

Capital Structure and Corporate Governance in Companies Listed on BM&FBovespa

Abstract

Objective: to analyze the relation between capital structure and corporate governance.

Method: the sample consists of the companies listed on BM&FBovespa between 2010 and 2014. The data were collected on the BNDES website and in the Economática® database and quantitative analysis was applied by the test of difference of means, correlation analysis and multiple linear regression.

Results: the companies that did not participate in the differentiated corporate governance levels present a higher mean indebtedness. In 2012, the companies received a higher volume of resources funded by BNDES, particularly Petrobras. The results appoint that corporate governance exerted negative influence on the subsidized indebtedness, and that the profitability was negatively related with all four types of indebtedness analyzed, confirming what is provisioned in the Pecking Order Theory.

Contributions: The research contributes to enrich the bibliography on capital structure by incorporating the subsidized debt as one of the explanatory variables of the model. Due to its great importance in the corporate context and the fact that academic research results are generally heterogeneous, the discussions on capital structure contribute somehow to the advance in this research area.

Key words: Capital structure. Corporate governance. Subsidized indebtedness.

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1. Introduction

Capital structure is one of the main items of corporate finance (Correa, Basso & Nakamura, 2013; David, Nakamura & Bastos, 2009; Terra, 2009). The theme is related to the use of equity and third-party capital to finance projects. Equity is represented by the proceeds from the retention of profits and also from the resources invested by the company shareholders, whose resources have no repayment term. Third-party capital corresponds to resources obtained by contracting debts, in which there is a set period for discharge, in addition to the payment of interest for its use (Assaf Neto & Lima, 2010).

The theme started to be further discussed by Modigliani and Miller (1958), according to whom a company's form of financing is irrelevant to determine its value. Several studies have been carried out and some theories have been elaborated in the attempt to determine the main factors that influence the use of equity or third-party capital and if the way they are used affects the company value (Bastos, Nakamura & Basso, 2009; Handoo & Sharma, 2014; Joneveer, 2013; Thippayana, 2014).

Trade-off theory and Pecking Order theory are the two most used in empirical studies and dominate the discussion on the capital structure. There is no consensus, however, on which theory best explains the capital structure and its determinants (Campos & Nakamura, 2013; Correa et al., 2013; Pohlmann & Iudícibus, 2010). The Agency theory and the Market Timing theory are also present in empirical studies on capital structure, and their assumptions have already produced results that show their importance in the context of capital structure theories (Baker & Wurgler, 2002; Chen & Huang, 2013; Sun, Ding, Guo, & Li, 2016; Yang, 2013).

Crisóstomo and López-Iturriaga (2011) suggest that countless factors of different kinds can influence how companies are able to obtain resources in the market. Among these, corporate governance stands out, as the companies adopting the best practices have more advantages to contract debt (Silveira, Perobelli, & Barros, 2008). Even though corporate governance has already been tested as a possible determinant of capital structure (Chang, Chen, Chou & Huang, 2015; Chang, Chou & Huang, 2011), the results are contradictory.

In view of the above, in this study, we aim to answer the following question: What is the relationship between capital structure and corporate governance?

The main objective of the study is to analyze the relationship between capital structure and corporate governance and the following specific objectives are: (i) to identify the profile of subsidized debts in companies that adopt the best governance practices and the debt profile of other companies; (ii) to identify the difference between the indebtedness in the companies that adopt the best governance practices and the indebtedness in the others; and (iii) to investigate the relationship between indebtedness and the factors pointed out in the literature as capital structure determinants.

The sample includes the companies listed on BM & FBOVESPA from 2010 to 2014. The data were collected from the Brazilian Development Bank (BNDES) (2016), in relation to subsidized indebtedness; and from Economática®, regarding the economic-financial situation. Quantitative analysis was performed using methods such as the test of difference of means, correlation analysis and multiple linear regression.

As capital structure theories have been elaborated in developed economies, it is timely to validate them in markets of developing countries, such as Brazil (Brito, Corrar, & Batistella, 2007). Although there are many theoretical and practical studies on the subject, the issue has not been defined yet, and imperfections in emerging markets require adjustments in the models already applied (Assaf Neto & Lima, 2010).

In addition, the main contribution of this study is the analysis of the capital structure, especially the composition of indebtedness, under the corporate governance approach, incorporating the company's participation in one of the differentiated levels (Level 1, Level 2 and New Market) as a factor that can explain the indebtedness of the companies listed on BM & FBOVESPA. In addition, this study will not treat third-party capital homogeneously (Póvoa & Nakamura, 2015), as it considers the debts contracted at BNDES (2016) as one of the measures of indebtedness, which distinguishes it from other studies. BNDES was intentionally selected because it is the most active development bank in credit granting in Brazil (Bachiller, 2016; Póvoa, Vieira, Kudlawicz & Bach, 2015).

2. Theoretical Framework

2.1 Capital structure theories

Over the last 50 years, different theories have sought to explain how firms determine their capital structure. Considering a perfect capital market, Modigliani and Miller (1958) proposed that the capital structure is irrelevant to determine the company value. Based on their proposals, however, other studies have found results that show the non-irrelevance of the capital structure, due to the influence of several factors. This advance in research indicates that, in fact, there are market imperfections that cause the non-irrelevance of the capital structure, such as taxes, agency costs, bankruptcy costs, and informational asymmetry. The Trade-off, Pecking Order, Agency and Market Timing theories address these imperfections from different perspectives.

The Trade-off theory proposes that there is an optimal capital structure, obtained by the combination of equity and third-party capital. According to this theory, the optimal capital structure maximizes the possibility of using external indebtedness to finance investments (Myers, 1984).

According to the Pecking Order theory by Myers (1984) and Myers and Majluf (1984), there is an ideal hierarchy (or order of preference) to be used in the choice of funding sources. The first form of financing would be the use of internal resources, through the retention of profits. If these resources are not enough, the company would then prefer external financing through the contraction of debt. And, in the latter case, shares would be issued, influencing the share value, the dividend division and, consequently, the ownership structure, which is not well accepted by the main shareholders.

The Agency theory, in turn, analyzes the relationship between the agent and the principal, as well as the respective costs. The agency relationship can be characterized as a contract in which one or more people (principal) commission a third party (agent) to perform services (Jensen & Meckling, 1976). The agency problem arises when both parts of the relationship are maximizing their usefulness and, for this purpose, the agent can act for his or her own benefit (Jensen & Meckling, 1976). In order to reduce these conflicts, the principal incurs agency costs, which are the costs incurred to verify if the agent has harmed the principal (Jensen & Meckling, 1976). Jensen (1986) admits that debt has the capacity/potential to reduce agency costs as, through debt, there is a lower free cash flow, reducing expenses at the discretion of the agent, who, having few free resources, should use them in the way (s)he judges most rational.

In turn, Market Timing theory, formulated by Baker and Wurgler (2002), refers to the opportunistic practice of issuing shares when the company experiences a favorable market value and buy back stock at low prices. The practice aims to exploit temporary fluctuations in the cost of equity as compared to the cost of other forms of funding.

2.2 Capital structure and corporate governance

The adoption of good corporate governance practices aims to reduce agency problems arising from the relationship between shareholders and managers. Thus, firms with a higher governance quality suffer less agency conflicts (Chang et al., 2014; Chang et al., 2015; Jiraporn, Kim, Kim & Kitsabunnarat, 2012).

Good governance practices are seen as capable of improving company management, organizational performance, increasing market value and reducing informational asymmetry through a better disclosure process (Armstrong, Guay, & Weber, 2010; Detthamrong, Chancharat & Vithessonthi, 2017). This set of benefits tends to improve the company's relationship with the external credit market (Chen, Chung, Hsu, & Wu, 2010). In this sense, the high quality of corporate governance can contribute to improve access to external resources, regardless of the institutional environment (Silveira et al., 2008; Vieira et al., 2011).

The empirical studies in international contexts show that the better quality of the corporate governance system contributes positively to the access to indebtedness, whether in developed countries (Liao, Mukherjee & Wang, 2015) or in emerging market countries (Detthamrong et al., 2017).

In Brazil, studies also concluded that good corporate governance practices contribute to the access to financing through debt (Fonseca, Silveira & Hiratuka, 2016; Silveira et al., 2008), suggesting that this result is due to the reduction of information asymmetry and also to difficulties to get financing through the issuance of shares, as commented by Silveira et al. (2008), considering that the value of company stock may not incorporate the quality of corporate governance, as investors face difficulty to evaluate this quality precisely. It is deduced that the adoption of good corporate governance practices can facilitate Brazilian companies' access to indebtedness.

2.3 Background empirical studies

Jiraporn et al. (2012) analyzed the relationship between the quality of governance and the leverage of companies listed in the Institutional Shareholder Services (ISS) from 2001 to 2004. The authors used two corporate governance indices, one of them based on categories adopted in earlier studies; while the other was built based on the ISS recommendations. As a main result, a negative and significant relationship was found between the two indices and the leverage, emphasizing that each index was tested in a specific regression model. Therefore, the results confirm the hypothesis of influence among the variables, but in a negative sense, that is, there is an inverse relationship between the quality of governance and leverage.

In the analysis of 154 non-financial companies with shares traded on BM & FBOVESPA, Silveira et al. (2008) identified some factors that influence leverage, namely: quality of corporate governance (positive relation), profitability, growth and volatility (negative relation). The authors separated the governance index in two dimensions (transparency, ownership structure and board of directors). They found that the transparency index does not influence the degree of leverage, while the ownership structure index and the board of directors influence it positively. The authors noted the importance of corporate governance as one of the determinants of the capital structure.

In another study that correlates the themes, Vieira et al. (2011) aimed to identify the influence of governance on the capital structure and performance of companies participating in BM & FBOVESPA's differentiated levels of governance. The authors analyzed the 84 companies listed at Level 1, Level 2 and the New Market from 2001 to 2006, and the governance index used in the study corresponds to the sum of 23 dummy variables. As observed, the independence of the board of directors presented negative significance, while the variation in stock concentration in the hands of the five largest shareholders and the variation in stock market liquidity are positively significant. According to the authors, the companies that joined Level 1, those who joined Level 2 and those who opted for the New Market have been adopting the best governance practices suggested by BM&FBOVESPA, but the governance index under study did not influence their indebtedness.

Fonseca et al. (2016) evaluated the influence of corporate governance on the amount and profile of indebtedness in 252 Brazilian publicly-traded companies from 2000 to 2013. The corporate governance variable was measured by a dummy that was equal to 1, as from the year when the company adhered to one of the three listing segments, and null in the other years. As verified, the indebtedness in $t-1$ is positively correlated with the current indebtedness, and there is a negative relation between profitability and growth opportunities on the one hand and indebtedness on the other. It was also observed that asset structure and cash flow volatility negatively influence short-term indebtedness, and that there is a positive relationship between size and total indebtedness. Regarding corporate governance, the authors observed a positive, costly and long-term relationship with total indebtedness, concluding that governance facilitates access to financing with third-party capital, but the corporate governance variable presented a negative relation with the short-term debt.

In view of the above, the relevance of this research is reinforced to deepen the analysis of the capital structure under the governance approach, by incorporating the participation in the differentiated levels of BM&FBOVESPA as a factor capable of explaining the capital structure in companies listed in that institution. It should be noted that this study differs from the others because it does not consider third-party capital in a homogeneous way, as it includes the analysis of company debt subsidized by BNDES (2016) as one of the measures of indebtedness.

3. Methodological Procedures

Regarding the purposes, the research is classified as descriptive, as it identifies the situation of the event and establishes how the variables are mutually related (Gray, 2012). With regard to procedures, this is a documentary research. The source of the documents is secondary (Cooper & Schindler, 2011), as the financing the companies obtained was consulted on the BNDES website (2016); data on the listing segment of each company were collected from the BM&FBOVESPA website; and the economic-financial data of the fiscal years between 2010 and 2014 were consulted in the Economática® base. Regarding the approach, the research is classified as quantitative, as data are organized, arranged in tables and submitted to statistical tests (Martins & Theóphilo, 2009).

The population includes the publicly-traded companies listed on BM&BOVESPA between 2010 and 2014. Due to the fact that the financial statements of financial companies (banks, insurance and investment brokers) present a differentiated structure in comparison with the non-financial companies, which can distort the results if they are included in the study, these were excluded from the sample. Figure 1 evidences some operational details and the theoretical backgrounds of the variables used in the study.

Variable	Description	Source	Theoretical background	Expected relation
Short-Term Indebtedness (INDST)	(Short-Term Debt + Short/Term Debentures) / Assets	Economática®	Crisóstomo and Pinheiro (2015)	
Long-Term Indebtedness (INDLT)	(Long-Term Debt + Long-Term Debentures) / Assets	Economática®	Crisóstomo and Pinheiro (2015)	
Total Indebtedness (INDTOT)	(Short-Term Debt + Long-Term Debt + Short-Term Debentures + Long-Term Debentures) / Assets	Economática®	Crisóstomo and Pinheiro (2015) Silveira <i>et al.</i> (2008)	
Subsidized Indebtedness (INDSUB)	Debt financed by BNDES / Assets	BNDES (2016) Economática®	Póvoa and Nakamura (2015)	
Corporate Governance (CG)	CG = 1, if listed on one of the differentiated corporate governance levels; CG = 0 if not	BM&FBovespa	Fonseca <i>et al.</i> (2016)	Positive
Profitability (ROA)	Net Income / Assets	Economática®	De Luca, Maia, Cardoso, Vasconcelos and Cunha (2014)	Negative
Size (SIZ)	Natural Logarithm of Assets	Economática®	Machado, Prado, Vieira, Antonialli and Santos (2015) Chang <i>et al.</i> (2014)	Positive
Tangibility (TANG)	Fixed Assets / Assets	Economática®	Chang <i>et al.</i> (2014)	Positive

Figure 1. Research variables

Source: elaborated by the authors.

Corporate governance is characterized in this article as a dummy variable, in which companies listed on the differentiated levels of corporate governance of BM&FBOVESPA (Level 1, Level 2 and New Market) receive score 1, while the other companies receive 0. A similar procedure is adopted in studies that measure corporate governance (Arruda, Girão & Lucena, 2015; Barros, Silva & Voese, 2015; Dalmácio, Lopes, Rezende & Sarlo Neto, 2013; Fonseca et al., 2016). Thus, participation in the differentiated segments represents the adoption of best corporate governance practices.

The variable corporate governance took into account the date on which the company adhered to that level. For example, if a company was listed in the Traditional Market until 2012 and then moved to the New Market in 2013, 0 was awarded to that company in the years 2010 to 2012, and 1 between 2013 and 2014 for being part of one of the differentiated levels of corporate governance.

In 2000, the São Paulo Stock Exchange (Bovespa) created the differentiated levels of corporate governance, which classify companies committed to best practices in the market. In increasing order of adoption of best practices, the following levels are available: Level 1 (N1), Level 2 (N2) and New Market (NM). Companies listed on BM&FBOVESPA on a voluntary basis, if they comply with the established rules, can be listed in the segments. Briefly, in order to participate in levels 1 and 2, companies need to decrease their concentration. The new market represents the differentiated level, with the most rigid corporate governance rules, as, for example, companies need to have their share capital exclusively in common shares, that is, shares with voting rights.

In the statistical model of the research, as there are four types of indebtedness - short-term (INDST), long-term (INDLT), total (INDTOT) and subsidized (dependent variables) -, four regressions are developed. The mathematical models used are defined in equations 1, 2, 3 and 4.

$$INDST_{i,t} = \alpha + \beta_1 CG_{i,t} + \beta_2 ROA_{i,t} + \beta_3 SIZ_{i,t} + \beta_4 TANG_{i,t} + \varepsilon \quad (1)$$

$$INDLT_{i,t} = \alpha + \beta_1 CG_{i,t} + \beta_2 ROA_{i,t} + \beta_3 SIZ_{i,t} + \beta_4 TANG_{i,t} + \varepsilon \quad (2)$$

$$INDTOT_{i,t} = \alpha + \beta_1 CG_{i,t} + \beta_2 ROA_{i,t} + \beta_3 SIZ_{i,t} + \beta_4 TANG_{i,t} + \varepsilon \quad (3)$$

$$INDSUB_{i,t} = \alpha + \beta_1 CG_{i,t} + \beta_2 ROA_{i,t} + \beta_3 SIZ_{i,t} + \beta_4 TANG_{i,t} + \varepsilon \quad (4)$$

Where $IND_{i,t}$ is the indebtedness of company i in year t , according to its nature (short term, long term, total or subsidized); α is the line intercept; β are the angular coefficients; $CG_{i,t}$ (corporate governance), $ROA_{i,t}$ (profitability), $TAM_{i,t}$ (size) and $TANG_{i,t}$ (tangibility) are the independent variables of firm i in year t ; and ε is the error term.

In addition to these variables, the dummy variables of sectors and years considered in the study sample were also used.

In order to reach the proposed objectives, the test of difference of means, correlation analysis and multiple linear regression were performed. The first one was used to check for differences among the four types of indebtedness in companies that adopt the best governance practices (Level 1, Level 2 and New Market) and in the others. Thus, the study compares two groups of companies: Group 1, consisting of companies that adopt the best governance practices; and Group 2, composed of the other companies. The application of multiple linear regression aimed to investigate the relationship between indebtedness and factors pointed out by the literature as determinants of capital structure (corporate governance, profitability, size and tangibility). Therefore, the statistical tests used in the study (test of difference of means, correlation and regression test), significances were set at 10%, 5% and 1%.

4. Results

Table 1 shows the descriptive statistics of the characteristics of the sample companies, according to the variables adopted for the study: short-term indebtedness, long-term indebtedness, total indebtedness, subsidized indebtedness, profitability, size and tangibility.

Table 1

Descriptive statistics of the data

Variable	N	Minimum	Maximum	Mean	Standard deviation	Variation Coefficient
INDST	986	0.0000	0.7072	0.0848	0.0928	2.2598
INDLT	986	0.0000	0.7015	0.1639	0.1389	0.8473
INDTOT	986	0.0000	0.8939	0.2487	0.1660	0.6676
INDSUB	120	0.0000	1.5877	0.0666	0.1709	2.5662
ROA	986	-0.3387	0.8414	0.0423	0.0980	2.3141
SIZ	986	8.6618	19.4506	13.6565	1.6826	0.1232
TANG	986	0.0000	0.9715	0.1845	0.2223	1.2033

Source: elaborated by the authors.

As shown in Table 1, the variables short-term indebtedness (INDST), long-term indebtedness (INDLT), total indebtedness (INDTOT) and subsidized indebtedness (INDSUB) averaged 8.5%, 16%, 25% and 6.6%, respectively. Subsidized debt (INDSUB) shows a high dispersion, as observed by the variation coefficient. Total indebtedness (INDTOT) showed the highest mean and the highest homogeneity, that is, it presents a low standard deviation and a low variation coefficient. As is also shown in Table 1, the profitability of the sample companies averages at 4.2% and the variable shows a high dispersion.

In order to understand the behavior of the indebtedness types in relation to the BM&FBOVESPA listing segments, descriptive statistical analysis was applied to the data, as shown in Table 2.

Table 2

Descriptive statistics of indebtedness types

Variable	Segment	N	Mean	Standard deviation	Mean error deviation
INDST	Traditional market	414	0.1013	0.1103	0.0054
	Differentiated corporate governance levels	572	0.0728	0.0757	0.0032
INDLT	Traditional market	414	0.1487	0.1411	0.0069
	Differentiated corporate governance levels	572	0.1749	0.1363	0.0057
INDTOT	Traditional market	414	0.2500	0.1806	0.0089
	Differentiated corporate governance levels	572	0.2478	0.1548	0.0065
INDSUB	Traditional market	46	0.1109	0.2617	0.0386
	Differentiated corporate governance levels	74	0.0390	0.0581	0.0067

Source: elaborated by the authors.

Based on the data in Table 2, it is observed that the companies not listed in any differentiated segment have higher average indebtedness than the others. It can be observed that the indebtedness in the companies participating in the differentiated levels is less dispersed than in the other companies. It should also be noted that the number of observations in the two groups is similar.

In order to verify if there are differences among the types of indebtedness used in the study (short-term, long-term, total and subsidized) and the BM&FBOVESPA listing segments, the test of difference of means was used, the results of which are shown in Table 3. Non-parametric tests were performed because the assumptions of the parametric test were not met, that is, the data did not follow an approximately normal distribution and homogeneity.

Table 3
Results of tests of difference of means

Variable	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
INDST	104,062.00	267,940.00	-3.250	0.001
INDLT	101,989.50	187,894.50	-3.720	0.000
INDTOT	116,260.00	202,165.00	0.486	0.627
INDSUB	1,147.00	3,922.00	-2.996	0.003

Source: elaborated by the authors.

Table 3 shows that there are statistically significant differences between the average indebtedness of companies at different levels of corporate governance and that of other companies. In the short-term (INDST), long-term (INDLT) and subsidized indebtedness (INDSUB), the significance is 1% while, in total indebtedness (INDTOT) there was no significance.

In order to investigate the correlation among the variables considered in the study, a correlation analysis was performed, the results of which are shown in Table 4.

Table 4
Results of correlation analysis

Variable	1	2	3	4	5	6	7	8
INDST (1)	1							
INDLT (2)	-0.013	1						
INDTOT (3)	0.548(***)	0.829(***)	1					
INDSUB (4)	-0.155(*)	-0.193(**)	-0.220(**)	1				
CG (5)	-0.151(***)	0.093(***)	-0.007	-0.205(**)	1			
ROA (6)	-0.338(***)	-0.073(**)	-0.250(***)	-0.142	0.044	1		
SIZ (7)	-0.254(***)	0.148(***)	-0.018	-0.436(***)	0.356(***)	0.128(***)	1	
TANG (8)	0.046	0.151(***)	0.152(***)	-0.158(*)	-0.235(***)	-0.009	-0.107(***)	1

Obs.: (*), (**) and (***) indicate the statistical significance of the coefficients at 10%, 5% and 1%, respectively.

Source: elaborated by the authors.

Based on the information shown in Table 4, it is observed that, in general, the independent variables are not highly correlated. Therefore, we do not verify the presence of multicollinearity among the regressors of the statistical model, complying with the models proposed for one of the assumptions of the regression. It can be observed that subsidized debt is negatively correlated with all the independent variables.

Table 5 shows the application of the regression models used in the study. The models were estimated using the Ordinary Least Squares method.

Table 5

Estimation of the models

Variable	INDST		INDLT		INDTOT		INDSUB	
CG	-0.012	(**)	0.023	(**)	0.011		-0.101	(**)
	(0.006)		(0.009)		(0.011)		(0.048)	
ROA	-0.281	(***)	-0.161	(***)	-0.442	(***)	-0.644	(*)
	(0.047)		(0.043)		(0.058)		(0.346)	
SIZ	-0.010	(***)	0.010	(***)	-0.001		-0.032	(**)
	(0.002)		(0.003)		(0.004)		(0.014)	
TANG	-0.002		0.140	(***)	0.138	(***)	-0.207	(*)
	(0.014)		(0.028)		(0.034)		(0.124)	
No. of observations	986		986		986		120	
F	8.18		7.99		7.66		1.24	
p-value	0.000		0.000		0.000		0.077	
R ²	19.95		12.20		12.75		33.87	

Obs.: Models estimated by ordinary least squares method. Estimated coefficients and deviations of errors (between parentheses) related to the estimation of the equation model.

(*), (**) and (***) indicate the statistical significance of the coefficients at 10%, 5% and 1%, respectively.

Source: elaborated by the authors.

Regarding the statistical aspects of the regression models, it is worth mentioning that all aspects were complied with. The variance analysis provided an F test that permitted the acceptance of the alternative hypothesis, in which the variation of the dependent variable is explained in global terms by the independent variables.

As shown by the application of the regression analysis, subsidized indebtedness presents specific characteristics and, in studies on capital structure, a more descriptive analysis is not common. This is followed by a more in-depth analysis of this type of indebtedness.

In order to identify the subsidized debt profile in the sample companies, an analysis of this type of indebtedness was carried out. Table 6 shows the values extracted from the BNDES website (2016).

Table 6

Annual distribution of amounts funded by BNDES for sample companies – 2010-2014

Year	No. of Companies	Amount (R\$)	Proportion (%)
2010	18	4.843.359.567,00	8,6
2011	21	11.484.160.035,00	20,5
2012	29	17.970.134.595,00	32,1
2013	26	10.521.267.423,00	18,8
2014	26	11.238.941.202,00	20,0
Total	120	56.057.862.822,00	100,0

Source: elaborated by the authors.

As shown in Table 6, the year 2012 registered the largest number of companies (29) and the highest proportion of subsidized resources (32.1%). The total amount the BNDES provided to the sample companies in the period under review (2010-2014) was over R\$ 56 billion.

Table 7 shows the distribution of loan amounts surpassing R \$ 1,000,000,000.00 the BNDES (2016) granted to the sample companies from 2010 to 2014. The category “Other” contains 52 companies.

Table 7

Ranking of companies that received loans from BNDES – 2010-2014

Company	Amount (R\$)	Proportion (%)
Petrobras	14.418.240.366,00	25,7
Klabin	3.370.232.000,00	6,0
Ambev	3.365.839.113,00	6,0
Braskem	3.253.928.979,00	5,8
Sabesp	3.170.568.634,00	5,7
Telefonica	3.031.110.000,00	5,4
B2W Companhia	1.998.826.634,00	3,6
Embraer	1.943.092.605,00	3,5
Oi	1.804.975.760,00	3,2
Fibria Celulose	1.651.488.485,00	2,9
Lojas Americanas	1.586.616.378,00	2,8
CPFL	1.508.759.793,00	2,7
Sanepar	1.406.392.099,00	2,5
Usiminas	1.086.363.000,00	1,9
Outras	12.461.428.976,00	22,2
Total	56.057.862.822,00	100,0

Source: elaborated by the authors.

According to the information shown in Table 7, Petrobras was the company that most received BNDES funds (2016) in the period under analysis and, adding up the amounts received by Klabin and Ambev, all three together hold approximately 38% of the total granted to the companies in the sample. It is also worth noting that 50.5% (R\$ 28,307,186,091.00) of the total volume of subsidized resources of the sample are present in companies belonging to the Traditional Market. On the other hand, 49.5% (R\$ 27,750,676,731.00) of the funds were allocated to companies belonging to the differentiated levels of corporate governance.

5. Discussion

As shown in Table 3, in terms of indebtedness, the companies listed in the differentiated segments have lower levels of indebtedness than the other companies. One possible explanation for the result is that companies with the best governance practices have lower information asymmetry and, thus, these companies have access to different sources of financing (Tani & Albanez, 2016), and may be using debt less.

According to Table 5, the corporate governance (CG) variable showed negative significance for short-term indebtedness and subsidized indebtedness. Therefore, the companies participating in the differentiated levels of corporate governance tend to have less subsidized indebtedness, that is, this fact does not influence the BNDES decision to grant financing. Meanwhile, participation in differentiated levels of corporate governance influences long-term debt raising positively, which can be explained by the fact that companies in this group tend to prefer loans with longer maturities to short-term loans.

Regarding total indebtedness, the governance does not influence a better funding of external resources, confirming the study by Vieira et al. (2011), which did not identify a relationship either between capital structure and corporate governance.

Considering the above, it is worth mentioning that the results found in this study partially confirm other Brazilian studies, which have already found both a positive relation and a negative relation between capital structure and corporate governance (Cicogna, Toneto Junior & Valle, 2007; Fonseca et al., 2016; Silveira et al., 2008).

Also in Table 5, it can be noticed that profitability (ROA) has a negative effect on indebtedness, that is, the Brazilian company follows the basic behavior of the Pecking Order theory. Therefore, companies prioritize the use of internally generated resources to finance their projects. This effect occurs in relation to all four types of indebtedness cited in the study. The profitability variable presented convergent results between the present study and several national and foreign surveys in different periods (Bastos et al., 2009; Bevan & Danbolt, 2002; Booth, Aivazian, Demirguc-Kunt & Maksimovic, 2001; et al., 2013, Haron, 2014, Rajan & Zingales, 1995, Titman & Wessels, 1988).

Table 5 also highlights that size generates different effects on short-term debt (INDST) and subsidized indebtedness (INDSUB), and that this effect is negative. Therefore, the larger the size, the less the company presents these types of indebtedness. Meanwhile, long-term indebtedness (INDLT) presented a positive relationship, which can be explained by the company's image and reputation in the market (Crisóstomo & Pinheiro, 2015) or the guarantees that it can obtain from credit institutions. With this result, the influence of size on debt is reversed, which has a negative effect on short-term indebtedness, as opposed to the positive effect of long-term indebtedness. The result may indicate the lesser need of large firms for short-term financing.

As observed, tangibility (TANG) presented a positive relationship with long-term indebtedness and total indebtedness, confirming the financial theories; that is, the more tangible assets the company has, the more guarantees it can make available to credit institutions. Tangibility (TANG) is a widely used variable in empirical studies, and the positive relation is almost always confirmed (Albanez & Valle, 2009; Chen, 2004).

Due to the magnitude of the values presented in Table 6, we can see the relevance of development banks in the country, ratified by Póvoa et al. (2015), according to which development banks are of great importance in the granting of credit in Brazil, BNDES being the most active of them.

It should be noted that, among the 66 companies considered for the total value of Table 7, 11 belong to the electricity sector, evidencing the importance of this type of financing for the segment, which requires high investments.

6. Final Considerations

The main objective of this research was to analyze the relationship between capital structure and corporate governance. For this purpose, the non-financial companies listed on BM&FBOVESPA were analyzed, taking into account the years from 2010 to 2014.

The results indicate that, in general terms, corporate debt is low, which requires a better use of the resources received, mainly in projects that guarantee an adequate return. The inappropriate use of resources can lead to serious problems, such as bankruptcy. In this context, the subsidized resources stand out, which present some advantages, such as interest rates well below the market average, long grace period for the repayment of loans and long-term installments of financing.

In the comparison between the capital structure in the companies that adopt the best governance practices and that of the other companies, a significant statistical difference was verified. The companies that do not participate in the differentiated levels of corporate governance have higher indebtedness when compared to the others. Among the possible explanations for this result, the following stand out: (i) financial institutions may be more concerned with the company's investment projects and/or characteristics, such as cash flow, profitability, assets that can be offered in guarantee, reputation in society, and less with the fact that the company adopts or stops adopting the best practices of corporate governance, represented here by the participation in a listing segment of BM&FBovespa; and (ii) firms at differentiated levels may behave according to the Pecking Order theory and, therefore, use internally generated resources, requiring less external financial resources for their investments.

The results of the regression analysis show that corporate governance influences subsidized indebtedness negatively, that is, the company's participation in one of the differentiated levels of corporate governance of BM&FBOVESPA impacts the attainment of this type of indebtedness negatively. It was also observed that the profitability presented a negative relation in the four types of indebtedness (short-term, long-term, total and subsidized), confirming that companies practice what the Pecking Order Theory proposes.

This research contributes to enrich the bibliography on capital structure by incorporating the subsidized debt as one of the explanatory variables of the model. In addition, the corporate governance variable was analyzed in the four types of indebtedness. Because of their great importance to the business environment and the fact that the results of academic studies are largely heterogeneous, discussions on capital structure contribute somehow to the advance of this field of research.

The study presents some limitations, such as the adoption of the differentiated levels as a proxy for corporate governance. In addition, it is highlighted that, for the subsidized debt, only the variable BNDES financing was used. As a suggestion for future studies, the construction of a corporate governance index that contemplates specific characteristics is indicated for the sake of a better measurement of corporate governance. In addition, the use of a longer period of analysis and a larger sample is recommended, considering companies from other emerging economies similar to Brazil. Thus, we suggest the use of other variables that may explain the indebtedness in the companies and an analysis of other subsidized debts contracted in other development banks.

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