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Corporate Governance: Do Institutional Investors Matter to Brazilian Companies?

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Abstract

Objective: This study analyzed the relationship between having institutional investors in Brazilian companies' shareholding structures and their corporate governance practices.

Method: The sample included 118 companies between 2010 and 2020, totaling 1,298 company-year observations. The Corporate Governance Practices Index (CGI) was used to measure the quality of corporate governance of the sampled companies. The number of institutional investors in the companies' shareholding structures was verified, and those with relevant holdings were individually classified.

Results: The results from the GMM-Sys regression show a positive relationship between pension fund participation and the CGI score, contradicting the results of Brazilian studies but aligning with those of international literature. These results also show that companies whose shareholding base has considerable participation of institutional investors tend to present improved governance practices.

Contributions: This study's findings detail the relationship between institutional investors and the corporate governance practices of the companies they invest in, allowing a better understanding of how corporate governance and institutional investors' participation in the Brazilian market have progressed over the last decade.

Keywords: Corporate governance; Institutional investors; GMM-Sys; Governance index.

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1. Introduction

This paper analyzes the relationship between the shareholding of different types of institutional investors and the corporate governance practices of Brazilian companies listed on B[3].

According to the IBGC (2015), corporate governance is a set of structures by which companies are managed and monitored, which plays a central role in managing relationships between partners, the board of directors, the executive board, supervisory and control bodies, and remaining stakeholders. Silveira *et al.* (2003) note that corporate governance can be considered a set of incentive and control mechanisms used to mitigate agency conflicts, as proposed by Jensen and Meckling (1976). Chen *et al.* (2012) corroborate this notion by showing evidence that adopting best corporate governance practices leads to decreased company agency problems.

A functional and well-structured corporate governance system may positively affect a company's financial and economic performance (IFC, 2018), preserving and maximizing its long-term economic and social value (Zaman *et al.*, 2022). Several studies report evidence that minority shareholders benefit from improved governance practices, and a positive relationship is found between governance and firm value (Gompers *et al.*, 2003; Brown & Caylor, 2006; Aggarwal *et al.*, 2009; Ararat *et al.*, 2017; Latif *et al.*, 2017).

In turn, institutional investors play a crucial role in the development of a robust and sustainable capital market, constituting one of the most influential groups within the capital markets of most countries (OECD, 2019; Fonseca *et al.*, 2020) due to a considerable increase in the volume of resources managed and the degree of participation of institutional investors in the ownership of companies seen in recent years (Dasgupta *et al.*, 2021). Such a context enables this group of investors to impact the decisions of the companies they invest in (Lou *et al.*, 2020).

The increase in the number of institutional investors in companies' shareholding structures in recent years indicates that these investors can influence the corporate governance of the companies in which they invest (Lewellen & Lewellen, 2022). Hence, institutional investors are usually considered critical for the development of corporate governance practices of companies in the capital market (Gillan & Starks, 2003; Bushee *et al.*, 2014).

The Brazilian literature on the relationship between institutional investors and corporate governance shows inconclusive or insufficient results. Some studies investigated only a specific type of institutional investors, such as pension funds (Punsuvo *et al.*, 2007; de Oliveira *et al.*, 2012; De Souza Lima, 2013), while others used a comprehensive index to measure corporate governance practices (Melo, 2017; Vasconcelos & Martins, 2020).

Furthermore, no studies were found on the relationship between the number of institutional investors in the shareholder structure and their corporate governance practices of companies in the Brazilian market. Therefore, there is a need to investigate the relationship between the different types of institutional investors operating in the Brazilian market and the development of corporate governance practices of the companies in their portfolios.

Therefore, this study has four specific objectives: i) to identify the companies' main characteristics of corporate governance using the Corporate Governance Practices Index (CGI), composed of 20 objective questions; ii) to observe the total number of institutional investors in the shareholder structure of the study companies for each year between 2010 and 2020; iii) to identify the institutional investors with relevant participation among the study companies' five largest direct shareholders for each year of the period analyzed, and classify the shareholders according to criteria suggested by the literature (i.e., legal definition, whether they are Brazilian or international, and nature of capital); and finally, iv) to quantitatively verify the relationship between the various types of institutional investors and the corporate governance practices of Brazilian companies, mainly using the GMM-Sys regression method, to answer the research question.

This study's results are expected to contribute to the Brazilian market's participants and regulators by providing a more accurate perception of risk and a better understanding of the relationship between institutional investors and the corporate governance practices of the companies in which they invest and, consequently, have a greater capacity to monitor these companies.

Furthermore, this study contributes to the literature by presenting how corporate governance practices measured by the CGI evolved in the Brazilian market in the last decade and showing that the number of institutional investors in the shareholder structure is potentially relevant to explain the ICG score. Finally, pension funds showed a positive and robust relationship with good governance practices, contradicting the results of Brazilian studies but aligned with international literature.

2. Theoretical Framework and Hypothesis Development

2.1 Corporate Governances

Agency Theory defines the agency relationship as a contract in which the owner (principal) delegates decision-making authority to a third party (agent), allowing the agent to act as a manager to meet the principal's interests. However, assuming both actors maximize value, there is reason to believe their interests will not always converge. Hence, agency conflicts emerge from differences in the interests of the principal and the agent when the latter uses his/her authority to make decisions contrary to the principal's interests (Jensen & Meckling, 1976).

Agency conflicts occur between shareholders and managers in capital markets in which prevail dispersed shareholding structures. However, in markets with a highly concentrated shareholding structure, agency conflicts occur between the majority shareholders, which have the ability and incentive to expropriate other investors, and minority shareholders (La Porta *et al.*, 2000; Aldrighi & Mazzer Neto, 2005).

Hence, corporate governance plays a central role in this context. Silveira *et al.* (2003) define it as a set of incentive and control mechanisms to minimize agency problems. Punsuvo *et al.* (2007) consider corporate governance a system of external and internal controls to balance and mitigate conflicts of interest generated by the separation between ownership and management. Shleifer & Vishny (1997) note that corporate governance can be considered a set of practices adopted by the companies' capital providers to ensure they obtain their investments' expected returns.

Following this line of thought, adopting good corporate governance practices can maximize value generation for stakeholders by mitigating the occurrence and effects of conflicts of interest intrinsic to companies. Several international studies found evidence that minority shareholders and other stakeholders benefit from improved governance and also show a positive relationship between governance and firm value (Gompers *et al.*, 2003; Aggarwal *et al.*, 2009; Latif *et al.*, 2017).

Thus, researchers in finance have developed and used indexes to measure companies' corporate governance practices. Both Brazilian (A. L. Carvalhal & Leal, 2005; Punsuvo *et al.*, 2007; Leal *et al.*, 2015; Maranho *et al.*, 2020) and international(Gompers *et al.*, 2003; Black *et al.*, 2012; Arora & Bodhanwala, 2018) studies have used the approach of selecting indicators or questions considered the most relevant to represent the companies' corporate governance practices.

One of the primary corporate governance indexes used in Brazilian literature is the CGI, which Carvalhal & Leal (2005) developed and Leal *et al.* (2015) updated. CGI has been adopted by studies analyzing the relationship between Brazilian companies' corporate governance practices and aspects such as firm performance and value (A. L. Carvalhal & Leal, 2005; Leal *et al.*, 2015), accounting information quality (Gabriel, 2011), private equity fund activism (A. Carvalhal & Souza, 2014), financial constraint (Silva *et al.*, 2019), and degree of institutional investors' involvement (Maranho *et al.*, 2020), among others.

CGI is based on objective responses that can be obtained from public information provided by publicly traded Brazilian companies in reference form. The index's current version comprises 20 questions subdivided into four dimensions: disclosure, composition, and functioning of the board of directors, ethics, conflicts of interest, and shareholder rights. The index's score is obtained by summing the points assigned to each item. This study will use CGI to measure corporate governance practices and examine how these practices relate to the different types of institutional investors in the companies' ownership structures.

2.2 Institutional Investors

Regarding the corporate governance mechanisms presented by publicly traded companies, the shareholders, as owners and through their voting power, are one of the leading groups with the ability to promote improvements in the companies' practices (Gillan & Starks, 2000, 2003; Lewellen & Lewellen, 2022). Institutional investors stand out among the different types of shareholders and are defined as legal institutions that manage monetary values from a large number of individuals (OECD, 2014; Bebchuk *et al.*, 2017).

Institutional investors have a large volume of resources under their management and, consequently, can acquire relevant shares in the companies they invest, being able to exercise internal control through voting or external control through trading their shares in the market (Gillan & Starks, 2003; Crane *et al.*, 2016). Institutional investors exert significant influence in the capital markets of most countries since their ownership share in developed and developing markets has increased dramatically over the last two decades (Lou *et al.*, 2020; Dasgupta *et al.*, 2021).

The same occurs in the Brazilian market, where approximately half of the companies listed in 2012 had at least one institutional investor with a relevant share, holding more than 5% of the voting capital or 10% of the total capital (OECD, 2013). The study developed by Fonseca *et al.* (2020) identified that 165 of the 269 (61%) companies analyzed between 2011 and 2016 had institutional investors among their primary shareholders.

Since this group of institutions manages a large volume of financial resources and has a more effective capacity to monitor companies than individual minority shareholders (Ferreira & Matos, 2008; Aggarwal *et al.*, 2011; Maranho *et al.*, 2020; Dasgupta *et al.*, 2021), companies with a higher number of institutional investors in their shareholder structure are more likely to present good corporate governance practices.

The reasoning behind this assumption is that the size of the shareholder base is relevant for a publicly traded company, as companies with a larger shareholder base tend to be more closely monitored by the market (Amihud *et al.*, 1999; Chia *et al.*, 2020). Thus, companies with more institutional investors in their shareholder base might be pressured to adopt good corporate governance practices to mitigate agency conflicts and costs based on an adequate governance structure (A. di M. da Silveira, 2004). Based on the previous discussion, the following research hypothesis is proposed:

H_1: The number of institutional investors in a company's shareholder structure positively affects corporate governance practices measured by the CGI

However, it is worth highlighting that institutional investors are not a homogeneous group. Studies conducted in different markets and contexts indicate that institutional investors differ significantly in terms of the size and objectives of their holdings, as well as in terms of monitoring efforts and the type of relationship established with the management and stakeholders of the company in which they invest (Ferreira & Matos, 2008; Isaksson & Çelik, 2014; Katan & Mat Nor, 2015; Fonseca *et al.*, 2020; Kałdoński *et al.*, 2020; Pathan *et al.*, 2021).

In the Brazilian context, Fonseca *et al.* (2020) investigated the degree of heterogeneity among institutional investors operating in the Brazilian market based on their main characteristics and investment profiles. The results indicate four distinct groups of institutional investors and confirm that other elements besides the company's legal type must be verified to categorize institutional investors, such as whether they are private or state-owned, of national or foreign origin, and also the relationship established with the managers of the invested company.

Chen *et al.* (2007), Katan & Mat Nor (2015), and Borochin & Yang (2017) found evidence that different legal types of institutional investors have different, and even opposite, impacts on a company's corporate governance mechanisms.

International studies indicate that pension funds can improve the corporate governance practices of invested companies, considering that they have an independent relationship with the companies and are oriented towards stable, long-term investments (Gillan & Starks, 2007; Ferreira & Matos, 2008).

However, studies conducted in the Brazilian market found opposing evidence (Punsuvo et al., 2007; De Souza Lima, 2013), where the companies' governance practices were negatively impacted by having large pension funds as shareholders or even found a statistically insignificant relationship (de Oliveira *et al.*, 2012). Such results are possibly explained by differences between the Brazilian and American markets and the intrinsic characteristics of the specific pension funds analyzed (Previ, Petros, and Funcef), which had a close relationship with the Government.

Considering that the methodology adopted here is similar to that used in the international studies, as it does not specifically choose which pension funds to study but analyzes all funds that meet this study's criteria, the following research hypothesis is proposed:

H_{2A}: The participation of pension funds in a company's shareholding structure positively affects corporate governance practices measured by the CGI.

Regarding investment funds, some authors found evidence that this type of institutional investor positively relates to changes in the invested companies' corporate governance (Chen *et al.*, 2007; Isaksson & Çelik, 2014).

Similarly, Gomtsian (2019) studied how large asset managers behave and vote at company meetings in the United Kingdom. The results suggest that large asset managers, including index fund managers (described as passive investors), have tried to promote improvements in the corporate governance practices of the companies in their portfolios. Thus, the following research hypothesis is proposed:

H_{2B}: The participation of investment funds in a company's shareholding structure positively affects corporate governance practices measured by the CGI.

Furthermore, the literature indicates that institutional investors linked to financial institutions (banks and insurance companies) are more likely to have a close relationship with the management of the companies in which they invest due to the potential existence of relevant commercial ties between them (Gillan & Starks, 2003; Ferreira & Matos, 2008; Z. Chen *et al.*, 2019).

Thus, the quality of monitoring of this type of institutional investor tends to be worse, even leading the corporate governance structure adopted by the companies in their portfolios to deteriorate when they are fully aligned with the controlling block of the companies. In this line of thought, the following research hypothesis is proposed:

H_{2C}: The participation of funds managed by financial institutions in a company's shareholding structure negatively affects corporate governance practices measured by the CGI.

In addition to the legal type, another important point is whether the institution is national or international. Ferreira & Matos (2008) note in their study that international and independent institutional investors effectively monitor management and increase shareholder value, while others do not. Aggarwal *et al.* (2011) analyzed institutional investors by classifying them according to their country of origin and the legal tradition of protecting shareholder rights. The results suggest that international investors are more effective in monitoring companies than domestic investors.

Analyzing the markets of nine East Asian countries, Lou *et al.* (2020) found that institutional investors positively correlate with abnormal returns over long time horizons (over three years), with this effect being strongly driven by foreign institutions than domestic ones. The authors argue that their results suggest that international institutional investors can monitor effectively and improve the quality of decisions made by the management of the invested companies. Thus, the following research hypothesis is proposed:

H_3: The participation of foreign institutional investors in a company's shareholding structure positively affects corporate governance practices measured by the CGI.

The nature of the capital invested is another aspect studied in the literature that can impact how these institutions relate to the companies in which they invest. Chen *et al.* (2017) analyzed the relationship between ownership by different types of institutional investors and the allocation of capital at the firm level after privatization processes in 64 countries. Their results suggest that the presence of institutional investors linked to the government is significantly related to the decreased efficiency of companies' investments, while international investors increased this efficiency.

In the Brazilian market, state-owned institutional investors have been the subject of some studies, which generally do not find conclusive evidence that their presence as shareholders positively impacts the performance and corporate governance practices of the companies in which they invest (de Oliveira *et al.*, 2012; Sonza & Granzotto, 2018; Duarte & Leal, 2021). The study developed by Fonseca *et al.* (2020) in the Brazilian market between 2011 and 2016 concluded that whether an institution is private or state-owned strongly influenced its investment profile. Based on this, the following research hypothesis is proposed:

H_4: The participation of Brazilian state-owned institutional investors in a company's shareholding structure negatively affects corporate governance practices measured by the CGI.

3. Methodology

3.1 Data Collection

The shareholdings and economic and financial data required for this study were collected in the Comdinheiro database. The information required to classify institutional investors was collected from the Brazilian Securities and Exchange Commission's (CVM) website, the institutions' websites, and from the Comdinheiro database. The data required to construct the CGI were collected from Comdinheiro, reference forms, financial statements, and bylaws of the companies analyzed.

The number of institutional investors in the companies' shareholding structure in the final sample was collected from item 15.3 of the reference form. The number addressed corresponds to the number of institutional investors, which are shareholders, according to the last active reference form for each year analyzed.

3.2 Sampling

The study population comprises publicly traded companies traded in the Traditional, Level 1, Level 2, and Novo Mercado segments of the B3 stock exchange, selected in the period from 2010 to 2020. The study period begins in 2010 because much of the information required to complete the index measuring corporate governance practices was collected from reference forms, which began to be compulsorily published from 2010 onwards.

In order to observe variations in institutional investors' shareholdings, only companies that went public in 2010 or earlier and maintained shares in trading for the entire period analyzed were selected for the sample; hence, the initial sample consisted of 279 companies. However, to meet this study's objectives, the companies must have at least one institutional investor among the five largest shareholders in at least three years between 2010 and 2020; 140 companies met this criterion.

The reason for adopting these two criteria is that the companies' corporate governance practices and control structures usually do not vary much from year to year (Bortolon, 2013; Leal *et al.,* 2015; Maranho *et al.*, 2020). Thus, observing the same companies for a more extended period is essential to observe companies' corporate governance practices and their relationship with the presence of different institutional investors in their shareholder structure.

Finally, companies whose institutional investors had a shareholding of 0% or presented missing data for most of the variables used during the period analyzed were excluded from the sample. Thus, the final sample comprises 118 companies, totaling 1,298 company-year pairs.

3.3. Institutional Investors Classification

Regarding the identification of institutional investors, the same method used by Nieiro & Bortolon (2020) was adopted here. For a shareholder to be classified as an institutional investor, it must be a legal entity managing financial resources from third parties, able to invest high volumes of capital, and representing a large number of people, as noted by OECD (2014) and Bebchuk *et al.* (2017).

Table 1 presents the classifications adopted. Institutional investors were classified into investment funds, pension funds, or funds managed by financial institutions (banks and insurance companies), considered the classic legal types of institutional investors, and concentrated most third-party resources managed by institutions (Isaksson & Çelik, 2014).

Additionally, only institutional investors among the 5 largest shareholders of the sample companies were classified and analyzed. This decision considered that Brazilian publicly traded companies are only required to disclose the percentage holdings of shareholders who hold more than 5% of the common shares or 10% of the total shares. The configuration of the five largest shareholders is expected to capture most of the institutional investors with disclosed shareholdings, given the predominance of concentrated ownership structures in Brazilian companies traded on the stock exchange (Valadares & Leal, 2000; Okimura *et al.*, 2007; Sternberg *et al.*, 2011; Caixe & Krauter, 2013; Bezerra *et al.*, 2015).

Table 1
Classification of Institutional Investors

Pension Funds	
Type	**Acronym**
National Private Pension Fund	FPPN
International Pension Fund	FPE
State-Owned Pension Fund	FPGOV
Investment Funds	
Type	**Acronym**
National Private Investment Fund	FIPN
International Investment Fund	FIE
State-Owned Investment Fund	FIGOV
Fundos Geridos por Instituições Financeiras	
Type	**Acronym**
Fund Managed by a National Private Financial Institution	IFPN
Fund Managed by an International Private Financial Institution	IFE
Fund Managed by a State-Owned Financial Institution	IFGOV

Source: Nieiro & Bortolon (2020).

3.4 Variables and econometric model

The econometric model (1), represented by the equation below, was developed to perform empirical tests of the research hypotheses:

$$CGI_{i,t} = \beta_0 + \beta_1 lnQII_{i,t} + \beta_2 PercentFP_{i,t} + \beta_3 PercentFI_{i,t} + \beta_4 PercentFIF_{i,t} + \beta_5 dEST_{i,t} + \beta_6 dPUB_{i,t} + \Sigma_1^c * \beta_c * VControle_{i,t} + \varepsilon_{i,t} \quad (1)$$

The dependent variable $GCI_{i,t}$ corresponds to the CGI. This index was developed by Carvalhal da Silva & Leal (2005) and updated by Leal et al. (2015). Its score is based on objective responses (secondary data) provided to 20 questions, addressing aspects such as transparency, composition of the board of directors, ownership and control structure, protection of shareholders' rights, and information disclosure. Thus, the index score is the sum of the positive responses obtained for a given company.

Table 2 presents information on the independent variables, detailing what each one measures, which research hypothesis it answers, and what the expected sign for its coefficient is, according to the theoretical framework and the hypothesis development. The variables that represent the percentage shareholdings of institutional investors were included because they potentially represent the degree of their involvement with the invested companies (Ferreira & Matos, 2008; Aggarwal *et al.*, 2011; Maranho *et al.*, 2020).

Table 2

Independent Variables Description

Variables	Description	Hypothesis	Expected sign	Literature
$lnQII_{i,t}$	Natural logarithm of the number of institutional investors	H_1	+	(Gillan & Starks, 2007; Borochin & Yang, 2017; Lou *et al*., 2020)
$PercentFP_{i,t}$	Percentage share of Pension Funds in company i in year t	H_{2A}	-	(Punsuvo *et al*., 2007; de Oliveira *et al*., 2012; De Souza Lima,2013)
$PercentFI_{i,t}$	Percentage share of Investment Funds in company i in year t	H_{2B}	+	(X. Chen *et al*., 2007; Isaksson & Çelik, 2014; Gomtsian, 2019)
$PercentFIF_{i,t}$	Percentage share of Funds Managed by Financial Institutions in company i in year t	H_{2C}	-	(Gillan & Starks, 2003; Ferreira & Matos, 2008; Z. Chen *et al*., 2019)
$dEST_{i,t}$	Dummy indicating the presence of institutional investors of international origin	H_3	+	(Ferreira & Matos, 2008; Aggarwal *et al*., 2011; Maranho *et al*., 2020)
$dPUB_{i,t}$	Dummy indicating the presence of state-owned institutional investors	H_4	–	(R. Chen *et al*., 2017; Fonseca *et al*., 2020; Duarte & Leal, 2021)

Source: developed by the author.

Furthermore, a set of control variables similar to those adopted in the studies by Aggarwal *et al.* (2011), Barros *et al.* (2015), and Maranho *et al.* (2020) was used here to mitigate the effect of endogeneity resulting from the omission of variables simultaneously correlated with the regressors and the dependent variable.

Thus, the econometric model (1) included control variables representing the performance, size, leverage degree, control structure, listing segment, and risk of the companies in the sample. Data concerning December 31 of each year were considered in the construction of the control variables. Table 3 presents information on the descriptions of the control variables and their calculation formulas.

Like the other economic and financial data, the CAPM Beta variable was collected from the Comdinheiro platform. A considerable number of missing data was found in the companies when we attempted to use the 60-month Beta. Of 1,298 possible company-year observations, only 544 (42%) were obtained for the 60-month Beta. A similar challenge was found when attempting to construct the variable manually. Hence, we used the 36-month Beta and obtained 988 company-year observations out of the potential 1,298 (76%). Thus, the model's results with and without the CAPM Beta variable are presented because its inclusion significantly reduces the sample size available despite being a relevant control variable.

Table 3
Control Variables Description

Variable	Description	Formula
$ROA_{i,t}$	Return on Assets	$\frac{Operational\ Profit_{i,t}}{Total\ Asset_{i,t}}$
$Q_{i,t}$	Tobin's Q	$\frac{(Total\ Asset_{i,t} - Net\ Worth_{i,t} + Market\ Value_{i,t})}{Total\ Asset_{i,t}}$
$TAM_{i,t}$	*Size Proxy*	$\ln(Total\ Asset_{i,t})$
$END_{i,t}$	Leverage degree	$\frac{Gross\ Debt_{i,t}}{Total\ Asset_{i,t}}$
$MTB_{i,t}$	*Market-to-book*	$\frac{Market\ Value_{i,t}}{Net\ Worth_{i,t}}$
$CONT_{i,t}$	Controller	*Dummy* that is assigned 1 if the company has one controlling shareholder or a controlling block of shareholders
$NM_{i,t}$	Novo Mercado	*Dummy* that is assigned 1 if the company is listed on Novo Mercado
$Beta_{i,t}$	CAPM Beta (36m)	*CAPM β ofthe last 36 months*

Source: developed by the author.

3.5 Regression method (GMM-Sys)

The presence of endogenous regressors in econometric models causes estimators to become inconsistent, resulting in inadequate inferences (Roberts & Whited, 2013). Endogeneity arising from the omitted variables problem, which is commonly addressed by including a large set of control variables in the model, is not the only form of endogeneity that affects research in finance (Barros *et al.*, 2020).

A problem researchers often ignore, which is present in corporate governance variables, is dynamic endogeneity. Dynamic endogeneity occurs when shocks that affect the dependent variable also affect the regressors in subsequent periods. In this case, lagged dependent variables must be included as explanatory variables (Wintoki *et al.*, 2012).

Based on the previous discussion, the main regression method used in this study was GMM-Sys. This method was proposed by Blundell & Bond (1998) for the estimation of dynamic models, using lags of the model's endogenous variables, which are not correlated with the error term, as instruments. To ensure the estimators' consistency, GMM-Sys assumes less restrictive assumptions, yielding more robust results than fixed effects and random effects methods traditionally used by research in the field (Wintoki *et al.*, 2012; Barros *et al.*, 2020).

The first step to applying GMM-Sys is to define how many lags of the dependent variable (CGI) should be included in the model as explanatory variables. Considering that Maranho *et al.* (2020) used one lag of the CGI as an explanatory variable in their GMM-Sys model, the maintained assumption was that one lag of the CGI would be sufficient to fully capture the existing dynamic effect. The validity of this assumption using the same methodology as Wintoki *et al.* (2012), estimating an OLS (ordinary least squares) model with the CGI being explained by its first four lags, including the model's control variables (1).

Initially, the regression was estimated with the first four lags of the CGI, with the first lag showing statistical significance but not the others. Next, according to the methodology described by Wintoki *et al*. (2012), the first two lags were excluded from the regression, and only the third and fourth lags were kept. In this case, only the third lag showed statistical significance. The conclusion is that although older lags include relevant information, the first lag is already sufficient to capture the dynamic aspect present in CGI.

Therefore, the regression method using GMM-Sys presents the first CGI lag as an explanatory variable, with the other lags being used as instruments.

4. Data Analysis and Results

4.1 Descriptive Statistics

The dependent variable analyzed in this study, CGI, was calculated for each year between 2010 and 2020 to verify changes in the corporate governance practices of the companies in the sample. Table 4 presents the descriptive statistics for the CGI and its dimensions over the period analyzed.

The companies' corporate governance practices improved in the period, with the CGI score rising from a mean of 12.58 and a median of 13.00 in 2010 to a mean 14.56 and a median of 15.00 in 2020. This finding aligns with studies using the same index in the Brazilian market and finding a similar progression in the companies' CGI scores (Leal *et al.,* 2015; Maranho *et al*., 2020).

Note that EDP Brasil (ENBR3) and Natura (NTCO3) presented the highest scores in the period analyzed, being the only companies to obtain a score of 19.00 out of 20.00 points on the CGI. On the other hand, Biomm (BIOM3) and Grazziotin (CGRA3) were the negative highlights, presenting the lowest score of the companies in the sample, 6.00 out of 20.00 points in the CGI.

When observing the scores of the four dimensions that compose the CGI, companies performed better in the dimension related to the composition and functioning of the board of directors. For most of the period analyzed, the companies obtained a mean score of 4.50 and a median of 5.00 out of the 5.00 possible points.

In contrast, the ethics and conflict of interest dimension presented the lowest total score. The companies obtained a mean score between 1.79 and 2.10 and a median of 2.00 out of the 4.00 points possible in this dimension over the period. Furthermore, this was the only dimension in which some companies scored zero.

Thus, the conclusion is that this study's specific objective i was met. The objective was to identify the main characteristics of companies' corporate governance measured by an index widely used in national literature.

Table 4
CGI Descriptive Statistics

Variáveis		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Disclosure Dimension (0 to 6 points)	Mean	3,46	3,52	3,64	3,69	3,76	3,81	3,94	3,98	4,12	4,25	4,37
	Median	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	4,00	4,25	4,50
	Standard deviation	1,10	1,09	1,10	1,11	1,13	1,20	1,20	1,22	1,19	1,25	1,25
	Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
	Maximum	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00	6,00
Composition and Functioning of the Council Dimension (0 to 5 points)	Mean	4,17	4,25	4,34	4,45	4,47	4,49	4,47	4,51	4,46	4,51	4,55
	Median	4,00	4,50	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00
	Standard deviation	0,97	0,89	0,84	0,78	0,77	0,79	0,81	0,77	0,81	0,80	0,78
	Minimum	2,00	2,00	2,00	2,00	2,00	2,00	1,00	2,00	2,00	2,00	2,00
	Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00
Ethical and Conflict of Interest Dimension (0 to 4 points)	Mean	1,79	1,84	1,89	1,94	1,94	1,97	2,00	2,06	2,08	2,09	2,10
	Median	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
	Standard deviation	1,04	1,01	1,04	1,02	1,02	1,01	1,00	0,98	1,00	1,02	1,01
	Minimum	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Maximum	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
Shareholders' Rights Dimension (0 to 5 points)	Mean	3,16	3,18	3,20	3,28	3,28	3,28	3,29	3,44	3,54	3,50	3,53
	Median	3,00	3,00	3,00	3,00	3,00	3,00	3,00	3,50	4,00	3,50	3,50
	Standard deviation	1,03	1,03	1,02	0,92	0,89	0,87	0,89	0,87	0,85	0,86	0,90
	Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	2,00	2,00	1,00
	Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00
CGI Score (0 to 20 points)	**Mean**	**12,58**	**12,79**	**13,07**	**13,36**	**13,45**	**13,56**	**13,69**	**13,99**	**14,20**	**14,36**	**14,56**
	Median	**13,00**	**13,00**	**13,50**	**13,50**	**14,00**	**14,00**	**14,00**	**14,50**	**14,50**	**14,50**	**15,00**
	Standard deviation	**2,29**	**2,38**	**2,31**	**2,27**	**2,24**	**2,36**	**2,44**	**2,42**	**2,45**	**2,42**	**2,43**
	Minimum	**7,00**	**6,00**	**6,00**	**7,00**	**7,00**	**7,00**	**6,00**	**7,00**	**7,00**	**7,00**	**7,00**
	Maximum	**18,50**	**18,50**	**18,50**	**18,50**	**18,00**	**19,00**	**19,00**	**19,00**	**19,00**	**19,00**	**19,00**

Source: developed by the authors.

Table 5 presents the descriptive statistics for the independent and control variables. The mean values of the shares of the different types of institutional investors reported in Table 5 considered in their calculation the company-year pairs without the presence of these investors, that is, those that had a share equal to 0%.

Following this criterion, the average values of the variables representing the participation of Pension Funds, Investment Funds, and Funds Managed by Financial Institutions, were 0.031, 0.088, and 0.012 respectively. However, the average shareholding of Pension Funds present in the sample companies disregarding the company-year pairs without participation of institutional investors is 15.84%, that of Investment Funds is 14.32%, and that of Funds Managed by Financial Institutions is 13.68%.

Table 5

Descriptive statistics of independent and control variables

Variables	Observations	Mean	Median	Standard deviation	Minimum	Maximum
lnQII	1298	4,775	5,316	2,179	0,000	13,729
PercentFP	1298	0,031	0,000	0,080	0,000	0,574
PercentFI	1298	0,088	0,051	0,122	0,000	0,860
PercentFIF	1298	0,012	0,000	0,054	0,000	0,457
dEST	1298	0,355	0,000	0,479	0,000	1,000
dPUB	1298	0,297	0,000	0,457	0,000	1,000
ROA	1298	0,045	0,054	0,116	-1,421	0,629
Q	1298	1,450	1,143	0,981	0,350	13,644
TAM	1298	8,558	8,495	1,851	1,591	14,342
END	1298	0,315	0,313	0,211	0,000	1,996
MTB	1298	2,056	1,259	5,476	-12,634	15,922
CONT	1298	0,586	1,000	0,493	0,000	1,000
NM	1298	0,581	1,000	0,494	0,000	1,000
BETA	988	0,692	0,660	0,410	0,182	1,919

lnQII – Natural logarithm of the institutional investors in the companies' shareholder structure; PercentFP – percentage share of institutional investors classified as Pension Fund; PercentFI - percentage share of institutional investors classified as Investment Fund; PercentFIF – percentage share of institutional investors classified as Fund Managed by Financial Institution; dEST - dummy indicating the presence of international institutional investors; dPUB - dummy indicating the presence of state-owned institutional investors; ROA – Return on Assets; Q – Tobin's Q; TAM –natural logarithm of total assets; END – leverage degree; MTB – market-to-book; CONT – dummy indicating the presence of a controlling shareholder or block of shareholders; NM – dummy indicating listing on the Novo Mercado; BETA – 36-month CAPM beta.

Source: developed by the author.

Another point of interest concerns the dummies that capture the presence of international and state-owned investors. A total of 35.50% of the company-year pairs had at least one international institutional investor among the five largest shareholders. At the same time, at least one state-owned institutional investor was identified in 29.70% of the 1,298 company-year pairs.

Furthermore, the average number of institutional investors within the companies' shareholder structure ranged from 368 to 474, with the lowest number in 2016 and the highest in 2020. Hence, this study met its objective ii: identify the total number of institutional investors in the companies' shareholder structure for each year between 2010 and 2020.

Table 6 provides information on the number of each type of institutional investor identified among the companies' five largest shareholders in each year of the period analyzed. The companies may have more than one type of institutional investor among their five largest shareholders in the same year.

Thus, objective iii was also met: identify institutional investors with relevant participation among the companies' five largest direct shareholders for each year of the study period and classify them into different types according to criteria provided in the literature.

Table 6

Number of observations of each type of institutional investor in the study companies according to year

Type	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
FPPN	2	2	1	2	3	4	5	4	5	5	7
FPE	3	3	3	3	3	2	3	3	2	2	2
FPGOV	13	13	15	18	24	30	30	30	27	25	26
Total Pension Funds	**18**	**18**	**19**	**23**	**30**	**36**	**38**	**37**	**34**	**32**	**35**
FIPN	44	43	45	53	44	35	27	33	30	20	18
FIE	41	45	61	64	66	69	60	53	54	53	42
FIGOV	14	14	16	18	17	17	19	23	22	23	21
Total Investment Funds	**99**	**102**	**122**	**135**	**127**	**121**	**106**	**109**	**106**	**96**	**81**
IFPN	1	2	2	4	3	5	4	4	2	2	4
IFE	4	3	4	5	10	6	8	12	9	13	7
IFGOV	4	4	4	4	5	5	4	2	1	0	2
Total Funds Managed by Financial Institutions	9	9	10	13	18	16	16	18	12	15	13

FPPN - ational Private Pension; FPE – International Pension Fund; FPGOV – State-Owned Pension Fund; FIPN – National Private Investment Fund; FIE – International Investment Fund; FIGOV – State-Owned Investment Fund; IFPN – Fund Managed by National Private Financial Institution; IFE – Fund Managed by International Financial Institution; IFGOV – Fund Managed by State-Owned Financial Institution.

Source: developed by the author.

4.2 Regression Analysis Model

As discussed in the methodology, GMM-Sys was the primary regression method adopted due to its robustness in analyzing variables addressed in this study. However, for comparison purposes and to present complementary information, this section presents the results of model (1) using the OLS (ordinary least squares) and dynamic OLS methods, according to the methodology adopted by Wintoki *et al.* (2012). Table 7 presents the results of the regressions in model (1).

All methods showed a positive and statistically significant relationship between the number of institutional investors, measured by the lnQII variable, and corporate governance practices, measured by the CGI. In other words, evidence was found that the presence of a higher number of institutional investors in a company's shareholder structure is associated with better-quality corporate governance practices. Hence, **hypothesis H_1 is confirmed**. This finding is relevant because the literature review showed that none of the studies addressing corporate governance practices in the Brazilian market investigated this variable.

One potential explanation for such a result is that the size of the shareholder base is relevant for a publicly traded company, considering that the market tends to more closely monitor companies with a larger shareholder base (Amihud *et al.*, 1999; Chia *et al.*, 2020). Therefore, companies with more institutional investors present in their shareholder base may be under more significant pressure to adopt good corporate governance practices to mitigate the costs arising from agency conflicts between principals (majority and minority shareholders) or between the principal (shareholders) and agent (managers), depending on each company's ownership structure (La Porta *et al.*, 2000; Aldrighi & Mazzer Neto, 2005; Crisóstomo & Brandão, 2019).

Another potential explanation is that there is some degree of reverse causality, which is not addressed by the model adopted here, i.e., companies with already good corporate governance practices and, consequently, a high CGI score are more attractive investments for institutional investors.

Regarding the impacts of different types of institutional investors on corporate governance practices, mixed findings were found concerning the remaining research hypotheses. The results indicate a positive and significant relationship between Pension Fund (PercentFP) participation and the CGI score. This finding would be in line with the international literature (Gillan & Starks, 2007; Ferreira & Matos, 2008) but not with Brazilian research (Punsuvo *et al.*, 2007; de Oliveira *et al.*, 2012; De Souza Lima, 2013).

Table 7

Results of Regressions (model 1)

Variables	OLS	OLS without β	Dynamic OLS	Dynamic OLS without β	GMM-Sys	GMM-Sys without β
	(A)	(B)	(C)	(D)	(E)	(F)
CGI (t – 1)			0,673***	0,630***	0,796***	0,833***
			(0,020)	(0,017)	(0,066)	(0,045)
lnQII	0,126***	0,197***	0,058**	0,108***	0,053*	0,058**
	(0,035)	(0,031)	(0,024)	(0,022)	(0,027)	(0,026)
PercentFP	4,392***	3,038***	1,653***	1,245**	1,021	0,856*
	(0,745)	(0,696)	(0,513)	(0,493)	(0,662)	(0,473)
PercentFI	1,773***	0,888**	1,043***	0,654**	0,569**	0,266
	(0,531)	(0,426)	(0,362)	(0,301)	(0,278)	(0,233)
PercentFIF	-5,308***	1,124	-2,145**	0,978	-1,346*	0,778
	(1,450)	(0,942)	(0,990)	(0,665)	(0,799)	(0,579)
dEST	0,182	0,214*	-0,020	0,010	0,011	0,044
	(0,121)	(0,116)	(0,083)	(0,082)	(0,081)	(0,063)
dPUB	-0,349**	0,032	-0,140	0,052	-0,001	0,068
	(0,143)	(0,129)	(0,098)	(0,091)	(0,115)	(0,091)
ROA	0,770	0,530	0,257	0,206	0,879**	0,822***
	(0,543)	(0,445)	(0,370)	(0,314)	(0,387)	(0,241)
Q	0,113*	0,031	0,051	-0,001	0,030	0,041
	(0,066)	(0,054)	(0,045)	(0,038)	(0,041)	(0,029)
TAM	0,465***	0,348***	0,198***	0,159***	0,076*	0,047*
	(0,043)	(0,037)	(0,030)	(0,026)	(0,042)	(0,027)
END	-0,439*	-0,486**	-0,310*	-0,269	0,031	-0,163
	(0,266)	(0,239)	(0,181)	(0,169)	(0,208)	(0,159)
MTB	0,007	0,014	-0,005	0,001	-0,001	-0,004
	(0,009)	(0,009)	(0,006)	(0,007)	(0,005)	(0,007)
CONT	0,359***	0,342***	0,150*	0,160*	0,084	0,016
	(0,130)	(0,121)	(0,089)	(0,086)	(0,101)	(0,081)
NM	2,966***	2,930***	1,160***	1,292***	0,632**	0,454***
	(0,132)	(0,122)	(0,104)	(0,097)	(0,257)	(0,149)

Variables	OLS	OLS without β	Dynamic OLS	Dynamic OLS without β	GMM-Sys	GMM-Sys without β
BETA	0,009		0,044		0,025	
	(0,141)		(0,096)		(0,092)	
Constant	6,887***	7,564***	1,661***	2,268***	1,247**	1,193***
	(0,378)	(0,302)	(0,300)	(0,259)	(0,569)	(0,420)
AR Test (2) (p-valor)					0,104	0,165
Hansen's J Test (p-value)					0,193	0,253
Observations	988	1,298	988	1,298	988	1298
R^2	0,497	0,530	0,768	0,766		
Adjusted R^2	0,490	0,525	0,764	0,763		
F Statistics	68,669***	111,182***	213,894***	299,840***		

IPGC – Corporate Governance Index Score; lnQII – Natural logarithm of the institutional investors; PercentFP – percentage share of institutional investors classified as Pension Fund; PercentFI - percentage share of institutional investors classified as Investment Fund; PercentFIF – percentage share of institutional investors classified as Fund Managed by Financial Institution; dEST - dummy indicating the presence of international institutional investors; ROA – Return on Assets; Q – Tobin's Q; TAM –natural logarithm of total assets; END – leverage degree; MTB – market-to-book; CONT – dummy indicating the presence of a controlling shareholder or block of shareholders; NM – dummy indicating listing on the Novo Mercado; BETA – 36-month CAPM beta.

Note: t statistics between parentheses, and ***, **, * represent statistical significance at 1%, 5%, and 10% respectively.

Source: developed by the authors.

Since the construction of the research hypothesis concerning Pension Funds followed the international literature, the research hypothesis H2A is confirmed. A potential explanation for this result is the difference between the pension funds investigated in the different studies. The Brazilian studies mentioned here addressed specific pension funds (Punsuvo *et al.,* 2007; de Oliveira *et al.,* 2012; De Souza Lima, 2013), while this study did not impose such a restriction, addressing all the pension funds among the companies' five largest shareholders.

In turn, the Investment Funds (PercentFI) participation showed a positive and statistically significant relationship with CGI in all models, except GMM-Sys without the CAPM Beta variable (column F of Table 7). This finding indicates that institutional investors of the investment fund type are associated with the companies' better corporate governance practices, which is aligned with the literature (Chen *et al.,* 2007; Isaksson & Çelik, 2014; Gomtsian, 2019). Thus, **it confirms hypothesis $H_{2B.}$**

The participation of Funds Managed by Financial Institutions (PercentFIF) showed a negative and statistically significant relationship in the models that included the CAPM Beta variable (columns A, C, and E of Table 7) and did not show statistical significance in the models that did not include the CAPM Beta variable (columns B, D and F of Table 7). Therefore, evidence was found that the presence of Funds Managed by Financial Institutions would be associated with worse corporate governance practices among the companies in their portfolio, a finding that converges with the literature (Gillan & Starks, 2003; Ferreira & Matos, 2008; Chen *et al.*, 2019), but the result was inconclusive. Therefore, **hypothesis H_{2C} is partially confirmed**.

Regarding the dummies indicating the presence of institutional investors of international or state-owned origin, dEST and dPUB, respectively, a statistically significant relationship was found between them and CGI only using the static OLS method (columns A and B of Table 7), which is the least robust of the regression methods used. This result indicates that the national or international origin and the nature of the capital behind institutional investors do not influence their relationship with the governance practices adopted by the companies in their portfolios. Therefore, the initial evidence indicates **the non-confirmation of research hypotheses H_3 and $H_{4.}$**

In addition to the regression results, Table 7 also presents the results of the GMM-Sys specification tests. The first is the Arellano-Bond serial correlation test (level 2), which presented a p-value of 0.104 and 0.165 for the models with and without the CAPM Beta, respectively (columns E and F of Table 7). Therefore, the null hypothesis of the absence of second-order serial correlation cannot be rejected, which indicates the consistency of the models' estimators.

The second test was Hansen's J test, which presented p-values of 0.193 and 0.253 for the models with and without the CAPM Beta, respectively (columns E and F of Table 7). Thus, the null hypothesis of the validity of the GMM-Sys instruments used in the models cannot be rejected.

Thus, the conclusion is that this study's objective iv, which consists of quantitatively verifying whether companies' corporate governance practices are impacted by the number of institutional investors present in their shareholder structure and by the different types of institutions that hold participation among the largest shareholders, was met.

5. Final Considerations

This study analyzed whether there is a relationship between the various types of institutional investors in the companies' shareholding structure and these companies' corporate governance practices between 2010 and 2020. Hence, the presence of institutional investors was verified among the five largest shareholders of 118 publicly traded Brazilian companies traded on the B3 during the study period. Additionally, they were classified according to their legal type, national or international origin, and the nature of the capital behind the institution.

CGI indicated consistent improvements in the mean score of companies in the years analyzed here, rising from 12.58 to 14.56. Emphasis was on the composition and functioning of the board of directors dimension, in which the companies obtained the highest scores, with a mean of 4.55 points in 2020 out of a possible 5.00 points. This finding suggests improved corporate governance practices adopted in the Brazilian market, aligning with other Brazilian studies (Leal *et al*., 2015; Maranho *et al*., 2020).

The regression models' results show that companies with more institutional investors in their shareholder structure tend to present better corporate governance practices, confirming hypothesis H_1. This finding suggests that these institutions, considering all types of institutional investors together, have a greater capacity, on average, to monitor the controllers and managers of the companies in their portfolios and, therefore, positively influence their governance model.

However, the different legal types of institutional investors addressed here presented distinct relationships with the CGI score of the invested companies. Robust results contradict studies in the Brazilian market (Punsuvo et al., 2007; de Oliveira *et al.,* 2012; De Souza Lima, 2013), i.e., a positive relationship was found between the participation of Pension Funds and the companies' CGI score. Therefore, hypothesis H_{2A} failed to be rejected.

This finding aligns with the international literature (Gillan & Starks, 2007; Ferreira & Matos, 2008) and suggests that Pension Funds seek to promote improvements in the corporate governance system adopted by the companies in which they invest. Such behavior is likely explained by the pension nature of these institutions; they focus on investments and results, observing a longer time horizon (Gillan & Starks, 2007; Punsuvo *et al*., 2007).

Regarding institutional investors classified as Investment Funds, the positive relationship between these institutional investors and CGI confirmed hypothesis H_{2B}. This result is in line with the literature (Gillan & Starks, 2003; Ferreira & Matos, 2008; Chen *et al.,* 2019) and indicates that Investment Funds have a greater incentive to effectively monitor the companies to improve their corporate governance practices, possibly because they maintain an independent relationship with the companies.

In turn, the results regarding the participation of Funds Managed by a Financial Institution of Brazilian or international origin or state-owned nature presented inconclusive results, leading to the partial confirmation of H_{2C} and the non-confirmation of H_3 and H_4.

This study contributes to Brazilian stock market participants and regulators by providing a better perception of risk and promoting a better understanding of the relationship between the different types of institutional investors and the companies' corporate governance practices. Additionally, this study contributes to the literature by pointing out that the number of institutional investors in the shareholder structure is relevant to the companies' CGI score. Future studies are suggested to explore this variable more deeply, also considering the possibility of reverse causality.

Finally, future studies are suggested to analyze the impact caused by the stability and longevity of institutional investors' holdings in Brazilian companies since international literature points to the relevance of this information. In this case, the challenge will be to find a way to construct variables that measure this information consistently in the Brazilian market, considering the information disclosure structure currently in force.

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