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Impact of Disclosure on Risk and Value of Brazilian Public Companies

Impacto do *Disclosure* no Risco e no Valor das Companhias Brasileiras de Capital Aberto

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Abstract
The objective of this study was to analyze the influence of disclosure on the risk and value of Brazilian non-financial public companies from 2011 to 2015. The disclosure was measured by annual reports on company websites; the presence of a session related to the risk factors that may influence them and the information availability related to risk, value creation and prospections. The risk variables were measured by the Beta, the Weighted Average Cost of Capital (WACC) and the volatility of stocks; the value of the companies was measured by the Market-to-Book Index, the market value of the companies and Tobin's Q. The results showed that the investigated companies presented low level of information disclosure in the studied period. The regression analysis with panel data showed a significant positive relationship between the adherence to the BM&FBovespa's Differentiated Levels of Corporate Governance (CG) and the Weighted Average Cost of Capital. However, when the CG level was weighted by the availability of a specific session for risk factors, a significant negative relationship was obtained between this variable and the WACC. Additionally, a significant negative relationship was found between the CG and the systemic risk of stocks (BETA). Disclosure and CG did not present a statistically significant relationship with the value. The study evaluates transparency in the communication process between managers and stockholders of Brazilian companies and shows the role of voluntary disclosure for the decision makers.
Keywords: D*isclosure. Risk management. Company value. Transparency. Brazilian companies.*

Resumo
O objetivo deste estudo é analisar a influência do *disclosure* no risco e no valor de empresas brasileiras não financeiras de capital aberto no período de 2011 a 2015. O *disclosure* foi medido a partir de relatórios anuais nos sites das empresas; a presença de uma sessão relacionada aos fatores de risco que podem influenciá-las e a disponibilidade de informações relacionadas ao risco, criação de valor e projeções. As variáveis de risco

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foram medidas pelo Beta, pelo Custo Médio Ponderado de Capital (WACC) e pela volatilidade das ações. O valor das empresas foi mensurado pelo Índice *Market-to-Book*, pelo valor de mercado das companhias e pelo Q de Tobin. Os resultados mostram que as empresas investigadas apresentam baixo nível de divulgação de informações no período estudado. A análise de regressão com dados em painel mostrou relação positiva e significativa entre a adesão aos níveis diferenciados de Governança Corporativa (GC) da BM&FBovespa e o Custo Médio Ponderado de Capital. Entretanto, quando o nível de GC foi ponderado pela disponibilidade de uma sessão específica destinada aos fatores de risco, obteve-se uma relação negativa e significativa entre essa variável e o WACC. Adicionalmente, constatou-se uma relação negativa significativa entre a GC e o risco sistemático das ações (BETA). O *disclosure* e a GC não apresentaram relação estatisticamente significante com o valor. O estudo avalia a transparência no processo de comunicação entre gestores e acionistas de empresas brasileiras e mostra o papel da divulgação voluntária para os tomadores de decisão.
Palavras-Chave: *Disclosure. Gestão de risco.* Valor de empresas. Transparência. Empresas brasileiras.

* * *

1 Introduction

D*isclosure* is the communication channel between managers and shareholders, considered as fundamental for the reduction of informational asymmetry (Bushman & Smith, 2003; Castro Junior, Conceição, & Santos, 2011). Lanzana, Silveira and Famá (2006) argue that the disclosure of information is one the ways that managers have to present their performance not only to the investors, but also to the company administration. Jensen and Meckling (1976) affirm that the voluntary *disclosure* of financial reports is a mechanism that provides monitoring of managers by external shareholders and also by the company creditors.

The study by Schadewitz and Blevins (1998) draws attention to the role of *disclosure* in the capital market when they affirm that rational investors avoid taking on the shareholding position in companies with quantity and quality of information below expectations. According to BM&FBovespa (2016), the adoption of good practices of corporate governance provides greater credibility to companies.

By considering the importance of transparency in the communication process between managers and shareholders and its possible influence on

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the value of companies and on the risk taken by the investors, the question is raised: What is the impact of *disclosure* on the risk and on the value of the companiess? The general objective of this study consists of analysing the influence of disclosing information by means of the *disclosure* process on the risk and on the value of Brazilian public companies from 2011 to 2015.

This paper is also based on the *Disclosure* theory. Guay and Verrecchia (2018), in a study about the conservative transparency, conclude that several times the companies prefer offering information of small failures as opposed to not having them due to the fact that this action signals the shareholders*s* that the organization is reliable and can reduce its risk, being thus rewarded with a higher value of the stocks in the long run. Leuz and Wysocki (2016) remark that reports on corporate environmental responsibility are not reliable, with low quality of provided information and several times the companies prefer focusing only on the positive advances. In the analysis of regulatory requirement on information transparency, Michelon, Pilonato and Ricceri (2015) concluded that the results on *Disclosure* are really contradictory and inconclusive, therefore justifying a deeper evaluation of the topic.

With regads to the method, this research adopted the following stages: i) development of a semistructured questionnaire based on the *Disclosure* Index proposed by Lanzana, Silveira and Famá (2006), for data collection on transparency; ii) definition of the study sample; iii) company *websites* analysis, specially the part concerning the Relatioship with Investors included on the *website* of each company of the sample; iv) financial data collection in Economática database; v) use of regression with panel data aiming to measure the influence of disclosing information by means of the *disclosure* process on the risk and on the value of the Brazilian public companies from 2011 to 2015. The selected period is justified due to the fact that 2011 is the year in which most companies of this study begin to disclose voluntary reports. Other authors use a 5 year period analysis (Guay & Verrecchia, 2018), by justifying the choice of a comprehensive

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period, making it possible to cover various peculiarities within an economic cycle.

This study aims to contribute by means of creating a more comprehensive measure of organizational *disclosure* evaluation for investors as well for managers who want to adopt transparency measures in their companies. The creation of this new transparency measure may contribute to the financial market transaction and to the insertion of new investors.

2 Theoretical Framework

2.1. Transparency

The Brazilian Institute of Corporate Governance – IBGC (2015) defines transparency as the desire to make information which belong to their own interests available for the interested parties and not only the ones imposed by provisions and regulations. According to Wong (2009), well governed organizations search an increasing transparency level, aiming to provide enough information about the performance of the companies, their perspectives and risks, with the intent to facilitate investiment decisions and to reduce the possibility of abuses from information asymmetry.

Nonetheless, Dantas *et al.* (2005) evaluated the benefits of accounting disclosure. According to the authors, a higher level of *disclosure* benefits the users with information for their decision-making process and creates the conditions for the development and for the stability of the capital market.

In Brazil, according to Lopes and Walker (2008), there is an unsatisfactory structure of corporate governance, there is an incentive for the manipulation of results, presence of an unstable and volatile financial market and weak legal protection to shareholders. Rocha and Procianoy (2004) carried out a study in which they concluded that the Brazilian companies do not attribute due importance to their relationships with investors and analysts, and stop gaining many advantages that could derive from their corect use and from their information transparency. From another perspective, Marques *et al.* (2015) analysed the relationship

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between the quality of accounting information and the transparency level of Brazilian companies. The study reinforces a greater explanatory capability of the accounting numbers of companies with higher levels of transparency.

Concerning the voluntary *disclosure*, the research carried out by Bertomeu, Beyer and Dye (2011) developed a theoretical financing model that jointly determines the capital structure, the voluntary *disclosure* policy and the company's capital cost. According to these authors, a company with low volatilily in its cash flows prefers increasing the capital by the issuing of risk-free debts and adopting an expansive policy of disclosing information. Almeida and Santos (2016) analysed if the voluntary information disclosure of corporate social responsibility influences the capital structure of the companies listed on the BM&FBovespa. The authors note a positive relationship showing that the companies that disclosed more information to the market can more easily attract resources.

2.2 Company Transparency, Risk and Value: a Literature Review

Lameira's study (2007) has correlated corporate governance with the risk represented by the variables: local beta, international beta, volatility stock return, non-systemic risk, weighted average cost of capital and the difference between the stock return and the fixed income return. The author found a negative and significant relationship between corporate governance and risk.

Skaife, Collins and LaFond (2004) investigated the extent in which the attributes of corporate governance that are aimed at mitigating the agency risk affect the cost of the companies. One of the results found by the study is that the companies which report higher annual accumulation and less transparent profits have a higher capital cost. Castro Junior, Conceição and Santos (2011) showed that there is a negative relationship between the equity cost in Brazilian non-financial companies and their *disclosure* level. The study concluded that higher levels of *disclosure* generates a lower risk

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perception on the shareholder, and, therefore, the company has a lower equity cost as a reward.

Alves, Gonçalves and Peixoto's study (2014) verified the existing relatioship between the transparency level and the risk of the non-financial companies negotiated on BM&FBovespa from 2003 to 2012. The authors suggest that a higher qualiy of corporate governance may cause the increase of the equity cost and, on the other hand, the reduction of the capital cost of third parties, in such a way that the weighted average cost of the company capital is reduced.

Nonetheless, Iyengar and Lepper (2000) show that the excess of information may result in a burden on the analysis performed by persons, a fact that diminishes motivation and commitment at the time of choosing a certain option or even analysing all the available information. Other studies also state that the burden phenomenon on the decision-making process may be aggravated by contexts in which the increase of costs are associated with misguided decisions (Langer & Rodin, 1976; Schulz, 1976; Zuckerman et al., 1978). That excess of available information can also affect the investors' perception.

Concerning the relatioship between transparency and company value, Perobelli and Ness Jr. (2000) concluded that when the result of the disclosed information is positive, it can indeed positively influence the price of the stocks, even though it does not occur instantly. Malacrida and Yamanoto (2006) collected information published by 42 companies belonging to Ibovespa and identified that companies with higher level of information disclosure present lower average volatility in the return of their stocks.

The research by Doná *et al.* (2015) analysed determinant factors of the context disclosed in the Management Reports of companies with stocks negotiated on BM&FBOVESPA, from the cyclical consumption sector, trade subsector. The authors found a positive and significant relationship between the volume of information found in the Management Reports and the size, the governance segment and the company profitability.

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Michelon, Pilonato and Ricceri (2015) evaluated the disclosure quality of the sustainable entrepreneurial responsibility reports, a voluntary report. The finding about the study is related to a low quality of the information disclosed in the voluntary reports, presenting as a certain cepticism about using the practice of a sustainable entrepreneurial responsibility report as a tool to improve the perceived accountability as a consequence. Guay and Verrecchia (2018) evaluated the impact of disclosing the company good and bad attitudes in their reports, and how it either positively or negatively impacts upon the stock price of the companies. The study shows that the companies which communicate negative mild attitudes of the organizations end up by being seen as of lower risk and as more reliable ones, causing the shareholders to reward this stock with a higher value of the stock in the long run.

3. Methodology

3.1 Sample and Data Definition

This paper can be classified as quantitative and descriptive because it aims to describe the characteristics of a given population or phenomenon, as well as to establish relatioships among variables (Gil, 2002). As to the sample, it consisted of Brazilian active public companies and listed on BM&FBovespa from 2011 to 2015.

Such analysis period is due to the data availability on the company *websites*. In addition, only the companies with significant liquidity were considered, i.e., the ones which present annual liquidity ratio on the stock market above 0,001, with the purpose of ensuring that the sample companies present a minimum trading volume of assets, because low liquidity companies are less likely to have adequate prices to the market values, according to the criterion adopted by Holtz and Sarlo Neto (2014)...

Finally, the financial companies and the funds were excluded, due to the fact that their particularities in the result calculation and their accounting structure is not similar to the other companies, as Moreira,

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Colauto, and Amaral (2010) point out. Thus, the final sample was made up by 159 companies, after the liquidity and the financial sector filters. Concerning the data, this research used secondary data collected from the Economática database, from the Securities and Exchange Comission (CVM) and from the *websites* of the companies of this study sample.

3.2 Definition of Variables

3.2.1 Dependent variables

For the estimation of the models, by taking into account the researches of/ Skaife, Collins and LaFond (2004), Silveira (2004), Carvalhal da Silva and Leal (2005), Lanzana, Silveira and Famá (2006), Lameira (2007), Peixoto (2012) and Alves, Gonçalves and Peixoto (2014), the following dependent variables related to the risk and to the value of the companies were selected:

a) Beta (BETA): it represents the stock systemic risk and it was measured by using the regression of the security monthly return versus the Bovespa Index monthly return. In order to obtain beta, the previous sixty months to the analysis period were used, according to the CAPM model (*Capital Asset Pricing Model*);

b) *Weighted Average Cost of Capital – WACC*: it represents the risk of the company capital structure, being a *proxy* variable for the cost implied in the capital. According to Damodaran (2002), this cost can be calculated from the company value formula, as follows:

$$WACC = \left\{ \frac{[EBIT * (1 - T) + D - 1]}{(EQUITY + DEBIT)} * [1 + (1 - \text{payout}) * \text{ROA}] \right\} + [(1 - \text{payout}) * \text{ROA}]$$

In which: WACC = abbreviation for *Weighted Average Cost of Capital;* EQUITY = Market value of the company stocks; DEBT = Book value of the company debt; EBIT = profits before interests and taxes; T = income tax rate; D = depreciation value in the period; I = investiment value made by the company; *Payout* = profit percentage for payment of dividends; ROA = ratio between the operational profit and the company total assets.

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c) Stock volatility (VOL): it represents the annual volatility of each stock. This variable was extracted from Economática;

d) Book value/price index per stock Index (M*arket-to-book Index*– M/B): it represents the natural logarithm of the book value/price per stock Index. It is calculated by dividing the stock price and the stockholders'equity per stock informed in the last balance sheet, which is calculated from the formula, as follows:

$$MBPL = \ln \frac{PL/_{QTD}}{COT}$$

In which: MBPL = M*arket-to-book* Index; NA = company net assets*; QTD* = quantity of stocks*; QUO* = stock closing price.

e) Market Value (MV): it represents the company size and it was calculated as the natural logarithm of the market value indicator withdrawn from the Economática database;

f) *Tobin's Q:* it represents, according to the approximation proposed by Chung and Pruitt (1994), the market value of stocks, added book value of debts or capital of third parties and divided by the total assets, that can be calculated according to the following equation:

$$Q\ de\ Tobin = \frac{VMAO + VMAP + DIVT}{ATIVO\ TOTAL}$$

In which: MVCS = Market value of common stocks; MVPS = Market value of preferred stocks; and DIVT = Book value of debts or capital of third parties.

3.2.2 *Independent* variables

The independent variables of the current study were exclusively developed for it and they were also selected according to the studies of Silveira (2004), Lanzana, Silveira and Famá (2006), Peixoto (2012) and Alves, Gonçalves and Peixoto (2014):

a) Risk Factor (RF): this variable verified if the company provides a specífic session to the risk factors which affect the company on its *website*, such as risks related to macroeconomic factors, to the sector in which the company

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operates and the company itself. It is a binary variable, which takes value 1 if the company provides the specific session on its *website* and value 0 if it does not do so;

b) Annual Report (AR): this variable verified if the company provides annual report on its *website*. It is a binary variable, which takes value 1 if the company provides its annual report in the year in question and value 0 if it does not do so. Considering that the study covers the period from 2011 to 2015, the score for each analysed year was applied;

c) Risk, Creation of Value and Propections (RCVP): this variable was based on the *Disclosure* Index proposed by Lanzana, Silveira and Famá (2006), which is a composite one of general and non-financial information, of additional financial information, of the analysis of tendencies and discussion and managerial analysis and of risk, creation of value and propections. Considering that the current study focus is to analyse the *disclosure* level of the companies by risk, creation of value and prospections, it was used in the econometrics model. Such measure was based on the company *website* analysis by focusing on what was proposed by Lanzana, Silveira and Famá (2006). They consider the use and the implementation of risk management, the exposure to exchange rate risk, the quantitative measures of creation of value for the stockholder, the managerial compensation, the perspectives of new projects, the profit and sales and growth prospections. The research was carried out with a questionnaire of 11 questions which covered these themes. The score of the companies in this index varied from 0 to 11 points, being 1 point attributed to each positive answer of the questionnaire;

d) Adhesion to differentiated levels of BM&FBovespa (CGL) corporate governance: represents the company adhesion to the differentiated levels of corporate governance measured by BM&FBovespa. According to BM&FBovespa (2016), the adhesion levels in ascending order are: Nível 1, Nível 2 and Novo Mercado. Hence, the companies received values of 0, 1, 2 and 3, being 0 for the traditional level, which corresponds to the stock

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exchange traditional market and so successively up to 3 for companies of Novo Mercado level;

e) Interaction between CGL and RF (CGL*RF): interaction variable which aimed to measure the relatioship between the adhesion of the differentiated levels of BM&FBovespa corporate governance and the availability of a specific session for the risk factors that affect the company;

f) Interaction between CGL and AR (CGL*AR)*:* interaction variable which aimed to measure the relatioship between the adhesion to differenteated levels of BM&FBovespa corporate governance and the availability of annual reports on the *website* of the companies;

g) Interaction between CGL and RCVP (CGL*RCVP): interaction variable which aimed to measure the relationship between the adhesion to differentiated levels of BM&FBovespa corporate governance and the availability of information concerning risk, creation of value of and prospections of the companies.

3.2.3 C*ontrol variables*

The control variables were selected based on the possible influence that they have on the dependent variables of risk and value of the company and on the independent variables of transparency and based on the studies by Lanzana, Silveira and Famá (2006), Peixoto (2012) and Alves, Gonçalves and Peixoto (2014).

a) B*ook-to-market* index (B/M): an index that represents the stock equity value on its price. It is calculated from the natural logarithm of the equity value index per stock on the price, which consists of the ratio between stockholders'equity per stock and its price;

b) Company Value (CV): it represents a *proxy* for the company size and it was calculated as the natural logarithm market value indicator withdrawn from Economática;

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c) Stock Liquidity (LIQ): an indicator extracted from Economática database which represents the relative volume of the stock negotiations and can be calculated according to the following:

$$LIQ = 100 * \left(\frac{p}{P}\right) * \sqrt{\left(\frac{n}{N}\right) * \left(\frac{v}{V}\right)}$$

In which: LIQ = Stock liquidity; p = number of days on which there was at least one stock negotiation within the chosen period; P = total number of days within the chosen period; n = number of stock negotiations within the chosen period; N = number of negotiations with all the negotiated stocks in the stock exchange within the chosen period; v = stock money volume within the chosen period*; V = money* volume with all the negotiated stocks on the stock exchange within the chosen period.

d) Sales growth (SALES): variable that represents the percentage variance of the total gross revenue of the companies from year to year;

e) Return on Equity (ROE): a variable that represents the ratio between the period net profit and the equity accounting value;

f) Financial Leverage (FL*):* an operationalized variable as the following formula:

$$AF = \frac{\frac{LL}{PL}}{\frac{LL - res\_fin}{AT}}$$

In which: NP = net profit; NA = net assets; fin_inc = financial income (financial income– financial expenses); TA = total assets.

g) Company Sector (SECTOR): binary variable (*dummy*) based on Economática database classification criterion, in which variables are classified as: SET1, SET2,...,SET18 (classification of companies in a total of eighteen sectors, except for the financing and the fund sectors).

In addition to the mentioned variables, all the models were also controlled by *dummies* for the Year, according to Economática database. Table 1 presents the variables used in this study.

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Table 1. Summary of the variables used in this study

Name	Variable	Nature	Source/Authors /Year
Beta	BETA	Dependent variable	- Economática. Lameira (2007); Peixoto (2012); Alves, Gonçalves and Peixoto (2014).
Weighted Average Cost of Capital	WACC	Dependent variable	- Economática. Skaife, Collins and LaFond (2004); Lameira (2007); Peixoto (2012); Alves, Gonçalves and Peixoto (2014).
Stock volatility	VOL	Dependent variable	- Economática. Peixoto (2012); Alves, Gonçalves and Peixoto (2014).
Market-to-book ratio	M/B	Dependent variable	- Economática. Lanzana, Silveira and Famá (2006); Peixoto (2012); Alves and Gonçalves and Peixoto (2014).
Market Value	MV	Dependent varible	- Economática. Peixoto (2012); Alves, Gonçalves and Peixoto (2014).
Tobin's Q	Tobin's Q	Dependent variable	- Economática. Silveira (2004); Carvalhal da Silva; Leal (2005); Peixoto (2012).
Risk Factor	RF	Independent variable	- *Websites* of companies and CVM Variable developed in the study
Annual Report	AR	Independent variable	- *Websites* of companies and CVM Variable developed in the study
Risk, Creation of Value and Prospections	RCVP	Independent variable	- *Websites* of companies and CVM Lanzana, Silveira and Famá (2006).
Adhesion to the differentiated /levels of BM&FBovespa governance	CGL	Independent variable	- *Websites* of companies and CVM Silveira (2004); Peixoto (2012); Alves, Gonçalves and Peixoto (2014).
Book-to-market ratio	B/M	Control variable	- Economática. Lanzana, Silveira and Famá (2006); Peixoto (2012); Alves, Gonçalves and Peixoto (2014).
Company Value	CV	Control variable	- Economática. Lanzana, Silveira and Famá (2006); Peixoto (2012); Alves, Gonçalves and Peixoto (2014).
Stock exchange liquidity	LIQ	Control variable	- Economática. Lanzana, Silveira and Famá (2006); Peixoto (2012); Alves, Gonçalves and Peixoto (2014).
Sales growth	SALES	Control variable	- Economática. Peixoto (2012)
Return on Equity	ROE	Control variable	- Economática. Peixoto (2012)
Financial Leverage	FL	Control variable	- Economática. Lanzana, Silveira and Famá (2006) and Peixoto (2012)
Company Sector	SECTOR	Control variable	- Economática. Lanzana, Silveira and Famá (2006); Peixoto (2012); Alves, Gonçalves and Peixoto (2014).

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3.3 Regression Models with Panel Data

This study used regression analysis with panel data, according to Greene (2008) and Kennedy (2009) – Table 2.

Table 2. Regression models with panel data

Description of Model	Models	Dependent Variable	Independent Variables	Control Variables
Fixed Effects Model	1	BETA	RF, CGL, CGL*RF	WACC, VOL, B/M, CV, LIQ, YEAR, SECTOR
Fixed Effects Model	2	BETA	AR, NGC, CGL*AR	WACC, VOL, B/M, CV, LIQ, YEAR, SECTOR
Fixed Effects Model	3	BETA	RCVP, CGL, CGL*RCVP	WACC, VOL, B/M, CV, LIQ, YEAR, SECTOR
Fixed Effects Model	4	WACC	RF, CGL, NGC*RF	BETA, VOL, B/M, CV, LIQ, YEAR, SECTOR
Fixed Effects Model	5	WACC	RA, CGL, CGL*AR	BETA, VOL, B/M, CV, LIQ, YEAR, SECTOR
Fixed Effects Model	6	WACC	RCVP, CGL, CGL*RCVP	BETA, VOL, B/M, CV, LIQ, YEAR, SECTOR
Fixed Effects Model	7	VOL	RF, CGL, CGL*RF	WACC, BETA, B/M, CV, LIQ, YEAR, SECTOR
Fixed Effects Model	8	VOL	AR, CGL, CGL*AR	WACC, BETA, B/M, CV, LIQ, YEAR, SECTOR
Fixed Effects Model	9	VOL	RCVP, CGL, CGL*RCVP	WACC, BETA, B/M, CV, LIQ, YEAR, SECTOR
Fixed Effects Model	10	M/B	RF, CGL, CGL*RF	FL, SALES, ROE, LIQ, YEAR, SECTOR
Fixed Effects Model	11	M/B	AR, CGL, CGL*AR	FL, SALES, ROE, LIQ, YEAR, SECTOR
Fixed Effects Model	12	M/B	RCVP, CGL, CGL*RCVP	FL, SALES, ROE, LIQ, YEAR, SECTOR
Fixed Effects Model	13	MV	RF, CGL, NGC*RF	FL, SALES, ROE, LIQ, YEAR, SECTOR
Fixed Effects Model	14	MV	AR, CGL, CGL*AR	FL, SALES, ROE, LIQ, YEAR, SECTOR
Fixed Effects Model	15	MV	RCVP, CGL, CGL*RCVP	FL, SALES, ROE, LIQ, YEAR, SECTOR
Random Effects Model	16	Tobin'sQ	RF, CGL, CGL*RF	FL, SALES, ROE, LIQ, YEAR, SECTOR
Random Effects Model	17	Tobin's Q	AR, CGL, CGL*AR	FL, SALES, ROE, LIQ, YEAR, SECTOR
Random Effects Model	18	Tobin's Q	RCVP, CGL, CGL*RCVP	FL, SALES, ROE, LIQ, YEAR, SECTOR

Initially, the *Lagrange Multiplier* (LM) test was performed in order to define between the *Pooled* and the Panel models; then, Hausman test was used to define between the use of fixed effects models and the random ones. In addition, Baum's heteroscedasticity tests (2001) and Wooldridge's

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autocorrelation test (2002) were adopted, by using Stata 13 *robust* command.

Thus, 18 (eighteen) econometric models were obtained for the regression analysis which relate *disclosure* and risk and *disclosure* and the company value, as shown in Table 2. For each of the 6 (six)/ dependent variables, there were 3 (three) model specifications due to the explanatory variables of *disclosure* which varied in each model (Risk Factor – RF; Administration Report – AR; and RCVP).

4 Result Analysis

The discussion and the analysis of the research results begin with the presentation of Table 3, which presents the descriptive statistics of the study.

Table 3. Descriptive statistics of the research

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
BETA	710	0,7929437	0,4478775	0,01	1,87
WACC	806	1.783.597	5,33456 -10	0,82487 9.	122579
VOL	851	3.496.214	1.620.354	17,26	72,24
M/B	892	1.684.497	1,442854 .1	339243 4.	912459
MV	892	5,35e+09	5,88e+09 1.	92e+08 1.	7,60E+11
Tobin's Q	892	1.366.775	12,69552 -10	0,21819 3	13,941
RF	925	0,4108108	0,4922471	0	1
AR	925	0,2237838	0,4170043	0	1
RCVP	925	0,8216216	1.791.505	0	9
CGL	925	1.994.595	1.285.523	0	3
B/M	806	0,9690553	1,319337 .0	012728 3.	479335
MV	892	5,35e+09	5,88e+09 1.	92e+08 1.	7,60E+11
LIQ	925	0,2580908	0,332492	0,001	1,019
SALES	843	370.963	18,31358 -29	0,47021 41	0,54621
ROE	829	6.907.831	-1.408.986	23.414 26	0,91738
FL	895	1.718.022	1,398075 .2	166565 4.	815101

It is observed in Table 3 that the companies considered in the sample presented low level of information disclosure. As an example, the fact that the score average of the studied companies was 0,41 points, varying between 0 and 1, 0 being for companies which do not have a specific session for information concerning the risks that can influence them and 1 point for companies which keep such session. Another result that confirms the low

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level of *disclosure* of the companies is the average score of companies concerning the annual report disclosure, which resulted in 0,22 points, also varying between 0 for companies that do not disclose such information and 1 point for companies that do so.

Information regarding Risk, Creation and Value and Prospections was analysed by Lanzana, Silveira and Famá (2006), based on the Disclosure Index proposed by the authors. They analysed the use and the information implementation by means of a questionnaire of 11 questions that addressed these topics. The maximum score of the companies was 9 points (varying between 0 and 11); however, this score average was 0,82, a value that confirms the low level of *disclosure* of the analysed companies. These results are in line with the ones obtained by Rocha and Procianoy (2004) and Lopes and Walker (2008), who showed a lack of concern about *disclosure* in Brasil, resulting in a low level of voluntary information of its organizations listed on the stock exchange.

The study continues by presenting Table 4, with the regression models of panel data which show the variables related to *disclosure* with the variables related to risk, as it was detailed in the methodology.

According to model 1, a positive and statistically significant relationship at the 10% level between the adhesion to the differentiated levels of BM&FBovespa (NGC) CG and the Weighted Average Cost of Capital (WACC) is observed. These results contradict the ones found in the study by Alves, Gonçalves and Peixoto (2014), which concluded that companies in a higher level of CG present a lower WACC. Furthermore, such result contradicts the ones found in the studies by Castro Junior, Conceição and Santos (2011), Almeida and Santos (2016), because it was expected that, with a higher level of transparency and quality of information, there would be less costly fundraising; however, this is not what results show.

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Table 4. Regression models which relate *disclosure* and risk

	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8	M 9
	WACC	WACC	WACC	BETA	BETA	BETA	VOL	VOL	VOL
RF	.	.	.	.	.	.	.	.	.
AR		-11,832			-0,2395			-47,264	
RCVP			-0,3730			-0,0276			-0,5889
CGL	2,1653*	0,2357	0,2416	-0,1638	-0,0842***	-0,0864***	23,226	-0,0454	-0,1007
CGL*RF	-2,4262**			0,0936				-30,715	
CGL*AR		0,4768			0,0969*			0,0152	
CGL*RCVP			0,1410			0,0068			0,0747
BETA	-0,0074	-0,0850	-0,0799				6,8211**	6,5641**	6,6555**
WACC							0,6041***	0,5990***	0,6014***
VOL	0,0606***	0,0606***	0,0604***	-0,0000 0,0032**	-0,0004 0,0031**	-0,0004 0,0031**			
B/M	0,5108	0,4921	0,5016	-0,0440	-0,0403	-0,0429	-0,0022	-0,0182	-0,0789
CV	-0,0000	-0,0000	-0,0000	-0,0000*	-0,0000*	-0,0000	-0,0000**	-0,0000*	-0,0000*
LIQ	-0,0097	0,1857	0,1626	0,2050	0,1962	0,1907	0,6694	0,8219	0,6904
YEAR	0,0944	0,0617	0,0589	-0,0901***	-0,0918***	-0,0906***	2,8122***	2,7778***	2,7537***
SECTOR	.	.	.	.	.	.	.	.	.
_cons	-1.955.626	-1.278.304	-1.223.518	-182.2807***	185.8169***	183.2499***	-5630.6167***	-5558.0443***	-5510.0206***

The numbers represent the coefficients estimated from the regressions of panel data. *, ** and *** correspond to the statistical significnce in the 10%, 5% and 1% levels, respectively.

It is important to emphasize that, when CGL was weighted with the availability of a specific session for the risk factors that affect the company (CGL*RF), according to model 1, a negative and statistically significant relationship at the 5% level was obtained, between this variable and the

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WACC, a result which is aligned with the ones obtained in other researches (Almeida & Santos, 2016; Alves, Gonçalves, & Peixoto, 2014; Castro Júnior, Conceição, & Santos, 2011). Thus, it is suggested that, so that the company reaps the benefits from a reduced cost of capital, being in a level of differentiated CG is not enough; it is also necessary that non-obligatory information is available, such as the risks that can affect the company.

Additionally, according to models 5 and 6, a negative and statistically significant relatioship at 1% level between the CGL variable and the systematic risk of the stocks (BETA) was found. These results are in accordance with the ones found in Lameira (2007) and Alves, Gonçalves and Peixoto (2012) and indicate that significant increases in the CG level leads to a result inversely proportional on the company risk. However, when the CGL is weighted by the availability of the Annual Report, the sign reversal takes place, a fact which suggests that companies that disclose voluntary information and find themselves in CG differentiated levels at the same time increase their risk.

Considering that the literature does not have a definitive answer for this result, it is assumed that it is related to the bounded rationality of the stockholders. Facing the fact that they receive a large flow of information on a daily basis and they are often unable to cope with them. Hence, it is assumed that the burden may occur on the decision-making process which can be worsened by increases in the costs associated to misguided decisions (Iyengar & Lepper, 2000; Langer & Rodin, 1976; Schulz, 1976; Zuckerman et al., 1978).

Moreover, it was observed during the data collection that this information availabillty is irregular for the majority of the companies, i.e., it is done in some years and it is not so in others. It is suggested that the companies prefer to disclose this report when the market verifies a higher risk regarding the company, with the intent to calm the shareholders down.

Subsequently, Table 5 presents the models of data regressions on panel data that associate the variables related to *disclosure* with the

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variables related to the company value, according to details in the methodology.

Table 5. Regression models that associate *disclosure* and company value

	M 10	M 11	M 12	M 13	M 14	M 15	M 16	M 17	M 18
	M/B	M/B	M/B	VM	MV	MV	Tobin's Q	Tobin's Q	Tobin's
RF	.	.	.	.	.	.	22,664	.	.
AR		-0,0387			1,29E+12			-0,3027	
RCVP			0,0271			3,88E+11			0,2196
CGL	0,3183	-0,1044	-0,1057	2,58E+12	3,45E+11	3,33E+11	0,6425	0,3742	0,5063
CGL*FR	-0,5296			-2,79E+12			-0,4328		
CGL*AR		0,1090			-1,33E+11			0,7662	
CGL*RCVP			0,0163			-1,05E+11			-0,0076
FL	0,2964***	0,3091***	0,3061***	-8,48E+11	-7,77E+11	-8,13E+11	-0,3417	-0,4135	-0,3953
SALES	0,0055**	0,0051**	0,0054**	3,870e+07***	3,698e+07***	3,810e+07***	0,0914**	0,0907**	0,0919**
ROE	0,0135**	0,0128**	0,0126**	-1,50E+10	-1,84E+10	-1,82E+10	0.1199**	0.1158**	0.1185**
LIQ	0,7750***	0,8987***	0,8883***	6,115e+09***	6,749e+09***	6,710e+09***	0,8767	0,5075	0,5451
YEAR	-0,1565***	-0,1598***	-0,1561***	-2,83E+10	-3,02E+10	-6,86E+09	0,1667	0,1630	0,1881
SECTOR	.	.	.	.	.	.	0,0098	0,0127	0,0121
_ cons	315.7056***	322.6594***	315.3123***	6,19E+13	6,73E+13	2,05E+13	-3.238.889	-3.154.046	-3.660.635

The numbers represent the coefficients estimated by means of panel data regressions. "*", "**" and "***" correspond to statistical significance in the 10%, 5% and 1% levels, respectively.
Source: Results from the research.

According to table 3 models, it can be noticed that the variables related to *disclosure* and to CG do not present statistically significant relationship with the variables related to value. Such results differ from the

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ones found in studies by Perobelli and Ness Jr. (2000) and Doná *et al.* (2015), who found a positive and statistically significant relationship between transparency and value.

Nonetheless, an important result found in the present study means to what extent information is necessary for the investor and when it extrapolates his/her understanding limits. By observing transparency in levels, the risk factor is the first one, in which it is simple, quick, short and available information on the organization website. The second one is the availability of the annual report, information which is more demanding to be developed and organized, being more difficult for the investor analysis. The third level is the quality of such information, measured by the RCVP in this study.

The achieved result suggests that the information levels impact upon the risk of the company, and do not upon its value, according to statistical significance for the variables of interest shown in table 2. Another interesting information is the fact that this information level also impacts upon the risk perception so much so that no significance for its highest RCVP with any of the regressions in which it was tested was found. Suggesting that there is a limit for information gathering and processing by the stockholders, reaching a level in which it becomes indifferent to the investor, becoming an effort wasted by the organization.

5 Conclusions

The present study main goal was to analyse the influence of *disclosure* on risk and on value of the Brazilian non-financial public companies from 2011 to 2015. The research showed that in view of the fact that investors receive a large flow of information on a daily basis and they are often unable to cope with them (bounded rationality). Such information processing by individuals becomes impossíble, reaching a level in which the details of information do not guarantee a higher return for the organization. This result aligns with theories which state that the excess of information

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may result in a burden on the analysis performed by persons, a fact that decreased the commitment of agents at the time of choosing a certain option or even of analysing all the available information, generating burden on the decision-making process.

The variables related to *disclosure* and to corporate governance did not present statistically significant relationship with the variables of the values of the companies. However, an important result found in the present study means the reflection on to what extent information is necessary for the investor and when it extrapolates his/her understanding limits. As to the observation of the transparency levels, the risk factor is the first one, which is simple, quick, short and available information on the organization website. The second one is the availability of the annual report, information which is more demanding to be developed and to be organized, being more difficult for the investor analysis. The third level is the quality of such information, measured by RCVP in this study.

The result suggests that the information levels impact the company risk, and not its value. Another interesting information is the fact that the level of this information also impacts the risk perception, so much so that no significance with any of the regressions for the highest RCVP in which it was tested was found.

It is worth emphasising that these results contribute to the understanding of the *desclosure* picture in Brazil, as even international results appear as controversial or inconclusive; thus, by understanding the reality in Brazil it is possible to contribute to theory in the context of local realities. Concerning pratice, the paper contributed to the managers' decision on the voluntary dislosure in entrepreneurial communication, keeping in mind that all the commitment in order to accomplish something inside an organization generates oportunity cost, and making decision based on data is one of the manager roles.

The paper limiting factors are: geographical ones (inferences were made only on the Brazilian reality; the time limit (focus on the period from

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2011 to 2015) and methodological/sampling (data extraction from one of the reports among the several ones from companies with the universe excerpt of public companies with higher liquidity in the stock exchange).

Based on the results found and the paper limits, a greater deepening in the transparency levels is suggested for future researches, so that other variables related to it are used, and other indexes are developed as well. It is also suggested that variables related to the performance are tested, such as Net margin, return on equity and the operational profit, so that the possible relationship of these variables with *disclosure* is studied.

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