The role of covenants in bond issue and investment policy. The case of Russian companies.

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Abstract

This study examines the use and determinants of covenants in public debt issued by Russian companies. On the basis of issue characteristics, firm characteristics and systemic risk variables, we investigate the likelihood that the inclusion of covenant clauses in financial contracts is positively related to the riskiness of bond issues. Using a hand-collected database of Russian firms that place bonds both in the domestic and Eurobond markets, we provide evidence that covenant protection in the Eurobond market does not transfer to the domestic bond market. If a firm has outstanding Eurobonds in its debt portfolio, the required covenant protection for an issue in the Russian domestic market will be higher compared with a firm that borrows by issuing only Russian bonds. We document that a negative relation between offering yield and the presence of covenants, which is consistent with the costly contracting hypothesis (CCH), is registered only in the Eurobond market. We also find a non-linear relation between investment and covenant protection for firms that issue in the Russian market, indicating a possible optimal covenant protection level for a bond issue.

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1. Introduction

An extensive body of theoretical and empirical research on capital structure has expanded beyond the choice of debt versus equity and increasingly examines the architecture of corporate liabilities, including characteristic features of financial contracts.

Covenants are particular clauses in an indenture or any other formal debt agreement that restrict corporate policy, providing creditors with the opportunity to enforce certain actions (e.g., to demand early repayment) when the covenants are breached. At the centre of the rationale for the presence of covenants in financial contracts is the conflict of interest between shareholders and debtholders. This conflict results in actions undertaken by managers acting on behalf of shareholders that have a negative impact on the firm's value as well as on the market value of outstanding debts. Studies by Jensen and Meckling (1976), Myers (1977), and Smith and Warner (1979) identify four main sources of conflict: claim dilution, asset withdrawal, asset substitution and underinvestment. One way to mitigate these conflicts and reduce the attendant agency costs is to include appropriate covenants in debt contracts to influence a firm's financial and investment policies and to lessen the transfer of wealth to shareholders.

However, covenants may produce undesirable effects, thus reducing flexibility in corporate policy by restricting future financing and investment decisions. Firms with high investment opportunities prefer to have few restrictive covenants because they seek to preserve future financial and investment opportunities (Beatty et al., 2002; Billett et al., 2007; Nash et al., 2003). In other words, covenants are priced in equilibrium because they reduce the ability of management and shareholders to take actions detrimental to the bondholders.

At the same time, the costly contracting hypothesis (CCH) forwarded by Smith and Warner (1979) sharpens this insight further by arguing that firms optimally trade off the cost of the restrictions imposed by covenants with the lower cost of debt due to reduced agency risk. By reducing the discretion of shareholders and managers ex post and ameliorating the agency risk faced by bondholders, covenants reduce the cost of debt ex ante. Consequently, when selecting covenants to include in indenture agreements, a firm must generally choose between maintaining flexibility and reducing potential agency problems. Recently, Bazzana and Broccardo (2013) demonstrate that in issuing a bond, a firm can find the optimal covenant strength that maximises the expected revenue, i.e., the difference between the reduction in the cost of debt and the sum of the flexibility costs and the expected costs in the case of covenant violation.

The empirical literature has demonstrated the increasing rate at which covenants are included in public and private debt contracts (Billett et al., 2007; Kwan and Carleton, 2010; Nini et al., 2009). However, extant research on the agency theory of covenants (ATC) relies on data from the United States and other developed countries. Moreover, the U.S. and other markets show marked differences. Regarding the U.S.

market, wide empirical research provides evidence that most of the corporate debt contracts include covenant protections, both in public and private debt (Bradley and Roberts, 2004; Chava et al., 2010; 2004; Chava and Roberts, 2008; Demiroglu and James, 2010; Dichev and Skinner, 2002; Nash et al., 2003; Smith and Warner, 1979). Nevertheless, Smith and Warner (1979) argue that 'we must examine the institutional framework within which covenant enforcement takes place for further insight into why certain kinds of covenants are observed – and others not' (p. 147). Thus, empirical research conducted outside the U.S. market reveals that covenant provisions are not ubiquitous either in public or in private debt contracts (Correia, 2008; Mather and Peirson, 2006; J. Niskanen and M. Niskanen, 2004; Tanigawa and Katsura, 2013). For instance, investigating the UK Eurobond market, Correira (2008) shows that only 33 per cent of the total sample of issues include more than one covenant. Similarly, Niskanen and Niskanen (2004), in an analysis of Finnish small firm loans, indicate that on average, only 11.2 per cent of the loan contracts include at least one covenant. Finally, by studying Japanese corporate publicly issued bonds, Tanigava and Katsura (2013) register that 20.3 per cent of the issues do not contain any covenant clauses.

The examination of contracts from other environments broadens the evidence of ATC as well as the cost-contracting hypothesis (CCH). For instance, observing a sample of Brazilian indenture agreements, Anderson (1999) argues that a weak institutional environment affects the nature of financial contracting. More importantly, due to the potential conflicts between shareholders and creditors, the agency costs of debt are likely to be high in Brazil. However, covenants that restrict a debtor's dividend, investment, and financing policies are seldom observed in the sample of indentures. Due to poor data availability, there is a substantial lack of empirical evidence on covenant protection and its determinants in less-developed markets.

As far as we know, this paper is the first to investigate the determinants of covenant clauses and their impact on corporate investment policy by considering a sample consisting of Russian bond issues. A distinguishing feature of the Russian debt market is that borrowers simultaneously place bonds on both the domestic bond market and the Euromarket. Moreover, according to statistics, the total volume of outstanding Eurobond issues is comparable to the domestic bond market in size. To address this, we collect deep and wide data from both domestic bond issues and Eurobonds placed by Russian companies. Additionally, we construct a firm-year sample to investigate the relation between covenant protection and corporate investment policy. The analysis examines not only the determinants of the inclusion of covenants in debt issues but also the ways in which the difference between the Russian corporate bond market and the Euromarket influences the issuers' behaviours in offering covenant protection. We specifically focus on the influence of covenant provisions on the cost of debt and on corporate investment policy. Thus, our paper yields new results and important insights for creditors and investors that operate in Russian financial markets and for credit rating agen-

cies.

We organise the remainder of the paper as follows. Section 2 develops testable hypotheses on the relation between covenant protection and the characteristics of issues and firms. This section also describes how covenant clauses in indenture agreements can affect the cost of debt and investment opportunity. Section 3 describes the sample and provides descriptive statistics on the issuers and characteristics of debt, including the frequency of covenant usage. Section 4 describes the empirical model and discusses the results. In Section 5, we present some robustness checks, and Section 6 concludes the paper.

2. Empirical predictions

We investigate how covenant protection is related to firm characteristics and the features of issues and how it influences firm value. With respect to firm and issue characteristics, we focus on the determinants of the choice of covenant protections (Hypothesis 1). Furthermore, we investigate how the differences between the Russian corporate bond market and the Euromarket influence the issuers' behaviour in offering covenant protection (Hypothesis 2). With respect to the differences between the two markets, we analyse how covenant protection affects the cost of debt (Hypothesis 3). Finally, we test the impact of covenant protection on a firm's investment policy (Hypothesis 4).

Hypothesis 1. *The likelihood of including covenants will be positively related to the riskiness of the issue.*

An extensive body of empirical literature on covenants focuses on the factors that determine the choice of covenants in debt issues. Referring to the Agency Theory of Covenants (Bradley and Roberts, 2004), which provides a rationale for the presence of covenants in debt indentures, the higher the riskiness of the bond, the more likely covenant inclusion is. In the literature, there are principal variables that are used as a proxy for the riskiness of the issue in relation to covenant protection: (*i*) the maturity of the debt, (*ii*) the growth of the firm, and (*iii*) the size of the firm.

As Myers (1977) argues, when a firm has risky debt outstanding and when managers act to maximise equity value on the basis of risk-shifting, managers have incentives to under- or overinvest in future growth opportunities. In this case, covenant protection and debt maturity become the significant components that are used to mitigate shareholder-bondholder conflicts. More generally, Barnea, Haugen and Senbet (1981), Childs, Mauer and Ott (2005) note that short-term debt can mitigate both underinvestment and overinvestment problems by making debt less sensitive to changes in firm value. A number of empirical studies (Aivazian et al., 2005; Barclay and Clifford W Smith, 1995; Guedes and Opler, 1996) support this statement. However, using short-term fi-

nancing to reduce agency costs may increase the cost of debt through both higher refinancing risk and higher transaction costs of debt rollover. Consistent with the interpretation of the substitution of short-term debt with no covenants and long-term debt with covenants, Bradley and Roberts (2004) find that large maturity and the presence of covenants are positively related. Additionally, using a panel data estimation approach on a sample of Eurobonds issued by UK companies during 1986–1999, Correia (2008) documents strong interdependence between the choice of maturity and the inclusion of protective covenants.

The contracting literature (Myers, 1977) suggests that firms with higher growth and/or investment opportunity are likely to be faced with risk-shifting problems in the future (or transferring wealth from debtholders to shareholders). Therefore, bondholders, particularly in high-growth firms, have incentives to protect themselves from managerial discretion (which might result in asset substitution, underinvestment, or claim dilution) with covenant clauses. As an illustration, using a simultaneous-equation model, Billett, King, and Mauer (2007) find a positive relation between covenant protection in public debt contracts and growth opportunity. Similarly, Bradley and Roberts (2004) and Demiroglu and James (2010) study private debt agreements and find a positive relation between growth opportunity (measured by the market-to-book ratio) and covenant protection. By contrast, Kahan and Yermack (1998) and Nash, Netter, and Poulsen (2003) examine the relation between a firm's growth opportunity and the choice of covenants in public debt issues. Both studies find that high-growth firms are less likely to include restrictive covenants, suggesting that the benefit of preserving future flexibility outweighs the benefit of reducing the cost of debt by including covenants. Similarly, Gilson and Warner (1998) find that fast-growing firms that experience a performance decline tend to remove restrictive covenants from their debt contracts by replacing bank debt with junk bonds that have less-restrictive covenants. The authors conclude that by removing restrictive covenants, the firms were able to maintain their ability to grow. Consistent with this statement, based on the analysis of public issues during the 1989–2006 period, Reisel (2014) detects that high-growth firms, as proxied by market-to-book ratios, are less likely to include covenants that restrict investment and asset sales and covenants restricting pay-outs in bond contracts. In a different context (examining bank debt contracts), Goyal (2005) finds evidence of a negative relationship between bank growth opportunity, as measured by the market value of assets over the book value of assets, and restrictive covenants included in public debt contracts issued by banks.

By investigating three types of covenants (dividend constraints, limitations on debt, and sinking funds), Malitz (1986) notes that larger firms have a more longstanding relationship with the market. Assuming that having more firm-specific information allows bondholders to more accurately assess potential wealth-expropriating decisions, thus lessening the need to offer costly covenants, Malitz (1986) finds that the smaller a firm

is (measured by the natural log of total assets), the more likely it is to benefit from restrictions. In spite of the conventional wisdom of a negative relation between the issuer's size and covenant protection, Nash, Netter and Poulsen (2003) and later Bradley and Roberts (2004) note that size affects different types of covenants differently. According to Bradley and Roberts (2004), large market cap firms are less likely to include dividend restrictions, security provisions or equity sweeps in their bond agreements. Interestingly, though, they reveal that large firms are more likely to include an asset sweep. Nash, Netter and Poulsen (2003) also indicate that larger firms are more likely to include negative pledge clauses or restrictions on sales/leasebacks, the opposite result from the dividend and debt restrictions.

Hypothesis 2. *The likelihood of including covenants in domestic bond contracts becomes less (more) likely, and the covenant protection index will be lower (higher) for a firm that has Eurobonds in its debt portfolio.*

Lending in the Euromarket differs from lending in the domestic Russian market. The Euromarket differs from the Russian corporate bond market in four key areas: (*i*) all issues of Eurobonds contain protective covenants in bond indenture agreements in contrast to Russian corporate bonds, (*ii*) higher transparency requirements for bond issuers, (*iii*) greater coordination among bondholders in the situation of technical default, and (*iv*) the existence of a bond trustee as a financial institution that acts as go-between for a bond issuer and bondholders. Russian law has introduced the concept of a bondholders' representative, which was designed to perform a similar function to the trustee in a Eurobond transaction only from July 2014. Moreover, according to the World Bank's 2015 Doing Business Survey, Russia ranks the 100th in the world in terms of protecting minority investors. If, as in our case, the firm issues different bonds in different markets, we assume that the relationships with the capital market can be different.

According to the information asymmetry theory of covenant use ("An Incomplete Contracts Approach to Financial Contracting," 1992; Garleanu and Zwiebel, 2009), the major determinant of the need for covenants in debt contracts is information asymmetry between a lender and a borrower about potential future wealth transfers from debt to equity. This theory has several implications in the context of covenant intensity. Firstly, the more opaque a firm is, the more likely its covenants will be strict and tight in order to offset the low level of information available about a borrower. Taking into account the low level of disclosure of Russian companies' information and the lack of transparency in terms of ownership structure, these arguments could be the explanation for the high level of covenant load in Russian Eurobonds. Secondly, to the extent that lending relationships reduce information asymmetry between debtholders and shareholders, covenants should become less intensive and less restrictive. In other

words, the more often a firm enters the debt market, the more frequently it is re-evaluated, which provides implicit control of managers' incentive-relation actions and thus lessens the need for explicit covenants. These results can be valid for firms that issue different bonds in the same market or that issue in comparable markets in terms of transparency and legal protection for bondholders.

Rajan and Winton (1995) emphasise the incentive to monitor as a motivating factor for including covenants in debt contracts. Covenants can serve as tripwires that enhance information efficiency and costly monitoring for lenders. When a firm obtains capital from several sources, individual debtholders have limited incentives to monitor because they would rather free-ride on other lenders' control and monitoring efforts.

Park (2000) also considers the incentive to monitor as a motivating factor for covenant inclusion. The main idea of his model is that it is best to delegate monitoring to a senior lender because a senior lender is much more effective than a junior lender in carrying out monitoring. Although junior debt is inherently riskier than senior debt because of its lower priority, Park (2000) shows that senior debt is the most restrictive. Taken together, these arguments suggest that if a firm issues bonds on the Euromarket, it can reduce its covenant protection when placing bonds on the domestic market.

On the other hand, covenant violations trigger a renegotiation process in which the right to accelerate the debt assigns a high amount of bargaining power to the debtholders. This bargaining power can significantly change the terms of the debt, for instance, increase the interest rate spread, reduce the maturity, restrict the availability of the credit line, require additional collateral and/or contain more restrictive covenants on cash management and capital expenditure (Nini et al., 2012). In other words, covenants provide an opportunity for the debtholders to hold up the borrower when a covenant breach occurs. Prilmeier (2011) shows that even large and rated firms worry about state-contingent hold-up by their lenders. Moreover, state-contingent hold-up opportunities will increase the information distance between the current debtholder and possible lenders.

Taking into consideration the fact that coordination among bondholders in the situation of technical default is greater in the Eurobond market compared with the domestic Russian market, we expect that Russian debtholders can require similar covenant protection in order to protect their rights in the situation of technical default in the Eurobond market.

Hypothesis 3. *The yield of bonds will be negatively (positively) associated with the level of covenant protection.*

According to the CCH, which is documented by Smith and Warner (1979) in their seminal paper, because covenant restrictions are costly to a firm, they must confer some offsetting benefit. They argue that the benefit is in the reduction of agency costs,

which translates into a lower cost of the debt. More recently, a series of articles have examined the joint choice and price effect of covenants in large samples of debt issues. Reisel (2014), Chava, Kumar, and Warga (2010), and Wei (2005) examine public debt issues, whereas Goyal (2005) adapts this methodology to study the impact of covenants on the spread of bank-issued subordinate bonds, and Bradley and Roberts (2004) use this methodology to study the impact of covenants on bank loan spreads. All of these articles find that including covenants reduces the cost of debt. In particular, Reisel (2014) finds a reduction of approximately 35-75 basis points. Additionally, Goyal (2005) and Bradley and Roberts (2004) find that the decision to include restrictive covenants and yield on corporate debt are determined simultaneously because management trades off the flexibility and other costs of covenant inclusion with a reduction in the expected offering yield (or cost of debt), but the equilibrium offering yield depends on the included covenants.

On the other hand, covenant protection provided to investors is subject to a number of parameters that define the risk profile of an issuer. These in turn are likely to depend on the issuer's characteristics that will influence the investors' perception of the credit risk. Moreover, the investors may determine the terms of the debt, including the covenant protection, to suit the firm's risk profile. Thus, by examining corporate bonds publicly issued in Japan from January 4, 2000 to December 20, 2011, Tanigawa and Katsura (2013) reveal that the relation between covenant usage and cost of debt varies across segments, with incidence tending to follow the issuers' credit rating. As an illustration, average yield spreads are smaller when the protective power is stronger within both AAA-rated and AA-rated bond classes. However, for A-rated, BBB-rated, and BB-rated bonds, the protective power does not conform to the average yield spread. For instance, the average yield spread for A-rated uncollateralised bonds with all three covenant clauses is the highest among A-rated uncollateralised bonds. This indicates that a covenant clause is chosen endogenously and could be appraised by investors as a signal of higher risk. Accordingly, investors require a higher yield to compensate for the risk inherent in bonds, and the bond also needs a censoring clause attached in order to place the bond successfully.

Hypothesis 4. *Covenant protection has a significant impact on a firm's investment policy.*

An extensive body of research explains that bond issuers' use of covenants weighs the benefit of mitigating agency problems against the cost of reducing flexibility in making investment decisions (Anderson, 1999; Begley, 1994; Chava et al., 2004; Gilson and Warner, 1998; Kahan and Yermack, 1998; McDaniel, 1986; Nash et al., 2003). The traditional view reflects the passive role of corporate creditors until firms are in default, which is typically associated with the failure to make a payment (Gale and Hellwig,

1985; Hart and Moore, 1998; Townsend, 1979). In their survey, Nini, Smith, and Sufi (2012) present an alternative view in which creditors have influence over managerial decisions even in the absence of payment default or bankruptcy through the use of covenants and the control rights with which they are associated. Under this view, covenants define the circumstances under which debtholders are permitted to intervene in management. In such instances, the transfer of control rights can act as part of the incentive package offered to management: "good" behaviour by management ensures continued control and any benefits associated with that control; "bad" behaviour by management results in the loss of control and any associated benefits. In other words, creditors are more likely to limit firm capital expenditures in response to increased credit risk or the uncertainty of the environment. This result suggests that restricting potential risk-shifting investments by managers becomes more relevant as the riskiness of debt increases.

3. Data and sample construction

We build two different samples. The first contains data related to the characteristics of the bond issues, and the second contains data on the firms issuing the bonds.

3.1. The bond issue sample

Our main data source is the Cbonds database (Cbonds.ru), which contains issue details on various financial market instruments (bonds, syndicated loans, stocks, mutual funds, etc.) from Russia, the CIS, and emerging markets. Cbonds.ru provides detailed information on bonds, including offering yield, offering amount, coupon type/rate, maturity, callability and putability features as well as quotes and indices. According to the majority of market participants, the Cbonds database on CIS countries is more accurate than databases of other Russian and international data vendors.

Because our objective is to examine the influence of shareholder-bondholder conflicts on corporate financial and investment policy, we focus on corporate public bonds outstanding in the domestic market of Russia and Eurobonds issued by Russian companies. Although Cbonds.ru contains corporate bonds issued as early as 1999, we restrict the period of observation from 2008 to 2013, during which covenant clauses become slightly more comprehensive. After excluding financial firms, finance subsidiaries and a small number of offerings with missing data, we obtain an initial sample of 814 nonconvertible bonds issued by industrial companies and utilities from 2008 to 2013.

< insert Table 1 here >

Table 1 reports the distribution of domestic corporate bond issues by different cate-

gories and the average level of basic bond characteristics through time. From the year 2008 to the end of 2013, 237 non-financial issuers in various industries placed 654 issues for a total face value of approximately 3,459.3 billion rubles (over 115 billion USD). Data analysis shows a fluctuation in the amount of outstanding bonds. Despite the significant drop by almost 32% in 2010, the face value of corporate bonds issued in 2013 grew more than twofold in comparison with 2008. The slight decrease in the number of issuers to 62 (in comparison with 65 in 2008) was accompanied by growth in the number of issues by almost 40% to 117 (in comparison with 84 in 2008). This indicates two main tendencies. Firstly, the size of an individual bond issue tends to climb. Secondly, during the period of observation, the expansion of the domestic corporate bond market was not primarily attributable to new issuers.

< insert Figure 1 here >

The aggregate maturity structure of corporate bond issues was characterised by a significant increase in the share of issues with a maturity of more than five years (Figure 1). The share of long-term bond issues rose from 3.57% in 2008 to 46.15% in 2013. On the whole, the substantial growth of the share of long-term issues (with a maturity over five years) testifies to the strengthening of the market. On the other hand, negative shocks, such as the economic crisis in 2009, provide heightened credit risk, which prompts issuers to reduce the maturity of outstanding debts. Thus, in 2009, the share of short-term issues (with a maturity of less than one year) was 3.2%. Moreover, the average offering yield increased to 14.82% in 2009.

The credit risk of major corporate bonds is measured by international (Moody's, Standard and Poor's, Fitch) and a number of domestic rating agencies (Expert RA, RA AK&M). We focus on the international ratings. We structure the credit ratings in the following way: (*i*) investment grade – bonds that have Standard and Poor's and Moody's credit ratings over BBB-(Baa3); (*ii*) below investment grade – with credit ratings less than BB+(Ba1); (*iii*) not rated and (*iv*) bonds with withdrawn international ratings. The majority (73.8%) of Russian outstanding corporate bonds did not have an international rating in 2008. Since the economic crisis of 2008-2009, the situation has changed dramatically. The worsening of the macroeconomic situation enabled growth in the number of defaults of unrated bonds and difficulties with restructuring. Due to uncertainty and high volatility in financial markets, investors became more risk-averse. The main direction of the change in the structure of the Russian corporate bond market is a substantial increase in the number of investment-grade bonds from 3.5% in 2008 to 34% in 2013.

There has been an upsurge in interest in Eurobond market from Russian corporate sector since the year 2006-2007. Some insight into the reason for this behavior of Russian issuers can be found in the lack of market depth and duration in domestic bond

market. On the other hand, the distinguishing features of Euromarket are mandatory international issuer rating; as a rule, stock-exchange listing; to comply with the requirements of local securities regulators (e.g. UKLA); the presence of covenants in indenture agreements including cross-default; and the strict disclosure requirements. Additionally, it is considered that Eurobond issue is qualified as a liquid asset if its amount is higher 500 million USD. Obviously, it can be asserted that issuing such financial instrument as Eurobond is available for large companies with relatively high level of financial stability.

< insert Table 2 here >

Table 2 presents the distribution of 160 Eurobonds issued by Russian companies and the average level of basic bond characteristics through time. According to Cbonds.ru, during the period of observation, the total volume of outstanding Eurobonds issues accounts for 99.8 billion USD, which seems comparable to the domestic bond market in size. External corporate bond debt increased considerably in 2012. As opposed to the domestic corporate bond market, the volume of outstanding bank Eurobonds is less than the volume of Eurobonds floated by nonfinancial companies. The number of outstanding Russian corporate Eurobond issues exceeded 40 in 2013 compared with 25 issues in 2008. Borrowings were mostly denominated in US dollars (134 issues out of 160, worth a total of 83.2 billion USD). However, Russian companies borrowed by means of Eurobonds in euros, pounds, Swiss francs, new Israeli shekels, and Russian rubles.

Russian corporate borrowers placed their Eurobonds on the same five stock exchanges. The Irish Stock Exchange retained its leading position in terms of the number of Eurobond placements. Russian corporate borrowers' interest in Eurobond placements on the Irish Stock Exchange was justified. Despite the issuers' comparable underwriting expenses, the total cost of placement on the Irish Stock Exchange together with other flotation costs (listing application fees, tranche listing fees, etc.) may be lower than the cost of flotation on the London Stock Exchange, which also remains popular among Russian issuers. Moreover, companies established in Ireland for the purpose of floating securities on the local stock exchange benefit from the country's lower taxes.

Global investors' persistent interest in Russian securities in the period of observation contributed to the relatively low cost of borrowing for Russian companies, while the average term of borrowed funds increased further from 4.5 years in 2008 to 6.4 years in 2013. In 2009 as well as in the second half of 2011, the negative performance of the international financial markets and the over-indebtedness of some European countries encouraged investors to shift their preferences towards less risky instruments. As a result, during 2009 and 2011, the share of short-term (less than one year) bonds increased to 25% and 17%, respectively (Figure 2). At the same time, a certain number of Rus-

sian corporate issuers, including borrowers with below-investment-grade ratings, were able to raise funds for a term of 10 years.

< insert Figure 2 here >

The main variable of interest is the inclusion of covenant clauses in bond indentures. Therefore, we have manually collected and analysed 654 prospectuses of Russian corporate bonds and 160 indentures of Eurobonds issued by Russian overseas special purpose vehicles (SPVs). In Tables 1 and 2, we report the data on the mean number of covenants per issue for the Russian and Eurobond markets, respectively. We obtained this information from Cbonds.ru.

3.2. The firm-year sample

Because our objective is to examine the relations between corporate financial and investment policy and covenants, we also create a firm-year panel database that matches the Cbonds issue data to issuers' financial data reported in financial statements.

We start by using the initial sample of 654 domestic bond and 160 Eurobond issues reported in Table 1 and Table 2 to create a firm-year panel of bond issues. We trace individual bond issues to their issuing firm and then track the firm's portfolio of bond issues over the 2008-2013 period by adjusting issue features (maturity, coupon rate, offering yield, and covenant provisions) to the portfolio. We then match these data to the firm's financial characteristics. Requiring that firms have non-missing values for the dependent and independent variables, we exclude several companies with missing financial reports. The final panel consists of 1,174 firm-year observations of 200 different firms over the period from 2008 to 2013. This is a unique sample because detailed information on covenant protection is not publicly available.

< insert Table 3 here >

Table 3 presents the sample distribution by the industries and by sectors we use in our analysis. Regarding the number of issuers, the dominant industries are the following: power (the largest issuers: Atomenergoprom, FGC UES, RusHydro); construction and development (Glavnaya Doroga, LSR Group, Western High Speed Diameter); engineering (Borets, OPK Oboronprom, Power Machines, United Aircraft Corporation). Among 200 firms, 69 have outstanding Eurobonds. Moreover, 54 of them issued Eurobonds during the period of observation, and 29 issuers placed their public debt on both markets.

3.3. Covenant index and variables

In order to capture covenant protection, we use a covenant index in our analysis. Index construction has been used as a promising methodology in recent research to capture the strength of the protection of the total covenant set of a bond issue (Billett et al., 2007; Bradley and Roberts, 2004; Chava et al., 2004; Wei, 2005). One possibility is to follow the method of Bradley and Roberts (2004) by counting the number of covenants included in each contract. We obtain this information from Cbonds.ru. We have manually analysed the prospectuses of Russian corporate bonds and the indentures of Eurobonds issued by Russian firms. However, this method ignores the probable correlations among the covenants, suggesting complementary effects between different covenants, especially those from the same type. To partially solve this problem, we implement the method of Billet, King and Mauer (2007). We use seven covenant groups (see Table A in the Appendix) to create a firm-year index of covenant protection. We obtain this information from Cbonds.ru. In our preliminary results, for an issuing firm in a given year, we start by creating a variable that equals 1 if at least one bond issue in its debt portfolio has the given type of covenant and zero otherwise. Afterwards, we sum the indicators and divide by seven (the maximum number of types) to create a covenant protection index. By definition, the index ranges between 0 (no covenant protection) and 1 (maximum covenant protection). We assume that all types of covenants are equally important in restricting firm behaviour, and therefore, a higher index value means more covenant protection.

< insert Table 4 here >

Table 4 reports the frequency of covenant usage for the initial sample of Russian corporate bonds. Covenant protection on the Russian corporate bond market remains steadily low. Thus, the mean of the index scarcely reached 0.18 in 2009, and 50% of the sample debentures have only one covenant clause in the indenture agreement. As a rule, so-called "boiler plate" covenants are included in general terms, but their presence does not play a significant role in restricting corporate financial and investment policy. Accounting-based covenants are registered as single cases. Between 10% and 25% of Russian corporate bond issues do not offer any restrictive covenants. As a result of the volatility in financial markets and a relatively weak institutional environment, direct constraints on an issuer's behaviour are difficult to enforce and are likely to be inefficient ex post. Consequently, firms are likely to desire flexibility, and potential investors are unlikely to value protective covenants.

< insert Table 5 here >

Interestingly, the results regarding the use of covenants in Russian corporate Eurobonds are strikingly different (Table 5). The number of covenant clauses in Eurobond indenture agreements varies from 1 to 22, indicating that all issuers of Russian corporate Eurobonds include covenants in their debt contracts. In this case, the index fluctuates from 0.58 in 2008 to 0.59 in 2013. Furthermore, 50% of Eurobond issues contain at least eight covenants from four different groups. In general, the difference in the level of development between the domestic financial market and the Eurobond market defines the financial contracting features, including covenant provisions.

To test our hypotheses, we define four types of variables: (*i*) covenant protection variables, (*ii*) issue-specific variables, (*iii*) firm-specific variables, and (*iv*) market variables (Table 6). The definitions and sources of each variable are shown in Table B in the Appendix.

< insert Table 6 here >

The first group of variables consists of three covenant indexes, one for all the issues (*Covindex*), one for the Russian issues only (*CovindexR*), one for Eurobond issues only (*CovindexE*), and three dummy variables. *DummybondR* and *DummybondE* are dummy variables that are set to 1 if a firm places bonds on the Russian domestic or Eurobond markets, respectively, and 0 otherwise. Additionally, we use *DummyE*, which takes the value of 1 if a firm experienced Eurobond placement (i.e., a firm has outstanding Eurobonds) and 0 otherwise. The second group of variables consists of two bond-specific factors: *Maturity* and *Yield*. *Maturity* measures the weighted average maturity in the years of a firm's bond portfolio issued in a certain year. The choice of debt contract terms including maturity and covenant provisions can be used to reduce adverse selection and moral hazard costs or to signal a firm's quality when information asymmetry about its future prospects exists. In highly asymmetric information environments, firms favour the issuance of short-term debt or debt with protective covenants because such provisions promote a reduction in agency costs. To this extent, we expect short-term debt and covenant clauses to be substitutes for one another, and therefore, the coefficient of maturity is predicted to be positive. As a proxy for the cost of debt, we use *Yield*, the weighted average nominal yield at maturity of a firm's bond portfolio issued in a certain year, obtained from the Cbond database.

With respect to firm-specific factors, we include four proxies as characteristics of issuers' risk profiles (leverage, size, growth opportunity and rating) and investment. We compute all variables on the basis of firms' financial statements, which were taken from the information disclosure system Interfax.

Highly leveraged firms have more incentive for risk-shifting behaviour. In order to test the predicted interdependency between borrowers' financial risk and protective covenants, we use *Leverage*, the ratio of the firm's total debt to the firm's book value

of assets similarly to Bradley and Roberts (2004), Paglia and Mullineaux (2006), and Park, Wang and Zou (2013). Nevertheless, an extensive body of empirical research (Billett et al., 2007; Correia, 2008; Frankel et al., 2008) computes the proxy for financial leverage as the total debt divided by the book (or market) value of equity. We focus on the first method mainly because some firms in our panel have accumulated losses from prior years, which, according to accounting standards, provide negative equity in their balance sheet. To overcome the problem of a negative sign for leverage, total assets instead of equity are used as the denominator for leverage.

Additionally, in order to achieve the goal of finding evidence of a relation between covenant protection and a firm's risk profile, we compute the firm's size (*Size*) and growth opportunity (*Growth*). Conventional wisdom on measuring a firm's size from empirical evidence of the agency theory of covenants is to use the log of the market cap as a proxy (Adam and Goyal, 2008; Bradley and Roberts, 2004; Nash et al., 2003). In consideration of the fact that a significant number of companies on our panel are not publicly traded companies and their shares do not have a public market price, we choose to determine the issuer's size as a logarithm of the firm's book value of assets. For the same reason, we evaluate growth opportunity with a backward-looking measure of sales growth computed as $\log Sales_t - \log Sales_{t-1}$ using the natural logarithm of sales revenue in years t and t-1.

Because shareholder–bondholder conflicts are more severe when debt is risky and because liquidity risk is more important for lower-quality firms, we might expect that the likelihood of financial distress affects the offering yield of bonds. We use issuer credit ratings as a proxy for financial distress risk. We focus on Moody's and S&P credit ratings. We structure the rating using three different dummies in the following way: (*i*) investment grade (*dummyrating1*) – bonds that have Standard and Poor's and Moody's credit ratings over BBB-(Baa3); (*ii*) below investment grade (*dummyrating2*) – bonds with credit ratings less than BB+(Ba1) and (*iii*) bonds with no ratings or withdrawn international ratings (*dummyrating3*).

Because we test how covenant intensity affects a firm's investment policy, the measurement of investment expenditures is a crucial step in our analysis. Following recent work such as Niskanen and Niskanen (2004), Chava and Roberts (2008), and Nini, Smith and Sufi (2012), we gauge fixed investment (*Investment*) as annual capital expenditures divided by the average book value of assets. We obtain capital expenditures as the expenditures on property, plant, and equipment (PPE) reported in cash flow statements.

Finally, to control for systemic credit risk, we compute credit spread (*Creditspread*) as the difference in yield between corporate bonds and a risk-free credit benchmark, in our case, Russian Government bonds (OFZ). To control for macroeconomic conditions, we use GDP, measured as the per cent rate of increase in gross domestic product (*GDP*).

4. Methodology and empirical analysis

The tests of the hypotheses are conducted using linear models estimated through ordinary least squares. In all of the models, we pooled the data across years for individual firms. The nature of the data allowed heteroskedasticity to arise in the models originating from the dependence of individual observations across time. That is, the observations are independent across groups (clusters) but not necessarily within groups. Hence, the inference is based on a matrix of variance and covariance that allows for intragroup correlations, relaxing the usual requirement, i.e., we used within-firm cluster standard error adjustments[1].

With the first hypothesis, we want to test the assumption related to the use of covenants as protection against the risk of the issue. As discussed in Section 2, we identify the three most important sources of risk in a bond issue: (*i*) *Maturity* is the maturity of the bonds in years, (*ii*) *Size* is the natural logarithm of the assets of the firm, and (*iii*) *Growth* is the time difference in the natural logarithm of the sales. The model we test is thus the following:

$$CP_{i,t} = \alpha + \beta' RISK_{i,t} + \gamma' X_{i,t} + \sum_{s=2}^{5} \varphi_s \times sector_s + \varepsilon_{i,t} \qquad (1)$$

where $\varepsilon_{i,t}$ is assumed to be clustered in N groups, with N the number of firms in the sample[2], and X is the set of control variables. We test the model using two different specifications of the dependent variable covenant protection (CP): a covenant index for all of the issues ($Covindex$) and one for the Russian issues only ($CovindexR$). The empirical results are shown in Table 7, column (1) and column (2), respectively.

< insert Table 7 here >

The F-test leads us to reject the null hypothesis of jointly null coefficients. The values of corrected R^2 confirm that the explanatory power of the models is good. The sign of the *Maturity* variable is as expected, the higher the maturity, the higher the risk of the bond, and the higher the covenant protection by the market, but the sign of the *Size* variable in the second specification contradicts previous results in the literature

[1] Note that we do not use the Huber/White/sandwich estimator of variance proposed by White (1980) for our baseline specification given that it is not able to relax the assumption of the independence of the observations.

[2] The robust estimator of variance is $\hat{\nu} = \hat{V}\left(\sum_{k=1}^{N} \mathbf{u}_k^{(N_k)\prime} \mathbf{u}_k^{(N_k)}\right)\hat{V}$, where $\hat{V} = \left(-\partial^2 \ln L / \partial \beta^2\right)^{-1}$ is the conventional estimator of variance and $\mathbf{u}_k^{(N_k)}$ is the contribution of the k-th firm to $\partial \ln L / \partial \beta$.

(Bradley and Roberts, 2004; Malitz, 1986; Nash et al., 2003). Assuming that larger firms have more debt offerings, they are more likely to include covenants that can reduce risk and make the bonds more attractive for investors. Moreover, due to the lack of variety in the types of covenants used in the Russian financial market and the weak institutional environment, we suppose that large firms could have incentives to offer more covenant protection to their bondholders without a significant restriction of their ability to make future investment and financial decisions. This supposition is also consistent with the evidence provided by Niskanen and Niskanen (2004) that large firms are more likely to have covenants in their loan contracts. Furthermore, the authors examine the use and determinants of covenants in Finnish corporate loans, which are defined by weak covenant protection (only 72 out of 642 loans include at least one covenant), as well as the Russian domestic bond market. Additionally, the low level of external investor protection in the Russian institutional framework accompanied by developing internal corporate governance in large companies encourages them to include covenant protection in their indenture agreements. This is important in situations of uncertainty and high volatility in financial markets. Regarding the control variables, the significance of *dummybondE* in both of the specifications indicates that issuance in the Eurobond market has an important role in determining covenant protection. We will analyse this aspect in more detail in the next hypothesis.

With the second hypothesis, we aim to test the impact of issuing a bond in the Eurobond market on covenant protection in the Russian market using the following model:

$$CP_{i,t} = \alpha + \beta \times CPE_{i,t} + \gamma' X_{i,t} + \sum_{s=2}^{5} \varphi_s \times sector_s + \varepsilon_{i,t} \tag{2}$$

We use two different independent variables for covenant protection in the Eurobond market *CPE*: *CovindexE*, a covenant index for Eurobond issuers, and a dummy (*dummybondE*) if the firm has outstanding Eurobonds. We test the model using two different specifications of the dependent variable covenant protection (*CP*): a covenant index for all of the issues (*Covindex*) and one for Russian issues only (*CovindexR*). The first specification regards firms that issue a bond in the sample period, whereas the second regards firms that issue a bond in the Russian market. These empirical results are indicated in Table 8, column (1) and column (2), respectively. In column (3), we report the regression (2) of Table 7 with a different ordering of the variables to provide a better analysis of the second hypothesis.

< insert Table 8 here >

Again in this case, the *F*-test leads us to reject the null hypothesis of jointly null coefficients. The positive coefficient of *CovindexE* in specification (1) seems to indicate

that the protection given by covenants in the Eurobond market does not transfer to the Russian market. This result can be partially derived from the construction of the *Covindex* in cases of contemporaneous issues in the Russian and Eurobond markets, indicating higher protection in the Euro market compared to the domestic market. If we look at the results in the remaining two specifications, columns (2) and (3), in which we eliminate the influences of index construction and of the different value of protection in the two markets, the result will be confirmed. If a firm has outstanding Eurobonds (*dummyE*), the covenant protection required for an issue in the Russian market will be higher compared to a firm without outstanding Eurobonds. This effect will be greater if the firm issues contemporaneously in the two markets as indicated by the coefficient of *dummybondE* in specification (3). These results seem to indicate that only the risk of a new issue in the Eurobond market and not the protection given by the covenant will be perceived in the domestic market. Russian bondholders ask for covenant protection similar to that of bondholders in the Eurobond market in order to have the same rights in the case of technical default. In other words, if a firm will be in technical default for a Eurobond issue, the European bondholders have the right to ask for a renegotiation of the bond or to ask for an anticipated refund. The only possibility for Russian bondholders to have the same rights is to increase the covenant protections for domestic issues in order to obtain technical default for Russian bonds. Regarding the control variables, the result we obtain for the rating is consistent with the theoretical literature on covenant protection. If the rating of a firm is below investment grade (*dummyrating2*), the level of protection must be higher.

With the third hypothesis, we test the cost-contracting hypothesis of Smith and Warner (1979). The two authors argue that because covenant restrictions are costly to a firm, they must confer some benefit in the reduction of agency costs, which translates into a lower cost of debt. This result has been found in some recent empirical papers (Chava et al., 2010; Reisel, 2014; Wei, 2005). The following is the model we test:

$$Yield_{i,t} = \alpha + \beta \times CP_{i,t} + \gamma' X_{i,t} + \sum_{s=2}^{5} \varphi_s \times sector_s + \varepsilon_{i,t} \tag{3}$$

where we use three specifications for covenant protection *CP*: covenant protection for all bond issues (*Covindex*), covenant protection for Russian issues (*CovindexR*) and covenant protection for Eurobonds issue (*CovindexE*). The empirical results are shown in Table 9, column (1), column (2) and column (3), respectively.

< insert Table 9 here >

The *F*-test leads us to reject the null hypothesis of jointly null coefficients, and the values of corrected R^2 confirm that the explanatory power of the models is good. The signs we obtain are as expected. The higher the covenant protection, the lower the

overall cost of debt for the firm, as indicated with the negative sign of *Covindex* in column (1) and of *CovindexE* in column (3). This result is consistent with the CCH and the available empirical examination of the agency cost approach. This result seems to be absent from the Russian market, as indicated by the lack of significance of the variable *CovindexR* in column (2). Regarding the control variables, the signs we found are as expected. Size (*Size*) has a negative impact on the cost of debt (but not on the risk, as in the first and second hypotheses). If the firm is not rated or if a rating was withdrawn (*dummyrating3*), the yield will be higher. The non-significance of the variable *CovindexR* in column (2) together with the importance of the absence of the rating for increasing the cost of debt for Russian issues seems to be consistent with the outcomes of the studies by Zhang and Zhou (2013) and Tanigawa and Katsura (2013). In both papers, the authors register that the effect of covenants on yield differs for bonds with different credit ratings. Thus, average yield spreads are smaller when the protective power is stronger within investment-grade bond classes. However, for non-investment-grade bonds, protective power does not conform to the average yield spread. Because the majority of issuers (over 70%) in the Russian domestic debt market have below-investment-grade ratings or are not rated, we assume that investors interpret covenant provisions in indenture agreements as a signal of high risk and require a higher yield to compensate for the risk inherent in the bonds.

With the last hypothesis, we test the relation between investment and covenant protection. In particular, we want to test the theoretical results by Bazzana and Broccardo (2013). They demonstrate that the firm selects the covenant strength in a bond issue to balance the loss of flexibility against a reduction in the cost of debt. Therefore, we expect a non-linear relation between investment and covenant protection, as shown by the following model:

$$Investment_{i,t} = \alpha + \beta_1 \times CP_{i,t} + \beta_2 \times CP_{i,t}^2 + \gamma' X_{i,t} + \sum_{s=2}^{5} \varphi_s \times sector_s + \varepsilon_{i,t} \qquad (4)$$

where we use two specifications for covenant protection *CP*: covenant protection for all bond issues (*Covindex*) and covenant protection for Russian issues (*CovindexR*). The empirical results are shown in Table 10, column (1) and column (2), respectively. The dependent variable (*Investment*) is the capital expenditure scaled by average assets.

< insert Table 10 here >

Even in this regression, the *F*-test leads us to reject the null hypothesis of jointly null coefficients. The coefficients of the regression with firm years and bond issues in column (1) are not significant because the covenant protection in the Eurobond market is not decided by the firm but imposed by the market. If we reduce the sample to only firm-years with a bond issue in the Russian market, the coefficient of the regression be-

comes significant and with the expected sign, as shown in column (2). The inclusion of covenants in the domestic market can increase the probability of issuing the bond, but with higher covenant protection, the flexibility of the firm will be reduced, with a negative impact on investment. This provides evidence supporting the research of Bazzana and Broccardo (2013), which models that optimal covenant tightness is affected by a firm's characteristics. Regarding the control variables, the signs are as expected: a negative impact of *Leverage* and a positive impact of *GDP*.

5. Robustness checks

The empirical validation of hypothesis 1 and hypothesis 2 is presented in the previous section using a linear model estimated with the ordinary least squares criterion. A necessary robustness check that has to be implemented is related to the nature of the dependent variable we use. Indeed, *Covindex* and *CovindexR* are indicators that can assume only seven ordered equi-spaced values. Under this condition, an ordered logit model (Ologit) can be considered more appropriate because it is able to use the structure existing in the data given by the ordering of categories and to take into account their equi-spaced nature (*Microeconometrics. Methods and Applications*, 2005).

< insert Table 11 here >

Table 11 presents the results of the robustness checks proposed using the ordered logit specification of the regression with the same list of independent and control variables used in Table 7. The Wald-Chi statistic confirms the goodness of fit of the model for both *Covindex* and *CovindexR*, rejecting the hypothesis of jointly null coefficients. The model estimated in column (1) presents seven significant values for the different portions of the distribution (categories), i.e., the categories do not overlap. The main result concerning the sign and the significance of the independent variable *Maturity* is confirmed, with the additional significance of the variable *Size*. The model estimated in column (2) presents four non-overlapping groups. Note that in this case, we have only four categories because for this group of firms – issuers in the Russian market – only four values of the indicator are observed. In this case, a comparison of the results of OLS and Ologit reveals strong similarities in both the size of the coefficient and its significance. The independent variables *Maturity* and *Size* are always positive and significant, confirming the main results of Table 7. Moreover, the results for the control variables, year and sector dummies follow the patterns highlighted in Table 7.

Regarding hypothesis 2, the Ologit model results (Table 12) confirm the robustness of our estimations, and the Wald Chi test rejects the hypothesis of jointly null coefficients.

< insert Table 12 here >

The first model in column (1), which relates to the investigation of the relationship between *CovindexR* and *CovindexE*, confirms the main result: a positive and significant correlation between the two variables. The sign and significance of the control variables remain consistent with the results of Table 8. The second model in column (2) also confirms the positive relationship between *CovindexR* and *dummybondE*. The sign and significance of the control variables are consistent with the results of Table 8. The last model in column (3) shows that a history of issuance in the Russian market does not count as a determinant of the number of covenants used on bonds, as measured by the variable *CovindexR*. In this case, the control variables again maintain sign and significance consistent with the results in Table 8.

Table 13 reports the main results of the robustness checks of the evidence proposed in Table 9 about the empirical validation of hypothesis 3.

< insert Table 13 here >

First, in columns (1) and (2), we respectively split the variables *Covindex* and *CovindexR* using dummies for every category of covenants as in Table A in the Appendix. Every dummy is equal to one if at least one covenant is present in the correspondent category. The results remain consistent, indicating that for the cost of the issue, the most important covenant category is the fifth, Specifying bonding activities. In the second robustness check, computed in columns (4) and (5), we replace the variable *GDP* with a control for the Year with no change in the results compared to Table 9. Finally, we add two regressions to columns (3) (with *GDP*) and (6) (with control for Year) to verify the relation between yield and covenant protection for firms issued in the Eurobond market. Mainly because of the limited number of observations, 62, we do not find significant coefficients for the independent variables. In all six specifications, the sign and significance of the control variables remain consistent with the results in Table 9.

Finally, Table 14 reports the main results of the robustness checks regarding the empirical validation of the fourth hypothesis.

< insert Table 14 here >

Firstly, we change the control variable *GDP* to a control for years in columns (1) and (4) without finding any change in the sign or significance of the independent variables. Next, we drop the square of the independent variable in columns (2) and (5), and the non-significant results of *Covindex* and *CovindexR* confirm the presence of non-linearity in the relation. Finally, we add the lagged independent variable in columns (3) and (6) to verify if the past values have an effect on the relation. The sign and signifi-

cance of the control variables in all six specifications remain consistent with the results in Table 10.

6. Conclusion

The conflict of interest between bondholders and shareholders results in actions undertaken by managers that have a negative impact on a firm's value. One way to mitigate these conflicts is to include appropriate covenants in debt contracts. However, covenants may reduce flexibility in corporate policy by restricting future financing and investment decisions. Therefore, firms optimally trade off the cost of restrictions imposed by covenants with the lower cost of debt due to reduced agency risk.

Using a hand-collected database of Russian firms that issue bonds both in the domestic and Eurobond markets, we test four hypotheses. Firstly, we find that as expected, the higher the covenant protection, the higher the risk of the issue for both bond and firm characteristics. We also verify that covenant protection in the Eurobond market has a negative impact for those firms that issue in the Russian market, noting an increase in covenant protection. With the third hypothesis, we find a negative relation between the overall cost of a bond and its covenant protection. Lastly, we find a non-linear relation between investment and covenant protection for firms that issue in the Russian market, indicating a possible optimal covenant protection level for a bond issue.

All of these results suggest some policy implications. Firstly, Russian firms should issue more in the Eurobond market because they can obtain significant benefit with a reduction in yield. Perhaps upon the development of the Russian debt market and as soon as the practice of including covenants in credit contracts becomes more widespread, the CCH will be defined as a characteristic of the domestic bond market as well. This would allow investors to manage and optimise risk and profitability, and it would enable borrowers to receive funds minimising the weighted average cost of capital. The negative impact of covenant protection in Eurobonds on the domestic Russian market confirms the statement that the mechanism of debtholders' interest protection in Russia is realised weakly. This suggests an urgent need to reduce information asymmetry through stronger transparency requirements on debt issuers in Russian capital markets. Secondly, given the importance of covenants in the control of risk, Russian rating agencies could include a careful analysis of the covenant protection contained in bond indentures as a criterion in credit rating assessments. Finally, our results could help Russian issuers to design optimal covenant sets to include in debt indenture agreements that take into account the need for flexibility in their future investment decisions.

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Tables

Table 1
Issue characteristics: domestic corporate bond market

This table presents the issue characteristics of domestic corporate bond for all the years of the sample divided by (*i*) issue characteristics, (*ii*) rating, (*iii*) status, (*iv*) type of coupon.

Variables	Issuance period						Full
	2008	2009	2010	2011	2012	2013	sample
Firm	65	56	64	61	58	62	237
Issues	84	93	104	157	99	117	654
Mean of issues per firm	1.3	1.7	1.6	2.6	1.7	1.9	2.8
Mean of covenant per issue	0.8	1.8	1.8	1.1	1.5	1.2	1.35
Issue characteristics							
Yield (%)	12.98%	14.82%	9.65%	8.95%	10.09%	9.79%	10.88%
Amount (mln rub)	300,142	706,173	482,113	617,478	493,493	859,894	3,459,291
Amount per issue (mln rub)	3,573.1	7,593.3	4,635.7	3,908.1	5,035.6	7,349.5	5,289.4
Aver. time to maturity (yrs)	3.41	4.64	4.92	4.54	6.42	8.99	5.55
Average coupon rate (%)	12.47%	14.19%	9.21%	8.79%	9.83%	9.48%	10.48%
Rating							
Not rated	73.81%	35.48%	39.42%	25.48%	30.30%	32.48%	37.31%
Withdrawn	9.52%	6.45%	9.62%	0.64%	44.44%	3.42%	4.43%
Below investment grade	13.10%	24.73%	37.50%	23.57%	2.02%	29.91%	28.90%
Investment grade	3.57%	33.33%	13.46%	50.32%	23.23%	34.19%	29.36%
Status							
Early redeemed	8.33%	11.83%	4.81%	5.73%	1.01%	0%	5.05%
Outstanding	5.95%	47.31%	43.27%	62.42%	98.99%	100%	62.23%
Redeemed	82.14%	40.86%	50.96%	31.85%	0%	0%	32.11%
Redemption default	3.57%	0%	0%	0%	0%	0%	0.46%
Restructured	0%	0%	0.96%	0%	0%	0%	0.15%
Type of coupon							
Fixed	100%	86.02%	97.12%	95.5%	90.91%	85.47%	92.27%
Floating	0%	13.98%	2.88%	4.5%	9.09%	14.53%	7.73%

Table 2

Issue characteristics: Russian corporate Eurobonds market

This table presents the issue characteristics of Eurobonds for all the years of the sample divided by (*i*) issue characteristics, (*ii*) rating, (*iii*) status, (*iv*) type of coupon.

Variables	Issuance period						Full
	2008	2009	2010	2011	2012	2013	sample
Firm	17	11	18	10	16	26	61
Issues	25	27	24	18	25	41	160
Issues per firm	1.5	2.5	1.3	1.8	1.6	1.6	2.6
Mean of covenant per issue	7.6	7.9	7.8	7.8	9.5	9.3	8.5
Issue characteristics							
Yield (%)	10.51%	8.73%	6.83%	6.32%	5.11%	4.84%	6.81%
Amount (mln usd)	14,075	12,781	12,952	11,440	18,710	29,792	99,751
Amount per issue (mln usd)	563.01	473.37	539.70	635.56	748.41	726.65	623.45
Aver. time to maturity (yrs)	4.54	2.99	6.09	6.31	5.33	6.40	5.31
Average coupon rate (%)	10.18%	9.13%	7.01%	6.51%	5.58%	5.06%	7.04%
Rating							
Not rated	24%	3.70%	16.67%	0%	8%	4.88%	9.38%
Withdrawn	28%	7.41%	8.33%	0%	48%	0%	6.88%
Below investment grade	28%	33.33%	50.00%	66.67%	40%	43.90%	43.75%
Investment grade	20%	55.56%	25.00%	33.33%	4%	51.22%	40.01%
Status							
Early redeemed	4%	11.11%	16.67%	0%	0%	0%	5.00%
Outstanding	16%	33.33%	75.00%	83.33%	72%	95.12%	64.38%
Redeemed	60%	55.56%	8.33%	16.67%	24%	4.88%	26.88%
Redemption default	20%	0%	0%	0%	4%	0%	3.75%
Type of coupon							
Fixed	100%	92.59%	91.67%	94.44%	100%	100%	96.88%
Floating	0%	7.41%	8.33%	5.56%	0%	0%	3.13%

Table 3
Number of firms

This table presents the industry and sectors distribution of all the firms of the sample that issue a bond during the years of the sample, in domestic or Eurobond market.

Industry	Number of firms	Sectors	Number of firms
Agriculture	5	Agriculture	5
Construction materials production	5	Construction	27
Construction and development	22		
Mining industry	10	Mining	10
Communication	8	Services	36
Retail	14		
Transportation	14		
Oil and gas service companies	1	Manufacturing	122
Textile industry	1		
Non-ferrous metals	3		
Food industry	9		
Ferrous metals	11		
Chemical and petrochemical industry	13		
Oil and gas	15		
Engineering industry	21		
Other sectors	22		
Power	26		
Total	200	5	200

Table 4

Covenant and covenant index: Domestic corporate bond market

This table presents the descriptive statistics of the number of covenants and of the covenant index for the bond issue in domestic bond market for all the years of the sample. Covenant index is computed as the number of covenant groups included in indenture agreements divided by seven.

Variables	Issuance period						Full
	2008	2009	2010	2011	2012	2013	sample
Number of covenants							
Mean	0.8	1.8	1.8	1.1	1.5	1.2	1.35
Min	0	0	0	0	0	0	0
10% percentile	0	0	0	0	0	0	0
25% percentile	0	0	1	0	1	1	0
50% percentile	1	1	1	1	1	1	1
75% percentile	1	3	3	1	3	1	3
90% percentile	2	3	3	3	3	3	3
Max	4	9	5	6	6	5	9
Covenant index							
Mean	0.1	0.18	0.19	0.12	0.17	0.14	0.14

Table 5

Covenant and covenant index: Eurobond market

This table presents the descriptive statistics of the number of covenants and of the covenant index for the bond issue in Eurobond market for all the years of the sample. Covenant index is computed as the number of covenant groups included in indenture agreements divided by seven.

Variables	Issuance period						Full
	2008	2009	2010	2011	2012	2013	sample
Number of covenants							
Mean	7.7	8.0	7.8	7.8	9.5	9.7	8.67
Min	1	1	2	1	2	2	1
10% percentile	4	1	2	4	4	4	3
25% percentile	4	4	4	4	5	4	4
50% percentile	9	9	8	8	8	10	8
75% percentile	10	10	11	12	13	13	12
90% percentile	12	12	14	13	19	16	14
Max	13	22	15	18	20	21	22
Covenant index							
Mean	0.59	0.53	0.53	0.57	0.66	0.664	0.59

Table 6
Summary statistics

This table presents the summary statistics of all the variables used in the empirical test. The definitions of the variables are showed in Table B in the Appendix.

Variable	#	Mean	Std. dev.	Min	Max
Covenant protection					
Covindex	360	0.2619	0.2493	0	1
CovindexR	295	0.1588	0.1134	0	0.7142
CovindexE	77	0.5770	0.2954	0	1
dummybondR	1,174	0.2512	0.4339	0	1
dummybondE	1,174	0.0655	0.2476	0	1
dummyE	1,174	0.2614	0.4396	0	1
Issue characteristics					
Maturity	360	5.2684	3.4259	0.3562	33.1661
Yield	360	10.0714	3.6380	0	19,3
Firm characteristics					
Leverage	1,138	64.3322	32.5752	0.0716	297.8683
Size	1,139	17.0835	2.1105	7.6029	23.2534
Growth	912	0.1228	0.9569	-7.6634	6.7205
Investment	1,139	6.5512	8.3393	0	80.2146
dummyrating1	1,174	0.0502	0.2186	0	1
dummyrating2	1,174	0.1175	0.3222	0	1
dummyrating3	1,174	0.1388	0.3459	0	1
Market characteristics					
Creditspread	6	3.5643	2.0383	1.9164	6.9652
GDP	6	101.8333	4.4716	92.2	105.2

Table 7
Estimation results: Hypothesis 1

This table presents OLS regression with clustered standard errors results regarding the relation between covenant protection and risk. Specification (1) regards the firms that issue a bond in the sample period. Specification (2) regards the firms that issue a bond in Russian market in the sample period. All variables are defined in Table B. Robust standard errors in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. Control for Sector as indicated.

Dependent variable	(1) Covindex	(2) CovindexR
Independent variables		
Maturity	0.0078**	0.0053**
	(0.004)	(0.003)
Size	0.0071	0.0147***
	(0.007)	(0.005)
Growth	0.0004	0.0065
	(0.008)	(0.006)
Control variables		
dummybondE	0.4228***	0.0679***
	(0.044)	(0.026)
Leverage	0.0000	-0.0000
	(0.000)	(0.000)
dummyrating2	0.0296	0.0501*
	(0.038)	(0.026)
dummyrating3	-0.0402	0.0388
	(0.042)	(0.033)
Creditspread	0.0070	0.0260**
	(0.015)	(0.012)
GDP	-0.0007	0.0079
	(0.007)	(0.005)
Sector	Yes	Yes
Constant	-0.1332***	-0.0474
	(0.051)	(0.031)
Observation	299	248
R-squared	0.588	0.138
F-test	21.24	4.318
	(0.000)	(0.003)

Table 8
Estimation results: Hypothesis 2

This table presents OLS regression with clustered standard errors results regarding the relation between covenant protection in the Eurobond market and covenant protection in the Russian market. Specification (1) regards the firms that issue a bond in the sample period. Specifications (2) and (3) regard the firms that issue a bond in Russian market in the sample period. All variables are defined in Table B. Robust standard errors in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. Control for Sector as indicated.

Dependent variable	(1) Covindex	(2) CovindexR	(3) CovindexR
Independent variables			
CovindexE	0.7808***		
	(0.019)		
dummyE		0.0496*	
		(0.026)	
dummybondE			0.0679***
			(0.026)
Control variables			
Maturity	0.0049**	0.0044*	0.0053**
	(0.002)	(0.003)	(0.003)
Leverage	-0.0002	0.0000	-0.0000
	(0.000)	(0.000)	(0.000)
Size	0.0076	0.0117**	0.0147***
	(0.005)	(0.006)	(0.005)
Growth	0.0092**	0.0083	0.0065
	(0.005)	(0.005)	(0.006)
dummyrating2	0.0582***	0.0556**	0.0501*
	(0.019)	(0.027)	(0.026)
dummyrating3	0.0419	0.0453	0.0388
	(0.026)	(0.033)	(0.033)
Creditspread	0.0153*	0.0239**	0.0260**
	(0.008)	(0.012)	(0.012)
GDP	0.0033	0.0071	0.0079
	(0.004)	(0.005)	(0.005)
Sector	Yes	Yes	Yes
Constant	-0.4093	-0.9181*	-1.0239*
	(0.394)	(0.536)	(0.542)
Observation	299	248	248
R-squared	0.856	0.154	0.138
F-test	199.8	3.327	4.318
	(0.000)	(0.012)	(0.003)

Table 9
Estimation results: Hypothesis 3

This table presents OLS regression with clustered standard errors results regarding the relation between yield and covenant protection. Specification (1) and (3) regards the firms that issue a bond in the sample period. Specification (2) regards the firms that issue a bond in Russian market only in the sample period. All variables are defined in Table B. Robust standard errors in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. Control for Sector as indicated.

Dependent variable	(1) Yield	(2) Yield	(3) Yield
Independent variables			
Covindex	-4.0989***		
	(0.755)		
CovindexR		0.1435	
		(1.323)	
CovindexE			-3.8495***
			(0.629)
Control variables			
Maturity	0.0202	-0.0582	-0.0124
	(0.046)	(0.040)	(0.043)
Leverage	0.0110	0.0152*	0.0111
	(0.009)	(0.009)	(0.009)
Size	-0.3491***	-0.2810***	-0.4244***
	(0.108)	(0.107)	(0.107)
Growth	0.1072	0.0840	0.0201
	(0.184)	(0.229)	(0.180)
dummyrating2	0.4956	0.4582	0.0801
	(0.407)	(0.335)	(0.381)
dummyrating3	1.1147**	1.3287***	0.6131
	(0.549)	(0.404)	(0.523)
Creditspread	0.6257***	0.3616*	0.4545**
	(0.193)	(0.199)	(0.192)
GDP	-0.1660**	-0.3310***	-0.2190***
	(0.076)	(0.085)	(0.073)
Sector	Yes	Yes	Yes
Constant	31.2761***	46.9361***	38.0160***
	(8.451)	(9.341)	(8.136)
Observation	299	237	299
R-squared	0.585	0.652	0.616
F-test	39.18	35.01	32.35
	(0.000)	(0.000)	(0.000)

Table 10
Estimation results: Hypothesis 4

This table presents OLS regression with clustered standard errors results regarding the relation between investment and covenant protection. Specification (1) regards the firms that issue a bond in the sample period. Specification (2) regards the firms that issue a bond in Russian market in the sample period. All variables are defined in Table B. Robust standard errors in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. Control for Sector as indicated.

Dependent variable	(1) Investment	(2) Investment
Independent variables		
Covindex	10.3475*	
	(6.018)	
Covindex^2	-9.3949	
	(6.986)	
CovindexR		21.5428**
		(9.082)
CovindexR^2		-39.0313**
		(16.009)
Control variables		
Maturity	0.0788	0.1258
	(0.156)	(0.165)
Leverage	-0.0582***	-0.0623***
	(0.020)	(0.021)
Size	0.2059	0.1612
	(0.254)	(0.292)
Growth	0.1600	0.1618
	(0.485)	(0.556)
Creditspread	0.4356	0.9294
	(0.642)	(0.658)
GDP	0.4640*	0.6529**
	(0.272)	(0.287)
Sector	Yes	Yes
Constant	-50.3158*	-70.8211**
	(29.074)	(30.766)
Observation	299	248
R-squared	0.182	0.208
F-test	10.77	8.214
	(0.000)	(0.000)

Table 11
Robustness check: Hypothesis 1

This table presents Ordered Logit results regarding the relation between covenant protection and risk. Specification (1) regards the firms that issue a bond in the sample period. Specification (2) regards the firms that issue a bond in Russian market in the sample period. All variables are defined in Table B. Standard errors in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. Control for Sector as indicated. The thresholds across categories of dependent variables are given by cut_1 to cut_7. We checked and rejected the null hypothesis: cuts_j = cuts_j+1 for each j, i.e. overlapping categories, at 1% significance level.

Dependent variable	(1) Covindex	(2) CovindexR
Independent variables		
Maturity	0.1109**	0.1013*
	(0.048)	(0.056)
Size	0.1715*	0.3097***
	(0.092)	(0.110)
Growth	0.0539	0.1081
	(0.100)	(0.120)
Control variables		
dummybondE	3.9885***	1.2833**
	(0.464)	(0.508)
Leverage	0.0005	0.0023
	(0.005)	(0.007)
dummyrating2	0.2801	0.4876**
	(0.484)	(0.223)
dummyrating3	0.8653***	-0.5332
	(0.314)	(0.621)
Creditspread	0.1438	0.3739
	(0.189)	(0.365)
GDP	0.0199	0.1620*
	(0.080)	(0.093)
Sector	Yes	Yes
cut_1 to cut_7	Yes	
cut_1 to cut_4		Yes
Observation	299	248
Pseudo R-squared	0.207	0.0793
Wald Chi-test	161.1	42.84
	(0.000)	(0.000)

Table 12
Robustness check: Hypothesis 2

This table presents Ordered Logit results regarding the relation between covenant protection in the Eurobond market and covenant protection in the Russian market. Specification (1) regards the firms that issue a bond in the sample period. Specifications (2) and (3) regard the firms that issue a bond in Russian market in the sample period. All variables are defined in Table B. Standard errors in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. Control for Sector as indicated. The thresholds across categories of dependent variables given by cut_1 to cut_7. We checked and rejected the null hypothesis: cuts_j = cuts_j+1 for each *j*, i.e. overlapping categories, at 1% significance level.

Dependent variable	(1) Covindex	(2) CovindexR	(3) CovindexR
Independent variables			
CovindexE	22.7033***		
	(6.352)		
dummybondE		1.2833**	1.2636**
		(0.508)	(0.516)
dummybondR(*t*-1)			-0.2960
			(0.264)
Control variables			
Maturity	0.0993**	0.1013*	0.1035*
	(0.047)	(0.056)	(0.055)
Leverage	-0.0027	0.0023	0.0024
	(0.007)	(0.007)	(0.007)
Size	0.1873*	0.3097***	0.3285***
	(0.102)	(0.110)	(0.110)
Growth	0.1793*	0.1081	0.1102
	(0.104)	(0.120)	(0.120)
dummyrating2	1.2110***	0.9071*	0.9228*
	(0.468)	(0.513)	(0.514)
dummyrating3	0.7687	0.5332	0.5081
	(0.574)	(0.621)	(0.626)
Creditspread	0.3203*	0.4876**	0.4729**
	(0.169)	(0.223)	(0.224)
GDP	0.0874	0.1620*	0.1593*
	(0.074)	(0.093)	(0.094)
Sector	Yes	Yes	Yes
cut_1 to cut_7	Yes		
cut_1 to cut_4		Yes	Yes
Observation	299	248	248
Pseudo R-squared	0.449	0.0793	0.0812
Wald Chi-test	459.3	44.32	45.34
	(0.000)	(0.000)	(0.000)

Table 13
Robustness check: Hypothesis 3

This table presents OLS regression with clustered standard errors results regarding the relation between yield and covenant protection. Specifications (1) and (4) regard the firms that issue a bond in the sample period. Specifications (2) and (5) regard the firms that issue a bond in Russian market only in the sample period. Specifications (3) and (6) regard the firms that issue a bond in Eurobond market in the sample period. The variables Covindex2, ..., Covindex7 used in specifications (1), (2) and (3) are dummies variables = 1 if at least a covenant is present in the correpondent groups of Table A, and zero otherwise (Covindex1 omitted). All the other variables are defined in Table B. Standard errors in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. Control for Year and Sector as indicated.

Dependent variable	(1) Yield	(2) Yield	(3) Yield	(4) Yield	(5) Yield	(6) Yield
Independent variables						
Covindex2	1.1476		1.5013			
	(0.939)		(0.957)			
Covindex3	0.0222	-3.2435	2.8138**			
	(1.070)	(2.248)	(1.189)			
Covindex4	0.4253	0.6618**	-1.0800			
	(0.331)	(0.298)	(0.847)			
Covindex5	-3.0265***	0.1057	-3.0288			
	(0.995)	(1.436)	(3.206)			
Covindex6	-0.0241	-0.2411	-1.5397*			
	(0.342)	(0.409)	(0.850)			
Covindex7	-0.9456		0.1612			
	(1.108)		(1.081)			
Covindex				-4.1313***		
				(0.750)		
CovindexR					0.1483	
					(1.336)	
CovindexE						2.3698
						(2.344)
Control variables						
Maturity	0.0035	-0.0771	0.0807	0.0222	-0.0585	-0.0052
	(0.050)	(0.048)	(0.133)	(0.046)	(0.039)	(0.167)
Leverage	0.0128*	0.0130	-0.0125	0.0111	0.0152*	-0.0071
	(0.008)	(0.008)	(0.013)	(0.009)	(0.008)	(0.011)
Size	-0.3980***	-0.3013***	-0.9843***	-0.3522***	-0.2847**	-0.7653**
	(0.116)	(0.098)	(0.297)	(0.109)	(0.112)	(0.310)
Growth	0.0219	0.1028	0.2026	0.1167	0.0966	0.3105
	(0.180)	(0.227)	(0.262)	(0.183)	(0.227)	(0.235)
dummyrating2	-0.0412	0.4601	-1.1676	0.4788	0.4219	-1.5512
	(0.375)	(0.321)	(1.061)	(0.413)	(0.345)	(1.320)
dummyrating3	0.5340	1.3883***	-2.1660	1.1190**	1.3418***	-3.2584
	(0.501)	(0.403)	(1.780)	(0.551)	(0.402)	(2.208)
Creditspread	0.5223***	0.2905	1.1660**	0.9194***	0.9513***	0.5132*
	(0.196)	(0.207)	(0.440)	(0.108)	(0.091)	(0.302)
GDP	-0.1918**	-0.3572***	0.3459**			
	(0.077)	(0.088)	(0.171)			
Year	No	No	No	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes	Yes	Yes
Constant	35.3016***	50.3230***	-9.7200	13.9691***	12.3568***	21.9958***
	(8.515)	(9.560)	(18.712)	(2.270)	(2.113)	(6.624)
Observation	299	237	62	299	237	62
R-squared	0.614	0.665	0.505	0.587	0.656	0.367
F-test	27.61	29.62	2.764	34.01	30.34	4.520
	(0.000)	(0.000)	(0.025)	(0.000)	(0.000)	(0.002)

Table 14
Robustness check: Hypothesis 4

This table presents OLS regression with clustered standard errors results regarding the relation between investment and covenant protection. Specifications (1), (2) and (3) regard the firms that issue a bond in the sample period. Specifications (4), (5) and (6) regard the firms that issue a bond in Russian market in the sample period. All variables are defined in Table B. Standard errors in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% level, respectively. Control for Year and Sector as indicated.

Dependent variable	(1) Investment	(2) Investment	(3) Investment	(4) Investment	(5) Investment	(6) Investment
Independent variables						
Covindex	11.2893*	2.0312	10.3129*			
	(5.928)	(1.779)	(5.991)			
Covindex^2	-10.5697		-9.4413			
	(6.990)		(7.094)			
Covindex(t-1)			0.2884			
			(1.537)			
CovindexR				23.1089***	5.6894	20.1412**
				(8.842)	(4.423)	(9.151)
CovindexR^2				-41.4068***		-36.5200**
				(15.570)		(15.873)
CovindexR(t-1)						6.9667
						(4.394)
Control variables						
Maturity	0.0593	0.0988	0.0757	0.1066	0.1159	0.0934
	(0.150)	(0.159)	(0.157)	(0.158)	(0.171)	(0.162)
Leverage	-0.0616***	-0.0570***	-0.0583***	-0.0662***	-0.0592***	-0.0636***
	(0.020)	(0.021)	(0.020)	(0.021)	(0.021)	(0.021)
Size	0.1723	0.3261	0.1988	0.1086	0.2850	0.0946
	(0.257)	(0.229)	(0.258)	(0.299)	(0.281)	(0.299)
Growth	0.1110	0.1654	0.1635	0.1197	0.1521	0.1517
	(0.472)	(0.487)	(0.486)	(0.541)	(0.554)	(0.555)
Creditspread	-0.4463**	0.5298	0.4309	-0.3053	0.8655	0.9323
	(0.219)	(0.657)	(0.634)	(0.232)	(0.667)	(0.657)
GDP		0.5025*	0.4615*		0.6603**	0.6442**
		(0.278)	(0.269)		(0.291)	(0.287)
Year	Yes	No	No	Yes	No	No
Sector	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-1.0743	-55.6707*	-49.9393*	-1.4657	-72.5422**	-69.2710**
	(4.509)	(29.848)	(28.572)	(5.227)	(31.174)	(30.737)
Observation	299	299	299	248	248	248
R-squared	0.194	0.174	0.182	0.223	0.194	0.215
F-test	10.23	12.00	10.73	7.389	9.290	7.305
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Figures

Figure 1
Maturity structure of issues.

This figure indicates the maturity structure of the number of outstanding issues in Russian corporate bond market during the years of the sample.

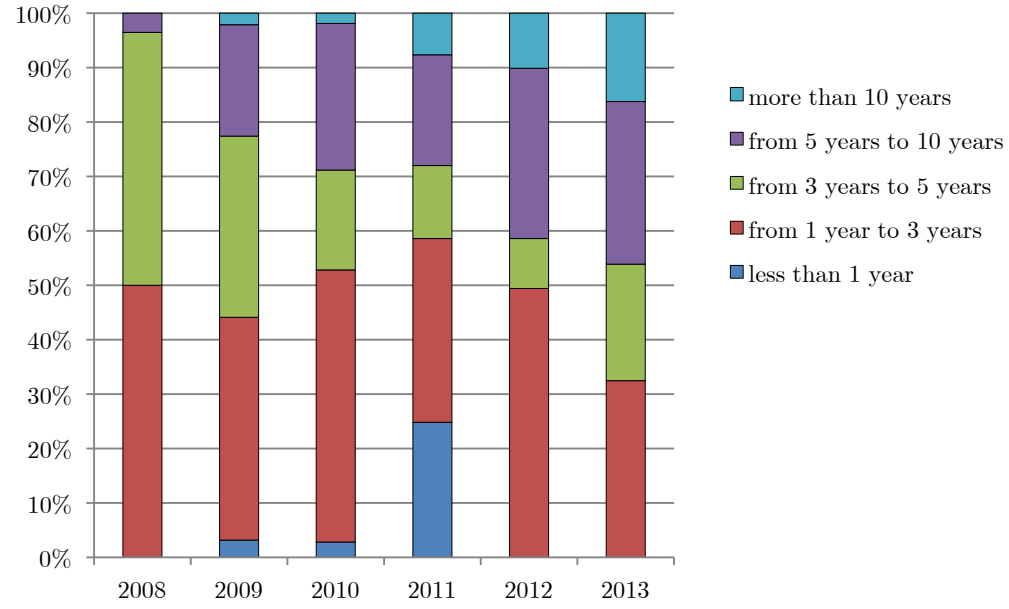
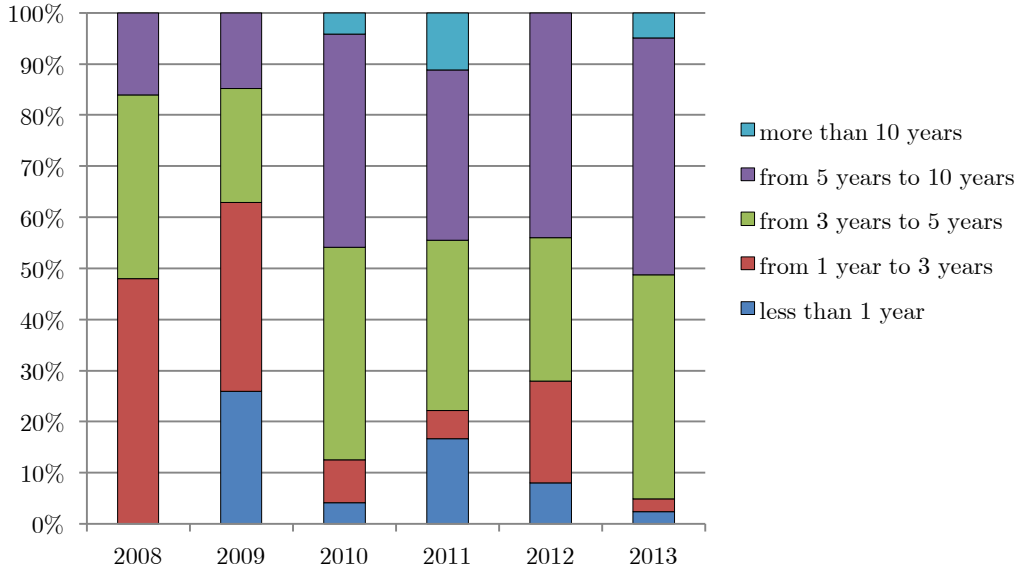


Figure 2
Maturity structure of issues.

This figure indicates the maturity structure of the number of outstanding issues in Eurobond market during the years of the sample.



Appendix

Table A
Types of covenants

Covenants' group	Types of covenants
Restrictions on the investment policy	Restrictions on investment
	Restrictions on the disposition of assets
	Restrictions on a consolidation or merger
	Requirements of the maintenance of assets
Restrictions on dividend payments	
Restriction of financing policy	Limitations on debt and priority
	Limitations on rentals, lease and sale-leaseback
Default-related covenants	Cross default
	Cross acceleration
Specifying bonding activities	Required reports
	Specification of accounting techniques
	Officers' certificate of compliance
	Required purchase of liability insurance
Event-related covenants	Hostile takeover
	Capital structure change
	Rating downgrade
Financial covenants	Coverage ratio
	Leverage
	Net worth
	Current ratio

Table B
Variables definitions and sources

Variable	Definition	Source
Covenant protection		
Covindex	Number of covenant groups included in indenture agreements divided by 7	Cbonds.ru
CovindexR	Covindex for Russian domestic bond issuers	Cbonds.ru
CovindexE	Covindex for Eurobond issuers	Cbonds.ru
dummybondR	Dummy = 1 if the firm places bonds on Russian domestic market in the certain year and zero otherwise	Cbonds.ru
dummybondE	Dummy = 1 if the firm places Eurobonds in the certain year and zero otherwise	Cbonds.ru
dummyE	Dummy = 1 if the firm has outstanding Eurobonds and zero otherwise	Cbonds.ru
Issue characteristics		
Maturity	Maturity in years	Cbonds.ru
Yield	Nominal yield to maturity	Cbonds.ru
Firm characteristics		
Leverage	The ratio of the firm's total debt to the firm's book value of assets	Interfax
Size	Natural logarithm of assets	Interfax
Growth	logSales(t+1)-logSales(t), where logSales(t) and logSales(t+1) are natural logarithm of sales revenue in years t and t -1, respectively	Interfax
Investment	Capital expenditures scaled by average assets	Interfax
dummyrating1	Dummy = 1 if the issuer's credit rating is equal to "investment grade"	Cbonds.ru
dummyrating2	Dummy = 1 if the issuer's credit rating is equal to "below investment grade"	Cbonds.ru
dummyrating3	Dummy = 1 if a firm is not rated or the rating was withdrawn	Cbonds.ru
Market characteristics		
Creditspread	Credit spread of corporate bonds over the average yield of OFZ market	Cbonds.ru
GDP	The percent rate of increase in gross domestic product	World Development Indicators