The Legibility of Financial Statements and the Cost of Debt

A Legibilidade das Demonstrações Financeiras e o Custo de Capital de Terceiros

Artigo recebido em: 11/06/21 e aceito em: 01/08/22

Albert Weyder Mousinho da Silva
Vitória –ES
Master's in Accounting and Administration from FUCAPE[1]
albertwm@hotmail.com

Neyla Tardin
Vitória – ES
PhD in Accounting Sciences and Administration from FUCAPE
neyla@fucape.br

ABSTRACT

This research aims to analyze the relationship between the level of readability of the financial statements and the cost of debt. The study covered a sample of 378 companies listed on B3 (Bolsa, Brasil and Balcão), from 2010 to 2017. The reports considered were the explanatory notes and management reports. Panel data regression models and ordinary least squares in two stages were used. The empirical results indicated a negative relationship between the level of readability of the explanatory notes and the cost of debt of the companies. For the management reports, no significant results were found. The research contributed to promote the discussion on the effects of the legibility of the reports released by the companies on the cost of debt.

Keywords: Readability; Capital of debt; Financial statements.

RESUMO

Esta pesquisa tem como objetivo analisar a relação entre o nível de legibilidade das demonstrações financeiras e o custo de capital de terceiros. O estudo abrangeu uma amostra de 378 companhias listadas na B3 (Bolsa, Brasil e Balcão), durante o período de 2010 a 2017. Os relatórios considerados foram as notas explicativas e relatórios da administração. Foram utilizados modelos de regressão de dados em painel e mínimos quadrados ordinários em duas etapas. Os resultados empíricos indicaram uma relação negativa entre o nível de legibilidade das notas explicativas e o custo de capital de terceiros das empresas. Para os relatórios da administração não foram encontrados resultados significativos. A pesquisa contribuiu para promover a discussão sobre os efeitos da legibilidade dos relatórios divulgados pelas companhias no custo de capital de terceiros.

Palavras-chave: *Legibilidade; Custo de capital; Demonstrações financeiras.*

1 INTRODUCTION

Financial statements are the primary source of information for several market participants. Limited readability, sometimes observed in these reports, has raised questions about the quality of companies' disclosure and its possible impacts on analysts, investors and creditors, when they assess the current situation and future prospects of business organizations based on these statements (ERTUGRUL *et al*., 2017). Understood as the easiness of understanding a document attributed to how it is written (LIM; CHALMERS; HALON, 2018) or the effective communication represented by the disclosure of relevant information about the value of the company (LOUGHRAN; MC DONALD, 2014), readability refers to the ability of writers to produce more readable reports to their users (FRANCO *et al*., 2015). In this way, the Accounting Pronouncement Committee – CPC 00 R1 –, conceptual framework for report elaboration and disclosure, lists comprehensibility as a qualitative attribute, helping information to be more useful, and recommends that information be disclosed clearly and precisely (COMITÊ DE PRONUNCIAMENTOS CONTÁBEIS 00 R1, 2011).

According to Ertugrul *et al*. (2017), low readability is associated with an increase of the informational risk perceived by the market, while high readability of financial statements can reduce the cost for investors concerning the obtainment of the information they deem

1 FUCAPE- Fucape Business School - Vitória – ES - CEP: 29075-505.

relevant and necessary for analysis, reducing the time spent understanding them (FRANCO *et al*., 2015). Besides the importance related to the comprehensibility, readability also impacts other organizational aspects such as its relationship with companies' performance. According to Li (2008), textual information present in the reports of companies that have performance below expectations favors the disclosure of reports that are more complex and difficult to understand, circumstance in which managers can conceal relevant information and, as a result and deliberately, promote poor readability of their reports. On the other hand, organizations that disclosure statements that are more readable and understandable have greater and more persistent profits (LI, 2008). Among the aspects that were also related to readability, it can be mentioned the results' management (Lo; Ramos; Rogo, 2017), the business strategy as a determinant of the readability of companies' annual reports (LIM; CHALMERS; HALON, 2018), the level of readability present in analyst reports (FRANCO *et al*., 2015), and the relation between readability and its informal influence on stock prices (LEE, 2012).

Another aspect to be investigated is the effect of legibility on the cost of capital of companies. According to Nardi *et al*. (2009) there are evidences of the relation between the quality of disclosed information and the expectation of return by creditors or suppliers of funds to companies, that is, the cost of capital of the companies. The authors inform that the companies, when committing to the quality of their information, allow their users to evaluate the risk and return in a safer way, before making the decision whether or not to invest in the company. For Lambert, Leuz and Verrecchia (2007), the link between disclosed accounting information and the cost of capital of the companies is one of the fundamental questions in accounting research. Therefore, this investigation aims to verify, in the national context, if readability affects the cost of capital of third-party of the companies. The study is justified because the literature mostly addresses this topic in an international environment, especially in the United States, and it is worth investigating it in a country with conditions that are not like those of developed countries, such as Brazil. this study also contributes theoretically to research in accounting and finance, given the small number of national studies in this field, promoting discussion of the effects of readability on companies' short and long-term indebtedness, considering the relevance of third-party capital as a source of resources for companies, in which its cost is reflected in the profitability and market value of the companies and, as a practical contribution, indicates possible improvement in corporate disclosure strategies, a contribution that can be extended to normative or regulatory bodies in the edition of technical guidelines.

The cost of capital is represented by the reasonable expectations of return of the varied sources that finance the companies, that is, their own sources or not (ASSAF NETO; LIMA; ARAÚJO, 2008), and plays an important role in the decision-making regarding management and investment, reflecting a problem of asymmetric information. Therefore, information disclosed by the companies can help them to reduce their cost of capital, contributing to creditors and investors to have a better understanding about the economic risks of investments already made or that they intend to make, affecting their perception of the current situation and future prospects of companies (García-Sánchez; Noguera-Gámez, 2017). The Brazilian institutional environment has peculiar characteristics, especially related to the credit market. Brazil presents a high level of banking concentration, compared to developed countries such as the United States, a fact that reduced competition in the sector, encouraging banks to demand higher rates from borrowers (MONTEIRO *et al*., 2018). In addition, because companies do not have a well-developed capital market, they resort to the credit market in a volume substantially greater than the capital market to finance their activities (BEIRUTH, FÁVERO, 2016).

Another peculiarity attributed to institutional factors in Brazil is the availability of access to differentiated sources of credit through public financing via the National Bank for Economic and Social Development (BNDES), with exclusive fees. Thus it can be observed a high participation of the State in the economy in general and in the credit market in particular (ALBANEZ, VALLE, CORRAR, 2011; ALENCAR, 2005). In summary, Brazil has a fragile institutional environment, with a capital market that is not very active and with a level of legal protection or enforcement lower than that of developed countries (MOURA *et al*., 2016). Therefore, given the importance of the information contained in the reports that support stakeholders' decision-making, especially of creditors of companies' resources, and the peculiar characteristics of the Brazilian institutional environment, this research presents the following problem: what is the effect of the readability of companies' financial statements on their cost of third-party capital?

Considering that sophisticated creditors such as banks generally represent the first option for external financing of companies and that, when evaluating the feasibility of making resources available to companies, they make extensive use of their published information and that low readability is associated with greater perception risk by creditors (ERTUGRUL *et al*., 2017), the present investigation into the effects of readability on the cost of third-party capital is worthwhile. The study is divided in this way: in Section 2 the theoretical framework that supports the research will be covered; in Section 3 the methodology; in Sections 4 and 5, the analysis of the results, and the conclusion, respectively.

2 THEORETICAL REFERENCE

2.1 Readability of accounting statements

The importance of readability of statements was approached, among others, by Li (2010). According to the author, accounting is based in information and he uses, as an example, the activity of accountants who, in a synthetic measure such as net profit, aggregate hundreds of other pieces of information. That study aimed

to evaluate research about textual analyses of financial disclosures and listed three main characteristics that oriented research in the field: the amount of information disclosed, the textual tone used in the financial statements, and their transparency or readability. It also evinces that the information contained in the statements provides a useful context for understanding the data and testing interesting economic hypotheses. The author criticizes previous studies in the field of textual analysis that used small samples and whose data were collected manually; his research prioritized a broader sample and used modern computational and statistical language instruments. Among his findings, he suggests that future research will probably benefit from the development of hypotheses that are more linked to the economic theories, both in the field of classical economy and of behavioral and experimental economy (LI, 2010). In research conducted by Loughran and McDonald (2014), the ways of measuring the readability of financial statements were analyzed, and the authors concluded that the Fog Index is an ineffective proxy for measuring readability in a corporate context, given that some words considered complex, according to the index methodology, are commonplace in the business environment. They define readability as the capacity of individual investors and analysts to assimilate, through published reports, relevant information about the value of companies, and they conclude that the 10-K-sized file provides a simple and better measure of readability, comparing to Fog Index, because it does not require analysis of the document's content, it is less prone to measurement errors, it is easy to replicate, and it is also correlated with other readability measures (Loughran; Mc Donald, 2014).

2.2 Readability and measures of business performance

The relation between readability and measures of business performance was approached by Li (2008). The author started from the premise that previous studies identified that managers are more willing to publish information with better readability in their statements when the company presents positive performance. He assessed this hypothesis by examining if the annual reports published by the companies that presented deficient performance are of difficult understanding and if the profits of the companies that present more complex statements are less persistent. This hypothesis was supported by the study and he concluded that companies with lower and less persistent profits tend to publish statements that are more difficult to understand. The research provided evidence that company managers can structure their annual reports in an opportunistic way, aiming to conceal adverse information from investors (LI, 2008). Lee (2012) investigated the relation between readability of companies' mandatory quarterly reports and the informational efficiency reflected in their stock prices, analyzing if low readability reports inhibit the market's reaction after the profit announcement, delaying the informational effects incorporated into the stock price. Evidence was found that reports with poor readability hinder the market's ability to assimilate information on companies' profits in a timely manner. This adverse effect was more accentuated in companies with low analyst coverage and low participation of institutional investor, in accordance with the presupposition that intermediaries of accounting information behavior as mitigators of the information asymmetry that results from the lack of readability of reports (LEE, 2012).

The management of results put into perspective with the readability of the financial statements was discussed by Lo, Ramos and Rogo (2017). The research expanded the analysis in Li's studies (2008) and aimed to evaluate whether company managers use more complex disclosure, not only because of the common use of legal jargon, but also if they use textual complexity to conceal information from investors. The authors found evidence of greater management of results in companies that seek to maintain or exceed the level of profits earned in previous years. On average, these companies publish more complex reports with low readability, reinforcing the belief that good news is easier to disclose. The study also suggests that the level of readability of the financial reports published by companies goes beyond the discussion about the disclosure of good or bad news and reinforces the idea of the strategic use of disclosure by managers to influence investors' understanding about the value of the company (Lo; Ramos; Rogo, 2017).

2.2.1 Readability and cost of capital

The relation between the role played by disclosed information and the cost of capital of the companies was approached by Easley and O' Hara (2004). They treated the information by segmenting it into public and private and found evidence that investors require a higher return to hold positions in stocks of companies with a large percentage of private information, justifying that private information increases the risk for poorly informed investors to hold positions in stocks of these companies and that well-informed investors are more able to modify their portfolios and incorporate new information. In this way, companies with a higher percentage of private information face a higher cost of equity. They also argue that recent CAPM models do not include the role of information in determining the returns required for company stocks, although it is recognized as important in efficient financial markets, since information is fully reflected in assets pricing. The study provided a link between the informational structure of companies and their cost of capital, developing a model for pricing assets in which both types of information affect their return. One of the conclusions of the research is that companies can influence their cost of capital by affecting the accuracy and amount of information available to their investors (Easley; O' Hara, 2004).

For Lambert, Leuz and Verrecchia (2011), asymmetric information does not affect the cost of capital of companies in an environment of perfect competition, which is only affected by the average of accuracy of investors' information; however, this scenario changes in the context of imperfect competition and asymmetric information starts to affect the cost of capital. Thus, the degree of competition plays a critical role in the relationship between asymmetric information and the cost of capital. This result provides evidence of the role of asymmetric information in affecting or not the cost of capital of companies, depending on the economic scenario in which a given company is inserted. According to Mazumdar and Sengupta (2005), companies that consistently publish detailed, timely and informative information have lower debt costs. The evidence found indicates a negative relationship between the interest rate of bank loans and the measure of the quality of disclosure of these companies. One of the motivations for the research lies in the fact that the use of credit via banking institutions is the largest source of external financing for North American non-financial companies. They conclude that companies considered as having a high level of quality in their disclosed information enjoy lower interest rates on their loans, since banks believe that these companies are less likely to withhold adverse information.

A study by Ertugrul *et al*. (2017) aimed to analyze the influence of readability and ambiguous tone of companies' annual reports on their bank borrowing costs. The authors argue that despite the evidence showing that readability affects experienced market participants such as financial analysts, it is unclear whether it affects sophisticated creditors such as banks. They also investigated the impact of textual features on terms unrelated to prices in loan contracts, such as guarantee and maturity date. They reveal that although the evidence found indicates that readability is a key determinant of the cost of loans and is related to attempts to conceal bad news, they recognize that the impact of readability may be associated with the complexity of the companies, i.e. more complex businesses need greater reports and, consequently, a potentially lower level of readability. The research provided the first scientific evidence that low readability increases the informational risk perceived by creditors and leads to higher external financing costs, contributing to the literature on the causes and consequences of the textual properties of published companies' reports (ERTUGRUL *et al*., 2017).

2.2.2 National context

In Brazil, some studies linked the influence of the quality of accounting information, disclosure, the adoption of differentiated levels of governance and the IFRS standard on the cost of capital of national companies. Lima (2009) verified that the level of voluntary disclosure is inversely related to the cost of third-party capital, as increasing the level of information disclosure by companies results in a reduction in information asymmetry, reducing the risk of resource lenders to companies. This investigation sought to evaluate the magnitude of the relationship between the degree of disclosure and the cost of third-party capital in national companies. On the other hand, Alencar (2005), in a similar study, concluded that the degree of disclosure of national companies does not affect their cost of capital, that is, a significant relationship between these variables was not observed, a result attributed to the institutional peculiarities of Brazil. Passos *et al*. (2017) suggest that there is a positive relationship between the degree of disclosure of market risks and the cost of third-party capital. This evidence indicates, according to the authors, that financial institutions are more careful in the analysis of the granting of resources to companies through lines of credit, since when they identify the risks incurred, they increase the cost of loans. The authors also argue that among the relevant information to be disclosed and which will help reduce information asymmetry among company stakeholders, disclosure of market risks stands out, this being a requirement of the Securities and Exchange Commission-CVM. The study also supports that a higher level of disclosure not only results in positive effects for companies but can also initially bring negative effects for them (PASSOS *et al*., 2017). A greater level of transparency of accounting information obtained after the entrance of companies listed on the Brazilian stock exchange into higher levels of governance has an impact on reducing the cost of third-party capital, according to Barros *et al*. (2015). This result is in line with international research that verified that attributes that comes from good governance practices that increase the quality of accounting information and reduce information asymmetry, allowing companies to enjoy lower interest rates when contracting loans, when the market credit recognizes such attributes as a factor that reduces the probability of non-compliance with financial obligations incurred, providing lower rates compared to companies not listed at some level of governance (BARROS *et al*., 2015). This finding was similar to that obtained in the study by Cicogna, Toneto Junior and Valle (2007); they concluded that the higher the level of governance adopted by companies, the lower the restriction on access to credit, bringing more security and guarantees to the financial institutions that operate in Brazil, given the typical insecurity of the national judicial system, institutional fragility, and also the presence of high rates for financing with reduced deadlines.

Aiming to investigate the impact of environmental disclosure in the cost of third-party capital of national companies, Fernandes (2013) concluded that both positive and negative environmental disclosure have no effect on the cost of capital, justifying that the assessment of environmental performance by banks for granting resources is still gradual and limited. The author also attributes the result to the management of environmental information disclosed by companies, as they tend to prioritize positive environmental events in their reports, as well as events outside the environmental context shown in the companies' statements (FERNANDES, 2013). Considering that the adoption of the international accounting standards

(International Financial Reporting Standards-IFRS) aims to increase the quality of accounting information, Gatsios *et al*. (2016) analyzed its impact on the cost of capital of Brazilian companies in the period from 2004 to 2013, considering that these standards favor the essence over the form, which, according to the authors, tend to reduce information asymmetry. The evidence found indicated that the adoption of the IFRS standard did not impact the cost of capital of Brazilian companies, contrary to what was observed in a study with European countries, a fact that the authors attribute to the time needed to observe possible impacts of adopting this accounting standard and to the Brazilian institutional fragility (GATSIOS *et al*., 2016). It is important to note that evidence found in national and international research indicates, mostly, that a greater level of readability, transparency and, consequently, the quality of accounting information has effects on reducing the cost of capital, which is why it is pertinent to evaluate the specific relationship between readability and the cost of third-party capital restricted to the Brazilian institutional environment. Therefore, to achieve its objective, this research seeks to assess the following hypothesis: H1 - companies that have less legibility in their financial statements have higher third-party capital costs.

3 METHODOLY

This is an empirical, quantitative, descriptive and longitudinal research with secondary data. To assess the relationship between the level of readability of the reports and the cost of third-party capital, the panel data with fixed effects model was used, as well ordinary least squares in two stages. This model allows the evaluation of temporal and spatial relationships among the variables that compose it, that is, it simultaneously captures temporal and longitudinal dimensions among the observed data (FÁVERO, 2013). The fixed effects model enables the intercept to change for each individual or company, considering their specific nature; however, it is presupposed that the angular coefficients are fixed among the sample observation (ALBANEZ; VALLE, 2009). The ordinary least squares in two stages model uses instrumental variables to neutralize the bias that arises from a regression without the necessary precautions. This method also serves to overcome potential endogeneity problems among variables (MARTINEZ, 2008; GÜNEY, 2017).

3.1 Sample

The population included companies listed in B3 - Bolsa, Brasil, Balcão (former BOVESPA), and its sample is formed by 378 companies. Companies in the financial sector, insurance companies, and companies with unavailable data were excluded. The final base presented 1.363 observations related to the variables considered in the research. Table 1 quantitatively describes the population and sample used in the research, as well as the number of observations.

TABLE 1 – POPULATION AND E SAMPLE

PERIOD OF THE RESEARCH	2010 TO 2017
Quantity of companies	434
Quantity of excluded companies	(56)
Total sample	378
No. of initial obervations	3.056
No. of lost obervations	(1.693)
Total of obervations	1.363

Source: elaborated by the author

3.2 Definition of the variables

3.2.1 Independent variable

Independent variable or explanatory variable was the level of readability (LEG) of financial statements disclosed by the companies listed in B3, specifically the management report and explanatory notes, required by the corporate legislation and which are, therefore, part of the mandatory disclosure of the public traded companies according to Law No. 6.404/76 (BRASIL, 1976). This obligation is determined by the regulatory body with the aim of reducing information asymmetry and protecting users of accounting information (GOMES et al., 2018). According to Ponte and Oliveira (2004), the reports consist of information supplementary to the traditional information required by legislation, such as Balance Sheet (BS) and Income Statement (IS), considering that the information disclosed in these statements does not seem to satisfactorily meet the needs of users. In this sense, the explanatory notes must evince the practices and procedures adopted by the companies that impact their published statements. The management report is how company managers communicate with external users, using less technical language. The main objective is to evince relevant information that not always can be easily understood in traditional financial statements disclosed (Ponte; Oliveira, 2004). Two metrics of readability were used: logarithm of the size of the PDF file in kilobytes (kB) available on the B3 website and logarithm of the number of words in the aforementioned reports. These metrics are objectively associated to the length of the report; the longer the reports, the more difficult it is to comprehend them, due to the time and greater effort to extract relevant information, result of low readability (LI, 2008). It is important to highlight that these readability proxies are fully applicable to texts in Portuguese. Thus, it is expected that the greater the number of words or the size of the file, the lower the level of readability of the report. Table 2 describes the independent variable in the two metrics used.

TABLE 2 – DESCRIPTION OF THE INDEPENDENT VARIABLE

VARIABLE	FORMULA	SOURCE	REFERENCE	SIGNAL EXPECTED
Level of Readability (LEG)	LEG= Ln (Size of the File)	-	Loughran and Mc Donald (2014), Ertugrul et al. (2017).	Positive
Level of Readability (LEG)	LEG= Ln (Number of words)	-	Li (2008).	Positive

Source: elaborated by the author.

According to Li (2008), it is assumed that longer documents are more dissuasive and difficult to read, requiring greater costs to process their information. For the author, managers can strategically use the length of financial reports to make them less transparent, concealing adverse information from investors.

3.2.2 Dependent variable

Dependent variable or explained variable was represented by the cost of third-party capital (Kd), and it is calculated according to the formula (1):

$$Kd = DF / PO \quad (1)$$

In which:

Kd = cost of third-parties capital; DF = financial expense; PO = onerous liability.

Onerous liability (PO) was represented by the obligations from contracting loans and financing, calculated according to the formula (2):

$$PO = FCP+FLP \quad (2)$$

In which:

FCP = short-term financing obligations; FLP = long- term financing obligations.

Data referring to the cost of capital of the companies of the sample, as well as of the control variables, were collected from the Economática® and from the financial statements disclosed by the companies available in B3 and in Securities and Exchange Commission (CVM).

3.2.3 Control variables

The control variables used were: size of the company (TAM), debt (LEV), Market-to-book (MB) and return on assets (ROA). Tables 2 and 3 describe the control variables, as well as the dependent and independent variables used in the model. For Ertugrul et al. (2017), using size as a control variable can be justified because large-sized company tend to be more stable and with low information asymmetry, so they enjoy low bank spreads. In relation to Market-to-book, the authors suggest that in companies of high growth, a negative impact on the cost of loans is expected, since it represents an additional value that the company presents in relation to what was presented in the statements and that can be accessed by the creditors in case of non-payment. Companies with high debt, on average, are riskier and therefore are expected to have high loans costs. The measure of profitability was included because companies with high profitability present relatively low risks (ERTUGRUL et al., 2017).

TABLE 3 – DESCRIÇÃO DAS VARIÁVEIS DE CONTROLE

VARIABLE	FORMULA	SOURCE	REFERENCE	SIGNAL EXPECTED
Size (TAM)	TAM= Ln (TOTAL ASSETS)	Economática®	Ertugrul et al. (2017), García-Sánchez and Noguera-Gámez, (2017), Mansi; Maxwell and Miller (2011), Passos et al. (2017)	Negative
Endividamento (LEV)	LEV=LAJIR/LAIR	Economática®	Ertugrul et al. (2017); Martinez and Silva (2017)	Positive
VARIABLE	FORMULA	SOURCE	REFERENCE	SIGNAL EXPECTED
Market-to-book (MB)	MB=market value/ PL	Economática®	Ertugrul et al. (2017), Mazumdar and Sengupta (2005)	Negative
Retorn on assets (ROA)	ROA=net profit/ total assets	Economática®	Martinez e Silva (2017), Cho; Freedman and Patten (2012)	Negative

Source: elaborated by the author.

3.2.4 Model

Statistical analysis involved regression with panel data with fixed effects and two-stage ordinary least squares. The model (4) used in the research was the following:

$$Kd_{(t+1)} = \beta 0+\beta 1LEGt+\beta 2TAMt+\beta 3LEVt+\beta 4MBt+\beta 5ROAt+\varepsilon \quad (4)$$

In which: $Kd_{(t+1)}$ = cost of third-party capital; LEG_t = measure of readability.

TAM_t = size of the company; LEV_t = debt; MB_t= *Market-to-book;*

ROA_t= Retorn on the assets; ε= error term; β0= estimated intercept; β1 a β5 = estimated coefficients.

It is worth noting that the independent variable and the control variables were lagged by one period in relation to the dependent variable (Lima, 2009; Ertugrul *et al*., 2017). Thus, it was considered the period from 2011 to 2017 for the cost of third-party capital, and for the other variables, the period from 2010 to 2016. It is expected that a lower level of readability, represented by a high number of words in a report or a high size of a PDF file, will increase the cost of third-party capital. Tests were conducted relating the level of readability with the cost of third-party capital (Kd) as follows:

i) test between the level of readability of the management report measured by the logarithm of the size of the PDF file and the Kd; ii) test between the level of readability of the management report measured by the logarithm of number of words of the document and the Kd; iii) test between the level of readability of the explanatory notes measured by the logarithm of the size of the PDF document file size and the Kd; iv) test between the level of readability of the explanatory notes measured by the logarithm of number of words of the document and the Kd. Considering that there are two metrics of readability (the logarithm of number of words and of size of the file), four tests were conducted using estimation method. To perform the econometric tests, the statistics software Stata® was used. The following section presents the analysis of the results.

4 ANALYSIS OF THE RESULTS

4.1 Descriptive statistics and correlation matrix

The results obtained in the descriptive statistics and in the correlation matrix are presented in Tables 4 and 5, in which the characteristics for companies that compose the searched sample are shown, regarding the variables that compose the model.

TABLE 4 – DESCRIPTIVE STATISTICS

VARIABLE	OBS	MEAN	D.P	MIN	P.25	MED.	P.75	MAX
NE TAM.	1.363	6,43	0,73	3,69	6,01	6,42	6,86	8,28
NE PALAV.	1.363	9,77	0,67	6,89	9,53	9,91	10,18	10,82
RA TAM.	1.363	5,75	1,17	2,20	5,00	5,87	6,57	8,09
RA PALAV.	1.363	8,20	0,93	4,91	7,62	8,33	8,83	10,00
KD	1.363	0,46	1,62	0,00	0,09	0,16	0,29	18,15
TAM	1.363	14,76	1,74	8,50	13,64	14,96	15,93	18,45
LEV	1.363	1,08	3,29	-12,67	0,59	1,06	1,45	19,78
MB	1.363	1,73	2,43	-6,32	0,56	1,18	2,24	18,62
ROA	1.363	-0,00	0,16	-1,70	-0,02	0,02	0,06	0,34

NE TAM.: readability of explanatory notes measured by log of PDF file size in kilobytes; NE PALAV.: readability of explanatory notes measured by the log of the number of words; RA TAM.: readability of management reports measured by the log of the PDF file size in kilobytes; RA PALAV.: readability of administration reports measured by the log of the number of words; Kd: cost of third-party capital; TAM: size of the company; LEV: debt; MB: Market-to-book; and ROA: retorn on the assets. All variables were winsorized at 1% to exclude outliers from the sample.

Source: elaborated by the author using Stata®.

On Table 4 it is verified that the mean related to the size of the file and also to the number of words is higher for the explanatory notes in comparison to the mean of the management reports, as expect, given that the Accounting Pronouncements Committee – CPC 26 R1 – Presentation of Financial Statements lists that they must provide information on the accounting policy and others explicatory information that are not provided in the statements (ACCOUNTING PRONOUNCEMENTS COMMITTEE 26 R1, 2011).

According to the data observed in Table 5, it can be noted a positive and significant correlation at 1% between the readability measures “size of file” and “number of words” both regarding the explanatory notes and the Management Report, which is consistent with the conclusion by Loughran and Mc Donald (2014) that the proxy “size of file” is correlated with other readability measures (2014). When verifying the relationship between the dependent variable and the control variables, the negative relationship between size of the com-

TABLE 5 – CORRELATION MATRIX

	NE TAM	NE PALAV.	RA TAM.	RA PALAV.	KD	TAM	LEV	MB	ROA
NE TAM.	1,00								
NE PALAV.	0,6073***	1,00							
RA TAM.	0,3701***	0,3951***	1,00						
RA PALAV.	0,3652***	0,5872***	0,6418***	1,00					
KD	-0,0487*	-0,0453*	0,0095	-0,0845***	1,00				
TAM	0,5389***	0,7173***	0,3532***	0,5893***	-0,1092***	1,00			
LEV	0,0170	0,0393	0,0159	0,0274	-0,0085	0,0261	1,00		
MB	0,0712***	0,1107***	0,1073***	0,1286***	-0,0160	0,0437	0,0484*	1,00	
ROA	0,0675**	0,2011***	0,1199***	0,2655***	-0,0765***	0,2667***	0,0579**	0,2180***	1,00

NE TAM.: readability of explanatory notes measured by log of PDF file size in kilobytes; NE PALAV.: readability of explanatory notes measured by the log of the number of words; RA TAM.: readability of management reports measured by the log of the PDF file size in kilobytes; RA PALAV.: readability of administration reports measured by the log of the number of words; Kd: cost of third-party capital; TAM: size of the company; LEV: debt; MB: Market-to-book; and ROA: retorn on the assets. All variables were winsorized at 1% to exclude outliers from the sample. ***Significative at 1%; **Significative at 5%; *Significative at 10%.
Source: elaborated by the author using Stata®.

pany and cost of third-party capital (Kd) stands out, as well as the one between return on assets (ROA) and Kd, which is in line with the argument advocated in the literature that larger and more profitable companies are more stable and present less risk and, therefore, can enjoy more attractive rates from their creditors (ERTUGRUL et al., 2017). Regarding the other control variables, they were not significant, so are not statistically different from zero. Finally, it can also be seen from Table 5 that the dependent variable Kd (cost of third-party capital) showed a negative correlation with all measures of readability, except for the size of file of management reports, which was not significant, contrary to what was expected, that the longer the document (lower level of readability), the higher the cost of third-party capital. However, it cannot be said that such correlations are considered strong since the highest of them was 8% (eight percent) and in any case it is necessary to perform econometric tests to confirm or reject the linear relationship between these variables.

According to Table 6, the results show that the coefficients of the variables that measure the level of readability, both of the explanatory notes (part A) and the management reports (part B) were not significant, when generated by the estimation of panel data with fixed effects method, as well as the results referring to management reports (part D) with the model estimated by the least squares in two-stages method, and for the explanatory notes when the measure of readability was the size of the file (part C, to the left).

Regarding the control variables, it is observed that the Market-to-book (MB) proved to be significant at 10% both for explanatory notes and for the management report and in both measures of readability, when estimated by regression in panel data with fixed effects (parts A and B). When estimated by the ordinary least squares in two stages method, the significant control variables were: size of the company, both for explanatory notes, when their readability was measured by the size of the file (part C, on the left), and for both measures referring to the management report (part D).

However, even with some control variables proving to be significant in these tests and in accordance with what is recommended in the literature (ERTUGRUL et al., 2017), the coefficients of the readability variables were not significant and, therefore, are not statistically different from zero, which is why the research hypothesis will be rejected for these tests.

Such results can be attributed to the limitation and superficiality of the metrics, based on number of words and size of the file, which did not appropriately capture the complexity of a text. In this aspect, the simplicity of the metrics, which, at first, could be an advantage (LOUGHRAN; MC DONALD, 2014) proved to be insufficient to explain a possible relationship between the variables. It is also worth noting that the proxy size of file can also be influenced by graphic elements such as images without necessarily representing an increase in the textual content of the statements. These results coadunate with those obtained by Lambert, Leuz and Verrecchia (2011) in a study that investigated the relationship between asymmetric information and the cost of capital of companies in an environment of perfect competition, as well as similar studies carried out in Brazil by Fernandes (2013), Alencar (2005) and Gatsios et al. (2016), in which no consistent evidence of this relationship was found. It is also worth highlighting the results presented in Table 6, in the test conducted for explanatory notes when their readability was measured by the logarithm number of words in the document (part C, on the right). The coefficient referring to the level of readability was significant at 5%, and was positive, showing a direct relationship between the number of words in the document and the cost of third-party capital, that is, the lower the level of readability of the document (represented by the increase in the number of words), the more the company's third-party

capital cost increases. In this aspect, the result provides evidence that the research hypothesis highlighted below cannot be rejected.

H1: companies that have lower legibility in their financial statements have higher third-party capital costs.

In the international literature, similar findings were observed in the study by Ertugrul et al. (2017) in which the authors concluded that companies that disclosure reports with low readability obtain higher banking spreads when contracting loans and grants with financial institutions.

A similar conclusion was verified in research by Mazumdar and Sengupta (2005), in which the authors provided evidence that companies that demonstrated high quality in their disclosure enjoy lower rates when contracting bank credit. In the national literature, Lima (2009) found evidence of inverse relationship between the level of disclosure and the cost of capital of companies, as similarly shown in research by Barros et al. (2015) and Cicogna, Toneto Junior and Valle (2007).

4.2 Result of the empirical model

TABLE 6 – RESULTS OF THE EMPIRICAL MODEL

PART A – PANEL FIXED EFFECTS – EXPLANATORY NOTES					
	COEF.	P-VALUE		COEF.	P-VALUE
NE TAM.	0,0731649	0,259	**NE PALAV.**	0,1063508	0,389
TAM	-0,225848	0,251	TAM	-0,2294736	0,258
LEV	-0,0126787	0,241	LEV	-0,0128221	0,235
MB	-0,0354959	0,081*	MB	-0,0355515	0,078*
ROA	-0,0125137	0,981	ROA	-0,0125137	0,970
Constant	3,205953	0,216	*Constant*	3,205953	0,257
PART B – PANEL FIXED EFFECTS – MANAGEMENT REPORTS					
RA TAM.	0,0198027	0,462	**RA PALAV.**	-0,0261357	0,726
TAM	-0,2120291	0,258	TAM	-0,2294736	0,262
LEV	-0,0124603	0,246	LEV	-0,0128221	0,244
MB	-0,0347808	0,084*	MB	-0,0355515	0,078*
ROA	-0,0302179	0,954	ROA	-0,0125137	0,957
Constant	3,359079	0,216	*Constant*	3,585819	0,220
PART C - MQO IN 2 STAGES – EXPLANATORY NOTES					
	COEF.	P-VALUE		COEF.	P-VALUE
NE TAM.	0,0201257	0,750	**NE PALAV.**	0,1711544	0,038**
TAM	-0,0940479	0,003***	TAM	-0,1361997	0,258
LEV	-0,0015403	0,947	LEV	-0,0021136	0,928
MB	-0,0008582	0,933	MB	-0,0042192	0,639
ROA	-0,5130647	0,118	ROA	-0,5162097	0,103
Constant	1,726399	0,000***	*Constant*	0,8121408	0,122
PART D - MQO IN 2 STAGES – MANAGEMENT REPORTS					
	COEF.	P-VALUE		COEF.	P-VALUE
RA TAM.	0,0791559	0,155	**RA PALAV.**	-0,0402247	0,444
TAM	-0,1078131	0,000***	TAM	-0,077286	0,003***
LEV	-0,001576	0,946	LEV	-0,0014841	0,949
MB	-0,0038999	0,684	MB	0,0008218	0,933
ROA	-0,526529	0,101	ROA	-0,4989871	0,127
Constant	1,609227	0,000***	*Constant*	1,935162	0,000***

The table shows the following variables: RA TAM.: readability of management reports measured by the log of the PDF file size in kilobytes (kB); RA PALAV.: readability of administration reports measured by the log of the number of words; Kd: cost of third-party capital; TAM: size of the company; LEV: debt; MB: Market-to-book; and ROA: retorn on the assets. Source: elaborated by the author using Stata®. *** Significative at 1%; **Significative at 5%; *Significative at 10%.

5 CONCLUSION

Previous research show that a lower level of readability, disclosure and evidencing are associated to a higher cost of capital of the companies; however, these findings were, in its majority, restricted to international environments, leaving gaps to be filled in national studies, which is why it was necessary to study this relationship in the Brazilian institutional environment. This research aimed to analyze the relationship between the level of readability of the financial statements of companies listed in the Brazilian stock exchange (B3), specifically of the explanatory notes and management reports, and the cost of third-party capital of these companies. As accounting is a science based on information, these reports are of the utmost importance to understand the business environment where these companies operate for their various stakeholders, be they creditors, shareholders, potential investors, among others. The way in which this information is disclosed and understood can impact companies' results, a fact that has been widely studied in the literature, especially international literature.

The results found in the research provided indications that a lower level of readability can impact the cost of third-party capital of companies, in an inverse relationship. This evidence was restricted to explanatory notes, whose readability was measured by the number of words in that report. The research did not find evidence of this relationship when the document in question was the management report; therefore, this effect cannot be extended to this type of document. Even with the evidence found, it is necessary to take into consideration some issues that can be viewed as limitations of the research. The first lies in the measure of the cost of capital, as this is an estimate considered when taking the percentage of 34% for taxes, to obtain the net financial expense. It is known that there may be differences between companies and sectors in terms of the effective tax rate. In this perspective, the difficulty of estimating the cost of third-party capital in Brazil should also be considered as a limitation of the research. According to Assaf Neto, Lima and Araújo (2008), even with a background of high interest rates in Brazil, large-sized companies manage to overcome this issue through subsidized resources via the National Bank for Economic and Social Development - BNDES, which can distort the estimate. Another limitation found was the scarcity of national studies that investigated specifically the relationship between readability and the cost of third-party capital. As an approximation, studies that evaluated the relationship between disclosure and the cost of capital were considered. As a result, another limitation faced was choosing the most appropriate econometric model for the investigation. Recommendations for further studies lie in the idea of working over a longer period, using alternative estimation models, with other readability metrics and other reports published by the companies, to verify the effects of readability on the cost of equity, as well as to include new control variables in the research.

REFERENCES

ALBANEZ, Tatiana; DO VALLE, Maurício R. Impactos da assimetria de informação na estrutura de capital de empresas brasileiras abertas. **Revista Contabilidade & Finanças**, v. 20, n. 51, p. 6-27, 2009.

ALBANEZ, Tatiana; DO VALLE, Maurício R.; CORRAR, Luiz J. Fatores institucionais e assimetria informacional: influência na estrutura de capital de empresas brasileiras. **Mackenzie Management Review**, v. 13, n. 2, 2011.

ALENCAR, Roberta Carvalho de. Custo do capital próprio e nível de disclosure nas empresas brasileiras. **BBR-Brazilian Business Review**, v. 2, n. 1, 2005.

ASSAF NETO, Alexandre; LIMA, Fabiano G.; ARAÚJO, Adriana M. P. de. Uma proposta metodológica para o cálculo do custo de capital no Brasil. **Revista de Administração-RAUSP**, v. 43, n. 1, p. 72-83, 2008.

BARROS, Claudio M. E.; DA SILVA, Pedro Y. C.; VOESE, Simone Bernandes. Relação entre o custo da dívida de financiamentos e governança corporativa no Brasil. **Revista Contabilidade, Gestão e Governança**, v. 18, n. 2, 2015.

BEIRUTH, Aziz X.; FÁVERO, Luiz P. L. Um ensaio sobre a adoção das international financial reporting standards em covenants contratuais. **Revista de Finanças Aplicadas**, v. 7, n. 1, p. 1-22, 2016.

BRASIL. Lei n° 6.404, de 15 de dezembro de 1976. **Dispõe sobre as sociedades por ações**. Publicado em 17 de dezembro de 1976. Disponível em: <http://www.planalto.gov.br/ccivil_03/Leis/L6404consol.htm>. Acesso em 25 de abr. 2019.

CICOGNA, Maria P. V; TONETO JUNIOR, Rudinei; DO VALLE, Maurício R. O impacto da adesão a padrões mais elevados de governança sobre o financiamento empresarial. **Revista de Administração-RAUSP**, v. 42, n. 1, p. 52-63, 2007.

COMITÊ DE PRONUNCIAMENTOS CONTÁBEIS. CPC 00 R1 – Estrutura conceitual para elaboração e divulgação de relatório contábil-financeiro. **Pronunciamentos**. Brasília, 2011. Disponível em: <http://www.cpc.org.br/>. Acesso em: 21 out. de 2018.

COMITÊ DE PRONUNCIAMENTOS CONTÁBEIS. CPC 26 R1 – Apresentação das Demonstrações Contábeis. **Pronunciamentos**. Brasília, 2011. Disponível em: <http://www.cpc.org.br/>. Acesso em: 23 mar. de 2019.

CHO, Charles H.; FREEDMAN, Martin; PATTEN, Dennis M. Corporate disclosure of environmental capital expenditures: A test of alternative theories. **Accounting, Auditing & Accountability Journal**, v. 25, n. 3, p. 486-507, 2012.

EASLEY, David; O'HARA, Maureen. Information and the cost of capital. **The journal of finance**, v. 59, n. 4, p. 1553-1583, 2004.

ERTUGRUL, Mine; LEI, Jin; QIU, Jiaping; WAN, Chi. Annual report readability, tone ambiguity, and the cost of borrowing. **Journal of Financial and Quantitative Analysis**, v. 52, n. 2, p. 811-836, 2017.

FÁVERO, Luiz Paulo Lopes. Dados em painel em contabilidade e finanças: teoria e aplicação. **BBR-Brazilian Business Review**, v. 10, n. 1, 2013.

FERNANDES, Sheila M. A influência do disclosure ambiental voluntário no custo da dívida. **RAI - Revista de Administração e Inovação**, v. 10, n. 3, p. 165-183, 2013.

FRANCO, Gus de; HOPE, Ole-Kristian; VYAS, Dushyantkumar; ZHOU, Yibin. Analyst Report Readability. **Contemporary Accounting Research**, v. 32, n. 1, p. 76-104, 2015.

GARCÍA-SÁNCHEZ, Isabel-María; NOGUERA-GÁMEZ, Ligia. Integrated information and the cost of capital. **International Business Review**, v. 26, n. 5, p. 959-975, 2017.

GATSIOS, Rafael C.; SILVA, José M.; AMBROZINI, Marcelo A.; ASSAF NETO, Alexandre; LIMA, Fabiano G. Impacto da adoção do padrão IFRS no custo de capital próprio das empresas de capital aberto no Brasil. **Mackenzie Management Review**, v. 17, n. 4, 2016.

GOMES, Matheus da C.; FERREIRA, Rafael R.; MARTINS, Vinícius A. O impacto da OCPC 07 sobre o tamanho e a legibilidade das notas explicativas de companhias brasileiras. **Revista Universo Contábil**, v. 14, n. 2, p. 162, 2018.

GÜNEY, Taner. Population growth and sustainable development in developed-developing countries: an iv (2sls) approach. **Suleyman Demirel University Journal of Faculty of Economics & Administrative Sciences**, v. 22, n. 4, p. 637-662, 2017.

LAMBERT, Richard; LEUZ, Christian; VERRECCHIA, Robert E. Accounting information, disclosure, and the cost of capital. **Journal of accounting research**, v. 45, n. 2, p. 385-420, 2007.

LAMBERT, Richard. Information asymmetry, information precision, and the cost of capital. **Review of Finance**, v. 16, n. 1, p. 1-29, 2011.

LEE, Yen-Jung. The Effect of Quarterly Report Readability on Information Efficiency of Stock Prices. **Contemporary Accounting Research**, v. 29, n. 4 p. 1.137-1.170, 2012.

LI, Feng. Annual Report Readability, Current Earnings and Earnings Persistence. **Journal of Accounting & Economics**, v. 45, p. 221-247, 2008.

LI, Feng. Textual Analysis of Corporate Disclosure: A Survey of the Literature. **Journal of Accounting Literature**, v. 29, p. 143-165, 2010.

LIM, Edwin KiaYang; CHALMERS, Keryn; HANLON, Dean. The influence of business strategy on annual report readability. **Journal of Accounting and Public Policy**, v. 37, n. 1, p. 65-81, 2018.

LIMA, Gerlando Augusto Sampaio Franco de. Nível de evidenciação x custo da dívida das empresas brasileiras. **Revista Contabilidade & Finanças-USP**, v. 20, n. 49, p. 95-108, 2009.

LINTNER, J. The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. **Review of Economics and Statistics**, v. 47, n. 1, p. 13-37, 1965.

LO, Kin; RAMOS, Felipe; ROGO; Rafael. Earnings Management and Annual Report Readability. **Journal of Accounting & Economics**, v. 63, p. 1-25, 2017.

LOUGHRAN, Tim; MCDONALD, Bill. Measuring Readability in Financial Disclosures. **The Journal of Finance**, v. LXIX, n. 4, p. 1.643-1.671, 2014.

MANSI, Sattar A.; MAXWELL, William F.; MILLER, Darius P. Analyst forecast characteristics and the cost of debt. **Review of Accounting Studies**, v. 16, n. 1, p. 116-142, 2011.

MARTINEZ, Antonio Lopo. Detectando earnings management no Brasil: estimando os accruals discricionários. **Revista Contabilidade & Finanças**, v. 19, n. 46, p. 7-17, 2008.

MARTINEZ, Antonio Lopo; SILVA, Renan Ferreira da. Agressividade Fiscal e o Custo de Capital de Terceiros no Brasil. **Revista de Gestão, Finanças e Contabilidade**, v. 7, n. 1, p. 240-251, 2017.

MAZUMDAR, Sumon C.; SENGUPTA, Partha. Disclosure and the loan spread on private debt. **Financial analysts journal**, v. 61, n. 3, p. 83-95, 2005.

MONTEIRO, Igor S.; KLOTZLE, Marcelo C.; PINTO, Antônio C. F. O Impacto da Concentração Bancária na Alavancagem das Empresas na América Latina. **Revista de Finanças Aplicadas**, v. 9, n. 1, 2018.

MOURA, Geovanne D.; MACÊDO, Francisca F.R.R.M.; MAZZIONI, Sady. Análise da relação entre gerenciamento de resultados e custo de capital em empresas brasileiras listadas na Bm&fbovespa. **Revista Catarinense da Ciência Contábil**, v. 15, n. 44, p. 9-23, 2016.

NARDI, Paula C. C.; SILVA, Ricardo L. M.; NAKAO, S. H.; VALLE, Maurício R. A relação entre gerenciamento de resultados contábeis e o custo de capital das companhias abertas brasileiras. **Revista Universo Contábil**, v. 5, n. 4, p. 06-26, 2009.

PASSOS, Lineker C.; ALMENDRA, Rafael S.; LUCA, Marcia M.M.; VASCONCELOS, Alessandra C. Disclosure dos riscos de mercado e o custo de capital de empresas. **Base Revista de Administração e Contabilidade da Unisinos**, v. 14, n. 3, p. 169-184, 2017.

PONTE, Vera Maria Rodrigues; OLIVEIRA, Marcelle Colares. A Prática da Evidenciação de Informações Avançadas e Não Obrigatórias nas Demonstrações Contábeis das Empresas Brasileiras. **Revista Contabilidade e Finanças – USP**, n. 36, p. 7-20, 2004.

SENGUPTA, Partha. Corporate disclosure quality and the cost of debt. **Accounting review**, v. 74, n. 4, p. 459-474, 1998.

SHARPE, W. F. Capital asset prices: a theory of market equilibrium under conditions of risk. **Journal of Finance**, v. 19, n. 3, p. 425- 442, 1964.