

The Impact of Cross-Listing on Firms Capital Structure: Evidence from Brazil

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Abstract

This article investigates the effects of ADR issuance on indicators of Capital Structure and Cost of Capital. Secondary data was obtained from the Economática® database. Propositions were tested using Unobserved Effects Panel Data Model. For the years 2005 to 2011, 27 ADR-issuing companies were studied out of a sample of 227 companies. The results indicate that ADR-issuing companies have on average 40% greater financial leverage, as well as an approximately 50% lower cost of capital, though the degree of significance is not as statistically favorable as the pre-established trends, which were less than the obtained results.

Key words: Internationalization of Capital; ADR; Capital Structure



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INTRODUCTION

Increased flow of resources (tangible and intangible) has occurred in the most diverse locations of the world as a result of the fall of geographic and political barriers. It has also been so with financial resources. In Brazil, it was because of the government that it became possible to trade stocks in markets with greater liquidity through certificates known as Deposit Receipts (DRs), or American Deposit Receipts (ADRs) when issued in the American market.

The internationalization of capital is an area that increasingly receives greater visibility in academic discussions and already has a structured body of theoretical research (Meade, 1951; Hymer, 1972, 1976; Buckley, 1990; Chesnais, 1996). With internationalization being a strategic global trend and with capital flows being guided through increasingly facilitated channels, it is easy to understand how the entry of foreign capital into an organization could influence its sources of resources from the first moment and, consequently, to its final results. Accordingly, several studies have sought to understand the internationalization process with its possible influence on capital structure (Alexander, Eun, Janakiraman, 1988; Erunzza, Miller, 2000; Sing, Chiang, Chen, 2008; Mendiola, 2010).

The study of Hail and Leuz (2009) found that companies with cross-listings in U.S. stock markets experience a decrease in their cost of capital, and companies from countries with weak market regulation have a further decrease in their cost of capital.

In some studies the results indicate that cross-listing reinforces the protection of foreign investors (Coffee, 1999; Stulz, 1999). In a more protected environment, studies show that it is easier for a company to obtain foreign financing (Reese and Weisbach, 2002; Benos and Weisbach, 2004; Doidge, Karolyi and Stulz, 2004). In this context, the possible influence of ADR issuance on capital structure can be seen.

The internationalization of equity capital and its consequences on capital structure was the focus of this work. Thus, the aim of this study was to research the internationalization of the equity capital of Brazilian companies via the issuance of ADRs in light of the theory of Capital Structure and using indicators of debt and leverage. The study sought to analyze the effects of the issuance of ADRs on the capital structure of publicly-traded companies. The sample included data from 279 companies listed on the BM&FBOVESPA from 2005 to 2011. Of the companies analyzed in the sample, 29 of them issued ADRs in at least one of the periods analyzed.

This work is divided as follows: first a brief introduction about the general theme, followed by an explanation, using the theoretical references, of the context of internationalization, capital structure and cost of capital. Next, the chapter on methodology presents the procedures which were used, and finally there is an analysis of the results with the final considerations.

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THEORETICAL BACKGROUND

This chapter is a brief review of the theories chosen as relevant to the study of the internationalization of equity capital of Brazilian companies in the form of ADRs.

Internationalization of Capital

A well-defined classification of foreign investments was made by Meade (1951) who considered foreign direct investments and portfolio investments as "autonomous" while those investments using fluctuations in foreign exchange reserves as "adjustment" accounts. Later, Hymer (1976) and Buckley (1990) separated Foreign Direct Investment (FDI) from Portfolio Investment (PI). (This is also the categorization used by the Central Bank of Brazil [Bacen].) The main difference between PI and FDI is in the control of the organization. While PI (Portfolio Investment) has a faster capital flow in the short-term, FDI is interested in participating in the control of the business and being represented in strategic decisions (Hymer, 1976; Buckley, 1990; Sarti, Laplane, 2002; Araújo, Flores Jr., 2004).

The focus in this article is on American Deposit Receipts (ADRs). They can be thought of as depository receipts of global shares traded in the North American market. Thus, for example, a Brazilian publicly-traded company can be listed on a U.S. stock exchange.

ADRs were first traded in 1927, but their more effective application came about after 1950 (Marcon, 2002). In accordance with Bacen's (2012) classification, ADRs represent a type of Portfolio Investment (for Bacen, only investors with more than 10% of voting capital are classified as DFI). The characteristics of ADRs are similar to those discussed by Hymer (1976) regarding the financial assets of PI: (a) the base of PI theory is the interest rate; (b) implicit risk; (c) general uncertainty; and (d) imposed barriers.

The choice of issuing ADRs over other options can be made for a number of reasons, among which are: fund-raising, international recognition, access to new types of financing, greater capital liquidity, and the ease of the international merger and acquisition processes (Kabir, Maroney, Hassan, 2005; Bandopadhyaya, Chugh, Grant, 2009; Mendiola, 2010).

The issuance of securities as a form of funding has consequences for organizations. Modigliani and Miller (1958, 1963) have many assumptions about the irrelevance of capital structure with regard to the assets of the company which are shown to be refuted. In general, there are several international studies which show internationalization (by the issuance of ADRs or other financial assets) as a significant factor in reducing the cost of capital of organizations and consequently causing an alteration in their capital structures (Alexander, Eun, Janakiraman, 1988; Jayaraman, Shastri, Tandon, 1993; Erunzza, Miller, 2000; Reeb, Mansi, Allee, 2001; Singh, Nejadmalayeri, 2004).

For Jayaraman, Shastri and Tandon (1993) the issuance of ADRs implies a high stock volatility. Erunzza and Miller (2000) found that there is a reduction in the cost of capital when they studied 166 companies from 32 countries, though not including any data from Brazil.

For Singh and Nejadmalayeri (2004), due to the imperfections of international capital markets, companies with international operations must incur additional costs to overcome these barriers. However the authors explain that other authors (Kindelberger, 1969; Caves, 1971) argue that multinationals, because of their ability to internalize capital market transactions, are able to overcome these very capital flow barriers.

Karolyi (2004) shows that the growth of ADRs neither facilitates nor makes difficult the development of the local market, but instead represents the result of poor functioning of these markets. Even so, expansion in these markets has fostered development of the stock market, which can be measured via greater cross-border capital flows, elevated market capitalization, company stock quoted more often, and greater trading volume.

Reeb, Mansi and Allee (2001) studied the question of Foreign Direct Investment in the Chinese market and found that issuance of ADRs in markets with heavy trading reduces the cost of financing and that FDI as a risk-reduction strategy is more pronounced for companies with elevated operational risk. Singh and Nejadmalayeri (2004) had already found that international diversification reduces the cost of capital when analyzing French companies.

With regard to Brazil, there are some studies which discuss ADRs, capital structure, and the cost of capital, however none of these have the same focus as this present study. The following are works which stand out. Matsumoto (1995) was about the issuance of ADRs by South American companies and uses the

efficient market theory. Eid Jr (1996) dealt only with the behavior of Brazilian businesses with regard to their structure and cost of capital. Cost Jr. et al. (1998) exposed the impact on Brazilian companies caused by the issuance of ADRs. Rodrigues (1999) investigated the degree of segmentation / integration of the Brazilian market and the profile of the investors who trade these stocks. Holthausen and Galli (2001) dealt with market valuation, volatility and performance adjusted for the risk of issuing ADRs by Brazilian businesses. Marcon et al. (2001a and b) reported on the behavior of issuances of ADRs in the Argentine and Brazilian markets. Marcon (2002) explained the cost of equity capital with regard to ADRs. Oliveira, Silva and Villalobos (2005) investigated which characteristics of Brazilian companies determine the listing of ADRs, and Camargos and Barbosa (2006) aimed to analyze the impact of cross-listing (ADRs) on the behavior of stock in the BM&FBOVESPA.

Capital Structure

Research on capital structure has grown through the years through various studies (Durand, 1952; Modigliani and Miller, 1958, 1963; Leland and Pyle, 1977; Ross, 1977; Marsh, 1982).

For Famá and Grava (2000), "the study of capital structure is divided into three phases: the first goes from the start of the study of finance until 1950, when the knowledge of risk was not accompanied with sufficient analytic tools to measure it. The second phase started with the classic study of Markowitz (1952) and was specifically oriented toward the study of capital structure, with its great achievement being Modigliani and Miller (1958) in which uncertainty began to be considered. The third phase, called the behavioral phase, developed in parallel with the phase of fact uncertainty (1950)."

The study of Modigliani and Miller (1958) was a landmark in the theory of capital structure, through which uncertainty (risk) became considered. The study of Modigliani and Miller (MM) (1958) was a landmark in the theory of capital structure and through which uncertainty (risk) became considered. In the article of MM (1958), they did not consider the impact of taxes. This generated criticism and was corrected in their 1963 article. In 1958 they concluded that capital structure is irrelevant when financial leverage does not affect the market value of the company. However, their theory was very narrow, given that it would not be possible in the real world. The theory would need to depend on a perfect capital market without taxes and transaction costs. In 1963 they incorporated tax benefits as determinants of capital structure. This meant, among other things, that the fiscal advantages of debt financing are slightly larger than initially suggested. As such, it is worth paying debt through the reduction in tax payments and, by doing so, maximize the value of the company. Thus, financial leverage can bring an additional benefit with regard to the impact of taxes.

Of the research on capital structure, after the work of MM, the following studies stand out: Fama and Miller (1972) and Jensen and Meckling (1976) which explain the conflict of interest, i.e. agency theory; followed by the question of information asymmetry with Ross (1977) and Leland and Pyle (1977); and industrial organization with Brander and Lewis (1986); and participation and control with Harris and Raviv (1988, 1991) and Stulz (1988).

The hypothesis to be proposed is related to the very capital structure of organizations and its consequent influence on the cost of capital, since the issuance of new stocks and bonds alters the profile of corporate liability. Research already shows the relevance of capital structure to the performance of companies (Rajan and Zingales, 1995; Perez and Famá, 2003; Leal, 2008). Other studies show that the internationalization of companies affects their capital structures (Keister, 2004; Sing and Nejadmalayeri, 2004; Chiang, Chen, 2008; Kuo and Wang, 2005; Filatotchev, Stephan and Jindra, 2008; Mendiola, 2010).

In Brazil there are some notable studies on capital structure. Forte (2010) is a survey of the main work done up to 2007, and some of that work is: Nakamura (1992), Eid Jr (1996), Famá and Kayo (1997), Famá and Perobelli (2001), Gomes and Leal (2001), Terra (2001), Nakamura and Mota (2002), Terra (2003), Basso, Mendes and Kayo (2004), and Nakamura and Jucá (2005), among others. Even so, it is sufficient to highlight the most recent work such as that of: Nakamura et al. (2007) which explains the determinants of the capital structure; Leal (2008) which investigates capital structure in Brazil and emerging markets; Dias Bastos and Nakamura (2009) which discusses the determinants of capital structure of companies in Brazil, Mexico and Chile; and Mitushima, Nakamura and Araújo (2010) which addresses the question of dynamic capital structure in Brazilian companies by means of variables such as interest rates, inflation

and the growth of the Gross Domestic Product (GDP). It is also important for this article to find out if there are differences in the capital structure of Brazilian organizations.

Copat and Terra (2009), upon comparing the results of Latin American organizations with those of North America, observed that the greater market imperfections that companies face in Latin America are more relevant to decision-making with regard to debt. They explain that the greater the increase of wealth in a country, the more likely that companies will pay off their debt. The companies even have a negative relationship with the rate of inflation on the capital structure, since the exchange rate fluctuation had a positive impact on debt. Among other findings, the authors explain that the results still show that the theories of capital structure created in developed countries can be applied to Latin America, taking into consideration the greater market imperfections. This kind of funding from foreign sources, Depositary Receipts, and more specifically ADRs (American Depositary Receipts), allows companies headquartered outside the United States to attract investors in North American markets to invest in the companies countries (Marcon, 2002). To this effect, Serra (1999) explains that in a more-liquid market the cost of capital tends to be lower as a consequence of greater trading.

For Marcon (2002), filling in for this lack of long-term funding for companies is fundamental for the recovery of economic growth. The elevated cost of local capital and the limited representation of the Brazilian capital markets encouraged companies to pursue the internationalization of their capital structure as an alternative for their long-term financing.

Pomerleano and Zhang (1999) arrived at the conclusion in their studies that Latin American and Asian countries possess a high cost of capital due to the financial intermediation. Oliveira and Lemme (2002) show the impact on the cost of equity capital on paper and cellulose companies which issued ADRs from 1992 to 1994. To that end, Marco (2002) shows that several other studies, though not focusing on the cost of capital, worked with ADRs in the context of Brazil: Matsumoto (1995); Rodrigues (1999); Costa Jr. et al. (1998); Holthausen and Galli (2001); Marcon et al. (2001a and b); and Tabak and Lima (2002).

A noteworthy study in the international context, and a pioneer in the area, is that by Saudagaran (1988) which tried to understand the motive companies have for listing their shares in foreign markets. Other articles that they studied with regard to ADRs were: Lang, Davis--Friday and Frecka (2002); Raedy et al. (2003); Foerster and Karolyi (1999), showing an increase in liquidity; and Pagano, Röell et al. (2002). Hail and Leuz (2005) supplied strong evidence that a business which is also listed in the USA reduces its cost of capital. Campbell, Papaioannou and Rai (2007) studied the question of the low cost of capital associated with the issuance of ADRs.

Serra (1999) commented in his study on emerging markets that companies with foreign listings increase their liquidity and consequently can have a lower cost of capital. He even suggested that shares in highly-segmented markets seem to show a reduction in the cost of capital independent of the locale, and if the price of the international risk is less than the price of local risk, the cost of capital may fall even further. Serra (1999) explained that if trading on the New York Stock Exchange (NYSE) is greater than other markets, this will have an impact on the cost of capital of the companies traded there because the increased trading allows for greater liquidity.

In a general context, there are many international studies which show how internationalization (by the issuance of ADRs or other financial assets) is a significant option for the reduction of the cost of capital for organizations and consequently an alteration of their capital structures (Alexander, Eun and Janakiramanan, 1988; Jayaraman, Shastri and Tandon, 1993; Erunzza and Miller, 2000; Reeb, Mansi and Allee, 2001; Singh and Nejadmalayeri, 2004).

Erunzza and Miller (2000), in their study of 166 companies from 32 countries, though not including any data from Brazil, found that there is a reduction in the cost of capital. For Reeb, Mansi and Allee (2001), with regard to the question of foreign direct investment in the Chinese market, the study showed that when issuing in markets with heavy trading, there is a lower cost of financing and that FDI as a risk reduction strategy is more pronounced for companies with elevated operational risk. Singh and Nejadmalayeri (2004) had already found that international diversification reduces the cost of capital when analyzing French companies. Also, according to Singh and Nejadmalayeri (2004), Lewellen (1971) argued that diversification of the product provides a coinsurance, thereby increasing the borrowing

capacity of companies and making it reasonable to expect a positive impact on the borrowing capacity for geographically diversified companies. Furthermore, Heston and Rouwenhorst (1994) presented evidence that diversification among political boundaries reduces risk more than diversification among sectors within a single country. The authors continued to say that Agmon and Lessard (1977) and Fatemi (1984) state that international diversification reduces the expected bankruptcy cost and allows for greater borrowing capacity. In a broader sense, it is enough to say that the research of Chiang and Chen (2008), Keister (2004) and even Sing and Nejadmalayeri (2004) was more focused on the internationalization of the operational part of the organization. In this regard, studies related to ADRs are more focused on: portfolio diversification (Kabir, Maroney and Hassan, 2006); profitability before and after issuance (Lee et al., 2011); effects on trading and characteristics (Mendiola, 2010); characteristics and performance of ADRs in the stock market (Bandopadhyaya, Chugh and Grant, 2009); and, in Brazil, the relationships between ADRs and the cost of equity (Marcon, 2002).

Despite the several articles reviewed, support was not found for stating that companies which issue ADRs have similar capital structures to those which do not.

It is in this context that the following hypotheses are to be tested:

H1 Companies which issue ADRs do not have a distinct capital structure from those listed on the domestic market.

H2 Brazilian companies with ADRs do not have significant differences in cost of capital as compared with other companies listed on the domestic market.

METHODOLOGY

Within this chapter the following are discussed: the sample criteria, the statistical techniques to test the hypotheses, and the indicators used for the proposed comparisons. This type of research, with regard to what it says about the nature of the topic, is considered basic, with a quantitative approach.

The subject area to be researched is the domestic, publicly-traded companies listed on the BM&FBOVESPA and which are considered active. The data were extracted from the ECONOMÁTICA® database. In this study only companies with an active ADR program were considered as issuers of ADRs. Thirty-four (34) active Brazilian ADR programs were found, out of a total of 27 companies (there were companies with more than one program). Together, these companies represent 51% of the trading volume of the Bovespa Index, which is currently composed of 70 organizations.

The data analysis was done with an Unobserved Effects Panel Data Model (UEM). Models with fixed and random effects were estimated with the Stata/IC® version 12 tool. It is important to note that fixed effect models using panel data do not allow the estimation of the effect of variables which do not vary with time, such as the nature of property, state or private companies, or source of capital (domestic or foreign). The other side of this limitation is that each study group, the company in this case, is its own control. Therefore, this model is free of independent variable omission bias. Allison (2009) warned against the use of this method for reducing such biases, which are generated when the model is under-specified.

Residuals are defined as the part of the dependent variable which is not explained by the statistical method, while robustness is the ability of the method to satisfactorily complete its objective even when some assumptions of the method are partially violated (Hair et al., 2009). The analysis of residuals aims to confirm the choice of methods and to increase robustness in order to reduce possible misinterpretation of results.

The residuals analysis was performed as described below. First, the deviations were calculated and the heteroscedasticity was analyzed. Next, the regressions were again estimated using the option to generate robust standard deviations, aiming to take care of the most common violations that are found in distributions.

The study used capital structure and cost of capital as dependent variables, measured by using the following: a) for capital structure, Debt (Total Liabilities / Total Assets) and Financial Leverage (Total Liabilities / Shareholder Equity), and b) for cost of capital, Cost of Debt (Kd). In addition to these, the following were used as control variables: dummy ADRs (which take the value "1" for issuers and "0" for non-issuers), Return on Assets (ROA), Return on Equity (ROE), Shareholder Equity, and Total Revenue

(values in reais, R\$, have a constant value to eliminate the effects of inflation). The final sample included 6,356 cases divided into 227 companies.

ANALYSIS AND DISCUSSION OF THE RESULTS

To investigate the effects of ADRs on the chosen dependent variables, this article will consider each case separately. Initially, to explore possible relationships (and consequently possible collinearity), a correlation matrix was created. Table 1 shows the data found for standardized coefficients and their significance.

Table 1 - Correlation Matrix of Indicators

	adr	ano	exgat	exgpl	pl	logpl	kd
adr	1.0000						
ano	0.0174	1.0000					
exgat	0.0377*	0.0334*	1.0000				
exgpl	-0.0353*	0.0288*	0.3725*	1.0000			
pl	0.4575*	0.1011*	-0.0688*	-0.0404*	1.0000		
logpl	-0.0158	-0.0169	-0.0544*	-0.0115	-0.0086	1.0000	
kd	0.0122	-0.0263*	-0.2069*	-0.0891*	0.0390*	-0.0106	1.0000
rentat	0.0125	-0.0389*	-0.0378*	0.0028	0.0181	-0.0072	0.7134*

+p< .10 *p< .05 **p< .01***p< .001

Source: Research data

The data suggest that the relationship between issuance of ADRs, debt and leverage is significant, although using less relevant coefficients and using shareholder equity. This relationship indicates that companies with ADRs are more linked to companies with higher shareholder equity. Furthermore, a strong relationship was also seen in the surveyed companies between the values of debt and leverage.

A univariate normality test was also performed. The number of cases was quite high, which contributed to the normality of the results. Tests such as the Henze-Zierkler and Doornik-Hansen were done to confirm the univariate and multivariate normality of the data.

Capital Structure

During the review of theory done for this article, several studies were found which aimed to understand the process of internationalization and its possible influence on capital structure (Alexander, Eun and Janakiramanan, 1988; Erunzza and Miller, 2000; Sing, Chiang and Chen, 2008; Mendiola, 2010).

Thus, appropriate tests were done to verify the validity of the results and, because of this, analysis began with capital structure. First, the effect of ADRs on debt was analyzed (this was done logarithmically to find parametric data). Table 2 shows the results from the completed regression.

In Table 2, note that ADRs appear to be associated with a greater positive effect on debt, indicating that companies with ADRs would be more likely to borrow in general. However, the significance level remained at 9.4%, too high to make any conclusive comments. The random effects (RE) model was tested and, after a Hausman test, the equality was rejected. Next, the RE model that showed significance was rejected, and ADRs were not shown to be significant with regard to debt. Though, it is noteworthy that Copat and Terra (2009), upon comparing the results of Latin American organizations with those of North American corporations, explained that the greater the growth of wealth of a country, the greater chance of paying off its debt. Even though there is not great significance with regard to the level of 5% or even 1% in the results, Copat and Terra (2009) still showed a negative relationship of the inflation rate to the capital structure, even when exchange rate fluctuation created a positive impact on debt. Studies which deal with debt and ADRs are rare, but on the other hand, studies with results on the cost of capital are common. For the group of companies with ADRs, the shareholder equity, Kd and ROA indicators may be related to debt. In companies without ADRs, the effect was similar, even though the Kd indicator obtained much more relevant values.

Table 2 - Debt Regression

Fixed-effects (within) regression		Number of obs	=	6224		
Group variable: id		Number of groups	=	227		
R-sq:	within	=	0.0238	Obs per group: min	=	21
	between	=	0.1362	avg	=	27.4
	overall	=	0.0675	max	=	28
corr(u_i, Xb)		=	0.1984	F(4,5993)	=	36.61
				Prob > F	=	0.0000

Logexgat	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
adr	.1041448	0.621885	1.67	0.094	-.0177669	.2260566
pl	-1.59e-09	4.59e-10	-3.46	0.001	-2.49e-10	-6.91e-10
kd	-.0189988	.0017889	-10.62	0.000	-.0225056	-.015492
rentat	.0018799	.0004536	4.14	0.000	.0009906	.0027691
cons	3.874817	.0088549	437.59	0.000	3.857458	3.892176
sigma_u	.63231014					
sigma_e	.28214829					
rho	.83395138					(fraction of variance due to u_i)

Source: Research data

Leverage was also tested. Likewise, the Hausman tests were not conclusive and the random effects model was not accepted. However, the fixed effects model showed significant values, as shown in Table 3.

Table 3 - Leverage Regression

Fixed-effects (within) regression		Number of obs	=	6224		
Group variable: id		Number of groups	=	227		
R-sq: within	=	0.0371	Obs per group: min	=	21	
between	=	0.0624	avg	=	27.4	
overall	=	0.0471	max	=	28	
corr(u_i, Xb)		=	0.1076	F(4,5993)	=	57.76
				Prob > F	=	0.0000

logexgpl	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
adr	.3369197	.1067855	3.16	0.002	.1275817	.1275817
pl	-3.89e-09	7.88e-10	-4.94	0.000	-5.44e-09	-2.35e-09
kd	-.0334299	.0030717	-10.88	0.000	-.0394516	-.0274083
rentat	.0008601	.0007789	1.10	0.270	-.0006668	.0023871
cons	4791846	.0152049	315.15	0.000	4.762039	4.821653
sigma_u	1.0370817					
sigma_e	.48448434					
rho	.82085659					(fraction of variance due to u_i)

F test that all u_i=0:	F(226, 5993)	=	118.00	Prob > F =	0.0000
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Source: Research data

In the fixed effects model the ADR coefficient is significant at 0.2% and with a relevant coefficient of 0.336. This corresponds with a 40% increase in leverage of companies with ADRs as opposed to those without. There was also a positive relationship found for debt, though the results were not significant. As such, it was concluded that H1 was partially refuted, as there were indicators distinct to companies which issue ADRs as opposed to those which do not. These results are similar to those found in Alexander et al. (1988).

The shareholder equity indicators (SE and Kd) were still significant for explaining leverage. Few differences were found among the models for companies with and without ADRs with regard to relationships between the SE, Kd, and Rentat indicators and leverage.

Thus, it can be seen that with regard to capital structure, ADR is not significant for debt but is relevant and significant for financial leverage.

Cost of Capital

From another perspective, there are many studies in the theoretical research which deal with the internationalization of capital. Works such as Alexander et al. (1988), Marcon (2002), and Chiang and

Chee (2008) have shown that there can be relationships between financial-economic indicators and the issuance of ADRs.

With regard to the cost of capital, the same relationships were tested and results, similar to those for debt, were found. The Hausman tests were not conclusive, and the random effects model could not be used. The fixed effects model is shown in Table 4.

Table 4 - Cost of Capital Regression

Fixed-effects (within) regression	Number of obs	=	6224			
Group variable: id	Number of groups	=	227			
R-sq: within = 0.4856	Obs per group: min	=	21			
between = 0.6383						
overall = 0.5035						
		F(3,5995)	= 1885.90			
corn (u_i, Xb) = 0.1591		Prob > F	= 0.0000			
	kd	Coef.	Std. Err.	t	P> t	[95% Conf Interval]
	adr	-.3838111	.4490026	-0.85	0.393	-1.264018 .4963955
	pl	-5.37e-09	3.31e-09	-1.62	0.105	-1.19e-08 1.13e-09
	rentat	.1766096	.0023503	75.14	0.000	1.720022 .181217
	cons	1.031416	.0625328	16.49	0.000	.9088294 1.154003
	sigma_u	1.0025933				
	sigma_e	2.0372431				
	rho	.19497295	(fraction of variance due to u_i)			
F test that all u_i=0:		F(226, 5994) = 3.90		Prob > F =	0.0000	

Source: Research data

The results point to a high, negative coefficient for the cost of capital (Kd) for companies with ADRs. Nevertheless, the evidence was not conclusive given that the 5% degree of significance was outside the accepted standards. As such, with regard to the cost of capital, the results showed that issuing companies have a cost of capital approximately 50% lower than the rest. Erunzza and Miller (2000) found that there was a reduction in the cost of capital when they studied 166 companies in 32 countries. The study by Singh and Nejadmalayeri (2004) found that international diversification reduces the cost of capital when analyzing French companies. In this same sense, Hail and Leuz (2009) found that companies with cross-listings in North American exchanges experience a reduction in their cost of capital and also that companies from countries with weak market regulation have an even greater reduction in the cost of capital. However, these findings conflict with those found by Chiang and Chen (2008).

In this case, to explain Kd, only the ROA variable was accepted. However, when running the two models separately for companies with ADRs, the effect of the ROA on the Kd is less.

FINAL CONSIDERATIONS

In general, this article first sought theoretical and empirical support as discussed in the theoretical reference, and then it aimed to test the declared hypotheses. H1 was related to relationships of ADRs with capital structure and H2 with the cost of capital.

After regression analysis, it was found that companies that issue ADRs are positively correlated around 40% with financial leverage. That is, companies with ADRs leverage on average 40% more than the rest. These results are compatible with those found in Alexander et al. (1988).

With regard to the cost of capital, the results show that issuing companies have a cost of capital less than the rest by approximately 50%. Nevertheless, this evidence was not statistically significant, which makes it difficult to come to a conclusion.

The study's limitations could be compensated for by using, among other options, a greater number of indicators to perform new tests which could shed new light on this subject. Moreover, it would be ideal if the research had access to indicators such as financing in foreign currencies, available only in the financial explanatory notes of some companies in the BM&FBOVESPA.

Some suggestions for new work include the effects of ADRs on the trading volume of Brazilian shares and even the effects of ADR issuance on the volatility of prices of domestic shares. Lastly, the research showed a decrease in the number of companies with ADRs, which could be investigated from a series of perspectives, including the financial economic impact on the companies after such a change.

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