A STUDY OF THE DETERMINANTS OF DIVIDEND DISTRIBUTION IN B3 COMPANIES: A LOOK AT THE DIFFERENT SECTORS

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ABSTRACT

The purpose of the present study was to identify the dividend policy drivers of Brazilian companies listed on B3, also considering these relationships by sector of activity. The final sample consisted of 527 companies between active and cancelled, with annual data between 1996 and 2020, totaling 6164 observations. Estimates were performed considering an unbalanced panel data employing the Quantile Regression model, considering the following quantiles: 0,25; 0,5; 0,75; and 0,9. The results showed that, for the entire sample, factors related to size, profitability, governance and macroeconomic characteristics are relevant to explain the dividend policy. The estimations made by sector indicate that size, ownership concentration and macroeconomic characteristics are the most relevant factors in most quantiles, while factors related to indebtedness, profitability, liquidity and corporate governance have different relationships depending on each sector. The findings provided evidence for investors and academics in understanding the differences between the determining factors of companies' dividend policy considering the sector in which they operate.

Keywords: Dividend Policy. Dividend Yield. Quantile Regression.

1 INTRODUCTION

Until the late 1950s, in a post-war economic context, there was a belief that companies should pay voluminous dividends, because the risk aversion of investors and the uncertainty about the future were determining factors for the investment decision. Lintner (1956) and Gordon (1959) formalized this theory, where they stated that the payment of dividends was closely linked to the value creation of companies, that is, the effect caused by the dividend policy of companies was directly linked to the decision to buy or sell the shares by investors. The end of this

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paradigm, accepted as true until then, occurred in 1961, with the work published by Modigliani and Miller (1961). In their study, the authors proposed the theory that, given an investment policy, only the level of investment determines the value of the company, and that the current prices and the shareholders' return are not impacted by this.

Since then, the study of dividend policy, its theories, and the determinants of dividend payment in companies has been the scene of debate among researchers. The main criticism made to Modigliani and Miller (1961) is on the rigidity of their assumptions, based on the perfection of markets. In this sense, issues such as tax preferences, agency problems, information asymmetry, signaling and capital structure have gained strength in subsequent studies to understand their effects on corporate dividend policy (Farrar and Selwyn, 1967; Easterbrook, 1984; Miller and Rock, 1985; Jensen, 1986; Brealey and Myers, 2000).

However, despite the various studies conducted, there is great divergence among researchers in this field. Al-Najjar (2009) argues that this lack of consensus among academics lies in the divergent results, either by using different methods or by the lack of significant variables, representing a gap to be investigated. Also, Marques et al. (2020) argue that the dividend policy is a widely debated topic in Brazil, where there is no consensus in the results found, possibly due to the specific characteristics of the Brazilian market.

In Brazil, companies listed in the Brazilian Stock Exchange (B3) are submitted to a specific regulation, through law number 6.404/1976 and its amendments, known as the Law of Corporations (LSA). This law determines that the shareholders are entitled to receive mandatory dividends in each fiscal year, depending on the company's bylaws, or in case of omission, the company should pay half of the net profit calculated in the current year. Moreover, a special feature of the Brazilian market is the figure of Interest on Equity (named as JSCP) as an alternative for companies in their profit distributions, which allows a tax benefit to them by directing the retention of tax to the investor. Also noteworthy is the non-taxation on the receipt of dividends, thus having great relevance in terms of remuneration (Assaf Neto et al., 2007).

Still, as highlighted by Assaf Neto et al. (2007), empirical studies that seek to understand the determinants for dividend policy are important because: i) there is a constant need for cash availability by investors; ii) shareholders prefer the receipt of present resources to possible future gains; iii) the constant payment of dividends can generate value for the company as there is a reduction in risk; iv) there is a relationship between taxation and preference to dividends; and v) the dividend policy can be used to adjust the capital structure of the company to a certain desired level.

Thus, facing a diffuse scenario in relation to which factors influence the distribution of dividends and considering the characteristics of the Brazilian market, this study seeks to deepen the discussions on the determinants of the dividend policy of the companies listed on B3, having as main objective to find which factors are determinants for the payment of dividends of the companies listed in the Brazilian stock exchange, analyzing the context in which occur higher or lower levels (given the percentage quartiles) of profit distribution of non-financial companies, using the Quantile Regression method. Additionally, we seek to investigate whether the behavior of the variables used have different significant

relationships according to the sector of operation and quantile, discussing possible causes for such.

In this sense, we seek to contribute to the debate on dividend policy in Brazil by bringing a broad analysis, considering active and inactive companies, with an extensive temporal period, between the years 1996 and 2020, besides proposing the sectorial cut, using a methodology little explored in the literature. Through this cut, it is understood to be possible to shed new light on the issue of dividends, seeking to broaden this discussion. We also highlight the contribution to small investors as a whole, since this study potentially helps them in the decision-making process for setting up investment strategies, since it compares how the factors relates to the level of companies' dividend distribution in each sector.

This article is structured in five sections, considering this introduction. The second section presents the theoretical framework, with considerations about the theories on dividend payment and aspects related to researches in the area. Next, considerations about the methodology adopted are made. The fourth section includes the presentation and discussion of the results. Finally, the fifth section presents the conclusions.

2 THEORETICAL FRAMEWORK

2.1 THE THEORIES ON DIVIDEND PAYMENTS

Gordon (1959) and Lintner (1956) proposed empirical-theoretical models where they state that the value of the firm can be determined based on the amount of dividends paid and profit retention rates, accounting for the growth of the firm. This theory, called Dividend Relevance, is based on the idea that the cost of capital increases as dividends fall, since investors are uncertain whether they will receive capital gains in the future resulting from reinvestments of profits in excess of the dividends that have been reapplied. In other words, dividends are a less risky form of investment than expectations of corporate growth, which generates stock appreciation.

To demonstrate this hypothesis, Lintner (1956) conducted interviews with managers of North American companies, evidencing that the dividend policy was related to specific aspects of the company and of the market in which it operates, also finding that managers believe that the constancy of the dividend payment amount is more relevant than the constancy of the dividend payment itself, and that these payments are related to the company's growth level. In a complementary way, Gordon (1959) turned to investor preference, using a sample of data from firms in different industries. The result observed indicated that the investor preferred to receive his income through dividend compensation rather than to have their capital reinvested by the company, since there was uncertainty of success regarding the future return of this investment.

In contrast, Modigliani and Miller (1961) brought a criticism to the dividend relevance theory, arguing that risk is determined by operational cash flows and not by the distribution of companies 'results. Thus, they demonstrated that in a market without imperfections the dividend policy is irrelevant under the argument that the value of the company is determined by their business risk and their capacity of generating wealth. A market without imperfections assumes some basic premises, such as: i) rational behavior of investors; ii) no taxes, iii) the investment level of firms is previously defined; and iv) markets are perfect. In

defending this irrelevance, the authors proposed the concept of "home made dividends", where shareholders can create their own dividends. In other words, they can reinvest their dividends or buy and sell shares depending on their liquidity needs.

Despite this theory being strongly accepted in the literature, the use of the efficient markets hypothesis is a harsh criticism proposed to the model of Modigliani and Miller (1961). After this work, several empirical studies have shown that market imperfections such as irrational behavior of agents and the existence of taxes directly impact dividend distribution. The following are empirical studies in the area that have sought to validate the dividend theories in different markets, as well as to validate firm-related control variables that help to explain the dividend policy.

2.2 EMPIRICAL STUDIES ON DIVIDENDS AND THEIR DETERMINANTS

In the view of Assaf Neto et al. (2007), empirical studies that seek to understand the determinants for dividend policy are important because: i) there is a constant need for cash availability by investors; ii) shareholders prefer the receipt of present resources to possible future gains; iii) the constant payment of dividends can generate value for the company as there is a reduction in risk; iv) there is a relationship between taxation and preference to dividends; and v) the dividend policy can be used to adjust the capital structure of the company to a certain desired level.

In this sense, Fama and French (2001), for example, studied a sample of American companies between 1926 and 1999, seeking to understand the characteristics that could explain the increase in the incidence of dividend payment. Using Logit regression models, they found evidence that firm size, growth opportunities, and profitability are determinants of dividend payout. Sharif et al. (2015), Kaveski et al (2019) and Dang et al. (2020) found similar evidence in other international markets, while Forti et al. (2015) and Ströer (2015) had similar findings for Brazil.

Factors related to profitability are seen as important in determining the dividend policy of companies because they represent the companies' capacity to generate results. Furthermore, Jensen (1986) emphasizes that the payment of dividends serves as a form of signaling that the manager is giving preference to shareholder liquidity instead of taking the risk of investing in projects that do not add value to the company.

Regarding size, Vancin (2013) argues that larger and more mature companies tend to pay more dividends than companies in consolidation or in the process of growth, because larger companies have more resources and greater access to credit if needed, which would ensure a greater potential for dividend distribution.

In this sense, DeAngelo, DeAngelo and Stulz (2006) added a proxy for the stage of life cycle of firms to understand how the stage of development of firms impacts the dividend distribution. With a sample of 1348 US firms between 1970 and 2002, through Logit models, they found a positive relationship between this variable and the propensity to pay dividends by firms, which corroborates the evidence of Fama and French (2001).

Another important factor cited in the literature as a determinant of dividend policy is debt, which according to Iquiapaza et al. (2008), has a negative

relationship with dividends, since more leveraged companies have more debt obligations, such as interest and amortization, which reduces the resources available for dividend distribution. In this sense, Loncan and Caldeira (2014) investigated the effects of debt on cash liquidity of 288 Brazilian firms between 2002-2012. As a result, they found a negative association between short and long-term debt and cash liquidity, i.e. an increase in debt elevates the financial constraints of firms that need to keep more resources in cash, reducing their propensity to distribute dividends.

Assaf Neto et al. (2007) also points out other factors that help to explain dividend policy, such as: liquidity, control and risk. According to Forti, Peixoto and Alves (2015), liquidity is positively related to dividend payment because companies with high liquidity offer security for managers to maintain or increase the level of dividend payment. In this sense, the findings of Kaveski et al. (2017) reinforce this view for the Brazilian scenario.

In relation to control, Harada and Nguyen (2011) argue that companies with share control pulverized in several investors tend to pay more dividends and to favor majority shareholders less because there is less expropriation of shareholders, besides preventing majority shareholders from making decisions for their own benefit. Ströer's (2015) work found similar evidence for the Brazilian market, highlighting a possible agency problem. On the other hand, Galvão et al. (2019) provided evidence that an increase in shareholder control can increase dividend policy. In this case, the possible explanation lies in the possibility of a signaling effect through dividend policy, where controllers distribute more dividends to minority shareholders as a mechanism to dissipate agency problems, i.e., signal to investors that there is no interest in expropriation through control.

The risk factor is identified by Fama and French (2001) as important, because less volatile companies distribute more dividends. For Forti et al. (2015) this occurs because managers of these companies are more likely to distribute higher dividends due to greater results' predictability, which reduces the companies' risk of not realizing their expected revenues. The works of Mota (2007) and Galvão et al. (2019) bring results that corroborate these findings for the Brazilian market, that is, risk negatively influences the dividend policy of companies.

There are also other factors found in the literature for the determinants of dividend policy. Bernadelli and Bernadelli (2016) pointed out that macroeconomic variables such as interest, GDP and exchange rate, are indicators that relate to companies, since they are inserted in the context of a country's economic performance. In their study, the authors demonstrated that the Brazilian stock market responds to macroeconomic characteristics in a significant way, where the increase in economic activity impacts positively and the exchange rate variation and the interest rate impact negatively the Brazilian stock market, using as measurement proxy the Ibovespa index.

Also, Galvão et al. (2019) highlight in considering the Brazilian context of dividend policy, the role of corporate governance, since belonging to any of the differentiated levels determined by B3, the quality of the companies' information increases, which affects the perception of companies in the capital market. In this sense, the authors found evidence that companies in the higher levels of corporate governance distribute more dividends.

Finally, Fonteless et al. (2012) sought to evaluate the profile of companies that are members of B3's IDIV (the index of the companies that preset the higher levels of dividend distribution), in order to find the possible determinants for high dividend policies. Within the results, the authors identified that the companies' dividend policy is determined by aspects related to legislation, where it is observed that companies distribute earnings mostly close to the minimum level required by their statutes, and the influence of the sector of operation, i.e., the economic sector of the companies may be determinant for the dividend policy because there are differences in investment needs, seasonality and working capital needs between sectors, which can influence the cash demands and thus their distribution of dividends.

Despite the numerous empirical works presented in the literature that sought to find the potential determinants of the dividend policy, there is still an opening for discussions in this direction since, as highlighted by Al-Najjar (2009), the use of different estimation methods, periods and calculation of the indicators used compromises the formation of a consensus on the determining factors for the dividend policy of companies, in addition to the difficulty of comparison between the results. Thus, the guiding hypothesis of the present study are:

- H1: The determinants of dividend policy mapped in the literature relate in different ways to the sectors in which firms operate depending on the level of dividend distribution.

Furthermore, it stands out as additional hypotheses:

- H2: Factors related to profitability, size and liquidity have positive relationships with dividend policy;
- H3: Risk and debt show negative relationships with dividend policy;
- H4: Aspects related to corporate governance, control, and macroeconomic indicators are impactful in explaining the dividend policy of companies.

3 METHODOLOGY

Considering this research objective of analyzing the determinants of the dividend policy of Brazilian publicly traded companies listed on B3, the sample used started from 846 companies of all sectors, considering active and cancelled registrations, based on the work of Iquiapaza et al. (2008), in which the authors emphasize that this procedure helps to control the survival bias in companies. The data collection took place through the Economática platform, and the period studied was between 1995 and 2020, with annual information. After data cleaning procedures, the final sample consisted of 527 companies divided into 9 sectors according to the division made by B3, totaling 6164 observations. The Table 1 below presents the procedures adopted to clean the database.

Table 1
Definition of the Study Sample

Classification	Number of Companies
Active and Cancelled Companies	846
(-) Companies without Assets	12
(-) Companies with Negative Net Worth	6

(-) No Dividend Yield	163
(-) Financial Sector	103
(-) Sector Others	10
(-) Companies with only one observation	24
(=) Final Sample	**527**

Source: Prepared by the authors.

Companies without information on total assets were excluded because it is understood that companies without assets cannot exist. Those with negative Net Worth were removed because negative values distort the measures used in this study. The exclusion of companies without information on Dividend Yield is due to the fact that without this information it is not possible to evaluate the determinants of the dividend policy. The exclusion of companies from the Financial and Other sectors is due to the fact that these companies have balance sheets and structures that are different from the others, which may cause some kind of bias in the results. Finally, companies with only one observation were removed because it is understood that it is not possible to observe their behavior over time.

The estimation method chosen was the Quantile Regression (QR). Despite being an old method, there are few works within the field of dividend policy that use such modeling, such as Ströher (2015) who sought to verify the determinants for the Dividend Payout in the Brazilian market and Thakur and Kannadhasan (2018), who conducted the study in the Indian market, showing a field not yet explored within the literature on the subject. Thus, the estimation was done through the quantiles 0, 25; 0, 5; 0, 75 and 0, 9 (hereafter 1Q, 2Q, 3Q and 4Q, respectively).

The justification for using this method is in the fact that the various potential determinants of dividend distribution may have positive or negative effects on the dependent variable, as highlighted by Al-Najjar (2009). Thus, from quantile regression models it is possible to obtain a more complete mapping of the impact of explanatory variables on the dependent variable, allowing the investigation of how each quantile responds, instead of having only one regression line for the case of the mean, such as i the MQO method (Marioni et al., 2016). The QR is advantageous for evaluating the determinants of dividend policy because it circumvents the problem derived from extreme values and biased averages, since it estimates the parameters of the model analyzed from the median of the quantiles, being robust to the presence of outliers and the presence of heteroscedasticity in the residuals.

The Table 2 below presents the variables used in the study as predictors of dividend policy, their calculation formula and the expected relationship based on the literature. The calculation formulas of the variables follow the Economática methodology and the dummy variables were manually inserted after collecting data

Table 2
Independent variables evaluated as potential determinants.

Type	Variables (name)	*Proxy*	Expected Coefficient
Dependent Variable	*Dividend Yield* (DY)	$\frac{DPA_t}{P_t} * 100$	N.A
Profitability	LPA (LPA)	$\frac{LL_t}{Nºstocks_t}$	+

	ROA (ROA)	$\frac{LL_t}{AT_t} * 100$	+
	ROE (ROE)	$\frac{LL_t}{PL_t} * 100$	+
	ROIC (ROIC)	$\frac{EBIT_t}{CI_t}$	+
Growth Opportunities and Indebtedness	Investment Rate (CAPEX)	$\frac{\frac{Capex}{Depreciation} * 100}{AT_t}$	-
	Gross Debt (ENDB)	$\frac{(PC_t + PNC\ )}{AT_t}$	-
	Net Debt (ENDL)	$\frac{\frac{(PC_t + PNC_t)}{AT_t} - Cash\ and\ Equivalents}{PL_t}$	-
	Leverage (ALAVC)	$\frac{LL_t * AT_t}{PL_t * EBIT_t}$	+/-
Liquidity	Current Liquidity (LIQC)	$\frac{AC_t}{PC_t}$	+
	General Liquidity (LIQG)	$\frac{AC_t + LRLP_t}{Total\ Liabilities}$	+
Control	% of shares of the 3 largest shareholders (CONC)	% of shares of the 3 largest shareholders	+/-
Risk	Systematic Risk - 5 years (BETA)	$\beta_i = \frac{cov(R_i, R_m)}{var(R_m)}$	-
Size	Company Size (LNAT)	$ln(AT_t)$	+
Corporate Governance	Corporate Governance (DSEG)	Dummy variable for belonging to some level of corporate governance	+/-
Macroeconomic	GDP (PIB)	GDP Per Capita in Dollars	+/-
	Interest (CDI)	CDI - End of period	+/-
	Foreign Exchange (CAMB)	Average Commercial Dollar - Sell	+/-
	Policy Uncertainy (INCT)	Economic Policy Uncertainty Index	-

Source: Prepared by the authors.

Thus, we have the following equation for estimating the models:

$$DY_{i,t} = \beta_0 + \beta_1 Rent_{i,t} + \beta_2 Oport_{i,t} + \beta_3 Liqui_{i,t} + \beta_4 Cont_{i,t} + \beta_5 Risk_{i,t} + \beta_6 Size_{i,t} + \beta_7 Sector_{i,t} + \beta_8 GC_{i,t} + \beta_9 Macro_{i,t} + \varepsilon_{i,t} \quad (1)$$

Two correction procedures were also performed to validate the quality of the adjustments. The first one was the sample stationarity conditions, through Fischer's test for unbalanced panels, where each company is treated uniquely, that is, as a panel, and the null hypothesis tested is that all panels have a unit root. This test was used to validate the sample, since it has a large time window and includes companies that were listed after the initial period, in addition to companies that no longer trade their shares on the stock exchange. The second one test wasthe Inflation Variance Factor (VIF), employed to check for multicollinearity, since the presence of this phenomenon causes an increase in the determination coefficient (R2), but, at the same time, presents few significant variables in the model. In this case, this test is necessary for the study since the variables selected for this present study come from companies' balance sheets.

Thus, for case of non- stationarity, the procedure adopted for correction, when necessary, was first- degree differentiation, as suggested by Greene (2002). This procedure was carried out for the variables Exchange Rate, Uncertainty and CDI, which, as they are macroeconomic variables, tend to be influenced by time. In case of multicollinearity, the cutoff value for the statistic was set at 5. It is important to emphasize that multicollinearity among the variables studied was not detected.

Thus, the next section presents the descriptive statistics and the results of the estimations performed, both for the entire sample and by sector of operation. It is worth noting that all estimations were performed using panel data with fixed effects by sector (considering the entire sample) and time (only in the division by sector). In the estimations for the entire sample, the time effect was not used to avoid the problem of singularity in the matrices due to the excess of control dummies.

4 PRESENTATION AND ANALYSIS OF RESULTS

4.1 DESCRIPTIVE STATISTICS

This section analyzes some basic statistics of the dependent variable Dividend Yield deemed relevant (1st and 3rd quartiles, median, mean, skewness and standard deviation). The minimum and maximum were not used as trend measures due to the fact that the sample has no treatment for outliers, since the RQ model is robust to this type of problem. Thus, the results found here are intended to produce an overview of the variables and their characteristics. In addition to understanding their behavior during the sample period, providing a preliminary analysis of dividend distribution for each sector of activity defined by B3. The results found for each sector are presented in Table 3below:

Table 3

Estatística descritiva para o *Dividend Yield*

Sector	1st Quartile	Median	Average	3rd Quartile	Asymmetry	Standard Deviation	Observations
All	0,000	0,907	3,143	4,259	5,1	5,1	6164
Oil, Gas and Biofuels	0,000	1,96	3,91	4,58	5,053	5,053	191
Basic Materials	0,000	1,28	3,71	5,09	5,380	5,380	1145
Industrial Goods	0,000	0,17	3,37	4,05	5,443	5,443	1100
Consumption	0,000	1,08	2,91	3,80	4,463	4,463	594
Non Cyclical	0,000	0,33	2,87	3,60	4,275	4,275	1577
Cyclic Consumption	0,000	0,92	2,58	3,01	4,283	4,283	220
Health	0,000	0,74	1,71	2,24	3,332	3,332	99
Information Technology	0,000	1,88	3,74	4,34	5,596	5,596	320
Communications	0,000	2,05	4,69	6,89	5,680	5,680	918

Source: Prepared by the authors.

From the analysis of Table 3, we can identify that, despite there being no treatment of outliers, the average Dividend Yield proved reasonable, where we observed a yield of 3.1% per year considering all companies. In this sense, as a measure of comparison, if an investor, in a theoretical portfolio with all the

companies in the sample of this study, had invested 100 Reais in December 1995, he would have an accumulated profitability of 116.61% by the end of 2020. By comparison, real inflation in Brazil in this same period was 353.89%, according to the Inflation Calculator of the Central Bank of Brazil (BCB, 2022), which would indicate a loss of return, without taking into account other factors such as capital gain or reinvestment.

Extending this analysis to sectors, we can identify that there are differences, on average, when we look at these. In this case, the most profitable sectors, on average, were Public Utilities, Communications, and Basic Materials, respectively. These sectors show higher profitability than the one observed when we look at the sample as a whole, indicating that companies from these sectors tend to be higher dividend payers than the others. On the other hand, the sectors that distributed the least were, respectively, Information Technology and Healthcare. In this case, these sectors have lower yields than the overall average, indicating that these sectors are composed of assets that do not have a robust dividend policy.

However, because there is no treatment for outliers, the measures of central tendency may be skewed. Furthermore, it is also interesting to note the positive asymmetry coefficient, which indicates that most of the Dividend Yield values are concentrated between the mean and the median, which shows that high dividend yield values are infrequent, conveying the idea that not all companies are able to distribute high dividends over time, since there are investment strategies, needs for changes in the capital structure, indebtedness, accumulated losses, among other possibilities that limit the distribution of companies' profit to their shareholders.

That said, the most interesting values to be evaluated, then, are the behavior of the median and the quartiles, which have low sensitivity in the presence of outliers. From these, it is possible to identify, based on the sample, the sectors that have higher levels of profitability in each part of the distribution. Analyzing the first quartile, it is identified that in all sectors, including the sample as a whole, there is the presence of the value 0. This value indicates that approximately 25% of the sample did not distribute dividends over the period studied, which reinforces the idea that not all companies are able to maintain the distribution of dividends over time.

When the median is checked, one notices that the Public Utilities, Communications, and Oil, Gas and Biofuels sectors are those with the highest Dividend Yield, with a value close to 2%. On the other hand, the least profitable sectors were, respectively, Industrial Goods and Cyclical Consumption. Regarding the third quartile, the highest dividend yield values are for the Utilities, Basic Materials, and Oil, Gas and Fuels sectors, while the Information Technology and Healthcare sectors are the ones with the lowest profitability when looking at the highest levels of distribution.

To validate the hypothesis that companies from different sectors have differences in dividend distribution, we used a t-test of difference between means for the Dividend Yield between the entire sample and each sector, presented in Table 4 below, which shows that all sectors, except for the Basic Materials sector, presented significant differences when compared to the combined sample. Thus, it is evident that there are differences between dividend distribution by sector. With this, the next section presents the results of the estimations by Quantile Regression.

Tabela 4
Statistics of the Test for Differences of Means

Sector	T-Statistics	P-lue
Oil, Gas and Biofuels	1,8769	0,06536 (*)
Basic Materials	1,2669	0,2053
Industrial Goods	-1,8704	0,06214 (*)
Non-Cyclical Consumption	-2,1535	0,03567 (**)
Cyclic Consumption	-2,2553	0,02421 (**)
Health	-2,3162	0,02134 (**)
Information Technology	-4,767	0 (***)
Communications	-1,4663	0,1432 (**)
Public Utility	3,8758	0,0001(***)

Note: Data significant at: * 10%; ** 5%; *** 1%.

Source: Prepared by the authors.

4.2 Model EVALUATION USING QUANTILE REGRESSION

As seen in the previous section, sectors have different dividend distribution, that is, there are sectors, such as Public Utilities, Communications, Industrial Goods and Basic Materials, which have higher dividend yield, while sectors such as Information Technology, Healthcare and Consumer Cyclical have lower dividend yield. Thus, through the Quantile Regression method, it is expected to capture how the different variables selected as potential determinants of the dividend policy affect the companies studied given their sectors of operation.

For better organization and visualization purposes of the quantile regression models, only the significant coefficients will be presented below, considering the entire sample; and the regression signs per sector. In addition, the analysis will be performed ceteris paribus on the characteristics identified as potential drivers of dividend policy. Nevertheless, only the signs of the significant variables considering a significance level of up to 5% were represented. Table 5 below presents the results:

Table 5

Result of the estimations for the whole sample

Caracteristics	*Proxy*	1Q	2Q	3Q	4Q
Profitability	LPA	+	+	+	+
	ROA	+	+	+	+
	ROE		+	+	+
	ROIC				
Growth Opportunities and Indebtedness	CAPEX				
	ENDB	-		-	-
	ENDL				
	ALAVC				
Liquidity	LIQC	-		+	+
	LIQG	-		+	+
Control	CONC	-	-	-	-
Risk	BETA			-	-
Size	LNAT	+	+	+	+
Corporate Governance	DSEG	+	+	+	-
Macroeconomic	PIB	+	+	+	+
	CDI	-	-	-	-
	CAMB	-	-	-	

		INCT			
Additional Information	Constant	+	+	+	+
	Dummy Year	No	No	No	No
	Dummy Sector	Yes	Yes	Yes	Yes
	Observations	6164	6164	6164	6164
	Companies	527	527	527	527

Note[1]: 1Q, 2Q, 3Q and 4Q refer to the quantiles 0.25; 0.5; 0.75 and 0.9 used in the estimations.
Note[2]: The "+" and "-" signs represent the signs of the estimates of the determinants
Note[3]: Sign-filled quantiles represent significance up to 5%.
Source: Elaborated by the authors.

From the analysis of Table 5, it can be seen that the characteristics identified as drivers of the companies' dividend policy were significant in most quantiles considering the entire sample, corroborating other results found in the literature. Nevertheless, the characteristics linked to indebtedness were not so effective, where only ENDB had significance in quantiles 1Q, 3Q and 4Q, showing that the dividend policy may not be so linked to leverage. These findings, however, support the argument of Lintner (1956), where he detected that corporate managers first set the dividend policy of companies as a sign of growth, and then adjust other policies, such as investments, indebtedness, and cash maintenance. Although there is evidence in this sense, when observing only the gross indebtedness, we have that it refers to all the third- party capital that makes up the liabilities of companies, and therefore, it is a sign of short and long term obligations, therefore, in this sense, it is expected that a higher indebtedness significantly reduces the dividends of companies, a result found both for lower levels of distribution (1Q) and for higher levels (3Q and 4Q).

Specifically regarding the risk, measured by the Beta of the companies, it can be seen that this is significant only in quantiles 3Q and 4Q. In this case, an increase in systematic risk can impact companies due to several factors, such as increases in interest rates, exchange rates, input prices, among others, causing the managers of companies that distribute higher levels of dividends to prefer the retention of capital in order to maintain cash in the company to deal with economic adversities.

As for the variable related to shareholder concentration, measured by CONC, it is significant in all quantiles, with a negative effect. This result points to strong evidence that the control of companies concentrated in the hand of a few shareholders with voting rights have incentives to distribute lower yields in dividends, since there may be a consensus to opt for the reinvestment of capital in the company itself, benefiting shareholders in the future with a capital gain higher than the yield in dividends, as pointed out by Harada and Nguyen (2011).

Regarding the variable differentiated levels of corporate governance, DSEG, it is observed that this presents a positive and significant relationship until the quantile 3Q and negative in the quantile 4Q. Considering that belonging to the highest levels of corporate governance imposes a series of restrictions on the company's structure in the stock market, with measures that, for example, restrict the concentration of capital, limit management, impose the disclosure of relevant information to the market, and avoid the expropriation of minority shareholders, belonging to differentiated levels of governance may somehow contribute to the yield of dividends, in companies that are still at the lowest levels of these indicators, which can be explained by the fact that many companies are still in the growth phase and have a need for reinvesting their profits. Moreover, the results found are

similar to the findings of Forti et al. (2015) and Galvão et al. (2019), in which the lack of consensus on the positive or negative effect of belonging to differentiated corporate governance levels' on the listed companies' dividend policy is highlighted.

For the profitability related variables, it is observed that only ROIC was not significant in explaining dividend policy, while EPS and ROA and ROE are significant and positive in all quantiles except regarding to ROE's quantile 1Q. On EPS, the results indicate that firms with higher earnings per share have higher dividend yields. This relationship was expected, since a greater realization of profits in the period allows for the distribution of more dividends. Similarly, the variables ROA and ROE show the same behavior, that is, they contribute with higher yields in companies that historically already distribute higher dividends compared to the market price of their shares. This result was expected, since these indexes are proxies of efficient management and good financial health of the companies, which ends up resulting in higher gains for the shareholder.

Regarding the size of the companies, measured by LNAT, we observed that it was significant in all quantiles, which shows us that the larger the company, the higher the dividend yield paid, regardless of the sector. These results are in line with extensive international and national literature, such as Fama and French (2001), Forti et al. (2015), Viana Junior et al. (2017) and Dang et al. (2020). In this case, as companies grow, it is expected an increase in dividends paid because there is a greater stage of maturity due to growth, which reduces the need for reinvestment and allows a greater distribution to shareholders as a form of remuneration for invested capital.

For the variables related to liquidity, LIQUIC and LIQUIG had similar behavior, with negative effect in 1Q and positive effect in quantiles 3Q and 4Q. In this case, liquidity indicators are used to measure a company's financial health, as they represent its ability to meet its obligations in the short term (LIQUIC) or long term (LIQUIG). Thus, although the first quantile is marked by companies that did not distribute dividends throughout the sample studied, it is expected that an increase in liquidity will positively impact dividend distribution. Thus, as observed in the higher quantiles, a positive result demonstrates a more robust financial health, which allows for a higher dividend distribution to shareholders. Nevertheless, a possible explanation for the negative effect in 1Q, in general, is in the lag of the companies' investments, that is, an increase in liquidity can be the result of investments in the previous period or in the reduction of debts in the same period, which results, in both cases, in the decrease of available cash resources in the short term and, therefore, means the absence of dividends.

Finally, it can be seen that macroeconomic characteristics are relevant to the dividend policy of companies, where CDI has a negative effect in all quantiles, GDP has positive effects in all quantiles and EXCHANGE has a negative effect in quantiles 1Q, 2Q and 3Q. Regarding the exchange rate, we can identify that companies with smaller distributions are subject to exchange rate fluctuations in a negative way, according to the findings of Bernardelli and Bernardelli (2016). In this case, the authors found evidence that the stock market as a whole contract as the exchange rate increases, which mainly affects smaller firms, which has a direct impact on dividend distribution. For GDP, one has that an economic growth in the country is also a result of the growth in profitability of the largest companies, which leads to positive impacts on the distribution of results. All the significant results found

for this category are in line with what was expected by Holanda and Coelho (2012) and Bernardelli and Bernardelli (2016), who observed similar relationships in their work.

4.3 Analysis of the Dividend Yield Model by Sector

As noted during the analysis of descriptive statistics and based on the results of the previous section, it is not possible to generalize the effects of the determining characteristics for the dividend policy for the company. We must to consider their peculiarities by sector of operation, since they present different characteristics and dividend yields, as pointed out earlier. Thus, the Figure 1 below presents the results of the estimates of the potential determinants of the dividend policy for the companies for each sector of operation.

Sectors	**Oil**				**Basic Mat.**				**Industrial**				**Non-Cyc. Cons.**				**Cyclic Cons.**				**Health**				**Inf. Tecno.**				**Communic.**				**P. Utility**			
Proxy	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
LPA																		+	+	+									+	+	+	+			+	+
ROA							+	+					+	+	+												+	+		+	+	+			+	+
ROE							+	+													+	+	+	+	-	-	-	-								
ROIC															+	+	+	+	+	+							-	-					+	+	+	
CAPEX			-								-	-	-				-	-			-	-					+	+					-	-		
ENDIVB																						+	+	+	+		+	+		-	-	-	-	-	-	
ENDIVL	-	-	-	-			+	+	-	-	-	-	+																							
ALAVANC		+	+	+						+	+	+			-		-	-	-	-							+	+								
LIQUIC				+	+	+	+	+					+	+	+	+	+	+	+	+	+	+	+	+				+					+	+	+	+
LIQUIG			-	-	+	+	+	+					+	+	+	+	+	+	+	+	+	+	+	+							+		+	+	+	+
CONC	-	-	-	-	-	-	-		-	-	-	-					-		+	+	+	+	+			+	+	+			+	+	-	-	-	-
BETA	-		+						-		+				+						-	-	-				-							-		
LNAT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+	+					+	+	+	+	+	+	+	+	+	+	+	+
DSEG					+		+						-	-	-			-						-	-	-	-	-			-	-	-	+	+		-
PIB	+	+	+	+	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+				+	+	+	+	+	+	+	+	+
CDI	-	-	-	-		-	-	-	-	-	-	-		-	-	-		-	-	-	-	-	-					-		-	-	-				
CAMBIO				+	-	-						+							-	-								-								
INCERT			-	-							-	-							-	-										-	-					
Constant	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+			+	+	+	+	+	+				+	+	+	+	+	-		+	+
Dummy Year	Yes				Yes				Yes				Yes				Yes				Yes				Yes				Yes				Yes			
Dummy Sector	No				No				No				No				No				No				No				No				No			
Observations	191				1145				1100				594				1577				220				99				320				918			
Companies	16				99				88				62				129				25				9				36				63			

Figure 1 – Estimation results by sector
Source: elaborated by the authors

Based on the Figure 1, one can observe that the behavior of the variables selected for the study are diverse in some aspects. The estimations present different results for each sector, reinforcing that the particularities of financing needs, capital structure, indebtedness and other aspects are different, which directly influences the distribution of dividends.

Thus, it was identified that systematic risk, as measured by BETA, was not a good predictor for determining the Dividend Yield for most sectors at most quantiles. However, for the Healthcare sector this was significant at quantiles 0.25; 0.5 and 0.75 , which demonstrates that consistently systematic risk is a reducer of dividend yield. Furthermore, for the Industrial Goods and Oil sector, risk is a positive factor at the 3Q quantile, which goes against what is expected by the literature, because historically, the risk associated with the business and the economy is tied to the payment of dividends by companies. In this sense, since the positive results are linked to the higher levels of distribution, there is evidence that is close to the work of Brennan (1970), where evidence was found that at a higher level of risk

investors may require a higher return for their investments, in this case, through remuneration in dividends.

For shareholder concentration (CONC), we can see that it has a positive or negative relationship, depending on the sector. For sectors with negative effects, that is, in which shareholder concentration reduces the Dividend Yield, we observe that these are capital- intensive sectors, which have companies with state participation and are heavily regulated, in addition to being sectors focused on the production of capital goods in the economy. We can identify that in these sectors there is a negative influence in almost all quantiles, which shows that shareholder concentration is consistently a reducer of dividend distribution in these sectors.

On the other hand, a positive effect is observed in sectors linked to the consumption of goods and services in general, such as the Cyclical Consumption sector, Health, Information Technology and Communications. Thus, this effect is positive especially in the higher quantiles, which shows that shareholder concentration increases the dividend distribution of firms in this sector. As argued by Zhou et al. (2016), an increase in dividend policy by firms helps to reduce the agency problem caused by shareholder confrontation, that is, distributing more dividends signals to minority shareholders the interest of the controllers to remunerate them for their investment.

For the size-related variable, measured by LNAT, it was found to be positive and significant at all quantiles for all sectors, except for the Health and Non-cyclical consumption sector. In general, as argued earlier, larger firms have a greater tendency to pay more dividends than growing firms, because smaller firms' objectives are geared towards expansion and consolidation, while larger firms tend to be more stable and well consolidated in the market. In this sense, this study provides strong evidence that size is a determinant of corporate dividend policy for virtually all sectors of the economy.

Regarding the variables related to growth opportunities and indebtedness (ENDB, ENDL, ALAVC and CAPEX), distinct relations are perceived depending on the sector. On the one hand, we can understand that the growth opportunities seen by the companies generate an increase in expenses, either through debt or the use of the company's cash, which reduces the accumulation of capital. Thus, in both cases, companies are more likely to accumulate capital, as a guarantee to shareholders for the payment of debts, loans, and investments, reducing the level of dividend payments. On the other hand, as Jensen (1989) stated, the relationship between leverage and dividends are complementary agency control mechanisms, that is, higher levels of leverage are associated with higher dividend payments as a way to limit the power of managers over profits. In addition, there is an interesting pattern where ENDB and ENDL are not significant simultaneously for each sector. This pattern is interesting because it shows that the debt and capital structure of firms in each sector function in different ways.

In this sense, it is ascertained that in the Oil and Industrial Goods sector the ENDL was negative and significant in all quantiles, besides ALAVC presenting positive coefficients in quantiles 2Q, 3Q and 4Q. In this case, the two sectors have a common characteristic: they are sectors that require a high investment in capital and that take time to have a return. Thus, because this variable expresses the portion of debt that is not covered by the companies' cash, this factor is

determinant for the reduction of the dividend policy as a form of control over the companies' available capital. Still, possibly because it propitiates the expropriation of the creditor, either by being a cheaper resource or even by generating tax benefits, leverage has positive effects. In this sense, the findings found here are similar to the work of Anton (2016) in which there is evidence that leverage is positively related to the level of profit distribution.

On the other hand, it is evident that the Information Technology sector has positive relations with the characteristics of indebtedness. A possible explanation for this fact lies in the structure of these companies, which have cash flows mostly focused on perpetuity and therefore are indebted over time through third-party capital to maintain growth. It also highlights the fact that the shareholder when investing in this type of company expects some kind of return, which may be through dividends. In this sense, this result provides evidence that indebtedness, for this sector, can be a determining characteristic for the increase in dividends.

As for the profitability variables (EPS, ROA, ROE and ROIC), we can identify that for the Basic Materials, Non-Cyclical Consumption, Cyclical Consumption, Health, Communications and Public Utilities sectors these variables had, to some extent, a positive influence on the increase of the dividend distribution of the companies depending on the estimation quantile. On the other hand, it can be seen that in the Information Technology sector there is a negative influence of ROE and ROIC.

In this case, a positive effect is expected since, as they argue Labhane and Mahakud (2016), firms with high profitability would be willing to pay more dividends, since they indicate good efficiency and management of firms' resources. Thus, a possible explanation for the negative findings in the Information Technology sector lies in two characteristics common to the sector: the low return margins due to the need for reinvestment in the company itself, and the strong correlation of the sector with the external scenario (especially with the North American and Chinese technology markets). Furthermore, we noticed that, in general, when significant, the profitability variables show positive effects in most quantiles for each sector.

As for liquidity variables, with the exception of the Oil sector, which showed significant relations in quantiles 3Q and 4Q for LIQG, the Basic Materials, Non-Cyclical Consumption, Cyclical Consumption, Health and Utilities sectors showed significant positive relations in all quantiles. In this case, the general liquidity indicator represents the ratio between current assets and long-term receivables in relation to their liabilities, which demonstrates the financial health of the companies. Thus, an increase in liquidity represents better conditions, which allows for an increase in the dividend policy of companies in these sectors. Furthermore, the Communications and Consumer Cyclical sectors were the only ones to present consistent relations with LIQC, which considers only the relations between assets and liabilities, without taking into account the realizable profits or the debt structure. Thus, it can be considered a not so efficient predictor to measure the Dividend Yield level of companies. In addition, a possible explanation for the negative effect of liquidity on dividend distribution for the Oil sector is in the findings of Forti et al. (2015), where they state that there is an optimal liquidity structure of companies, which at a certain level starts to have negative effects on their dividend policy .

Regarding the macroeconomic variables, GDP was highly significant, not being a good predictor only for the Information Technology sector, where only the 4Q quantile showed significance. The CDI also proved to be a good predictor, being significant in most quantiles of practically all sectors, except for Information Technology and Public Utilities. CAMBIO was significant in the 4Q quantiles of the Petroleum and Industrial Goods sectors, while it showed negative effects in different quantiles for the Basic Materials, Consumer Cyclical and Information Technology sectors. Finally, INCERT showed negative effects in the 3Q and 4Q quantiles for the Petroleum, Industrial Goods, Cyclical Consumption, and Communications sectors.

Since these are economic variables, they tend to have similar behaviors over time, that is, a GDP growth is correlated to periods of economic prosperity and liquidity, with lower interest rates and strong exchange rates. Despite this, looking ceteris paribus at the effect of each of these indicators on the results, we have strong evidence that a growth in the GDP determines an increase in the dividend policy of Brazilian companies, since it allows us to infer that there was greater consumption, greater production of goods and services, greater exports, etc., which directly benefits the companies. However, as observed, only the Basic Materials sector presents a contrary relationship, with a negative effect in all quantiles. According to Cunha (2020) which studied how the economic growth measured through the GDP relates to the decision of retention or distribution of profits of publicly traded companies in Brazil during economic cycles, the Basic Materials sector has a negative relationship with the economic cycles, in which the companies of this sector in boom cycles prefer to retain profits for future provisions, which corroborates the findings of this study.

When we look at the CDI, on the other hand, we have that it represents a retraction in the level of economic activity, as it expresses a brake on consumption, the increase in companies' capital costs, reflects on exports and imports, reduces the circulation of currency, in addition to the flight of capital from variable income investments to the fixed income ones. Thus, in periods of rising interest rates, a reduction in the companies 'dividend policy is expected, according to the findings presented in Figure 1.

The exchange rate was significant for 4Q in the Oil and Industrial Goods sectors. These two sectors are characterized by exporting and dollarized companies, that is, that have revenues in foreign currency. In this case, an increase in the exchange rate can benefit these companies, since an increase in the Real x Dollar ratio increases their revenues and, consequently, can result in higher profits. In this sense, higher profits can mean higher dividends, an idea corroborated by the variable related to earnings per share also being significant at the 4Q quantile for both sectors.

Finally, for the variable that indicates membership in the differentiated corporate governance segments (DSEG), one can identify that it presents significant and negative relationships in a good part of the quantiles of the Noncyclical Consumption and Communications sectors, while it presents significant relationships in all quantiles of the Information Technology sector. For the Basic Materials and Public Utilities sector, this variable presents positive relations in the lower quantiles and negative relations in the higher quantiles. According to Galvão et al. (2019), there are several studies that seek to measure the effects of corporate governance practices and their impacts on the various characteristics

of firms, that is, how the adoption of governance mechanisms impacts investment and financing decisions, structure and market value. In this sense, there is no consensus within the literature on the effects of corporate governance on dividend distribution, where there are arguments in favor, as in Souza et al. (2016) and authors who have found negative relationships, such as Forti et al. (2015). Thus, counting that for the entire sample corporate governance proved to be effective and positive and in the division by sector does not present consensus, the results point to the need for further research on this issue to discuss possible causes for the positive or negative effects in relation to this aspect.

5 CONCLUSION

The study on the determinants of the dividend policy of companies is widely spread within the scientific literature on the subject, which seeks to highlight the importance of certain relative characteristics, as well as their consequences for companies and for investors in general. In this sense, determining how profits are distributed is a topic of utmost importance, since it is not only about how much investors will receive, but also about how much of the profit will remain in the hands of managers and how they will be used.

Thus, the objective of this study was to investigate the determinants of the dividend policy of Brazilian listed companies, also evaluating these determinants by sector of operation through a method little used in finance, the quantile regression. With this, we sought to fill three gaps on the subject. The first concerns the statistical validation of the difference between the sectors in terms of Dividend Yield, where the tests indicate significant differences between the sectors compared individually against a joint sample, which shows the need for further studies to assess these differences. The second refers to the use of the method itself, which is little explored in the area and becomes interesting for the evaluation of the dividend policy because the estimations are made based on sample quantiles, being a robust method to the presence of outliers and heteroscedasticity. Since part of the sample has a Dividend Yield equal to zero, which represents observations of companies that did not distribute dividends, and another part is expressed by companies with high Dividend Yield, estimates by traditional methods may be biased and underestimated, problems that are circumvented by quantile regression. Furthermore, given that the potential determinants of dividend distribution may present positive or negative impact, the models estimated through this method are more consistent, since the response of each quantile in relation to the set of potential determinants evaluated is observed. The third gap concerns the individualized evaluation by sector. Previous studies use several determinants linked to governance, investments, risk, indebtedness, size, among other characteristics, to evaluate the dividend policy of Brazilian companies, but do not take into account the fact that each sector presents its own particularities around these issues. Thus, when evaluating the models with the inclusion of these variables individually, it was possible to observe that some factors are explanatory in certain sectors, explaining similar behaviors for sectors with similar capital structures.

To this end, the final sample included 527 companies divided into 9 sectors, according to B3, organized into an unbalanced panel, with annual data between 1996 and 2020, totaling 6164 observations. The period studied is justified because in 1995 the Real Plan was instituted, which provided a stabilization of the

hyperinflation present in the country, in addition to the institution of the form of remuneration to shareholders through Interest on Equity. All data collected was taken from the Economática® platform.

In relation to the estimations made for the entire sample, sector dummies were used to control for effects related to each sector. The results found indicate that size, earnings per share, return on assets and GDP are significant and have positive effects for all quantiles, showing that consistently these factors are determinants for the increase in corporate dividend policy. Moreover, corporate governance has positive effects in companies that distribute fewer dividends, with a marginal effect reduced as we include companies with higher levels of distribution, where it becomes negative, which may indicate a maximum point. Additionally, it is noteworthy that the variables related to shareholder concentration and CDI were significant in all quantiles, having negative effects on dividend policy. Finally, gross indebtedness, general and current liquidity and exchange rate were significant in almost all quantiles, indicating that these indicators can have an impact on dividend policy, with positive effects (general and current liquidity in quantiles 3Q and 4Q) or negative effects (gross indebtedness in quantiles 1Q, 3Q and 4Q and exchange rate in quantiles 1Q, 2Q and 3Q). The other variables chosen for the study did not prove to be effective in explaining the dividend policy of the firms.

For the results concerning to each sector, dummies for each year were used to control for time effects. The main results indicate that in general, asset size is positive and significant for most quantiles in all sectors, except Health. In addition, the macroeconomic variables GDP, CDI and Exchange Rate performed well to explain the dividend policy of the companies, and the signal found in most cases was in accordance with what is expected by the literature. The control characteristics related to indebtedness, liquidity, risk and profitability present different relations for each sector, indicating that these sectors have particularities that impact the decision to distribute dividends. In addition, relations were found for sectors that are close in terms of capital structure and investment needs. Finally, the characteristics related to shareholding control and belonging to differentiated segments of corporate governance suggest signaling effects on dividend policy depending on the sector of operation.

Thus, the present study achieved its objective by showing that companies belonging to different economic sectors also have significant differences in their dividends, also affecting the determinants that help explain the distribution policy. Furthermore, it is worth mentioning that the results found contribute to deepen the discussions about the dividend distribution policy of Brazilian companies through different perspectives, with the use of a methodology little explored in the literature, which allowed us to have a different look at the theme. Thus, this different view at the dividends and their determinants, within the of distinct levels of profit distribution, acts as a piece to solve the puzzle proposed by Black (1976), that is, through a methodology little explored in the literature, we seek to shed new light on the effect of the dividend policy in companies.

As an additional contribution, this study helps in individual investment decision making, where it is possible to determine between more conservative profiles, focused on dividends, or aggressive, focused on growth, helping in the constitution of a portfolio, especially a pension one, which ends up being more directed towards stocks with higher Dividend Yields, most of the time.

As a limitation of this study, we have the use of the same variables to identify the determinants of the dividend policy for all sectors, and, in this case, it was shown that they have some particularities. Finally, as a suggestion for future research, a similar study can be proposed for the financial sector itself, considering its specificities during the estimations.

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AUTHORS' CONTRIBUTIONS

Contributions	Diego Reis Chain	Flávia Vital Januzzi
1. Idealization and conception of the research subject and theme	✓	✓
2. Definition of the research problem	✓	✓
3. Development of Theoretical Platform	✓	
4. Design of the research methodological approach	✓	✓
5. Data collection	✓	
6. Analyses and interpretations of collected data	✓	
7. Research conclusions	✓	
8. Critical review of the manuscript	✓	✓
9. Final writing of the manuscript, according to the rules established by the Journal.	✓	
10. Research supervision		✓