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Capital Structure, Internationalization and Countries of Destination of Brazilian Companies: An Analysis of the Upstream-Downstream Hypothesis

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ABSTRACT

This study examines the effect of defining the country of destination of the international debt of Brazilian multinationals, based on the Upstream–Downstream hypothesis. To deepen the discussion of stability suggested by the theory, this paper inserted institutional variables of the target countries of internationalization in econometric models used by previous studies, testing whether the hypothesis Upstream-Downstream remains valid. Starting from a sample involving Brazilian publicly traded multinational and domestic companies between the years 2007 to 2011 and as a statistical method, we performed a regression with panel data. The results show that Brazilian companies when defining the destination countries of internationalization, regardless of these countries presenting higher or lower stability in relation to Brazil, increase their indebtedness. The results showed that among the characteristics present in countries considered as more stable, only the Corruption Perception Index was positively associated with the level of indebtedness of multinationals.

Keywords: Capital structure, Internationalization, Upstream-downstream hypothesis.

1. INTRODUCTION

According to the United Nations Conference on Trade and Development (UNCTAD), multinational companies from emerging countries are increasingly gaining notoriety in the international scenario, and in Brazil the flows of direct investments abroad grew about 88% in the period from 2007 to 2012 (UNCTAD, 2014).

Due to the growing internationalization movement, studies such as by Shapiro (1978), Lee and Kwok (1988) and Burgmann (1996) investigated multinationals from a financial point of view, focusing on indebtedness, reporting that these companies develop their activities in a reality different from that of domestic firms.

Thus, relevant and controversial issues in corporate finance, such as capital structure associated with strategies and forms of indebtedness, are investigated in an environment of internationalization. This approach that associates both elements of the finance area and the business strategy area presents theoretical gaps that still need to be

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investigated — One of the research lines consists in understanding the capital structure of multinationals. Research on the subject do not yet present conclusive results, such as Kwok and Reeb (2000), Saito and Hiramoto (2010) and Aybar and Thanakijsombat (2015).

In this regard, we can observe that the studies that insert the variable internationalization in the traditional models of capital structure have pointed in opposite directions. On the one hand, we note that, in some studies, internationalization has had a positive effect on indebtedness (SINGH; NEJADMALAYERI, 2004; MITTOO; ZHANG, 2008; SAITO; HIRAMOTO, 2010), and on the other hand, we noted that some studies have pointed in the opposite direction, evidencing a negative effect (BURGMAN, 1996; CHEN et al., 1997).

In this regard, Kwok and Reeb (2000) deepened in the investigation on the capital structure of internationalized companies and found that US multinationals had a lower level of indebtedness compared to their local counterparts, termed as domestic companies. The results of this study culminated in the so-called Upstream-Downstream hypothesis, considered a theoretical milestone in the study of multinationals indebtedness.

The explanation of the proposition by Kwok and Reeb (2000) lies in the fact that when firms based in more stable economies are internationalized to less stable economies, there is a tendency to increase the risks of the company. This fact increases the cost of debt and, consequently, inhibits a greater indebtedness of such companies (downstream effect). On the other hand, when companies based in countries with less stable economies, by internationalizing to more stable economies, they start to deal with smaller risks and therefore, tend to have a higher level of indebtedness when compared to domestic ones (upstream effect). Thus, Kwok and Reeb (2000) explain that the degree of indebtedness of multinationals is related to the level of stability of the countries of origin and destination of internationalization.

In the Brazilian context, Saito and Hiramoto (2010) confirmed the validity of the hypothesis for Brazil but did not advance in the Upstream-Downstream theory by not considering the characteristics of the countries to which the companies have internationalized. There are theoretical gaps which have not been addressed by previous studies and that need further study, such as the institutional variability of countries.

In relation to the effects that the characteristics of countries can exert on the capital structure of multinationals, some studies, such as the ones by La Porta et al. (1998), De Jong et al. (2008), Kayo and Kimura (2011) and Aybar and Thanakijsombat (2015) can contribute to throw light on this issue. Despite the authors not addressing the firm's international condition nor testing the validity of the Upstream-Downstream hypothesis, they were reported as intrinsic factors to countries, such as political-legal risks, the system of protection for creditors and investors, and the development of the capital market that may interfere with the capital structure of companies.

Therefore, considering the state of the art of the Upstream-Downstream hypothesis, the objective of this study is to analyze the effects of the definition of the country of destination of internationalization in the indebtedness of Brazilian multinational companies, based on the Upstream-Downstream hypothesis. We expect that knowing the specific characteristics of the countries that can influence the indebtedness of multinationals contributes in making the Upstream-Downstream hypothesis more objective when compared to the subjective classifications used in previous studies, such as the use of the terms "more stable" and "less stable". This work aims to not only at testing the Upstream-Downstream hypothesis according to Saito and Hiramoto (2010), but also to contribute to its progress through the insertion of the institutional and macroeconomic variables of the countries.

We expect that the present study will help companies to outline their internationalization strategies based on more consistent and assertive information, allowing managers of multinationals to understand how choices about internationalization can affect corporate indebtedness.

Therefore, this paper intends to mitigate the existing theoretical gap in the financial literature on the capital structure of multinationals, contributing to the advancement of the Upstream-Downstream hypothesis, through the empirical verification of the performance of multinationals from an emerging country, as analyzed in Brazil.

2. LITERATURE REVIEW

2.1. CAPITAL STRUCTURE AND INTERNATIONALIZATION

Shapiro (1978), considered one of the forerunners of the study of the indebtedness of multinationals, claimed that companies engaged in international activities require a higher level of financing when compared to companies operating only in the domestic market.

Posteriorly, Lee and Kwok (1988) Presented relevant studies on companies in the international situation, and in opposition to what they proposed Shapiro (1978), found that multinationals do not have lower bankruptcy costs and have no higher level of indebtedness than domestic companies. These evidence were explained by the fact that multinationals had higher agency costs than domestic firms.

Chen et al. (1997) continued with the investigation, adding other determinants, such as intangibility and growth opportunities. The authors observed that multinationals based in the United States are less indebted than domestic firms, emphasizing that the higher the level of internationalization of companies, the lower would be the degree of leverage.

Following empirical evidence that US multinationals were less leveraged than their domestic counterparts, Kwok and Reeb (2000) decided to deepen their research, looking for elements among the countries that justified the previous evidence. By analyzing a sample of 1,921 firms from 32 countries, they found evidence of two different types of behavior among the firms analyzed. On the one hand, companies based in markets classified as "less stable", reduced the risk of the business and thus perceived an increase in the level of indebtedness (Upstream effect). On the other hand, they observed that for companies in the United States, considered as a "more stable" country, internationalization would provide greater risks and thus there would be a reduction in corporate leverage, when compared to local counterparts (Downstream Effect).

These evidence contributed to the advances of the studies on capital structure of multinationals and for this reason they became known as the Upstream-Downstream hypothesis. This proposition affirms the existence of a negative relation between internationalization and financial leverage for multinational companies of the United States that decide to internationalize, and a positive relation with the indebtedness to multinational companies based in less stable countries.

Other studies were performed with companies based in other countries such as France (SINGH; NEJADMALAYERI, 2004), Canada (MITTOO; ZHANG, 2008), Brazil (SAITO; HIRAMOTO, 2010; PEREIRA, 2013) and ratified the Upstream-Downstream hypothesis.

Singh and Nejadmalayeri (2004) analyzed the behavior of French companies and they found evidence contrary to the studies of US multinationals by verifying that the internationalization factor was positively related to the leverage of French companies in the long term.

Mittoo and Zhang (2008) tested the Upstream-Downstream hypothesis in Canadian companies and also found evidence contrary to studies with US multinationals by observing that Canadian multinationals are more indebted in the long term compared to domestic firms, corroborating the hypothesis by Kwok and Reeb (2000).

In the case of multinationals from emerging countries, Aybar and Thanakijsombat (2015) sought associations between financing, investment and company value decisions, in the period from 2000 to 2010. The results suggested that internationalization affects the value

of the company in the short term, and it was also observed that the country of destination of internationalization influences the value of the company.

Studies conducted in Brazil by Saito and Hiramoto (2010) confirmed that the Upstream-Downstream hypothesis is valid for Brazilian companies, but they did not contribute to its advance, since they used the same econometric model employed by Kwok and Reeb (2000). As results, they observed that Brazilian multinationals are more leveraged than domestic companies by 9.6%, and in the long term this ratio represents 5.8%.

In relation to the work performed with companies from other countries (KWOK; REEB, 2000; SINGH; NEJADMALAYERI, 2004; MITTO; ZHANG, 2008; SAITO; HIRAMOTO, 2010), opposite results were found, since multinationals had a higher level of indebtedness than domestic firms (Upstream effect).

The evidence found in the studies with companies both in the United States and those in other countries, are explained by the Upstream-Downstream hypothesis, postulated by Kwok and Reeb (2000) and that is based on the increase of the risks that the international expansion can bring to the company, impacting multinational debt agency costs and influencing the level of corporate indebtedness. Specifically, the Downstream effect implies that the greater the degree of internationalization of the company, the greater the risk incurred and, consequently, the lower the leverage. Contrasting these implications, the Upstream effect explains that the greater the degree of internationalization of the company, the lower the risks experienced by them and, as a consequence, will generate greater opportunities for indebtedness. In view of this context, the following research hypothesis emerges:

H1: Is the degree of internationalization of Brazilian multinationals positively associated with the level of indebtedness in the short, long and full term of these companies?

Thus, Kwok and Reeb (2000) offered explanations to the empirical evidence found in the work related to the capital structure of multinationals. However, it is still up to studies to find empirical elements that specify the term "stable" inserted by the authors without consistent evidence. In addition, this study does not only intend to test the validity of the Upstream-Downstream hypothesis in Brazil as proposed by Saito and Hiramoto (2010), but also to advance and contribute to the hypothesis by inserting the characteristics of institutional and macroeconomic variability of the countries of origin and destination of internationalization and the DOI (Degree of Internalization) measure in its multidimensional form.

2.2. EMPIRICAL EVIDENCE

In the case of variables at the firm level and from the perspective of the Agency theory, Titman and Wessels (1988) found a positive sign for the relationship between company size and level of indebtedness and explained that the larger the company, the lower the risk of bankruptcy. From the standpoint of the Static Tradeoff theory, Rajan and Zingales (1995) state that this relation can be negative because in larger companies the informational asymmetry between managers and capital market is smaller.

Regarding the opportunity for growth, the Agency theory points to a negative relation with the level of indebtedness. Conversely, the Pecking Order theory suggests a positive sign for the relationship, as it assumes that domestic sources have priority in raising funds.

The Pecking Order theory suggests that internal sources, such as accumulated profits, are preferred by managers when compared to indebtedness (MYERS, 1984; MYERS; MAJLUF, 1984). Studies in Brazil, such as the one by Perobelli and Famá (2002), Procianoy and Schnorrenberger (2004), Kayo et al. (2004), Silva and Valle (2008), Silveira, Perobelli and Barros (2008) Also confirm the negative sign for the relationship between profitability and indebtedness as suggested by the Pecking Order's theoretical academic thinking.

The Static Tradeoff theory explains that the higher the company's risk of bankruptcy, the less likely the creditors will be lending the capital to the firm, and will only be willing to do so at higher interest rates to offset the risk of insolvency (TITMAN; WESSELS, 1988).

According to Kayo and Kimura (2011), tangibility is an important factor for the level of corporate credit due to the possibility of assets being used as collateral, thus allowing, the increase of the indebtedness capacity of the company. Regarding theories, both the Static Tradeoff and the Agency theory point to a positive signal relationship between the level of tangibility of assets and indebtedness.

The Static Tradeoff theory agrees with the Agency theory regarding the positive sign of the relationship between tangibility and indebtedness because when there is an excess of internal resources, raising the level of indebtedness is a way of disciplining the opportunistic behavior of administrators (MYERS; MAJLUF, 1984).

According to the Pecking Order theory, liquidity serves as an internal source of fundraising and is preferable to indebtedness. Jensen and Meckling (1976) explain that the higher the liquidity of the company, the lower its indebtedness, presenting a negative relation.

The tax benefit, initially proposed by Modigliani and Miller (1963), points indebtedness as preferable option for the raising of funds. Thus, the higher the rate of income tax on the basis of calculation of taxes, the greater the tax benefit, thus encouraging the use of third-party capital. Thus, indebtedness is a cheaper source than equity and should be stimulated, as suggested by the Static Tradeoff theory (TITMAN; WESSELS, 1988).

Regarding the type of industry, Kayo and Kimura (2011) included this variable in their models, using characteristics intrinsic to the sector, such as risk and concentration index. The authors found empirical evidence that the sustainability characteristics of the sector presented a positive and significant relationship with the level of indebtedness, indicating that the companies that are part of the sectors with significant growth opportunities are more indebted.

With respect to variables at the country level, studies such as the one by De Jong et al.(2008), based on the Static Tradeoff theory, clarify that the more the capital market of a country is developed and with the consequent market capitalization of companies, the greater the supply of equity will be, which lowers the cost of this source of resources. Thus, the development of the capital market is negatively related to the level of indebtedness of the firm.

According to La Porta et al. (1998), the political-legal risk of the country is related to the weaknesses and imperfections of policies and legislation related to it. Kwok and Reeb (2000) explain that the risks incurred by the companies are different for countries and emphasize that in emerging economies the risks of investment projects are accentuated in relation to developed economies.

The Agency theory suggests that the protection of shareholders' rights is negatively related to indebtedness due to conflicts of interest between stakeholders related to the voting laws of shareholders at meetings and the distribution of mandatory dividends.

The rights of creditors are negatively related to the level of indebtedness. According to the Static Tradeoff theory, if the protection of creditors' rights is greater, creditors' contracts may be more stringent, and thus inhibit the indebtedness of companies.

According to De Jong et al.(2008), the gross formation of capital, as well as economic growth, negatively influence the capital structure of companies because when companies have a higher level of funds available, such as high profitability and liquidity, they choose to use these internal sources, leading them to a trend of reducing the use of debts.

Faulkender and Petersen (2006) analyzed the relationship between capital structure and availability of credit obtained the results that leverage is positively related to the credit available to companies. According to the Static Tradeoff theory, companies prefer to take

on debt than to use their own resources, due to the abundance and facilities of credit offered by financial institutions.

Camara (2012) investigated the effects of macroeconomic factors on the capital structure of multinational and domestic corporations based in the United States, in the period between 1991 and 2009. In the results, the author noted that macroeconomic conditions exert different effects on multinationals and domestic firms. In a period of GDP growth, multinationals adjust more quickly when compared to their local counterparts.

Zeballos, Seifert and Protopappa-Sieke (2013) investigated how firms can define the optimum level of working capital together with short-term debt through the analysis of interest rates and late payments. As a result, the authors observed that greater access to short-term financing does not interfere with the cash flow of companies, however, when short-term debt is restricted or when payment delays increase, the target for working capital rises rapidly.

Duppati and Rao (2015) compared the long-term financial performance of Indian companies with that of US companies after internationalization. As a result, the authors observed that, in addition to the markets reacting positively in the short term, long-term financial performance was also positive.

The currency exchange variation influences the level of indebtedness of multinationals as these companies obtain debts in foreign currency and do not protect themselves against the risks of an undervaluation of the domestic currency as in the case of the United States dollar.. In this context, the following research hypothesis was elaborated:

H2: After the insertion of variables related to the degree of stability of the countries of origin and destination of internationalization, is the Upstream-Downstream hypothesis valid for Brazilian companies?

The hypotheses will be empirically tested with the objective of advancing the Upstream-Downstream hypothesis, according to the methodological procedures to be tested below.

3. METHODOLOGICAL ASPECTS

As a result of the research objectives, we decided to conduct a descriptive study, by means of a quantitative approach, based on the assumptions of the construction of the hypotheses, which will be tested by statistical treatment.

3.1. SAMPLE AND DATA SOURCE

The research had as its scope, all the non-financial and active publicly traded companies in Brazil, excluding those companies that presented negative values for total assets or shareholders' equity. Regarding the outliers, cases located at the upper or lower limit at 1.5 interquartile intervals were excluded from the sample.

The insertion of domestic companies in the sample had the purpose of controlling the results, allowing the verification of whether the possible effects occurred due to internationalization, or whether the same effect can be observed in domestic firms.

The research used the criterion Degree of Internationalization (DOI) higher than 0%. Therefore, firms with DOI equal to 0% were considered as domestic. After treatment of the data and exclusions, a final sample was obtained, consisting of 1,199 company-year observations, between multinational and domestic, according to Table 1.

From the final sample, we investigated the countries involved in relations with the multinationals, which were later associated with the respective companies. Thus, each company has internationalized to at least one country in each year of the sample.

We extracted data regarding the independent variables at the company and industry level from *Economática* and Compustat. In relation to the variables consistent with the degree of internationalization and the respective entry procedures, we used the financial reports

Table 1. Final sample: total of observations distributed per year

Year	Multinationals	Domestic	Total
2007	84	164	248
2008	87	146	233
2009	90	148	238
2010	88	153	241
2011	93	146	239
Total	442	757	1199

Source: Prepared by the author

available on stock exchange sites, data from CEPAL (Economic Commission for Latin America and the Caribbean), UNCTAD, information from Worldscope, *Economática* and Compustat data bases, from the Guides of the *Revista Exame*'s 500 Best and Largest and from the Ranking of the Brazilian Transnational Corporations published by *Fundação Dom Cabral* (FDC).

The list of destination countries of internationalization was obtained through management's reports and explanatory notes on the BM&FBOVESPA website, on corporate websites and in the editions of the Brazilian Transnational Ranking (FDC). The other piece of information we obtained primarily by making contact with the investor relations departments of the companies. Data related to the institutional and macroeconomic variables of the countries were extracted from the database available on the World Bank website. To extract information related to the variable Corruption Perceptions Index, we used the website of the worldwide organization Transparency International.

3.2. STUDY VARIABLES

The dependent variables are represented by the short-term, long-term and total indebtedness. The data for the composition of these variables were extracted only at market value so as to avoid possible distortions of accounting values. Subsequently, we inserted them into the analysis model by the acronym LEVERAGE, according to Table 2.

The independent variables used in the study are presented in Tables 3, 4 and 5, where we describe the criteria of measurement, source, the effects found by the respective theories and the main authors who studied these relations.

Table 4 presents the independent variables related to the characteristics of the internationalization of companies, the acronym used in the econometric model, the form of measurement, source, expected effects and the authors of the studies related to said theoretical basis.

The research used as a parameter of the level of internationalization of companies the Degree of Internationalization index by UNCTAD Launched in the entity's annual report, because it deals with a multidimensional index that covers both market aspects, as well as labor and foreign assets, being adopted in the Ranking of Brazilian Transnational Corporations (FDC) held annually by *Fundação Dom Cabral* and also used in the Ranking of Transnational India (2012).

Thus, according to Table 5, eight institutional characteristics of the countries of destination of internationalization, involving macroeconomic and institutional factors of the countries of origin and destination of internationalization.

The financial literature has shown that factors intrinsic to countries, such as macroeconomic characteristics, influence the capital structure of companies (LA PORTA et al., 1998; KAYO; KYMURA, 2011). Therefore, according to the studies pointed out, This research will analyze the following macroeconomic and institutional determinants of the countries that can influence the indebtedness of the companies.

Table 2. Dependent variables used in the model: forms of indebtedness

Variables	Acronyms	Measurement Form	Source	Authors
Short-term indebtedness	STLEV	Short-term indebtedness/ (liabilities + market Net Equity)	*Economática*/ Compustat	(2); (3)
Long-term indebtedness	LTLEV	Long-term indebtedness/ (liabilities + market Net Equity)		(2); (3); (5); (6)
Total indebtedness	TLEV	STLEV + LTLEV		(1); (2); (3)

Note: Authors who used the measure: (1) Kwok and Reeb (2000), (2) Singh and Nejadmalayeri (2004), (3) Mittoo and Zhang (2008), (4) Saito and Hiramoto (2010), (5) De Jong et al. (2008), (6) Kayo and Kimura (2011)
Source: Pereira (2013)

Table 3. Independent variables related to firm characteristics

Variables	Acronyms	Measurement Form	Source	Effect	Theories	Authors
Size	SIZE	Log of total assets	*Economática*/ Compustat	(+)	(1)	(6)
				(-)	(3)	(9)
Growth opportunity	GROW	(Market net equity + total liabilities)/asset		(-)	(3)	(8)
				(+)	(2)	(7)
Profitability	PROF	Operating profit/asset		(-)	(2)	(7)
				(+)	(1)	(10)
Bankruptcy risk	RISK	Log of the standard deviation of the operating profit of the last 5 years		(-)	(1)	(3); (4) e (6)
Tangibility	TANG	Fixed asset/ asset		(+)	(1) e (3)	(6); (11); (12)
Liquidity	LIQUID	Current asset/current liability		(+)	(3)	(8); (5)
				(-)	(2)	(7); (5);
Benefit of tax shield	TAX	Tax expenditure / Profit before tax		(+)	(1)	(2); (5)
Type of Industry	IND	Categorical variable transformed into control Dummies				(1); (2); (3); (4)

Notes. (a) Theories: (1) Static Tradeoff; (2) Pecking order; (3) Agency Theory; (b) Main authors who explained the relationship: (1) Kwok and Reeb (2000), (2) Singh and Nejadmalayeri (2004), (3) Mittoo and Zhang (2008), (4) Saito and Hiramoto (2010), (5) De Jong et al. (2008), (6) Titman and Wessels (1988), (7) Myers and Majluf (1984), (8) Jensen and Meckling (1976), (9) Rajan and Zingales (1995), (10) Fama and French (2002), (11) Balakrishnan and Fox (1993); (12) Almeida and Campello (2007)
Source: Pereira (2013)

Table 4. Independent variables related to the internationalization of companies

Variables	Acronym	Measurement Form	Source	Effect	Theories	Authors
Degree of Internationalization	DOI	Arithmetic average of (assets abroad/ asset), (overseas sales/sales) and (overseas employees/employees)	Wordscope, Economática, Compustat Global Advantage, CEPAL, FDC, website of companies, stock exchanges and contacts with companies	(-) c and (+) d	-1	(1); (2); (3); (4) and (5)
Entry Model	EMODT	Categorical variable transformed into control dummies		(+)	-2	(6) and (7)

Note: (a)Theories: (1) Upstream-downstream hypothesis; (2) Agency Theory; (3) Static Tradeoff Theory. (b) Main authors who explained the relationship: (1) Kwok and Reeb (2000), (2) Singh and Nejadmalayeri (2004), (3) Mittoo and Zhang (2008), (4) Saito and Hiramoto (2010), (5) UNCTAD (2011), (6) Hill et al. (2009). (c) the level of internationalization is negative for companies based in stable countries such as the United States. (d) the level of internationalization is positive for companies based in less stable countries, such as emerging countries; (e) T=the effects of entry mode types will be tested.
Fonte: Pereira (2013)

As reported by Kwok and Reeb (2000), The variables in Table 5 translate into parameters that characterize the stability of the countries, and based on these variables, the Upstream-Downstream hypothesis justifies differences in the levels of corporate indebtedness. Therefore, we emphasize that the variables listed in Table 5 will be analyzed later in the estimation of the regression model with panel data.

Table 5. Independent variables related to country characteristics

Variables	Acronym	Measurement Form	Source	Effect	Theories	Authors
Market capitalization	CPMER	Total capitalizations of the capital market/GDP of the country	World Bank	(-)	(1) and (3)	(1)
Corruption	CPI	Corruption Perceptions Index (0 = weak; 10 = strong)	Transparency International	(+)	(1) and (3)	(3)
Growth of the economy	GDP	Variation of the country's GDP in the year	World Bank	(-)	(2)	(1); (2)
Protection of the rights of borrowers and creditors	DIRLEG	Efficiency index of legal rights (0 = weak; 10 = strong)	World Bank	(+) (-)	(3) (1)	(3); (1) (3); (1)
Gross Capital Formation	FBCAP	Gross Capital Formation / GDP	World Bank	(-)	(2)	(1)
Annual Price Change	INFL	Annual Inflation Rate	World Bank	(-)	(2)	(4); (5)
Private Credit Level	CREDPRIV	Private Credit Available / GDP.	World Bank	(+)	(1)	(6)
Exchange Rate Variation	SP	Dollar variation against the currency of countries	World Bank	(+)	(1)	(5)

Note. (a) Theories: (1) Static Tradeoff; (2) Pecking order; (3) Agency Theory. (b) Main authors who explained the relationship: (1) De Jong et al. (2008); (2) Kayo and Kimura (2011); (3) La Porta et al. (1998); (4) Booth et al. (2001); (5) Faulkender and Petersen (2006)

It should be noted that the effects of years (2007-2011), of entry mode (EMODT) and industry (IND) were controlled using dummy variables with the objective of identifying specific behaviors in the sample period and which the impacts on the results of the estimation of the models.

3.3. ECONOMETRIC PROCEDURES

In order to verify the possible multicollinearity between the control variables, we performed the Variance Inflation Factor (VIF) test of the set of regressors with the dependent variable, adopting as a parameter the mean value of the FV Equation 1 in such a way that it did not extrapolate the value 10, as explained by Gujarati (2006).

$$\begin{aligned} LEVERAGE_{it} = {} & \alpha_1 + \beta_1 SIZE_{it} + \beta_2 GROW_{it} + \beta_3 PROF_{it} + \beta_4 RISK_{it} + \beta_5 TANG_{it} + \beta_6 LIQUID_{it} \\ & + \beta_7 TAX_{it} + \beta_8 DOI_{it} + \beta_9 CPREV_{it} + \beta_{10} DIRLEG_{it} + \beta_{11} SP_{it} + \beta_{12} CPMER_{it} \\ & + \beta_{13} CPI_{it} + \beta_{14} FBCAP_{it} + \beta_{15} PIB_{it} + \beta_{16} INFL_{it} \sum_{2008}^{2011} \gamma_J * YEAR_T + \sum_{J=1}^{18} \theta_T * IND_J \\ & + \sum_{C=1}^{2} \theta_C * EMODT_C + \omega_{it} \end{aligned} \quad (1)$$

However, the tests showed that the VIF value was 10.53. To correct this problem, we opted to perform the factorial analysis of the institutional and macroeconomic variables in order to summarize them in factors and to mitigate the collinearity between them.

Table 6 below presents the factors, nomenclature, acronyms and description of the variables that compose it, according to the VIF test results.

The variable represented by FACTOR 1 is related to the context of capitalization provided by the market for companies and the protection of legal rights based on the principle of legal certainty adopted by the countries.

FACTOR 2 relates to the perception of corruption in the respective countries and is represented by the variable Corruption Perceptions Index (CPI). FACTOR 3 corresponds to the macroeconomic fundamentals of growth and is represented by the annual variation of Gross Domestic Product (GDP) and Inflation (INFL) of the countries.

After the factorial analysis, the multicollinearity test was performed again and as the result for the mean value we obtained 4.39 (accepted by the corporate finance literature). The complete test result is available in Appendix A.

As a result of the factorial analysis, we obtained Equation, which was tested in the three types of indebtedness, short (STLEV), long (LTLEV) and total (TLEV), according to :

Table 6. Grouping of variables into factors according to factorial analysis

Factor	Factor Nomenclature	Variables	Description of Variables
FACTOR 1	Capitalization and Protection	CPREV	Private Credit
		CPMER	Market capitalization
		FBCAP	Gross Capital Formation
		DIRLEG	Legal Rights of Shareholders and Creditors
FACTOR 2	Perception of Corruption	CPI	Corruption Perception Index
FACTOR 3	Macroeconomic fundamentals of Development	PIB	Gross Domestic Product
		INFL	Inflation

Source: Research results

$$\begin{aligned} LEVERAGE_{it} = {} & \alpha_1 + \beta_1 SIZE_{it} + \beta_2 GROW_{it} + \beta_3 PROF_{it} + \beta_4 RISK_{it} + \beta_5 TANG_{it} \\ & + \beta_6 LIQUID_{it} + \beta_7 TAX_{it} + \beta_8 DOI_{it} + \beta_9 FACTOR1_{it} + \beta_{10} FACTOR2_{it} \\ & + \beta_{11} FACTOR3_{it} + \sum_{2008}^{2011} \gamma_J * YEAR_T + \sum_{J=1}^{18} \theta_T * IND_J + \sum_{C=1}^{2} \theta_C * EMODT_C \\ & + \omega_{it} \end{aligned} \quad (2)$$

For data analysis, we used multiple regression of data on panels. To check which model (fixed, random or pooled effects) is most suitable for the sample, we used the test by Chow, Hausman and Breush-Pagan. At a significance level of 1%, the fixed effects model was more adequate for the dependent variables STLEV and TLEV. For the LTLEV dependent variable, the random effects model was more adequate, according to Table 7.

However, depending on the results of the p-value for the types of indebtedness, STLEV (7%) and TLEV (4%), we decided to estimate the data also in the fixed effects model, with the aim of giving greater robustness to the results.

To identify the adequacy of the models to the assumptions, in addition to multicollinearity, we performed the Wooldridge test to identify autocorrelation problems, the Wald test to identify problems of heteroscedasticity, The Jarque-Bera test to test the normality of the residues and the graphical plotting to verify the linearity of the coefficients. We found multicollinearity problems that were solved by factorial analysis; autocorrelation and heteroscedasticity problems that were solved using robust standard errors, through the variance estimation by Huber-White's robust variance-covariance matrix (Sandwich Estimator of Variance). There was no violation of the assumptions regarding the normality of the residues. The graphs of the test variables of the study (factors) with the dependent variables showed behavior close to linearity.

4. EMPIRICAL RESULTS

The model we developed was based on the state of the art in which we find the Upstream-Downstream hypothesis, initiated with the work by Kwok and Reeb (2000), being corroborated Singh and Nejadmalayeri (2004), Mittoo and Zhang (2008), Saito and Hiramoto (2010) and Pereira (2013). It should be noted that these studies did not consider the institutional variability of the countries.

Therefore, this study criticizes the previous studies and inserts the mentioned variables in the model. Thus, Table 8 presents the results of the statistical tests estimated by means of

Table 7. Results of the Chow, Hausman and Breusch-Pagan tests. Short, Long and Total Term

VARIÁVEIS	STLEV			LTLEV			TLEV		
	Chow	Hausman	Breusch-Pagan	Chow	Hausman	Breusch-Pagan	Chow	Hausman	Breusch-Pagan
F Test	8.26	26.26	763.52	7.43	16.35	735.07	9.34	28.35	883.93
p-value	0.00	0.07	0.00	0.00	0.50	0.00	0.00	0.04	0.00
Inference		Fixed Effect			Random effects			Fixed Effects	

Source: Research results

Table 8. Results of regressions with panel data according to Model 2

Variables	STLEV Coefficients		LTLEV Coefficients	TLEV Coefficients	
	Random	Fixed	Random	Random	Fixed
CONSTANTE	0.1274***	0.0750*	-0.0945**	0.0342	-0.0178
SIZE	-0.0017	0.0060	0.0393***	0.03751***	0.0393***
GROW	-0.0039	-0.0060	-0.0054**	-0.0094**	-0.0116**
PROF	-0.0329	-0.3266	-0.0199	-0.0523	-0.0520
RISK	-0.0013	-0.0011	-0.0016	-0.0030	-0.0037
TANG	0.0039	0.0132	0.0213	0.0245	0.0258
LIQUID	-0.0009	-0.0007	-0.0001	-0.0010	-0.0010
TAX	-0.0009	-0.0065	0.0012	-0.0048**	-0.0056**
DOI	0.1029***	0.1036***	0.0353**	0.1370***	0.1345***
FACTOR 1	0.0324*	0.0085	-0.0768***	-0.0439**	-0.0469
FACTOR 2	0.0026	-0.0125	0.0164**	0.0194**	0.0192**
FACTOR 3	0.0121	-0.0030	-0.0258***	-0.0133	-0.0174
YEAR 2008	0.0173**	0.0137*	-0.0051	0.0122	0.0116
YEAR 2009	0.0143*	0.0052	-0.0153**	-0.0008	-0.0022
YEAR 2010	0.0007	-0.0001	-0.0034	-0.0027	-0.0028
YEAR 2011	0.0132	0.0075	-0.0196**	-0.0064	-0.0076
IND 2	0.0604		-0.0524	0.0085	
IND 3	0.0188		-0.0518	-0.0329	
IND 4	-0.0367		-0.0144	-0.0514	
IND 5	-0.0314		-0.1306***	-0.1611**	
IND 6	-0.0476		0.0002	-0.0466	
IND 7	0.0850		-0.0809**	0.0051	
IND 8	-0.0579		-0.0613	-0.1175	
IND 9	0.0366		-0.0041	0.0340	
IND 10	-0.0319		-0.0234	-0.5505	
IND 11	-0.0203		0.0660	0.0473	
IND 12	-0.0378		-0.0577	-0.0942	
IND 13	0.0163		-0.0140	0.0039	
IND 14	-0.0096		-0.0204	-0.0294	
IND 15	-0.0606		-0.0846	-0.1446*	
IND 16	-0.0505		-0.0095	-0.0592	
IND 17	0.0002		0.0583	0.0603	
IND 18	0.0306		-0.0695**	-0.0382	
IND 19	0.0337		0.0157	0.0506	
EMODT 2	-0.0516***	-0.0604	0.0810***	0.0273**	0.0074
EDMODT 3	-0.0212*	-0.0291*	0.1169***	0.0923***	0.0673***
sigma_u	0.0773	0.0904	0.0685	0.1102	0.1247
sigma_e	0.0582	0.0583	0.0561	0.0788	0.0789
rho	0.6375	0.7062	0.5981	0.6613	

Note: The asterisks *, ** and *** represent significant statistics at the level of 10%, 5% and 1% respectively. Variables: STLEV – short-term debt; LTLEV – long-term debt; TLEV – total debt; SIZE – size of firm; GROW – opportunity for growth of the firm; PROF – profitability of the company; RISK – risk of bankruptcy of the firm; TANG - Level of tangibility of the firm's assets; LIQUID – liquidity of the firm; TAX - tax benefit of the firm and DOI-degree of internationalization; FACTOR1- level of capitalization and protection of countries; FACTOR2 – corruption perception index; FACTOR3 - macroeconomic fundamentals of development; YEAR 2008- year from 2008; YEAR 2009 – year from 2009; YEAR 2010 - year 2010; YEAR 2011 – year from 2011; IND 2 – food and beverages; IND 3 – Trade; IND 4 – construction; IND 5 – electronics; IND 6 – electricity; IND 7 – non-metallic minerals; IND 8 – mining; IND 9 – industrial machinery; IND 10 – others; IND 11 – paper and cellulose; IND 12 – oil and gas; IND 13 – chemical; IND 14 – steel and metallurgy; IND 15 – software and data; IND 16 – telecommunications; IND 17 – transport and services; IND 18 – textiles; IND 19; vehicles and parts; EMODT 2 – non-equity entry model; EMODT 3 – equity entry mode.

Source: Research results

regressions according to Model 2, being conducted correcting problems of autocorrelation and heteroscedasticity, the robust for the three modes of indebtedness (STLEV, LTLEV and TLEV). We observed that the regression coefficients of STLEV and TLEV maintained the same relation for both fixed effects and random effects, which gives robustness to the results.

In this regard, this study aims to contribute to the advancement of the hypothesis through the insertion of the characteristics of the countries that are a target of internationalization, in order to control, by means of dummy variables, the effects of years, the entry mode and the industry sector on the indebtedness of Brazilian multinationals, as described in Model 2.

4.1. ANALYSIS OF SHORT-TERM DEBT (STLEV)

We can observe in Table 8 that the DOI and EMODT 2 variables presented a positive and significant statistical relationship at the 1% level. At the statistical significance level of 5%, the TAX variable (tax benefit) presented a negative relation.

In turn, the variables FACTOR 1 (capitalization and protection), control of the YEAR 2009 and EMODT 3 (equity entry model) presented a positive statistical relationship at the 10% level of significance. It is noted that both the DOI and FACTOR 1 were positively associated with indebtedness, indicating that the more internationalized Brazilian multinationals are in relation to the countries where there are good conditions to obtain private credit, which have a good level of market capitalization and gross capital formation, an efficient and secure legal system, the more indebted they will be in the short term.

The control performed with the entry modes showed that the two modalities, both equity and non-equity, have been negatively and significantly associated with short-term indebtedness, ratifying the hypothesis that multinationals as a whole are more indebted in relation to domestic ones.

In relation to the control performed for the years of the sample, we observed that the years 2008 and 2009 were statistically significant, presenting a positive relation in the short term, and a possible justification would be the influence of the American financial crisis.

Thus, we observe that the insertion of the institutional variables that characterize the countries brought elements that advance the application of the hypothesis for multinationals of emerging countries. We noted that the capitalization and protection characteristics offered by the countries to Brazilian multinationals influenced the determination of the level of short-term indebtedness.

4.2. ANALYSIS OF LONG-TERM AND TOTAL TERM INDEBTEDNESS

The degree of internationalization (DOI) was positively related to the level of significance of 5% in the long and total term according to Table 8. As pointed out in the short term, the long and the total term also correspond to the Upstream-Downstream hypothesis when affirming that in emerging countries, the more internationalized multinationals are, the higher their debt levels will be.

The variable (FACTOR 1), which represents the capitalization and protection of the countries, was significantly related to 1% and in a negative way with the level of indebtedness. This fact points to the hypothesis that the better the conditions for obtaining private credit associated with a developed capital market are, with a significant gross capital formation and an efficient legal security of the country, the lower the long-term and total indebtedness will be. These evidence are not in line with the assumptions of the Upstream-Downstream hypothesis when asserting that multinationals from emerging countries, by internationalizing to more stable countries, would tend to indebtedness.

The variable FACTOR 2 (Corruption Perceptions Index) was associated in a positive and significant way with the indebtedness, pointing to the fact that the more the country acts in the prevention of corruption, the greater the indebtedness of Brazilian multinationals with activities in that country. This evidence makes the hypothesis more objective when evidencing strong results.

The macroeconomic fundamentals of development, represented by FACTOR 3 (GDP and Inflation), were significant, but were negatively related to long-term indebtedness. This finding is not consistent with the Upstream-Downstream hypothesis, which states that multinationals from less stable countries, when internationalizing to more stable countries, tend to be more indebted than their local counterparts.

As in the short-term analysis, in the long term, the years 2009 and 2011 were statistically significant and were negatively related to indebtedness. The justification would also be the same in the short term, the influence of the American financial crisis.

Regarding the entry modes, the results of this research were consistent with the theoretical estimate for total indebtedness, and according to Pereira (2013), these increase by 5% in the explanation of debt.

4.3. SYNTHESIS OF RESULTS

Given the analysis of the modes of indebtedness, we found a positive association between the degree of internationalization and level of indebtedness. Therefore, the validity of the hypothesis **H1** is not rejected**:** The degree of internationalization of Brazilian multinationals is positively associated with the level of indebtedness in the short, long and total term of these companies. In all three modes of indebtedness, the degree of internationalization was consistent with the theoretical prediction, i.e., the more internationalized companies in emerging countries are, the higher the level of indebtedness tends to be, as shown in Table 9.

At the country level, the Capitalization and Protection variable was not compatible with the theoretical explanation proposed by Kwok and Reeb (2000). The authors state that if multinationals from less stable countries, by internationalizing to more stable and less risky countries, the level of indebtedness tends to increase. However, the statistical analyzes showed the opposite. Countries that have good indicators of the level of private credit, with a developed capital market system, with increasing gross capital formation and legal security of the rights of shareholders and creditors do not provide Brazilian multinationals with better conditions to raise the level of indebtedness as suggested by the theory by Kwok and Reeb (2000).

Table 9. Internationalization: Synthesis of Main Results

VARIABLE	ACRONYM	EXPECTED EFFECT	RESULTING EFFECT	ANALYSES
INTERNATIONALIZATION				
DOI	Degree of Internationalization	(+)	(+)	Consistent with the theoretical forecast. More internationalized companies from emerging countries, are more indebted.
Country Level				
Capitalization and Protection	FACTOR 1	(+)	(-)	Does not fit the theory. Companies that are internationalized to countries with better capitalization and protection conditions are no longer indebted.
Corruption	FACTOR 2	(+)	(+)	The better the country deals with corruption, the better the conditions of corporate indebtedness.

Source: Research data

The Corruption Perception Index (FACTOR 2), was statistically significant at the level of indebtedness in the long and total term. Companies that internationalized to less corrupt countries tend to raise their level of indebtedness in the long term and in total also.

Given the results of the institutional and macroeconomic variables, hypothesis **H2** is not partially rejected**:** After the insertion of variables related to the degree of stability of the countries of origin and destination of internationalization, the Upstream-Downstream hypothesis becomes valid for Brazilian companies. In this regard, only the Corruption Perception Index was consistent with the theoretical prediction. Capitalization and protection, represented by variables of the FACTOR 1 and the macroeconomic development fundamentals, represented by FACTOR 3, were associated in a negative way with the level of indebtedness.

Therefore, these results contribute in an objective way to reduce the theoretical gap of the Upstream-Downstream hypothesis which broadly and subjectively states that multinationals from emerging countries, considered to be less stable, as they internationalize to more stable countries, cause the level of indebtedness to rise.

5. FINAL CONSIDERATIONS

This study aimed to analyze the effects of the definition of the country of destination of internationalization on the indebtedness of Brazilian multinational companies, from the Upstream-Downstream hypothesis. This is an innovative study in the internationalization literature, as it consists of the first empirical work that related Brazilian multinationals to the macroeconomic and institutional reality of the destination countries of internationalization, and which culminated in important contributions, such as the influence that the level of corruption of a country can affect in the indebtedness and consequently in the financial management of a Brazilian multinational.

The three types of indebtedness, short, long and total terms presented results consistent with the Upstream-Downstream hypothesis, which concerns that the higher the degree of internationalization of multinationals from emerging countries, the greater the indebtedness.

However, the theoretical explanations proposed by Kwok and Reeb (2000) were not fully validated in the Brazilian context, as indicated in the analysis of the results.

By identifying the destination countries of the internationalization of Brazilian multinationals and inserting their respective macroeconomic and institutional variables into the model proposed by Kwok and Reeb (2000), this article contributes to the deepening of the hypothesis, bringing greater objectivity and advancement to the model. The authors of the Upstream-Downstream hypothesis suggest that the reduction or elevation of the level of indebtedness of multinationals from internationalization refers to the difference in stability between the countries of origin and destination. This statement, in addition to being comprehensive and subjective, does not support empirical evidence. This work empirically demonstrated that variables suggested by Kwok and Reeb (2000) with a view to establishing the stability of the countries, such as the development of the capital market and legal security, did not provide subsidies to confirm the theoretical prediction of the authors. In an antagonistic way, the level of corruption of the countries, proved to be a consistent indicator for assessing the impacts that the choice to internationalize to a given country can bring about corporate indebtedness.

Thus, this study demystified, through empirical evidence, that the explanations suggested by Kwok and Reeb (2000) that the simple perception of stability between countries would be the criterion causing differences in the level of indebtedness among multinationals. The terms “more stable” and “less stable” used to classify countries are flawed and insufficient, because the study showed that the macroeconomic fundamentals of development (GDP and inflation) were negatively related to indebtedness. This study brought new elements to

the internationalization literature by showing that the level of perception of corruption in the countries of destination exerts a greater influence on the indebtedness of multinationals than market or economic factors, such as the level of private credit or legal security of the country.

Therefore, we propose that the Corruption Perceptions Index to be inserted in the econometric models of the hypothesis, variable according to the assumptions of the theory in the long and total of indebtedness, with the objective of making the Upstream-Downstream hypothesis objective and consistent, and also so that companies can delineate their strategies with greater assertiveness based on empirical foundations.

For future work, we suggest that Brazil's internal financing conditions to be verified, with the objective of ascertaining indications of different behavior of this country in relation to the assumptions of the Upstream-Downstream hypothesis when referring to emerging countries.

6. REFERENCES

AYBAR, B.;THANAKIJSOMBAT, T. Financing decisions and gains from cross-border acquisitions by emerging-marketacquirers. Emerging Markets Review**,** *24*, 69–80, 2015.

BOOTH, L.; AIVAZIAN, V.; DERMIRGUE-KUNT, A.; MAKSIMOVIC, V. Capital structures in developing countries.The Journal of Finance, v. 56, n. 1, p. 87-130, Feb. 2001.

BURGMAN, T. A. An empirical examination of multinational corporate capital structure.Journal of international Business studies, Third Quarter, p. 553-570, 1996.

CAMARA, Omar. Capital Structure Dynamics of US-based Multinationals (MNCs) and Domestic (DCs) firms. Thesis submitted for the degree of PhD at the University of St Andrew, 2012.

CHEN, C. J. P.; CHENG, C. S. A.; HE, J.; KIM, J.An investigation of the relationship between international activities and capital structure. Journal of International Business Studies, v.*28,* n.3, p. 563-577, 1997.

DE JONG, A., KABIR, R., NGUYEN, T.T. Capital structure around the world: The roles of firm- and country-specific determinants. Journal of Banking and Finance**,**v.32, p. 1954–1969, 2008.

DUPPATI, Geeta R; RAO, Narendar V. Cross-border mergers and acquisitions: Mature markets vs. emerging markets - with special reference to the USA and India. Cogent Business & Management. n. 2, p.1-11, 2015.

FAMÁ, R.; BARROS, L. A. B. de C.; SILVEIRA, A. D. M. A estrutura de capital é relevante? Novas evidências a partir de dados norte-americanos e latino-americanos. Caderno de Pesquisas em Administração, São Paulo, v.8, n.2, p.71-84, abr./jun. 2001.

FAULKENDER, M.; PETERSEN, M.A. Does the source of capital affect the capital structure? The Review of Financial Studies, New York, v. 19, n.1, p.45-79, 2006.

FRANK, M.Z.; GOYAL, V.K. Testing the Pecking Ordertheory of capital structure.Journal of Financial Economics, v. 67, p. 217-248, 2003.

FUNDAÇÃO DOM CABRAL. Ranking das Transnacionais Brasileiras: Os benefícios da Internacionalização, 2012. Disponível em <http://www.fdc.org.br/professoresepesquisa/publicacoes/Paginas/publicacao-detalhe.aspx?publicacao=18305>. Acesso em 15 jan. 2013.

JENSEN, M.; MECKLING, W. Theory of the Firm: Managerial Behavior, Agency Costs, and Capital Structure. Journal of Financial Economics. v. 3, n. 4, p. 305-360, 1976.

KAYO, E.K.; FAMÁ, R.; NAKAMURA, W.T.; MARTIN, D.M.L. Estrutura de capital e criação de valor: os determinantes da estrutura de capital em diferentes fases de crescimento das empresas. Revista Eletrônica de Administração (REAd), v.10, n.3, p.1-14, Rio Grande do Sul, mai/jun 2004.

KAYO, E.K.; KIMURA, H. Hierarchical determinants of capital structure.Journal of Banking & Finance.v. 35, p. 358–371, 2011.

KWOK, C.C.Y.; REEB, D.M. Internationalization and firm risk: an upstream–downstream hypothesis. Journal of International Business Studies, v.31, p. 611–629, 2000.

LA PORTA, R.; LOPEZ-DE-SILANES, F.; SHLEIFER, A.; VISHNY, R.W..Law and Finance.Journal of Political Economy, v.106, p. 1113–1155, jun.1998.

LEE, K.; KWOK C. C. Y. Multinational corporations vs. domes-tic corporations: International environmental factors and determinants of capital structure. Journal of International Business Studies, v.19, n.2, p.195-217, 1988.

MITTOO, U. R.; ZHANG, Z. The capital structure of multinational corporations: Canadian versus U.S. evidence. Journal of Corporate Finance, v. 14, p. 706-720, mai., 2008.

MODIGLIANI, F.; MILLER, M. Taxes and the cost capital: a correction. TheAmerican Economic Review, v. 53, n. 3, p. 433-443, jun. 1963.

MYERS, S.C.; MAJLUF, N.S. Corporate financing and investment decisions when firms have information that investors do not have.Journal of Financial Economics,v.13, p. 187–221, jun. 1984.

MYERS, S.C. The capital structure puzzle.The Journal of Finance, v. 39, p. 575– 592, jul. 1984.

PEREIRA, V. S. Ensaios sobre os Efeitos da Internacionalização na Estrutura de Capital e Estrutura de Propriedade de Multinacionais Latino-Americanas. 2013. 135 f. Tese (Doutorado em Administração) – Escola de Administração de Empresas de São Paulo, Fundação Getúlio Vargas, São Paulo, 2013.

PEROBELLI, F.F.C.; FAMÁ, R. Determinantes da estrutura de capital: aplicação a empresas de capital aberto no Brasil. Revista de Administração da USP (RAUSP), São Paulo, v.37, n.3, jul/set 2002.

PROCIANOY, J.L.; SCHNORRENBERGER, A. A influência da estrutura de controle nas decisões de estrutura de capital das companhias brasileiras. Revista Brasileira de Economia, Rio de Janeiro, v.58, n.1, p.121-146, jan/mar 2004.

RAJAN, R.G.; ZINGALES, L..What do we know about capital structure? Some evidence from international data.Journal of Finance,v. 50, p. 1421–1460, 1995.

SAITO, R.; HIRAMOTO, E. Foreign activity effects and capital structure: Brazilian evidence. Academia, RevistaLatinoamericana de Administración, v. 45, p. 59-75, 2010.

SHAPIRO, A. C. Financial structure and cost of capital in the multinational corporation.Journal of Financial and Quantitative Analysis, v.13, n.2, p. 211-26, jun., 1978.

SILVA, A. F.; DO VALLE, M. R. Análise da estrutura de endividamento: um estudo comparativo entre empresas brasileiras e americanas. Revista de Administração Contemporânea, Curitiba, v.12, n.1, p.201-229, Jan/Mar 2008.

SILVEIRA, A.D.M.; PEROBELLI, F.F.C.; BARROS, L.A.B.C. Governança corporativa e os determinantes da estrutura de capital: evidências empíricas no Brasil. Revista de Administração Contemporânea(RAC),Curitiba, v.12, n.3, p.763-788, jul/set 2008.

SINGH, M.; NEJADMALAYERI, A. Internationalization, capital structure, and cost of capital: Evidence from French corporations. JournalofMultinational Financial Management, v.142, p. 153-169, 2004.

TERRA, P. R. S. Estrutura de capital e fatores macroeconômicos na América Latina. Revista de Administração da Universidade de São Paulo, v.42, n. 2, p. 192-204, abril / maio / junho, 2007.

TITMAN, S.; WESSELS, R. The determinants of capital structure choice. The Journal of Finance, v. 43, n. 1, p. 1-19, mar. 1988.

UNCTAD, United Nations Conference on Trade and Development, World Investment Report 2013: Global Value Chains: Investiment and Trade for Development, New York and Geneva United Nations, 2013.

ZEBALLOS, Ariel C.; SEIFERT, Ralf W.; PROTOPAPPA-SIEKE, Margarita.Single product, finite horizon, periodic review inventory model with working capital requirements and short-term debt. Computers&OperationsResearch n. 40, p. 2940–2949, 2013.

APPENDIX A.

Table 10. VIF test result

Variáveis	STLEV
Variáveis de Controle	VIF
size	26.84
factor1	22.91
_ind_10	10.75
_ind_6	7.46
_ind_4	6.07
_ind_18	6.01
factor3	5.91
_ind_14	5.77
_ind_3	4.86
_ind_19	4.16
_ind_13	3.3
_ind_17	3.14
_ind_16	3.11
_ind_2	3.11
factor2	2.58
doi	2.46
_ind_5	2.32
_ind_11	2.29
_year_2009	2.28
_year_2011	2.18
_emodt_2	2.17
_ind_7	2.06
_ind_9	2.04
_year_2008	1.95
_ind_12	1.9
_ind_15	1.88
_ind_8	1.77
grow	1.77
_year_2010	1.76
_emodt_3	1.71
tang	1.59
risk	1.57
prof	1.47
liquid	1.41
tax	1.09
VIF Médio	4.39

Source: Search Results