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The Disclosure of Information about Business Models and its Reflections on the Capital Structure of Companies in Brazil

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1. INTRODUCTION

Information asymmetry represents a fundamental challenge in corporate environments where managers possess privileged access to company information compared to shareholders and investors. This informational disparity creates significant obstacles to efficient market functioning, potentially leading to adverse selection and moral hazard problems that increase investment risks (Arrow, 2012). In such scenarios, the integrity and transparency of financial markets are compromised, as investors cannot adequately assess the true value and performance of companies in which they might invest.

To mitigate these information asymmetry problems, disclosure of corporate information has emerged as a critical mechanism that enables shareholders and investors to enhance their understanding of companies and more effectively monitor managerial behavior (Wagenhofer, 1990; Verrecchia, 1983, 1999; Macagnan, 2009a, 2009b). High-quality disclosure practices reduce information disparities between internal and external stakeholders, thereby facilitating more informed investment decisions and potentially generating additional value for the company. Moreover, transparent disclosure practices are increasingly recognized as essential components of effective corporate governance, fostering trust and accountability in the market. However, when faced with informational limitations that impede accurate risk assessment, investors and shareholders often adopt conservative behaviors that consequently increase companies' cost of capital (Verrecchia, 1999; Botosan, 1997; Zhang *et al*., 2020). This relationship between information disclosure and capital costs represents a crucial area of study in financial literature. Particularly relevant to this discussion is the disclosure of business model information, which enables stakeholders to make better-informed investment decisions and potentially lowers a company's capital costs (Diamond and Verrecchia, 1991; Ettredge *et al*., 2002).

The business model (BM) encompasses strategic, organizational, and financial elements that are vital to understanding how a company creates, delivers, and captures value. As such, comprehensive disclosure of BM components serves as an effective mechanism for reducing informational asymmetry between managers and the market (Alves *et al*., 2021). At the same time, however, disclosing strategic information carries inherent risks, including the potential for competitors to access and adjust their strategies accordingly (Wagenhofer, 1990; Macagnan, 2009a). This tension between transparency benefits and competitive disadvantages creates a complex decision-making environment for companies regarding optimal disclosure practices.

In this context, the market value increased by voluntary disclosure would then be reflected in the capital structure of companies, as evidenced in the studies of: Rajan and Zingales (1995); Damodaran (2016); Bastos, Nakamura and Leonardo (2009).

Rajan and Zingales (1995) showed that the capital structures of the most profitable companies have a lower debt ratio, and that companies with a high market value in relation to the accounting value have a lower level of debt.

In a study carried out by Bastos, Nakamura and Leonardo (2009) on the determinants that can influence the degree of financial leverage of the company, the best results in terms of explanatory power (Adjusted R2) were found for the variable Total Debt at Market Value, reflecting in the research that this is the most appropriate type of debt measurement for the study of the capital structure of the companies in the sample.

Balancing these considerations, we arrived at the following research problem: Do the BM's information disclosure indices reflect in formation of companies' capital structures in Brazil?

The objective of this research went to verify whether the disclosure of the business model (BM) reflect in formation capital structures in Brazilian companies. Building in theoretical foundation, we formulate three main hypotheses that will be further developed in the Theoretical Framework and Hypothesis Development section. First, we propose that higher levels of BM disclosure are associated with reduced cost of capital for companies (H1). Two, we hypothesize that comprehensive BM disclosure practices contribute positively to overall company valuation (H2). Finally, third we hypothesize the voluntary disclosure of information about the Business Model reflect in formation of companies' capital structures of Companies (H3).

These hypotheses address the fundamental research question regarding how business model disclosure practices affect company performance and market perception in the Brazilian capital market.

Our study focuses on companies within the Brazilian capital market, specifically those comprising the Broad Brazil Index (IBrA) on B3 - a key indicator in the Brazilian market that tracks the average performance of traded asset prices. The sample encompasses 91 companies listed on the Brazilian Stock Exchange, with 127,113 explicit and implicit observations of BM parameters collected from 2015 to 2021. This comprehensive dataset allows for robust analysis of BM disclosure practices and their impacts on various financial metrics over time.

Statistical results confirm our research hypotheses, demonstrating that BM information disclosure contributes to capital cost reduction by mitigating information asymmetries, ultimately reflected in enhanced company value creation and capital structure in Brazilian companies. These findings suggest that companies listed on the Brazilian capital market should evolve their BM disclosure practices regarding both quality and quantity of information to achieve better disclosure rates.

This study contributes meaningfully to ongoing scholarly discourse on measuring accounting transaction disclosures, forming part of a broader research agenda aimed at improving accounting information quality. Additionally, it advances research on company information dissemination (Seibert *et al*., 2019), aligning with an evolving body of work that measures value chain impacts and their repercussions on capital costs, company valuation, and capital structure.

In the following sections, we present a thorough literature review and articulate our research hypotheses in detail. We then describe the methodology employed, including variables, analysis techniques, data sources, and sample characteristics. Subsequently, we present our research results and conclude with a discussion of key findings and their implications for theory and practice.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

Academic studies also consider that the disclosure of information allows shareholders to better evaluate their investments, thus reducing the cost of capital for companies (Diamond and Verrecchia, 1991; Botosan, 1997; Ettredge *et al*., 2002; Easley and 0'Hara, 2004; Lambert *et al*., 2012; Mangena *et al*., 2016; Heflin *et al*, 2016; Bertomeu and Cheynel, 2016; Zhou *et al*., 2018; He *et al*., 2019).

In this context, the disclosure of MN information would also be included as a way of reducing the cost of capital, due to the reduction of information asymmetry in companies (Diamond and Verrecchia, 1991; Ettredge *at al*., 2002). Considering the above, and the importance of Business Model disclosures in reducing the cost of capital, the following hypothesis is proposed.

Hypothesis 1: *Voluntary disclosure of information about the Business Model contributes to reducing the Cost of Capital for Companies.*

Companies disclose business model information voluntarily, which helps users of public information (financial or otherwise), financial analysts, to have a better understanding of the business model and how the company operates, such as its ability to create value.
In this context, disclosure of the business model would be reflected in the value of companies, since it provides information to add value to them. Academic studies have found evidence that disclosure of information is reflected in the value of companies (Easley *et al.*,2002; Cahan *et al.*, 2016; Guay and Verrecchia, 2018; Bravo, 2017; Zhang *et al*., 2020).
Voluntary disclosure is value-relevant; that is, it affects the value of the firm, implying that market participants value voluntary disclosure because the more companies voluntarily disclose information, the greater value they have to investors (Uyar and Kiliç, 2012). Considering the above, and the importance of disclosures about the business model for the value of companies, the following hypothesis is proposed:

Hypothesis 2: *The voluntary disclosure of information about the Business Model contributes to the Aggregation of Value for Companies.*

It was also found that voluntary disclosure is relevant to the formation of value, reflecting on the capital structure; that is, it affects the company's value and capital structure, implying that market participants value voluntary disclosure, since the more information companies voluntarily disclose, the greater value they have in the eyes of investors (Uyar and Kiliç, 2012; Cahan *et al.*, 2016; Rajan and Zingales, 1995; Bastos *et al*., 2009). Considering the above, and the importance of disclosures about the business model for the formation of the capital structure of companies, the following hypothesis is proposed:

Hypothesis 3: *The voluntary disclosure of information about the Business Model reflect on the formation of the capital structure of Companies.*

3. DESIGN RESEARCH

Next, we initially present the analysis technique, detailing the econometric modeling and respective variables, to later describe the population and sample, as well as the source of data analyzed and the respective collection.

3.1. Analysis technique

The Models

Using the dependent, interest and control variables described in the following paragraphs, the following models were tested.

Model 1

$$WACC_{i,t} = \beta_{0i,t} + \beta_1 INT_{i,t} + \beta_2 IAI_{i,t} + \beta_3 BETA_{i,t} + \beta_4 COV_{i,t} + \beta_5 VOL_{i,t} + \beta_6 REPT_{i,t} + \beta_7 EXP_{i,t} + \beta_8 GROWTH_{i,t} + \beta_9 LEVERAGE_{i,t} + \beta_{10} ROA_{i,t} + \beta_{11} SELIC_{i,t} + \varepsilon_{i,t}$$

$$CCP_{i,t} = \beta_{0i,t} + \beta_1 INT_{i,t} + \beta_2 IAI_{i,t} + \beta_3 BETA_{i,t} + \beta_4 COV_{i,t} + \beta_5 VOL_{i,t} + \beta_6 REPT_{i,t} + \beta_7 EXP_{i,t} + \beta_8 GROWTH_{i,t} + \beta_9 LEVERAGE_{i,t} + \beta_{10} ROA_{i,t} + \beta_{11} SELIC_{i,t} + \varepsilon_{i,t}$$

Model 2

$$M\text{-}T\text{-}B_{i,t} = \beta_{0i,t} + \beta_1 INT_{i,t} + \beta_2 BETA_{i,t} + \beta_3 COV_{i,t} + \beta_4 VOL_{i,t} + \beta_5 REPT_{i,t} + \beta_6 EXP_{i,t} + \beta_7 GROWTH_{i,t} + \beta_8 LEV_{i,t} + \beta_9 ROA_{i,t} + \varepsilon_{i,t}$$

Model 3

$$Alav_{i,t} = \beta_{0i,t} + \beta_1 INT_{i,t} + \beta_2 BETA_{i,t} + \beta_3 COV_{i,t} + \beta_4 VOL_{i,t} + \beta_5 REPT_{i,t} + \beta_6 EXP_{i,t} + \beta_7 GROWTH_{i,t} + \beta_8 ROA_{i,t} + \varepsilon_{i,t}$$

Frame 1 below demonstrates the variables of the models and the corresponding hypotheses.

Frame 1 - Model Variables and Hypotheses

Hypothesis	Variables	Works/Authors on the Theme
Hypothesi 1, 2, 3	Dependent –WACC, CCP, M-T-B, ALAV	Decourt *et al*. (2019). Easley and 0'Hara (2004), Zhou *et al.* (2018). Alves, Decourt and Ferreira, (2021).
	Interest: IQG, IQ1 and IQ2	Alves, Decourt and Ferreira (2021). Protin, Decourt and Barbosa (2018).
	BETA, COV, VOL, REPT, EXP, GROWTH, ROA and SELIC.	Decourt *et al*. (2019), Nagata and Nguyen (2017), Protin, Decourt and Barbosa (2018), Bravo (2017), He, Plumlee and Wen (2019), Banco Central, Julio and Kim (2012).

Source: Prepared by the authors.

Considering the formulated hypotheses and aiming to achieve the study's objectives, panel data models were used, which consist of observations of n entities for various periods.

3.2. Applied dependent variables

Weighted Average Cost of Capital (WACC), Cost of Equity Capital (CCP), Market-to-Book (MTB) and Leverage (ALAV) were used to measure the capital costs, performance of the sample companies and capital structure of Companies, with these being the dependent variables.

3.3. Applied variables of interest

The indices that measure the quantity and quality of information on Business Models described in sections 3.3.1 and 3.3.2 were used: Global Quality Index (IQG), Index comparing a company's disclosure strategy to its peers (IQ1), Index of the relative number of information units disclosed (IQ2) about the BM, calculated according to the information and frequency of the 11 BM parameters found in the collection (Table 1), and Frequency of Information on BM (FR), as variables of interest (INT).

The evaluation of the quality of narrative information in annual reports followed different approaches, as proposed by Beattie *et al*. (2004). This study considers the construction of a disclosure index and assumes the scope of disclosure (volume or quantity) to be a good indicator of informative quality, which is an approach widely used in literature (Depoers, 2000). Beattie *et al.* (2004) and Beretta and Bozzolan (2008) propose multidimensional approaches that consider not only the amount of information disclosed but also what is conveyed and how (what the authors call richness). It is on these two axes that the methodology for calculating BM indices was based.

3.3.1 Measure of information quantity disclosed

The quantity of disclosed information is measured by the relative number of disclosed elements. Two methods are used. The first, proposed by Bozzolan *et al*. (2009), compares a company's disclosure strategy to its peers. Therefore, this is a measure of position. It can be applied globally (to information related to the BM) to the four components or their parameters. The index is calculated as follows:

$$IQ1_i = \frac{N_i}{max_j\left(N_j\right)} \quad \text{J} = 1 \text{ to k}$$

N_i represents the number of information units disclosed by company i, and k is the number of companies in the sample.

The second approach, proposed by Beattie *et al*. (2004), allows for the measurement of the relative number of information units disclosed, adjusted according to the size and sector of activity of the company. It is expected that large companies operating in complex sectors will disclose more information. The amount of information disclosed is initially measured by standardized residuals (QR) through a linear regression, using the least squares method, of the number of information units disclosed relative to size (measured by the logarithm of market capitalization) and sector of activity (according to the sector categories of B3). The measure of the relative amount of information is thus defined by:

$$QR_i = D_i - \hat{D}_i$$

Where D_i represents the amount of information disclosed for company *i*, and $\hat{D}i$ represents the theoretical amount of information, given the size and sector of activity of company *i*.

The QR residual is then normalized (STQR) using the minimum and maximum relative measures of all companies in the sample.

$$STQR_i = \frac{max_j\left(QR_j\right) - QR_i}{max_j\left(QR_j\right) - min_j\left(QR_j\right)}$$

This standardized residual is lower for companies that disclose more information than the expected average for a defined sector and size. According to Beattie *et al*. (2004), in order to ensure comparability of interpretation of the results, the index is calculated with the complement to 1 of the standardized residuals.

$$IQ2_i = 1 - STQR_i$$

The higher the IQ2 index, the greater the amount of information disclosed by the company according to its industry sector and size.

3.3.2 Measurement of information disclosure quality

Quality (or richness) is, in turn, addressed by different measures. According to Beretta *et al.* (2008), this quality can be particularly measured by the extent (width) of disclosure. This is measured by the coverage of various topics (or subtopics) in the analysis framework and the dispersion of disclosure among different topics (or subtopics). Coverage (COB) represents the percentage of topics (or subtopics) for which at least one information is disclosed by the company in relation to the total number of topics (or subtopics):

$$COB_i = \frac{1}{n}\sum_{j=1}^{n} INF_{ij}$$

Where INF_j takes the value 1 if the company discloses at least one information about topic j, 0 otherwise, and n represents the number of topics. Dispersion (DISP) shows how various items are concentrated. The degree of dispersion is measured by the complement of the Herfindahl Index[1]. Thus, the higher the index, the greater the dispersion.

$$pi_j DISP_i = 1 - \sum_{j=1}^{n} p_{ij}^2$$

Where n represents the number of information disclosed on topic j divided by the total number of information disclosed by company i. The extent (EXT) of diffusion is the arithmetic mean of these two measures. The higher the coverage and dispersion indices, the greater the extent of information disclosed.

$$EXT_i = \frac{COB_i + DISP_i}{2}$$

According to Beretta *et al*. (2008), the quality of disclosed information also depends on its depth. This gives an indication of how the information is disclosed. It is based on three different attributes coded dichotomously (Beattie *et al*., 2004): historical or prospective information, financial or nonfinancial information, and qualitative or quantitative information.
The prospective dimension (TEMP) synthesizes the information that allows users to improve their predictions of revenues or cash flows (Bozzolan *et al*., 2009). It is measured by the proportion of prospective information in all information about the BM. Financial information (FIN) is measured by the proportion of financial nature information in the information published by the company. Finally, quantitative information (QUANT) is measured by the proportion of company information that has at least one ad-hoc measurement indicator. The average of these three attributes measures the depth (PROF) of the published information.

$$PROF_i = \frac{TEMP_i + FIN_i + QUANT_i}{3}$$

In the end, the quality (or richness) of disclosed information is represented by the average of extent and depth.

$$RIQ_i = \frac{EXT_i + PROF_i}{2}$$

Finally, a global quality index (GQI) is obtained by the average of richness and standardized quantity index (QI2):

$$IQG_i = \frac{IQ2_i + RIQ_i}{2}$$

The higher the global quality index, the better the quality of information disclosed by the company. The indices are calculated using the overall sample (information disclosed within the Reference Form).

[1] The Herfindahl index (also known as the Herfindahl-Hirschman index, or HHI) is a measure of the size of companies relative to their industry and an indicator of the degree of competition among them. So called after the economists Orris C. Herfindahl and Albert O. Hirschman, it is an economic concept widely used in the application of competition defense rules, antitrust regulation, and also technology management.

3.5 Sample and Data Collection

To develop and achieve the objectives of this study, the sample was initially composed of 100 companies that make up the B3 IBrA index from 2015 to 2021. However, during the period analyzed, there were exits and entries in the IBrA index, as they no longer met the criteria for remaining in the index, with 91 companies remaining present in all years of the sample. The distribution of information related to BM in the Reference Form (FR) was analyzed, which is an important source of information on the performance of companies to investors (Lang and Lundholm, 1993).

The documents were analyzed using the content analysis (or thematic) method, which consists of classifying text units into different predefined categories (Weber, 1990). The method is often used to analyze the disclosure of financial information (Beattie *et al*., 2004; Botosan, 1997), therefore being the best option for data collection to achieve the objectives of the study. Initially, data from the years 2015 and 2019 of BM were collected, which served as the basis for the electronic collection of BM information through Python software for the remaining years analyzed in the sample. The coding procedure was organized into three phases (Bozzolan *et al*., 2009).

The first concerns the definition of the analyzed recording units. Even though they are considered less reliable than sentences (Hackson and Milne, 1996), paragraphs were chosen because they allow the identification of possible interactions between the different components or parameters of BM. The second phase involves the definition of the analytical structure and the coding procedure to identify the disclosure of BM information. Based on the models of Osterwalder *et al*. (2005), Johnson *et al*. (2008), and Demil *et al*. (2010) of business models, the extended model was used for the four components: value proposition, value architecture, resources and competences, and economic equation, which can be divided into parameters.

A multidimensional analysis framework was used to capture BM information. The analytical structure organizes BM information into 11 categories, representing the 11 parameters of BM, as defined in frame 2. The homogeneity of the collected data is ensured by the definition of identification and classification rules for each of the dimensions.

Frame 2 - Business model components and parameters

Components	Parameters	Description
Value proposition	Offer description	Features or attributes of the product or service
	Target customers	Target market segments
	Offer access	Distribution mode Customer relationship management
Value architecture	Internal organization - value chain	Key activities and processes
	External organization - value network	Key partners and partnerships
Skills and resources	Resources	Tangible and intangible assets available to the organization
	Organizational competencies	Modes of articulation and implementation of individual and collective resources and knowledge
Economic equation	Revenue structure	Formation and components of income
	Revenue dynamics	Cash receipt flow
	Cost structure	Formation and composition of costs
	Cost dynamics	Cash disbursement flow

Source: Disle *et al*. (2016).

In the third phase, each paragraph of the document or information was coded 0 (zero) if no information related to the BM was identified. Otherwise, the paragraph is coded according to its level of content (according to one of the 11 parameters). If the paragraph refers to several parameters, it is not duplicated, but all parameters related to it are coded (up to five parameters). This procedure allows, in particular, to explain the interactions between the components of the BM and their various parameters.

The study also integrates two measures: quantitative versus qualitative information (QUANT), taking the value 0 if the disclosed information is purely narrative and 1 if it provides at least one ad hoc measurement indicator; and financial versus nonfinancial (FIN), considering the value 0 if the information does not provide an indication of impact on performance, 1 if the impact is positive, and 2 if the impact is negative. Finally, according to Bozzolan *et al*. (2009), investors need prospective information to help them build their cash flow predictions. Thus, the study integrates this dimension with a measure (PROSP) taking the value 0 if the information does not refer to time, 1 if the information refers to the past, and 2 if the disclosed information refers to the future. In summary, each analyzed paragraph gives rise to coding according to the eight dimensions mentioned above and synthesized in frame 3.

Frame 3 - Coding Dimensions

Variable	Modalities	Description
PAR_1	1 a 11	Reference to one of the 11 parameters of the business model
PAR_2	1 a 11	Reference to one of the 11 parameters of the business model
PAR_3	1 a 11	Reference to one of the 11 parameters of the business model
PAR_4	1 a 11	Reference to one of the 11 parameters of the business model
PAR_5	1 a 11	Reference to one of the 11 parameters of the business model
QUANT	0 ou 1	0 if information is narrative; 1 if information is quantitative
FIN	0, 1 ou 2	0 if information is not related to financial performance; 1 if information has a positive impact on performance; 2 if information has a negative impact on performance
PROSP	0, 1 ou 2	0 if information is not time-related; 1 if information is about the past; 2 if information is about the future

Source: Protin *et al.* (2016).

To collect data from the other years of the 2016 sample, 2017, 2018, 2020, and 2021, Python software was used, following the same methodology for content analysis and coding of disclosure parameters on the BM described in the previous paragraphs, in a way that allows for electronic collection of information. The Reference Forms for collecting data on business models for the analyzed years were obtained from the official website of B3.

To collect information for the construction of the informational asymmetry index, Decourt *et al*. (2019) developed a website (http://www.disclosureindex.com/br), where the project is presented, and analysts are asked to declare whether they are certified or not, as well as their state of residence. After filling out this simple form and submitting the requested information, the website presents two companies, from which analysts choose the one they consider to have the best information, i.e., where there is less information asymmetry between the company and the market. Ten pairs of companies are presented each time; some analysts participate more than once, in which case they will be presented with another ten pairs of companies (Decourt *et al*., 2019). The other variables were collected in the Thomson Reuter and Economática databases.

4. DESCRIPTION AND ANALYSIS OF EVIDENCE

This section presents the empirical findings from our analysis of the relationship between business model disclosure and its impacts on information asymmetry, cost of capital, company valuation, and capital structure. We structure our results according to each hypothesis tested, beginning with descriptive statistics and then presenting the regression results that address each hypothesis specifically.

4.1. Descriptive Analysis of Variables

Table 1 presents the descriptive statistics of the variables used in the econometric models, where it was found that, on average, the weighted average cost of capital and the cost of equity capital in the sample companies corresponded to 7.02% and 9.56%, respectively, with the average market value of the company in relation to accounting records being 2.70, and leverage 2,73. On average, the frequency of disclosure of the 11 parameters of the BM of the companies found in the sample was 207, and the BM information disclosure indexes corresponded to 0.570, 0.417, 0.329. These indexes (iqg, iq1, and iq2) were considered median, and companies need to evolve in presenting the quality and quantity of information disclosed about BM

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Table 1 - Descriptive statistics of the determinant variables

Variable	Mean	Std. Dev.	Min	Max	N
lev	2,73363	16,03597	-230,8438	135,4344	613
wacc	0,070226	0,0296705	0,0183562	0,2641017	614
ccp	0,095672	0,0484232	0,0214176	0,3380325	614
mtb	2,699123	6,844407	-18,25498	132,79	637
Fr	207,9576	102,6987	43	642	637
iqg	0,5705557	0,1106326	0,2907033	0,9484344	637
iq1	0,4173906	0,2157344	0,0785953	1	637
iq2	0,328967	0,2038047	0	1	637
iai	1498,931	125,9064	0	1731	450
beta	1,038583	0,762343	-1,473707	4,35568	625
cov	10,27974	5,897313	0	36	622
vol	41,99513	17,01026	0	118,2318	623
rept	0,7531447	0,4315212	0	1	636
nbc	1,043956	0,2051584	1	2	637
exp	16,38625	26,285	0	92,83	635
growt	0,0081277	1,519655	-34,10779	13,81478	637
roa	4,505259	10,18865	-116,769	106,9559	637

Source: Prepared by the authors.

4.2 Multiple Linear Regression Analysis

The analysis of multiple linear regressions (Table 2) showed that increasing the disclosure of information on BM contributes to a reduction in the weighted average cost of capital (WACC). In IQG, the coefficient indicates that this disclosure index contributes on average, with -1.23 percentage points (p.p.) to the WACC reduction, while the other indices also contribute to a WACC reduction of -0.40 p.p. (iq1) and -0.41 p.p. (iq2). The evidence suggests that the three indices together contribute to a reduction of -2.04 p.p. in the WACC, which is on average 7.02%, indicating that disclosing information on BM has an impact on reducing the WACC of the sample companies. This finding is consistent with the academic literature, which concluded

that information disclosure allows shareholders to better evaluate their investments, thus reducing the cost of capital of companies (Diamond and Verrecchia, 1991; Botosan, 1997; Ettredge *et al*., 2002; Easley and O'Hara, 2004; Lambert *et al*., 2012; Heflin *et al*., 2016; Zhou *et al*., 2018; He *et al*., 2019).

It was also found that the informational asymmetry index (IAI) reflects on the WACC, with the coefficient of IAI indicating that in the IQG, IQ1, and IQ2 models, the index contributes on average to a reduction of -3.71 p.p., -3.77 p.p., and -3.55 p.p. in the WACC, which is on average 7.02%. Therefore, the evidence suggests that disclosing information on BM contributes to mitigating informational asymmetry, impacting capital costs. This finding is also consistent with the academic literature, which concluded that disclosing company information helps to mitigate information asymmetries (Diamond and Verrecchia, 1991; Dye, 2001; Ettredge *et al*., 2002; Protin *et al*., 2016; Decourt *et al*., 2019; Zhang *et al*., 2020). The IAI from 2015 to 2019 was used in this model because the index was only estimated until 2019.

It was also found that the variables of volatility (-0.59 p.p.), growth (0.04 p.p.), leverage (-0.13 p.p.), ROA (-0.20 p.p.), and Selic (-0.86 p.p.) contribute on average to a reduction of -1.74 p.p. in the WACC, which is on average 7.02%.

Table 2 - Multiple Linear Regression Analysis

Wacc	**Modelo 1 IQG**		**Modelo 2 IQ1**		**Modelo 3 IQ2**	
Variável	**Coef.**	**P>|t|**	**Coef.**	**P>|t|**	**Coef.**	**P>|t|**
Iqg	-0,0216225	**0,002*****				
iq1			-0,009782	**0,006*****		
iq2					-0,012477	**0,001*****
Iai	-0,0000247	**0,048****	-0,0000251	**0,045****	-0,0000236	**0,059***
Beta	-0,0002934	0,766	-0,000435	0,659	-0,000296	0,764
Cov	-0,000028	0,816	-0,0000135	0,915	-0,0000398	0,737
Vol	-0,000144	**0,041****	-0,0001422	**0,045****	-0,0001423	**0,043****
Rept	0,0022613	0,364	0,0024019	0,337	0,0023326	0,348
Exp	0,0001847	0,222	0,0001958	0,196	0,0001885	0,212
Growt	0,0162076	**0.000*****	0,0162721	**0,000*****	0,0163064	**0,000*****
Lev	-0,0005464	**0,025****	-0,0004764	**0,052****	-0,0005684	**0,020****
Roa	-0,000448	**0,009*****	-0,0004619	**0,007*****	-0,0004373	**0,010****
Selic	-0,0010972	**0.000*****	-0,0010664	**0,000*****	-0,0010434	**0,000*****
_cons	0,1311915	**0.000*****	0,1228238	**0,000*****	0,1206535	**0,000*****
R2	0,3230		0,3186		0,3247	
R2 Aj.	0,1390		0,1402		0,1429	
F	13,31		13,05		13,42	
Prob > F	0,0000		0,0000		0,0000	
sigma_u	,01992382		,2015269		,02005246	
sigma_e	,01036306		,01039641		,1034965	
Rho	,7870671		,78980566		,78964685	

Source: Prepared by the authors.

Legend: ***significant at 1%; **significant at 5%; *significant at 10%

The multiple linear regression analysis (Table 3) showed that an increase in disclosures of information about BM contributes to a reduction in the cost of equity, with the IQG coefficient indicating that this disclosure index contributes on average -1.28 percentage points to the CCP. The other indices also contribute to a reduction in the CCP by -0.47 percentage points (iq1) and -0.41 percentage points (iq2). The evidence suggests that the three indices together contribute to a reduction of -2.16 percentage points in the CCP, which on average is 9.56%, indicating that disclosing information about BM produces effects on the reduction of CCP for the sample companies. In other words, the evidence suggests that disclosing information about BM produces effects on the reduction of CCP for the sample companies, which is consistent with the academic literature on this topic (Diamond and Verrecchia, 1991; Botosan, 1997; Ettredge

et al., 2002; Easley and 0'Hara, 2004; Lambert *et al*., 2012; Heflin *et al*., 2016; Zhou *et al*., 2018; He *et al*., 2019). The IAI of the years 2015 to 2019 was used in this model because the index was only estimated until 2019.

Additionally, it was found that the variables volatility (-0.84 percentage points), growth (0.05 percentage points), roa (-0.41 percentage points), and Selic (-1.29 percentage points) contribute on average to a reduction of -2.49 percentage points in the CCP, which on average is 9.56%.

Table 3 - Multiple Linear Regression Analysis

CCP	**Modelo 1 IQG**		**Modelo 2 IQ1**		**Modelo 3 IQ2**	
Variável	**Coef.**	**P>|t|**	**Coef.**	**P>|t|**	**Coef.**	**P>|t|**
Iqg	-0,0224919	**0,014****				
iq1			-0,0113645	**0,008*****		
q2					-0,0125757	**0,013****
Iai	-0,0000263	0,113	-0,0000267	0,108	-0,0000251	0,129
Beta	0,0010055	0,568	0,000922	0,591	0,0009814	0,574
Cov	-0,000152	0,414	-0,000117	0,536	-0,0001681	0,355
Vol	-0,000227	**0,048****	-0,0002280	**0,047****	-0,0002239	**0,046****
Rept	0,0030777	0,398	0,0030937	0,402	0,0031887	0,386
Exp	0,0002975	0,177	0,0003083	0,166	0,0003018	0,168
Growt	0,0190567	**0,001*****	0,0191504	**0,001*****	0,0191513	**0,001*****
Lev	-0,0004089	0,294	-0,000331	0,396	-0,0004302	0,272
Roa	-0,000896	**0,017****	-0,0009025	**0,016****	-0,0008875	**0,018****
Selic	-0,0016689	**0.000*****	-0,0016457	**0.000*****	-0,0016114	**0.000*****
_cons	0,1601543	**0.000*****	0,1520108	**0.000*****	0,1491138	**0.000*****
R2	0.3371		0.3369		0.3372	
R2 Ajustado	0.0776		0.0777		0.0794	
F	14.52		13.58		14.67	
Prob > F	0.0000		0.0000		0.0000	
sigma_u	.03255955		.03271698		.03266953	
sigma_e	.01473531		.01473654		.01473327	
Rho	.83000288		.83133625		.83099141	

Source: Prepared by the authors.

Legend: ***significant at 1%; **significant at 5%; *significant at 10%

The analysis of multiple linear regressions (Table 4) showed that an increase in the disclosure of BM information contributes to the value of companies, with the IQG index indicating that this disclosure contributes on average 1.19 points to the MTB. The other indices and the frequency of information also contribute to an increase in MTB by 0.67 (iq1), 0.24 (iq2), and 1.19 (fr). Therefore, the evidence suggests that the three indices together contribute to a 2.10 increase in MTB, which is on average 2.18, indicating that disclosing information about BM produces effects on the increase in the value of sample companies. This supports hypothesis 3 of this study and is consistent with findings in the academic literature that disclosing information reflects on the value of companies (Diamond and Verrecchia, 1991; Botosan, 1997; Easley *et al*., 2002; Easley and O'Hara, 2004; Damodaran, 2016; Guay and Verrecchia, 2018; Zhou *et al*., 2018; He *et al*., 2019; Zhang *et al*., 2020).

It was also found that the variables (average of models) reputation, export, and roa contribute on average 0.31, -0.45, and 0.13, respectively, to the increase and decrease in MTB, which is on average 2.18.

Table 4 - Multiple linear regression analysis

MTB	**Modelo 1 IQG**		**Modelo 2 IQ1**		**Modelo 3 IQ2**		**Modelo 4 FR**	
Variável	**Coef.**	**P>|t|**	**Coef.**	**P>|t|**	**Coef.**	**P>|t|**	**Coef.**	**P>|t|**
Iqg	2,079182	**0,001*****						
iq1			1,618879	**0.000*****				
iq2					0,7181119	**0,042****		
Fr							0,0057084	**0.000*****
Beta	-0,0329805	0,699	-0,0526562	0,545	-0,0083309	0,923	-0,0728181	0,415
Cov	-0,0064948	0,467	-0,0193307	**0,052***	-0,0007695	0,932	0,0035598	0,700
Vol	0,0071349	0,130	0,0082246	**0,078***	0,0063684	0,172	0,006362	0,184
Rept	0,444763	**0,076***	0,5083913	**0,040****	0,431097	**0,088***	0,2650301	0,273
Exp	-0,0266135	**0,056***	-0,0253856	**0,067***	-0,0269604	**0,057***	-0,0305934	**0,020****
Growt	0,2891645	0,302	0,2326379	0,399	0,3207671	0,261	0,3134598	0,232
Lev	0,0432618	0,234	0,035489	0,325	0,0439633	0,228	0,0573976	0,126
Roa	0,0296506	**0,044****	0,0282	**0,051***	0,0310987	**0,037****	0,0307818	**0,032****
_cons	0,6962408	0,246	1,267865	**0,006*****	1,605391	**0,001*****	0,8226543	**0,079***
R2	0.0499		0.0669		0.0415		0.1119	
R2 Aj.	0.0147		0.0080		0.0143		0.0026	
F	2.59		3.81		2.02		5.26	
Prob > F	0.0105		0.0004		0.0461		0.0000	
sigma_u	1,956116		1,9215548		1,9670527		1,9547136	
sigma_e	1,393157		1,3806727		1,3993104		1,3469892	
Rho	.66346546		.65951365		.66398718		.67803229	

Source: Prepared by the authors.

Legend: ***significant at 1%; **significant at 5%; *significant at 10%

The analysis of multiple linear regressions (Table 5) demonstrated that the disclosure of BM information contributes to the formation of the capital structure of companies, with the frequency of information contributing on average in percentage points to a reduction of -106.60 (fr) and the information quantity index -180.32 (iq2) of ALAV, and the index that measures the quality of information in relation to its peers 285.60 (iq1) to the increase in ALAV.

The evidence suggests that the two indices (fr and iq2), together, contribute to a -286.92 percentage point reduction in ALAV, which averages 273.36%. This indicates that disclosure of information about the BM reduces ALAV for the sample companies, which is consistent with the academic literature on the subject (Uyar and Kiliç, 2012; Cahan *et al.*, 2016; Rajan and Zingales, 1995; Bastos *et al*., 2009).

However, the iq1 index, which measures the disclosure strategy relative to peers, contributes to a 285.60 percentage point increase in ALAV, which averages 273.36%. This shows that companies prefer to increase leverage relative to their peers as a financial strategy, which may be due to market competition.

Table 5 - Multiple linear regression analysis

ALAV	**Modelo 1**	
Variável	**Coef.**	**P>|t|**
fr	-0,0051261	**0,077***
iq1	6,842557	**0,004*****
iq2	-5,481389	**0,018****
beta	0,.45495	**0,010****
cov	-0,029764	0,425
vol	0,0216059	0,048
rept	0,196922	0,673
exp	0,0185508	0,255
growt	-0,0170034	0,717
roa	0,0823441	**0,016****
_cons	0,562689	0,475
R2	0.0977	
R2 Ajustado	0.0037	
F	2.96	
Prob > F	0.0029	
sigma_u	1,9940882	
sigma_e	2,240192	
rho	.44207391	

Source: Prepared by the authors.
Legend: ***significant at 1%; **significant at 5%; *significant at 10%

5. FINAL CONSIDERATIONS

The objective of this research went to verify whether the disclosure of the business model (BM) reflect in formation capital structures in Brazilian companies. Our findings align with the hypotheses posited, indicating that disclosing information on business models significantly contributes to the objectives of this study and aligns with existing literature (Osterwalder *et al*., 2005; Zott and Amit, 2010; Bertrand *et al*., 2012; Beattie and Smith, 2013; Demil *et al*., 2010; Arrow, 1963; Akerlof, 1970; Spence, 1973; Verrecchia, 1983; Wagenhofer, 1990; Dye, 2001; Botosan, 1997; Easley *et al*., 2002; Easley and O'Hara, 2004; Damodaran, 2016), that disclosing information about MN produces positive effects for reducing capital costs and mitigating information asymmetry between companies and investors, which together contribute to adding value to companies in the capital market, and in the formation capital structure companies in Brazil.

Our statistical analysis reveals that disclosing information on business models contributes to mitigating diversifiable beta and reducing capital costs by alleviating information asymmetries. Furthermore, companies should enhance both the quality and quantity of information disclosure to improve disclosure indices, thus contributing to the literature in this field (Protin *et al*., 2016; Disle *et al*., 2016; Protin *et al*., 2018; Alves *et al*., 2021).

Our study demonstrates that higher disclosure indices in business models are associated with a significant reduction in Weighted Average Cost of Capital (WACC), Capital Capitalization Premium (CCP) and degree of leverage (ALAV), while concurrently increasing Market-to-Book Ratio (MTB).

Specifically, our analysis indicates an average reduction of -286.92 percentage points in ALAV, -2.04 percentage points in WACC and -2.16 percentage points in CCP, with an average increase of 2.10 in MTB, suggesting a positive impact on company valuation.

Finally, while our study relied on information from reference forms submitted by companies to B3, the abundance of data and references to business models therein substantiated our research objectives. Nonetheless, there remains room for improvement in the presentation of information in reference forms, suggesting the potential benefits of issuing standardized guidelines by regulatory bodies like CVM.

For future research, we recommend exploring the presence of business model concepts in financial statements or accounting standards and expanding data collection over additional years to capture evolving trends in disclosure practices, as well as the importance of ESG disclosure for corporate value formation.

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