DETERMINANTS FOR ISSUING INTERNATIONAL BONDS BY BRAZILIAN FIRMS

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Abstract

One of the most important topics studied in the finance literature is the capital structure of companies. This paper seeks to understand the determinants for the issuance of private debt securities (bonds) in the international market by Brazilian companies. We analyzed 472 non-financial listed companies from 2001 to 2009. We used probit and panel regression models to analyze the determining factors for the issuance of international bonds and estimate the probability for a Brazilian company to issue these securities. The results indicate that firm size and its exporting capacity are positively related to international bonds. There is a negative relation between the existence of foreign shareholders and the issuance of international bonds. Adopting good corporate governance practices, such as listing ADRs in the US or on Brazilian's New Market, is positively related to international bonds in a few models.

Keywords: International Bonds, Capital Structure, Corporate Governance, Brazil

1. INTRODUCTION

Several studies have been conducted in Brazil and abroad in order to analyze the determinants of the capital structure. There are two main theories, the trade-off and the pecking order theory. According to Graham and Harvey (2001), the first theory argues that firms make use of an optimal capital structure and that the main benefit of debt would be taxes (Modigliani and Miller, 1963). Thus, one would expect that large, profitable and mature firms have greater leverage and smaller and growing companies possess less leverage. Studies of Jensen and Meckling (1976), Easterbrook (1984) and Jensen (1986) corroborate the theory of trade-off by suggesting a positive relationship between leverage and profitability.

For the pecking order theory, Myers (1984) states that, because of adverse selection, firms prefer using internal funds. When external resources are needed, companies prefer to issue debt to equity due to lower information associated debt issuance costs. Shyam-Sunder and Myers (1999) find strong evidence to support this theory in a study of US firms over the period 1971-1989. In contrast, Frank and Goyal (2003) find results contrary to the pecking-order theory for US listed firms from 1971 to 1998.

Other studies over the years show ambiguity regarding the findings in the pecking order theory. Zender and Lemmon (2004) conclude that this theory can be considered a good explanation for how companies finance themselves, though Fama and French (2005) find the opposite. They also find that this theory could best describe the behavior of small firms rather than large firms, the opposite result of findings by Frank and Goyal (2003).

Harris and Raviv (1991) show evidence of the positive relationship between leverage and fixed assets, unrecognized tax benefits generated by debt, investment opportunities, firm size, and a negative relationship with volatility, probability of default and profitability.

Galai and Masulis (1976), Jensen and Meckling (1976) and Myers (1977) argue that companies with greater investment opportunities present lower leverage, considering that agency costs are directly proportional to investment opportunities. Titman and Wessels (1988) and Rajan and Zingales (1995) show that the tangibility of assets is an important determinant of leverage, since this is the amount that a company can give as collateral.

Titman and Wessels (1988) consider the size of the company a key factor for leverage because larger firms tend to be less risky. Warner (1977) and Ang et al. (1982) agree on the importance of company size, but consider that this factor has relationship with the bankruptcy costs, which are higher for smaller companies. Bolton and Freixas (2000) suggest that the higher the volatility of the company the greater the probability of default, leading to a negative relationship between volatility and leverage.

Starting from the discussion of the company's capital structure and moving toward the issuance of debt securities and more specifically international bonds, it is important to review the literature that demonstrates the importance of the bond market.

According to Hakansson (1999), a developed corporate bond market brings a positive effect on the economy, since the absence of this market results in a very high dependence of the banking system. Some of the effects of the absence of an efficient bond market are the lack of transparency in the accounts of firms, imperfections in the regulatory environment and problems of moral hazard. On the other hand, when the size of the banking system and the bond market is balanced, market forces have a greater chance to correct deviations, reducing systemic risk and the probability of crises.

Mizen, Tsoukalas and Tsoukas (2009) study the issue of debt securities in the US market from 1995 to 2004, and find that firms that have issued bonds

before, with low credit risk and with incentives to seek external financing access the debt markets more likely than firms without these features.

Schmukler and Vesperoni (2001) conduct a study for East Asia and Latin America on the behavior of business financing options when countries integrate with global markets. The results show that financial liberalization does not increase the leverage of the companies. In addition, the authors find that countries with more robust financial systems are less affected by financial liberalization, which reinforces the importance of the bond market. Black and Munro (2010) show that the debt markets are increasingly becoming international. They find that issuers seek to benefit from the liquidity and diversification of international markets.

In Brazil, Leal and Saito (2003) review the empirical evidence on the determinants of capital structure and show that there is a shortage of long-term financing and therefore Brazilian firms follow the pecking order theory and usually finance its activities primarily through retained earnings.

Nakamura and Mota (2004) conduct a study in the Brazilian market in order to understand the application of trade-off and the pecking order theories. Their results indicate a predominance of the pecking order theory. In contrast, Zonenschain (1998), Singh (1995) and Prates and Leal (2005) reject the theory of the pecking order for the Brazilian market.

Leal and Carvalhal (2008) analyze the leverage of Brazilian companies from 1998 to 2004, as well as the type of debt instrument (bank loan, domestic securities and international bonds). The results indicate that firm leverage is positively related to asset tangibility, and negatively related to firm size and profitability. When the authors analyze international bonds, the results are the opposite, that is, the issue of international bonds is negatively related to asset tangibility, and positively related to firm size and profitability. A plausible explanation for this may be related to some characteristics of issuers of international securities, which tend to be larger, internationally recognized companies.

The purpose of this paper is to analyze the determining factors for issuing international bonds by Brazilian companies. We analyzed 472 non-financial companies from 2001 to 2009, and find the firm size, its export capacity, and good governance practices are positively related to the issuance of international bonds. In contrast, there is a negative relation between the existence of foreign shareholders and the issuance of international bonds.

2. DATA AND METHODOLOGY

We analyzed 472 non-financial listed companies from 2001 to 2009. The financial and accounting data were collected from the Economatica and Bloomberg databases. Table 1 shows data on international bonds issued by non-financial Brazilian companies from 2001 to 2009. The total volume issued during the nine years is significant, about USD 65 billion. The average tenor increased from 4.6 years to approximately 11 years, while the average yield remained almost constant at about 8% per annum. The number of issues seems to have strong correlation with the year, and is relatively low during crises (2002 and 2008).

Table 1. International Bonds Issued by Brazilian Firms

	Total Volume (USD MM)	*Average Volume (USD MM)*	*Average Yield (%)*	*Average Tenor (Years)*	*Number of Issues*	*Number of Issuers*
2001	4,046.87	176.03	8.63	4.63	23	11
2002	1,797.43	299.57	8.80	5.68	6	5
2003	8,347.00	189.70	8.58	4.80	44	23
2004	4,899.35	163.31	8.01	6.23	30	21
2005	4,399.21	183.30	8.79	6.42	24	16
2006	11,004.00	305.67	8.80	6.90	36	25
2007	9,089.58	275.44	9.19	8.11	33	28
2008	3,125.00	347.22	8.30	8.44	9	9
2009	18,342.00	917.10	7.92	10.97	20	14
Total	65,052.25	289.12	8.60	6.68	225	73

Data on international bonds issued by non-financial Brazilian companies from 2001 to 2009. The table shows the volume, tenor, yield, and number of issues and issuers.

We estimate probit models to estimate the probability for the issuance of international bonds by non-financial Brazilian companies. The independent variables were selected from previous studies on the capital structure, especially Leal and Carvalhal (2008). The probit models to estimate the probability of a company issuing international bonds are estimated with the following equation:

$$\Pr ob(Intbonds=1) = \Phi(\beta_0 + \beta_1 Lev + \beta_2 Tang + \beta_3 Size + \beta_4 ROA + \beta_5 P/B + \beta_6 Vot + \beta_7 Vot/Tot + \beta_8 Exp + \beta_9 For + \beta_{10} NM + \beta_{11} ADR + \beta_{12} Year + \varepsilon) \quad (1)$$

Where, *Intbonds* is a dummy variable that equal 1 if the firms has issued bonds and 0 otherwise, *Lev* is firm leverage (liabilities/total assets), *Tang* is tangibility of assets (fixed assets/total assets), *Size* is the logarithm of total assets, *ROA* is the return on assets (operating profit/total assets), *P/B* is the price-to-book (market value/book value), *Vot* is the percentage of voting shares of the controlling shareholder, *Vot/Tot* is the ratio of voting to total shares of the controlling shareholder, *Exp* is a dummy variable that equal 1 if the firm is an exporter and 0 otherwise, *For* is a dummy variable that equal 1 if the firm has a foreign shareholder among the top ten shareholders and 0 otherwise, *NM* is a dummy variable that equal 1 if the firm is listed on New Market premium governance segment and 0

otherwise, *ADR* is a dummy variable that equal 1 if the firm has American Depositary Receipts in the US and 0 otherwise, and *Year* is a dummy time variable to control for differences in macroeconomic variables.

We used *ADR, For* and *Exp* variables to investigate the effect that the international recognition of the company may have in its choosing to issue international bonds. Moreover, we used NM to check if governance practices affect the likelihood of a company to issue international bonds.

After the probit models for issuing international bonds, we estimated panel regression models to determine what influence the size of issued bonds. The models were run only for companies who have issued international bonds, and have the following specification:

$$VolIntbonds = \beta_0 + \beta_1 Lev + \beta_2 Tang + \beta_3 Size + \beta_4 ROA + \beta_5 P/B + \beta_6 Vot + \beta_7 Vot/Tot + \beta_8 Exp + \beta_9 For + \beta_{10} NM + \beta_{11} ADR + \beta_{12} Year + \varepsilon \quad (2)$$

where *VolIntbonds* is the total international bonds issued by the firm, and the other variables are similar to those used in the probit models.

3. RESULTS

Table 2 shows the descriptive statistics of variables used in this study. We can see that only 3% of companies issued international bonds in the period. Approximately one third of the companies are exporters and have foreign shareholders. In addition, around 10% are listed on New Market and have ADRs. There is a strong concentration of the voting capital (62.89% in the hands of the controlling shareholder) and separation of voting and cash flow (1.21 votes for each share). On average, firms have leverage of 61.81%, ROA of 3.14%, P/B of 1.22 and 36% of fixed assets.

Table 2. Descriptive Statistics

	Average	*Median*	*Min*	*Max*	*Std Dev*	*Obs*
Intbonds	0.03	0.00	0.00	1.00	0.18	4509
ADR	0.12	0.00	0.00	1.00	0.33	4509
Vot	62.89	62.7***	0.45	100.00	28.28	3580
Vot/Tot	1.21	1.03***	0.13	2.46	0.40	3230
Exp	0.35	0.00	0.00	1.00	0.48	4247
For	0.32	0.00	0.00	1.00	0.47	4248
Lev	61.81	61.9**	0.02	137.88	24.72	2853
NM	0.10	0.00	0.00	1.00	0.30	4509
P/B	1.22	1.00	-2.02	4.62	1.10	2049
ROA	3.14	3.14***	-17.12	21.90	6.97	2703
Size	20.41	20.55***	14.93	26.57	1.94	3061
Tang	0.36	0.36***	0.00	0.99	0.23	3035

*Descriptive statistics of the variables used in this study from 2001 to 2009. ***, ** and * denote statistical significance at 1%, 5% e 10% respectively.*

Table 3 shows the correlation matrix, in which we can see that P/B, ROA, ADR, Exp, Size and Tang are positively correlated with the issuance of international bonds, confirming the hypothesis that the firm value, profitability, size, tangibility and international recognition (being exporter and issuing ADRs) are important factors for issuing international debt securities. In contrast, foreign shareholding and good governance practices are negatively correlated with international bond issues, which is contrary to our initial hypothesis.

Table 3. Correlation Matrix

	Int Bond	*ADR*	*Vot*	*Vot/Tot*	*Exp*	*For*	*Lev*	*NM*	*P/B*	*ROA*	*Size*	*Tang*
IntBond	1.00											
ADR	0.20	1.00										
Vot	0.00	-0.09	1.00									
Vot/Tot	0.06	0.00	0.24	1.00								
Exp	0.14	-0.05	0.00	0.14	1.00							
For	-0.05	0.17	-0.12	-0.09	-0.11	1.00						
Lev	0.07	-0.05	0.02	0.02	-0.02	-0.11	1.00					
NM	-0.06	0.23	-0.30	-0.23	-0.13	0.20	-0.21	1.00				
P/B	0.09	0.21	-0.06	-0.02	0.06	0.21	-0.07	0.28	1.00			
ROA	0.04	0.03	0.01	0.11	0.13	0.11	-0.39	0.00	0.29	1.00		
Size	0.33	0.46	0.01	-0.06	-0.08	0.19	0.14	0.11	0.23	0.12	1.00	
Tang	0.15	0.12	0.12	-0.03	0.08	0.07	0.18	-0.21	-0.05	-0.08	0.28	1.00

*Correlation matrix of the variables used in this study from 2001 to 2009. ***, ** and * denote statistical significance at 1%, 5% e 10% respectively.*

Table 4 compares the characteristics of companies divided into two groups: issuers and non-issuers or international bonds. We performed statistical tests of differences in order to verify if the means and medians are different between both groups. Our results indicate that issuers of international bonds tend to be large firms, exporters, have higher value (P/B), profitability (ROA) and more fixed assets.

Regarding corporate governance, issuers of international bonds also tend list ADRs in the US and have lower concentration of voting shares, but they have higher separation of voting to cash-flow rights. Moreover, the percentage of firms listing on New Market is almost the same between issuers and non-issuers of international bonds.

Table 4. Firm Characteristics of Issuers and Non-Issuers of International Bonds

	Mean			*Median*		
	Non-Issuers	***Issuers***	***P-value***	***Non-Issuers***	***Issuers***	***P-value***
ADR	0.11	0.41	0.00 ***	0.00	0.00	0.00 ***
Vot	63.04	56.83	0.04 **	63.01	55.34	0.03 **
Vot/Tot	1.21	1.41	0.00 ***	1.03	1.42	0.00 ***
Exp	0.34	0.65	0.00 ***	0.00	1.00	0.00 ***
For	0.32	0.31	0.75	0.00	0.00	0.80
Lev	61.70	65.18	0.18	61.66	66.74	0.08 *
NM	0.10	0.12	0.42	0.00	0.00	0.68
P/B	1.20	1.71	0.00 ***	0.99	1.47	0.00 ***
ROA	3.09	4.37	0.08 *	3.09	4.28	0.08 *
Size	20.32	23.31	0.00 ***	20.47	23.46	0.00 ***
Tang	0.36	0.47	0.00 ***	0.36	0.48	0.00 ***

*Characteristics of companies divided into two groups: issuers and non-issuers or international bonds. Statistical tests of differences are performed to verify if the means and medians are different between both groups. ***, ** and * denote differences statistically significant at 1%, 5% e 10% respectively.*

Table 5 shows the results of probit regressions for the probability of a non-financial Brazilian company to issue international bonds. As can be seen in the table, firm size and the exporting capacity of company are the most important factors that affect the probability of issuing international bonds. The coefficients of Size and Exp are positive and significant at 1% in all cases, corroborating our initial hypothesis.

The tangibility of assets also has a positive relation with the issuance of international bonds, but it is significant in only 3 models. The ADR listing is significant in only 1 case, showing a positive relationship with issuing international bonds. The ownership structure and New Market listing are not significant.

Table 5. Determinants for Issuing International Bonds

Independent Variable	***Dependent Variable = Intbonds***							
	I	***II***	***III***	***IV***	***V***	***VI***	***VII***	***VIII***
Tang	-0.03	0.02	0.15	0.18	0.24	0.74*	0.75*	1.61***
	(0.92)	(0.94)	(0.66)	(0.60)	(0.50)	(0.10)	(0.10)	(0.01)
Size	0.58***	0.58***	0.58***	0.58***	0.50***	0.60***	0.60***	0.64***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ROA	0.00	0.00	-0.01	-0.01	0.00	-0.02	-0.02	-0.01
	(0.99)	(0.77)	(0.38)	(0.42)	(0.69)	(0.26)	(0.26)	(0.45)
Lev		0.00	0.00	0.00	0.01	0.01	0.01	0.02**
		(0.43)	(0.55)	(0.72)	(0.22)	(0.17)	(0.17)	(0.01)
Exp			0.70***	0.69***	0.65***	0.68***	0.69***	0.99***
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
For				-0.24*	-0.26*	-0.21	-0.21	-0.44**
				(0.07)	(0.06)	(0.21)	(0.21)	(0.03)
ADR					0.51***	0.19	0.19	0.29
					(0.00)	(0.28)	(0.30)	(0.19)
P/B						0.15	0.14	0.19*
						(0.11)	(0.12)	(0.07)
NM							0.04	0.08
							(0.88)	(0.82)
Vot								0.00
								(0.92)
Vot/Tot								-0.18
								(0.46)
Obs=0	2573	2517	2517	2517	2517	1682	1682	1445
Obs=1	94	94	94	94	94	75	75	57
McFadden R^2	0.35	0.35	0.39	0.39	0.41	0.47	0.47	0.53

*Probit regressions where the dependent variable is the probability of a Brazilian company to issue international bonds from 2001 to 2009. The coefficients and p-values (in parentheses) are reported. Year dummy variables are not shown in the table for space reasons. ***, ** and * denote differences statistically significant at 1%, 5% e 10% respectively.*

The coefficients of For are negative and statistical significant in 3 models, suggesting a negative relationship between the probability of issuing international bonds and the presence of foreign shareholders. Firm leverage is positive but significant in only 1 model. The positive relationship is in line with the theory, since leveraged companies may use all possible financing options, increasing their propensity to issue international bonds. Year

dummy variables (not shown for space reasons) do not have significant coefficients.

Table 6 shows the results of the panel regressions only for companies issuing international bonds. The dependent variable is the issued volume of international bonds by the company from 2001 to 2009. As we can see, firm size has positive and significant coefficients in all models, showing that big firms issue more international bonds.

Table 6. Determinants for the Issued Volume of International Bonds

Independent Variable	*Dependent Variable = Intbonds*							
	I	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*
Tang	-0.29	-0.31	-0.29	-0.33	-0.31	-0.30	-0.18	0.32
	(0.14)	(0.14)	(0.17)	(0.11)	(0.13)	(0.17)	(0.49)	(0.40)
Size	0.20***	0.20***	0.20***	0.19***	0.19***	0.22***	0.22***	0.22**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)
ROA	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01
	(0.12)	(0.25)	(0.44)	(0.58)	(0.52)	(0.96)	(0.65)	(0.29)
Lev		-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
		(0.63)	(0.51)	(0.34)	(0.44)	(0.62)	(0.66)	(0.88)
Exp			0.07	0.07	0.06	0.06	0.08	0.15
			(0.38)	(0.41)	(0.42)	(0.54)	(0.48)	(0.31)
For				-0.17**	-0.17**	-0.23***	-0.23***	-0.26***
				(0.02)	(0.03)	(0.00)	(0.00)	(0.01)
ADR					0.06	0.11	0.10	0.11
					(0.41)	(0.15)	(0.23)	(0.29)
P/B						0.03	0.01	0.00
						(0.45)	(0.87)	(0.97)
NM							0.20	0.37**
							(0.13)	(0.02)
Vot								0.00
								(0.64)
Vot/Tot								0.01
								(0.91)
R^2 adj	0.47	0.47	0.47	0.49	0.49	0.56	0.56	0.59
Obs	94	94	94	94	94	75	75	57

*Panel regressions where the dependent variable is the issued volume of international bonds by Brazilian companies from 2001 to 2009. The coefficients and p-values (in parentheses) are reported. Year dummy variables are not shown in the table for space reasons. ***, ** and * denote differences statistically significant at 1%, 5% e 10% respectively.*

The existence of foreign shareholders presents a negative and significant coefficient in all models. This result may be due to the fact that international investors prefer not to be shareholder and lender of a company at the same time to avoid conflicts of interest, so international investors would be present in only one part of the capital structure. This hypothesis can be weakened, considering the fact that the existence of ADRs has a positive (although not significant) relationship with the issued volume of bonds.

It is important to highlight that listing on New Market is positive and significant, suggesting that good corporate governance is positively related to the issued volume of international bonds. The fact that a firm is an exporter is also positively related to the issued volume of international bonds, but the relation is not significant.

4. CONCLUSION

This work analyzes the determinants for issuing international bonds by Brazilian companies. The results indicate that the size of the company and its capacity to export are important determinants for the issuance of international bonds. Big companies with large export flow tend to issue more international bonds.

Adopting good corporate governance practices, such as listing ADRs in the US or on Brazilian's New Market, is significant in a few models, suggesting a positive relation between better governance practices and the issue of international bonds. We also find a negative relation between the existence of foreign shareholders and the issuance of international bonds. This result indicates that international investors tend to prefer only one type of financial instrument (stock or debt) when investing in foreign companies.

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