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LONG-TERM DEBT AND PERFORMANCE IN CRISIS TIMES: EVIDENCES OF COMPANIES FROM BRAZIL AND LATIN AMERICA

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ABSTRACT

This study aimed at examining the effect of long-term debt on the performance of Brazilian and Latin American companies, encompassing the previous economic scenario, during and after the global crisis of 2008. It was considered in this study the accounting data from public companies listed in stock exchanges of Brazil, Chile, Argentina, Colombia, Mexico and Peru within the period of 2007 to 2015. It was elaborated a multiple linear regression model with panel data based on the literature of the subject. It was used Stata software for data analysis. The results indicated that for companies from Latin America, except Brazilians, there is a negative relationship between long-term debt and performance. In the case of Brazilian companies, for such relationship, the results were inconclusive.

Keywords: *Capital structure. Long-term debt. Performance.*

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1 INTRODUCTION

One of the most important decisions for companies within the corporate finance is related to the choice of the debt policy or capital structure. This is a fundamental decision, given the effect it can have on the value of the organization. In general, the capital structure represents the mix between third-party and equity capital used to finance the operations of a particular company. There are several possibilities for building a capital structure. Among the ways to measure these various possibilities of capital structure is the long-term debt, which consists of an indicator of capital structure used in the financial analysis and expresses the ratio between long-term debt and total debt (Abor, 2007).

According to Cole, Yan and Hemley (2015), capital structure theory and its relationship to corporate performance has been a controversial issue in corporate finance over the years. Many persons argue that companies should use third-party capital as the main source of financing for the tax benefit, since the interest paid on the debt is deductible from the tax payable. Then, they can increase net profit in the period. However, the problem of financing with third-party capital is to increase the company's debt, which increases its risk. On the other hand, although equity capital financing is not subject to this situation, it does not obtain the tax benefits provided by the financing with third-party capital, since dividends do not deduct taxes.

In addition, Cole *et al.* (2015) still state that, at first, it may seem that the way in which a company chooses how its operations are financed is independent of its current performance. Similarly, Modigliani and Miller (1958), when introducing studies on capital structure, concluded that the company's value is independent of its capital structure, assuming markets are perfect. However, with the evolution of the research on the subject, it can be noticed that several studies, such as Abor (2005), Abor (2007), Zeitun and Tian (2007), Lara and Mesquita (2008), Ebaid and Pratheepkanth (2011) have already demonstrated a statistically significant relationship between capital structure and performance.

In view of this, considering the importance of the capital structure and its relation to performance, in addition to the periods before and after the economic crisis of 2008, this study seeks to answer the following question: what is the impact of long-term debt on the profitability of Brazil and the rest of Latin America companies in the pre-, pos- and during crisis period of 2008?

The study aimed at examining the effect of long-term debt on the performance of Brazilian and Latin American companies between 2007 and 2015, encompassing the previous economic scenario, during and after the global crisis of 2008. In order to achieve the general objective, the following specific aims are listed: i) to review scientific studies that consider aspects such as capital structure and performance; ii) to collect accounting data and indicators of the organizations studied; iii) to develop and apply multiple linear regression models for the companies in the analyzed regions; iv) to examine and compare the results obtained.

This study is justified by the fact that, although there are several studies that address the relationship between capital structure and performance, few of them consider these variables in periods marked by economic crisis, even more taking into account the specificities of Brazilian companies compared to the others companies in Latin America. In addition, this study contributes to the capital structure literature by providing evidence of the effect of long-term debt on corporate performance in different countries, especially in a critical period when organizations try to re-establish themselves in the market after years of economic recession world.

2 THEORETICAL FOUNDATIONS

In this section, we first describe the main concepts that involve capital structure and long-term indebtedness. Next, we present previous studies that investigated the relationship between capital structure and performance.

2.1 Capital structure and long-term debt

According to Assaf and Lima (2011), business organizations, in order to carry out their activities, need constant capital, either for the maintenance or expansion of the company. In other words, organizations, regardless of their size, need to finance their activities in the short, medium and long-term. Batista, Siqueira, Novais and Figueiredo (2005) state that this financing process is called by the specialized literature as capital structure. It is extremely important to the companies, since mistaken or wrong decisions regarding the organization capital have negative effect on the cost of capital. The opposite is also true, that is, right decisions in relation to the capital structure, in turn, can reduce the cost of capital for the organization. In both cases it can be noticed that the profit of the company is directly affected by the cost of capital.

Conceptually, Assaf and Lima (2011) define the capital structure as the sum of two sources of financing: own funds and those of third parties. Thus, to better understand this issue it is necessary to analyze how a company is formed. As a general rule, the organization is formed by the following elements: assets, rights and obligations. According to Batista *et al.* (2005), the assets and rights form the company's assets, while, the liabilities, the organization's liabilities. To make investments in the company's assets, it is necessary to use the financing and it has two sources: own and third-party funds.

Own funds and third-party capital are recorded differently in the company's balance sheet. While the first one is allocated to net equity, the third parties capital deals with financing obtained from financial institutions, among other types of obligations that are denominated as a due obligation. Obviously, the correct management of the company's assets and liabilities implies a large difference in its profitability and, consequently, in the application of funds in the capital market. In this line, the importance of controlling and managing sources of financing, own and third parties funds increases, since this affects the company total value (Batista *et al.*, 2005).

The understanding is very simple: the greater the dependence of the organization of third-party capital, the more insolvent the company is. But, as debt reveals itself as a source of funds of significant importance for the organization, this ends up being the strategy used by the companies in the continuity of their activities. This strategy is present in several organizations in Brazil. In this sense, the study by Fonseca, Silva, Assis, Nazareth and Ferreira (2014), which encompassed the capital structure and debt index of three large organizations in the country, showed that all of them have their main source of financing in third-party capital.

Managing the capital structure of a company efficiently is undoubtedly a decisive factor for the continuity of organizations in their market. In this sense, Fonseca *et al.* (2014) report in their study the researches of other authors and observe that for some time researchers are concerned with describing what would be the optimal capital structure for organizations.

In addition, according to the explanation of Fonseca *et al.* (2014), the organization can choose the capital structure it wants, but it must be aware of this, since a very large degree of debt to third parties can result in insolvency and, consequently, bankruptcy or recovery of the company. They also observed that the capital structure of companies presents differences in relation to their size, because while small organizations have a higher level of debt in the short term, large corporations have a more pronounced level of debt in the long term. In this way, understanding these differences is important, since the companies that are in debt in the short term are more subject to the oscillations of the economy.

2.2 Previous studies

Pratheepkanth (2011) studied all companies listed on the Colombo Stock Exchange, the main stock exchange in Sri Lanka, between 2005 and 2009, in order to verify the impact of the capital structure on the performance of Sri Lankan companies. Among the observed results, it was verified that there is a negative relation between capital structure and return on assets (ROA), reflecting the high financing costs between these companies.

In this sense, Lara and Mesquita (2008) also studied the influence of capital structure on profitability, having, however, as sample 70 Brazilian companies. The results indicated a great dispersion among the different sources of capital used by these companies. Own funds are the

ones with the lowest variability. In addition, it was verified, the relationship between rate of return and debt, the inverse relationship for long-term financing and direct relationship to equity capital.

When analyzing the relationship between capital structure and profitability of Ghanaian listed companies in the Ghana Stock Exchange between 1998 and 2002, Abor (2005) showed a positive relation between short-term debt and return on net equity (ROE) , suggesting that more profitable companies tend to borrow more in the short term to finance their operations. On the other hand, long-term debt was negatively correlated with ROE.

Abor (2007) also examined the relationship between capital structure and performance of small and medium companies in Ghana and South Africa between 1998 and 2003. In this research, the results indicated that short-term debt is negatively related to Gross Profit in companies of both countries. Long-term debt was positively related to Gross Profit, both for Ghanaian and South African companies. Also, with a sample of South African companies, Fosu (2013) studied 257 companies listed on the Johannesburg Stock Exchange between the period 1998 and 2009 and found that financial leverage has positive effects on their performance. However, the squared leverage coefficients were significantly negative, suggesting the existence of an optimum point, that is, high levels of financial leverage may have an adverse effect on companies performances.

Zeitun and Tian (2007) investigated the effect that the capital structure exerts on the performance of Jordanian companies, having as a sample 167 companies studied between 1989 and 2003. Among the results found, there was a statistically significant and negative relation between the long-term debt and return on assets (ROA). Another interesting finding in this study was the positive relationship found between short-term debt and performance, as measured by Tobin's Q, suggesting that companies with high short-term debt have high growth and performance rates.

Nguyen and Nguyen (2015) examined the impact of capital structure on the performance of listed companies in the Ho Chi Minh City Stock Exchange, considered the largest stock exchange in Vietnam, with data from 2006 to 2014. The results indicated that the capital structure influences the performance of these companies. It was found a negative relationship between measures of capital structure, including long-term debt, and ROA and ROE performance measures. This suggests that, in general; a high degree of leverage is associated with poorer corporate performance.

The study of Ebaid (2009) investigated the impact of choosing the capital structure on the performance of listed companies in the Egyptian Stock Exchange between 1997 and 2005 using three measures of financial performance previously verified: ROA, ROE and Gross Profit. The empirical tests indicated that the capital structure, including long-term debt, negatively impacts the performance of companies, when measured by ROA. On the other hand, the capital structure and short-term, long-term and total debt did not have a significant impact on the performance of companies when measured by ROE or Gross Profit. In view of this, it can be stated that the choice of capital structure, in general terms, has little influence on the performance of listed companies in Egypt.

Kudlawicz, Senff and Bach (2015) sought to verify the relationship between economic performance and capital structure of companies listed on the São Paulo Stock Exchange, but from the perspective of the efficiency frontier. The results obtained in the mentioned research showed that, in general, the companies with better performance and lower debt are closer to the efficient frontier, that is, they present greater financial efficiency.

When investigating the relationship between corporate performance, capital structure and the macroeconomic environment, using a sample of 1,594 Indian companies in the period between 1998 and 2011, Bandyopadhyay and Barua (2016) found empirical evidence that economic cycles significantly influence financing decisions and, consequently, the performance of organizations. Banerjee and Anupam De (2015) studied the impacts of capital structure decisions on the financial performance of companies listed on the Bombay Stock Exchange during the global pre-crisis period, between 2001 and 2007, and post-crisis period between 2008 and 2013. Among the results found, there was a negative relationship between the financial leverage and the profitability of these companies during the pre-crisis period, suggesting that an increase in third-party capital reduces performance.

3 METHODOLOGY

In this study, the data on publicly-listed companies listed on the Brazilian, Chilean, Argentine, Colombian, Mexican and Peruvian stock exchanges were considered during the period from 2007 to 2015. The period of analysis encompasses the previous economic scenario, during and after the global crisis of 2008, aimed at identifying the differences between the Brazilian and Latin American markets in terms of capital structure, especially long-term debt.

The data were collected from accounting statements and other indicators available in the software Economatica and adjusted to the dollar, given the heterogeneity of the currencies of the various countries studied. Multiple linear regression models were developed with panel data based on the literature on the subject. Stata software was used for data analysis.

As a dependent variable were considered the long-term liabilities, represented by the acronym ELP. Among the independent variables, profitability, represented by the return on assets (ROA), that is the result of the relationship between Net Profit and Total Assets, indicated in equation 1:

$$ROA = \frac{LL}{AT} \quad (1)$$

The leverage ratio (LEV) and companies size, represented by total assets (TA), were used for control purposes, culminating in the regression model according to equation 2:

$$ELP = \beta_0 + \beta_1 ROA + \beta_2 YEAR + \beta_3 LEVERAGE + \beta_4 AT + \varepsilon \quad (2)$$

On what:
ELP = Long-Term Liabilities
β = the constant;
ROA = represents the profitability;
YEAR = *dummy* variable for the years 2006 to 2015;
AT = the size, represented by the total assets;
LEV = leverage ratio;
ε = the statistical error.

From the presentation of the variables, Table 1 compiles the relationship between the performance and long-term debt variables, calculation form and expected result based on the theories presented previously.

Table 1
Summary and definition of variables supported on theoretical basis

Variables	Expected Result	Theoretical Basis
ELP x ROA	+	(0)
	-	(1, 2, 3, 4, 5, 6, 7, 8)
	Null	(0)

1) Abor (2005), 2) Abor (2007), 3) Zeitun e Tian (2007), 4) Pratheepkanth (2011), 5) Lara e Mesquita (2008), 6) Ebaid (2009), 7) Nguyen e Nguyen (2015), 8) Banerjee e Anupam De (2015)

Note. Source: own elaboration.

In order to minimize errors of interpretation, the variables were winsorized in order to treat the outliers. Similarly, to identify autocorrelation and multicollinearity problems, the Pearson correlation test and the Variance Inflation Factors (VIF) test were performed. Then the Breusch-Pagan, Chow and Hausman tests were analyzed for identification of the most suitable regression model for the study. Finally, the autocorrelation tests (Woodridge test) and heteroscedasticity (Wald test) were performed in the model.

4 RESULTS

As mentioned above, the data were divided into two groups: Latin America and Brazil. Table 2 presents the descriptive analysis of the sample, composed of Latin America. It can be noticed that the return on the average asset is greater than seven, with a maximum greater than twenty. To avoid distortions in the interpretation of the results, the total assets were used as a variable of size control, which can significantly affect ROA.

Table 2
Descriptive analysis for Latin American companies, except Brazilian companies

Variable	Observations	Average	Standard Deviation	Minimum	Maximum
AT	821	1,067,658	1,233,847	33,952	3,558,161
LEV	813	2.107011	1.19095	0.9	4.4
ROA	835	7.348982	5.461789	0.5	20.8
ELP	821	282,876.4	349,461.3	2,639	1,016,505

Note. Source: own elaboration.

Table 3 represents the descriptive analysis of Brazilian companies. It is possible to notice the large difference between the average ROA of Brazilian and Latin American companies, since in Brazil the average is greater than 1,400, which again reinforces the importance of control of the model by the variable size, represented by the AT variable.

Table 3
Descriptive analysis for companies in Brazil

Variable	Observations	Average	Standard Deviation	Minimum	Maximum
AT	7,239	6,527,716	29,700,000	0	354,000,000
LEV	7,183	19.10806	307	0	15,111
ROA	7,211	1,445.355	44,808	0	2,373,557
ELP	3,153	1,520,661	6,952,230	0	128,000,000

Note. Source: own elaboration.

The regression model applied for companies in Latin America, it is noted in Table 4, the existence of a negative ratio of 1% between the capital structure and profitability, in agreement with the studies of Abor (2005), Abor (2007), Zeitun and Tian (2007), Ebaid), Lara and Mesquita (2008), Pratheepkanth (2011), Nguyen and Nguyen (2015) and Banerjee and Anupam De (2015).

In addition, it is observed that the variables of total asset control (TA) and leverage ratio (LEV) show a positive and significant relationship to 1% in relation to long-term debt. The YEAR dummy shows a negative and significant relationship in 5% of long-term debt and the years 2008 to 2011 and 2013 to 2015, that is, long-term debt was reduced in those years, which include the pre- and post-crisis periods.

Table 4
Regression for companies of Latin America, except Brazilian

Variables	β	Error	*t*	Sig.	VIF
Constante	70,510.68	20,484.75	3.44	0.001	
ROA	-7,237.502	1,106.529	-6.54	0.000	0.922532
LEV	18,050.61	4,449.361	4.06	0.000	0.869726
AT	0.2556813	0.0058095	44.01	0.000	0.974534
YEAR					
2007	-25,694.44	21,802.26	-1.18	0.239	0.531443
2008	-49,639.08	23,453.65	-2.12	0.035	0.524736
2009	-63,385.97	23.650,85	-2.68	0.008	0.51459
2010	-52,700.07	24,291.2	-2.17	0.030	0.507932
2011	-51,238.68	24,716.03	-2.07	0.038	0.480878
2012	-39,273.35	25,543.22	-1.54	0.125	0.47908
2013	-62,136.99	25,634.89	-2,42	0.016	0.476571
2014	-46,856.4	24,607.57	-1.9	0.057	0.477014
2015	-57,125.95	24,217.38	-2.36	0.019	0.499645

Note. Source: own elaboration.

When applying the model in Brazilian companies, it can be noticed in Table 5 that it was possible to prove a relationship between long-term debt and profitability, contrary to studies by Lara and Mesquita (2008), which, when analyzing this relationship in 2008, identified a significant and inverse relationship between variables. One possible explanation for the divergence is the analysis period of the present study, that is, the previous period to the global crisis of 2008, the crisis itself and the post-crisis period.

In this sense, long-term debt is not significant in relation to the periods of 2007 and 2009. The year 2008 was marked by the positive relationship with long-term debt at a significance of 10%. Finally, it is noted that the global crisis of 2008 significantly impacted the capital structure of Brazilian organizations, especially long-term debt from 2010 onwards. It is also verified that there is a negative and significant relationship to 1%, which shows a reduction in the ELP of the companies and can be explained both by the lack of credit available in the country and by the apprehension of the managers to leverage their business in times of economic instability.

Table 5
Regression for companies in Brazil

Variables	β	Error	*t*	Sig.	VIF
Constant	31,086.96	7,822,122	3.97	0.000	
ROA	-446.213	418.6335	-1.07	0.287	0.934198
LEV	9.998.124	1,821.515	5.49	0.000	0.978802
AT	0.230482	0.001615	142.73	0.000	0.917546
YEAR					
2007	-95.7137	9,633.488	-0.01	0.992	0.609856
2008	16,934.07	9,465.279	1.79	0.074	0.605736
2009	11,871.67	9,956.244	1.19	0.233	0.598779
2010	-55,994.1	11,787.87	-4.75	0.000	0.896938
2011	-48,538.5	11,758.3	-4.13	0.000	0.8966
2012	-56,152.1	15,021.78	-3.74	0.000	0.905758
2013	-79,331.3	14,002.56	-5.67	0.000	0.90175
2014	-97,485	28,537.82	-3.42	0.000	0.879047
2015	-51,542.3	8,845.14	-5.83	0.000	0.892736

Note. Source: own elaboration.

The results presented here corroborate much of the previous studies performed in other countries regarding long-term debt and profitability, given their negative relationship to the profitability of Latin American companies. In Brazil, there was no statistical significance between the variables. The major contribution to the subject was the negative and significant relationship at the 1% level between the ELP and the period after the global crisis of 2008.

5 CONCLUSION

This study aimed at examining the effect of long-term debt on the performance of Brazilian and Latin American companies in the period between 2007 and 2015, encompassing the previous economic scenario, during and after the global crisis of 2008, with a view to the importance of the capital structure for companies. The results obtained contributed to the studies on the subject, mainly for providing evidence for different economic scenarios regarding the relationship between long-term debt and performance and partly to reinforce findings from previous studies of this nature.

The results indicated that for companies in Latin America, except for Brazil, there is a negative relationship between long-term debt and performance, corroborating studies on capital structure and performance, such as the works of Abor (2005), Abor (2005) 2007), Zeitun and Tian (2007), Ebaid (2009), Lara and Mesquita (2008), Pratheepkanth (2011), Nguyen and Nguyen (2015) and Banerjee and Anupam De (2015). In the case of Brazilian companies, there was no statistically significant relationship between long-term debt and performance, although evidence of changes in the capital structure of these companies has been found as of 2010, after the economic crisis.

As a suggestion for future studies it is recommended to use other measures of performance for the companies studied, in addition to ROA, such as Gross Profit and ROE, which, as presented previously, have already been considered in studies on capital structure. In addition, the use of macroeconomic variables is indicated as a way to broaden the measurement of the impacts of economic crises on the capital structure, since in this study it was chosen to use only the annual period for this.

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