



The influence of ownership structure and board independence on the cost of debt in BRIC countries



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ABSTRACT

Agency theory predicts that the default premium on debt is determined by the intensity of agency conflicts since they affect the risk of debtholders. This effect is especially important in emerging countries with high ownership concentration and low protection of minority owners. This paper presents an empirical analysis of the influence of ownership structure and board independence on the cost of debt in BRIC countries over the period 2007–2020. The main finding of the study is the presence of significant country-specific effects of ownership structure on the cost of debt measured with the G-spread on corporate bonds, as well as the absence of effects of board independence. According to our results, concentrated ownership and state ownership increase the cost of debt in Brazil and Russia, while decreasing it in China. We reveal that institutional investors help mitigate the risks of debtholders in China, while insider ownership decreases the default risk in Brazil.

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1. Introduction

If you ask an investment banker in Moscow what a corporate bond's yield depends on, they will not say "credit rating", but rather "everything". This is a special feature of large emerging markets.

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

Why do we believe we should study the corporate governance effect on the cost of debt in emerging countries separately? First, this is a question of market efficiency. In countries with low market efficiency, which include the BRIC countries, non-financial factors play a larger role in asset pricing and financial decision-making. Second, we know that emerging countries are characterized

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by low levels of investor protection, exacerbating agency conflicts. In a shallow corporate governance tradition, this can have a strong effect on the firms' debtholders. High informational asymmetry contributes to the effect. These ideas are supported by a recent study by Marques et al. (2018) showing that governance issues are relevant to investors in debt securities in Brazil and India.

As mentioned above, corporate governance in emerging markets, particularly in the BRIC countries, is different from that in developed economies. There are at least three specific features of BRIC countries that 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).

The present paper investigates the influence of ownership structure and board independence on the cost of debt in terms of the bond yield spread in BRIC countries. We provide useful inputs in answering the following important questions. First, we consider how special features of ownership structure influence the debtholders. Does the concentrated ownership of corporations, which is a special feature of BRIC countries, matter for the debtholders? Do institutional investors decrease the cost of debt in emerging markets like they do in developed countries? Is there any evidence of the negative effect of state ownership on the cost of debt in BRIC? Do insiders, whose presence is typical in emerging market firms, have a negative impact on agency conflicts that, in turn, increase the cost of debt? Second, we study whether the board of directors can mitigate the agency conflicts that are detrimental for debtholders. Finally, we investigate the country-specific drivers of the cost of debt in BRIC. We do not include South Africa because of the relatively higher level of development of the capital markets (Marques, 2018) and institutional ownership.

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 G-spread on corporate bonds issued in BRIC countries from 2007 to 2020 and the ownership and governance factors as at the date before the spread calculation. The data sample includes 409 spread observations from Brazil, 332 from Russia, 1683 from India, and 1458 from China. Compared to those from developed markets, the results have similarities and differences, namely board independence does not influence the cost of debt in any country, while ownership structure has a significant and differentiated effect.

The main finding of this 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, state ownership and concentrated ownership of corporations and institutions increase the cost of debt, and the main adverse factor is state ownership. The largest increasing effect on the cost of debt in Russia refers to concentrated ownership by corporations and state ownership due to their high level; insider ownership also has an adverse effect on bond yield spread, but it is less considerable due to lower ownership of insiders in Russia. In India, insider ownership has an increasing effect, and a similar effect is revealed with regard to the effect of ownership concentration of corporations and institutions. Evidence from China reveals the decreasing influence of all observed ownership factors, and the favorable effect of corporations' ownership concentration can be regarded as the most influential due to its relatively high average value.

The empirical novelty of this study is the evidence on the sensitivity of the risk premium on debt to the ownership structure in BRIC countries. Empirical literature on this phenomenon in emerging markets (Juniarti, 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. Moreover, we demonstrate the importance of country-specific factors for the bond yield, such as the impact of 'promoters' in India, blockholders in Russia and Brazil, and the favorable effect of state ownership in China. We prove 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.

In addition, we contribute to the criticism of rating methodologies. 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's specificity is not highlighted. The results can be useful for the elaboration of methodological aspects for companies in emerging countries.

The structure of the present paper is as follows. In Section 2, we review the theoretical and empirical literature. In Section 3 we examine the evidence and statistics regarding the specificity of ownership and governance patterns in BRIC countries and develop research hypotheses. Section 4 describes the research methodology and data. In Section 5 we discuss the results, while Section 6 provides an overview of our robustness checks. Section 7 concludes this study.

2. Literature review

In this section, we present an overview of the theoretical concepts that 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.

Theoretically, ownership and governance structures should affect the cost of debt. They determine the intensity of two agency conflicts that debtholders face, namely the manager-external investor conflict and the shareholder-debtholder 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 debtholder 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 debtholders results in wealth transfer (or wealth expropriation) and risk shifting. The overinvestment and underinvestment problems, usual consequences of the abovementioned conflict, have an increasing effect on the variance of the expected cash flows for debtholders.

As we mentioned above, emerging countries are characterized by low levels of investor protection, exacerbating agency conflicts. In a shallow corporate governance tradition, this can have a stronger effect on the firms' debtholders. High informational asymmetry contributes to the effect. Moreover, debtholders are particularly alert to corporate governance issues during volatile periods (Darrat et al., 2014). Therefore, the theoretical relationship between ownership structure, board composition and the cost of debt should be significant for debt issuance in BRIC countries during the crisis and recovery periods.

Let us first discuss the effect of *ownership concentration*. Theoretically, the impact of ownership concentration on debtholders is ambiguous. According to the 'private benefits hypothesis' (Barclay and Holderness, 1989), blockholders are likely to pursue their interests and make managers take actions that maximize their wealth at the expense of the wealth of minority shareholders and debtholders. The 'shared benefits hypothesis' suggests that controlling shareholders are interested in effective management to maximize the firm's value. This results in increasing firm value and higher firm performance (Shleifer and Vishny, 1997; Ivashkovskaya and Stepanova, 2011). Therefore, concentrated ownership can benefit debtholders since it reduces the degree of moral hazard that debtholders face (Rabotinsky and Stepanova, 2014).

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 operating in provinces with low institutional development. However, the shared benefits hypothesis was shown to be dominant for Japan by Tanaka (2014); the author demonstrated that the presence of a large corporate shareholder holding more than 10% of the stock reduces the cost of debt. Similarly, Anderson et al. (2003) show that ownership concentration in the hands of the founding family reduces the cost of debt.

In addition, business group ownership can affect debtholder risk. On the one hand, the concentration of ownership in the hands of a corporation may reduce the protection of minority shareholders' rights (see Lin et al., 2011). On the other hand, debtholders benefit from co-insurance or risk-sharing within the group in case of a default (see Khanna and Yafeh, 2005).

The evidence on the cost of debt effect of *institutional ownership* is mixed. Wang and Zhang (2009) show that ownership of institutional investors decreases the cost of debt, since they are more sensitive to information asymmetry due to their active trading but less likely to influence the corporate governance policies due to their highly diversified positions. 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. in the period 1991–1996 and show that concentrated institutional ownership has a positive relationship to bond yields. However, a further investigation of U.S. companies by Ashbaugh-Skaife et al. (2006) reveals that there is no significant correlation between institutional ownership 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 blockholding institutional investors reduces the cost of debt. All in all, institutional investors tend to have a favorable effect on the cost of debt, unless it is not highly concentrated.

Moreover, a company's cost of debt can be influenced by *insiders*. 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, while directors have additional incentives for the effective monitoring of managerial actions (see Lorca et al., 2011, for Spain). On the other hand, managerial ownership may lead to increased power of managers, which can make the monitoring of their actions by the board of directors difficult (see Bradley and Chen, 2011, for the U.S., and Tanaka, 2014, for Japan). Moreover, the phenomenon of management entrenchment is related to impeded management rotation even in the case of a poor performance of managers. Li and Sun (2015) prove a hump-shaped improvement in firm performance with an increase in managerial ownership in the U.S. The revealed effect on the cost of debt is primarily monotonic and positive (see Ortiz-Molina, 2006; Shuto and Kitagawa, 2011).

Finally, the cost of debt depends on state participation. On the one hand, *state ownership* decreases the cost of debt via implicit government guarantees (Borisova and Megginson, 2011), support in overcoming business barriers and subsidization (Rabotinsky and Stepanova, 2014), or via tax issues (Shailer and Wang, 2015). On the other hand, state ownership increases the cost of debt due to a lower firm performance (Shleifer and Vishny, 1997), the pursuit of non-financial objectives (Shleifer and Vishny, 1994) or state-induced investment distortions (Borisova et al., 2015). Thus, the results are mixed. They differ during crisis periods (Borisova et al., 2015) and across markets (e.g. see Shailer and Wang, 2015).

Board independence is the issue of corporate governance codes regardless of the country of the firm's incorporation. This has already been considered by rating agencies during the analysis of corporate governance in a company (see the criteria for non-financial companies' rating created by FitchRating, 2017). The core idea 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, for the U.S.; Piot and Missonier-Piera, 2007, for France), as well as the positive influence on bond credit rating (see Ashbaugh-Skaife et al., 2006, for 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).

However, two forces weaken the power of the 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).

All in all, the cost of debt depends not only on board independence but also on the ownership concentration and types of major owners. The direction and power of the effect depend on the agency conflicts and their mitigants and may differ from country to country.

3. Background: the 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, 2018) and the resulting importance of institutional shareholders. The average institutional ownership in a sample of 245 South African companies is 47% as of 31 December 2016, based on the Capital IQ database, which is more than twice the average in the BRIC sample (see Table 1).

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 a lack of enforcement mechanisms to support compliance with the requirements for board independence (Brugni et al., 2013). The directors are often nominal; the number of independent directors who can exert effective control on top management as experts is usually small. Only a 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 formal enforcement of the high standards of corporate governance in Russia contributes to the prioritizing of other stimuli – Enikolopov and Stepanov (2013) argue that the main motive for Russian companies to adhere to the standards should therefore be reputation. This channel only works effectively for companies listed on foreign stock exchanges because there are strict requirements for disclosure and corporate governance. However, Russian companies often bypass these requirements and prefer to create a Special Purpose Vehicle (SPV) and issue credit-linked notes or loan participation notes instead of bonds.

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 a definition of affiliated parties (Enikolopov and Stepanov, 2013).

Ownership concentration is typical for Brazilian companies. At the end of 2016, block holding relates to ownership by corporations, government, institutions, and individuals/insiders: the average standalone ownership of each group was 23–37% (see Table 1). Because of the power of blockholders, there is evidence of expropriation of the wealth of minority shareholders and debtholders (Clarke, 2015). Mechanisms of expropriation include, first, the dominance of controlling shareholders' representatives among directors (Brugni et al., 2013); second, a dual-class shareholding system allowing 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 blockholders has been partially resolved by the increase of institutional shareholding, enhancing the diffusion of ownership and the attraction of professional investors as external control bodies (Clarke, 2015).

In Russia, ownership concentration is primarily subject to control from corporations, the government and large individual and insider investors. The average ownership of these groups by 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 the 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 and debtholders. Concentrated ownership in publicly held companies is also a widespread phenomenon, resulting in conflict between blockholders and debtholders or blockholders and minority shareholders. The power of business groups, family groups and oligarchs as controlling shareholders is large (Clarke, 2015). Transformation of corporate governance at the company level toward a more independent board of directors does not help mitigate the agency conflict between controlling and minority investors. Muravyev et al. (2014) find 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 is a tendency to offshore, and many firms diffused their equity among foreign financial institutions and foreign corporate bodies.

A core feature of the Indian corporate governance model is the presence of so-called “promoters”, who are the key decision-makers in a company (OECD, 2020). According to Sarkar and Sarkar (2012), in 2008 92,8% out of a sample of 3155 Indian firms were characterized by concentrated ownership. The ownership structure of a typical Indian firm refers to a blocking stake of shares

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

Shareholder identity	Brazil	Russia	India	China
Institutions	24.90%	11.90%	12.10%	12.50%
Activist Investors	0.70%	0.10%	1.80%	1.20%
VC/PE Firms	9.40%	3.20%	8.10%	7.00%
Banks/Investment Banks	1.90%	10.10%	4.70%	1.70%
Individuals/Insiders	23.10%	14.90%	33.90%	24.00%
Chairman	10.50%	12.20%	14.10%	20.90%
CEO	9.60%	9.60%	13.70%	15.90%
State Owner	28.80%	18.90%	14.40%	10.00%
Corporations	37.30%	47.20%	28.30%	33.80%
No. of companies	286	209	3315	3913

Source: S&P Capital IQ

controlled by the promoter group.¹ They also serve as directors, and therefore the insiders on the board mainly hold a stake in a company's equity. This may enhance the agency conflict between the debtholders and 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 blocking 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 most 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 blockholders to protect the interests of minority shareholders and debtholders ([Jiang and Kim, 2015](#)). Therefore, the primary role of independent directors in China is not mitigating the risk of managerial opportunism, as in most developed countries. Consequently, arguments based on conventional theory are not valid with regard to Chinese companies.

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 for Russia and India – the interests of the government as a 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 tunnelling occurs less often in state-owned enterprises ([Jiang et al., 2010](#)); the tunnelling 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](#)).

All in all, there are plenty of special features in corporate governance in Brazil, China, India and Russia, including high ownership concentration and state participation, issues with the protection of minor shareholders, as well as low decision-making power of boards of directors coupled with high power of insiders. Moreover, we should also account for some country-specific factors like the power of so-called 'promoters' in India and individual insiders' role in Russia. These factors influence agency conflicts and their mitigants. Debtholders are also under pressure from these agency conflicts.

4. Data and methodology

4.1. Measurement of cost of debt

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 \(2011, 2015\)](#), and [Huang and Petkevich \(2016\)](#). This measure captures micro-level factors only and includes a *liquidity premium* related to investment in comparable securities, and the *credit spread*, which reflects the probability of default on debt (credit risk), evaluated on basis points, and tax issues related to a bond ([Petitt et al., 2015](#)). The choice of the indicator related to non-intermediated debt is motivated by the research of [Aldamen and Duncan \(2012\)](#), who found that corporate governance has a more distinct effect on the risk of investors in debt instruments in the form of corporate bonds, commercial papers and notes, rather than of bank loans, asset-specific finance and other forms of intermediated debt ([Aldamen and Duncan, 2012](#)).

We focus on the risk of bondholders and calculate bond yield spread as the G-spread, or the difference in the YTM of corporate bond and YTM on a government bond in the same currency and with the same time to maturity, following [Borisova and Megginson \(2011\)](#). Although the calculation of the G-spread assumes that the spot yield curve of a government bond is flat, we can take the yield curve into account including the term spread on a government bond within control variables. G-spread data is also more available, so the use of this measure allows us to construct a wider sample, which is critical when coping with multicollinearity.

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

¹ Promoters are corporate bodies or individuals, domestic or foreign, that are not only the owners of a firm but also serve as managers – they are classified as insider owners ([Sarkar and Sarkar, 2012](#)).

4.2. Variables

We use the *G-spread* variable to approximate the cost of debt, which represents the G-spread on the 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 independence variables, as well as controls (bond-, firm- and country-specific variables).

To investigate the influence of ownership structure regarding 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 considers the differentiated nature of insider ownership – minority shareholding usually reflects compensation schemes, while a controlling insider usually refers to owners who control the management team. Concentration of ownership by corporations (*CorpConc*) 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 include only investors who can, theoretically, significantly influence ownership dispersion or company policy. Therefore, the following variables are included. *CorpConc* is the percentage of share capital held by the top-3 corporations among the shareholders; *State* is the percentage of share capital held by governmental institutions; *Insider* is the percentage of share capital held by insiders; *InstConc* is the percentage of share capital held by the top 3 institutional investors. *Indep* stands for 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. We do not include board size as an independent variable to avoid multicollinearity, as board size is closely related to firm size.

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. *Perf* is 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. *Vol* stands for the riskiness of the issuer's operations to capture any unsystematic risk associated with an issuer, which is crucial for debtholders. 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 an adverse influence on the cost of debt, as the riskier the company's operations, the higher the required return for debtholders. *Lev* stands for 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 the capital structure of the issuer – the more leveraged the issuer, the higher the probability of it defaulting on debt (Bhojraj and Sengupta, 2003). *Size* is the size of the company, which is included as the probability of default is less for larger issuers as they are more financially stable (Bradley and Chen, 2015). The natural logarithm of sales is used to avoid the multicollinearity that may arise with the use of the logarithm of total assets (Klock et al., 2005) as the proxy for firm size. The values of sales are converted into US dollars, using the mean exchange rate for the year.

With regard to the bond characteristics, *Matur* is the number of years to bond maturity, used to capture 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). We also do not include the issue size, because we observe that this factor is highly correlated to firm size, which can have an adverse effect on the quality of our model. Although issue size has an effect on the expectations regarding the issuer's probability of default, we believe that a large part of the explanatory power of issue size is taken into account in firm size. The need to account for embedded options arises from the existence of additional risk factors. 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 investor's privilege; therefore, the risk premium should be less, ceteris paribus. We include the dummies Call and Put in the model, as embedded options are not taken into account in the G-spread calculation.

TermSpread stands for the difference between long- and short-term yields 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* contributes to the macroeconomic-driven dynamics of the yield spread. Moreover, term spread contributes to the consideration of the government bond yield curve, which is not flat in reality: the yield to maturity typically increases with an increase of time to maturity.

4.3. 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. Following Wang and Zhang (2009), we define the panel data baseline specification as follows:

$$Spread_{i,t+1,q} = \alpha + \beta_1 CorpConc_{i,t} + \beta_2 State_{i,t} + \beta_3 Insider_{i,t} + \beta_4 InstConc_{i,t} + \beta_5 Indep_{i,t} + \beta_6 Controls_{i,t} + \vartheta_j + \theta_q + \varepsilon_{i,t+1,q}, \quad (1)$$

where i, j, t , and q represent a bond, an industry, a year, and a quarter, respectively, ϑ_j is an industry effect, θ_q is a time effect, $\varepsilon_{i,t+1,q}$ is white noise. The explanatory and control variables are lagged to one year to prevent reverse causality problems, following Sengupta

Table 2
Definition of variables.

Variable	Definition		Source
	Baseline measure	Alternative measure	
<i>Spread</i>	G-spread (in b.p.)	I-spread (in b.p.)	Bloomberg Professional S&P Capital IQ
<i>CorpConc</i>	Percentage of share capital held by top-3 corporations within shareholders	Percentage of share capital held by top-5 corporations within shareholders	
<i>State</i>	Percentage of share capital held by governmental institutions		
<i>InstConc</i>	Percentage of share capital held by top-3 institutional investors	Percentage of share capital held by top-5 institutional investors	
<i>Insider</i>	Percentage of share capital held by insiders (members or management team and board of directors, related party individuals)		
<i>Indep</i>	Percentage of independent non-executive directors relative to the board size		Bloomberg Professional S&P Capital IQ
<i>Size</i>	The natural logarithm of total assets in US dollars	The natural logarithm of sales in US dollars	
<i>Perf</i>	Net income divided by total equity $\times 100$	Earnings before taxes divided by total assets $\times 100$	
<i>Lev</i>	Total debt divided by total assets $\times 100$	Total liabilities divided by total assets $\times 100$	
<i>Vol</i>	The standard deviation of earnings before interest, taxes, depreciation and amortization scaled for total assets for preceding 3 years $\times 100$	The standard deviation of net income scaled for total assets for preceding 3 years $\times 100$	
<i>Matur</i>	Number of years to maturity		Bloomberg Professional S&P Capital IQ
<i>Term</i>	The difference in current long-term and short-term interest rates (in b.p.)		OECD

(1998) and Shuto and Kitagawa (2011). The standard errors are clustered by the bond, following Wang and Zhang (2009). Variable definitions are shown in Table 2.

4.4. Sample description

The final section is devoted to the statistical analysis of the variables based on the sample, a 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.

As we chose to use the G-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 2020. The choice of the period is motivated by its academic significance, as this period covers the time of the 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 rates 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 the sample because this type of financial instrument has the features of both 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 observations with missing information regarding the yield spread and observations that refer to the bond issuance by companies without complete information regarding ownership and board structure. Observations regarding companies without any information on the control variables were dropped, and all the variables are winsorized at 1% on the left and right side of the distribution.

The information regarding ownership structure was collected from the S&P Capital IQ database, while data on board composition in dynamics was obtained from the Bloomberg Professional database.

The final country samples are as follows: 409 observations from Brazil representing 119 bonds issued by 31 companies; 332 observations from Russia representing 115 bonds issued by 37 companies; 1683 observations from India representing 482 bonds issued by 94 companies; 1458 observations from China representing 547 bonds issued by 174 companies.

The majority of the bonds were issued after 2015, which could raise the problem of selection bias. Regarding the distribution of observations by industry, in Brazil and India they are concentrated in the utility sector (more than 40% of observations). The Russian and Chinese samples are relatively evenly distributed among industries.

4.5. Descriptive statistics

Table 3 presents the summary statistics and correlation matrix with regard to the overall sample of bond observations in BRIC. Summary statistics regarding the ownership and board composition variables reveal the necessity of differentiating the samples by

Table 3
Summary statistics by country.

Panel A. Summary statistics (means)		Brazil	Russia	India	China
<i>G-spread</i>	Mean	169.153	159.430	154.310	129.595
<i>I-spread</i>		-1.46047	100.366	200.610	122.466
<i>CorpConc</i>		21.284	44.943	21.614	47.633
<i>State</i>		12.267	18.770	31.452	0.305
<i>InstConc</i>		14.125	7.460	12.303	7.272
<i>Insider</i>		1.472	3.528	5.785	2.047
<i>Indep</i>		42.891	35.262	44.750	39.151
<i>Size</i>		9.235	9.433	8.731	9.632
<i>Perf</i>		12.046	22.362	9.614	6.693
<i>Lev</i>		36.353	37.300	38.774	36.090
<i>Vol</i>		6.885	10.283	6.407	4.428
<i>Matur</i>		7.423	5.023	5.751	3.142
<i>Term</i>		160.560	-30.765	52.592	59.327
<i>Call</i>		0.135	0.040	0.380	0.000
<i>Put</i>		0.000	0.046	0.197	0.005
<i>N</i>		400	303	1681	1418

Panel B. Spearman correlation matrix

	<i>G-spread</i>	<i>Corp Conc</i>	<i>State</i>	<i>Inst Conc</i>	<i>Insider</i>	<i>Indep</i>	<i>Size</i>	<i>Perf</i>	<i>Lev</i>	<i>Vol</i>	<i>Matur</i>	<i>Term</i>
<i>G-spread</i>	1.00											
<i>CorpConc</i>	-0.02	1.00										
<i>State</i>	-0.21***	-0.64***	1.00									
<i>InstConc</i>	0.27***	-0.11***	-0.28***	1.00								
<i>Insider</i>	0.25***	-0.17***	-0.23***	0.07***	1.00							
<i>Indep</i>	0.09***	0.01	-0.25***	0.20***	0.17***	1.00						
<i>Size</i>	-0.35***	-0.10***	0.36***	-0.31***	-0.38***	-0.27***	1.00					
<i>Perf</i>	-0.12***	0.03	0.09***	-0.08***	-0.08***	0.05***	0.06***	1.00				
<i>Lev</i>	-0.01	0.06***	-0.06***	0.08***	-0.03	0.10***	0.02	0.02	1.00			
<i>Vol</i>	-0.04**	0.09***	-0.01	0.01	0.07***	0.06***	-0.12***	0.48***	-0.04**	1.00		
<i>Matur</i>	-0.00	-0.28***	0.33***	0.08***	-0.07***	-0.06***	0.12***	0.08***	-0.03	0.14***	1.00	
<i>Term</i>	-0.02	-0.12***	0.04*	-0.02	-0.05**	-0.01	0.07***	-0.05**	-0.02	-0.07***	0.12***	1.00

This table presents summary statistics and Spearman correlation matrix for a sample of at-issue and yearly observations of bonds issued by BRIC companies from 2007 to 2020.

country (see Table A.1 in the Appendix): Brazil is characterized by the highest median level of the Z-spread (132 b.p.), while in China the median spread is minimal (91 b.p. for a median bond observation).

The highest level of ownership concentration in Brazil is corporations' and institutional ownership (on average 21% and 14% respectively), state ownership is also at a relatively high level (12% on average), while the average insider shareholding level is much lower (only 1%). The level of institutional ownership in the Brazilian sample is the highest within our sample. The average share of independent directors in Brazil is 43%.

In the Russian sample, the most significant ownership stakes relate to the top-3 corporations and government (45% and 19%). Russia is also characterized by the second-highest level of insider ownership (overall mean of 4%). The average level of board independence is 35%.

The average level of insider ownership in India is 6%, and this parameter can reach 75%, which supports the evidence of promoter group shareholding. The average state ownership is highest in India at 31% and this sample has the highest level of board independence at 45%.

The most pronounced investor group in China refers to corporations: its mean and median ownership concentration level is around 50%. The second most powerful group of shareholders refers to institutions (7% of stock on average). We observe a relatively low level of insider ownership in China (2%). Most importantly, we show that the issuers of corporate bonds in China are mostly not state-owned enterprises, as the mean state ownership reaches only 0.3%.

According to correlation analysis, there is no significant and strong correlation within the control variables, which indicates that there is a minor multicollinearity problem in the data (see Panel B of Table 3).

5. Results and discussion

The results of the hypotheses testing the influence of ownership structure and board independence on the cost of debt are presented in Table 4. The results on the significance of the variables are consistent with the assumption of the normality of errors.

The concentration of corporations' ownership increases the cost of debt in Brazil, Russia and India, which is consistent with the private benefits hypothesis (Barclay and Holderness, 1989), business customs in these countries (Brugni et al., 2013; Clarke, 2015), and evidence of the high average level of corporations' ownership (see Table 1). The largest impact of corporations' ownership concentration is revealed in Russia: a 1% point increase in corporations' ownership concentration leads to a 2.5 basis point G-spread

Table 4
Ownership structure, board independence and cost of debt.

	(1)	(2)	(3)	(4)
	Brazil	Russia	India	China
<i>CorpConc</i>	0.9639* (1.80)	2.5189*** (3.00)	0.8498** (2.28)	-0.5365** (-2.11)
<i>State</i>	8.5664*** (8.57)	2.8882*** (2.74)	-0.2672 (-0.73)	-1.0537** (-2.47)
<i>InstConc</i>	4.4736*** (4.73)	1.4704 (1.06)	1.8834** (2.41)	-1.6758** (-2.57)
<i>Insider</i>	-2.7185** (-2.17)	1.9719** (2.16)	1.8377*** (3.49)	4.2053*** (5.07)
<i>Indep</i>	1.3601 (1.63)	1.6386 (1.20)	0.5123* (1.88)	-0.3463 (-0.73)
<i>Size</i>	-45.3790*** (-3.85)	-85.3972** (-2.55)	-17.1409*** (-3.73)	-20.1280*** (-4.81)
<i>Perf</i>	-2.0271*** (-3.50)	-0.6877* (-1.75)	-0.0381 (-0.10)	-1.5081* (-1.69)
<i>Lev</i>	2.5622*** (3.24)	1.3426 (1.13)	2.1173*** (3.95)	0.9322*** (2.59)
<i>Vol</i>	5.1927 (1.49)	-4.7229 (-0.64)	-4.0107** (-2.13)	-1.4956 (-0.80)
<i>Matur</i>	-0.2142 (-0.09)	16.5721** (2.51)	-5.1607*** (-4.59)	3.2438** (2.00)
<i>Term</i>	-0.1502 (-0.54)	-0.3796 (-0.86)	-0.0503 (-0.05)	1.0258 (1.55)
Option dummies	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	409	332	1683	1458
Adjusted R-squared	0.75	0.32	0.65	0.62

This table presents the effect of ownership structure and board independence on the cost of debt for a sample of at-issue and yearly observations of bonds issued by BRIC companies from 2007 to 2020. The dependent variable is the G-spread in year $t + 1$. All explanatory and control variables are measured in year t . Variable definitions are presented in Table 2. The robust t-statistics clustered by the bond are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 5
Alternative definition of cost of debt.

	(1)	(2)	(3)	(4)
	Brazil	Russia	India	China
<i>CorpConc</i>	2.1446* (1.94)	3.6074*** (4.08)	0.7481** (1.98)	-0.5112* (-1.95)
<i>State</i>	15.3542*** (8.20)	3.2325*** (2.81)	-0.2948 (-0.84)	-1.0786** (-2.47)
<i>InstConc</i>	3.5994** (2.55)	1.4110 (0.89)	1.6590** (2.21)	-1.8519*** (-2.84)
<i>Insider</i>	-2.2779 (-1.57)	2.2102** (2.48)	2.0078*** (3.72)	4.1852*** (5.05)
<i>Indep</i>	3.7115** (2.10)	2.0367 (1.39)	0.1481 (0.65)	-0.3720 (-0.76)
<i>Size</i>	-44.4631** (-2.25)	-73.0407* (-1.92)	-20.2329*** (-4.42)	-19.7629*** (-4.66)
<i>Perf</i>	-2.1078* (-1.74)	-0.7100* (-1.71)	0.0824 (0.22)	-1.5570* (-1.72)
<i>Lev</i>	1.9598 (1.34)	1.1879 (1.02)	1.9409*** (3.82)	0.9806*** (2.65)
<i>Vol</i>	4.5269 (0.84)	-5.9683 (-0.71)	-6.1573*** (-3.40)	-1.6731 (-0.89)
<i>Matur</i>	3.9390 (1.10)	18.9104*** (2.67)	-0.8319 (-0.81)	4.5748*** (2.65)
<i>Term</i>	0.1066 (0.46)	-0.3683 (-0.74)	-0.3507 (-0.46)	1.0584 (1.56)
Option dummies	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	399	299	1740	1413
Adjusted R-squared	0.91	0.35	0.65	0.61

This table presents the effect of ownership structure and board independence on the cost of debt for a sample of at-issue and yearly observations of bonds issued by BRIC companies from 2007 to 2020. The dependent variable is the I-spread in year $t + 1$. All explanatory and control variables are measured in year t . Variable definitions are presented in Table 2. The robust t-statistics clustered by the bond are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

increase. Although the median level of ownership concentration by corporations for the Chinese sample is close to the one in Russia and accounts for 50% (see Table A.1), the effect is reversed in China and is consistent with co-insurance within business groups (see [Khanna and Yafeh, 2005](#)): in China, concentrated ownership by corporations decreases the cost of debt by 0.5 b.p. for each 1 p.p. increase. Thus, the difference in results within BRIC countries is caused primarily by differences in the level of corporations' ownership concentration and the relationship between corporation-owner and a firm, suggesting a different role of investors.

The concentration of institutional investor ownership decreases the cost of debt only in China, 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 not concentrated (the median level is 5.9%, see Table A.1), which eliminates the power of institutions (see [Wang and Zhang, 2009](#); [Huang and Petkevich, 2016](#); [Clarke, 2015](#)). An extra percentage point of institutional ownership decreases the cost of debt by 1.7 b.p. on average. We reveal an increasing effect of institutional ownership on the cost of debt in Brazil and India, where the median level of institutional holdings is the highest (9.5% and 11.4% respectively, see Table A.1), which is in line with [Bhojraj and Sengupta \(2003\)](#) with regard to the adverse effect of concentrated institutional ownership. We also reveal an absence of the effect in Russia, where institutional ownership is low and often represented by bank ownership. Therefore, the determining factor of the influence of this investor group on debtholder risk is the level of ownership, which is highest in India and Brazil; the type of institutions, which is often represented by banks in Russia, while ownership by banks is prohibited in China ([Chen, 2009](#)); 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 Brazil and Russia, while a decreasing effect is revealed in India and China. The largest adverse effect of state ownership is seen in Brazil (a 1% point increase in state ownership causes the G-spread to rise by 8.6 b.p.), while the most favorable effect is present in China: the G-spread decreases by 1.1 b.p. following a 1% point increase in the state stake). The adverse effect in Brazil and 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](#)). The positive perception of state ownership by debtholders in China is consistent with the absence of an adverse effect of state ownership on legal investor protection ([Wu et al., 2009](#)) and the absence of fund tunneling in state-owned enterprises in China ([Jiang and Kim, 2015](#)). 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, despite widespread dual-class ownership (see [Pargendler, 2014](#); [Black et al., 2014](#)), insider ownership decreases the cost of debt (for an increase from 10% to 11% of the insiders' stake, the G-spread decreases by 2.7 b.p.), which is evidence of managers-owners' different incentives in Brazil. As expected, the relationship is

Table 6
Alternative definition of control variables.

	(1)	(2)	(3)	(4)
	Brazil	Russia	India	China
<i>CorpConc</i>	0.9217** (2.06)	2.7902*** (3.10)	0.7015* (1.81)	-0.5484** (-2.39)
<i>State</i>	7.5061*** (7.54)	2.2476* (1.91)	-0.4330 (-1.14)	-1.3948*** (-3.63)
<i>InstConc</i>	2.4610** (2.41)	2.3505* (1.97)	2.0004** (2.46)	-2.0852*** (-3.26)
<i>Insider</i>	-1.4596 (-1.16)	2.4646*** (2.67)	1.6127*** (2.84)	3.5462*** (4.64)
<i>Indep</i>	1.0983 (1.47)	1.1853 (0.96)	0.4652* (1.75)	-0.1543 (-0.32)
<i>Size</i>	-46.6077*** (-4.16)	-55.1839 (-1.50)	-24.8963*** (-4.69)	-18.7299*** (-4.76)
<i>Perf</i>	-3.5582* (-1.76)	-1.0883 (-0.50)	-1.3260 (-1.42)	-0.7546 (-0.43)
<i>Lev</i>	3.1488*** (3.97)	3.0527 (1.65)	1.3662** (2.31)	1.4564*** (2.62)
<i>Vol</i>	1.4978 (0.36)	-10.8053 (-1.30)	-3.9395* (-1.70)	15.1829*** (4.06)
<i>Matur</i>	-0.2108 (-0.09)	13.9539** (2.19)	-5.3913*** (-4.71)	3.3177** (2.19)
<i>Term</i>	-0.0516 (-0.19)	-0.1968 (-0.45)	-0.3071 (-0.27)	1.1860* (1.75)
Option dummies	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	409	332	1683	1458
Adjusted R-squared	0.75	0.30	0.65	0.63

This table presents the effect of ownership structure and board independence on the cost of debt for a sample of at-issue and yearly observations of bonds issued by BRIC companies from 2007 to 2020. The dependent variable is the G-spread in year $t + 1$. All explanatory and control variables are measured in year t . Variable definitions are presented in Table 2, where control variables definition refers to alternative measure. The robust t-statistics clustered by the bond are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

similar in Russia, which is consistent with the risk of managerial entrenchment and the results of [Muravyev et al. \(2014\)](#) on the 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, the similar adverse effect of insider ownership can be related to managerial entrenchment. Thus, the different natures of insider investors in different countries, such as the existence of promoter groups, as well as different rights suggested by the share class are the factors underlying the differences in results within countries.

The independence of the board of directors is insignificant at the 5% level in each country according to the results.² This was predicted for Brazil due to the presence of nominal directors (see [Clarke, 2015](#); [Estrin and Prevezer, 2011](#)) and for 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 the decision-making process.

6. Robustness checks

In this section we present the results of the robustness checks addressing three issues – the definitions of the bond yield spread, the control variables and ownership concentration. The model we work with can also be a source of potential endogeneity, since ownership structure and board independence are related to the informal business rules and traditions, which are not observed and therefore omitted in the model. However, this is a standard limitation of corporate governance studies. The instrumental variables approach is not applicable to governance and ownership structure factors; thus, we do not address endogeneity directly in the present paper.

6.1. Alternative definition of cost of debt

To check the sensitivity of our results to the calculation of the dependent variable we use the I-spread for the cost of debt approximation in the model presented in Equation 1.

² The significance of the positive coefficient of board independence in the Indian sample is not robust to alternative measurements of cost of debt (see [Table 5](#))

Table 7
Alternative definition of ownership concentration.

	(1)	(2)	(3)	(4)
	Brazil	Russia	India	China
<i>CorpConc</i>	1.0831** (1.99)	2.4529*** (2.92)	0.9992*** (2.68)	-0.5048** (-1.99)
<i>State</i>	8.5520*** (8.19)	2.8327*** (2.65)	-0.1071 (-0.27)	-0.9890** (-2.34)
<i>InstConc</i>	3.8489*** (4.11)	1.1621 (0.89)	1.7055** (2.40)	-1.3990** (-2.23)
<i>Insider</i>	-2.7749** (-2.18)	1.9184** (2.10)	1.9494*** (3.81)	4.1239*** (5.02)
<i>Indep</i>	1.5141* (1.80)	1.5871 (1.16)	0.4784* (1.76)	-0.3330 (-0.70)
<i>Size</i>	-43.9653*** (-3.68)	-86.6142** (-2.60)	-16.7273*** (-3.61)	-20.1809*** (-4.76)
<i>Perf</i>	-1.9262*** (-3.34)	-0.6906* (-1.76)	-0.0113 (-0.03)	-1.5398* (-1.72)
<i>Lev</i>	2.7071*** (3.45)	1.3484 (1.13)	2.1040*** (3.95)	0.9650*** (2.68)
<i>Vol</i>	5.1423 (1.46)	-4.8890 (-0.66)	-4.0147** (-2.18)	-1.3374 (-0.72)
<i>Matur</i>	-0.2512 (-0.11)	16.7082** (2.53)	-5.2293*** (-4.64)	3.1891* (1.95)
<i>Term</i>	-0.1690 (-0.59)	-0.3800 (-0.85)	-0.0532 (-0.05)	1.0134 (1.53)
Option dummies	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	409	332	1683	1458
Adjusted R-squared	0.75	0.32	0.65	0.62

This table presents the effect of ownership structure and board independence on the cost of debt for a sample of at-issue and yearly observations of bonds issued by BRIC companies from 2007 to 2020. The dependent variable is the G-spread in year $t + 1$. All explanatory and control variables are measured in year t . Variable definitions are presented in Table 2, where the definition of CorpConc and InstConc refers to alternative measures. The robust t-statistics clustered by the bond are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The results of the empirical analysis with an alternative definition of cost of debt on the country subsamples (see Table 5) show that the effect of all variables of interest, except for insider ownership for the Brazilian sample, is consistent with the baseline results. The significance of the coefficients has a minor variation, while the effect of corporations' ownership concentration and state ownership have an impact of higher volume in the model of the I-spread, which can be explained by a higher variance and median level of the I-spread in our data (see Table 3).

6.2. Alternative definition of control variables

Running the regressions with a different calculation of controls, we use return on assets (based on earnings before taxes) for *Perf*, the ratio of total liabilities to total assets for *Lev*, and the standard deviation of return of assets (based on net income) as *Vol*. We present the results of the model estimation with an alternative definition of the control variables in Table 6.

The results of alternative specification testing are similar to the baseline results except for the effect of insider ownership in Brazil, which is consistent with the model with an alternative calculation of cost of debt. The model with an alternative definition of controls also reveals the positive influence of institutional ownership concentration in Russia, which is significant at the 10% level. This result is consistent with the distorted interests of banks as institutional owners in Russia, but cannot be considered robust due to the absence of significance in other models.

6.3. Alternative definition of ownership concentration

The final robustness check refers to the definition of ownership concentration. The baseline model utilizes the measure of corporations' and institutional ownership concentration referring to top-3 shareholders in the considered investor group. However, the degree of an owner's power in emerging markets is determined not only by their shareholding level, but also by their relationships with the management team and other informal factors. Therefore, we test whether the baseline results are robust to using the shareholding of the top-5 owners as an alternative measure for ownership concentration.

The results of testing with the alternative specification, which are reported in Table 7, are identical to the baseline results; moreover, the positive coefficient of board independence becomes significant at the 10% level for the Brazilian sample. The positive relationship can be significant due to the power of informal institutions in Brazil (Estrin and Prevezer, 2011). However, as this result appears only in the current specification, we do not consider it.

7. Conclusion

This paper investigated 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 corporate bonds, and ownership and board characteristics. The theoretical concept of the investigation is based on 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 some observations are similar to findings for developed countries. The increasing influence of *concentration of corporations' ownership* on the cost of debt in Brazil, Russia and India is consistent with results from the U.S. (see [Ashbaugh-Skaife et al., 2006](#)), while the shared benefits hypothesis proved for China also holds for Japan ([Tanaka, 2014](#)). This finding is evidence that investors in Brazil, Russia and India 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 results from Brazil and Russia that *state ownership* increases the risk of debtholders is in line with evidence from multinational studies (see [Borisova and Megginson, 2011](#); [Borisova et al., 2015](#)), but not with the decreasing effect of government ownership in China, proving that investors in that country value potential state guarantees. The fact that investor risk in debt securities in Brazil and Russia rises with an 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. This conclusion is in line with the idea that legal enforcement of corporate governance standards in Russia is considered weak due to corruption in regulatory bodies ([Enikolopov and Stepanov, 2013](#)).

We have shown an increasing effect of *insider ownership* in Russia, India and China, which is consistent with the entrenchment effect observed in the U.S. and Japan (see [Chen, 2011](#); [Tanaka, 2014](#)).

At the same time, we observe a favorable effect of *institutional ownership* in China only 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](#); [Huang and Petkevich, 2016](#)). The absence of these effects in BRIC countries (except for the influence of institutional ownership in China) 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.

The major limitations of the paper are related to the size of the Brazilian and Russian samples and potential sample selection bias, as the sample of bonds is restricted by the availability of data in the Bloomberg Yield and Spread analysis and transparency of ownership and governance data. Moreover, it is not possible to construct a dynamic panel model and check the validity of the static model, as the data is unbalanced.

There is potential for further research. First, using larger Brazilian and Russian samples will decrease industry concentration and mitigate any potential sample selection bias. Second, including more governance variables could help control other agency conflict mechanisms. Finally, adding observations from other emerging market countries to the sample would build a more solid basis for comparison.

Declarations of interest

None.

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Appendix

See [Table A.1](#).

Table A.1
Summary statistics by country.

Panel A. Brazilian sample								
	Mean	S.D.	Min	Q25	Median	Q75	Max	N
G-spread	169.153	204.141	-126.519	25.780	131.599	282.730	676.391	400
I-spread	-146.047	421.256	-618.239	-481.822	-352.182	277.104	664.571	400
CorpConc	21.284	32.099	0.000	0.000	0.000	33.000	96.150	400
State	12.267	19.817	0.000	0.000	0.000	28.670	51.940	400
InstConc	14.125	12.599	0.000	7.060	9.450	19.085	48.000	400
Insider	1.472	6.578	0.000	0.000	0.000	0.004	57.220	400
Indep	42.891	26.647	0.000	22.222	40.000	66.667	80.000	400
Size	9.235	1.411	7.001	8.201	8.926	9.617	12.382	400
Perf	12.046	15.876	-42.514	4.835	11.229	18.902	76.027	400

(continued on next page)

Table A.1 (continued)

Panel A. Brazilian sample								
Lev	36.353	12.085	11.262	26.175	37.922	43.668	65.917	400
Vol	6.885	3.122	0.986	5.159	6.576	8.046	18.196	400
Matur	7.423	2.827	2.000	5.000	7.000	10.000	15.000	400
Term	160.560	170.874	-121.420	90.720	199.280	252.930	402.390	400
Call	0.135	0.342	0.000	0.000	0.000	0.000	1.000	400
Put	0.000	0.000	0.000	0.000	0.000	0.000	0.000	400
Panel B. Russian sample								
G-spread	159.430	160.460	-126.519	65.181	103.696	205.989	676.391	303
I-spread	100.366	165.069	-324.037	9.740	53.574	146.123	664.571	303
CorpConc	44.943	36.457	0.000	1.000	51.000	75.000	96.150	303
State	18.770	32.383	0.000	0.000	0.000	26.150	89.500	303
InstConc	7.460	9.430	0.000	1.290	3.160	11.900	48.000	303
Insider	3.528	13.602	0.000	0.000	0.008	0.188	74.800	303
Indep	35.262	20.750	0.000	20.000	33.333	46.154	80.000	303
Size	9.433	1.228	5.125	8.902	9.493	10.518	12.267	303
Perf	22.362	24.753	-42.514	8.271	13.682	32.629	76.027	303
Lev	37.300	18.144	4.265	22.515	29.940	56.368	70.580	303
Vol	10.283	4.072	0.986	7.765	9.051	13.925	18.196	303
Matur	5.023	2.769	1.000	3.000	5.000	6.000	15.000	303
Term	-30.765	129.756	-247.500	-133.500	27.170	63.920	348.200	303
Call	0.040	0.195	0.000	0.000	0.000	0.000	1.000	303
Put	0.046	0.210	0.000	0.000	0.000	0.000	1.000	303
Panel C. Indian sample								
G-spread	154.310	126.732	-123.230	61.300	130.578	226.665	676.391	1681
I-spread	200.610	122.167	-76.712	113.500	177.914	269.487	664.571	1681
CorpConc	21.614	24.248	0.000	0.000	11.000	37.280	90.000	1681
State	31.452	37.759	0.000	0.000	0.888	73.960	89.500	1681
InstConc	12.303	8.129	0.000	6.990	11.400	16.120	48.000	1681
Insider	5.785	13.709	0.000	0.001	0.010	4.520	74.800	1681
Indep	44.750	16.088	0.000	40.000	50.000	52.941	80.000	1681
Size	8.731	1.612	5.041	7.385	9.173	10.155	11.882	1681
Perf	9.614	10.485	-42.514	5.306	11.587	14.147	76.027	1681
Lev	38.774	13.145	4.265	30.232	35.904	47.946	70.580	1681
Vol	6.407	2.334	0.986	5.001	5.778	7.429	18.196	1681
Matur	5.751	3.377	0.000	3.000	5.000	8.000	15.000	1681
Term	52.592	85.286	-50.080	-6.580	24.970	114.980	326.430	1681
Call	0.380	0.485	0.000	0.000	0.000	1.000	1.000	1681
Put	0.197	0.398	0.000	0.000	0.000	0.000	1.000	1681
Panel D. Chinese sample								
G-spread	129.595	115.567	-126.519	60.789	91.263	162.310	676.391	1418
I-spread	122.466	115.061	-315.180	53.837	83.330	154.919	664.571	1418
CorpConc	47.633	19.519	0.000	36.000	50.000	62.000	89.000	1418
State	0.305	3.351	0.000	0.000	0.000	0.000	47.820	1418
InstConc	7.272	5.989	0.660	4.030	5.910	9.160	48.000	1418
Insider	2.047	6.504	0.000	0.000	0.000	0.695	46.430	1418
Indep	39.151	8.774	25.000	33.333	36.364	42.857	72.727	1418
Size	9.632	1.309	5.742	8.604	9.583	10.659	12.382	1418
Perf	6.693	5.546	-42.514	3.795	6.557	9.108	30.414	1418
Lev	36.090	15.149	4.265	23.372	36.772	48.329	70.580	1418
Vol	4.428	2.322	0.986	2.717	3.956	5.644	13.633	1418
Matur	3.142	1.741	0.000	2.000	3.000	3.000	15.000	1418
Term	59.327	14.054	29.320	58.220	64.120	64.120	202.480	1418
Call	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1418
Put	0.005	0.070	0.000	0.000	0.000	0.000	1.000	1418

This table presents the summary statistics and Spearman correlation matrix for a sample of at-issue and yearly observations of bonds issued by BRIC companies from 2007 to 2020. Variable definitions are presented in Table 2. ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively.

References

- Aldamen, H., Duncan, K., 2012. Does adopting good corporate governance impact the cost of intermediated and non-intermediated debt? *Account. Financ.* 52 (s1), 49–76.
- Aman, H., Nguyen, P., 2013. Does good governance matter to debtholders? Evidence from the credit ratings of Japanese firms. *Res. Int. Bus. Financ.* 29, 14–34.
- Anderson, R.C., Mansi, S.A., Reeb, D.M., 2004. Board characteristics, accounting report integrity, and the cost of debt. *J. Account. Econ.* 37 (3), 315–342.
- Ashbaugh-Skaife, H., Collins, D.W., LaFond, R., 2006. The effects of corporate governance on firms' credit ratings. *J. Account. Econ.* 42 (1), 203–243.
- Barclay, M.J., Holderness, C.G., 1989. Private benefits from control of public corporations. *J. Financ. Econ.* 25 (2), 371–395.

- Bhojraj, S., Sengupta, P., 2003. Effect of corporate governance on bond ratings and yields: The role of institutional investors and outside directors*. *J. Bus.* 76 (3), 455–475.
- Black, B.S., De Carvalho, A.G., Sampaio, J.O., 2014. The evolution of corporate governance in Brazil. *Emerg. Mark. Rev.* 20, 176–195.
- Bliss, M.A., Gul, F.A., 2012. Political connection and cost of debt: some Malaysian evidence. *J. Bank. Financ.* 36 (5), 1520–1527.
- Borisova, G., Megginson, W.L., 2011. Does government ownership affect the cost of debt? Evidence from privatization. *Rev. Financ. Stud.* hhq154.
- Borisova, G., Fotak, V., Holland, K.V., Megginson, W.L., 2015. Government ownership and the cost of debt: evidence from government investments in publicly traded firms. *J. Financ. Econ.* 118, 168–191.
- Boubakri, N., Ghouma, H., 2010. Control/ownership structure, creditor rights protection, and the cost of debt financing: International evidence. *J. Bank. Financ.* 34 (10), 2481–2499.
- Bradley, M., Chen, D., 2011. Corporate governance and the cost of debt: Evidence from director limited liability and indemnification provisions. *J. Corp. Financ.* 17 (1), 83–107.
- Bradley, M., Chen, D., 2015. Does board independence reduce the cost of debt? *Financ. Manag.* 44 (1), 15–47.
- Brugni, T.V., Bortolon, P.M., De Almeida, J.E.F., Paris, P.K.S., 2013. Corporate governance: a panoramic view of Brazilian boards of directors. *Int. J. Discl. Gov.* 10 (4), 406–421.
- Chen, A., 2009. Corporate governance in Russia and some points of comparison with China. *Chin. Econ.* 42 (3), 41–59.
- Chernykh, L., 2008. Ultimate ownership and control in Russia. *J. Financ. Econ.* 88 (1), 169–192.
- Clarke, T., 2015. The transformation of corporate governance in emerging markets: reform, convergence, and diversity. *Emerg. Mark. Financ. Trade* 51 (sup2), S25–S46.
- Darrat, A.F., Gray, S., Park, J.C., Wu, Y., 2014. *Corporate Governance and Bankruptcy Risk*. *Journal of Accounting, Auditing & Finance*.
- Dwivedi, N., Jain, A.K., 2005. Corporate governance and performance of Indian firms: the effect of board size and ownership. *Empl. Responsib. Rights J.* 17 (3), 161–172.
- Enikolopov, R., Stepanov, S., 2013. Corporate governance in Russia. *The Oxford Handbook of the Russian Economy*. Oxford University Press.
- Estrin, S., Prevezer, M., 2011. The role of informal institutions in corporate governance: Brazil, Russia, India, and China compared. *Asia Pac. J. Manag.* 28 (1), 41–67.
- Fama, E.F., Jensen, M.C., 1983. Separation of ownership and control. *J. Law Econ.* 301–325.
- FitchRating (2017). *Criteria for Rating Non-Financial Corporates*.
- Huang, K., Petkevich, A., 2016. Corporate bond pricing and ownership heterogeneity. *J. Corp. Financ.* 36, 54–74.
- Ivashkovskaya, I., Stepanova, A., 2011. Does strategic corporate performance depend on corporate financial architecture? Empirical study of European, Russian and other emerging market's firms. *J. Manag. Gov.* 15 (4), 603–616.
- Jensen, M.C., 1993. The modern industrial revolution, exit, and the failure of internal control systems. *J. Financ.* 48 (3), 831–880.
- Jensen, M.C., Meckling, W.H., 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *J. Financ. Econ.* 3 (4), 305–360.
- Jiang, F., Kim, K.A., 2015. Corporate governance in China: a modern perspective. *J. Corp. Financ.* 32, 190–216.
- Jiang, G., Lee, C.M.C., Yue, H., 2010. Tunneling through intercorporate loans: the China experience. *J. Financ. Econ.* 98, 1–20.
- Juniarti, The Lia Natalia, 2012. Corporate Governance Perception Index (CGPI) and cost of debt. *Int. J. Bus. Soc. Sci.* 3 (18), 223–232.
- Kabir, R., Li, H., Veld-Merkoulova, Y.V., 2013. Executive compensation and the cost of debt. *J. Bank. Financ.* 37 (8), 2893–2907.
- Khanna, T., Yafeh, Y., 2005. Business groups and risk sharing around the world. *J. Bus.* 78 (1), 301–340.
- Klock, M.S., Mansi, S.A., Maxwell, W.F., 2005. Does corporate governance matter to bondholders? *J. Financ. Quant. Anal.* 40 (04), 693–719.
- Li, X., Sun, S.T., 2015. *Managerial Ownership and Firm Performance: Evidence From the 2003 Dividend Tax Cut*.
- Lin, C., Ma, Y., Malatesta, P., Xuan, Y., 2011. Ownership structure and the cost of corporate borrowing. *J. Financ. Econ.* 100 (1), 1–23.
- Lorca, C., Sánchez-Ballesta, J.P., García-Meca, E., 2011. Board effectiveness and cost of debt. *J. Bus. Ethics* 100 (4), 613–631.
- Marques, T.A., de Sousa, R., Kareem, C., Barboza, F., 2018. Corporate governance and debt securities issued in Brazil and India: a multi-case study. *Res. Int. Bus. Financ.* 45 (C), 257–270.
- Melkumov, D., 2009. Institutional background as a determinant of boards of directors' internal and external roles: the case of Russia. *J. World Bus.* 44 (1), 94–103.
- Muravyev, A., Berezinets, I., Ilina, Y., 2014. The structure of corporate boards and private benefits of control: evidence from the Russian stock exchange. *Int. Rev. Financ. Anal.* 34, 247–261.
- Ortiz-Molina, H., 2006. Top management incentives and the pricing of corporate public debt. *J. Financ. Quant. Anal.* 41 (2), 317–340.
- Pargendler, M., 2014. Corporate governance in emerging markets. *Oxford Handbook of Corporate Law and Governance* (Jeffrey N. Gordon & Wolf-Georg Ringe eds.), Forthcoming; FGV Direito SP Research Paper Series No.17. Available at SSRN: <https://ssrn.com/abstract=2417994>.
- Petitt, B.S., Pinto, J.E., Pirie, W.L., 2015. *Fixed Income Analysis*. John Wiley & Sons.
- Piot, C., Missonier-Piera, F., 2007. Corporate governance, audit quality and the cost of debt financing of French listed companies. Communication présentée au 28ème Congrès de l'Association Francophone de Comptabilité, Poitiers.
- Rabotinskiy, I., Stepanova, A., 2014. Corporate Governance and Cost of Debt: Review of Recent Studies. *Корпоративные финансы*: 2 (30).
- Sarkar, J., Sarkar, S., 2012. *Corporate Governance in India*. SAGE Publications, India.
- Sengupta, P., 1998. Corporate disclosure quality and the cost of debt. *Account. Rev.* 459–474.
- Shailer, G., Wang, K., 2015. Government ownership and the cost of debt for Chinese listed corporations. *Emerging Markets Review*, 22(C), 1–17.
- Shleifer, A., Vishny, R.W., 1994. Politicians and Firms. *The Quarterly Journal of Economics* 109 (4), 995–1025.
- Shleifer, A., Vishny, R.W., 1997. A survey of corporate governance. *J. Financ.* 52 (2), 737–783.
- Shuto, A., Kitagawa, N., 2011. The effect of managerial ownership on the cost of debt: Evidence from Japan. *Journal of Accounting, Audit. Financ.* 26 (3), 590–620.
- Tanaka, T., 2014. Corporate governance and the cost of public debt financing: evidence from Japan. *J. Jpn. Int. Econ.* 34, 315–335.
- Wang, A.W., Zhang, G., 2009. Institutional ownership and credit spreads: an information asymmetry perspective. *J. Empir. Financ.* 16 (4), 597–612.
- Wu, S., Xu, N., Yuan, Q., 2009. State control, legal investor protection, and ownership concentration: evidence from China. *Corp. Gov.: Int. Rev.* 17 (2), 176–192.