PENSION FUNDS AND GOVERNANCE: THE EFFECT OF GOVERNMENT SPONSORSHIP

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Abstract

The issue of conflict of interest and information asymmetry underlies the relationship between management, sponsors, and pension fund participants. The governance system aimed at mitigating the conflict of interest and information asymmetry appears as practices that, even with the cost, could contribute to the effectiveness of the pension fund investments. In this context, the present study aimed to investigate empirically how the extent of Brazilian pension funds governance practices is affected by the nature of the sponsoring entity. With a sample of 208 observations collected manually, representing 104 pension funds, from 2013 and 2017, we analyzed the impact of the sponsorship on the governance of the Brazilian pension funds. We measured governance using a governance index composed of 34 indicators, built on the Brazilian pension fund legislation, guidelines and recommendations issued by public bodies, and the governance literature. The result of this study indicates that, contrary to the initial expectations of the survey, a state-controlled company sponsorship explains a better level of governance. This study contributes to a better understanding of how the adoption of governance practices works, especially with the reported cases of corruption in Brazilian pension funds.

Keywords: Governance, Sponsor, Conflict of Interest, Brazilian Pension Fund, Enforcement

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1. INTRODUCTION

In this article, we examine how Brazilian private pension funds governance mechanisms depend on the nature of their sponsoring entities. Brazilian private pension funds, herein referred to as pension funds, are an important part of the Brazilian economy, as they play an essential role in complementing retired citizens' pension income arising from government managed pension schemes. Because of their crucial role in providing income and support for pension fund participants during their retirement, pension funds should have a long-term orientation (Duffett & Thomas, 1993; Thamotheram

& Wildsmith, 2007; Gospel, Pendleton, Vitols, & Wilke, 2011; Vaz de Lima & Busanelli de Aquino, 2019). This long-term orientation, however, may be threatened by the possibility of conflicts of interest between participants and managers (Duffett & Thomas, 1993; IFRS, 1994; Tilba & McNulty, 2013; Bradley, Pantzalis, & Yuan, 2016).

Managers and participants can have different sets of priorities and different incentives affecting their behavior. Pension fund sponsors usually have the power to appoint pension fund managers (Harper, 2008). This appointment power can cause a direct conflict of interests, creating a scenario where the will of the sponsor supersedes the will of the beneficiary (Duffett & Thomas, 1993; Dias, 2006; Stewart & Yermo, 2008; Clark & Urwin, 2011). For example, the management can decide on investments that benefit the sponsor over the funds. This fact can occur because of their relation to the sponsoring entity.

Brazil has no pension funds of significant size when compared with pension funds from OECD member countries, particularly when these pension funds are analyzed individually (Willis Towers Watson, 2019). However, the sum of the assets of all Brazilian pension funds would amount to USD 223 billion. Therefore, if Brazil were a member of the OECD, it would have the ninth most extensive supplementary pension system in absolute terms (total assets) (OECD, 2019). A large percentage of these assets (62%) are under the management of pension funds that are sponsored by government-owned entities, in which political interference can play a major role (PREVIC, 2019).

The sponsoring entity directly influences Brazilian pension funds management through the election of trustees (Complementary Law No. 108/2001; Complementary Law No. 109/2001; Dias, 2006; Stewart & Yermo, 2008). When a governmental entity sponsors a pension fund, trustees nominated by the sponsor are likely to have political ties. Recently, unethical behavior of fund trustees was observed along with multi-billion-dollar deficits presented by two of Brazil's largest pension funds, Petros (Pension Funds of Petrobras' employees) and Postalis (Pension Funds of the Brazilian Post Office's employees). Particularly in Postalis' case, former trustees were suited and convicted to a 10-year ban as managers of pension funds by the pension funds regulatory agency, due to investments and sales of real state between 2010 and 2012 that were irregular (Ministério da Previdência Social, 2015). It is important to say, those conflicts of interest happened in two pension funds sponsored state-controlled companies.

Pension fund governance mechanisms should play the role of mitigating these conflicts of interest (IFRS, 1994; Gillan & Starks, 1998; Stewart & Yermo, 2008; Benson, Hutchinson, & Sriram, 2011). The aforementioned cases of corruption in Brazil, where managers of state-sponsored pension funds sought private benefits over their beneficiaries, raise the issue of the existence of adequate governance mechanisms in these institutions. So, this can induce the idea that pension funds from a state-controlled company have weaker governance (Hochberg & Rauh, 2013; Bradley et al., 2016). In this paper, we empirically examined how the extent of Brazilian

Pension funds governance practices is affected by the nature of the sponsoring entity. Due to that, our hypothesis is:

Hypothesis 1 (H1): When the pension fund sponsor is a state-controlled company, the governance mechanisms are weaker.

The sample of this research consisted of 104 Brazilian pension funds, in two distinct periods (2013 and 2017), resulting in 208 observations. We choose these periods because, between these two years, Brazil experienced a significant economic crisis, marked by operations of the Federal Public Prosecution Service and the Federal Police began, which found irregularities in the administration of publicly sponsored pension funds (Federal Public Prosecution Service, 2019; World Bank, 2020). These facts may impact the results of this research and bring new insights into the subject.

The econometric model applied had as its dependent variable the governance level of the Brazilian pension funds and as a variable of interest in the nature of the sponsor. The governance level is measured by a set of 34 governance indicators for pension funds, built based on Brazilian legislation and the governance manual of the National Superintendent of Private Pension (PREVIC). We collect these indicators manually on the websites of each of the sample's pension funds by assigning the value 1 when the index was met and 0 otherwise. The more indicators the pension fund has, the stronger it is considered its governance. The variable of interest is a dummy, represented by one (1) – when the pension fund had a state-controlled company sponsorship and zero (0) otherwise. Information on the nature of the patronage of each pension fund was obtained directly from PREVIC's website.

The results of this research indicate that Brazilian pension funds have a low governance level, with average adherence to the set of indicators of 52% and 56%, in 2013 and 2017, respectively. Contrary to our initial expectation, we identified that state-controlled company sponsorship explains a better level of governance for 2013. However, this variable is not statistically significant for 2017. From this fact and through analysis from the descriptive statistics, we can note that the governance practices adopted throughout the pension fund scandals possibly spurred the adoption of governance mechanisms by other pension funds. Finally, we found in this study that pension funds with higher values in assets have a better level of governance, and this variable is statistically significant for both periods of the sample.

The main limitations of the paper are the small sample size and lack of information on pension funds' portfolios, particularly regarding the riskiness of their investments. The sample size is greatly influenced by the fact that there is no central repository for data on the pension fund's governance mechanisms. Due to that, we needed to rely on hand-collected data at certain points in time, without having the ability to observe historical data on how sample pension funds behaved in years other than the ones we examined. The lack of information about the detailed composition of pension funds' investment portfolios limits our ability to assess whether pension funds whose

managers engage in riskier behavior do provide extra disclosure in order to mitigate asymmetries of information with pension fund participants, or do they provide lower quality disclosure in order to hide their potential extraction of private benefits through investing.

The paper proceeds as follows. Section 2 presents a discussion on the conflicts of interest that may exist in Brazilian pension funds, along with the corresponding governance mechanisms designed to mitigate such conflicts, with the development of the hypotheses tested. Section 3 presents the research design. We show our results and discussion in Section 4. Section 5 concludes the paper, presenting suggestions for future research.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Like firms, pension funds have a separation between the funds' ownership and their control (Akerlof, 1970). Consequently, fund pension can suffer from conflicts of interest (Jensen & Meckling, 1976; Fama & Jensen, 1983; Duffett & Thomas, 1993; Shleifer & Vishny, 1997; Tilba & McNulty, 2013; Bradley et al., 2016). The misalignment of managers and participant's interests could result in a series of negatives outcomes, including lower risk-adjusted returns, increased operating costs, incompetent management, not to mention misbehavior such as related party transactions, fraud, and embezzlement. Governance mechanisms that can constrain management opportunistic and self-interested behavior must be implemented to reduce the costs associated with conflicts of interest (Stewart & Yermo, 2008; Benson et al., 2011).

The governance of pension funds is at the center of public interest in countries like Switzerland, Germany, the Netherlands, and the UK, due to a history of fraud and mismanagement (Ammann & Zingg, 2008). These events are more likely to happen when there are stronger levels of conflict of interest. Politicians in many countries are turning their attention to the management of pension funds resources to protect participants (Kowalewski, 2012). The Brazilian government made a series of efforts to improve the governance of pension funds, including Resolution No. 13 of 2004 and Resolution No. 23 of 2006 issued by the Conselho de Gestão da Previdência Complementar – CGPC (Governance Council of Private Social Security).

CGPC Resolution No. 13 demands that pension funds follow principles, rules, governance mechanisms, and internal controls that are consistent with the pension funds size and complexity. CGPC Resolution No. 23 regulates information disclosure to participants and beneficiaries of PPFs, including the pension funds statutes and their changes, its financial statements, annual reports, and actuarial report. The set of rules issued by CGPC has the objective of promoting standards of economic, financial, and actuarial security, preserving the wealth of the participants through improved disclosure (Lopes, Kataoka, Ribeiro Filho, & Pederneiras, 2010). Torres and Santos' (2008) results suggested that governance mechanisms and increased transparency

implemented by Brazilian pension funds increased their returns. Despite the expected benefits due to improved governance, the research of Lopes et al. (2010) found that, after the introduction of Resolutions No. 13 and 23, still 26.1% of Brazilian pension funds did not disclose annual reports. Additionally, 76% do not publish reports on investment risks, and 58.7% do not present a governance section on their website. These findings show that there was still much to be done in increasing pension funds governance.

The efforts initiated with Resolutions No. 13 and 23 were complemented by the issuance of a manual on governance best practices for pension funds, based mainly on the OECD Guidelines for Pension Fund Governance (OECD, 2009). This manual was issued by the Brazilian National Superintendence of Pension Funds (PREVIC, 2012). However, evidence reported by Nascimento, Frauches, Chan, and da Silva (2014) indicated that only 17% of the Brazilian Pension funds sponsored by state-owned entities reach 90% of adherence to the governance indicator proposed in their paper. Hence, a potential explanation for the low adherence to governance mechanisms could be the nature of the pension funds' sponsor.

The effect of the sponsor on the pension funds can be harmful to the participants, as the sponsor could direct, through elected managers, pension funds' assets to investments in assets of its interest (Besley & Prat, 2003), either with well or ill-intended intensions. Hochberg and Rauh (2013) suggest that political pressures may affect the investment policies of US state pension funds, causing poor performance. Zhang, Guo, and Hao (2018) find that public pension funds have lower returns in states in which there is an increased level of corruption. Bradley et al. (2016) found that US state pension funds are holding investments in politically connected companies longer, prolonging losses to pension beneficiaries. Ribeiro Filho, Libonati, Lopes, and Santiago (2008) had found similar behavior by Brazilian pension funds when government entities sponsored pension funds, and investments flowed to government bonds. In contrast, private sponsored pension funds' investments were more likely to flow to financial institutions. Adding to this difference in investment behavior, Pereira, Niyama, and Sallaberry (2013) and Pasqualeto, Mangoni, Da Silva, Teixeira, and Macagnan (2014) showed that state-sponsored pension funds have a higher level of administrative expenses than their privately sponsored counterparts.

State-sponsored pension funds stronger regulatory demands in Brazil when compared to privately sponsored pension funds. Nonetheless, Federal Laws No. 6.404 (1976) and 13.303 (2016) allow city, state, and federal governments to appoint trustees and executives to run pension funds, allowing pension funds' assets to be managed according to the interest of political parties in office. These appointed trustees and executives could be interested in hindering governance mechanisms to avoid or delay the detection of their private dealings.

Although de Lima, Oliveira, Ponte, and Rebouças (2016) reported that state-sponsored Brazilian pension funds had a larger adherence to governance best practices when compared to

privately sponsored PPFs, there is recent evidence showing that privately sponsored PPFs have better efficiency in terms of financial performance and costs (Abi-Ramia, Boueri, & Sachsida, 2015; Diniz & Corrar, 2017). These authors also suggested that a more in-depth investigation of the determinants of Brazilian pension funds governance mechanisms could improve our understanding of their activities.

In addition to the differences reported by the literature, there is significant evidence of malpractice by trustees of state-sponsored pension funds. The Chamber of Deputies Parliamentary Inquiry Committee (CPI) No. 15 of 2015 found possible political influence on investments made by public pension funds, FUNCEF, Petros, PREVI and Postalis, which generated billions of losses to their participants. The irregularities triggered Operation

Greenfield conducted by the Federal Public Ministry and the Federal Police.

Due to the particularities of state-sponsored pension funds, we present our study's hypothesis:

H1: When the pension fund sponsor is a state-controlled company, the governance mechanisms are weaker.

In the next section, we present the econometric model developed to test the hypothesis outlined in the present section.

3. RESEARCH DESIGN AND SAMPLE SELECTION

3.1. Model and variables

Based on our hypothesis and on control variables which the literature relates to pension funds governance, we built the following OLS model:

$$GS_{i,t} = \beta_0 + \beta_1(Public\ Entity_{i,t}) + \beta_2(Assets_{i,t}) + \beta_3(Participants_{i,t}) + \beta_4(Invested\ Funds_{i,t}) + \beta_5(Expenses_{i,t}) + \beta_6(Outsourced\ Services_{i,t}) + \varepsilon \tag{1}$$

$GS_{i,t}$ is a governance score that proxies for the extent of the governance practices of a given the pensions funds within our sample. It is composed of 34 governance indicators, detailed in Appendix A. We created these indicators of governance based on the applicable legislation of pensions funds governance, such as Federal Complementary Laws No. 108/2001 and 109/2001, CGPC Resolutions No. 13/2004 and 26/2006 and PREVIC's Best Practices Manual. Pension funds' $GS_{i,t}$ scores were calculated based on information observed on pension funds' websites.

Pension fund governance is not a directly observable variable. Pension fund governance is an abstract concept comprised by a set of mechanisms and processes that pension funds implement, including the accountability of management and how they are supervised, in order to minimize the potential conflicts of interest that can arise between the fund members and managers (Stewart & Yermo, 2008). Therefore, the literature utilizes indicators and indexes in order to indirectly measure governance (Ammann & Zingg, 2010; Kowalewski, 2012; Xu, Liu, Hsu, & Lin, 2019).

Among the indicators we included in our proxy for governance are the code of ethics and conduct (Article 3 of CGPC Resolution No. 13/2004, PREVIC Guide, 14), which should be adopted by the pension fund and its trustees. This governance instrument evidences the commitment of pension fund trustees to care for the assets of these organizations by acting in the interests of the participants and assisted and punishing those who are not committed to ethical conduct.

Another indicator of pension fund governance is the existence of an internal audit sector (Article 6 of CGPC Resolution No. 13/2004, PREVIC Guide, 65). Its function is to monitor operational, disclosure, and compliance risks, as well as to examine the effectiveness of internal controls implemented by the management of pension funds. This mechanism helps signals the interest of the statutory bodies of pension funds in demonstrating that they are acting

in the interests of the participants. Also, it is appropriate to check whether pension funds disclose their annual reports periodically (Article 17 of CGPC Resolution No. 13/2004, Article 3 of CGPC Resolution No. 23/2006, PREVIC Guide, 44). This indicator represents a commitment to transparency and accountability by the management, mitigating the problem of information asymmetry. The set of these governance practices, as well as the others that constitute the set of indicators constructed, could minimize conflicts of interest between the members of the statutory bodies, participants, and beneficiaries.

We presented the indicators of governance for pensions funds to the evaluation of five experts who work at pensions funds, either in governance or management jobs, in large state-sponsored[1] pensions funds. The indicators' validity was also subject to evaluation by a company specialized at providing professional services to pensions funds (PRP Accounting Solutions). Contributions by these experts allowed us to refine the indicators.

We attributed each indicator value of one when the pensions funds *i* provide the data regarding the indicator on its website and zero otherwise. For each pension's funds in our sample, our dependent variable was computed as a percentage of the total indicators, as follows:

$$GS_{i,t} = \frac{\sum_{i=1}^{n} x_{ij}}{n_i} \tag{2}$$

where,

n_i = the total number of governance indicators x_i for each pensions *funds_j*

$x_{i,j}$ = *indicator_i* for pensions *funds_j*

This form of calculation is usual on the extant literature pension funds' governance, resulting in a percentage level ($GS_{i,t}$). We prepared Table 1 to summarize the explanatory variable and control variables of this research.

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[1] Such as Bank of Brazil's Pension Fund (PREVI), Banrisul Social Security Foundation, CEEE Social Security Foundation and Corsan Foundation.

Table 1. Description of explanatory variable and control variables

Variable	Classification	Description
$\beta_1 Public\ Entity_{i,t}$	Interest	Factor that represents whether the pension fund has public or private sponsorship.
$\beta_2 Assets_{i,t}$	Control	Natural log of the total assets of each pension fund (Ammann & Zingg, 2010; Kowalewski, 2012; Abi-Ramia et al., 2015; Xu et al., 2019).
$\beta_3 Participants_{i,t}$	Control	Natural log of the total number of participants from each pension fund (Kowalewski, 2012; Abi-Ramia et al., 2015; da Cunha, 2018; Xu et al., 2019).
$\beta_4 Invested\ Funds_{i,t}$	Control	Investment balance of each pension fund divided by total assets (Diniz & Corrar, 2017; Xu et al., 2019).
$\beta_5 Expenses_{i,t}$	Control	Total expenses incurred for each pension fund divided by total assets (Ammann & Zingg, 2010; Tan & Cam, 2013).
$\beta_6 Outsourced\ Services_{i,t}$	Control	Total expenditure on outsourced services of each pension fund divided by total expenditure (da Cunha, 2018).

Source: Prepared by the authors.

Our main explanatory variable is a dummy variable, where number one (1) represents a publicly sponsored pension fund, and zero (0) represents private sponsored pension funds. The other variables in the econometric model, as described in Table 1, and they were selected from the extant literature to control for the effect of characteristics that may influence the pension fund governance level.

3.2. Population, sample and data

We collected data through the analysis of information disclosed by pension funds in their websites, either through direct identification or through the entity's website search tool. We considered two periods of collection, first in December 2014, and then in September 2018. In addition to that, we collected information on the Annual Information Report (RAI), respectively, to the year 2013 and 2017, the most recent RAI available at the time of data collection. Additional data necessary for the calculation of our model's explanatory variables was obtained directly by the authors with PREVIC, covering fiscal years 2013 and 2017.

PREVIC stratifies pension funds into classes by total assets, as presented in Table 2. In our initial sample, we included the most significant pension funds within Groups A, B, and C, totaling 125 pension funds. The total assets of the sample pension funds add to 96.15% of the population of pension funds' total assets. Next, we searched pension funds' website, and analyzed the information available, resulting in a final sample of 104 pension funds, with a total of 208 observations.

Table 2. Pension funds classes as defined by PREVIC

Class	Assets
A	Assets > R$ 15 billion
B	R$ 2 billion ≤ Assets < R$ 15 billion
C	R$ 500 million ≤ Assets < R$ 2 billion
D	R$ 100 million ≤ Assets < R$ 500 million
E	R$ 100 million < Assets

Source: PREVIC (2014).

4. RESULTS

4.1. Univariate analysis

We perform the first analysis of the dependent variable. Table 3 shows the behavior of the level of disclosure of the pension fund governance practices of the sample for the data collected in 2013 and 2017.

Table 3. Descriptive analysis of the level of disclosure of pension fund governance practices by year

Year	Maximum	Mean	Minimum	Standard deviation
2013	0,88235	0,51867	0,11765	0,11564
2017	1,00000	0,59474	0,11765	0,14542

Source: Prepared by the authors.

There is an improvement in the average disclosure level of governance practices of Brazilian pension funds, from 51.86% in 2013 to 59.47% in 2017. However, this percentage remains low. This result is in line with research by Lopes et al. (2010), who found a low level of disclosure of governance practices by the pension fund. We performed the above analysis also by segregating pension funds by type of sponsor (see Table 4).

Table 4. Descriptive analysis of the disclosure level of pension fund governance practices by year and sponsorship type

Panel A – Government-sponsored pension funds				
Year	Maximum	Mean	Minimum	Standard deviation
2013	0,882	0,569	0,412	0,099
2017	1,000	0,619	0,118	0,173
Panel B – Privately sponsored pension funds				
Year	Maximum	Mean	Minimum	Standard deviation
2013	0,676	0,482	0,118	0,114
2017	0,794	0,577	0,206	0,120

Source: Prepared by the authors.

Publicly sponsored pension funds improved the average disclosure level of governance practices, from 56.88% in 2013 to 61.89% in 2017. Privately sponsored pension funds increased their average disclosure level of governance practices. Governance practices rose from 48.18% in 2013 to 57.69% in 2017. Even though the evolution of the privately sponsored pension funds governance level has been approximately doubled the growth of the publicly sponsored pension funds, the latter still has a better disclosure of their governance practices. The result found is following the research by de Lima et al. (2016).

The governance indicators most evidenced by pension funds were: 1) disclosure of the bylaws and 2) forecast of attributions, composition, form of access, duration and term of office of the members of the statutory bodies, in the statute itself, with an average for both of them of 96.36% in 2013 and approximately 94% in 2017. This result is expected because these indicators are mandatory. The least frequently reported indicator by the pension fund was the disclosure of the semiannual report on

internal controls issued by the fiscal council, with an average of 5.45% in 2013 and 6.42% in the year of 2017. These findings converge with the research

results of Vasquez (2008) and Lopes et al. (2010). Finally, Table 5 shows the descriptive statistics of the control variables.

Table 5. Descriptive statistics of control variables

Year 2013					
Variable	*Assets*	*Participants*	*Invested Funds*	*Expenses*	*Outsourced Services*
Mean	21,43	9,04	0,9529	0,0056	0,2906
Maximum	25,87	12,06	0,9999	0,0238	0,9418
Minimum	20,04	6,37	0,5446	0,0005	0,0429
Standard deviation	1,16	1,16	0,0754	0,0039	0,2189
Year 2017					
Mean	21,75	9,77	0,9644	0,0053	0,0569
Maximum	25,94	13,04	1,0000	0,0185	0,7011
Minimum	20,26	6,40	0,5887	0,0006	0,0000
Standard deviation	1,10	1,24	0,0646	0,0034	0,1081

Source: Prepared by the authors.

The average value of the assets of the pension funds in a sample is R$ 5.93 billion in 2013, rising to R$ 7.21 billion in 2017. The average expense on assets represents 0.56% in 2013. 2013, and 0.53% in 2017, which denotes a reduction in expenses with the increase of assets. It is also noticeable a significant decrease in outsourcing expenses in relation to total expenses, which spent 29.06% in

2013 to 5.69% in 2017. One explanatory variable is 44 publicly sponsored pension funds and 60 privately sponsored pension funds.

Table 6 shows a correlation matrix between the variables used in this research. Before estimating as regressions, it was established that correlation indices greater than 0.8 are unacceptable.

Table 6. Variable correlation matrix

2013	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1. GS	1.00						
2. Public Entity	0.37	1.00					
3. Assets	0.31	0.21	1.00				
4. Participants	-0.03	-0.03	**0.66**	1.00			
5. Invested Funds	0.00	-0.33	-0.11	-0.03	1.00		
6. Expenses	0.03	0.47	-0.18	-0.21	-0.20	1.00	
7. Outsourced Services	-0.34	**-0.57**	-0.18	0.09	0.29	-0.40	1.00
2017	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1. GS	1.00						
2. Public Entity	0.14	1.00					
3. Assets	0.36	0.21	1.00				
4. Participants	0.18	0.08	**0.74**	1.00			
5. Invested Funds	-0.17	-0.44	-0.06	-0.06	1.00		
6. Expenses	0.05	**0.51**	-0.20	-0.18	-0.34	1.00	
7. Outsourced Services	-0.07	-0.25	-0.10	0.05	0.11	-0.21	1.00

Source: Prepared by the authors.

Note that the variables, participants, expenses, and outsourced services have a moderate correlation. The remaining variables have less significant correlation indices. However, none correlates higher than the acceptable limit of 0.8. This way, all of them will be used in the econometric model. Next, we present the estimated results of the multiple linear regression model.

4.2. Linear regression

We estimated a multiple linear regression, from the model described in Equation (1), using the ordinary least squares (OLS) method in cross-sectional data for 2013 and 2017. We summarized these results in Table 7.

Based on the results presented, we observe an adjusted R^2 of 0.255407 for 2013, and 0.127199 for 2017. We performed the heteroscedasticity tests of Breusch-Pagan residues and White to validate our model. Table 8 shows the null hypothesis (H_0) and the results of the tests. These results indicate that there is no heteroscedasticity in the residuals of the applied model, which allows evaluating the regression results.

For the year 2013, the public sponsorship of the pension funds positively affects the extent of governance practices of Brazilian pension funds, with 1% significance, rejecting the hypothesis of this research. However, such behavior is not recurring for 2017. Nevertheless, this result agrees with the study by de Lima et al. (2016). On the other hand, it contrasts with the study by Tan and Cam (2013), who did not identify a significant relation to the type of pension fund sponsorship as an explanatory factor for the disclosure of Australian pension fund governance practices.

The increase in the disclosure level of governance practices also stems from the positive relationship with pension funds' assets, significant at 1%. This performance is consistent for the years 2013 and 2017. The finding converges with the research by Ammann and Zingg (2010) and de Lima et al. (2016). However, it differs from the study by Tan and Cam (2013), who did not identify a significant relation to asset size as an explanatory factor of the level of disclosure of Australian pension fund governance practices. These results contribute to previous research by reinforcing that there is a tendency for larger pension funds to have better levels of governance compared to smaller

pension funds. Actions to reduce the cost regarding the amount of effort expended when implementing each governance practice should be considered both by pension fund managers and by lawmakers, as this factor seems to be critical in explaining pension funds' observed governance levels.

Table 7. Result of the econometric model

Dependent variable: $GS_{i,t}$				
Method: ordinary least squares				
Observations: 104				
Year 2013				
Variable	*Coefficient*	*Standard error*	*t-stat*	*Probability*
Public Entity$_{i,t}$	0.071	0.027	2.648	0.009***
Assets$_{i,t}$	0.040	0.013	3.189	0.002***
Participants$_{i,t}$	-0.029	0.012	-2.489	0.014**
Invested Funds$_{i,t}$	0.239	0.139	1.708	0.091*
Expenses$_{i,t}$	-4.186	3.069	-1.363	0.176
Outsourced Services$_{i,t}$	-0.087	0.058	-1.515	0.133
Constant	-0.282	0.261	-1.082	0.282
R-square	0.299	*Adjusted R-square*		0.255
F stat	6.889			
Durbin-Watson	2.051			
Year 2017				
Variable	*Coefficient*	*Standard error*	*t-stat*	*Probability*
Public Entity$_{i,t}$	-0.021	0.036	-0.574	0.567
Assets$_{i,t}$	0.072	0.019	3.679	0.000***
Participants$_{i,t}$	-0.025	0.016	-1.509	0.135
Invested Funds$_{i,t}$	-0.315	0.234	-1.349	0.181
Expenses$_{i,t}$	4.785	4.963	0.964	0.337
Outsourced Services$_{i,t}$	0.015	0.131	0.117	0.907
Constant	-0.443	0.407	-1.089	0.279
R-square	0.178	*Adjusted R-square*		0.127
F stat	3.502			
Durbin-Watson	1.542			

Note: ***, **, * represent the significance at the 1%, 5%, and 10% level, respectively.
Source: Prepared by the authors.

Table 8. Heteroscedasticity test

Test	*Null hypothesis (H0)*	*Probability*	*Year*
Breusch-Pagan	There is no heteroscedasticity	0,252	2013
White	There is no heteroscedasticity	0,824	2013
Breusch-Pagan	There is no heteroscedasticity	0,137	2017
White	There is no heteroscedasticity	0,789	2017

Source: Prepared by the authors.

Finally, invested funds have a positive relationship, at 10% significance, with the level of governance practices in the Brazilian pension funds. In contrast, the number of participants has a negative impact on the governance level of these organizations, with 5% significance. However, this situation is present only in 2013, with no significant result in 2017 for both variables. We present our paper's conclusions in the next section.

5. CONCLUSION

This research aimed to verify if the nature of the sponsor is an important factor in the level of governance practices of Brazilian pension funds, through a sample of 208 observations, from 104 pension funds, in the years 2013 and 2017. For this, it was a set of 34 governance indicators for closed supplementary pension entities that were built based on Brazilian legislation and the closed-ended governance manual of the National Superintendent of Supplementary Pension (PREVIC). We submitted these indicators to the evaluation of professionals working in the management and governance of Brazilian pension funds.

Thus, it was possible to measure the level of adherence to the governance practices of Brazilian pension funds. The results indicate that closed entities, on average, have a low level of adherence to governance practices. Also, we found that publicly sponsored closed entities have a better level of disclosure of governance practices when compared to privately sponsored closed entities.

Considering the hypothesis constructed, the econometric model indicated that the public sponsorship of closed supplementary pension entities explains the level of disclosure of governance practices for 2013. Also, we found that the total asset variable has a positive relationship with the level of disclosure of governance practices of Brazilian pension funds, consistently, for the years 2013 and 2017.

The fact that there is no centralized public database containing governance, accounting, financial, and other data regarding all Brazilian pension funds limits the extent of the governance-related stream of research when it comes to Brazilian pension funds. This problem is augmented by the fact that most Brazilian pension funds do not present historical information on their governance in their respective websites. Thus, analyses of pension funds governance behavior, including a more significant number of periods, resulting in panel data studies, depend on isolated efforts by researchers.

Brazilian pension funds do not provide detailed information about the composition, risks, and returns of their investment portfolios. This information, if publicly available, could have allowed us to analyze the relation between risk-adjusted returns and the pension funds level of governance. The study of the potentially endogenous link between governance and performance is an exciting avenue for future research, as it deals with the efficient allocation of critical economic resources. That is why we understand that pension funds should be required to disclose detailed information in the performance of their investment portfolios, in agreement with Stewart and Yermo (2008) argument that funds with more sophisticated investment strategies should require stricter governance oversight.

We also understand that OECD's (2009) guidelines for fund governance may be insufficient for the case of emerging markets. In this sense, a thorough study of emerging markets pension funds, mainly on markets that have experienced demographic changes regarding the aging population, such as South Korea, could improve the literature on governance mechanisms that are suitable for pension funds that experience this kind of transformation. The fact that Brazilian pension funds present a low level of adherence to Governance best practices denotes an alarming situation that should be addressed by increased action of the responsible regulatory agency.

REFERENCES

1. Abi-Ramia, M., Boueri, R., & Sachsida, A. (2015). Economias de escala e escopo na previdência complementar fechada brasileira. *Economia Aplicada, 19*(3), 481-505. https://doi.org/10.1590/1413-8050/ea132623
2. Akerlof, G. A. (1970). The market for "Lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics, 84*(3), 488-500. https://doi.org/10.2307/1879431
3. Ammann, M., & Zingg, A. (2010). Performance and governance of Swiss pension funds. *Journal of Pension Economics and Finance, 9*(1), 95-128. https://doi.org/10.1017/S1474747208003788
4. Benson, K. L., Hutchinson, M., & Sriram, A. (2011). Governance in the Australian Superannuation Industry. *Journal of Business Ethics, 99*(2), 183-200. https://doi.org/10.1007/s10551-010-0648-1
5. Besley, T., & Prat, A. (2003). *Pension fund governance and the choice between defined benefit and defined contribution plans* (Discussion Paper, UBS Pensions Series 012 (454)). Financial Markets Group, London School of Economics and Political Science, London, UK. Retrieved from http://eprints.lse.ac.uk/24853/
6. Bradley, D., Pantzalis, C., & Yuan, X. (2016). The influence of political bias in state pension funds. *Journal of Financial Economics, 119*(1), 69-91. https://doi.org/10.1016/j.jfineco.2015.08.017
7. Clark, G. L., & Urwin, R. (2011). Best-practice investment management: Lessons for asset owners from the Oxford-Watson Wyatt project on governance. *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.1019212
8. Conselho de Gestão da Previdência Complementar Resolução MPS CGPC No. 13. (2004). Retrieved from http://www.previc.gov.br/regulacao/normas/resolucoes/resolucoes-cgpc/resolucao-cgpc-no-13-de-1o-de-outubro-de-2004.pdf/view
9. Conselho de Gestão da Previdência Complementar Resolução MPS CGPC No. 23. (2006). Retrieved from http://www.previc.gov.br/regulacao/normas/resolucoes/resolucoes-cgpc/resolucao-cgpc-no-23-de-06-de-dezembro-de-2006.pdf/view
10. da Cunha, C. M. P. (2018). Sponsor bias in pension fund administrative expenses: The Brazilian experience. *BAR - Brazilian Administration Review, 15*(1). https://doi.org/10.1590/1807-7692bar2018170072
11. de Lima, L. C., Oliveira, M. C., Ponte, V. M. R., & Rebouças, S. M. D. P. (2016). Práticas de governança corporativa adotadas e divulgadas pelos fundos de pensão brasileiros. *Revista Contemporânea de Contabilidade, 12*(27), 3-26. https://doi.org/10.5007/2175-8069.2015v12n27p3
12. Dias, L. P. (2006). *Governance of Brazilian pension funds* (Thesis). Retrieved from https://pdfs.semanticscholar.org/cbc7/89d8c546116b7f38a19900b731d07bb8d4e4.pdf
13. Diniz, J. A., & Corrar, L. J. (2017). Avaliação da Eficiência Financeira de Entidades Fechadas de Previdência Complementar no Brasil. *Sociedade, Contabilidade e Gestão, Rio de Janeiro, 12*(3), 44-69. https://doi.org/10.21446/scg_ufrj.v12i3.14165
14. Duffett, C., & Thomas, R. (1993). The role of the corporate trustee in corporate and pension fund governance. *Corporate Governance: An International Review, 1*(4), 182. https://doi.org/10.1111/j.1467-8683.1993.tb00036.x
15. Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics, 26*(2), 301-325. https://doi.org/10.1086/467037
16. Federal Complementary Law No. 108. (2001). Retrieved from http://www.planalto.gov.br/ccivil_03/leis/LCP/Lcp108.htm
17. Federal Complementary Law No. 109. (2001). Retrieved from http://www.planalto.gov.br/ccivil_03/leis/LCP/Lcp109.htm
18. Federal Law No. 13.303. (2016). Retrieved from http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2016/lei/l13303.htm
19. Federal Law No. 6.404. (1976). Retrieved from http://www.planalto.gov.br/ccivil_03/leis/l6404compilada.htm
20. Federal Public Prosecution Service. (2019). *Billion dollar pension fund results in three new complaints from FT Greenfield.* Retrieved from http://www.mpf.mp.br/df/sala-de-imprensa/noticias-df/rombo-bilionario-em-fundos-de-pensao-resulta-em-tres-novas-denuncias-da-ft-greenfield
21. Gillan, S., & Starks, L. T. (1998). A survey of shareholder activism: Motivation and empirical evidence. *Contemporary Finance Digest, 2*(3), 10-34. https://doi.org/10.2139/ssrn.663523
22. Gospel, H., Pendleton, A., Vitols, S., & Wilke, P. (2011). New investment funds, restructuring, and labor outcomes: A European perspective. *Corporate Governance: An International Review, 19*(3), 276-289. https://doi.org/10.1111/j.1467-8683.2011.00848.x
23. Harper, J. T. (2008). *Board of trustee composition and investment performance of US public pension plans* (ICPM Working Paper). Retrieved from https://icpm.in1touch.org/document/4313/Joel_Harper_Board_of_Trustee_Composition_and_Investment_Performance_of_US_Public_Pension_Plans_February_2008.pdf

24. Hochberg, Y. V., & Rauh, J. D. (2013). Local overweighting and underperformance: Evidence from limited partner private equity investments. *Review of Financial Studies, 26*(2), 403-451. https://doi.org/10.1093/rfs/hhs128
25. International Financial Reporting Standards (IFRS). (1994). *IAS 26 – Accounting and reporting by retirement benefit plans.* Retrieved from https://www.ifrs.org/issued-standards/list-of-standards/ias-26-accounting-and-reporting-by-retirement-benefit-plans/#about
26. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X
27. Kowalewski, O. (2012). Corporate governance and pension fund performance. *Contemporary Economics, 6*(1), 14-44. https://doi.org/10.5709/ce.1897-9254.32
28. Lopes, J. E. D. G., Kataoka, S. S., Ribeiro Filho, J. F., & Pederneiras, M. M. M. (2010). Um estudo sobre a divulgação das informações das práticas de Governança Corporativa nos sítios das entidades fechadas de previdência complementar. *Revista Contemporânea de Contabilidade, 7*(13), 151-174. https://doi.org/10.5007/2175-8069.2010v7n13p151
29. Ministério da Previdência Social. (2015). *Previdência complementar: CRPC condena ex-dirigentes do Postalis a 10 anos de inabilitação.* Retrieved from http://www.previdencia.gov.br/2015/06/previdencia-complementar-crpc-condena-dirigentes-do-postalis-a-10-anos-de-inabilitacao/#:~:text=A%20CRPC%20condenou%20cada%20um,quarta-feira%20(24).
30. Nascimento, A. C. R., Frauches, P. F., Chan, B. L., & da Silva, F. L. (2014). Aderência das Entidades Fechadas de Previdência Complementar de Patrocínio Público às Práticas de governança corporativa. *Redeca, 1*(1), 79-101. Retrieved from https://revistas.pucsp.br/redeca/article/view/23376
31. OECD. (2019). *Pension funds in figures.* Retrieved from https://www.oecd.org/daf/fin/private-pensions/Pension-Funds-in-Figures-2019.pdf
32. OECD. (2009). *OECD guidelines for pension fund governance.* Retrieved from https://www.oecd.org/finance/private-pensions/34799965.pdf
33. Parliamentary Inquiry Committee (CPI) No. 15 of 2015. Retrieved from: https://www2.camara.leg.br/atividade-legislativa/comissoes/comissoes-temporarias/parlamentar-de-inquerito/55a-legislatura/cpi-fundos-de-pensao
34. Pasqualeto, J. C. M., Mangoni, L. A., Da Silva, M. H., Teixeira, B. M., & Macagnan, C. B. (2014). A influência dos patrocinadores nas despesas administrativas dos fundos de pensão brasileiros. *Congresso Internacional de Administração, 2014, Ponta Grossa.* Retrieved from http://anteriores.admpg.com.br/2014/selecionados.php
35. Pereira, C. A. P., Niyama, J. K., & Sallaberry, J. D. (2013). A economia de escala no custo administrativo dos fundos de pensão brasileiros. *XX Congresso Brasileiro de Custos.* Retrieved from https://anaiscbc.emnuvens.com.br/anais/article/view/1
36. PREVIC. (2012). *Guia previc melhores práticas de governança para entidades fechadas de previdência complementar. Superintendência nacional de previdência complementar.* Retrieved from http://www.previc.gov.br/central-de-conteudos/publicacoes/guias-de-melhores-praticas
37. PREVIC. (2019). *Estatística trimestral.* Retrieved from http://www.previc.gov.br/central-de-conteudos/publicacoes/informe-estatistico
38. Ribeiro Filho, J. F., Libonati, J. J., Lopes, J. E. G., & Santiago, H. L. F. (2008). Composição do ativo de investimentos em entidades fechadas de previdência complementar (EFPC): Uma análise exploratória focada no tipo de patrocínio. *Revista Brasileira de Gestao de Negocios, 10*(27), 175-188. Retrieved from http://www.spell.org.br/documentos/ver/6531/composicao-do-ativo-de-investimentos-em-entidades-fechadas-de-previdencia-complementar--efpc---uma-analise-exploratoria-focada-no-tipo-de-patrocinio
39. Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance, 52*(2), 737-783. https://doi.org/10.1111/j.1540-6261.1997.tb04820.x
40. Stewart, F., & Yermo, J. (2008). *Pension fund governance: Challenges and potential solutions* (OECD Working Papers on Finance, Insurance and Private Pensions). https://doi.org/10.1787/19936397
41. Tan, M. G.-S., & Cam, M. A. (2013). Explaining pension fund product and governance disclosure in Australia. *Australasian Accounting Business and Finance Journal, 7*(3), 49-68. https://doi.org/10.14453/aabfj.v7i3.4
42. Thamotheram, R., & Wildsmith, H. (2007). Increasing long-term market returns: Realising the potential of collective pension fund action. *Corporate Governance: An International Review, 15*(3), 438-454. https://doi.org/10.1111/j.1467-8683.2007.00577.x
43. Tilba, A., & McNulty, T. (2013). Engaged versus disengaged ownership: The case of pension funds in the UK. *Corporate Governance: An International Review, 21*(2), 165-182. https://doi.org/10.1111/j.1467-8683.2012.00933.x
44. Torres, F. J. V., & Santos, J. F. dos. (2008). Influência das práticas de governança corporativa no retorno excessivo dos fundos de pensão brasileiros no ano de 2005. *Encontro de Administração Pública e Governança,* 1-13. Retrived from http://www.anpad.org.br/admin/pdf/EnAPG231.pdf
45. Vasquez, J. G. P. (2008). *Acessibilidade dos websites e transparência informacional na perspectiva da governança corporativa dos fundos de pensão* (Master's Dissertation, Universidade Federal de Santa Catarina). Retrieved from http://btd.egc.ufsc.br/wp-content/uploads/2010/06/Joel_Gregorio.pdf
46. Vaz de Lima, D., & Busanelli de Aquino, A. C. (2019). Financial resilience of municipal civil servants' pension funds. *Revista Contabilidade & Finanças, 30*(81), 425-445. https://doi.org/10.1590/1808-057x201908810
47. Willis Towers Watson. (2019). *Pensions & Investments World 300.* Retrieved from https://www.thinkingaheadinstitute.org/en/Library/Public/Research-and-Ideas/2019/09/P_I_300_2019_research_paper
48. World Bank. (2020) *Open data.* Retrieved from https://data.worldbank.org/
49. Xu, G., Liu, F. C., Hsu, H. T., & Lin, J. W. (2019). The impact of pension governance practices on the public defined benefit pension performance. *Benchmarking: An International Journal, 27*(1), 192-214. https://doi.org/10.1108/BIJ-08-2018-0265
50. Zhang, H., Guo, L., & Hao, M. (2018). Corruption, governance, and public pension funds. *Review of Quantitative Finance and Accounting, 51,* 883-919. https://doi.org/10.1007/s11156-017-0691-4

APPENDIX A

Table A.1. Indicators of governance practice

Code	Indicator	Nature
1	Does the statute provide for the duties, composition, manner of access, duration and termination of the term of office of members of statutory bodies?	Mandatory
2	Does the pension fund announce its electoral process for the vacancies of the deliberative and audit boards?	Voluntary
3	Does the pension fund present the minimum criteria (qualification and suitability) for the eligibility for positions in statutory bodies?	Mandatory
4	Does the pension fund disclose the other activities carried out by the directors to identify if they do not hold positions in other statutory bodies of the pension fund itself?	Mandatory
5	Does the pension fund disclose the qualification of directors, officers, and board members?	Voluntary
6	Does pension fund demonstrate that it qualifies its directors, officers, and employees periodically to keep them permanently up to date?	Voluntary
7	Are regular meetings scheduled for all statutory bodies?	Voluntary
8	Does the pension fund have other technical advisory bodies in addition to those required by law (such as investment, risk, among others)?	Voluntary
9	Does the pension fund have an Ethics Committee?	Voluntary
10	Does the Pension Fund have any procedures that ensure that the qualifications and experience of outsourced contractors are adequate to their tasks, as well as, there is no conflict of interest?	Mandatory
11	Does the pension fund have tools for monitoring and evaluating the performance of outsourced service providers?	Mandatory
12	Does the Pension Fund disclose its statutes?	Mandatory
13	Does the Pension Fund disclose its internal regulations?	Voluntary
14	Are there internal regiments containing the rules of functioning of the constituted boards?	Voluntary
15	Are there internal regiments containing the rules of functioning of the constituted committees?	Voluntary
16	Does the pension fund adopt a Governance Manual?	Voluntary
17	Does the pension fund have an ethics code?	Voluntary
18	Does the pension fund disclose its process of identification, evaluation, control, and monitoring of risks?	Mandatory
19	Does the pension fund have an internal control body?	Voluntary
20	Is the internal controls body bound to statutory bodies?	Voluntary
21	Is there an internal audit department or function in the pension fund?	Voluntary
22	Is the internal audit sector linked to the deliberative council?	Mandatory
23	Does the pension fund disclose investment policies?	Mandatory
24	Does the pension fund disclose relevant actuarial assumptions?	Mandatory
25	Are there communication channels that allow participants to access information regarding the pension fund and its pension plans in an individualized way?	Voluntary
26	Has the Pension Fund submitted its last annual report?	Mandatory
27	The date of issuance of the financial statements is before March 31 of the subsequent year?	Mandatory
28	Does the pension fund have external auditors?	Mandatory
29	Does the pension fund disclose the benefits plan regulation?	Mandatory
30	Is there disclosure of the person responsible for the applications of pension fund resources?	Mandatory
31	Is there disclosure of the custodian of pension fund resources?	Voluntary
32	Does the pension fund provide the semi-annual report on internal controls issued by the audit board?	Mandatory
33	Does the pension fund provide the conclusive opinion on the financial statements issued annually by the audit board?	Mandatory
34	Does the pension fund adopt socio-environmental actions?	Voluntary