Author
Benchmark RF Pre/Index	Reference fee used to determine the fund's performance. Ex: IMA-B	Funds with satisfactory risk-adjusted performance indices	Yoshinaga, Castro and Pozzi (2009)
Benchmark RF General	Reference rate used to determine the fund's performance. Ex: CDI		
Stock index	Reference rate used to determine the fund's performance. Ex: IBOV and IBRX-50		
Stock index	Reference rate used to determine the fund's performance. Ex: IBOV and IBRX-50		
Grace period	Minimum grace period before the shareholder's redemption. Assuming 1 for a grace period and 0 for a fund that has no grace period	Funds with a grace period will have a higher level of manager discretion and, consequently, better performance	Agarwal, Daniel and Naik (2009)
Exclusive managers	Fund destined exclusively to managers. Dummy variable to determine if the Fund is Exclusive for managers. Assuming 1 for yes and 0 no	Less risk expected	Funchal, Lourenço and Motoki (2016)
Exclusive pension	Dummy variable for determining a pension investment fund. Assuming 1 yes and 0 no	Less risk expected	Funchal, Lourenço and Motoki (2016)
Investors in general	Investors that do not fit into the other categories. Dummy variable to determine the fund for Investors in General. Assuming 1 yes and 0 no	The worst relationship between performance and risk is expected. Higher risk to general investors than to others	Funchal, Lourenço and Motoki (2016)
Institutional investors	Fund destined to the financial or government Institution (qualified or not). Dummy variable to determine the fund for institutional investors. Assuming 1 yes and 0 no	Less risk expected	Funchal, Lourenço and Motoki (2016)
Non-resident investors	Individuals or legal entities that invest in Brazil and have residence, headquarters, or domicile abroad. Dummy variable to determine the fund for non-resident investors. Assuming 1 yes and 0 no	Less risk expected	Funchal, Lourenço and Motoki (2016)
Private investors	Investors in the private banking segment. Dummy variable to determine the fund for private investors. Assuming 1 yes and 0 no	Less risk expected	Funchal, Lourenço and Motoki (2016)

Discretionary variables	Definition	Expected Effect	Author
Professional investors	Financial institutions, insurance company, capital company, complementary social security institutions (privately or publicly held), natural or legal persons with an investment of more than BRL 10,000,000 and who certify in writing their status as a professional investor; investment funds; free-lance investment agents, portfolio managers and securities consultants authorized by the CVM in relation to their own resources, non-resident investors. Dummy variable, where 1 if professional investors and 0, if not	Less risk expected	Funchal, Lourenço and Motoki (2016)
Qualified investors	Financial institutions, insurance company, capital company, complementary social security institutions (privately or publicly held), natural or legal persons with an investment of more than BRL 1,000,000 and who certify in writing their status as an investor; Investment funds exclusive for qualified investors; portfolio managers and securities consultants authorized by the CVM; exclusive social security systems. Dummy variable, where 1 if qualified investors and 0, if not	Less risk expected	Funchal, Lourenço and Motoki (2016)
Age in months	Fund age in months, on the date the data were collected	Older funds are expected to perform worse than new ones	Agarwal, Daniel and Naik (2009); Jones (2007); Spiegel and Zhang (2013)
Big 4	Dummy variable to determine if the fund is audited by a Big4. Assuming 1 for yes and 0 for no	Funds audited by a Big4 are expected to be less risky	Francis and Yu (2009); Lawrence, Minutti-Meza and Zhang (2011)

Source: elaborated by the author

ADDITIONAL MATERIAL - Discussion of control variables

About controls, all risk measures increase as the management fee increases. Contrarily, Gil-Bazo, Ruiz-Verdú, and Santos (2010) observed that funds with high management fees direct managers to take less than the ideal risk. The higher the fund's net equity, the better its performance and the lower the level of risk, which is in line with Agarwal, Daniel, and Naik (2009), who suggests that there are diseconomies of scale in the hedge fund industry. The authors also refute Getmansky (2012), who argues that there is a concave relationship between performance and assets under management.

Grace periods negatively influence the funds' performance. However, Agarwal, Daniel, and Naik (2009) highlighted them as significantly positive. High-water marks are negatively significant only in Sortino, which contradicts the result by Agarwal, Daniel, and Naik (2009), who found a significant high-water mark, reinforcing their hypothesis associating incentives to better performance.

Closed-end funds behaved negatively and significantly regarding risk indices, corroborating the research by Funchal, Lourenço, and Motoki (2016). It is possible to assume that the greater discretion of managers in these funds means that they can buy illiquid assets in the short term and run a greater risk in the expectation of return in the long term. This assumption is also supported by Agarwal, Daniel, and Naik (2009) and Wu, Wermers, and Zechner (2015). The other controls proved to corroborate the literature.