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Profitability and voluntary disclosure of Brazilian equity companies

Rentabilidade e disclosure voluntário das empresas acionárias brasileiras

Rentabilidad y divulgación voluntaria de las empresas de capital brasileño

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ABSTRACT
This article verified whether profitability positively influences companies' voluntary disclosure level. To achieve the objective of this article, a Multiple Linear Regression (MLR) Analysis was used with fixed effect panel data, from all non-financial companies of B3 (Brazilian stock exchange), being 527 companies from the period from 2010 to 2018 (nine years), generating a total initial sample of 4,743 observations. Based on the results of the econometric model, we found that higher profitability is associated with lower voluntary disclosure levels of B3 listed companies. This evidence contradicts the hypothesis of the literature, that indicates a positive relationship between profitability and voluntary disclosure.
Keywords: profitability; voluntary disclosure; indebtedness; firm size; equity liquidity.

RESUMO
Este artigo verificou se a rentabilidade influencia de forma positiva o nível de *disclosure* voluntário das empresas. Para alcançar o objetivo deste artigo, foi adotado a técnica de Análise de Regressão Linear Múltipla com dados em painel de efeito fixo, de todas as empresas não financeiras da B3, sendo 527 empresas do período de 2010 a 2018 (nove anos), gerando uma amostra inicial total de 4.743 observações. Com base nos resultados do modelo econométrico, constatou-se que quanto maior for a rentabilidade, em média, menor será o nível de *disclosure* voluntário das empresas listadas na B3, evidência que contraria a hipótese da literatura, que sinaliza uma relação positiva da rentabilidade sobre o *disclosure* voluntário.
Palavras-chave: rentabilidade; *disclosure* voluntário; endividamento; tamanho das empresas; liquidez acionária.

RESUMEN
Este artículo verificó si la rentabilidad influye positivamente en el nivel de divulgación voluntaria de las empresas. Para lograr el objetivo de este artículo, se utilizó la técnica de Análisis de regresión lineal múltiple con datos en un panel de efectos fijos, de todas las compañías no financieras de B3, siendo 527 compañías del período de 2010 a 2018 (nueve años), generando una muestra inicial total de 4.743 observaciones. Con base en los resultados del modelo econométrico, se encontró que cuanto mayor es la rentabilidad, en promedio, menor es el nivel de divulgación voluntaria de las empresas que figuran en B3, evidencia que contradice la hipótesis en la literatura, lo que indica una relación positiva de rentabilidad sobre divulgación voluntaria.
Palabras clave: rentabilidad; divulgación voluntaria; endeudamiento; tamaño de las empresas; liquidez de capital.

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1 INTRODUCTION

Providing useful information to decision-makers is part of accounting's scope (Horvat & Mojzer, 2019; Mihaylova & Papazov, 2018; Tulvinschi, 2019). According to Hendriksen and Van Breda (2016), the main purpose of disclosing financial reports is to support shareholders and other stakeholders in decision-making, with a focus on information transparency. This disclosure process, including non-mandatory information, contributes to reducing information asymmetry, adverse selection, moral hazard, and transaction costs (Bezerra, Lustosa, Sales & Fernandes, 2015).

Regarding voluntary disclosure, literature has developed different hypotheses based on several theories to explain the discrepancy in the disclosure level (Elfeky, 2017). Rouf and Akhtaruddin (2018), and D'Angelo, El Gazzar and Jacob (2018) report that one of the reasons for a company to disclose information is because problems of information and incentive hinder the efficient resource allocation. Additionally, disclosure is considered an important means for the company's management to communicate with external investors about performance and governance aspects.

Voluntary disclosure can be seen through the lens of the Signaling Theory. According to this theory, company management sends signals to the market to mitigate information asymmetry problems such as adverse selection and moral hazard (Klann & Beuren, 2011; Elfeky, 2017). In this perspective, managers tend to disclose positive information about the company if the benefits generated by such disclosure are greater than the underlying costs (Murcia & Santos, 2009).

The results found in the literature show that profitability ratios are the most popular types of information disclosed by companies (Haddad, Shibly & Haddad, 2020). Companies voluntarily disclose information to signal their growth potential to the market (Louie, Ahmed & Ji, 2019) - the company's profitability is a useful indicator to that purpose. Therefore, profitability is usually associated with the voluntary disclosure level. As Rouf and Akhtaruddin (2018) point out, firms' profitability is positively and significantly correlated with voluntary disclosure. This view is corroborated by Aly, El Halaby and Hussainey (2018) that found that Egyptian companies tend to benefit from a positive relationship between profitability and the level of voluntary disclosure.

Even though this is a hot topic, literature on voluntary disclosure practices in emerging countries is scarce (Zaini, Samkin, Sharma & Davey, 2018). Thus, this research analyzes evidence in the Brazilian market about the practice of voluntary disclosure, based on the understanding that companies with high profitability tend to voluntarily disclose this type of information to generate good expectations to the market and avoid the cost of a poor interpretation in the case of non-disclosure. In this sense, we propose this article's research question: does profitability positively influence companies' voluntary disclosure level?

Based on this question, this article's objective was to assess whether profitability positively influences companies' level of voluntary disclosure. This research is justified based on the lack of a deep understanding of the relationship between profitability and voluntary disclosure in emerging countries (Zaini et al. 2018). This gap can be seen in the divergent and non-significant results found on the theme in Brazil (Murcia & Santos, 2009; Klann & Beuren, 2011; Angonese, Sanches & Bezerra, 2014; Consoni & Colauto, 2016).

Our results diverge from the hypothesis proposed in this research, indicating that companies with higher profitability have a lower voluntary disclosure level. This result represents an opportunity for new studies and discussions towards theories that provide a better understanding of the voluntary disclosure theory.

Our research's theoretical contribution lies in providing a more in-depth and robust analysis of the literature on voluntary disclosure and its relationship with profitability. Additionally, we analyze this relation through a more comprehensive sample than that used by current literature on the field, once most research is limited to a small sample. Our study also differs from current literature by employing a Voluntary Disclosure proxy based on primary data with 4743 observations. Thus, based on a comprehensive sample with all B3 non-financial companies and an approach that demands a long time to be measured and collected, our research provides results with greater predictive power and reliability.

Our research also provides practical contributions, as empirical evidence on the relationship between profitability and voluntary disclosure can be leveraged by individuals who use the information disclosed by companies listed on B3, especially investors, to make efficient investment decisions and other managerial decisions.

The remainder of the article is organized as follows: (2) Theoretical Background: we address the relevant aspects related to the article's theme based on the current literature; (3) Methodology: describes how research data were collected and analyzed, as well as the other relevant aspects related to the quantitative research methodology; (4) Analysis and Discussion of Results: we present the Descriptive Statistics and Multiple Linear Regression Analysis with a fixed effect panel data, of all non-financial companies of B3, with 527 companies from the period between 2010 and 2018 (9 years). (5) Final Considerations: this section provides conclusions about the results found, as well as the contributions to the research development on the phenomenon studied, in addition to recommendations for future research.

2 THEORETICAL BACKGROUND

2.1 Profitability and Voluntary Disclosure

The idea of disclosure addresses the publishing of qualitative or quantitative accounting information, either

compulsory or voluntary, that provides accurate and useful information for decision-makers (Lopes & Alencar, 2010). Similarly, Frenkel, Guttman, and Kremer (2020), and Acar and Okzan (2017) propose that disclosure is an important mechanism for accounting information quality, which has gained importance in recent years within the accounting research field.

A detailed discussion on the topic was proposed by Verrecchia (2001), who presents three (or four) broad categories of study. The first is composed of association-based disclosure studies, which address the association between investors' behavior and disclosure. The second category consists of discretionary-based disclosure, which seeks to establish the reasons for disclosure by investigating the reasons that lead companies or managers to disclose certain information.

The third category encompasses efficiency-based disclosure studies, which seek to investigate which information is preferred and most efficient, before disclosure. Finally, there is also the relationship between information retention and managers' motivation for disclosure. In this regard, the market assimilates the omitted information's content and, when it does not match managers' intention, it is defined as the disclosure level threshold (equilibrium point).

In this study, we consider discretionary-based disclosure following the classification of Verrecchia (2001), or voluntary disclosure theory, as established by several authors, which assumes that managers have incentives to voluntarily disclose (or not disclose) information (Klann & Beuren, 2011; Rufino & Monte, 2015). Disclosures should happen voluntarily if the benefits generated by such disclosure are higher than the underlying costs (Murcia & Santos, 2009).

However, not all companies will have high levels of voluntary disclosure. Haddad et al. (2020) highlight that the voluntary disclosure of accounting indices provided in the manufacturing companies' annual reports in the Gulf Cooperation Council was considered extremely low. A possible explanation for that may lie in the contractual theory of the firm. Under this perspective, accounting information is responsible for monitoring contracts and, consequently, mitigating information asymmetry and transaction costs. On the other hand, although the increase in voluntary disclosure improves agent monitoring, it tends to increase agent remuneration costs (Hermalin & Weisbach, 2012). Thus, the increase in disclosure generates an increase in transaction costs that, in the end, can overcome the benefits of disclosure and destroy firms' value (Hermalin & Weisbach, 2012).

Researchers have sought to identify variables related to companies' voluntary disclosure. Tsang, Xie, and Xin (2019), for example, reported that foreign investments lead to increased voluntary disclosure. Additionally, they found that foreign investments have a greater impact on voluntary disclosure than national investments. Guttman and Meng (2020) showed that companies' ability to disclose or omit

voluntary information could affect their investment decisions. While Cassar, Gerakos, Green, Hand, and Neal (2018) point out that investors' agency costs influence voluntary disclosure.

Among these discussions, research has widely argued that companies' profitability level can influence voluntary disclosure by managers or companies. For Salotti and Yamamoto (2008), this variable fits the concept of adverse selection, since companies with better financial performance have greater incentives to disclose such performance. Otherwise, non-disclosure could lead the market to infer that the performance was unsatisfactory. Consequently, investors may not select a good investment option due to the non-disclosure of information.

In this sense, Alsharari and Alhmoud (2019) and Rouf and Akhtaruddin (2018) argue that there is a positive association between profitability and voluntary disclosure. That is, companies with higher profitability tend to disclose more information to increase investors' information level. Kolsi (2017) and Rufino and Monte (2015) corroborate this argument by stating that companies with higher profitability have greater incentives to disclose information about their financial situation. Therefore, high profitability should be understood by managers as good information. Consequently, managers should highlight with greater emphasis when companies' have greater profitability.

Similarly, Aly et al. (2018) highlight that several companies benefit from the relationship between profitability and voluntary disclosure to signal good economic performance to the market. In this scenario, Félix Júnior, Oliveira, Miranda, Lagiola, and Galvão (2018) and Haniffa and Cooke (2005) also address voluntary disclosure of profitability by relating it to the disclosure of voluntary information. For the authors, companies with higher profitability tend to disclose voluntary information to make their performance evident to the market.

These understandings are in line with the Signaling Theory, which, in a market context, explains voluntary disclosure as managers' attempt to mitigate information asymmetry by signaling the qualities that differentiate their companies from others to the market (Klann & Beuren, 2011; Wardhani, 2019).

2.2 Research Hypothesis Development

In the international context, Acar and Ozkan (2017) tested the hypothesis that there is a difference in companies' corporate governance structure that recognize provisions. The study analyzed 191 non-financial companies listed on BIST (*Borsa Istanbul*), the Turkish stock exchange. The results showed that the companies that recognize provisions have a larger board of directors, and 62% of the observations recognized provisions. Among these companies, from 2005 to 2010, only 32% provided IAS 37 information with full disclosure requirements (post-IFRS).

In this same scenario, Acar and Ozkan (2017) state that the corporate governance structure impacts financial reporting, given the importance of corporate governance in

reducing information asymmetry and agency conflicts. Consequently, corporate governance positively influences financial information disclosure and the quality of this disclosure. Allaya, Derouiche and Muessig (2018) highlight that companies with greater voluntary disclosure have more long-term debts, suggesting that companies benefit from an extensive disclosure through greater access to long-term debt.

Regarding the relationship between profitability and companies' voluntary disclosure level, Bhatia and Dhamija (2015) investigated the relationship between the voluntary disclosure of financial indicators with the performance of companies listed on the Indian stock exchange. Among the indexes studied, profitability showed a negative relationship with disclosure, however, it was not significant. Nevertheless, Kolsi (2017) showed that profitability positively affects companies' voluntary disclosure in Arabia, which can help investors in decision-making and lead to a fair resource allocation.

Additionally, Alsharari and Alhmoud (2019) and Ahmadi and Bouri (2017) highlight the influence of profitability on voluntary disclosure. Within this scenario, through the positive association between profitability and voluntary disclosure, companies seek to make more clarifications to leverage the value that the disclosure of their voluntary information can generate (Félix Júnior et al., 2018). Therefore, a higher rate of voluntary disclosure by companies with higher profitability can improve their organizational performance level.

In Brazil, some studies that investigated the factors that influence voluntary disclosure found a positive, however, not significant association between profitability and voluntary disclosure, such as the studies of Murcia and Santos (2009), and Klann and Beuren (2011). On the other hand, Consoni and Colauto (2016) and Angonese et al. (2014) found a negative association, however, also not significant.

Regarding the relationship between performance-related measures and voluntary disclosure, Haddad et al. (2020), Karajeh, Ibrahim and Lode (2017) and Egbunike and Tarilaye (2017) showed that a higher level of financial leverage and firm size are associated with more voluntary disclosure of accounting ratios. Furthermore, Elfeky (2017) tested a theoretical framework showing a positive significant correlation between firm size, firm profitability, firm leverage, independent directors and auditor type, and the extent of voluntary disclosure of Egyptian companies.

The studies of Rouf and Akhtaruddin (2018), Aly et al. (2018), Elfeky (2017), Rufino and Monte (2015), and Haniffa and Cooke (2005) stand out among the articles that found a positive correlation with statistical significance on the relationship between profitability and the level of voluntary disclosure in literature. However, this relation, that is, profitability versus voluntary disclosure, still needs to be understood in the Brazilian scenario, where research has shown divergent results and no statistical significance,

opening research avenues for further studies of this nature. Thus, we propose the following research hypothesis:

H1: higher profitability is associated with a higher level of voluntary disclosure of companies.

3 METHODOLOGY

3.1 Initial Sample

This study's non-probabilistic sample comprises all B3 non-financial companies, which encompass 527 companies within the 2010-2018 period (9 years), resulting in a total of 4743 observations. We opted to collect data from 2010, since it was the first year of publication of the Reference Form (FR) and 2018, as it was the latest year of available information.

The Reference Form (FR) was instituted by the Securities and Exchange Commission (CVM) through the CVM Instruction NO. 480/2009 and is disclosed annually by companies that issue securities. This instruction was defined as the data source of voluntary disclosure due to its uniform structure, contributing to the comparability of the information disclosed. This document has also set a new standard of mandatory disclosure requirements, which may differ from voluntary disclosure results of previous research (Consoni & Colauto, 2016).

Despite the RF being mandatory, the data considered for creating the voluntary disclosure variable was the information that allowed issuer identification. This procedure is in line with recent national research on the topic (Consoni & Colauto, 2016; Consoni, Colauto & Lima, 2017).

The observable variables (Metrics) were collected with the aid of Economatica Software. Companies from the financial sector were excluded from the sample because they could bias the results, given their specific characteristics not comparable with non-financial companies.

3.2 Dependent variable

Our dependent variable Voluntary Disclosure was collected through content analysis of FR reported on the Brazilian Securities and Exchange Commission website for B3-listed companies for the years from 2010 to 2018. According to Bardin (2010), the content analysis technique consists of procedures of analysis and description of the database researched, which allows the inference of information about the sample studied in the research.

To measure the Voluntary Disclosure proxy, we built a Voluntary Disclosure Index based on the definition of categories and subcategories of the elements that compose the Voluntary Disclosure of companies proposed in the study of Murcia and Santos (2009). The following subcategories were excluded from the original proxy of Murcia and Santos (2009): Statement of Cash Flow, Segment reporting, Foreign Exchange Exposure, and Director's Remuneration. We opted to exclude these elements because the Brazilian Accounting Standards Committee (CPC) made their disclosure mandatory. Thus, such information is no longer considered of voluntary

disclosure. The resulting proxy is composed of 26 items of Voluntary Disclosure, as shown in Table 1.

Table 1

Elements used in the voluntary disclosure proxy

Category	No.	Subcategory
Business Environment	1	Analysis of the company's sector.
	2	Relationship with suppliers.
	3	Customer satisfaction.
	4	Market share.
	5	Identification of business-related risks.
Operational Activity	6	Company's history.
	7	Technological aspects of operation activities.
	8	Production capacity.
	9	Units sold.
Strategic Aspects	10	Firm's future objectives, plans, and goals.
	11	Main operating markets.
	12	Profit reinvestment policy.
	13	Research and development.
	14	Company's main products and services.
	15	Social and/or environmental information
Financial Information	16	Accounting information in US GAAP or IFRS.
	17	Detailed information on product and service costs (COGS, COS)
	18	Stock price or growth (OS, PS).
	19	Market value.
	20	Forecasts (cash flow, sales, profit).
Financial Ratios	21	Profitability indicators (ROE, ROA).
	22	Liquidity ratios (current ratio, quick ratio).
	23	Debt ratios (NL - Liability, CL-LTL).
	24	EBITDA.
Corporate Governance	25	Main corporate governance practices.
	26	Investor relations.

Source: Adapted from Murcia and Santos (2009).

Based on the subcategories described in Table 1, the level of Voluntary Disclosure was calculated by the number of subcategories disclosed by each company, divided by the total number of subcategories (26). Therefore, if a company discloses all 26 subcategories, it will have a Voluntary Disclosure Index of 100%. If a company discloses 13 subcategories, its Voluntary Disclosure Index will be 50%, and so on. Equation 1 describes this approach.

$$DISCV = \frac{\Sigma SD}{TS} \qquad (1)$$

Where:

DISCV = Firm's voluntary disclosure;

SD = Disclosed subcategories (1 if the subcategory is disclosed, 0 if not); and

TS = Total Subcategories (26).

3.3 Independent and control variables

The independent variable of interest analyzed was Return on Assets (ROA). Thus, we expect that more profitable companies will disclose more information to legitimize their existence. Therefore, firms with higher ROA should present a higher level of voluntary disclosure (Elfeky, 2017; Haniffa & Cooke, 2005). The data collection source for this metric was the software Economatica. The variable was calculated through the ratio between the firm's Net Profit and Total Assets.

We also included in the econometric model the five most used control variables by the literature. The inclusion of control variables avoid sample bias and guarantees the robustness of the research's empirical analysis, as shown in Table 2 (section 3.4).

3.4 Econometric model

As shown in Equation 2, we estimated the following econometric model to address this research's objective, which consists of evaluating whether profitability positively influences firms' voluntary disclosure level.

$$DISCV_{it} = \beta 0 + \beta 1 ROA_{it} + \beta 2 CAF_{it} + \beta 3 TAM_{it} + \beta 4 ALF_{it} + \beta 5 LIQA_{it} + \beta 6 LIC_{it} + \varepsilon_{it} \quad (2)$$

The description of the dependent and independent variables used in the econometric model are shown in Table 2.

DISCV was obtained through Equation (1) according to section 3.2. The term "Ɛ" also present in the econometric model, represents unobserved factors that can affect the dependent variable. The Multiple Linear Regression data analysis method was applied with fixed effect panel data, as it is the most appropriate data procedure for continuous dependent variables (Wooldridge, 2002).

The following procedures were adopted for data preprocessing: a) missing values were removed from the

sample with the software Stata since some companies stopped disclosing certain information. Thus, companies that did not disclose any of the variables used in this article were eliminated from the sample; b) to remove outliers from the sample, avoiding potential bias to the results, first, data were rearranged in ascending order, and then 1% of the companies with the lowest and highest values were excluded. After these procedures, our initial sample of 4,743 observations from all B3 non-financial companies from 2010 to 2018 was reduced to a final sample of 2,783 observations.

Table 2
Variables of the econometric model used in the article

Abbreviation	Description	Metric	Source	Expected signal	Literature
		Dependent variable – According to Equation 2			
DISCV	Voluntary Disclosure	Number of voluntary disclosure subcategories disclosed by the firm divided by the total number of subcategories.	CVM		Silva and Onusic (2014)
		Independent variable of interest – According to Equation 2			
ROA	Return on Assets	Ratio of firm's net income and its total assets.	Economatica	(+)	Elfeky (2017)
		Independents variables of control – According to Equation 2			
CAF	Equity financing	Natural logarithm of the number of shares issued by the company.	Economatica	(+)	Wen (2013)
TAM	Firm size	Natural logarithm of the company's total assets.	Economatica	(+)	Dawd (2018)
ALF	Financial leverage	Ratio of total debt (current + non-current liabilities) and total assets of the company.	Economatica	(+)	Lan, Wang and Zhang (2013)
LIQA	Stock liquidity	$LIQ = 100 \text{ x } \left(\dfrac{Z}{P}\right) \text{ x } \sqrt{\left(\dfrac{n}{N}\right) \text{ x } \left(\dfrac{Y}{V}\right)}$	Economatica	(+)	Consoni and Colauto (2016)
LIC	Current ratio	Ratio of current assets to current liabilities of each company.	Economatica	(+)	Assaf Neto (2006)

Source: Elaborated by the authors.

Our study presents a methodological limitation as the measurement of the voluntary disclosure proxy can be a weakness given its subjectivity. This limitation arises from the method used to build this variable - content analysis – which requires a subjective analysis. However, despite such possible arbitrary in constructing any non-measurable variable, several studies in this field have adopted the same criterion for this proxy.

4 ANALYSIS AND DISCUSSION OF RESULTS

4.1 Results of the Econometric Model
4.1.1 Variables' Behavior

Table 3 presents the descriptive statistics that summarize variables' behavior shown in Equation 2. The table describes the number of observations, mean, standard deviation, and the minimum and maximum values of each variable.

Table 3
Variables' behavior – equation 2

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
DISCV	2,783	59.331	15.745	15.000	92.000
ROA	2,783	11.293	88.333	-1,302.624	531.220
CAF	2,783	11.247	2.447	0.000	25.455
TAM	2,783	13.995	2.607	1.791	20.572
ALF	2,783	1.430	16.103	-313.338	620.665
LIQA	2,783	0.149	0.361	0.000	8.370
LIC	2,783	7.447	60.942	0.000	1,718.815

Source: Elaborated by the authors.
Caption: This table of descriptive statistics (according to equation 2) contains the number of observations, the mean, the standard deviation, and the minimum and maximum values of all the variables that compose the econometric model of multiple linear regression with fixed effects panel data within nine years (2010-2018).

Based on Table 3, we found that each variable has a sample 2783 observations in the period between 2010 and 2018 of a 9-year time series sample. The variables DISCV and TAM had the highest means (59.33 and 13.99, respectively), while the variables ALF and LIQA had the lowest means (1.43 and 0.14, respectively). As for the standard deviation, the ROA and LIC variables presented the largest standard deviations (88.33 and 60.94, respectively), whereas CAF and LIQA showed the smallest standard deviations (2.44 and 0.36, respectively). The

variables ROA and LIC showed the highest range between minimum and maximum values (-1302.62 to 531.22 and 0.00 to 1718.81, respectively). The variables TAM and LIQA presented the lowest ranges between the minimum and maximum values (1.79 to 20.57 and 0.00 to 8.37, respectively).

4.1.2 Correlation Matrix and Ramsey's Reset Test

Spearman's correlation matrix of the variables presented in Equation 2 displays the positive or negative correlation between the independent variable of interest and the dependent variable. It also shows the positive or negative correlation between the independent variable and the independent control variables. The results are shown below.

Regarding the existence of a correlation between the independent variables and the dependent variable, we found that the independent variable of interest ROA has a positive correlation with the dependent variable DISCV. This means that when ROA increases, DISCV will also increase. The same occurs for the independent control variables CAF, TAM, LIQA. That is, when the variables CAF, TAM, and LIQA increase, DISCV is also expected to increase. Our findings also show that the independent control variable LIC has a negative correlation with the dependent variable DISCV, which means that DISCV is expected to decrease when LIC increases. Yet, the ALF control variable is not correlated with DISCV.

We found a correlation between the independent variables. The independent control variable TAM showed a positive correlation with the independent CAF control variable of 56.61%. This was the highest correlation found between the independent variables of the correlation matrix. This correlation percentage between the independent variables is within the acceptable limit (closer to 50% than 100%). Thus, we found no signs of multicollinearity between the independent variables present in our econometric model (Wooldridge, 2002). Multicollinearity absence suggests the lack of trends in the econometric model and is among the main tests to validate the assumptions of econometric models used in the literature, which assumes that the model has been properly estimated.

Although the econometric model developed in this article is original, it was estimated based on the main variables used by international and national literature, which were substantiated by prior research. We used Ramsey's Reset Test of model specification to identify any problems associated with the existence of omitted variables in the econometric model. Results show that the econometric model estimated in this article does not suffer from omitted variables, which suggests consistency in the model specification, indicating robustness and reliability in the results found.

4.1.3 Multiple Linear Regression

Table 4 describes the results of the multiple linear regression of fixed effects panel data in equation 2 using a 9-year time series (2010-2018) of non-financial companies listed in B3.

Table 4
Multiple Linear Regression – equation 2

DISCVit = β0 + β1ROAit + β2CAFit + β3TAMit + β4ALFit + β5LIQAit + β6LICit + Ɛit								
DISCV	Beta	Standard Error	t	P> I t I	CI 95 %		Expected Signal	Signal Found
ROA	-0.007	0.003	-2.46	0.014**	-0.014	-0.001	(+)	(-)
CAF	0.183	0.235	0.78	0.437	-0.279	0.645	(+)	(Neutral)
TAM	1.723	0.364	4.73	0.000***	1.006	2.439	(+)	(+)
ALF	-0.025	0.008	-3.20	0.002***	-0.041	-0.010	(+)	(-)
LIQA	-0.076	0.944	-0.08	0.936	-1.933	1.780	(+)	(Neutral)
LIC	-0.0004	0.005	-0.07	0.945	-0.012	0.011	(+)	(Neutral)
CONSTANT	33.113	4.605	7.19	0.000	24.055	42.170		

Sources: Elaborated by the authors.
Caption: This table contains the results of the multiple linear regression from Equation 2. The symbols *, **, and *** indicate that the beta coefficient is significant at the 90% confidence level, 95% confidence level, and 99% confidence level, respectively. This table also presents the expected signals of the Beta coefficient according to the literature and the signals found through the multiple linear regression.

Based on the analysis of Table 4, considering that the p-value (0.014) of the Beta coefficient for the ROA variable was lower than the 5% significance level, then, at the 95% confidence level, the independent variable of interest ROA appears to have a negative significant influence on the dependent variable DISCV. Therefore, a 1% profitability increase leads to a 0.007 decrease in companies' voluntary disclosure level (DISCV) by 0.007. This result suggests that higher profitability leads to lower levels of companies'

voluntary disclosure. This indicates the rejection of the research hypothesis (H1), which predicted that higher profitability levels would cause higher voluntary disclosure levels of companies.

This evidence contradicts the association predicted in previous literature, such as in the research of Rouf and Akhtaruddin (2018), Aly et al. (2018), and Elfeky (2017), who found a positive correlation between profitability and voluntary disclosure. Our results also contradict the

research evidence of Rufino and Monte (2015) and Salotti and Yamamoto (2008), who claim that companies with higher profitability have greater incentives to disclose information about their financial situation.

Among the various approaches that seek to explain the motivations for voluntary disclosure, this research was mainly based on the Theory of Signaling, in which disclosure is a managers' attempt to mitigate information asymmetry by signaling the qualities that differentiate their companies to other in the market (Klann & Beuren, 2011; Wardhani, 2019). Nevertheless, an alternative for understanding the results is by adopting the firm's contractual approach and transaction costs. Under the contractual approach, the firm is seen as a set of contracts that mediate relations between various economic agents (Santos, Calíope & Coelho, 2015).

Under this perspective, increasing the quantity or quality of disclosures can improve contract monitoring and, consequently, promote the reduction of information asymmetry and transaction costs. Nevertheless, the increased monitoring caused by greater disclosure leads to increased agent's compensation costs (Bezerra et al., 2015). Hence, disclosure increases transaction costs that, in the end, can overcome the benefits of such disclosure increase and destroy the company's value (Hermalin & Weisbach, 2012). This may explain why highly profitable companies do not increase their disclosure, even though they have motivations to do so.

On the other hand, in line with this perspective, the fact that profitability is negatively correlated with the voluntary disclosure level suggests the existence of a cost-related issue, where companies with poor profitability must disclose information to send positive signals to the market. Other research also found a negative relationship between profitability and voluntary disclosure, although the effects were not significant (Bhatia & Dhamija, 2015; Consoni & Colauto, 2016; Angonese et al., 2014). This indicates that the field is still open for future research to understand the reasons behind voluntary disclosure.

Additionally, our results show that the independent control variable TAM has a positive significant influence on the dependent variable DISCV. Therefore, when the company increases 1 Brazilian Real (R$) in its total assets, DISCV will increase by 1.723. This evidence indicates that larger B3 listed companies, on average, have higher voluntary disclosure levels. This result corroborates the evidence in the literature, as found in the studies by Haddad et al. (2020), Dawd (2018), Elfeky (2017), and Karajeh et al. (2017), which show a positive relationship between firm size and their voluntary disclosure.

As shown in Table 4, complementary results were also found for the ALF variable considering that the p-value (0.002) of the Beta coefficient for this variable was lower than the 1% significance level. Hence, with 99% confidence, our findings show that the independent control variable ALF has a significant negative influence on the dependent variable DISCV. Therefore, when the company increases its indebtment by 1 Brazilian Real, its voluntary disclosure level

(DISCV) will decrease by 0.025. This result suggests greater financial leverage, on average, leads to lower voluntary disclosure levels of B3 listed companies. This result differs from the hypothesis based on the literature, as evidenced by Lan et al. (2013) and Salotti and Yamamoto (2008), who found a positive relationship between financial leverage and voluntary disclosure.

Finally, in the analysis of the results reported in Table 4, the independent control variables CAF, LIQA, and LIC were not statistically significant, with respective p-values of 0.437, 0.936, and 0.945.

5 FINAL CONSIDERATIONS

This article's objective was to analyze whether profitability positively influences companies' voluntary disclosure level, grounded on the research hypothesis that as profitability increases, companies increase their voluntary disclosure level. To reach this objective, a Multiple Linear Regression econometric model was estimated using fixed effect panel data of all non-financial B3 companies. Data encompassed 527 companies from 2010 to 2018 (9 years), which generated a total initial sample of 4,743 observations.

As a result of the econometric model, described in Equation 2, we found that higher profitability level leads to a lower level of voluntary disclosure by companies. This result rejects the research hypothesis (H1), which proposed that higher profitability was associated with higher levels of companies' voluntary disclosure. Therefore, this research results differ from previous literature, which indicated that companies with higher profitability tend to have higher levels of voluntary disclosure. A possible explanation for this result, which still lacks further evidence, lies in the firm's contractual approach, whereby an increase in disclosure can improve contract monitoring. Nonetheless, this may lead to an increase in managers' compensation costs. This perspective suggests a limit for the increase in disclosure in which its benefits do not exceed its costs.

As a complementary result, we found that, on average, larger B3 listed companies present higher levels of voluntary disclosure. This result corroborates evidence from literature, which predicts that larger companies tend to disclose higher voluntary information levels. As indicated in previous studies, increasing voluntary disclosure levels can bring a series of benefits for companies, mainly: attracting more investments and increasing market competitive advantage. Therefore, larger companies may maintain high levels of voluntary disclosure aiming to remain among the largest companies and increase their competitive advantage towards competitors in their operating markets. This also happens because these companies need to improve their performance in other economic and financial measures.

Also, as a complementary result, we found that greater financial leverage, on average, leads to lower levels of voluntary disclosure of B3 listed companies. This result differs from the literature thatindicates that companies with

greater financial leverage have a higher level of voluntary disclosure. On the one hand, companies with a higher level of indebtment tend to disclose more voluntary information to keep their creditors informed. On the other hand, they may decrease the voluntary disclosure level to camouflage certain information that could be considered negative and undesirable. This could harden the company's ability to obtain new financing. Therefore, the company would intentionally use low voluntary disclosure levels to hide certain information and try to maintain or increase its financial leverage levels.

This article's results are relevant to the literature on voluntary disclosure as they bring current evidence with a comprehensive sample, addressing the relationship between profitability and voluntary disclosure of Brazilian equity companies. Thus, it contributes to improving and advancing this field of research. The results indicate that companies with higher profitability levels do not always choose to disclose more voluntary information for the market. Such evidence may support the decision-making process and capital application by users of information disclosed by B3 listed companies, especially investors.

As a suggestion for future research, we recommend the use of other Financial Statements published by B3 listed companies be used, besides the Reference Form, such as Explanatory Notes, Management Report, among others, to increase the scope and consistency of the voluntary disclosure proxy.

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