The voluntary adoption of International Financial Reporting Standards and loan contracting around the world

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Abstract   Using a sample of non-U.S. borrowers from 40 countries during 1997 through 2005, this paper investigates the effect of the voluntary adoption of International Financial Reporting Standards (IFRS) on price and nonprice terms of loan contracts and loan ownership structure in the international loan market. Our results reveal the following. First, banks charge lower loan rates to IFRS adopters than to non-adopters. The difference in loan rates in excess of a benchmark rate between the two groups is about 20 basis points for all loans and nearly 31 basis points for London Interbank Offered Rate (LIBOR)-based loans. Second, banks impose more favorable nonprice terms on IFRS adopters, particularly less restrictive covenants. We also provide evidence suggesting that banks are more willing to extend credit to IFRS adopters through larger loans and longer maturities. Finally, IFRS adopters attract significantly more foreign lenders participating in loan syndicates than non-adopters.

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1 Introduction

A major argument in favor of accounting standards harmonization via International Financial Reporting Standards (IFRS) is that IFRS adoption allows firms easier access to outside capital, particularly by facilitating external financing from international capital markets and cross-border investment flows (for example, Covrig et al. 2007). While previous research has analyzed various effects of IFRS adoption from the perspective of equity holders (for example, Covrig et al. 2007; Daske et al. 2007; Kim and Shi 2010), it has paid little attention to the consequences of IFRS adoption from the perspective of debt holders. As a result, little is known about the impact of IFRS adoption on the cost of debt. To fill this void, this study aims to provide systematic evidence on this unexplored issue, using actual bank loan data.

Specifically, we investigate whether and how voluntary IFRS adoption affects the price and nonprice terms of bank loan contracts. Studying the impacts of IFRS adoption on loan contracting terms is important for several reasons. Bank loans are the most important source of external financing for most firms around the world.[1] Private debt contracts such as bank loans contain both price and nonprice terms to alleviate the information problems faced by banks and other private lenders[2] and to monitor credit quality. This allows us to assess the effect of IFRS adoptions on the direct costs of private debt (loan rate) and associated indirect costs (for example, collateral requirements and covenant restrictions). Because a bank loan deal typically involves two or more parties lending to a single borrower, we also can investigate whether and how enhanced disclosures via IFRS influence the way in which loans are structured in terms of the number of lenders and the composition of foreign versus domestic lenders (lender mix).

For our empirical analyses, we construct a sample of non-U.S. borrowers from 40 countries during 1997 through 2005. We then examine the loan contracting effects of voluntary IFRS adoption by comparing the price and nonprice terms of the loan contracts of IFRS adopters and non-adopters. Specifically, we first investigate whether voluntary IFRS adoptions by borrowers are associated with lower loan rates. We argue that voluntary IFRS adoption reduces ex ante information uncertainty faced by lenders or information asymmetries between borrowers and lenders. As a result, lenders can better assess borrower credit quality and thus spare themselves ex post monitoring and re-contracting costs. We predict and find that, all else being equal, lenders charge lower loan rates to borrowers who voluntarily adopt IFRS than to those who use local accounting standards. In our main regressions, the difference is about 20 basis points for all loans and nearly 31 basis points for LIBOR-based loans after controlling for borrower-specific credit risk; loan-specific characteristics; and year, industry, and country fixed effects.

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[1] For example, over the past decade, about $780 billion in new debt securities were issued in the U.S. market, while only $2 billion in new equity securities were issued. About 54% of debt issues were bank loans (Graham et al. 2008).

[2] Our sample includes loans made by both commercial banks and private lenders such as investment banks and insurance companies. We use the terms *banks* and *lenders* interchangeably.

Second, we investigate whether voluntary IFRS adoption affects nonprice terms of loan contracts such as loan size, maturity, collateralization, and covenant restrictions. Commercial banks and other private lenders use loan size and maturity to ration credit among borrowers with different risks. Our analysis provides useful insights into how voluntary IFRS adoption affects credit rationing by banks or influences their willingness to extend credit to borrowers with different information risks or disclosure standards. We also examine whether voluntary IFRS adoptions influence the presence of collateral and restrictive covenants in loan contracts. To the extent that enhanced disclosures via IFRS adoption alleviate information asymmetries between lenders and borrowers and facilitate more efficient monitoring, we expect lenders to impose more favorable (or less restrictive) nonprice terms on IFRS adopters compared with borrowers who use local accounting standards.

The results of our main regressions show that loans to IFRS adopters have longer maturities and involve larger amounts than loans to non-adopters. We find that IFRS adopters are, on average, less likely to have restrictive covenants in their loan contracts than borrowers using local accounting standards. We also find no significant difference between the two groups in the collateral requirements. Restrictive nonprice terms could be viewed as indirect (implicit) costs to borrowers (Smith and Warner 1979; Graham et al. 2008; Kim et al. 2011): They cause borrowers to engage in more frequent refinancing and thus to incur higher renegotiation and re-contracting costs. Furthermore, restrictive covenants reduce flexibility in investment decisions, which can cause borrowers to abandon profitable investment opportunities to comply with the covenants (Chava and Roberts 2008; Roberts and Sufi 2008). As such, the lower likelihood of restrictive covenants observed for IFRS adopters vis-à-vis non-adopters could be viewed as an additional important benefit or cost saving arising from IFRS adoptions. Put differently, the economic consequences of IFRS adoptions for borrowers are likely to be even more favorable than those implied by favorable pricing terms alone.

We also investigate whether voluntary IFRS adoptions by borrowers lead to an increase in the number of lenders and a change in the lender mix (that is, the composition of domestic versus foreign lenders participating in each loan). To the extent that voluntary IFRS adoption mitigates information problems faced by lenders participating in a loan syndicate, voluntary IFRS adoption should increase the number of participant lenders and, in particular, foreign lenders. Our results are consistent with this prediction. Finally, our results hold after controlling for within-country variations in borrower- and loan-specific characteristics and potential self-selection bias associated with the decision to adopt IFRS.

As a sensitivity check, we examine whether IFRS adoption effects on loan contracting terms are differentially affected by several firm-level and country-level factors. We find that the loan rate-reducing effect of IFRS adoption is significant at the 1% level for (more transaction-based) term loans but insignificant at the 10% level for (more relationship-based) nonterm loans. We find that IFRS adoption reduces loan rates significantly, irrespective of the quality of the information environment (proxied by analyst following), the strength of creditor rights protection, the efficacy of legal enforcement, and the level of economic

development. We provide mixed evidence on how firm- and country-level factors differentially affect IFRS adoption effects on the *nonprice* terms of loan contracts.

Our study adds to the literature on the effect of IFRS adoptions by providing direct evidence that voluntary IFRS adoptions are associated with lower loan rates, greater credit availability, less restrictive covenants, and greater participation of foreign banks in loan syndicates. We also contribute to the loan contracting literature by presenting evidence consistent with the notion that enhanced disclosures via IFRS adoption allow lenders to assess borrower credit quality more accurately and improve borrower visibility in the international loan market. Previous studies have examined how borrower-specific factors affect loan contracting (for example, Strahan 1999; Ball et al. 2008; Chava et al. 2008; Graham et al. 2008); however, they provide little evidence on whether and how a commitment to better disclosure affects contract terms and the structure of loan ownership.

Recent studies by Bharath et al. (2008), Graham et al. (2008), and Kim et al. (2011) provide evidence that banks consider the quality of financial reporting when assessing credit risk; however, they focus on the United States, where voluntary commitment to a better reporting strategy via IFRS is not feasible. Our evidence sheds light on the role of increased and improved disclosures in private debt contracting under financial reporting environments significantly different from those in the United States.

The remainder of this paper is structured as follows. Section 2 develops our research hypotheses. Section 3 specifies empirical models for hypothesis testing. Section 4 describes our sample and data sources, presents descriptive statistics on our research variables, and conducts univariate tests. Section 5 presents the results of various multivariate tests using the full sample. Section 6 further analyzes the data with sensitivity checks. Section 7 summarizes the paper and presents our concluding remarks.

2 Hypothesis development

2.1 The effect of IFRS adoption on borrowing rates

The decision to adopt IFRS is an important strategic commitment that increases the quantity and quality of accounting disclosures in most financial reporting regimes (Leuz and Verrecchia 2000; Covrig et al. 2007). This commitment is costly[3] and thus credible. Enhanced disclosures via IFRS alleviate the information uncertainty faced by lenders concerning borrower credit quality. This reduction in ex ante information risk lowers the cost of external financing (for example, Diamond and Verrecchia 1991; Baiman and Verrecchia 1996). Higher-quality disclosures via IFRS reduce post-contracting costs associated with monitoring borrower

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[3] For example, it is difficult for IFRS adopters to reverse the decision, once made, and IFRS adoptions require nontrivial efforts and resources on the part of the preparers of financial statements and their auditors.

performance or credit quality and renegotiating contractual terms subsequent to changes in the latter. It is thus likely that voluntary IFRS adoption reduces borrowing costs.

Lambert et al. (2007) provide another reason why high-quality information reduces the cost of external financing. Their analysis indicates that high-quality reports improve coordination between firms and capital suppliers with respect to capital investment decisions, while poor-quality reports lead to misaligned capital investments due to impaired coordination. Rational capital suppliers therefore demand higher risk premiums for firms with poor-quality reports. This theory suggests that IFRS adoptions reduce the cost of coordination between borrowers and lenders, which in turn enables lenders to charge lower loan rates to IFRS adopters than to non-adopters.

We predict that lenders will charge lower loan rates to IFRS adopters than to non-adopters, because voluntary IFRS adoptions reduce the ex ante information risk faced by lenders and ex post monitoring and re-contracting costs and improve coordination between lenders and borrowers with respect to capital investment decisions. We state this prediction in the following alternative form.

H1 Loan spreads, measured by interest rates in excess of a benchmark rate, are lower for borrowers who voluntarily use IFRS than for those who do not, all else equal.

2.2 The effect of IFRS adoption on the nonprice terms of loan contracts

Bank loan contracts include not only a price term (that is, loan interest rate) but also non-price terms, such as loan size, maturity, collateral requirements, and restrictive covenants. Lenders use these terms (as well as the price term) in loan contracts to mitigate information problems and potential agency conflicts. They can control their risk exposure by limiting loan size or shortening loan maturity (Strahan 1999; Qian and Strahan 2007; Chava et al. 2008; Bae and Goyal 2009).[4] For example, short-term loans allow banks to monitor credit quality through frequent loan renewal processes, thereby reducing information risk (for example, Oritz-Molina and Penas 2006; Graham et al. 2008). To the extent that voluntary IFRS adoption reduces ex ante information uncertainty or the associated information asymmetry between lenders and borrowers and ex post monitoring and re-contracting costs, lenders will be more willing to extend credit to IFRS adopters and will provide more favorable loan terms. We state this prediction in the following alternative form.

H2 Loan sizes are larger and loan maturities are longer for borrowers who voluntarily use IFRS than for those who do not, all else equal.

Previous research shows that collateral requirements and covenant restrictions in loan contracts are also associated with information problems faced by lenders

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[4] Diamond (1991) shows that low- and high-risk borrowers prefer short-term loans because low-risk borrowers can roll over their loans without incurring high renegotiation costs and lenders may hesitate to offer long-term loans to high-risk borrowers with high default risk. This author's analysis further indicates that intermediate-risk borrowers prefer long-term loans to minimize refinancing or renegotiation costs.

(for example, Rajan and Winston 1995; Jimenez et al. 2006; Graham et al. 2008; Kim et al. 2011). The debt covenant literature finds that banks use restrictive covenants to improve the ex post monitoring of credit quality, although the covenants also reduce borrower investment flexibility (Smith and Warner 1979; Rajan and Winston 1995; Graham et al. 2008).

In our context, these studies suggest that banks are less likely to require collateral or impose restrictive covenants on borrowers who use IFRS than on those who use local accounting standards, because enhanced disclosures via IFRS adoptions reduce the demand for ex post monitoring and re-contracting.[5] We state this prediction in the following alternative form.

H3 The likelihood that loans are secured by collateral or subject to restrictive covenants is lower for borrowers who use IFRS than for those who do not, all else equal.

2.3 The effect of IFRS adoption on the number of lenders and lender mix

The syndicate loan literature (for example, Dennis and Mullineaux 2000; Qian and Strahan 2007; Sufi 2007) shows that fewer lenders participate in loan syndicates with borrowers with high information uncertainty, because syndicate structures with fewer lenders reduce both free rider problems in information gathering and monitoring and the costs of re-contracting (if credit quality changes) or recovery in the event of default. Graham et al. (2008) and Kim et al. (2011) provide further evidence that fewer lenders are attracted to loans to borrowing firms with financial restatements and internal control weakness over financial reporting.[6] The implication of this research in our context is that IFRS adoption mitigates adverse selection and moral hazard problems among syndicate participants, thereby attracting more participants into a loan syndicate.[7]

We also expect that voluntary IFRS adoptions attract more foreign lenders into a loan syndicate. To the extent that foreign lenders are more familiar with IFRS than local accounting standards, IFRS-based reporting makes it relatively easier for borrowers to communicate their financial results and credit quality. In addition, IFRS-based reporting makes it less costly for foreign lenders to assess borrowers'

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[5] Evidence shows that voluntary IFRS adoption not only increases the quantity and quality of financial disclosures but also reduces accounting flexibility by restricting the choice of measurement methods (e.g., Ashbaugh and Pincus 2001). Bharath et al. (2008) provide evidence suggesting that lenders use more stringent (nonprice) contractual terms for borrowers with poor reporting quality. IFRS adoption can decrease the agency cost of debt to the extent that the resulting reduced accounting flexibility increases reporting quality and thus enables lenders to save ex post costs associated with loan monitoring and re-contracting. In this regard, lenders are also likely to offer more favorable nonprice terms or impose less restrictive covenants for IFRS adopters than for non-adopters.

[6] Ball et al. (2008) and Kim and Song (2010) show that the lead arranger of a loan syndicate retains a smaller portion of new loans when the information asymmetry between the lead arranger and other syndicate participants is lower.

[7] Information asymmetry exists among loan participants because the lead arranger is better informed about borrower credit quality than the other syndicate participants. This information asymmetry creates standard agency problems of adverse selection and moral hazard in loan contracting. For more discussions, see Holmstrom and Tirole (1997) and Ball et al. (2008).

credit risk ex ante, to monitor credit quality ex post, and to renegotiate contractual terms subsequent to credit quality changes.

We restate our two predictions on the syndicate structure and the lender mix in the following alternative form.

H4 The number of lenders in general and the number of foreign lenders in particular are greater for loans to borrowers who voluntarily use IFRS than for loans to those who do not, all else equal.

3 Empirical model

We specify a regression model in which a particular feature of loans originated in year t is linked to a borrower's decision to voluntarily adopt IFRS in year $t − 1$; borrower-specific controls in year $t − 1$; loan-specific controls in year t; and year, industry, and country fixed effects:

$$\begin{aligned} Loan\,Feature_t = &\alpha_0 + \alpha_1 DIFRS_{t-1} + \alpha_2 Borrower{-}specific\,Controls_{t-1} \\ &+ \alpha_3 Loan{-}specific\,Controls_t \\ &+ (Year,\,Industry,\,Country\,Indicators) + Error\,Term_t \end{aligned} \quad (1)$$

where all variables are defined in the "Appendix". *Loan Feature* represents one of 10 loan contracting features: (1) one price term measured by the drawn all-in spread (*Spread*); (2) two measures capturing credit availability, that is, loan size (*LoanAMT*) and loan maturity (*Maturity*); (3) four nonprice terms, namely, the presence of collateral, financial, and general covenants (*DSecured, DFinCov,* and *DGenCov*, respectively) and the total number of financial and general covenants (*NCov*); and (4) three measures of loan ownership structure, that is, the numbers of both domestic and foreign lenders, domestic lenders only, and foreign lenders only for each loan (*NLender, NDomestic,* and *NForeign*, respectively). The term $DIFRS_{t-1}$ is an indicator variable that equals 1 for borrowing firms who adopt IFRS in year $t − 1$ and 0 otherwise.

We examine the *lagged* relation between a loan feature in year t and IFRS adoption in year $t − 1$ to alleviate concerns over potential reverse causation between the two.[8] To examine the relation between *voluntary* adoption and loan contracting, we consider loans originated during 1997 through 2005 and link each of ten loan contracting features in year t (from 1997 through 2005) to IFRS adoptions and other firm-specific characteristics in year $t − 1$ (from 1996 through 2004) and relevant loan-specific characteristics in year t (from 1997 through 2005). This design excludes *mandatory* IFRS adoptions in 2005 by firms in the European Union (EU).

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[8] Implicit here is the assumption that at the time of loan contracting in year t, financial statements for year t are not publicly available. Examining the contemporaneous relation between *DIFRS* in year t and *Loan Features* in year t can create an endogeneity concern, because voluntary IFRS adoptions are likely to be endogenous.

To test H1, we estimate Eq. (1) with *Spread* as the dependent variable. The variable *Spread* represents the interest rate charged by lenders (plus the annual fee and upfront/maturity fee relative to the loan amount) minus the benchmark rate (LIBOR or its equivalents).[9] Commercial banks and other private lenders typically assess the risk of a loan based upon information on the business nature and performance of borrowing firms and then set a markup over a benchmark rate, such as the LIBOR, to compensate for credit risk. Thus *Spread* reflects lenders' perceived level of risk on a loan facility provided to a specific borrower. Hypothesis H1 predicts $\alpha_1 < 0$.

To test H2, we use two nonprice terms of loan contracts as the dependent variable, *LoanAMT* and *Maturity,* where *LoanAMT* is the natural log of the amount of each loan facility and *Maturity* is the natural log of the loan period, defined as the difference in months between the loan origination date and the maturity date. Hypothesis H2 predicts $\alpha_1 > 0$.

To test H3, we estimate the probit version of Eq. (1) using as the dependent variable each of three indicator variables, *DSecured, DFinCov,* and *DGenCov*. These variables take on the value of 1 for secured loans, loans with at least one financial covenant included, and loans with at least one general covenant included, respectively, and 0 otherwise. Loan covenants are either financial covenants that are typically linked to accounting ratios or general covenants, which include all other non-financial covenants, such as restrictions on prepayment,[10] dividend payment, and voting rights. To obtain a composite measure of the strength of loan covenants, we also construct a covenant index, *NCov,* by counting the number of financial and general covenants in a loan facility. When *NCov* is the dependent variable, we estimate Eq. (1) by running a Poisson regression of *NCov* on *DIFRS* and other control variables. Hypothesis H3 predicts $\alpha_1 < 0$ when *DSecured, DFinCov, DGenCov,* or *NCov* is used as the dependent variable in Eq. (1).

Finally, to test H4, we estimate Eq. (1) using as the dependent variable *NLender* (= *NForeign* + *NDomestic*), *NForeign,* or *NDomestic.* We define a domestic lender as one headquartered in the same country as the borrower. We hand-collect data on the nationality of each bank participating in a loan from the 2005 and 2006 editions of *The Bankers' Almanac*. Hypothesis H4 predicts $\alpha_1 > 0$.

Our test variable, *DIFRS,* equals 1 if the borrower voluntarily adopted IFRS in fiscal year $t-1$ (year t refers to the loan origination year) and 0 otherwise. Our sample period of loan origination is 1997 through 2005. The EU mandated that all listed firms adopt IFRS starting from January 1, 2005, while some of these firms

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[9] In our DealScan sample, the most popular benchmark rate is the LIBOR. We notice, however, that some loans are priced in excess of non-LIBOR benchmark rates, such as the Hong Kong Interbank Offered Rate (HIBOR), the Tokyo Interbank Offered Rate (TIBOR), the Singapore Interbank Offered Rate (SIBOR), and the Euro Interbank Offered Rate (EURIBOR). As will be further discussed in the next section, we include in our sample loans priced in excess of either LIBOR or non-LIBOR. We report the regression results using both LIBOR- and non-LIBOR-based spreads and those using only LIBOR-based spreads, separately.

[10] Prepayment restrictions include asset sweep, excess cash flow sweep, debt issue sweep, equity issue sweep, and insurance proceeds.

voluntarily adopted IFRS prior to 2005. Our use of lagged *DIFRS* in Eq. (1) links our *Loan Feature* variables in 2005 to *DIFRS* in 2004.[11]

We also include eight borrower-specific control variables: *ROA, Size, MB, Lev, Cross, NAnal, MSCI,* and *Big4.* Here *ROA, Size,* and *Lev* represent return on assets (net income divided by total assets), borrower size (the natural log of market capitalization), and leverage (total debt divided by total assets), respectively. *MB* represents the market-to-book ratio; *Cross* equals 1 for cross-listed firms and 0 otherwise; *NAnal* denotes the log of the number of analysts following a borrowing firm; *MSCI* equals 1 if a firm's shares are a constituent of the Morgan Stanley Capital International (MSCI) index[12] and 0 otherwise; *Big4* equals 1 for firms with Big 4 (or 5) auditors and 0 otherwise. *ROA, Size, MB,* and *Lev* are included to control for borrower credit quality. *Cross* and *MSCI* are included because lenders are likely to be more familiar with cross-listed firms and firms with shares included in the MSCI Index. We include *NAnal* and *Big4* to control for potential cross-firm differences in the information environment associated with analyst coverage and auditor quality, respectively.[13] All borrower-specific variables are measured in the fiscal year preceding the loan origination year.

Previous research on bank loan contracts shows that several loan-specific characteristics are related to the price and nonprice terms of loan contracts (for example, Strahan 1999; Dennis et al. 2000; Bharath et al. 2008; Chava et al. 2008). Based on this research, we include six loan-specific variables: *LoanAMT, Maturity, TLoan, NLender, DForCurr,* and *DPPricing*. Here *LoanAMT, Maturity,* and *NLender* are used as control variables only when they are not used as the dependent variable in Eq. (1). *TLoan* equals 1 for term loans and 0 otherwise; *DForCurr* equals 1 for loan facilities quoted in foreign currencies and 0 otherwise; and *DPPricing* equals 1 for loan facilities with performance pricing provisions and 0 otherwise. All loan-specific variables are measured in the loan origination year.

Based on research showing that country-level contracting environments affect the price and nonprice terms of loan contracts and the structure of loan syndicates (for example, Qian and Strahan 2007; Bae and Goyal 2009), we control for cross-country variations in loan contracting environments by including *Country Indicators* in Eq. (1). We also examine whether our results are robust to within-country median adjustments of borrower-specific and loan-specific controls.

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[11] Since the IFRS adoption indicator, *DIFRS* (as well as all borrower-specific financial statement variables) is measured in year $t − 1$ and the dependent variable, *Loan Feature*, is measured in year t, two-way causation is unlikely between *DIFRS* (our test variable) and *Loan Feature* (our dependent variable). This approach mitigates concerns over reverse causality in Eq. (1) with respect to the relation between *Loan Feature* and *DIFRS*. Nevertheless, Sect. 6 also reports the results of Heckman-type two-stage regressions to control for potential self-selection bias associated with a borrower's decision to adopt IFRS voluntarily.

[12] The MSCI Index is a world market index constructed using the prices of representative stocks listed on 22 stock markets in North America, Europe, and the Asia/Pacific region weighted by the market capitalization of each constituent stock market.

[13] We also consider an additional borrower-specific variable, namely, asset maturity (*ASM),* when Eq. (1) is estimated using loan maturity (*Maturity)* as the dependent variable, because previous research shows a positive relation between the two (Barcley and Smith 1995; Bharath et al. 2008). Unreported results show that the coefficient for *ASM* is insignificant at the 10% level in all cases.

4 Sample and data

4.1 Sample and data sources

The initial sample consists of all non-US firms that are included in the Worldscope database and the Loan Pricing Corporation's DealScan database during 1997 through 2005. Data on IFRS adoption and borrower-specific variables for 1996 through 2004 are obtained from Worldscope.[14] Data on MSCI Index membership (*MSCI*) and analyst following (*NAnal*) are collected from Datastream and I/B/E/S International, respectively. The DealScan database contains data on bank loans and other financial arrangements,[15] starting from 1986. We select 1997 as the starting year of our sample period, because few IFRS adopters are included in the DealScan database prior to 1997.

The loan data in the DealScan database are compiled for each deal and facility. Each deal—that is, a loan contract between a borrower and (multiple) lenders at a specific date—can have only one facility or a package of several facilities with different terms.[16] We consider each facility as a separate observation, because loan characteristics and loan spreads vary across facilities. We match the loans to borrowers' financial statement data in Worldscope, using each borrower's ticker symbol and name. This procedure substantially reduces the sample size, because many borrowers included in the DealScan database are subsidiaries of public firms, private firms, or government entities, and some public companies are not covered by Worldscope. Following Qian and Strahan (2007), we exclude loans to firms in the financial sector (SIC codes 6000–6900) and public sector (SIC codes 9100–9999). We require that the annual financial statement data to measure all borrower-specific characteristics be available from Worldscope in the fiscal year immediately before the loan origination year. For international (non-U.S.) loans included in DealScan, more than half of the loan facilities do not have data on the drawn all-in spread, while most loans have data on loan size and maturity and the identities of participating lenders. To increase our sample size, we require each loan facility to have data only on loan availability (*LoanAMT* and *Maturity*).[17]

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[14] Worldscope has a data field, 07536, that describes the accounting standards followed by a specific firm. This data field identifies 22 different accounting standards adopted by non-U.S. firms, including local standards (01), International Accounting Standards, hereafter IAS (02), U.S. standards (03), IAS with EU guidelines (06), and IFRS (23). In this paper, we classify firms with accounting standards codes 02, 06, and 23 as IFRS adopters.

[15] Other papers using the Loan Pricing Corporation's DealScan database include Strahan (1999), Bae and Goyal (2009), Bharath et al. (2008), Asquith et al. (2005), Ivashina et al. (2008), and Kim et al. (2011).

[16] For instance, a deal can comprise a line of credit facility and a term loan.

[17] Qian and Strahan (2007) use a similar approach. As shown in their Tables II and III, the number of facility-years used in their regression analyses is 4,322 for the number of lenders and 1,255 for the drawn all-in spread.

As shown in Panel A of Table 1, our sample contains 5,178 facility-year observations from 40 countries, of which 205 observations are IFRS adopters.[18] As shown in column 1 of Panel A of Table 1, the number of facility-years in the total sample ranges from a low of three for Pakistan to a high of 1,809 for Japan. Column 2 of Panel A of Table 1 shows the number of facility-years for IFRS adopters, ranging from zero for 21 countries to 76 for Germany.[19]

Columns 3 and 4 of Panel A of Table 1 show, respectively, creditor rights and legal enforcement indices by country. The creditor rights index is the sum of four indicator variables representing "no automatic stay on assets," "secured credit first," "restrictions for going into reorganization," and "current management does not stay in the reorganized firm." The creditor rights index is from La Porta et al. (1998). Creditor rights are better protected in a country with a higher index. In our sample, the creditor rights index ranges from zero for France, Mexico, and the Philippines to four for Hong Kong, India, Israel, Malaysia, Singapore, and the United Kingdom. We measure the effectiveness of a country's legal enforcement using Berkowitz et al.'s (2003) legal enforcement index. This index aggregates five legal proxies from La Porta et al. (1998)—representing the rule of law, the absence of corruption, the extent of government corruption, the risk of government expropriation, and the risk of the government repudiating contracts—into a single number, using the principal components analysis.[20] In our sample, the legal enforcement index ranges from 8.51 (the Philippines) to 21.91 (Switzerland). Countries with high creditor rights indices do not necessarily have high legal enforcement indices. For example, France has the lowest creditor rights index and a legal enforcement index of 19.67 (which is above the sample median of 17.42), while both India and Malaysia have a creditor rights index of 4 and legal enforcement indices below the sample median. These observations suggest that the two indices capture different aspects of the contracting environment, as noted by Bae and Goyal (2009). Column 5 of Panel A of Table 1 shows the mean level of the gross domestic product (GDP) per capita in U.S. dollars. The average GDP per capita during 1997 through 2005 ranges from $508 for India to $43,374 for Norway.

Panel B of Table 1 reports the yearly distribution of 205 IFRS adopters and 4,973 non-IFRS adopters. The number of IFRS adopters increases over time, except for

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[18] The percentage of IFRS adopters in our sample, about 4.0%, is smaller than that in the sample of Covrig et al. (2007). These authors use a total sample of 24,592 firm-years with both IFRS adopters and non-adopters from 29 countries in the period 1992 through 2002 to examine the effect of IFRS adoption on foreign mutual fund holdings in the global equity market. In their total sample, the percentage of IFRS adopters is about 5% (see their Table 1). Their focus is on the global equity market, while ours is on the international market for private debts.

[19] We estimate our main regressions after excluding observations from 21 countries with no IFRS adopters. Results using this reduced sample are qualitatively similar to those reported in this paper. Covrig et al. (2007) also include in their sample observations from nine (out of 29) countries with no IFRS adopters when examining the effect of IFRS adoption on foreign mutual fund holdings.

[20] Following Berkowitz et al. (2003), we aggregate five legal proxies into the single legal enforcement index as follows: $LEnforce = 0.381*(\text{Efficiency of Judiciary}) + 0.578*(\text{Rule of Law}) + 0.503*(\text{Absence of Corruption}) + (0.347*\text{Risk of Expropriation}) + 0.384*(\text{Risk of Contract Repudiation})$.

Table 1 Sample profile

Country	(1) Facility–years with both IFRS adoption and non-adoption	(2) Facility–years with IFRS adoptions	(3) Creditor rights index	(4) Legal enforcement index	(5) Mean of per capita GDP, 1997–2005 (US$)
Panel A: Distribution of total samples, IFRS adopters and non-adopters by country, and country-level variables
Argentina	24	0	1	12.34	6,136
Australia	210	2	1	20.43	24,094
Austria	4	4	3	20.75	28,705
Belgium	16	4	2	20.81	27,097
Brazil	51	0	1	14.08	3,598
Canada	368	0	1	21.13	25,284
Chile	40	0	2	14.69	5,261
China	19	17	2	–	1,143
Czech Republic	4	3	3	–	7,562
Denmark	14	3	3	21.55	35,977
Finland	42	3	1	21.48	28,215
France	290	6	0	19.67	26,263
Germany	118	76	3	20.44	27,396
Greece	30	8	1	14.91	13,640
Hong Kong	93	3	4	19.10	24,837
Hungary	5	5	1	–	6,661
India	89	0	4	12.79	508
Indonesia	15	0	2	9.15	945
Israel	13	0	4	16.54	18,622
Italy	36	0	2	17.23	23,369
Japan	1,809	7	2	20.36	33,672
Korea	143	0	3	14.22	11,551
Malaysia	139	0	4	16.67	4,067
Mexico	101	0	0	12.82	5,823
Netherlands	80	3	2	21.67	28,838
Norway	35	0	2	21.77	43,374
New Zealand	38	0	3	21.54	17,692
Pakistan	3	0	1	8.97	576
Philippines	64	0	0	8.51	1,019
Portugal	11	0	1	17.20	13,248
Russian Federation	6	6	2	–	2,717
Singapore	65	0	4	19.52	22,949
South Africa	26	4	3	14.50	3,447
Spain	60	0	2	17.13	18,451
Sweden	64	2	2	21.56	30,810
Switzerland	49	47	1	21.91	40,412
Taiwan	415	0	2	17.62	13,685

Table 1 continued

Country	(1) Facility–years with both IFRS adoption and non-adoption	(2) Facility–years with IFRS adoptions	(3) Creditor rights index	(4) Legal enforcement index	(5) Mean of per capita GDP, 1997–2005 (US$)
Thailand	57	0	3	12.93	2,165
Turkey	10	2	2	11.83	3,296
United Kingdom	524	0	4	20.40	27,894
Total	5,178	205			
Mean			2.1	17.17	16,525
Median			2	17.42	15,689
SD			1.17	4.10	12,643

Year	IFRS adopters	Non-adopters
Panel B: Sample distribution by year		
1997	5	80
1998	4	189
1999	12	265
2000	11	429
2001	14	476
2002	34	700
2003	39	869
2004	38	992
2005	48	973
Total	205	4,973

Industry	Facility–years for IFRS adopters	Facility–years for non-adopters
Panel C: Sample distribution by industry		
Mining	1	238
Construction	1	263
Manufacturing	123	2,636
Transportation and utilities	33	847
Trade	20	452
Services	27	537
Total	205	4,973

declines in 1998 and 2000. The number of non-IFRS adopters in our sample also increases over the years, except for a decline in 2005. Panel C of Table 1 presents the distribution of IFRS adopters and non-adopters across six industries. Both IFRS adopters and non-adopters are concentrated in the manufacturing industry.

Table 2 Descriptive statistics and univariate tests for mean and median differences between IFRS adopters and non-adopters

Variable	N	IFRS adopters (N = 205)			Non-adopters (N = 4,973)		
		Mean	Median	SD	Mean	Median	SD
Panel A: Loan-specific variables							
Loan spread (basis points)	2,083	52.95	33.75	47.31	112.30***	82.5***	95.26
Log of the amount of loan facility (*LoanAMT*)	5,178	19.64	19.69	1.52	18.47***	18.36***	1.45
Loan size ($million)	5,178	959	355	1884	327***	94***	835
Log of loan maturity (*Maturity*)	5,178	3.61	4.09	0.78	3.48**	3.58**	0.81
Loan maturity (months)	5,178	47.91	60	29.91	43.27**	36***	31.40
Secured loan dummy (*DSecured*)	1,157	0.46	0.00	0.50	0.41	0.00	0.49
Financial covenant dummy (*DFinCov*)	5,178	0.01	0.00	0.12	0.11***	0.00***	0.31
General covenant dummy (*DGenCov*)	5,178	0.01	0.00	0.12	0.05***	0.00**	0.22
Number of covenants (*NCov*)	5,178	0.05	0.00	0.45	0.43***	0.00***	1.3
Number of lenders (*NLender*)	5,178	17.19	15	11.42	10.92***	8***	8.94
Number of foreign lenders (*NForeign*)	5,178	11.91	10	9.35	4.65***	1***	7.80
Number of domestic lender (*NDomestic*)	5,178	5.28	5	4.30	6.27***	7**	5.33
Foreign currency dummy (*DForCurr*)	5,178	0.86	1.00	0.34	0.40***	0.00***	0.49
Performance pricing dummy (*DPPricing*)	5,178	0.14	0.00	0.34	0.08**	0.00***	0.28
Term loan dummy (*TLoan*)	5,178	0.22	0.00	0.42	0.38***	0.00***	0.48
Panel B: Borrower-specific variables							
Return on assets (*ROA*)	5,178	0.05	0.05	0.06	0.04***	0.04***	0.08
Firm size (*Size*)	5,178	7.72	7.87	1.75	6.60***	6.63***	1.88
Market-to-book ratio (*MB*)	5,178	1.90	1.50	1.27	2.24***	1.44*	9.63
Leverage (*Lev*)	5,178	0.31	0.29	0.14	0.34***	0.33**	0.18
Cross-listing (*Cross*)	5,178	0.06	0	0.23	0.07	0	0.26
Number of analysts following (*NAnal*)	5,178	1.63	1.94	1.43	1.09***	0.69***	1.19
MSCI Index (*MSCI*)	5,178	0.40	0	0.49	0.30***	0***	0.46
Big 4 auditor (*Big4*)	5,178	0.61	1	0.48	0.51***	1***	0.50

See "Appendix" for the definitions of all variables

***, **, and * Significance at the 1, 5, and 10% levels, respectively

4.2 Descriptive statistics and univariate tests

Table 2 presents descriptive statistics for IFRS adopters and non-adopters and reports the results of univariate tests for mean and median differences between the two samples. As shown in Panel A of Table 2, the mean and median drawn all-in spreads are about 53 and 34 basis points, respectively, for IFRS adopters, and about 112 and 83 basis points, respectively, for non-adopters. The differences are significant at less than the 1% level, consistent with H1. In line with H2, IFRS adopters have significantly larger loan facilities (at the 1% level) and longer maturities (at less than the 5% level) than non-adopters. We find no significant difference in *DSecured* between IFRS adopters and non-adopters. A comparison of *DFinCov, DGenCov,* and *NCov* between the two samples reveals that IFRS adopters have a significantly smaller likelihood of having restrictive covenants than non-adopters at less than the 5% level, consistent with H3. The mean and median differences in *NLenders* and *NForeign* between the two samples are significant at the 1% level, consistent with H4. This suggests that when compared with non-adopters, IFRS adopters have both more lenders and more foreign lenders participating in each loan deal. Finally, the mean and median differences in *DForCurr, DPPricing,* and *TLoan* between the two samples are significant at less than the 5% level, suggesting that IFRS adopters are more likely to have their loans priced in foreign currencies and to include a performance pricing provision in their loan contracts and are less likely to have transaction-based term loans than non-adopters.

As shown in Panel B of Table 2, IFRS adopters are more profitable, larger, less leveraged, and have greater analyst coverage than non-adopters; the mean and median differences are significant at less than the 5% level. The mean *MB* is greater for non-adopters than IFRS adopters at the 1% level, while the median *MB* is higher for IFRS adopters at the 10% level. We also find that IFRS adopters are more likely to be included in the MSCI Index and to have Big 4 (or 5) auditors than non-adopters at the 1% level. We find, however, no significant difference between the two samples in the likelihood of their stocks being cross-listed on foreign exchanges.

Table 3 reports a Pearson correlation matrix for the variables included in our regression analyses. Our test variable, *DIFRS,* is negatively correlated with *Spread* at the 1% level, consistent with H1, and positively correlated with *LoanAMT* and *Maturity* at the 1 and 5% levels, respectively, consistent with H2. Our variable of interest, *DIFRS,* is negatively correlated with *DFinCov, DGenCov,* and *NCov*; these correlations are significant at the 1% level, consistent with H3. However, the correlation between *DIFRS* and *DSecured* is insignificant at the 10% level. *DIFRS* is positively correlated with *NLender* and *NForeign* at the 5 and 1% levels, respectively, consistent with H4. *Spread* is negatively correlated with the borrower-specific characteristics *ROA, Size, Big4, MSCI,* and *NAnal* and positively correlated with *Lev,* and *Cross,* consistent with our priors. These correlations are significant at the 1% level. *Spread* is positively correlated with *MB* at the 10% level.

Table 3 Pearson correlation matrix

Variable	DIFRS	Spread	LoanAMT	Maturity	DSecured	DFinCov	DGenCov	NCov	Nlender	NForeign	DforCurr	DPPricing	TLoan
1. Spread	-0.13***	1											
2. LoanAMT	0.15***	-0.31***	1										
3. Maturity	0.03**	0.07***	-0.03***	1									
4. DSecured	-0.01	0.32***	-0.10***	0.17***	1								
5. DFinCov	-0.06***	0.11***	-0.05***	0.11***	0.34***	1							
6. DGenCov	-0.03***	0.11***	0.08***	0.01	0.09***	0.47***	1						
7. NCov	-0.05***	0.19***	-0.05***	0.13***	0.32***	0.86***	0.59***	1					
8. Nlender	0.13**	-0.21***	0.49***	0.09***	-0.01	0.10***	0.10***	0.09***	1				
9. NForeign	0.17***	-0.16***	0.40***	0.19***	-0.04	0.00	0.12***	0.05**	0.33***	1			
10. DforCurr	0.18***	-0.07***	0.29***	0.17***	-0.01	0.02**	0.10***	0.02**	0.24***	0.47***	1		
11. DPPricing	0.03**	-0.03**	0.26***	0.06	0.02	0.14***	0.24***	0.17***	0.30***	0.35***	0.20***	1	
12. TLoan	-0.06***	0.19***	-0.27***	0.41***	0.18***	0.06***	-0.02	0.05***	-0.03***	-0.08***	0.06***	-0.07***	1
13. ROA	0.03**	-0.09***	0.03*	0.09	0.01	0.05***	0.05***	0.05***	-0.05***	-0.08***	0.20***	0.03**	0.01
14. Size	0.11***	-0.42***	0.74***	-0.02**	-0.26***	-0.32**	0.08***	-0.03***	0.41***	0.13***	0.29***	0.20***	-0.18***
15. MB	-0.00	0.03*	0.07***	0.02***	-0.07***	-0.00***	0.02*	0.00	0.06***	0.46***	0.05***	0.03**	-0.02*
16. Lev	-0.03**	0.16***	-0.00***	0.04***	-0.07***	-0.02	-0.01***	-0.00	0.01	0.08***	-0.05***	-0.02**	0.12***
17. Big4	0.05***	-0.05***	0.21***	-0.02***	-0.21***	-0.04***	0.00***	-0.06***	0.04*	-0.03***	0.03***	0.05***	-0.05***
18. MSCI	0.05***	-0.10***	0.11***	0.07***	-0.04	0.03	0.04**	0.01	-0.04***	0.06***	-0.04*	0.00	-0.00
19. NAnal	0.08***	-0.18***	0.38***	-0.04***	-0.24***	-0.05***	0.07***	-0.04***	0.22***	0.30***	0.33***	0.18***	-0.08***
20. Cross	-0.00	0.09***	-0.14***	0.09***	0.02	0.10***	-0.00	0.04***	-0.07***	-0.02	0.07***	-0.04**	0.05***

Table 3 continued

Variable	ROA	Size	MB	Lev	Big4	MSCI	NAnal	Cross
14. Size	0.16***	1						
15. MB	0.04***	0.09***	1					
16. Lev	−0.16***	−0.07***	−0.03***	1				
17. Big4	−0.02	0.24***	−0.01	0.04***	1			
18. MSCI	0.00	0.18***	−0.02	0.02	−0.00	1		
19. NAnal	0.06***	0.49***	0.04***	0.03***	0.21***	0.05***	1	
20. Cross	−0.00	−0.19***	−0.03*	0.01	−0.09***	−0.23***	−0.48***	1

See "Appendix" for the definitions of all variables

***, **, and * Significance at the 1, 5, and 10% levels, respectively

Table 4 Effect of IFRS adoption on loan spread

Variable	(1) All loans	(2) Loans on LIBOR
Panel A: Test variable		
IFRS adoption dummy (*DIFRS*)	−19.07 (−2.64)***	−30.50 (−2.52)**
Panel B: Borrower-specific controls		
Return on assets (*ROA*)	−1.20 (−2.75)***	−1.03 (−2.02)**
Firm size (*Size*)	−25.28 (−11.34)***	−29.14 (−9.50)***
Market-to-book ratio (*MB*)	0.73 (1.25)	0.73 (1.23)
Leverage (*Lev*)	57.03 (3.66)***	76.74 (4.26)***
Cross-listed (*Cross*)	3.79 (0.44)	5.91 (0.41)
Number of analysts (*NAnal*)	8.67 (3.12)***	9.53 (2.29)**
MSCI Index (*MSCI*)	−6.07 (−0.70)	1.66 (0.17)
Big 4 (or 5) auditor (*Big4*)	0.17 (0.33)	2.51 (0.31)
Panel C: Loan-specific controls		
Log of the amount of loan facility (*LoanAMT*)	−3.40 (−1.37)	−1.79 (−0.50)
Loan maturity (*Maturity*)	−0.18 (−0.05)	0.72 (1.18)
Term loan (*TLoan*)	21.98 (4.02)	19.24 (2.77)***
Number of lenders (*NLender*)	0.37 (1.32)	0.34 (1.04)
Foreign currency dummy (*DForCurr*)	18.77 (2.24)	26.03 (2.27)**
Performance pricing dummy (*DPPricing*)	8.26 (1.70)	5.73 (1.00)
Constant	374.08 (7.13)	365.58 (5.38)***
Industry indicators	Yes	Yes
Country indicators	Yes	Yes
Year indicators	Yes	Yes
R squared	0.45	0.47
N	2,083	1,217

See "Appendix" for the definitions of all variables

Reported *t* values are computed using standard errors adjusted for clustering at the firm level

***, **, and * Significance at the 1, 5, and 10% levels, respectively (two-tailed test)

The negative correlation between *Spread* and *LoanAMT* (at the 1% level) suggests that banks charge lower interest rates on larger loans. The positive correlation between *Spread* and *Maturity* (at the 1% level) suggests that banks charge higher loan rates on longer-maturity loans. A significantly negative (positive) correlation of *Spread* with *DForCurr* (*TLoan*) at the 1% level suggests that borrowers with foreign currency loans (transaction-based term loans) are likely to pay lower (higher) rates relative to local currency loans (relationship-based nonterm loans such as lines of credit). Finally, *Spread* is negatively correlated at the 1% level with the number of participant lenders, both foreign and domestic, in general (*NLender*), and the number of foreign lenders (*NForeign*) in particular, suggesting that less concentrated loan ownership is associated with lower loan rates.

5 Results of multivariate tests

5.1 Tests for the effect of IFRS adoption on loan spread

To test our hypothesis on the effect of IFRS adoption on loan pricing (H1), we estimate Eq. (1) with *Spread* as the dependent variable. In the DealScan database, most loans are quoted using the LIBOR or a LIBOR equivalent such as the TIBOR and HIBOR as the benchmark rate. Column 1 of Table 4 reports the ordinary least squares (OLS) regression results with drawn all-in spreads based on either the LIBOR or LIBOR equivalent as the dependent variable; column 2 reports the results with only LIBOR-based all-in spreads. All reported *t* values are based on standard errors adjusted for firm-level clustering to alleviate concerns over residual serial correlation (Petersen 2009).

In columns 1 and 2 of Table 4, the coefficient for *DIFRS* is negative and significant at the 1% (5%) level for all loans (LIBOR-based loans), consistent with H1. The coefficient for *DIFRS* captures the loan spread (or rate) difference in basis points between IFRS adopters and non-adopters after controlling for borrower- and loan-specific characteristics, as well as year, industry, and country fixed effects. The magnitude of the *DIFRS* coefficient suggests that IFRS adopters, on average, pay lower loan rates than non-adopters by about 20 (31) basis points for all loans (LIBOR-based loans).

With respect to borrower-specific variables (Panel B of Table 4), the following is apparent: the coefficients of both *ROA* and *Size* are negative and significant at less than the 5% level, suggesting that lenders consider large profitable borrowers to have lower credit risk. The coefficient for *MB* is insignificant at the 10% level. Borrowers with high growth potential (as reflected in a high *MB*) may have higher credit quality, because they have a greater ability to generate future cash flows or may have lower credit quality because they have more volatile cash flows. These two opposing effects can cancel each other out, resulting in an insignificant coefficient for *MB*. The coefficient for *Lev* is significantly positive at the 1% level, consistent with previous studies (for example, Bharath et al. 2008; Graham et al. 2008; Kim et al. 2011). The coefficient for *NAnal* is significantly positive in columns 1 and 2 of Panel B of Table 4, indicating that greater analyst coverage is associated with higher rates, even though it is significantly negatively correlated with *Spread* in Table 3. However, *NAnal* is highly correlated with other control variables, especially *LoanAMT* and *Size*. Finally, the coefficients for *Cross, MSCI*, and *Big4* are insignificant at the 10% level in both columns, perhaps because they are highly correlated with *Size* and *LoanAMT*.

As shown in Panel C in Table 4, the coefficient of the term loan indicator (*TLoan*) is positive and significant at the 1% level, suggesting that lenders charge higher loan rates for transaction-based term loans. The coefficient for *DForCurr* is significantly positive at the 5% level in both columns, while the coefficient for *DPPricing* is positively significant at the 10% level only in column 1.

5.2 Tests for the effect of IFRS adoption on nonpricing terms of loan contracts

Hypothesis H2 predicts that voluntary IFRS adoption favorably affects credit availability by increasing loan size and lengthening loan maturity. To test H2, we estimate Eq. (1) using *LoanAMT* and *Maturity* as the dependent variable and report the results in columns 1 and 2 of Table 5. The coefficient for *DIFRS* is significantly positive at the 10% (5%) level for *LoanAMT* (*Maturity*). These results are consistent with H2, suggesting that banks are more willing to extend credit to borrowing firms who use IFRS by offering larger and longer-maturity loans.

To evaluate the effect of IFRS adoption on loan collateralization, we estimate Eq. (1) with *DSecured* as the dependent variable, using the probit regression procedure. As shown in column 3 of Table 5, the coefficient for *DSecure* is insignificant at the 10% level, suggesting no relation between IFRS adoption and the likelihood that loans are secured by collateral. To examine the effect of IFRS adoption on covenant restrictions, we estimate Eq. (1) with each of the variables *DFinCov, DGenCov,* and *NCov* as the dependent variable. Columns 4 and 5 of Table 5 report the results of probit regressions with *DFinCov* and *DGenCov*, respectively, as the dependent variable[21]; column 6 reports the Poisson regression results with *NCov* as the dependent variable.[22] The coefficients for *DIFRS* are significantly negative at less than the 5% level for all three specifications (columns 4–6), suggesting that IFRS adopters are less likely to have restrictive covenants than non-adopters.

The estimated coefficients on borrower-specific controls (Panel B of Table 5) show profitable (high-ROA) firms are offered small loans, consistent with the results in Bae and Goyal (2009). There is no indication that profitable firms are offered other more favorable nonprice terms. Consistent with our priors, we find that large firms are offered larger loans and are less subject to collateral requirements and covenant restrictions. While growth potential is not significantly associated with nonprice terms at the 10% level, the significantly positive coefficients for leverage at the 1% level suggest that banks offer larger and longer-maturity loans to high-leverage firms.[23] In addition, cross-listed firms are offered short-term loans and are more likely to have financial covenants, while firms with high analyst coverage are offered short-term loans and are less likely to have general covenants. Finally, banks tend to offer larger loans and are less likely to use restrictive covenants with firms whose stocks are included in the MSCI index or firms with Big 4 (or 5) auditors.

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[21] In columns 3 to 5 of Table 5, where the dependent variable is a binary variable, *Country Indicators* is excluded to avoid the problem of quasi-complete separation, which stops us from estimating the probit regressions (Albert and Anderson 1984). This problem often arises when there is an independent dummy variable, *x*, such that for one value of *x*, either every case has 1 on the dependent variable, or every case has 0 (Allison 1999). In our case, in some countries none of the loans offered to firms have collateral and financial or general covenants. We therefore do not include *Country Indicators* in columns 3, 4, and 5 of Table 5.

[22] Following previous research (for example, Graham et al. 2008, Kim et al. 2011), we apply a Poisson regression when *NCov* is the dependent variable, where *NCov*, that is, the number of both financial and general covenants, is a countable number with a minimum of zero and a maximum of 13, and thus its distribution is better described by a Poisson distribution.

[23] Graham et al. (2008) also document a positive relation between leverage and loan maturity in their U.S. sample.

Table 5 Effect of IFRS adoption on credit availability and nonpricing terms

Dependent variable	(1) Loan amount (LoanAMT)	(2) Loan maturity (Maturity)	(3) Secured loan indicator (DSecured)	(4) Financial covenant indicator (DFinCov)	(5) General covenant indicator (DGenCov)	(6) Number of covenants (NCov)
Panel A: Test variable						
IFRS adoption dummy (DIFRS)	0.16 (1.67)*	0.18 (2.44)**	0.00 (0.01)	−1.10 (−3.05)***	−0.73 (−2.09)**	−0.63 (−2.00)**
Panel B: Borrower-specific controls						
Return on assets (ROA)	−0.02 (−5.62)***	0.00 (0.39)	−0.00 (−0.33)	0.00 (1.32)	0.00 (0.26)	−0.01 (−0.54)
Firm size (Size)	0.44 (30.41)***	0.01 (0.45)	−0.18 (−3.89)***	0.01 (0.32)	0.04 (1.01)	−0.07 (−3.48)***
Market-to-book ratio (MB)	−0.00 (−1.49)	0.00 (1.05)	0.00 (0.57)	−0.00 (−0.18)	−0.01 (−0.35)	0.00 (1.12)
Leverage (Lev)	0.68 (5.61)***	0.22 (3.07)***	−0.55 (−1.69)*	−0.22 (−1.02)	−0.13 (−0.47)	−0.01 (−0.10)
Cross-listed (Cross)	−0.01 (−0.18)	−0.11 (−2.23)**	−0.21 (−1.07)	0.45 (3.26)***	−0.34 (−1.82)*	−0.06 (−0.66)
Number of analysts (NAnal)	0.00 (0.35)	−0.06 (−4.02)***	0.04 (0.55)	0.01 (0.12)	−0.16 (−2.17)**	0.05 (1.50)
MSCI Index (MSCI)	0.13 (1.93)*	0.02 (0.46)	−0.01 (−0.07)	−0.03 (−0.11)	−0.11 (−0.78)	−0.20 (−2.76)***
Big 4 (or 5) auditor (Big4)	0.11 (2.82)***	−0.01 (−0.43)	−0.24 (−0.46)	−0.24 (−2.43)**	−0.01 (−0.10)	−0.07 (−1.16)
Panel C: Loan-specific controls						
Log of the amount of loan facility (LoanAMT)		−0.03 (−1.88)*	−0.02 (−0.46)	−0.16 (−4.37)***	−0.02 (−0.35)	−0.03 (−1.02)
Loan maturity (Maturity)	−0.04 (−1.88)*		0.40 (4.71)***	0.24 (5.32)***	−0.00 (−0.01)	0.08 (2.30)**
Term loan (TLoan)	−0.22 (−5.30)***	0.74 (24.04)***	0.16 (1.52)	0.02 (0.22)	0.01 (0.14)	0.14 (2.70)***
Number of lenders (NLender)	0.03 (10.76)***	0.01 (1.19)	−0.00 (−0.02)	0.02 (4.56)***	0.00 (1.45)	0.02 (8.73)***
Foreign currency dummy (DForCurr)	0.06 (0.91)	−0.09 (−1.79)*	−0.02 (−0.11)	0.05 (0.51)	0.45 (3.67)***	0.49 (6.32)***

Table 5 continued

Dependent variable	(1) Loan amount (LoanAMT)	(2) Loan maturity (Maturity)	(3) Secured loan indicator (DSecured)	(4) Financial covenant indicator (DFinCov)	(5) General covenant indicator (DGenCov)	(6) Number of covenants (NCov)
Performance pricing dummy (DPPricing)	0.04 (0.60)	0.08 (2.26)**	0.22 (1.05)	0.83 (6.03)***	0.92 (6.05)***	1.50 (23.86)***
Constant	15.16 (76.51)***	3.39 (12.36)***	0.77 (0.83)	0.28 (0.50)	−2.17 (−2.79)***	−19.21 (−0.01)
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes
Country indicators	Yes	Yes	No	No	No	Yes
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes
R squared	0.70	0.36	0.23	0.12	0.17	0.32
N	5,178	5,178	1,157	5,178	5,178	5,178

See "Appendix" for the definitions of all variables

Reported t (z) values are computed using standard errors adjusted for clustering at the firm level

Columns 1 and 2 report the results of OLS regressions. Columns 3 through 5 report the results of probit regressions. Column 6 reports the results of Poisson regressions

***, **, and * Significance at the 1, 5, and 10% levels, respectively (two-tailed test)

The estimated coefficients on loan-specific controls (Panel C of Table 5) suggest that large loans are associated with shorter maturities at the 10% level (columns 1 and 2) and more likely to have financial covenants at the 1% level (column 4). Longer-maturity loans tend to have collateral requirements and financial covenants at the 1% level (columns 3 and 4 of Panel C of Table 5). Term loans are smaller and longer in maturity at the 1% level (columns 1 and 2) and use restrictive covenants more frequently at the 1% level (column 6). The number of lenders participating in a loan syndicate is positively and significantly associated at the 1% level with loan size, the presence of financial covenants, and the number of restrictive covenants (columns 1, 4, and 6). Loans quoted in foreign currencies tend to have shorter maturity at the 10% level (column 2) and are associated with the presence of general covenants and the number of restrictive covenants at the 1% level (columns 5 and 6). Performance pricing provisions are more likely to be present for longer-maturity loans at the 5% level (column 2) and to be used with covenant restrictions at the 1% level (columns 4–6).

5.3 Tests for the effect of IFRS adoption on the lender mix

Hypothesis H4 predicts that IFRS adoption increases the number of both foreign and domestic lenders and, in particular, the number of foreign lenders participating in each loan deal. To test H4, we estimate Eq. (1) using three different dependent variables, *NLender, NForeign,* and *NDomestic* and report the results of Poisson regressions in columns 1 through 3, respectively, of Table 6. We apply the Poisson regression procedure because the three dependent variables represent countable numbers that range from zero to finite maxima.[24]

As shown in column 1 of Table 6, the coefficient of *DIFRS* is significantly positive at the 5% level, consistent with the view that IFRS adoption attracts more participant lenders. The coefficient of *DIFRS* is also significantly positive at the 1% level when *NForeign* is used as the dependent variable (column 2 of Table 6); there is no effect when *NDomestic* is used as the dependent variable (column 3). These results are consistent with H4, indicating that IFRS adoption attracts more foreign lenders but not more domestic lenders.

The estimated coefficients on the control variables (Panels B and C of Table 6) show that foreign lenders are attracted more to larger firms and high-leverage firms at the 1% level, while domestic lenders are attracted more to profitable firms at the 10% level. As expected, large loans (long-maturity loans) are associated with more participant lenders, whether foreign or domestic, at the 1% (10%) level. Foreign lenders do not appear to have a preference for term loans over nonterm loans. Finally, loans quoted in foreign currencies are offered primarily by foreign lenders, and more lenders, whether domestic or foreign, are attracted to syndicated loans with performance pricing provisions. These relations are significant at the 1% level.

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[24] We performed the Shapiro–Francia test for normality and rejected the null hypothesis that these variables are normally distributed at less than the 1%. These variables do not follow a normal distribution because they are a discrete random variable ranging from zero to finite maxima of 61, 56, and 56, respectively. As a robustness check, we also ran OLS regressions to test H4 and obtained qualitatively similar results to the ones reported in Table 6.

Table 6 Effect of IFRS adoption on the numbers of both foreign and domestic lenders, foreign lenders only, and domestic lenders only

Dependent variable	(1) Number of lenders (*NLender*)	(2) Number of foreign lenders (*NForeign*)	(3) Number of domestic lenders (*NDomestic*)
Panel A: Test variable			
IFRS adoption dummy (*DIFRS*)	0.14 (2.34)**	0.20 (2.95)***	−0.02 (−0.25)
Panel B: Borrower-specific controls			
Return on assets (*ROA*)	0.00 (0.86)	−0.01 (−0.40)	0.01 (1.66)*
Firm size (*Size*)	0.04 (3.21)***	0.14 (6.08)***	0.00 (0.26)
Market-to-book ratio (*MB*)	0.00 (1.47)	0.00 (1.17)	0.00 (0.25)
Leverage (*Lev*)	0.18 (1.65)*	0.54 (2.72)***	0.09 (0.83)
Cross-listed (*Cross*)	−0.09 (−1.65)*	−0.11 (−1.14)	−0.04 (−0.69)
Number of analysts (*NAnal*)	−0.02 (−1.35)	−0.02 (−0.80)	−0.01 (−0.68)
MSCI Index (*MSCI*)	−0.02 (−0.35)	−0.04 (−0.46)	0.01 (0.25)
Big 4 (or 5) auditor (*Big4*)	−0.05 (−1.45)	−0.01 (−0.12)	−0.03 (−1.12)
Panel C: Loan-specific controls			
Log of the amount of loan facility (*LoanAMT*)	0.20 (12.53)***	0.28 (11.18)***	0.14 (7.69)***
Loan maturity (*Maturity*)	0.03 (1.68)*	0.05 (1.76)*	0.03 (1.72)*
Term loan (*TLoan*)	0.11 (3.25)***	0.03 (0.63)	0.14 (3.73)***
Foreign currency dummy (*DForCurr*)	0.03 (0.61)	0.38 (3.83)***	−0.37 (−5.14)***
Performance pricing dummy (*DPPricing*)	0.33 (6.39)***	0.30 (5.47)***	0.20 (2.68)***
Constant	−2.92 (−10.07)***	−5.99 (−13.52)***	−3.06 (−6.14)***
Industry indicators	Yes	Yes	Yes
Country indicators	Yes	Yes	Yes
Year indicators	Yes	Yes	Yes
R squared	0.24	0.57	0.23
N	5,178	5,178	5,178

See "Appendix" for the definitions of all variables

Reported *z* values from Poisson regressions (1) and (2) are computed using standard errors adjusted for clustering at the firm level

***, **, and * Significance at the 1, 5, and 10% levels, respectively (two-tailed test)

6 Further analysis

6.1 The results of regressions with country median-adjusted variables

When estimating Eq. (1), we include country indicators to control for cross-country variations in the loan contracting environment. To further control for country-specific factors and alleviate concerns over potential problems of omitted correlated

variables, we include the within-country transformation of all continuous variables in Eq. (1) by taking the differences between their raw values and their medians within each country and then re-estimating Eq. (1) using these within-country median-adjusted values. Untabulated results[25] show that the median-adjusted results are, overall, in line with the main results reported in Tables 4, 5 and 6, where country fixed effects are controlled for, suggesting that our main results are unlikely to be driven by omitted country-specific factors or cross-country variations in borrower- and loan-specific controls.

6.2 Results of two-stage treatment effect regressions

As mentioned earlier, our sample selection procedures effectively exclude borrowers with mandatory IFRS adoptions, and thus the decision to adopt IFRS is voluntary. Therefore, examining the effect of IFRS adoption on loan contracting in a single-equation regression context can raise the problem of self-selection bias. To address this issue, we employ a Heckman-type two-stage regression approach. In the first stage, we estimate a probit IFRS adoption model in which the likelihood of IFRS adoption is regressed on eight firm-specific variables that are expected to influence the demand for IFRS-based reporting (as well as year and industry indicators): firm size, leverage, cash flow from operations, return on assets, asset turnover, sales growth, and the percentage change in equity financing and that of debt financing.[26] In the second stage, we re-estimate Eq. (1) after including the inverse Mills ratio obtained from the first-stage probit regression.

Untabulated results with the inverse Mills ratio included show that the coefficient for our variable of interest, *DIFRS*, is significant with expected signs at the 1% level, when *Spread* and *LoanAMT* are used as the dependent variable and at the 5 and 10% levels when *DFinCov* and *DGenCov* are used, respectively. We note, however, that the explanatory power of the first-stage probit regression is relatively low, with a pseudo-R^2 of 10%, suggesting that our probit IFRS adoption model may suffer from problems of omitted correlated variables. With the above caveat, the two-stage regression results buttress our earlier findings that banks charge lower loan rates, offer larger loans, and are less likely to require restrictive covenants for IFRS adopters than for non-adopters. We find, however, that IFRS adoption has no significant impact (at the 10% level) on loan maturity and the likelihood of collateral requirements.[27]

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[25] Tabulated results are available from the authors upon request.

[26] These variables are chosen based on prior studies on IFRS adoption or cross-listing decisions (e.g., Pagano et al. 2002, Barth et al. 2008, Kim and Shi 2010). The first-stage probit estimation (untabulated) shows that firm size and the percentage change in equity financing and that of debt financing are significant determinants of the demand for IFRS-based reporting at the 1%, 5%, and 10% levels, respectively.

[27] We do not re-estimate Eq. (1) with the inverse Mills ratio added when the dependent variable is *NCov, NLender, NForeign,* or *NDomestic*, because these variables (and thus the associated error terms) are Poisson distributed. An important assumption underlying the Heckman-type two-stage treatment effect regression is that the error terms in both the first- and second-stage regressions follow a normal distribution with zero mean and constant variance.

6.3 The results of regressions for partitioned samples

Tables 4, 5 and 6 document that IFRS adoption affects both the price and nonprice terms of loan contracts. We also find that these results are generally robust to country median adjustments of loan- and borrower-specific characteristics and potential self-selection bias associated with the decision to adopt IFRS voluntarily. This section investigates whether these results are linked to five factors shown by previous research to influence financial contracts: (1) the information environment proxied by analyst coverage; (2) the loan type, that is, term loans versus nonterm loans such as lines of credit and 364-day facilities; (3) a country's creditor rights protection; (4) a country's legal enforcement; and (5) a country's economic development. For this purpose, we partition our total sample into two subsamples, using each factor as a partitioning variable and then re-estimate Eq. (1) for each partitioned subsample. To control for country fixed effects within each partitioned subsample, we include country indicators in the regressions, except when our sample is partitioned using country-level variables. In Table 7, we report the estimated coefficient for *DIFRS* from these subsample regressions.

6.3.1 Information environment

Previous research shows that analysts following (*NAnal*) is a good proxy for the information environment (for example, Lang et al. 2003; Kim and Shi 2008). Panel A of Table 7 reports the results of regressions for the subsamples with above- and below-median *NAnal* values. The *t* statistics (*z* statistics) to test the mean (median) differences in the *DIFRS* coefficient between these subsamples are insignificant at the 10% level for all cases, suggesting that the loan contracting effects of IFRS adoption do not differ significantly between these two subsamples.[28]

6.3.2 Term versus non-term loans

Nonterm loans such as lines of credit are typically used to fund short-term investment projects or working capital needs, while term loans are used for funding long-term investment projects. Nonterm loans are lenders' commitments to offer a certain amount of credit to borrowers upon demand; they are typically not backed by collateral and are more relationship based than term loans. Term loans are often secured and tend to be transaction based. We examine whether the loan contracting effects of IFRS adoption differ systematically between the two types of loans. We partition our total sample into two subsamples, with term loan and nonterm loan facilities and re-estimate Eq. (1) separately for the two subsamples. As shown in Panel B of Table 7, we find inter-group differences in the IFRS adoption effects on *Spread* and *LoanAMT*: The rate- reducing effect of IFRS adoption is significant at

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[28] When the dependent variable is *NCov* in the poor information environment (Panel A of Table 7) and for low participation of foreign lenders (Panel C), maximum likelihood estimates for Poisson regressions do not exist, because the data have a large number of zeros (Santos Silva and Tenreyro 2009). For example, in the poor information environment subsample (Panel A), *NCov* is zero for all loans made to IFRS adopters, which precludes estimating Poisson regressions.

Table 7 Effect of IFRS adoption conditional on types of borrowers, loans, lenders, and institutions

Panel A: Good versus poor information environment (above-median versus below-median NAnal)

Dep. Var.	Good environment	Poor environment	Diff.	Good environment	Poor environment	Diff.	Good environment	Poor environment	Diff.
	Spread			*LoanAMT*			*Maturity*		
DIFRS	−26.76 (−3.01)***	−33.87 (−2.05)**	7.11 (0.39)	0.16 (1.18)	0.21 (1.67)*	−0.05 (−0.31)	0.14 (1.58)	0.18 (1.65)*	−0.04 (−0.31)
N	1,238	845		2,727	2,451		2,727	2,451	
Dep. Var.	*NCov*	Non-existence of MLE[a]		*NLender*			*NForeign*		
DIFRS	0.12 (0.38)			0.15 (2.10)**	0.15 (1.45)	0.00 (0.03)	0.23 (2.78)***	0.25 (1.36)	−0.02 (−0.09)
N	2,727	2,451		2,727	2,451		2,727	2,451	

Panel B: Term loans versus nonterm loans

Dep. Var.	Term loan	Nonterm loan	Diff.	Term loan	Nonterm loan	Diff.	Term loan	Nonterm loan	Diff.
	Spread			*LoanAMT*			*Maturity*		
DIFRS	−69.68 (−3.73)***	−11.20 (−1.47)	−58.48 (−3.00)***	−0.30 (−1.63)	0.31 (2.79)***	−0.61 (−2.84)***	0.03 (0.31)	0.15 (1.73)*	−0.12 (−0.80)
N	777	1,306		1,941	3,237		1,941	3,237	
Dep. Var.	*NCov*			*NLender*			*NForeign*		
DIFRS	−1.87 (−4.15)***	−2.31 (−5.87)***	0.43 (0.70)	0.09 (1.28)	0.11 (3.66)***	−0.02 (−0.25)	0.10 (1.00)	0.19 (6.33)***	−0.09 (−0.93)
N	1,941	3,237		1,941	3,237		1,941	3,237	

Panel C: Weak versus strong creditor rights protection (below-median versus above-median creditor right index)

Dep. Var.	Weak protection	Strong protection	Diff.	Weak protection	Strong protection	Diff.	Weak protection	Strong protection	Diff.
	Spread			*LoanAMT*			*Maturity*		
DIFRS	−22.03 (−1.65)*	−26.67 (−2.69)***	4.64 (0.27)	0.08 (0.66)	0.42 (3.70)***	−0.34 (−1.97)**	0.00 (0.07)	0.15 (1.85)*	−0.15 (−1.07)
N	713	1,370		1,102	4,076		1,102	4,076	

Table 7 continued

Dep. Var.	NCov			NLender			NForeign		
	Weak enforcement	Strong enforcement	Diff.	Weak enforcement	Strong enforcement	Diff.	Weak enforcement	Strong enforcement	Diff.
DIFRS	−16.40 (−37.78)***	−2.32 (−2.99)***	−14.08 (−15.10)***	−0.04 (−0.51)	0.19 (2.61)***	−0.23 (−2.08)**	0.13 (1.11)	0.18 (1.97)**	−0.05 (−0.40)
N	1,102	4,076		1,102	4,076		1,102	4,076	

Panel D: Weak versus strong legal enforcement (below-median versus above-median law enforcement index)

Dep. Var.	Spread			LoanAMT			Maturity		
	Weak enforcement	Strong enforcement	Diff.	Weak enforcement	Strong enforcement	Diff.	Weak enforcement	Strong enforcement	Diff.
DIFRS	−37.87 (−3.05)***	−24.65 (−2.82)***	−13.22 (−0.87)	0.11 (0.75)	0.16 (1.51)	−0.05 (−0.24)	−0.07 (−0.59)	0.17 (2.26)**	−0.24 (−1.69)*
N	1,116	954		1,773	3,371		1,773	3,371	

Dep. Var.	NCov			NLender			NForeign		
	Weak enforcement	Strong enforcement	Diff.	Weak enforcement	Strong enforcement	Diff.	Weak enforcement	Strong enforcement	Diff.
DIFRS	−0.07 (−0.10)	15.76 (20.72)***	−15.83 (−43.52)***	0.01 (0.06)	0.29 (5.29)***	−0.28 (−1.83)*	0.22 (2.15)**	0.34 (3.59)***	−0.12 (−0.81)
N	1,773	3,371		1,773	3,371		1,773	3,371	

Panel E: Low versus high economic development (below-median versus above-median LGDP)

Dep. Var.	Spread			LoanAMT			Maturity		
	Low development	High development	Diff.	Low development	High development	Diff.	Low development	High development	Diff.
DIFRS	−30.07 (−2.48)**	−9.25 (−1.02)	−20.82 (−1.43)	0.30 (2.46)**	0.16 (1.72)*	0.14 (0.98)	0.09 (1.03)	0.14 (1.76)*	−0.05 (−0.43)
N	1,635	448		2,603	2,575		2,603	2,575	

Dep. Var.	NCov			NLender			NForeign		
	Low development	High development	Diff.	Low development	High development	Diff.	Low development	High development	Diff.
DIFRS	−1.69 (−2.25)**	13.83 (15.11)***	−15.52 (−24.51)***	−0.01 (−0.15)	0.26 (4.10)***	−0.27 (−2.78)***	0.04 (0.55)	0.38 (2.77)***	−0.34 (−2.12)**
N	2,603	2,575		2,603	2,575		2,603	2,575	

See "Appendix" for the definitions of all variables

Reported t values are computed using standard errors adjusted for heteroskedasticity and firm-level clustering

***, **, and * Significance at the 1, 5, and 10% levels, respectively (two-tailed test)

[a] The maximum likelihood estimates do not exist

the 1% level for term loans but insignificant at the 10% level for nonterm loans. We find, however, that IFRS adoption encourages lenders to extend credit to nonterm loans: the loan size-increasing effect of IFRS adoption is significant at the 1% level for nonterm loans but insignificant at the 10% level for term loans.

6.3.3 Creditor rights, legal enforcement, and economic development

Previous research suggests that a country's creditor rights protection and legal enforcement frameworks influence bank loan contracting (for example, Esty and Megginson 2003; Qian and Strahan 2007; Bae and Goyal 2009). To examine whether the loan contracting effects of IFRS adoption are conditioned on country-level factors, we partition our total sample into two subsamples based on the median value of a country's creditor rights, legal enforcement, or economic development. As explained in Sect. 4.1, we measure creditor rights and the strength of legal enforcement using the creditor rights index and the legal enforcement index developed by La Porta et al. (1998) and Berkowitz et al. (2003). Economic development is measured as the natural log of the GDP per capita in year t (*LGDP*).

We re-estimate Eq. (1), separately, for the partitioned samples, excluding country indicators. As shown in Panel C of Table 7, we find no significant difference (at the 10% level) in IFRS adoption effects between countries with strong and weak creditor rights with respect to *Spread, Maturity,* and *NForeign.* We find, however, that IFRS adoption effects on increasing *LoanAMT* and *NLender* are accentuated in countries with strong creditor rights, while the *NCov*-reducing effect of IFRS adoption is attenuated in these countries. Panel D of Table 7 shows that legal enforcement has no significant impact (at the 10% level) on the extent to which IFRS adoption influences *Spread, LoanAMT,* and *NForeign.* However, IFRS adoption has significant impacts on lengthening loan maturity (at the 10% level), relaxing covenant restrictions (at the 1% level), and attracting more lenders to loan syndicates (at the 10% level) in the strong enforcement regime. The last panel of Table 7 shows that economic development is not an important factor in determining the IFRS adoption effect on loan pricing and credit availability (loan size and maturity). However, IFRS adoption has a significantly greater impact (at the 1% level) on relaxing covenant restrictions and attracting more lenders, particularly more foreign lenders, to loan syndicates in wealthy economies.

7 Summary and concluding remarks

Using a sample of non-U.S. borrowers from 40 countries during 1997 through 2005, we investigate the effect of voluntary IFRS adoption on features of loan contracting in the international loan market. We compare the price and nonprice terms of loan contracts and loan ownership structures between borrowers who voluntarily adopted IFRS and those who did not, controlling for borrower- and loan-specific characteristics, as well as year, industry and country fixed effects.

Our results reveal the following. First, we find that banks charge lower loan rates to IFRS adopters than to non-adopters. The rate difference between the two groups

is about 20–31 basis points in our main regressions. Second, we find that banks impose less restrictive nonprice terms on IFRS adopters than on non-adopters. In particular, IFRS adopters have less restrictive covenants in their loan contracts than non-adopters. We also find weak evidence that banks are willing to extend more credit to IFRS adopters by offering larger loans and longer maturities. Third, we find that IFRS adopters attract more foreign lenders participating in loan syndicates than non-adopters, suggesting that IFRS adoption enhances a borrower's visibility to foreign lenders in the international loan market. Our results are robust to country median adjustments of borrower- and loan-specific characteristics and potential self-selection bias associated with a firm's decision to adopt IFRS.

Our results suggest that banks view voluntary IFRS adoption as a borrower's credible commitment to a better reporting strategy. Evidence in this paper supports the notion that IFRS adoption leads to banks offering more favorable contract terms to borrowers by reducing pre-contract information uncertainty, improving post-contract monitoring and re-contracting, and enhancing lender familiarity with financial statements prepared by borrowers in the international loan market.

Appendix

See Table 8.

Table 8 Variable definitions

Variable	Definition
Panel A: Test variable	
DIFRS	1 for firms voluntarily adopting IFRS and 0 otherwise
Panel B: Loan-specific variables	
Spread	The interest rate that a borrower pays in basis points over LIBOR or LIBOR equivalents for each dollar drawn down
LoanAMT	The log of the amount of a loan facility
Maturity	The log of maturity measured in months
DSecured	1 if a facility is secured and 0 if a facility is unsecured
DFinCov	1 if a facility has financial covenants and 0 otherwise
DGenCov	1 if a facility has general covenants and 0 otherwise
NCov	The number of financial and general covenants

Table 8 continued

Variable	Definition
NLender	The total number of lenders in each loan facility
NForeign	The number of foreign lenders in each loan facility
NDomestic	The number of domestic lenders in each loan facility
DForCurr	1 for a facility in the foreign currency and 0 otherwise
DPPricing	1 for a facility with a performance pricing option and 0 otherwise
TLoan	1 for a term loan and 0 otherwise
Panel C: Borrower-specific variables	
ROA	Net income/total assets
Size	The log of market capitalization
MB	The ratio of market capitalization to book equity
Lev	The ratio of total debts to total assets
Cross	1 if a firm's stock is cross-listed and 0 otherwise
NAnal	The log of the number of analysts following
MSCI	1 if a firm's shares are constituents of the MSCI World index and 0 otherwise
Big4	1 if auditor is one of the Big 4 (or 5) auditors and 0 otherwise
Panel D: Country-level variables	
Creditor rights protection index	The creditor right index aggregating four dummy variables representing no automatic stay on assets, secured credit first, restrictions for going into reorganization, and current management does not stay in the reorganized firm. Source: La Porta et al. (1998)
Legal enforcement index	The Berkowitz et al. (2003) legality index measured by a summary statistic from a principal component analysis on the effectiveness of the judiciary, rule of law, risk of contract repudiation, absence of corruption, and risk of expropriation. Source: La Porta et al. (1998) and Berkowitz et al. (2003)
Economic development	The natural log of the per capita GDP. Source: International Monetary Fund

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