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THE INFLUENCE OF OWNERSHIP STRUCTURE AND BOARD INDEPENDENCE ON THE COST OF DEBT IN BRIC COUNTRIES

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THE INFLUENCE OF OWNERSHIP STRUCTURE AND BOARD INDEPENDENCE ON THE COST OF DEBT IN BRIC COUNTRIES³⁴

This paper presents an empirical analysis of the influence of ownership structure and board independence on bond yield spread in BRIC countries, 2007-2016. The main finding of the study is the presence of significant country-specific effects of ownership structure on the cost of debt, and the absence of effects of board independence. According to our results, in Brazil, insider ownership and concentrated ownership of corporations increase the cost of debt, while institutional investors help to mitigate the risks of debt holders. Only state and insider ownership matter in Russia: the larger the government stake, the higher the cost of debt, while insider ownership has a non-linear effect. In India insider ownership has an increasing effect, while state ownership has the inverse effect. Evidence from China reveals the decreasing influence of corporations' ownership concentration, which can be a result of the co-insurance effect. We contribute to the literature by providing evidence from emerging markets, taking into account the specific features of each country and investigating the effect on market indicator of the cost of debt, the data on which is scarce. The results of this study can be used by rating agencies or investors for the evaluation of the risks related to bond issuers, as well as by debt issuers for attracting finance with lower costs.

JEL Classification: G32, G34

Keywords: cost of debt, ownership structure, board independence, BRIC

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Introduction

Agency theory predicts that the default premium on debt is determined by the intensity of agency conflicts, as they affect the risk of debt holders. Ownership structure influences agency conflict between debt holders and shareholders resulting in potential wealth transfer and asset substitution (Jensen and Meckling, 1976). Board structure can influence the conflict between debt holders and managers, which is caused by opportunistic managerial behavior and the distortion of financial information (Bhojraj and Sengupta, 2003).

Studies conducted in developed markets have proved the relevance of this relationship (see Ashbaugh-Skaife et al., 2006; Wang and Zhang, 2009; Bradley and Chen, 2011; Aman and Nguyen, 2013; Borisova et al., 2015; Huang and Petkevich, 2016). With regard to BRIC countries, a recent study by Marques et al. (2017) shows that governance issues are relevant to investors in debt securities in Brazil and India. The present paper investigates the influence of ownership structure and board independence on the cost of debt in terms of bond yield spread in BRIC countries.

We contribute to the existing literature both empirically and methodologically. The empirical novelty is the evidence of the sensitivity of the risk premium on debt to the ownership structure in BRIC countries. The empirical literature on this phenomenon in emerging markets (Juniarti and The Lia Natalia, 2012; Bliss and Gul, 2012; Shailer and Wang, 2015) is scarce, the results obtained are ambiguous, and generally only the implied cost of debt is used as a measure of the cost of debt. However, corporate governance in emerging markets, in BRIC countries particularly, is different from that in developed economies. There are at least three specific features of BRIC countries which affect ownership and governance patterns: high ownership concentration and evidence of the private benefits of control, the significant role of government in business, and the power of informal institutions and weak legal enforcement in some countries (Estrin and Prevezer, 2011; Sarkar and Sarkar, 2012; Enikolopov and Stepanov, 2013; Brugni et al., 2013; Clarke, 2015; Jiang and Kim, 2015). We do not include South Africa because of the relatively higher level of development of the capital markets (Marques, 2017) and institutional ownership.

The methodological contribution relates to the application of a method which has not been used in the literature on the influence of ownership and governance on the yield spread on corporate bonds: we use an at-issue option-adjusted spread, because the term structure of the yield to maturity is taken into account in its calculation. Recent papers on this theme highlight the relevance of this issue (see Borisova et al., 2015; Huang and Petkevich, 2016).

To test the model of the influence of ownership and board structure on the cost of debt we use unbalanced panel data of at-issue and yearly observations on the option-adjusted spread on

corporate bonds issued in BRIC countries from 2007 to 2016 and the ownership and governance factors as at the date after the spread calculation. The data sample includes 146 spread observations from Brazil, 153 observations from Russia, 1,413 observations from India and 198 observations from China. The results have similarities and differences with those from developed markets: board independence does not influence the cost of debt in any country, while ownership structure has a significant and differentiated effect. This proves the necessity of examining BRIC countries separately, as although they had similar economic growth patterns, specific ownership and governance patterns are caused by specific historical economic developments, mentalities, and business customs.

The results can be used by rating agencies for the elaboration of methodological aspects for companies from BRIC countries and by investors for assessing the risk of investing in debt securities. In the present rating methodologies corporate governance is considered within the frames of board procedures, board independence and related party transactions (see FitchRating, 2017), while emerging market specificity is not highlighted. It can be also used by companies for aligning their ownership and board structure with the interests of debt holders to raise the attractiveness of debt instruments and decrease their yields.

The structure of the present paper is the following: in second chapter we review the theoretical and empirical literature, examine the evidence and statistics regarding the specificity of ownership and governance patterns in BRIC countries, and develop research hypotheses. The third chapter describes the research methodology, while in the fourth chapter we present the data description, results and an overview of robustness checks.

Literature review

In this chapter we present an overview of the theoretical concepts which provide the basis for our research and the empirical evidence regarding the influence of ownership and board structure on the cost of debt in both developed and emerging markets. We also identify the specific features of each BRIC country, which potentially influence ownership and governance patterns, and set out the hypotheses for the empirical analysis.

Conceptual framework

Theoretically, ownership and governance structures should affect the cost of debt. They determine the intensity of agency conflicts with which debt holders are faced: the manager-external investor conflict and the shareholder-debt holder conflict (Jensen and Meckling, 1976). Information asymmetry between managers and external investors is associated with the moral hazard problem, which, according to Bhojraj and Sengupta (2003), originates two sources of debt holder risk: first, the self-interested behavior of managers (agency risk); second, the non-completeness of corporate information for external investors (information risk). The conflict between shareholders and debt holders is in wealth transfer (or wealth expropriation) and risk shifting (asset substitution), which result from the activities of shareholders. They may make managers pay dividends or make share repurchases at the expense of investing in effective projects, or take extremely risky projects, as shareholder return positively correlates with the riskiness of operations (Jensen and Meckling, 1976). This has an increasing effect on the variance of the expected cash flows for debt holders.

The framework of corporate governance in a company which attracts the external capital has become especially relevant among investors since the publicity of the most severe cases of accounting fraud, such as the case of Enron in 2001 (Darrat et al., 2014). Investors in debt securities in Brazil and India in particular are sensitive to changes in the corporate governance of issuers (see Marques et al., 2017). Therefore the theoretical relationship between ownership structure, board composition and the cost of debt should be significant for debt issuance in BRIC countries.

Here, we investigate how ownership and board composition affect the cost of debt, and review the findings from developed and emerging markets.

Ownership structure is primarily driven by ownership concentration and ownership identity. The impact of ownership concentration on debt-holder risk depends on two effects: according to the “private benefits hypothesis” (Barclay and Holderness, 1989), block holders are likely to pursue their own interests and make managers take actions that maximize their wealth

at the expense of the wealth of minority shareholders and debt holders. These actions may be related to the gaining from different privileges provided by the executives or to the use of access to insider information and the ability to influence firm policies. The “shared benefits hypothesis” suggests that controlling shareholders are interested in effective management to maximize the firm’s value and, therefore, their own wealth. Shleifer and Vishny (1997) argue that in this case block holders tend to prevent managerial discretion through active monitoring. This results in increasing firm value and higher strategic efficiency (Ivashkovskaya and Stepanova, 2011). Therefore, concentrated ownership can benefit debt holders as it reduces the degree of moral hazard with which debt holders are faced (Rabotinskiy and Stepanova, 2014). As a result, the impact of concentrated ownership on the risk of debt holders and ultimately on the actual cost of debt depends on which of the two effects is more severe.

With regard to the empirical evidence, Ashbaugh-Skaife et al. (2006) reveal the dominance of the “private benefits hypothesis” on a sample of U.S. companies. The same result was obtained by Shailer and Wang (2015) for Chinese companies in financial distress and operating in provinces with low institutional development. However, the dominance of the “shared benefits hypothesis” was revealed in Japan by Tanaka (2014): the presence of a large corporate shareholder holding more than 10% of the stock reduces the cost of debt.

Ownership of corporations may refer to a different relationship between a company and shareholders: the first is control within the frame of business group, which relates to ownership exceeding 50% of ordinary shares (or less in the case of a significant power), the second is ownership less than 50%, which is counted as an investment. Business group ownership can ambiguously affect debt holder risk: there can be an adverse impact on the rights’ protection of minority investors due to potential wealth transfer (see Lin et al., 2011), on the other hand, debt holders can benefit from co-insurance, or risk sharing within the group if there is a default (see Khanna and Yafeh, 2005).

State ownership is related both to the power of governors not interested in firm efficiency (Shleifer and Vishny, 1997), which is observed empirically on multinational samples (Borisova and Megginson, 2011; Borisova et al., 2015); and to excess guarantees to debt holders in terms of debt repayment and a probable bailout by the government in the case of bankruptcy (Borisova and Megginson, 2011) and support in overcoming business barriers and subsidization (Rabotinskiy and Stepanova, 2014), which decreases the riskiness of operations (see Shailer and Wang, 2015 in China).

Institutional ownership may also have an ambiguous effect on the degree of agency conflicts: the incentive for monitoring managers by these investors may be different (Shleifer and Vishny, 1986). It depends on the type of the investor: there is an evidence from the U.S. that

the ownership of institutional investors who are more sensitive to information asymmetry due to their active trading, but are less likely to influence the corporate governance policies due to their highly diversified positions decreases the cost of debt (Wang and Zhang, 2009); moreover, a favorable effect on the cost of debt is related to long-term institutional ownership, as this type of investment is generally not concentrated (Huang and Petkevich, 2016).

Bhojraj and Sengupta (2003) outline the reducing effect of institutional ownership on bond yields in the U.S., 1991-1996. However, they outline that concentrated institutional ownership has a positive relationship with the bond yields. Further investigation of U.S. companies by Ashbaugh-Skaife et al. (2006), however, reveals that there is no significant influence of the percentage of shares controlled by institutional investors and the cost of debt. The results obtained from empirical research in other countries are more consistent. Boubakri and Ghouma (2010), using a sample of 19 countries from East Asia and Western Europe, reveal that the control of widely held financial firms is associated with a better credit rating. Aman and Nguyen (2013) find that an increase in the percentage of stock in the hands of institutional owners boosts a firm's credit rating for a sample of Japanese companies in 2003. Piot and Missonier-Piera (2007), using a sample of French companies, reveal that the presence of block-holding institutional investors reduces the cost of debt.

The effect of *managerial* and *director ownership* is also uncertain. On the one hand, insider ownership brings together their interests and the interests of shareholders (Jensen and Meckling, 1976; Jensen, 1993). As shareholders are interested in value maximization, managers become less prone to opportunistic behavior (for example, they tend not to create value-diminishing growth policies), while directors have additional incentives for the effective monitoring of managerial actions (see Lorca et al., 2011 in Spain). On the other hand, managerial ownership may lead to the increased power of managers, which can make the monitoring of their actions by the board of directors difficult (see Bradley and Chen, 2011 in the U.S. and Tanaka, 2014 in Japan). Moreover, the phenomenon of management entrenchment is related to the impeded management rotation even in the case of the poor performance of managers. Li and Sun (2015) prove the hump-shaped improvement in firm performance with an increase in managerial ownership in the U.S.

Board independence is the issue of corporate governance codes regardless the country of the firm's incorporation. This feature has been already taken into account by rating agencies during the analysis of the corporate governance in a company (see the criteria for non-financial companies' rating created by FitchRating, 2017). The core which lies behind the positive influence of independent directors on company governance and management is their reputation as actors of internal control (Fama and Jensen, 1983). The negative influence of board

independence on the cost of debt is evident in developed markets (see Bhojraj and Sengupta, 2003 and Anderson et al., 2004 in the U.S., Piot and Missonier-Piera, 2007 in France) as well as the positive influence on bond credit rating (see Ashbaugh-Skaife et al., 2006 in the U.S.). Nevertheless, the results depend on the country's specificity, for example, regarding the standard number of non-independent directors on the board (Aman and Nguyen, 2013; Lorca et al., 2011).

There are forces, however, which can weaken the power of control mechanism of independent directors: first, the power of informal relationships between independent and insider directors, and the entrenchment of the board directors and their adherence to the incumbent culture of the board (Fama and Jensen, 1983).

The influence of *board size* is ambiguous, as according to agency theory, the larger the board of directors, the larger the probability of its inefficiency (Lipton and Lorsch, 1992); the optimal size of the board is seven or eight (Jensen, 1993); whereas the resource dependence theory, proposed by Salancik and Pfeffer (1978), suggests that the larger the board, the higher the company's capabilities and performance (Dalton et al., 1999; Hillman et al., 2000), as the crucial function of the board is the provision of resources: expertise, contacts, and other human capital of board members.

The specificity of ownership and governance patterns in BRIC countries

BRIC economies are characterized by historically established patterns in corporate structures, a specific institutional environment, and sustainable business customs. We do not include South Africa in our research because of the earlier development of capital markets (Marques, 2017) and the resulting importance of institutional shareholders. Average institutional ownership in a sample of 245 South African companies is 47% as at 31 December 2016, based on Capital IQ database, which is more than twice the average in the BRIC sample (see Table 1).

The dominance of informal institutions over formal rules and the lack of legal enforcement in Brazil and Russia

Besides the evidence of existing black economy mechanisms and corruption in Brazilian business (Estrin and Prevezer, 2011), the Brazilian corporate governance legal framework is characterized by lack of enforcement mechanisms for supporting compliance with the requirements for board independence (Brugni et al., 2013). The members of the board of directors are often nominal; the number of independent directors who can implement effective control over the top management as experts is usually small. Only small number of firms have a formal mechanism to evaluate directors and there is usually no disclosure of the process details (Brugni et al., 2013; Clarke, 2015).

The legal enforcement of corporate governance standards in Russia is considered weak due to corruption in regulatory bodies (Enikolopov and Stepanov, 2013). The weakness of the formal enforcement in the implementation of the high standards of corporate governance in Russia contributes to the prioritizing of the other stimuli – Enikolopov and Stepanov (2013) argue that the main motive to adhere to high standards of governance by Russian companies should therefore be reputation. This channel works effectively only for the companies which are listed on foreign stock exchanges, because there are strict requirements for disclosure and corporate governance. However, Russian companies often bypass these requirements and prefer, for this reason, to create a Special Purpose Vehicle and issue Credit-linked Notes or Loan Participation Notes.

Other indicators of the emerging nature of the corporate governance system in Russia include the lack of transparency in ownership disclosure (Chernykh, 2008) and the absence of the definition of affiliated parties (Enikolopov and Stepanov, 2013).

Ownership concentration and evidence of the private benefits of control in BRIC countries

Ownership concentration is typical for Brazilian companies. At the end of 2016, block holding relates to ownership by corporations, government, institutions and individuals/insiders: average standalone ownership of each group was 23-37% (see Table 1). As a consequence of the power of block holders, there is evidence of the expropriation of the wealth of minority shareholders and debt holders (Clarke, 2015). Mechanisms of expropriation include: first, the majority of the members of the board of directors are representatives of controlling shareholders (Brugni et al., 2013); second, a dual-class shareholding system allows the distribution of voting rights to insiders and non-voting rights to outsider owners, creating a wedge between voting and economic rights (Black et al., 2014; Pargendler, 2014). The problem of the power of block holders has been partially resolved by the increase of institutional shareholding, enhancing the diffusion of the ownership and the attraction of professional investors as external control bodies (Clarke, 2015).

In Russia ownership concentration is primarily subject to the control of corporations, the government and large individual/insider investors: the average ownership of these groups at the end of 2016 was 47%, 19% and 15% respectively (see Table 1). State concentrated ownership in Russia is developed both by the specificity of the Russian economy before privatization and the process of renationalization at the beginning of 21st century. As a result, state control is common among Russian companies. In state-controlled companies, the primary agency conflict refers to the managers/board members and minority shareholders/debt holders. Concentrated ownership in publicly-held companies is also a widespread phenomenon, which results in conflict between block holders and debt holders or block holders and minority shareholders. The power of

business groups, family groups and oligarchs as controlling shareholders is large (Clarke, 2015). The transformation of corporate governance on the company level toward a more independent board of directors does not help to mitigate the agency conflict between controlling and minority investors: Muravyev et al. (2014) give evidence of a positive association between non-executive and independent directors with private benefits of control; Melkumov (2009) points out the weakness of independent directors in Russia while facing institutional pressures in a highly concentrated ownership environment. This problem has been partially resolved during the past decade, because there has been a tendency to offshore, and many firms diffused their equity among foreign financial institutions and foreign corporate bodies.

India's primary specificity regarding corporate governance is the historically developed nature of ownership which prevails in the majority of companies and is referred to as promoter control. According to Sarkar and Sarkar (2012), in 2008 92,8% out of a sample of 3,155 Indian firms were characterized by concentrated ownership. The ownership structure of a typical Indian firm is: a block stake of shares is controlled by the promoter group: promoters are corporate bodies or individuals, domestic or foreign, which are not only the owners of a firm, but also serve as managers – they are classified as insider owners (Sarkar and Sarkar, 2012). They also serve as members of the board of directors; therefore, the insiders on the board mainly hold a stake in a company's equity. As a result, a part of the board of directors are not independent from the management and from the major shareholders of a company. This may enhance the agency conflict between the debt holders/minority shareholders and majority shareholders, which becomes a greater problem as the details regarding the promoters (even their names) are often not disclosed in annual reports. Minority shareholder expropriation by promoters controlling the management and holding a block stake often occurs in India, according to Sarkar and Sarkar (2012). Therefore, as there is restricted ownership of independent directors in India (no more than 2% of shares), their role in mitigating this conflict should be significant.

The concentrated ownership of corporations and insiders, as well as state control, are widespread practices in firm-level governance systems in China (see Table 1), as in a majority of the emerging market countries. There is evidence of an inverse relationship between ownership concentration and legal investor protection in non-state owned Chinese companies (see Wu et al., 2009). However, the empirical findings regarding the relationship between ownership concentration and firm value are ambiguous (Jiang and Kim, 2015). As one of the major concerns of internal governance systems is the concentration of ownership due to the probability of wealth expropriation by controlling shareholders, the main duty of independent directors in China is the control of block holders to protect the interests of minority shareholders and debt holders (Jiang and Kim, 2015). Therefore, the primary role of independent directors in China is

not the mitigation of the risk of managerial opportunism, as in the majority of developed countries. As a consequence, the arguments based on conventional theory are not valid with regard to the Chinese companies.

Table 1. Average characteristics of ownership structure in BRIC as at December 2016

Parameter	Brazil	China	India	Russia
No. of observations	286	3,913	3,315	209
Institutions	24.9%	12.5%	12.1%	11.9%
Activist Investors	0.7%	1.2%	1.8%	0.1%
VC/PE Firms	9.4%	7.0%	8.1%	3.2%
Banks/Investment Banks	1.9%	1.7%	4.7%	10.1%
Individuals/Insiders	23.1%	24.0%	33.9%	14.9%
Chairman	10.5%	20.9%	14.1%	12.2%
CEO	9.6%	15.9%	13.7%	9.6%
State Owner	28.8%	10.0%	14.4%	18.9%
Corporations	37.3%	33.8%	28.3%	47.2%

Source: Capital IQ

The significant role of the government in Brazil, Russia and China

According to Pargendler (2014), equity owned by the government accounted for 80% of market capitalization in China, 60% in Russia, and 35% in Brazil. At the end of 2016, the average share ownership by the government for a sample of BRIC companies was 14%.

Some of the Brazilian cases of government intervention were related to the adverse effect on minority shareholders' wealth by sponsoring statutory amendments or active participation in the creation of corporate policies via its representatives (Pargendler, 2014). Similar evidence is observed in Russia and India – the interests of the government as controlling shareholder are distorted, which is an obstacle to better corporate governance (see Dwivedi and Jain, 2005; Melkumov, 2009).

In contrast, evidence from China reflects the absence of minority investor expropriation in companies with significant state control: first, fund tunneling occurs less often in state-owned enterprises (Jiang et al., 2010); the tunneling is usually conducted by managers or other agents, or facilitating political objectives to increase GDP (Jiang and Kim, 2015). Moreover, there is no inverse relationship between controlling ownership and legal investor protection in Chinese state-owned enterprises (Wu et al., 2009).

Research hypotheses

Controlling shareholders pose a threat to minority shareholders and debt holders in BRIC countries. In Brazil and Russia there is evidence of the influence of block holders on corporate

policies, mainly via the representatives on the board of directors and top management or a dual-class ownership structure (Brugni et al., 2013; Black et al., 2014; Pargendler, 2014; Clarke, 2015). In India there are promoters or insider owners – the managers – who are also the directors and the owners of a company (Sarkar and Sarkar, 2012). Evidence from China reveals the adverse influence of ownership concentration on minority investor protection in companies not controlled by government (see Wu et al., 2009). These facts build a solid basis in support of the private benefits hypothesis, proposed by Barclay and Holderness (1989): block holders influence company policy in accordance with their own interests. As shareholders are likely to support policies which are connected with a higher return, the riskiness of the company's operations rises, and the variance of the expected future cash flow of debt holders increases. There is also the probability of the tunneling of funds by controlling shareholders, or the pressure from shareholders on managers to make guaranteed dividend payments or share repurchases, which may decrease the average expected cash flow of debt holders. Despite the fact that debt holders are fixed stake claimants, the probability of default rises with the increase in the variance or a decrease in the average future cash flow, the risk premium of debt holders becomes larger, which positively influences the cost of debt.

The particular subject of interest of the present paper is the identity of shareholders who expropriate minority investor rights, and whether the presence of independent directors matters for investors in bond instruments.

In Brazil, Russia and China the highest ownership concentration is the ownership stake of corporations (from 34% to 47% on average, see Table 1). Therefore, we expect that the private benefits of control hypothesis is significant in relation to corporations' ownership⁵ in these countries. As the most powerful shareholders in India belong to the promoter group (see Sarkar and Sarkar, 2012), we expect that corporations' ownership concentration does not significantly affect debt holders' risk.

H1. The concentration of corporations' ownership increases the cost of debt in Brazil, Russia and China, while it has no significant influence in India.

Among BRIC countries, institutional ownership developed significantly only in Brazil (the average institutional ownership is 25%, see Table 1), while the average ownership of activist investors is low in all the investigated countries (0.1-1.8%). The low average ownership level of activist investors means that institutional investors in BRIC countries are passive in general. In Russia institutional investors are mostly represented by banks. Evidence from India and China proves that institutional investors do not participate in company decision making as they do not

⁵ Hereinafter *corporations' ownership* - percentage of shares held by corporations as investors

have sufficient incentives and power as their holding is usually short-term (Sarkar and Sarkar, 2012; Jiang and Kim, 2015).

Therefore, implying the results of Wang and Zhang (2009) and Huang and Petkevich (2015), it is more likely that the concentration of institutional ownership matters for debt holders only in Brazil, decreasing risk and therefore the cost of debt for issuers due to the diversified positions of institutions. Clarke (2015) also points out that institutional investors in Brazil contribute to the partial mitigation of the minority investor expropriation problem due to ownership diffusion.

H2. The concentration of institutional investor ownership decreases the cost of debt in Brazil and has no effect on the cost of debt in Russia, China and India.

H2.1. The more concentrated the ownership of institutional investors, the less adverse the influence of the concentration of corporation ownership on cost of debt in Brazil.

State ownership is also significant in BRIC countries. Evidence from Brazil shows the possibility of minority investor expropriation by the government, by aligning the corporate policy with its interests via representatives or sponsoring statutory amendments to pursue its goals (Pargendler, 2014). According to Melkumov (2009), government ownership in Russia is related to the risk of pursuing political and bureaucratic goals which adversely affects corporate governance according to Shleifer and Vishny (1997). Evidence from India also reveals that the interests of government in business are distorted (Dwivedi and Jain, 2005).

However, evidence from China reflects the absence of an inverse relationship between the legal protection of investors and state controlling ownership (Wu et al., 2009). It also shows that fund tunneling in state-owned enterprises is rare (Jiang and Kim, 2015). Shailer and Wang (2015) identify a negative relationship between government ownership and cost of debt in China.

H3. The higher the level of state ownership, the higher the cost of debt in Brazil, Russia and India; the lower the cost of debt in China.

Insider ownership plays a different role in each BRIC country, which reflects different influences on debt holder risk.

In Brazil, there is a widespread phenomenon of dual-class shares, which distributes voting rights to insiders and non-voting rights to outside investors, creating a wedge between economic and voting rights (Pargendler, 2014; Black et al., 2014). Therefore, we expect the conflict between insider owners and debt holders to be significant.

The adverse effect of insider ownership is also evident in India. The institute of promoter ownership, which is concentrated in more than 90% of Indian companies (Sarkar and Sarkar, 2012), allows owners to be top executives and board members simultaneously. This undermines

the top role of directors as external monitors and defenders of the rights of minority shareholders.

However, there is evidence of a reverse effect of non-concentrated insider ownership in Russia. Muravyev et al. (2014) find a non-linear relationship between director ownership and corporate performance in Russia: director ownership helps to mitigate corporate governance problems as soon as it becomes concentrated, and then the influence is negative due to the entrenchment effect. As the level of insider director ownership is higher than that of outsider directors (Muravyev et al., 2014), we expect the entrenchment effect in Russia, as evidence from European countries suggests that companies which are actively managed by controlling individual investors have lower performance (see Gugler et al., 2014).

Evidence from China suggests the absence of the entrenchment effect, as concentrated insider ownership is rare in China (Jiang and Kim, 2015). Therefore we expect the absence of the effect of insider ownership on the cost of debt in China.

H4. The higher the insider ownership, the higher the cost of debt in Brazil and India. In Russia the relationship between insider ownership and the cost of debt is U-shaped; in China this effect is not significant.

We expect that the independence of the board of directors matters for debt holders only in India and China. In Brazil, the directors are usually related to controlling shareholders and sometimes nominal, which poses a threat to debt holders while the private benefits hypothesis holds (Clarke, 2015; Brugni, 2013; Estrin and Prevezer, 2011). In Russia, there is evidence of a positive association between non-executive and independent directors and the private benefits of control (Muravyev et al., 2014). However, in India and China independent directors should reduce debt holder risk due to their restricted ownership in India (Sarkar and Sarkar, 2012) and their specific role in China – the mitigation of minority rights expropriation (Jiang and Kim, 2015).

H5. Board independence has a negative influence on the cost of debt in India and China, and no effect in Brazil and Russia.

Cost of debt measurement and other methodology

In the present chapter we continue with a description of the methodological approach to the investigation of ownership structure and board independence on the cost of debt with regard to variable choice and model specification.

Cost of debt approximation

To get results comparable with those from developed markets, we choose bond yield spread as the dependent variable, calculated as the difference between YTM on corporate bond and YTM on benchmark security, following Anderson et al. (2004), Klock et al. (2005), Borisova and Megginson (2011), Bradley and Chen (2011, 2015), Huang and Petkevich (2016). This measure captures micro-level factors only and includes a *liquidity premium*, related to the investment in comparable securities, and the *credit spread*, which reflects the probability of default on debt (credit risk), evaluated on the basis points, and tax issues related to a bond (Petitt et al., 2015). The choice of the indicator related to non-intermediated debt is also motivated by the result of research of Aldamen and Duncan (2012): the effect of corporate governance is more distinct on the risk of investors in debt instruments in the forms of corporate bonds, commercial papers and notes, rather than of bank loans, asset-specific finance and other forms of the intermediated debt.

We focus on the risk of bond holders; and to account for the non-constant spot rate of return over time and different embedded options, we use an *option-adjusted spread*, which is derived from Z-spread by option-specific adjustments. The need to account for the term structure of bond yields is highlighted in Borisova et al. (2015) and Huang and Petkevich (2016). The yield to maturity typically increases with the increase of the time to maturity (the yield curve is generally upward sloped). However, the calculation of G-spread and I-spread is based on the assumption that the spot yield curve of a government bond is flat.

Z-spread at issue is derived from the following equation:

$$\sum_{i=1}^n \frac{Coupon}{(1+Zspread+spotrate(gov)_i)^i} + \frac{Parvalue}{(1+Zspread+spotrate(gov)_n)^n} = P, \quad (1)$$

where $spotrate(gov)_i$ – the spot rate of return on an investment in a government bond with maturity i and in the same currency as the bond for which the spread is calculated; n - the maturity of a corporate bond.

The need to account for the embedded options arises from the existence of additional risk factors related to different options – the most popular are call, put, and the sinking fund provision. The probability of call increases the interest rate risk of a bondholder, which positively influences the yield on a bond. The put option is, inversely, the privilege of an

investor; therefore, the risk premium should be less, *ceteris paribus*. A similar effect relates to the bonds with a sinking fund provision, because the risk of default on debt obligation for these bonds is less – an issuer partially redeems bonds, diversifying the risk.

The value of an option-adjusted spread for each bond observation was obtained using the Bloomberg Yield and Spread analysis tool. For a robustness check we use G-Spread and I-spread: the calculation of G-spread uses the government bond's yield to maturity with a comparable maturity as the benchmark, while I-spread is measured using a linearly interpolated yield for the same maturity of government bonds.

Variables

We use one variable to approximate the cost of debt – *Spread* – which represents the option-adjusted spread on corporate bond in basis points at the date of our interest, as the spread on the corporate bond reflects the default risk of the bond issuer throughout the bond listing. The explanatory variables include ownership and board structure variables, as well as controls (bond-, firm-, country- and year-specific variables).

Ownership structure

To investigate the influence of ownership structure with regard to corporations and institutions, we use the variable of ownership concentration, while for state and insider ownership the shareholding of all investors within the group is used. First, government ownership is usually represented by the shareholding of one institution. Second, this takes into account the differentiated nature of insider ownership – a minority shareholding reflects usually compensation schemes, while a controlling insider usually refers to the owners who control the management team. The concentration of ownership by corporations is used to reflect BRIC country specificities (Brugni et al., 2013; Black et al., 2014; Pargendler, 2014; Clarke, 2015). Institutional ownership is also considered in concentrated form to take into account only investors who can, theoretically, significantly influence ownership dispersion or company policy. Therefore the following variables are included:

CorpConc – the percentage of share capital held by the top-3 corporations among the shareholders;

State – the percentage of share capital held by governmental institutions;

Insider – the percentage of share capital held insiders;

InstConc – the percentage of share capital held by the top-3 institutional investors.

Board structure

Independence – the percentage of independent directors out of the overall size of the board following Ashbaugh-Skaife et al. (2006), Bradley and Chen (2015) and the majority of other studies investigating this phenomenon;

BoardSize – the number of board members;

Bond-specific variable

YearsToMaturity – the number of the years to bond maturity, used to capture the liquidity risk, the maturity is often included in the model (Wang and Zhang, 2009; Boubakri and Ghouma, 2010; Bradley and Chen, 2015).

The credit rating variable, which is often included in the regression model (Anderson et al., 2004; Borisova and Megginson, 2011; Kabir et al., 2013) is not included to prevent multicollinearity and endogeneity: first, some of the determinants of the credit rating are included as firm-specific and country-specific variables; second, the corporate governance variables have a significant impact on the credit rating, which has been proved in empirical studies (see Ashbaugh-Skaife et al., 2006; Aman and Nguyen, 2013).

Company-specific variables

As default risk depends on the issuer's qualities, the model includes several factors which explain the creditworthiness of the issuer (excluding corporate governance characteristics): performance, volatility, leverage and size.

Performance – the measure of the company's profitability as a proxy for the firm's ability to meet its debt obligations (Borisova and Megginson, 2011; Borisova et al., 2015), which is measured as earnings before taxes to equity.

Volatility – the riskiness of the issuer's operations to capture any unsystematic risk associated with an issuer, which is crucial for debt holders. The standard deviation of operating cash flow for the preceding 6 years, scaled for the mean operating cash flow, is used to measure this variable. It is expected that this variable is characterized by the adverse influence on the cost of debt, as the riskier the company's operations, the higher the required return for the debt holders.

Leverage – the ratio of total debt to total assets, following Klock et al. (2005) and Kabir et al. (2013). Leverage captures the explanation for default risk from the side of capital structure of the issuer – the more leveraged the issuer, the higher the probability of it defaulting on debt (Bhojraj and Sengupta, 2003).

Size – the size of the company which is included as the probability of default on debt is less for larger issuers, as they are more stable financially (Bradley and Chen, 2015). The natural logarithm of sales is used to avoid the multicollinearity which may arise with the use of the

logarithm of total assets (Klock et al., 2005) as the proxy for the firm size. The values of sales are converted into US dollars, using the mean exchange rate for the year.

Country-specific variable

TermSpread – the difference between long term and short term yield on government bonds in the local currency (see Huang and Petkevich, 2016). This factor takes into account expected inflation, which is necessary to address as spread and company sales are expressed in nominal terms. This variable combined with *year dummies* contribute to the macroeconomic-driven dynamics of yield spread. We also control for time effects including year dummies to count for the crisis period which had the largest influence on the bond market in 2008-2009.

Model

The model used to investigate the influence of ownership structure and board independence on bond yield spread (a market proxy of the cost of debt) is based on panel data of bond-quarter observations. We chose this form to combine both at-issue and yearly observations on each bond included in a sample. The basic specification is as follows:

$$\begin{aligned}
 Spread_{i,t} = & \alpha + \beta_1 CorpConc_{i,t} + \beta_2 State_{i,t} + \beta_3 Insider_{i,t} + \beta_4 InstConc_{i,t} + \beta_5 Indep_{i,t} + \\
 & + \beta_6 BoardSize_{i,t} + \gamma BondCharacteristics_{i,t} + \delta FirmCharacteristics_{i,t} \\
 & + \tau CountryCharacteristics_{i,t} + \varphi YearDummies_t + u_i + \varepsilon_{i,t}, \quad (2)
 \end{aligned}$$

where u_i – individual bond effect, $\varepsilon_{i,t}$ – white noise, i – bond, t – quarter, variables are defined in appendix 1.

To find the best-fitted model for each subsample we include non-linear variables:

first, as ownership variables, theoretically, have an ambiguous effect on the risk of debt holders (see Barclay and Holderness, 1989; Shleifer and Vishny, 1986; Jensen, 1993), for each country sample we test the model specification based on a quadratic relationship between ownership and cost of debt variables, and then eliminate it, if it is not relevant;

second, to test specific hypotheses for Brazilian sample (see hypothesis H2.1) we introduce interaction terms $CorpConc \times InstConc$.

Data and results

The final chapter is devoted to the statistical analysis of the variables on the basis of the sample, panel data regression analysis of the influence of ownership structure and board independence on the cost of debt, the identification of the problems of the regression model and data, and testing the validity of the results.

Sample description

As we chose to use option-adjusted yield spread on a corporate bond as the proxy for the cost of debt, the initial database refers to the corporate bonds issued by non-financial companies from Brazil, Russia, India and China from 2007 to 2016. The choice of the period is motivated by the academic significance, as this period covers the period of world financial crisis.

The data on bond yield spreads (in basis points) was obtained using the Bloomberg fixed income database. Only bonds with fixed coupon rate were considered because the benchmark for the variable and floating coupon bonds (LIBOR rate) differs from the benchmark for the fixed coupon bonds – the yield on government bonds – which captures the majority of the macroeconomic factors influencing the yield on a corporate bond. There were also restrictions regarding the maturity type of the bond set: only bonds without embedded options or with options in the form of call, put, or sinking fund provisions were taken into consideration. Therefore, convertible bonds are not included in a sample because this type of financial instrument has both the features of debt and equity; extendible and perpetual bonds are not included due to the specific nature of their yield curve.

Further data refining includes the elimination of the observations with missing information regarding yield spread and observations which refer to the bond issuance by companies without complete information regarding ownership and board structure available. The observations with regard to companies without any information regarding the control variables were also dropped. There was also censoring of the sample: the bonds issues with yield spread more than 1000 basis points in absolute values were dropped as outliers.

The information regarding ownership structure was collected from S&P Capital IQ database, while data on board composition in dynamics was obtained from issuers' annual reports and reports for securities exchanges (such as SEC 20-F forms), dated before the date of the yield spread (therefore, all ownership, board and financial fundamental variables are lagged).

The final country samples are as follows:

146 observations from Brazil representing 32 bonds issued by 9 companies from 2009 to 2015;

153 observations from Russia representing 47 bonds issued by 27 companies from 2010 to 2016;

1,413 observations from India representing 340 bonds issued by 79 companies from 2007 to 2016;

198 observations from China representing 108 bonds issued by 46 companies from 2009 to 2016.

For the detailed distribution of the bonds with regard to the issue year refer to Appendix 2, which shows that the majority of the bonds included in each country sample except Brazil were issued in 2015-2016, which could raise the problem of selection bias.

With regard to the distribution of observations by industry (see Appendix 2), in Brazil and India they are concentrated in the utilities sector (42-43%) and in China in the industrial sector (41%). The Russian sample is relatively evenly distributed among utilities, telecommunications, consumer staples and industrials.

Descriptive statistics

Summary statistics regarding the ownership and board composition variables reveal the necessity of differentiating the samples by country (see Tables 2-5): Brazil is characterized by the highest median level of option-adjusted spread (296 b.p.), while in China the median spread is minimal (54 b.p.).

The highest level of ownership concentration in Brazil is state and institutional (on average 19% and 18% respectively), while corporations' ownership concentration and insider shareholding are less (13% and 1%). The level of institutional ownership in the Brazilian sample is the highest. The average share of independent directors in Brazil is 34%.

In the Russian sample, the most significant ownership stakes relate to the top-3 corporations and government (32% and 26%). Russia is also characterized by the highest level of insider ownership (overall mean 10%, while mean CEO ownership is 6%, chairman ownership 3%). The average level of board independence is 32%.

Although the median level of insider ownership in India is only 6%, this parameter can reach 79%, which supports the evidence of promoter group shareholding. The average state ownership is highest in India – 35%. This sample has the highest level of board independence – 47%.

The Chinese sample is characterized by the low level and variance of all ownership variables except corporations' ownership concentration (highest in BRIC, 58% on average). The low median insider ownership (1%) is not consistent with the evidence from China (see Table 1), which reflects the potential sample selection bias.

Tables 2-5. Summary statistics by country**Brazil (Number of observations = 146, 138 for G-spread and I-spread)**

Variable	Mean	Median	St. dev.	Min	Max
OAS	246	296	279	-597	747
G-spread	249	310	285	-579	741
I-spread	135	301	480	-974	755
CorpConc	13	0	20	0	79
State	19	4	23	0	52
InstConc	18	13	12	6	39
Insider	1	0	4	0	20
BoardSize	10	10	2	5	13
Independence	34	31	25	8	78
YearsToMaturity	8	8	5	2	30
Performance	6	10	18	-46	36
Volatility	0.5	0.5	0.2	0.1	1
Leverage	27	26	8	13	54
Size	9	9	1	7	11
TermSpread	-542	-586	163	-712	-278

Russia (Number of observations = 153)

Variable	Mean	Median	St. dev.	Min	Max
OAS	92	101	189	-444	780
G-spread	107	108	187	-446	799
I-spread	4	35	217	-542	752
CorpConc	32	10	35	0	100
State	26	0	35	0	100
InstConc	8	5	8	0	47
Insider	10	0.02	21	0	72
BoardSize	10	11	2	5	15
Independence	32	33	16	0	71
YearsToMaturity	6	5	5	1	30
Performance	19	11	36	-195	121
Volatility	0.4	0.4	0.2	0.1	1
Leverage	26	25	13	0	63
Size	8	9	1	4	10
TermSpread	17	-12	160	-193	477

India (Number of observations = 1,413, 1,412 for G-spread and I-spread)

Variable	Mean	Median	St. dev.	Min	Max
OAS	141	122	145	-530	816
G-spread	164	143	133	-341	817
I-spread	207	186	130	-287	833
CorpConc	21	7	25	0	90
State	35	0	40	0	100
InstConc	11	10	8	0	46
Insider	6	0.01	14	0	79
BoardSize	12	12	4	4	19
Independence	47	50	13	0	83
YearsToMaturity	6	5	5	0	60
Performance	12	16	18	-222	165
Volatility	0.5	0.4	0.3	0.2	2
Leverage	40	38	14	0	114
Size	8	8	2	0	11
TermSpread	-219	-202	93	-514	-126

China (Number of observations = 198)

Variable	Mean	Median	St. dev.	Min	Max
OAS	69	54	96	-101	435
G-spread	111	83	88	-12	485
I-spread	72	56	98	-99	448
CorpConc	58	58	16	9	87
State	0	0	0	0	0
InstConc	7	6	4	2	25
Insider	1	0	4	0	27
BoardSize	10	11	2	7	15
Independence	39	36	8	25	73
YearsToMaturity	4	3	5	0	30
Performance	11	12	8	-40	35
Volatility	0.5	0.5	0.3	0.04	1
Leverage	29	26	15	3	59
Size	9	9	2	5	13
TermSpread	55	55	1	51	63

Results

The results of the hypotheses testing regarding the influence of ownership structure and board independence on the cost of debt are presented in Table 6.

The results on significance of the variables are consistent with the assumption of the normality of errors. However the problems of the heteroscedasticity of errors and

multicollinearity within the explanatory variables exist. To eliminate the heteroscedasticity problem we use robust standard errors in regression specifications for the Brazilian, Russian and Indian samples. During the hypotheses testing we found multicollinearity in the data (see Appendix 3): for all samples the common variable inflating the variance is *Size*, for India and China this problem is also related to *TermSpread*. An additional variable causing multicollinearity in the Brazilian sample is *Leverage*. To eliminate the multicollinearity problem, we exclude correlated variables from the basic specification tested.

Table 6. Results of empirical analysis

Variables	Brazil	Russia	India	China
CorpConc	95.14**	1.464	0.06	-10.08***
State	6.28	1.68**	-9.25*	
State ²			0.05	
InstConc	-21.99**	1.48	-0.26	5.25
InstConc x CorpConc	0.26			
Insider	200.37*	-15.51***	-2.43	
Insider ²	-5.54*	0.46***	0.05**	
BoardSize	77.72*	23.56**	-3.11**	55.02
Independence	-3.53	-3.12	0.18	-12.34
YearsToMaturity	-9.89	-31.62***	-6.19***	-93.85**
Performance	-4.04	-1.71***	-0.16	20.68*
Volatility	-491.82**	-57.24	38.91*	397.45*
Leverage		-2.87	-1.62***	-21.60
TermSpread	0.13	0.12		
Constant	-1,154.89	32.61	473.94***	1,108.03
<i>Observations</i>	<i>146</i>	<i>153</i>	<i>1,413</i>	<i>198</i>
<i>R-squared</i>	<i>0.466</i>	<i>0.397</i>	<i>0.388</i>	<i>0.184</i>
<i>Number of id_bond</i>	<i>32</i>	<i>47</i>	<i>340</i>	<i>108</i>

*** p<0.01, ** p<0.05, * p<0.1

The concentration of corporations' ownership increases cost of debt in Brazil, which is consistent with the private benefits hypothesis (Brugni et al., 2013; Clarke, 2015) and evidence of the high average level of corporations' ownership. In China, ownership by corporations decreases the cost of debt. This is consistent with the evidence of co-insurance within business groups (see Khanna and Yafeh, 2005), as the average and median levels of ownership concentration by corporations for the Chinese sample is 58% (see Table 5), which is a sign of parent-subsidiary relationships. The hypothesis regarding the adverse relationship in Russia was rejected, whereas in India the absence of a significant relationship was expected. Thus, the difference in results within BRIC countries is caused primarily by difference in the level of

corporations' ownership concentration, suggesting a different role of investors. For Russia and India, the higher relative power of insider owners and the government can explain this result.

The concentration of institutional investor ownership influences the cost of debt only in Brazil, following our hypotheses: it decreases the cost of debt as the level of institutional shareholding is high enough to contribute to the minority investor expropriation problem solution, but remains to be not concentrated which eliminates the power of institutions (see Wang and Zhang, 2009; Huang and Petkevich, 2015; Clarke, 2015). Therefore, the determining factor of the influence of this investor group on debt holder risk is the level of ownership, which is highest in Brazil; the type of institutions, in Russia they are often represented by banks; and the degree of participation in a company's decision making process, which is not observed in India and China.

State ownership increases the cost of debt in Russia, and decreases the cost of debt in India. The adverse effect in Russia is evidence that investors consider the state's distorted interests as a significant threat to their rights (see Melkumov, 2009). The favorable effect of state ownership in India can be an indicator of the benefits received by state-owned companies in India, in both financing and operation (see Borisova and Megginson, 2011; Rabotinskiy and Stepanova, 2014). However, the private benefits hypothesis for Brazil was rejected, as there is no evidence of a significant influence. We failed to check this relationship on the Chinese sample because of the low variance within the observations (see Table 5). The difference in results within samples is primarily caused by the different roles of government in company operations (see Shleifer and Vishny, 1997; Borisova and Megginson, 2011).

The influence of *insider ownership* also depends on the country. In Brazil, where dual-class ownership is widespread (see Pargendler, 2014; Black et al., 2014), insider ownership increases the cost of debt⁶, which is evidence of the risk related to the control-ownership wedge regarding insider ownership. In Russia, the relationship is U-shaped, as expected: if insider ownership is less than 17%, it has a favorable effect on corporate governance and on the cost of debt, for higher insider ownership, the risk of managerial entrenchment increases the cost of debt. It is consistent with the result of Muravyev et al. (2014) on Russian sample. Insider ownership in India increases the cost of debt due to the power of promoter group owners, who are managers, directors and shareholders simultaneously (Sarkar and Sarkar, 2012). With regard to the Chinese sample, due to the low variance of insider ownership there was no possibility to test this hypothesis. Thus, different nature of insider investors in different countries, such as

⁶ The diminishing part of the ownership-spread relationship curve refers to highest 1% of insider ownership

existence of promoter group; as well as different rights suggested by share class are the factors, which underlie the difference in results within countries.

The independence of the board of directors is insignificant in each country according to the results. This was predicted in Brazil due to the presence of nominal directors (see Clarke, 2015; Brugni, 2013; Estrin and Prevezer, 2011) and in Russia because of the existing relationship between non-executive directors and the private benefits of control (see Muravyev et al., 2014). The absence of board independence on the cost of debt could be caused by the weak perception of this mechanism by investors due to the outweighing power of shareholders in decision making process.

The present study has limitations in the following fields: first, the sample selection bias problem may be relevant, as the sample of the bonds investigated is restricted by the availability of data in the Bloomberg Yield and Spread analysis; second, it is not possible to test the hypotheses regarding influence of state and insider ownership on the Chinese sample due to low degree of variance. Third, it is not possible to construct a dynamic panel model and check the validity of static model, as the data used is unbalanced. Finally, the Brazilian and Indian samples are concentrated towards the utilities sector (42-43%), while 41% of Chinese sample is in the industrial sector, which raises the problem of industry bias.

Robustness check

In this section we present the results of the robustness checks addressing two issues – control and spread calculation.

Running the regressions with a different calculation of controls we use return on assets (based on net income) for *Performance* and the ratio of total liabilities to total assets for *Leverage*. To check the sensitivity of results to the dependent variable calculation we use G-spread and I-spread for the cost of debt approximation. The results of robustness check are presented in Tables 7-10.

Table 7. Results of empirical analysis of other model specifications for Brazilian sample

Variables	Option-adjusted spread		G-spread	I-spread
	Basic	With other controls	Basic	Basic
CorpConc	95.14**	84.61**	98.71**	17.31
State	6.28	12.20	15.00	-9.773
InstConc	-21.99**	-23.56**	-15.59*	-20.33*
InstConc x CorpConc	0.26	0.34	0.451	1.301***
Insider	200.37*	209.85*	275.15***	72.61
Insider ²	-5.54*	-5.98*	-6.437**	-1.036
BoardSize	77.72*	82.98*	95.08**	35.76
Independence	-3.53	-2.938	-2.149	-3.850
YearsToMaturity	-9.89	-14.99	-8.227	-19.32
Performance	-4.04	-5.550	-2.393	2.898
Volatility	-491.82**	-502.46**	-441.75**	-193.03
TermSpread	0.13	0.213	-0.0104	0.0832
Constant	-1,154.89	-1,097.59	-1,937.34*	263.78
<i>Observations</i>	146	146	146	138
<i>R-squared</i>	0.466	0.468	0.496	0.311
<i>Number of id_bond</i>	32	32	32	31

*** p<0.01, ** p<0.05, * p<0.1

Table 8. Results of empirical analysis of other model specifications for Russian sample

Variables	Option-adjusted spread		G-spread	I-spread
	Basic	With other controls	Basic	Basic
CorpConc	1.464	0.94	1.70*	2.17**
State	1.68**	1.54**	1.79***	2.25***
InstConc	1.48	3.01	1.70	1.07
Insider	-15.51***	-18.26***	-9.55**	-14.69**
Insider ²	0.46***	0.50***	0.32***	0.41***
BoardSize	23.56**	20.25*	32.18***	27.68**
Independence	-3.12	-2.88	-2.29	-2.61
YearsToMaturity	-31.62***	-27.86***	-41.10***	-34.07***
Performance	-1.71***	-1.83***	-1.23***	-1.48***
Volatility	-57.24	-71.89	-33.82	-60.82
Leverage	-2.87	-0.04	-2.95	-1.28
TermSpread	0.12	0.14	0.16**	-0.02
Constant	32.61	-8.84	-18.30	-172.16
<i>Observations</i>	153	153	153	153
<i>R-squared</i>	0.397	0.377	0.284	0.359
<i>Number of id_bond</i>	47	47	47	47

*** p<0.01, ** p<0.05, * p<0.1

Table 9. Results of empirical analysis of other model specifications for Indian sample

Variables	Option-adjusted spread		G-spread	I-spread
	Basic	With other controls	Basic	Basic
CorpConc	0.06	-0.07	0.04	-0.05
State	-9.25*	-9.80*	-17.60***	-15.71***
State ²	0.05	0.05*	0.10***	0.10***
InstConc	-0.26	-0.44	-0.34	-0.49
Insider	-2.43	-2.40	-0.61	-1.10
Insider ²	0.05**	0.05**	0.02	0.03
BoardSize	-3.11**	-2.58**	-3.40**	-3.36**
Independence	0.18	0.07	0.21	-0.18
YearsToMaturity	-6.19***	-7.92***	-1.82	0.97
Performance	-0.16	-0.10	-0.20	-0.26
Volatility	38.91*	35.37	25.55	32.81
Leverage	-1.62***	-1.58***	-1.79***	-1.80***
Constant	473.94***	525.09***	627.33***	585.97***
<i>Observations</i>	<i>1,413</i>	<i>1,413</i>	<i>1,412</i>	<i>1,412</i>
<i>R-squared</i>	<i>0.388</i>	<i>0.387</i>	<i>0.372</i>	<i>0.356</i>
<i>Number of id_bond</i>	<i>340</i>	<i>340</i>	<i>339</i>	<i>339</i>

*** p<0.01, ** p<0.05, * p<0.1

Table 10. Results of empirical analysis of other model specifications for Chinese sample

Variables	Option-adjusted spread		G-spread	I-spread
	Basic	With other controls	Basic	Basic
CorpConc	-10.08***	-10.42**	-6.08***	-9.98***
InstConc	5.25	40.20	0.94	13.09
BoardSize	55.02	102.22*	11.54	62.14
Independence	-12.34	-18.27	-8.13*	-12.97
YearsToMaturity	-93.85**	-59.10	-91.37***	-94.73**
Performance	20.68*	3.39	24.08***	20.41
Volatility	397.45*	279.52	111.25	439.94*
Leverage	-21.60	0.64	-19.38**	-20.55
Constant	1,108.03	-22.51	1,261.85*	958.66
<i>Observations</i>	<i>198</i>	<i>198</i>	<i>198</i>	<i>198</i>
<i>R-squared</i>	<i>0.184</i>	<i>0.169</i>	<i>0.389</i>	<i>0.183</i>
<i>Number of id_bond</i>	<i>108</i>	<i>108</i>	<i>108</i>	<i>108</i>

*** p<0.01, ** p<0.05, * p<0.1

The results of the empirical analysis of other specifications on the country subsamples (Tables 7-10) show that although the significance level for the influence patterns can differ

among specifications, the variables are still significant with a minor variation in magnitude. The squared term for state ownership in India is significant in all alternative specifications but insignificant in the basic model. However, in these cases an increasing part of the relationship curve refers to a maximum 25% of observations, therefore, state ownership mainly decreases the cost of debt for the Indian sample, which is consistent with the basic model. Thus, we conclude that how the variable is measured does not influence the results significantly.

There is also endogeneity in the model: ownership structure, board size and the independence of the board are related to the informal business rules and traditions which are not observed and therefore omitted in the model. This makes these variables correlated with the error term. The credit rating variable is omitted in the model to avoid a correlation with other explanatory variables, which can cause endogeneity due to variable omission. However, the instrumental variables approach is not applicable to governance and ownership structure factors; thus, we do not address endogeneity in the present paper.

Conclusion

This paper investigates the influence of ownership structure and board independence on the cost of debt in BRIC countries based on panel data on the yield spread of the corporate bonds, and ownership and board characteristics. The theoretical concept of the investigation is based on the agency theory and the role of board composition and ownership structure on the intensity of the agency conflicts with which debt holders are faced.

The main finding of this study is that the influence of ownership structure on the cost of debt in BRIC countries differs, while there are observations similar to the findings in developed countries. The increasing influence of *concentration of corporations' ownership* on the cost of debt in Brazil is consistent with result from the U.S. (see Ashbaugh-Skaife et al., 2006), while the shared benefits hypotheses proved for China also holds in Japan (Tanaka, 2014). This finding is evidence that investors in Brazil believe that control by corporations is related to a high chance of unprofitable investments or additional costs to benefit shareholders, while control by corporations in China is considered favorable because of the co-insurance effect.

The result from Russia that *state ownership* increases the risk of debt holders is in line with evidence from multinational studies (see Borisova and Megginson, 2011; Borisova et al., 2015), but not consistent with the decreasing effect of government ownership in India, proving that investors there value potential state guarantees. The fact that investor risk in debt securities in Russia rises with the increase in the government stake shows that the effect of distorted governmental interests and bureaucracy is more severe than a probable bailout in the case of default.

We have revealed the increasing effect of *insider ownership* in Brazil, India and Russia (if insider ownership is more than 17%), which is consistent with the entrenchment effect observed in the U.S. and Japan (see Chen, 2011 and Tanaka, 2014). This result also shows that compensation schemes influence management effectiveness in Russia, which is appreciated by debt holders, as insider ownership up to 17% decreases the cost of debt in Russia.

However, we observe a favorable effect of *institutional ownership* only in Brazil and do not prove the effect of board independence in BRIC countries. Both effects are present in developed markets – see Anderson et al. (2004), Aman and Nguyen (2013), Wang and Zhang (2009), and Huang and Petkevich (2016). The absence of these effects in BRIC countries (except the influence of institutional ownership in Brazil) shows that the level of capital market development influences the development of governance practices and the perception of the impact of governance mechanisms by investors.

There is potential for further research. First, enlarging the Chinese sample will allow the hypotheses regarding state and insider ownership to be tested, enlarging other samples will

decrease industry concentration and mitigate any potential sample selection bias. Second, including more governance variables could help to control for other agency conflict mechanisms. Finally, adding observations from other emerging market countries in the sample will build a more solid basis for comparison.

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Appendices

Appendix 1. Definition of variables and methods of their measurement

Variable	Method of the measurement		Source
	Basic model	Robustness check	
Spread	Option-adjusted spread (in b.p.)	G-spread, I-spread (in b.p.)	Bloomberg Professional
Ownership variables			
CorpConc	Percentage of share capital held by top-3 corporations within shareholders before spread date $\times 100$		S&P Capital IQ
State	Percentage of share capital held by governmental institutions before spread date $\times 100$		
InstConc	Percentage of share capital held by top-3 institutional investors before spread date $\times 100$		
Insider	Percentage of share capital held by insiders (members or management team and board of directors) before spread date $\times 100$		
Governance variables			
Independence	Total number of independent non-executive directors to the size of the board before spread date $\times 100$		Annual reports, 20-F Forms
BoardSize	Number of directors on the board of directors before spread date		
Bond-specific variables			
YearsTo Maturity	Number of years to maturity		Bloomberg Professional
Firm-specific variables			
Performance	Earnings before taxes to equity for the fiscal year before spread date $\times 100$	ROA: Net income to total assets for the fiscal year before spread date $\times 100$	S&P Capital IQ
Volatility	Standard deviation of operating cash flow for 6 preceding years, scaled for the mean operating cash flow for this period		
Leverage	Total debt to total assets for the fiscal year before spread date $\times 100$	Book value of total liabilities to total assets for the fiscal year before spread date $\times 100$	
ln(FirmSize)	Natural logarithm of Sales in US dollars for the fiscal year before spread date	Natural logarithm of total assets in US dollars for the fiscal year before spread date	

Country-specific, macroeconomic variables		
TermSpread	Difference in current long-term and short-term interest rates (in b,p.)	OECD

Appendix 2. Distribution of observations by country, issue year and industry

Distribution of bonds by country and issue year

Issue Year	Brazil	Russia	India	China
2007			28	
2008			7	
2009	2		8	1
2010	3	1	27	
2011	2	4	17	1
2012	8	1	26	
2013	6	13	28	
2014	7		30	
2015	4	12	37	32
2016		16	132	76
Total	32	47	340	108

Distribution of observations by issuer's industry

Industry	Brazil	Russia	India	China
Consumer Discretionary	0	0	185	0
Industrials	13	27	132	82
Utilities	61	43	609	30
Energy	0	7	51	34
Telecommunications Services	0	30	14	2
Materials	36	11	271	35
Healthcare	0	2	71	4
Real estate	0	4	44	0
Consumer staples	36	29	6	4
Retailing	0	0	30	0
Information Technology	0	0	0	7
Total	146	153	1,413	198

Appendix 3. Correlation matrices

Brazil

	OAS	CorpConc	State	InstConc	Insider	BoardSize	Indep	YearsToMaturity	Performance	Volatility	Leverage	Size	Term Spread
OAS	1												
CorpConc	-0.46***	1											
State	0.27**	-0.55***	1										
InstConc	0.01	-0.21**	-0.59***	1									
Insider	-0.12	0.41***	-0.24**	0.03	1								
BoardSize	0.11	-0.18*	-0.24**	0.23**	-0.71***	1							
Independence	-0.001	-0.46***	-0.19*	0.70***	0.16	-0.04	1						
YearsToMaturity	0.1	0.12	-0.25***	-0.01	-0.12	0.32***	-0.11	1					
Performance	-0.1	-0.02	-0.02	-0.04	0.07	-0.04	0.33***	0.1	1				
Volatility	0.18*	0.04	-0.50***	0.50***	0.19*	0.1	0.23**	0.16	-0.15	1			
Leverage	-0.32***	0.40***	-0.16	0.07	0.68***	-0.61***	0.19*	-0.30***	-0.03	-0.31***	1		
Size	0.13	0.11	-0.35***	-0.02	-0.44***	0.55***	-0.43***	0.46***	-0.17*	0.25**	-0.61***	1	
TermSpread	0.09	-0.15	0.12	-0.15	-0.06	0.16	0.05	0.28***	0.23**	0.31***	-0.50***	0.19*	1

* p<0.05, ** p<0.01, *** p<0.001

Russia

	OAS	CorpConc	State	InstConc	Insider	BoardSize	Indep	YearsToMaturity	Performance	Volatility	Leverage	Size	Term Spread
OAS	1												
CorpConc	0.1	1											
State	-0.10	-0.59***	1										
InstConc	0.25**	0.004	-0.34***	1									
Insider	-0.05	-0.40***	-0.35***	0.01	1								
BoardSize	-0.27***	-0.20*	0.58***	-0.41***	-0.30***	1							
Independence	-0.11	-0.23**	-0.14	-0.004	0.35***	-0.36***	1						
YearsToMaturity	-0.03	0.06	0.31***	-0.21**	-0.34***	0.36***	-0.17*	1					
Performance	-0.14	0.14	-0.30***	-0.18*	0.16*	-0.260**	0.33***	-0.12	1				
Volatility	0.07	-0.07	0.02	-0.003	0.10	-0.06	-0.29***	-0.05	-0.13	1			
Leverage	-0.13	0.21**	-0.33***	0.18*	-0.04	-0.17*	0.22**	0.07	0.35***	-0.20*	1		
Size	-0.37***	-0.47***	0.20*	-0.28***	0.29***	0.07	0.56***	0.1	0.35***	-0.26**	0.37***	1	
TermSpread	-0.08	-0.07	-0.03	0.04	0.07	-0.002	-0.001	0.07	-0.03	0.24**	0.07	0.10	1

* p<0.05, ** p<0.01, *** p<0.001

India

	OAS	CorpConc	State	InstConc	Insider	BoardSize	Indep	YearsToMaturity	Performance	Volatility	Leverage	Size	Term Spread
OAS	1												
CorpConc	0.40***	1											
State	-0.61***	-0.73***	1										
InstConc	0.31***	0.12***	-0.53***	1									
Insider	0.40***	-0.04	-0.38***	0.09***	1								
BoardSize	-0.52***	-0.46***	0.62***	-0.3***	-0.35***	1							
Independence	0.18***	0.32***	-0.38***	0.12***	0.14***	0.04	1						
YearsToMaturity	-0.22***	-0.18***	0.19***	-0.10***	-0.10***	0.10***	-0.14***	1					
Performance	-0.24***	-0.12***	0.21***	-0.14***	-0.20***	0.16***	0.04	0.07**	1				
Volatility	0.50***	0.40***	-0.56***	0.37***	0.22***	-0.42***	0.18***	-0.13***	-0.19***	1			
Leverage	0.24***	0.26***	-0.18***	0.05	-0.03	-0.18***	-0.03	-0.07**	-0.14***	0.11***	1		
Size	-0.60***	-0.46***	0.64***	-0.36***	-0.41***	0.64***	-0.30***	0.16***	0.20***	-0.44***	-0.20***	1	
TermSpread	0.08**	0.24***	-0.37***	0.36***	0.12***	-0.11***	0.23***	-0.29***	-0.09***	0.18***	0.15***	0.17***	1

* p<0.05, ** p<0.01, *** p<0.001

China

	OAS	CorpConc	State	InstConc	Insider	BoardSize	Indep	YearsToMaturity	Performance	Volatility	Leverage	Size	Term Spread
OAS	1												
CorpConc	-0.31***	1											
State	-0.01	-0.01	1										
InstConc	0.45***	-0.50***	-0.03	1									
Insider	0.27***	-0.19**	0.002	0.24***	1								
BoardSize	0.09	-0.07	-0.15*	-0.09	-0.19**	1							
Independence	-0.18*	0.13	0.05	0.05	0.02	-0.52***	1						
YearsToMaturity	-0.31***	0.29***	-0.07	-0.15*	-0.08	-0.34***	0.50***	1					
Performance	0.10	-0.005	0.03	-0.01	0.17*	0.28***	0.03	-0.03	1				
Volatility	0.01	-0.19**	0.25***	0.28***	0.01	-0.41***	0.26***	0.17*	0.01	1			
Leverage	-0.0683	-0.06	-0.11	0.14*	-0.12	0.12	-0.27***	-0.19**	0.01	0.13	1		
Size	-0.44***	0.55***	0.07	-0.44***	-0.15*	0.02	0.36***	0.34***	-0.10	0.01	-0.15*	1	
TermSpread	-0.10	-0.16*	-0.002	-0.03	-0.004	0.01	0.04	0.05	0.04	-0.08	0.02	-0.04	1

* p<0.05, ** p<0.01, *** p<0.001

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