

## **The effect of mandatory IFRS reporting on the syndicated loan structure**

### **強制採用國際會計準則對債務契約結構之影響**

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**Abstract:** This research examines whether and how the globally mandatory adoption of International Financial Reporting Standards (hereafter, IFRS) affects the ownership structure of syndicated loans. We find that the lead arrangers retain a larger proportion of a syndicated loan, fewer lenders are involved in a syndicated loan, and lead arrangers, in turn, form a more concentrated syndicate after borrowers adopt IFRS. Specifically, the adoption of a principles-based accounting system such as IFRS, characterized by limited interpretation and implementation guidance, increases the difference in professional judgment among debt contracting parties, which in turn reduces lenders' and borrowers' demand for accounting information in signing debt contracts. Further analyses indicate that the negative effect of the mandatory adoption of IFRS on the ownership structure of a syndicated loan is weaker in common-law countries (in countries with a stricter enforcement regime) than in civil-law countries (in countries with a weaker enforcement regime).

**Keywords:** International Financial Reporting Standards (IFRS), syndicated loans, lead arranger.

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**摘要：**本研究以聯貸市場探討強制採用國際會計準則對債務契約結構的影響。實證研究結果發現在強制採用國際會計準則之後，主辦銀行的債權持有比例增加，參與聯貸的銀行家數減少，表示強制採用國際會計準則使債務契約結構趨向集中。國際會計準則屬於原則式準則，提供較少詳細解釋以及指引規範，因此財務報表編製者對會計政策選擇與裁量權具有較高彈性，協辦銀行對於採用國際會計準則所伴隨的較高資訊風險存有疑慮，因此要求主辦銀行提高債權持有比例，降低聯貸市場以會計資訊訂定債務契約之需求。進一步分析發現強制採用國際會計準則對於債務契約結構的負面影響，成文法系國家之負面影響大於普通法系國家、法令執行強度較弱國家之負面影響大於法令執行強度較強國家。

**關鍵詞：**國際會計準則、聯貸契約、主辦銀行

## 1. Introduction

This research examines the effects of the mandatory adoption of International Financial Reporting Standards (IFRS) on the ownership structure of syndicated loans. The extant studies on IFRS suggest that mandatory IFRS reporting enhances financial reporting quality and financial statement comparability (Daske, Hail, Leuz, and Verdi, 2008; Li, 2010; Byard, Li, and Yu, 2011; DeFond, Hu, Hung, and Li, 2011; Tan, Wang, and Welker, 2011; Yip and Young, 2012), which in turn benefit equity markets, particularly international capital markets (Chen, Ng, and Tsang, 2014; Hong, Hung, and Lobo, 2014; Yu and Wahid, 2014; Gao, Jiang, and Zhang, 2019). The global syndicated loan market has grown tremendously and represents a substantial source of corporate finance and bank assets in the U.S. as well as in most other countries<sup>2</sup>.

Although financial statement information is important for contracting

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<sup>2</sup> Global syndicated lending has grown strongly from the beginning of the 1990s to date. For example, signings of new loans totaled \$1.6 trillion in 2003, or more than three times the 1993 amount (Gadanecz, 2004). In the U.S., over the past decade there have been \$780 billion in new debt securities and only \$2 billion for equities (Graham, Li, and Qiu, 2008). According to the American Banker, syndicated lending generates the greatest part of underwriting revenue for the financial sector (about 51% of total U.S. corporate finance) (Weidner, 2000).

purposes (Leftwich, 1983; Watts and Zimmerman, 1986; Ball, 2001; Holthausen and Watts, 2001; Ahmed, Billing, Morton, and Harris, 2002; Ball and Shivakumar, 2008, Li, 2010; Armstrong, Guay, and Weber, 2010; Chang, Fang, and Chu, 2007; Chen, 2011)<sup>3</sup>, scant work to date explores whether the mandatory IFRS adoption influences the use of accounting numbers for debt contracting. Ball, Li, and Shivakumar (2015) investigate the contractibility of IFRS financial statement information, finding a significant drop in accounting-based debt covenants following mandatory IFRS adoption, which suggests that the contractibility of IFRS financial statement information also decreases. Using bank loans in 31 countries during the 2000-2011 period, Chen, Chin, Wang, and Yao (2015) find that borrowers that mandatorily adopt IFRS experience an increase in interest rates, a reduction in the use of accounting-based financial covenants, an increase in the likelihood that a loan is collateralized, a reduction in loan maturity, and an increase in the fraction of a loan retained by lead arrangers. Contrary to the argument of Ball *et al.* (2015), they indicate that their findings are consistent with the argument that IFRS reporting reduces the function of information role of accounting.

To enhance our understanding of accounting information's influence on debt contracting, we test whether the ownership structure of syndicated loans changes after mandatory IFRS adoption. A syndicated loan involves multiple banks jointly offering funds to a borrower. Before the syndication, lead arrangers (or lead lenders or lead banks) develop borrower relationships, negotiate contract terms, guarantee loan amounts, and then find participants to fund part of the loan. After the syndication, lead arrangers monitor the borrower's compliance with contractual terms on behalf of the syndicate and also act as agents in collecting payments and renegotiating debt terms (Taylor and Sansone, 2007).

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<sup>3</sup> In their review article, Armstrong *et al.* (2010) further conclude that "... *financial reporting is useful because efficient contracts are possible when contracting parties commit to a more transparent information environment*" and indicate that accounting information plays a more explicit role on debt contracts than on contracting in the minority-interest setting. Ball and Shivakumar (2008) reveal that the primary economic role of reported earnings is not to provide timely new information to the share market; by inference, that role lies elsewhere - for example, in settling debt and compensation contracts and in disciplining prior information.

Syndicate participants face two types of information asymmetry: one between borrowers and lenders and another between lead arrangers and participants. A special case of asymmetric information provided by the syndicated loan market is the one between lead arrangers and participants in the lending syndicate. The asymmetric information between lead banks and participants leads to agency problems *ex-ante* (before contract signing) and *ex-post* (after contract signing) (Ball, Bushman, and Vasvari, 2008). In the *ex-ante* case, lead arrangers may possess private information about the borrower, creating adverse-selection problems. In the *ex-post* case, lead arrangers may shirk in their monitoring role or engage in self-serving activities, because they only retain part of the loan, thereby causing moral hazard problems. These agency problems can be alleviated either by increasing lead arrangers' screening and monitoring incentives through a greater loan share (Sufi, 2007) or by reducing the information asymmetry among lenders (Beatty, Liao, and Zhang, 2019).

Information asymmetries among contracting parties fundamentally affect the design of optimal loan arrangements (Ball *et al.*, 2008). Ownership is an important mechanism for mitigating the effects of asymmetric information (Leland and Pyle, 1977), as loan participants rely on lead banks to perform due diligence on the borrower before signing any contract. Such due diligence efforts are largely unobservable, and thus loan participants require the informed lead arrangers to hold a larger proportion of the loan when information asymmetry is more severe. Loan participants also need to rely on lead arrangers to monitor the borrowers on an ongoing basis after signing the contract. The unobservability of monitoring effort results in a demand for the lead banks to retain a higher percentage of the loan (Leland and Pyle, 1977).

As the severity of information asymmetry decreases, the demand for the lead arrangers to have a higher share of the loan is reduced. Sufi (2007) shows that the more transparent information a borrower provides, the smaller is the loan concentration. Ball *et al.* (2008) find when borrowers' accounting information is more able to capture credit quality deterioration that a higher percentage of the

loan can be syndicated out. Because loan participants usually do not have privileged access to the borrower's inside information, publicly available accounting information can therefore help the participating banks assess the borrower's credit quality. Moreover, loan contracts often contain covenants that restrict dividend payments, issuance of additional debt, or capital expenditure or have asset sale restrictions to prevent asset substitution (Armstrong *et al.*, 2010). These provisions are usually based on accounting numbers. Therefore, accounting information should be an important mechanism for mitigating the effects of asymmetric information on the syndicate process (Ahmed *et al.*, 2002; Ball, 2006; Holthausen and Watts, 2001; Leftwich, 1983; Li, 2010; and Watt and Zimmerman, 1986).

The globalization of accounting standards through IFRS is progressively replacing many different local generally accepted accounting standards (hereafter local GAAPs). Studies generally find that mandatory IFRS reporting influences accounting quality in the context of financial reporting transparency and comparability (Bae, Tan, and Welker, 2008; Barth, Landsman, and Lang, 2008; DeFond *et al.*, 2011; Tan *et al.*, 2011). Since accounting information plays an important role in the loan contracting process and accounting quality is a pertinent consideration in the design of loan contracts (Hasan, Park, and Wu, 2012; Nikolaev, 2010), we investigate whether the loan ownership structure changes due to the adoption of globally mandatory IFRS.

We posit that there are two possible opposing effects triggered by mandatory IFRS adoption in the context of syndicated loans. From the information (valuation) perspective, enhanced financial reporting quality and comparability due to mandatory IFRS adoption mitigate the adverse-selection problems between lead banks and participating lenders, in turn reducing the demand on the lead banks to hold a larger proportion of the loan (Chang *et al.*, 2007). From the contracting perspective, the adoption of mandatory IFRS, characterized by limited interpretation and guidance, increases noise in financial reporting, which widens the differences in subjective judgment during the debt contracting process (Ball *et al.*, 2015). This then raises pre-contract negotiation costs to

lenders and borrowers and thereby reduces the likelihood of successful contracting between lead arrangers and potential participating lenders. Anticipating these information disadvantages, potential participants may require the lead lender to retain a larger proportion of syndicated loans. As a result, it becomes an empirical question on how mandatory IFRS adoption affects the syndicate ownership structure.

We thus construct a sample of non-U.S. borrowers for 2,219 loans from 35 countries (22 IFRS countries and 13 non-IFRS countries) during the period from 2000 to 2009. We employ a difference-in-difference analytical approach to test our research questions, which allows us to control for possible changes in the IFRS adopters and the concurrent changes that non-IFRS adopters are experiencing. Most countries in our sample adopted IFRS in 2005 except for Singapore, which adopted IFRS in 2003. Our empirical results show that lead banks hold a significantly higher proportion of loans after mandatorily adopting IFRS for financial reporting, thus supporting the contracting perspective.

To ensure the robustness of analyses, we use two alternative measures - a Herfindahl index and the number of lenders - to investigate the effects of mandatory IFRS reporting on changes in the syndicated loan structure. The results are similar. Syndicated loans are more concentrated and the number of lenders decreases significantly in the post-IFRS period. One plausible reason for this empirical result is that participant lenders are concerned with increased information risk due to greater flexibility in accounting choices and managerial discretions that accompany IFRS adoption. The lead lender in turn thus retains a larger share of a syndicated loan.

We next examine if the negative effect of mandatory IFRS reporting on the syndicated loan structure is conditional on the institutional environments, including (1) a country's legal origin and (2) the country-level enforcement regimes. Empirical results indicate that the contracting effects of mandatory IFRS adoption are relatively weaker for mandatory adopters in common-law countries or domiciled in countries with stronger enforcement regimes. The results are consistent with prior studies whereby the degree of creditor protection

affects the design of bank loans (Miller and Reisel, 2012; Qian and Strahan, 2007).

Chen *et al.* (2015) also examines mandatory IFRS adoption's effects on syndicated loan contracting. Our study differs from Chen *et al.* (2015) in many aspects, such as hypotheses, data, and conclusions. First, Chen *et al.* (2015) focus mainly on how mandatory IFRS changes impact loan contracts (spread, the use of financial covenants, collateral, and maturity), whereas our study examines whether and how mandatory IFRS adoption changes the ownership of syndicated loans. The major advantage of using a syndicated loan ownership structure as our dependent variable is that it captures the extent of information asymmetry among the lenders, lead arrangers, and participating lenders. This information asymmetry is a very unique case offered by the syndicated loan market.

Second, Chen *et al.* (2015) build their research question based on the information role of financial statements, whereas our research question is built on both the contractibility and the information roles of financial statements. We argue that the adoption of IFRS can trigger economic consequences through its informational and contracting roles. Moreover, our study documents a net negative effect of IFRS adoption on the syndicated loan market.

Finally, we address whether a country's legal origin or the strength of the enforcement regime affects the association between IFRS adoption and the function of the syndicated loan market. This is important, because reporting incentives are shaped by many institutional factors (Ball, Robin, and Wu, 2003; Hail, Leuz, and Wysocki, 2010a, 2010b).

This study makes contributions to the literature in several ways. First, we contribute to the literature on the effects of mandatory IFRS adoption on syndicated loans. Prior studies on the economic consequence of mandatory IFRS (e.g., Daske *et al.*, 2008; Li, 2010; Byard *et al.*, 2011; DeFond *et al.*, 2011; Tan *et al.*, 2011) focus primarily on the equity market. We cannot extract from the effects on the equity market what might be the effects on the debt market. Our paper concentrates exclusively on debt markets.

Second, while the extant research verifies the positive effect of IFRS

reporting from the *information* (valuation) role of accounting, our evidence indicates the opposite from the contracting role of accounting. IFRS adoption increases information asymmetries between lead arrangers and participating lenders and between lenders and borrowers. It is more difficult for participating lenders to screen and monitor borrowers that adopt IFRS. Participating lenders would require lead arrangers to retain more of the loan and form a more concentrated syndicate with fewer participants in the post-IFRS era. This indicates that it would be more difficult for lead lenders to recruit participation lenders if the borrower adopts IFRS. We suggest that firms applying IFRS should be cautious when using the flexibility offered by IFRS. The increased accounting choices and the extensive use of fair value accounting numbers can increase debtholders' concerns related to accounting numbers, which in turn affect the syndication process and the contractibility of accounting information.

Third, prior studies (e.g., Sufi, 2007; Ball *et al.*, 2008) mainly use samples from the U.S., but it is not clear if the results are generalizable to countries outside of the U.S. Thus, we provide additional evidence on the theoretical model by Holmstrom (1979) and Holmstrom and Tirole (1997), which posits that information asymmetries between lenders affect syndicated loan structure. More importantly, the use of exogenous change in mandatory IFRS adoption can rule out the endogeneity problems and avoid difficulty in interpreting empirical results. Our analyses can avoid the selection-bias issue and rule out the possibility that the effects of IFRS adoption on syndicated loan structures are driven by the changes in firms' incentives and the economic environment, rather than the change in the financial reporting system. Finally, while Watts (2003) and Whittington (2008) suggest that debtholders' information need is an important force that shapes the properties of accounting numbers, our findings have policy implications for regulators<sup>4</sup>.

The rest of the paper runs as follows. Section 2 presents hypotheses' development. Section 3 offers the research design and discusses the data. Section

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<sup>4</sup> In his review paper, Whittington (2008) discusses in greater details on whether stewardship should be a separate objective of financial reporting in the IASB framework.



4 shows the empirical results. Section 5 conducts sensitivity tests. Section 6 concludes.

## **2. Background and hypotheses' development**

### **2.1 Institutional background of the syndicated loan market**

Syndicated loans are an increasingly significant source of firm finance and have recently led to more underwriting revenue than either the equity or the bond market (Altunbas, Gadanez, and Kara, 2006; Ball *et al.*, 2008). Syndicated loans are credits granted by multiple financial institutions to a borrower. The syndicate members can be divided into two groups: lead arrangers and participating lenders. Before the syndication, lead arrangers develop borrower relationships, negotiate contract terms, and guarantee loan amounts. Once the lead arranger signs a mandate<sup>5</sup> with a borrower, the syndication process begins. The lead arrangers then recruit potential participant lenders to fund part of the loan. They provide an information memorandum (IM) to potential buyers, summarizing the executive summary, investment considerations, a list of terms and conditions, an industry overview, and a financial model. After a syndicated loan agreement is signed by all parties, the lead banks are responsible for monitoring the borrower's compliance with contractual terms on behalf of the syndicate and act as agents in collecting payments and dealing with necessary amendments such as a covenant waiver or a change in the collateral (Standard & Poor's, 2007; Dennis and Mullineaux, 2000; Lee and Mullineaux, 2004).

Syndicate participants face two types of information asymmetry: one between borrowers and lenders and another between lead arrangers and participants. The syndicated loan market offers a special case of asymmetric information, which is the one between lead arrangers and participants. The asymmetric information between lead banks and participants leads to agency problems ex-ante (before contract signing) and ex-post (after contract signing)

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<sup>5</sup> A mandate is a preliminary loan agreement outlining the lead's syndication strategy, the specification of debt covenant, fees, and collateral, as well as the loan amount and a range for the interest rate.

(Ball *et al.*, 2008). Because the lead arranger collects information and establishes a relationship with the borrower in the first place, the lead arranger can obtain private information about the borrower. Before signing the loan contracts, the participating banks rely on the lead banks' due diligence on screening the borrower and assessing the borrower's credit quality. Hence, the participating banks face adverse-selection problems before the syndication, because the lead bank has an incentive to syndicate loans of lower quality. After the syndication, the participating banks face moral hazard problems, because the lead banks only retain part of the loan, and so their incentives to monitor the borrower decrease. Both adverse selection and moral hazard problems can shape syndicate participants' demands for lead banks' retained share of the loan (Leland and Pyle, 1977; Sufi, 2007; Ball *et al.*, 2008; Ivashina, 2009).

Ball *et al.* (2008) indicate that information asymmetries between contracting parties essentially influence the design of optimal loan arrangements. Leland and Pyle (1977) theoretically predict that ownership is an important mechanism for mitigating the effects of asymmetric information. Since loan participants rely on lead arrangers to perform due diligence before and after the syndication and because such due diligence efforts are largely unobservable, loan participants thus require the lead arrangers to hold a larger fraction of the loan when information asymmetry is more severe. Conversely, the demand for lead arrangers' higher share of the loan drops if information asymmetry is less severe. Sufi (2007) shows that the more transparent information a borrower provides, the less concentrated the loan is. Ball *et al.* (2008) find when borrowers' accounting information is more able to capture their credit quality deterioration that a larger proportion of their loan can be syndicated out. Because loan participants usually do not have privileged access to the borrower's inside information, publicly available accounting information can therefore help the participating banks assess the credit quality of the borrower.

Loan contracts often also contain covenants that restrict dividend payments, issuance of additional debt, or capital expenditure or have asset sale restrictions to prevent asset substitution and among others (Armstrong *et al.*, 2010). These

provisions are often based on accounting numbers. Therefore, accounting information should be an important mechanism for mitigating the effects of asymmetric information on the syndicate process (Ahmed *et al.*, 2002; Ball, 2006; Holthausen and Watts, 2001; Leftwich, 1983; Li, 2010; and Watt and Zimmerman, 1986). This research posits that publicly available accounting information not only resolves information asymmetries among contracting parties (e.g., the lead arranger, the participating bank, and the borrower), but also mitigates the adverse selection and moral hazard problems between the lead arranger and the participating banks - namely, the contractibility of accounting information can be a mechanism for reducing the cost of contracting and monitoring.

## **2.2 Hypotheses' development**

In this section we discuss two competing views, the information perspective and contracting perspective, on the contractibility of accounting information under IFRS financial reporting that affects the syndicated loan structure.

### **2.2.1 The informational effect of IFRS reporting on syndicate structure**

The information role of accounting: Debt holders, as well as shareholders, demand financial statements that supply information about the amounts, timing, and uncertainty of firms' prospective cash receipts (Chang *et al.*, 2007; Chen and Hsu, 2007; Chen, 2011). Debt holders view this information as an indicator of the firm's ability to service the debt and avoid flow-based insolvency. Shareholders seek such information, as it helps them perform equity valuation. Extant literature on the equity market concludes that mandatory IFRS adoption influences financial reporting quality and information transparency (Daske *et al.*, 2008; Hail *et al.*, 2010a, 2010b; Armstrong, Barth, Jagolinzer, and Riedl, 2010; Li, 2010). Based on extant research into the relation between accounting information and loan structure (Sufi, 2007; Ball *et al.*, 2008; Ivashina, 2009), we posit that adopting IFRS may also play an important role in the loan syndication process by altering information asymmetry between lead arrangers and

participating lenders.

In the context of a syndicated loan, information asymmetries and the need for monitoring lead to adverse selection and moral hazard between the lead lenders and the participating lenders (Leland and Pyle, 1977; Sufi, 2007; Ball *et al.*, 2008; Ivashina, 2009). Before signing the loan contract, potential participants require the lead arranger to retain a certain proportion of the loan in order to mitigate the information asymmetries between lead arrangers and participating lenders and the associated adverse selection problems inherent in a syndicated loan. Moreover, the lead arrangers are also required to hold a fair share of a loan to ameliorate potential moral hazard problems after the signing of the loan contract. The level of information asymmetry among various parties involved will affect the share of a loan retained by the lead arranger (Sufi, 2007).

From the information perspective, extant research reveals that IFRS adoption enhances financial reporting quality and transparency. High-quality accounting numbers enable potential lenders to more accurately assess the borrower's credit quality independently, which in turn reduces the information asymmetry between the lead arranger and participating lenders (Hasan *et al.*, 2012; Nikolaev, 2010). As a result, the lead arrangers can hold a smaller share of the syndicated loan after borrowers adopt IFRS. Similarly, high-quality IFRS reporting not only can lower the cost associated with post-contract due diligence and monitoring efforts of the lead arrangers, but also can facilitate participating lenders in monitoring the lead arrangers' contractual duties. Thus, IFRS adoption could help mitigate the moral hazard problem after the loan contract is signed. Overall, the information perspective predicts that the adoption of IFRS enables a higher proportion of the loan being syndicated out. As a result, the lead banks' share retained is reduced and more lenders are involved, leading to a more diversified loan structure.

### **2.2.2 The contracting effect of IFRS reporting on syndicate structure**

The contracting role of accounting: Financial statements are reports on stewardship, which provide information about how the management of an

enterprise has discharged its stewardship responsibility to owners for the use of enterprise resources entrusted to it. Shareholders seek such information that helps them compensate management for current period performance. Studies (Myers, 1977; Smith and Warner, 1979; Kothari, Ramanna, and Skinner, 2010) indicate that asset substitution and underinvestment problems drive debt holders' demand for information about the value of the firm's net assets in the event of liquidation and the extent of other claims on those assets. Because debt holders expect agency problems, they can mitigate such problems by relating debt covenants to accounting numbers in the debt contract. This contracting demand from accounting standards can be only effective under the situation in which accounting standards have verifiable and conservative features (Kothari *et al.*, 2010).

From the contracting perspective, the adoption of mandatory IFRS could have some adverse effects on debt contracting. IFRS adoption can hardly lessen the information asymmetries and associated adverse selection and moral hazard problems inherent in the syndication process. First, the current allegedly "principles-based" standards (i.e., IFRS) are characterized by a lesser scope of exceptions, fewer treatment exceptions, and the lack of (or less) detailed implementation guidance (Maines, Bartov, Fairfield, Hirst, Iannaconi, Mallett, Schrand, Skinner, and Vincent, 2003; Schipper, 2003). Second, IFRS is known for the extensive use of fair values in financial statements. The judgments and estimates widely applied by fair values have the potential to limit the contracting usefulness of accounting information by introducing biases and errors into reported numbers (Yeh and Yu, 2014)<sup>6</sup>. Thus, one may argue that potential

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<sup>6</sup> Some studies provide indirect evidence on these arguments. For example, based on the case of FASB Interpretation No. 47, which is classified as a principles-based standard by the SEC, Fornaro and Huang (2012) provide evidence that significant opportunities for earnings management and discretion exist within a principles-based accounting environment, particularly when standards lack clarity. Lin, Riccardi, and Wang, (2012) examine whether accounting quality changed following a switch from U.S. GAAP (more guidance standards) to IFRS and find that accounting numbers under IFRS generally exhibit more earnings management, less timely loss recognition, and less value relevance compared to those under U.S. GAAP. These findings spur lenders to be less likely to participate in a loan.

participant lenders may face higher information risk concerning borrowers' credit quality. Prior studies indicate that lead arrangers retain more of the loan and form a more concentrated syndicate when borrowers are informationally opaque and require more intense monitoring with due diligence (Holmstrom, 1979; Holmstrom and Tirole, 1997; Sufi, 2007; Ball *et al.*, 2008). Therefore, we argue that lead arrangers hold more of the loan in the post-IFRS period. Compared to the pre-IFRS period, the ownership structure of the syndicated loans becomes more concentrated after IFRS adoption.

Adopting principles-based accounting standards implies fewer scope and treatment exceptions for income smoothing. This will unexpectedly increase volatility in reported earnings (Schipper, 2003). Barth *et al.* (2008) provide evidence on the increased income volatility in countries adopting IFRS. In such a case, the increased contract costs in the post-IFRS era, including costs associated with writing, negotiating, and enforcing debt contracts, may not alleviate or even exacerbate the information asymmetries between lead banks and participating banks. Thus, the associated adverse selection and moral hazard problems may deteriorate. Potential participating lenders may require the lead arrangers to retain a higher proportion of a syndicated loan. Given the above discussions based on two distinct perspectives on how mandatory IFRS adoption influences the syndicated ownership structure, our hypothesis is stated in null form.

*Hypothesis 1:* The proportion of the loan retained by lead arrangers correlates with whether a borrower adopts mandatory IFRS reporting.

### **2.2.3 The effect of the institutional environment on syndicate structure**

The IFRS-related literature suggests that the effects of a mandated IFRS in the capital market are heterogeneous (Stecher and Suijs, 2012; Shima and Gordon, 2011; Daske, *et al.*, 2008; Ball *et al.*, 2003; Ball, 2006)<sup>7</sup>. These studies contend that standards alone play a limited role in determining reporting quality.

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<sup>7</sup> For example, extant studies argue that IFRS implementation is likely to be heterogeneous across countries (Ball, 2006); in addition, firms' reporting incentives are shaped by markets' and countries' institutional environment and play a key role for reporting outcomes (Ball *et al.*, 2003; Ball, 2006).

This highlights the importance of firms' reporting incentives, which are shaped by many institutional factors. We further explore if the negative relation between IFRS adoption and syndicate loan structure is conditional on institutional factors, such a country's legal origin and country-level enforcement regimes. The investigation is important for interpreting the differences, if any, between the syndicated loan market and the equity market.

### **2.2.3.1 The effects of legal origin**

A country's legal origin creates incentives that influence the reporting behaviors of corporate executives (Bushman and Piotroski, 2006). A useful starting point to investigate this issue is to examine whether preparer incentives originate predominately from markets (as in common-law countries) or governments (as in civil-law countries) (Ball, Kothari, and Robin, 2000). In common-law countries, the shareholder base typically is large and diverse, and information asymmetries problems can usually be resolved by public disclosure. Therefore, the demand for financial reporting quality is higher, such as the timely incorporation of economic losses in reporting accounting earnings. The timely recognition of economic losses reduces information asymmetries between lenders and borrowers (LaFond and Watts, 2008)<sup>8</sup> and makes existing leverage and coverage covenants bind more quickly (e.g., Zhang, 2008)<sup>9</sup>. External shareholders and analysts play important monitoring roles. Since the demand for high-quality financial reporting and disclosure is enforced primarily from the market system, shareholder litigations are expected to be more frequent and higher in cost in common-law countries. Therefore, firms in common-law countries are less likely to engage in earnings manipulation and abuse the discretion afforded by IFRS. In contrast, information asymmetries are more

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<sup>8</sup> Zhang (2008) shows that conservatism benefits lenders through the timely signaling of default risk, as manifested by accelerated covenant violations.

<sup>9</sup> LaFond and Watts (2008) document that conservatism reduces the manager's incentives and ability to manipulate accounting numbers and so reduces information asymmetries and deadweight losses that information asymmetries generate. This increases firm and equity values.

likely to be efficiently resolved by insider communication with stakeholder representatives in civil-law countries. As a result, the market demand for high-quality public financial reporting is lower in these countries.

IFRS is also widely viewed as reflecting a largely common-law approach of transparent and timely disclosure (Ball *et al.*, 2000). This argument, coupled with the aforementioned differences between common-law and civil-law systems, suggests that IFRS adopters in common-law countries can more effectively signal credit quality to lenders and reduce contracting costs more than those in civil-law countries (Ball *et al.*, 2000)<sup>10</sup>. In sum, we argue that the negative effects of mandatory IFRS adoption on syndicated loan structure are less pronounced in common-law countries than in civil-law countries. Therefore, the argument yields the following hypothesis.

*Hypothesis 2a:* The negative effect of mandatory IFRS adoption on the syndicated loan market is less pronounced in common-law countries than in civil-law countries.

### **2.2.3.2 The effects of creditor rights**

The second institutional factor addressed is the strength of the enforcement regime. Extant studies document that the strength of the enforcement regimes that shape managers' reporting incentives is likely to be the primary driver for the development of accounting standards (Hail *et al.*, 2010a; 2010b; Holthausen, 2009; Leuz, 2010). Mandatory IFRS adoption's effects on equity markets appear relatively more pronounced in countries with strict enforcement regimes and in countries where legal institutions induce stronger reporting incentives to firms (Daske *et al.*, 2008; Li, 2010; Armstrong *et al.*, 2010; Byard *et al.*, 2011; and DeFond *et al.*, 2011). The need for legal enforcement might be more desperate in a debt market. Cross-countries' evidence shows that the degree of creditor protection affects bank loan contracting (Qian and Strahan, 2007; Miller and

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<sup>10</sup> Absent common-law penalties for false signaling, it is difficult to see how high-quality firms in civil-law countries will be able to reduce contracting costs through improved financial reporting (Ball *et al.*, 2000).



Reisel, 2012) and syndicated loan structure (Esty and Megginson, 2003). Borrowers domiciled in countries with stronger creditor protection are more likely to acquire lower cost and longer maturity contracts (Qian and Strahan, 2007). Since IFRS's benefits in financial reporting are more pronounced in countries with strict enforcement regimes, we expect that the negative effects of mandatory IFRS adoption on the syndicated loan structure will be less pronounced in countries with stricter legal enforcement. Therefore, the argument yields the following hypothesis.

*Hypothesis 2b:* The negative effect of mandatory IFRS adoption on the syndicated loan market is less pronounced in countries with strong legal enforcement than in countries with weak legal enforcement.

### 3. Research design and data

#### 3.1 Empirical models

The present research applies a difference-in-difference approach to investigate the effects of mandatory IFRS reporting on a syndicated loan structure. This method is an efficient way to investigate the changes in syndicated loan structure in the pre- versus post-mandatory IFRS reporting periods for mandatory adopters. At the same time, we can control for possible changes from the IFRS adopters and concurrent changes from non-IFRS adopters.

We proceed in four steps. First, we create two key variables of interest: *Mandatory\_Adopter*, and *Post\_mandatory*. The former is an indicator variable, which takes the value of one if the borrower is from countries that mandate IFRS after December 31, 2005 and zero otherwise. The second variable, *Post\_mandatory*, captures whether the firm-year observation falls in the post-mandatory adoption period and takes on the value of one if the firm-year observation falls in year 2005 or later and zero otherwise. Thus, we use the interaction term, *Mandatory\_Adopter\* Post\_mandatory*, to capture the change in the independent variable across pre- and post-adoption periods for a firm from

IFRS countries relative to the change over the same interval for the control firms from non-IFRS countries.

Second, we capture the ownership structure of syndicated loans by using the share retained by lead banks. Thus, we measure our dependent variable, *Proportion\_lead*, by the percentage of the loan retained by the lead arranger. For additional analysis, we use two alternative constructs to capture the syndicated loan structure: a Herfindahl index (*Herfindahal\_index*) and the total number of lenders in the syndicated loan (*Num\_lead*). The Herfindahl index can capture any effects of “joint” monitoring. Similar to Sufi (2007), the Herfindahl index is calculated using each syndicate member’s share in the loan. It is the sum of the squared individual shares in the loan.

Third, our empirical model includes both loan-specific and borrower-specific control variables. Deal-specific control variables are described as follows: (1) Size of a deal (*Log(Loan\_Size)*) is defined as the natural log of the total dollar value of the deal converted into US dollars. (2) Loan maturity (*Loan\_maturity*) is defined as the number of years to maturity of the loan. (3) Loan type (*Term, Revolver*), where we use two dummy variables to control each of the following loan types: term loans, revolver loans, and all other types of loans (omitted group). Similarly, borrower-specific control variables are described as follows: (1) Firm size (*Log(Firm\_Size)*) is measured as the natural log of the book value of the total assets. Ball *et al.* (2008) argue that lead arrangers retain less share of a deal when the borrowing firm is larger. (2) *Leverage (LEV)* is the ratio of the borrower’s long-term debt to total assets. (3) Return on assets (*ROA*) represents earnings before interest and taxes (*EBIT*) scaled by average total assets at the time of the deal.

Fourth and finally, to control for the prior lender-borrower relationship, all empirical models include the variable, *Prior\_lead*, which is a dummy variable taking the value of one if at least one of the loan’s lead arrangers had been a lead arranger of the borrower’s previous loans over the five years preceding the loan’s issuance date and zero otherwise. To control for the syndicate-specific reputation of the arranger, we include *Syndicate\_relationship* in all empirical models. This

variable is measured in the following way: for every participant lender, the number of previous relationships between the lead arranger and the participant is deflated by the total number of deals syndicated by the arranger (the estimation is performed over five years preceding the loan's issuance)<sup>11</sup>. We also include a dummy variable for firms that trade an ADR in the U.S. (*US\_listing*). This empirical model includes *year-fixed* effects to capture common effects on dependent variables in a particular year. To control for country-level macroeconomic factors, we include *Log(GDP)* in our regressions, measured as the natural log of *GDP* per capita for each country-year during the sample period.

To reduce possible endogeneity concerns, all research models examine the lagged relation between debt-related variables in year *t* and financial-related variables in year *t-1*. Appendix A provides specific definitions of each variable. We combine these variables into the following regression equation estimated at the facility level (or the tranche level):

$$\text{Syndicate\_Structure} = \beta_0 + \beta_1 \text{Mandatory\_Adopter} + \beta_2 \text{Post\_mandatory} + \beta_3 \text{Mandatory\_Adopter} * \text{Post\_mandatory} + \sum \beta_j \text{Control}_j + \varepsilon, \quad (1)$$

Where *Syndicate\_Structure* is set equal to either *Proportion\_lead*, *Herfindahal\_index*, or *Num\_lender*; and *Control* is the set of control variables including various fixed effects. The coefficient of the variable of interest is  $\beta_3$ , indicating whether lead arrangers hold more (or less) of the loan, form a more (or less) concentrated syndicate, or select fewer (or more) participants after the borrower adopts IFRS relative to the pre-IFRS era.

To test H2a and H2b, we create two binary indicator variables. *Common\_Law* equals 1 if a firm is domiciled in a country with a common-law legal system and 0 otherwise. *Credit\_right* indicates that the country has stronger

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<sup>11</sup> Lead arrangers that have previous lending relationships with the participant bank could retain a lower proportion of the syndicated loan ownership, because the reputation of the lead bank helps mitigate participant banks' concern about the adverse selection and moral hazard problems.

creditor rights. Following Daske *et al.* (2008), we measure the quality of legal enforcement, *Credit\_right*, using the score drawn from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998). The variable is a proxy for the strength of the creditor rights protected in a country, and a higher value indicates that the country has stronger creditor rights. To examine if the effects of mandatory IFRS reporting on the syndicated structure are conditioned on the institutional environment, we interact the institutional indicator variables with *Mandatory\_Adopter \* Post\_mandatory* in the following equations:

$$\begin{aligned}
 \text{Syndicate\_Structure} = & \beta_0 + \beta_1 \text{Mandatory\_Adopter} \\
 & + \beta_2 \text{Post\_mandatory} \\
 & + \beta_3 \text{Mandatory\_Adopter} * \text{Post\_mandatory} \\
 & + \beta_4 \text{Mandatory\_Adopter} * \text{Post\_mandatory} * \text{Common\_Law} \\
 & + \sum \beta_j \text{Control}_j + \varepsilon
 \end{aligned} \tag{2}$$

$$\begin{aligned}
 \text{Syndicate\_Structure} = & \beta_0 + \beta_1 \text{Mandatory\_Adopter} \\
 & + \beta_2 \text{Post\_mandatory} \\
 & + \beta_3 \text{Mandatory\_Adopter} * \text{Post\_mandatory} \\
 & + \beta_4 \text{Mandatory\_Adopter} * \text{Post\_mandatory} * \text{Credit\_right} \\
 & + \sum \beta_j \text{Control}_j + \varepsilon
 \end{aligned} \tag{3}$$

All other variables are as previously defined in equation (1).

### 3.2 Data

We construct a sample of loan agreements for borrowers domiciled in 35 countries, including 22 mandatory IFRS countries and 13 non-mandatory IFRS countries. Loan information comes from Reuters Loan Pricing Corporation's (LPC) DealScan database, which offers detailed coverage of lending information. About half of the loan agreement information in this dataset is from the United States loan agreements beginning in the 1980s, and the other half is from loan agreements outside the United States beginning in the middle of the 1990s. DealScan provides deal-based and facility-based data, allowing us to identify

names of borrowers and their corresponding lenders. We carefully observe individual-specific loan information, including loan amount<sup>12</sup>, interest rate<sup>13</sup>, the maturity date of the loan, date of loan inception, whether or not the loan is secured, loan type, and purpose. DealScan also identifies the number of lenders involved and categorizes lenders as either lead lender or participants<sup>14</sup>. We then match the borrower in the DealScan database with the borrower-specific financial variables in the Compustat Global database, which includes the balance sheet and income statement information for publicly-traded firms across a wide range of countries.

From the DealScan database, we obtain loan facilities across 35 countries over the sample period from 2000-2009. Table 1 presents our sample composition by countries and country-level variables for mandatory IFRS adopters (treatment sample) and non-IFRS borrowers (benchmark sample), respectively. Table 1 Panel A shows the sample composition of IFRS adopter countries by the number of facilities and their legal institutions. Most of our sample firms are European countries that adopted IFRS in 2005. Singapore is the only country that adopted IFRS earlier (in 2003) in our sample. Among the sample countries, Australia, Hong Kong, Ireland, Singapore, South Africa, and the United Kingdom are common-law countries, while the others are code-law countries. We collect a total of 721 facilities, among them are 209 facilities collected from the post-IFRS era.

Table 1 Panel B presents our sample of non-IFRS adopters. Most of the facilities are loans by Japanese firms. Some facilities are loans for Taiwanese firms. Common-law non-IFRS adopters include India, New Zealand, Pakistan, and Thailand.

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<sup>12</sup> The loan amount is converted from the original currency to US dollars for comparison across countries.

<sup>13</sup> The interest rate is measured as basis points over London Inter-bank Offered Rate (LIBOR), including all fees.

<sup>14</sup> We classify syndicate members as the lead lender that receives the following descriptions in the DealScan database: lead bank, lead manager, lead agent, admin agent, arranger, agent, and bookrunner.

**Table 1**  
**DealScan's facility composition**

IFRS Adopter	Total number of facilities	Total number of facility – years with IFRS adoption	Legal origin	Creditor rights index	Adoption of mandatory IFRS reporting
Australia	131	48	<i>Common</i>	1	12/31/2005
Austria	2	0	<i>Civil</i>	3	12/31/2005
Belgium	1	1	<i>Civil</i>	2	12/31/2005
Denmark	4	1	<i>Civil</i>	3	12/31/2005
Finland	8	0	<i>Civil</i>	1	12/31/2005
France	86	18	<i>Civil</i>	0	12/31/2005
Germany	31	4	<i>Civil</i>	3	12/31/2005
Greece	1	0	<i>Civil</i>	1	12/31/2005
Hong Kong	42	20	<i>Common</i>	4	12/31/2005
Hungary	3	0	<i>Civil</i>	1	12/31/2005
Ireland	8	0	<i>Common</i>	1	12/31/2005
Italy	28	3	<i>Civil</i>	2	12/31/2005
Luxembourg	4	1	<i>Civil</i>	-	12/31/2005
Netherlands	39	16	<i>Civil</i>	2	12/31/2005
Norway	31	23	<i>Civil</i>	2	12/31/2005
Philippines	15	3	<i>Civil</i>	0	12/31/2005
Singapore	43	29	<i>Common</i>	4	12/31/2003
South Africa	16	6	<i>Common</i>	3	12/31/2005
Spain	46	8	<i>Civil</i>	2	12/31/2005
Sweden	32	8	<i>Civil</i>	2	12/31/2005
Switzerland	11	1	<i>Civil</i>	1	12/31/2005
United Kingdom	139	19	<i>Common</i>	4	12/31/2005
<b>Total</b>	<b>721</b>	<b>209</b>			

**Panel B: DealScan's facility composition by country and country-level variables for non-IFRS borrowers (benchmark sample)**

Non-IFRS Adopter	Total number of facilities	Total number of facility – years with IFRS adoption	Legal original	Creditor rights index
Bermuda	8	-	-	-
Brazil	3	-	<i>Civil</i>	1
Chile	4	-	<i>Civil</i>	2
China	5	-	<i>Civil</i>	2
India	55	-	<i>Common</i>	4
Japan	1027	-	<i>Civil</i>	2
Korea (South)	73	-	<i>Civil</i>	3
Mexico	1	-	<i>Civil</i>	0
New Zealand	27	-	<i>Common</i>	3
Pakistan	1	-	<i>Common</i>	1
Russia	10	-	<i>Civil</i>	2
Taiwan	283	-	<i>Civil</i>	2
Thailand	1	-	<i>Common</i>	3
Total	1498			

**Panel C: Sample distribution by facility year**

Facility-year	Mandatory-IFRS borrowers	Non-mandatory-IFRS borrowers
2000	49	32
2001	81	80
2002	104	136
2003	96	173
2004	90	226
2005	114	238
2006	67	76
2007	61	102
2008	42	211
2009	17	224
Total	721	1498

Table 1 Panel C shows sample distribution by facility year. Our sample includes more facilities of IFRS-adopters from the years 2002 and 2005. There are only a few facilities of IFRS-adopters from the years 2008 and 2009,

probably because of the 2008 global financial crisis. However, the sample of non-IFRS adopters is relatively evenly distributed.

## 4. Empirical Results

### 4.1 Descriptive statistics

Table 2 presents descriptive statistics of the variables used in our analysis for IFRS adopters (treatment sample in panel A) and non-adopters (benchmark sample in panel B). As shown in panel A of Table 2, the mean and median of *Proportion\_lead* are 15.97% and 9.73%, respectively, for the pre-IFRS period, and 18.95% and 10.78%, respectively, for the post-IFRS period. This pattern shows that lead arrangers on average hold a higher proportion of the loan after a borrower adopts IFRS reporting. Similar results can be observed in both variables of *Herfindahal\_index* and *Num\_lender*: a greater concentration of holdings and fewer lenders involved in a syndicate after adopting IFRS. Univariate analyses provide preliminary evidence supporting the *contracting* perspective of mandatory IFRS adoption effects on loan structure.

Regarding loan-specific variables, lenders have decreased their average loan amount (from \$934 million to \$715 million) and loan maturity (from 4.18 years to 3.95 years) and increased collateral requirements (from 45% to 57%) in the post-IFRS era. These results are in line with the argument by Melnik and Plaut (1986), which indicate that lenders could provide borrowers a trade-off between certain contractual terms. If lenders are less willing to sign loan contracts based on IFRS reporting, then they would substitute accounting-based terms with non-accounting-based terms to compensate for their risk.

### 4.2 Multivariate analyses

For multivariate regression analyses, we use three different dependent variables to measure syndicate structure (*Syndicate\_Structure*): the percentage of the loan held by the lead arranger (*Proportion\_lead*), the concentration level of holdings within a syndicate (*Herfindahal\_index*), and the number of lenders in a



**Table 2**  
**Descriptive statistics for variables used in regression analyses**

Panel A: Descriptive statistics by IFRS adopters (treatment sample)												
	IFRS borrowers						Pre-IFRS period			Post-IFRS period		
	N	Mean	Std	P25	Med	P75	N	Mean	Med	N	Mean	Med
<b>Dependent Variables</b>												
<i>Proportion_lead</i>	721	16.84%	15.87%	5.40%	10.00%	21.42%	512	15.97%	9.73%	209	18.95%**	10.78%***
<i>Herfindahal_index</i>	721	1,697.42	1,556.00	570.00	1,088.84	2,237.50	512	1,613.56	1,046.64	209	1,902.87**	1,266.66**
<i>Num_lender</i>	721	13.97	10.55	6.00	11.00	20.00	512	15.18	12.00	209	11.01***	9.00***
<b>Loan-specific Variables</b>												
<i>Loan_size</i>	721	870,890,000	1,724,000,988	69,000,000	243,965,874	820,135,044	512	934,528,698	243,916,419	209	715,003,960*	243,965,874
<i>Loan_maturity</i>	721	4.11	2.24	3.00	4.91	5.00	512	4.18	5.00	209	3.95	3.50*
<i>Spread</i>	498	0.0940	0.0777	0.0425	0.0670	0.1300	372	0.0962	0.0700	126	0.0875	0.0650
<i>Secured</i>	167	0.49	0.50	0.00	0.00	1.00	115	0.45	0.00	52	0.57	1.00
<i>Term</i>	721	0.34	0.47	0.00	0.00	1.00	512	0.29	0.00	209	0.45***	0.00***
<i>Revolver</i>	721	0.46	0.49	0.00	0.00	1.00	512	0.50	0.50	209	0.36***	0.00***
<b>Borrower-specific Variables</b>												
<i>Log(Firm_size)</i>	721	21.49	1.88	20.14	21.46	22.82	512	21.57	21.51	209	21.30*	21.35
<i>LEV</i>	721	0.20	0.17	0.09	0.19	0.28	512	0.20	0.18	209	0.21	0.21
<i>ROA</i>	721	0.04	0.06	0.02	0.04	0.06	512	0.03	0.03	209	0.06***	0.06***
<i>US_listing</i>	721	0.21	0.40	0.00	0.00	0.00	512	0.22	0.00	209	0.17	0.00

  

Panel B: Descriptive statistics by non-IFRS adopters (benchmark sample)												
	Non-IFRS borrowers						pre-IFRS period			post-IFRS period		
	N	Mean	Std	P25	Med	P75	N	Mean	Med	N	Mean	Med
<b>Dependent Variables</b>												
<i>Proportion_lead</i>	1,498	32.16%	17.66%	18.82%	30.03%	41.81%	889	34.01%	33.33%	609	29.46%***	28.00%***
<i>Herfindahal_index</i>	1,498	2,431.49	1,483.00	1,336.00	2,188.20	3,244.44	889	2,594.17	2,336.00	609	2,194.01***	1,837.50***
<i>Num_lender</i>	1,498	6.65	4.94	3.0	5.0	8.0	889	7.04	5.00	609	6.07***	5.00***
<b>Loan-specific Variables</b>												
<i>Loan_size</i>	1,498	37,381,827	221,652,097	290,614	802,056	3,997,380	889	27,128,649	719,000	609	52,349,110**	1,002,840***
<i>Loan_maturity</i>	1,498	3.05	2.47	1.00	3.00	5.00	889	2.80	1.08	609	3.42***	3.00***
<i>Spread</i>	355	0.0962	0.0752	0.0500	0.0800	0.1000	120	0.0883	0.0670	235	0.1002	0.900**
<i>Secured</i>	268	0.55	0.49	0.00	1.00	1.00	178	0.34	0.00	90	0.98***	1.00***
<i>Term</i>	1,498	0.41	0.49	0.00	0.00	1.00	889	0.36	0.00	609	0.48***	0.00***
<i>Revolver</i>	1,498	0.43	0.49	0.00	0.00	1.00	889	0.42	0.00	609	0.43	0.00
<b>Borrower-specific Variables</b>												
<i>Log(Firm_size)</i>	1,498	21.01	1.80	20.00	21.00	22.00	889	21.03	21.00	609	20.98	21.00
<i>LEV</i>	1,498	0.17	0.13	0.06	0.15	0.24	889	0.17	0.15	609	0.16**	0.13***
<i>ROA</i>	1,498	0.01	0.05	0.00	0.01	0.04	889	0.01	0.01	609	0.02***	0.02***
<i>US_listing</i>	1,498	0.04	0.20	0.00	0.00	0.00	889	0.04	0.00	609	0.04	0.00

*Proportion\_lead* is defined as the fraction of the loan retained by the lead arranger. The lead lender is designated if the following descriptions appear in the DealScan database: lead bank, lead manager, lead agent, admin agent, arranger, agent, and bookrunner. *Herfindahal\_index* measures the sum of the squared percentage ownership of each lender in the loan. *Num\_lender* is defined as the total number of lenders in the loan syndicate. *Loan\_size* is the total dollar value of the loan converted to US dollars. *Loan\_maturity* is the number of years to maturity of the loan. *Spread* is based on the All-in-Drawn-Spread measure reported by DealScan. This measure is equal to the amount the borrower pays in

basis points over LIBOR or LIBOR equivalents, for each dollar drawn down. *Secured* is defined as an indicator variable taking the value of one if the loan is secured with collateral and 0 otherwise. *Term* is defined as an indicator variable taking the value of one if the loan's type belongs to term loan and 0 otherwise. *Revolver* is defined as an indicator variable taking the value of one if the loan's type belongs to lines of credit and 0 otherwise. *Log(Firm\_size)* is defined as the natural log of the borrower's book value of total assets. *LEV* is defined as the ratio of the borrower's long-term debt to total assets. *ROA* is defined as the borrower's earnings before interests and taxes (EBIT) scaled by average total assets at the time of the deal. *US\_listing* is defined as an indicator variable taking the value of one if the borrower has issued an ADR and 0 otherwise. \*\*\*, \*\*, and \* denote significance at the respective 1%, 5%, and 10 % levels (two-tailed test) for the mean (median) differences between pre- versus post- IFRS period. The two independent T statistics are used for the mean difference, and the Wilcoxon signed-ranks test is used for the median difference.

syndicated loan (*Num\_lender*). Table 3 reports the results of estimating equation (1), which regresses syndicate ownership structure (measured by *Proportion\_lead*, *Herfindahal\_index*, or *Num\_lender*) on a dummy variable indicating mandatory IFRS adopters (*Mandatory\_Adopter*), a dummy variable for the time period (*Post\_mandatory*), the interaction between the two dummy variables (*Mandatory\_Adopter \* Post\_mandatory*), and a set of control variables. The variable of interest is the interaction term, which captures changes in the syndicated ownership structure of mandatory adopters after 2005<sup>15</sup> versus the corresponding change for non-IFRS adopters.

Table 3 presents the results of multivariate analyses. In model 1 where the dependent variable is *Porportion\_lead*, the coefficient of *Mandatory\_Adopter* is negative and significant at the 1% level, suggesting that the proportion of a syndicated loan that is retained by lead arrangers is lower for loans of IFRS adopters than for non-IFRS adopters. In model 2 where the dependent variable is *Herfindahal\_index*, the coefficient of *Mandatory\_Adopter* is negative and significant at the 10% level, indicating that the ownership structure of syndicated loans is less concentrated when a borrower reports under IFRS versus non-IFRS reporting firms. Similarly, as revealed in model 3, when the dependent variable is *Num\_lender*, the coefficient of *Mandatory\_Adopter* is positive and significant at the traditional level, suggesting that more lenders are involved in a syndicated loan when a borrower reports under IFRS than when it reports under non-IFRS. The coefficients of *Post\_mandatory* are positive and significant in models 1 and 2, indicating that the lead arrangers retain a higher share of the loan and form a more concentrated syndicate after IFRS adoption. Similarly, model 3 shows that the coefficient of *Post\_mandatory* is statistically negative, indicating that fewer lenders are involved in a syndicated loan after IFRS adoption.

Our main interest is on the interaction term of *Mandatory\_Adopter \* Post\_mandatory*. As revealed in model 1, the coefficient is positive (coeff. = 4.83%) and significant at the 1% level, suggesting that IFRS

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<sup>15</sup> Most sample countries, except Singapore, do not mandatorily adopt IFRS until 2005, when it becomes mandatory to do so.

**Table 3**  
**The effect of mandatory IFRS reporting on the ownership structure of the syndicated loans**

Model	Model 1		Model 2		Model 3	
Dependent Variable	<i>Proportion_lead</i>		<i>Herfindahal_index</i>		<i>Num_lender</i>	
Independent Variable	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value
<i>Intercept</i>	55.50	7.71***	7,048.43	10.75***	-9.35	-3.12***
<i>Mandatory_Adopter</i>	-5.77	-4.02***	-242.23	-1.85*	3.80	6.36***
<i>Post_mandatory</i>	5.23	1.85*	461.83	1.79*	-4.28	-3.63***
<b><i>Mandatory_Adopter*Post_mandatory</i></b>	<b>4.83</b>	<b>2.92***</b>	<b>463.34</b>	<b>3.07***</b>	<b>-2.37</b>	<b>-3.43***</b>
<i>Log(Loan_size)</i>	-5.29	-10.43***	-322.52	-6.98***	1.70	8.06***
<i>Loan_maturity</i>	-0.14	-0.93	-5.51	-0.38	-0.08	-1.22
<i>Term</i>	-2.73	-2.50**	-349.28	-3.51***	1.47	3.23***
<i>Revolver</i>	-1.01	-1.00	-272.78	-2.94***	0.53	1.26
<i>Prior_lead</i>	0.09	0.13	-98.32	-1.47	0.29	0.96
<i>Syndicate_relationship</i>	-9.67	-1.86*	-1369.09	-2.89***	1.56	0.72
<i>Log(Firm_size)</i>	-1.09	-4.21***	-166.95	-7.04***	0.84	7.79***
<i>LEV</i>	-1.00	-0.41	192.52	0.87	-2.71	-2.69***
<i>ROA</i>	2.85	0.48	603.12	1.11	-4.46	-1.80*
<i>US_listing</i>	1.37	1.10	103.67	0.92	2.21	4.28***
<i>Log(GDP)</i>	7.40	6.37***	243.31	2.30**	-2.27	-4.70***
Year fixed effects	Yes		Yes		Yes	
N	2,219		2,219		2,219	
Adj. R <sup>2</sup>	32.75%		19.74%		37.77%	

1. This table shows regression analyses of the effect of mandatory IFRS reporting on the ownership structure of loans using the difference-in-differences approach. In model 1, *Proportion\_lead* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory*, and control variables. In model 2, *Herfindahal\_index* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Common\_law*, and control variables. In model 3, *Num\_lender* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Common\_law*, and control variables. *Mandatory\_Adopter* is defined as an indicator variable that takes the value of one if the borrower is a mandatory IFRS adopter (the treatment firm) and zero otherwise. *Post\_mandatory* is an indicator variable taking the value of one if a firm-year observation falls into 2005 or later and 0 otherwise. All variables are defined in Appendix A.
2. Regressions include year fixed effects.
3. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed test).

borrowers experience an increase in the proportion of syndicated loans retained by lead arrangers. Specifically, in terms of magnitude, the percentage held by the

lead arranger is 4.83% larger (or 26.68% at the mean of 16.84) when borrowers adopt IFRS.

Model 2 shows that the coefficient on *Mandatory\_Adopter\*Post\_mandatory* is positive (coeff. = 463.34) and significant at the 1% level. This indicates that for IFRS borrowers, the syndicate is more concentrated after IFRS adoption. Specifically, the syndicate structure is 27.30% more concentrated using the Herfindahl index (463.34/1697.42) after IFRS-borrowers adopt IFRS.

Model 3 also similarly indicates that the coefficient on *Mandatory\_Adopter\*Post\_mandatory* is negative (-2.37) and significant at the 1% level, suggesting that IFRS adoption is associated with a fewer number of lenders. In terms of magnitude, IFRS-borrowers have 16.96% (2.37/13.97) fewer participants at the mean after IFRS adoption. Overall, the findings presented in Table 3 indicate that mandatory IFRS adoption makes lead arrangers retain a larger fraction of a syndicated loan and form a more concentrated syndicate with fewer participant lenders. These findings are consistent with arguments of the *contracting perspective* that mandatory IFRS reporting adversely affects the ownership structure of a syndicated loan.

Concerning loan-specific control variables, the coefficient of *Log(Loan\_size)* is first significantly negative in models 1 and 2 and significantly positive in model 3. The results suggest that the proportion of loans retained by lead arrangers is lower for larger loans, and thus the loan should be more diffused and financed by more syndicate lenders. These results are consistent with prior studies (e.g., Ball *et al.*, 2008).

Second, the coefficient of the *Term* indicator is significantly negative in models 1 and 2 and significantly positive in model 3, indicating that lead arrangers retain a small portion of ownership, and thus more syndicate members are willing to participate in transaction-based term loans. For borrower-specific control variables, the coefficient of *Log(Firm\_size)* is significantly negative in models 1 and 2 and significantly positive in model 3, indicating that lead arrangers hold less share of the loan, and that more syndicate members

participate in the loan when the borrowing firm is large. Consistent with prior studies, the coefficient of *Syndicat\_relationship* is negative and significant.

In sum, the results in Table 3 are consistent with empirical findings by Sufi (2007) and in line with the theoretical framework by Holmstrom (1979) and Holmstrom and Tirole (1997). The IFRS regime, having greater inherent flexibility and a lack of detailed implementation guidelines, leaves more room for opportunistic earnings management (Ball *et al.*, 2015; Langmead and Soroosh, 2009). Consequently, borrowers that adopt IFRS are more difficult to be screened and monitored, thus exacerbating the adverse selection and moral hazard problems in the syndication process. Participating lenders are generally requiring lead arrangers to retain more of the loan and form a more concentrated syndicate with fewer participants in the post-IFRS era. This indicates that it would be more difficult for lead lenders to recruit participant lenders if the borrower adopts IFRS. Firm management should thus be cautious in applying IFRS. The increased options in choosing accounting methods might raise creditors' concerns about a firm's accounting numbers, which might in turn influence the loan syndication process.

### 4.3 The effect of institutional environment on the syndicated loan

Table 4 presents the results after including institutional factors. The signs of the coefficient on *Mandatory\_Adopter\*Post\_mandatory* in models 1-3 are consistent with those in Table 3, indicating that on average mandatory IFRS adoption increases the share of a loan held by the lead arranger and leads to a more concentrated syndicate. The coefficients of *Mandatory\_Adopter\*Post\_mandatory\*Common\_law* are -7.59 ( $t$ -value=-3.39), -706.40 ( $t$ -value=-347), and 1.54 ( $t$ -value=1.66) for the *Proportion\_lead* (model 1), *Herfindahal\_index* (model 2), and *Num\_lender* (model 3) regressions, respectively. The results in model 1 imply that after IFRS adoption, lead arrangers hold 7.59% (or 45.07% at the mean of 16.84) less of the loan for IFRS-borrowers in common-law countries than those in civil-law countries. The results in model 2 are consistent (41.62% at the mean of 1,697.42). Similarly, the

**Table 4**  
**The effect of mandatory IFRS reporting conditional on the legal origin**

Model Dependent Variable	Model 1		Model 2		Model 3	
	<i>Proportion_lead</i>		<i>Herfindahal_index</i>		<i>Num_lender</i>	
Independent Variable	Coef.	t-value	Coef.	t-value	Coef.	t-value
<i>Intercept</i>	56.78	7.89***	7168.15	10.95***	-9.62	-3.20***
<i>Mandatory_Adopter</i>	-5.49	-3.83***	-216.12	-1.65*	3.74	6.26***
<i>Post_mandatory</i>	7.36	2.55**	659.74	2.51**	-4.71	-3.91***
<i>Mandatory_Adopter*Post_mandatory</i>	9.01	4.37***	851.90	4.54***	-3.22	-3.74***
<b><i>Mandatory_Adopter*Post_mandatory*Common_law</i></b>	<b>-7.59</b>	<b>-3.39***</b>	<b>-706.40</b>	<b>-3.47***</b>	<b>1.54</b>	<b>1.66*</b>
<i>Log(Loan_size)</i>	-5.36	-10.58***	-328.62	-7.12***	1.71	8.12***
<i>Loan_maturity</i>	-0.22	-1.38	-12.39	-0.84	-0.06	-0.98
<i>Term</i>	-2.46	-2.25**	-324.16	-3.26***	1.41	3.10***
<i>Revolver</i>	-0.78	-0.77	-251.12	-2.71***	0.48	1.15
<i>Prior_lead</i>	-0.00	-0.00	-107.34	-1.61	0.31	1.03
<i>Syndicate_relationship</i>	-9.78	-1.89*	-1379.61	-2.92***	1.58	0.73
<i>Log(Firm_size)</i>	-1.05	-4.04***	-162.74	-6.87***	0.83	7.70***
<i>LEV</i>	-1.50	-0.62	145.63	0.66	-2.61	-2.59***
<i>ROA</i>	2.86	0.48	603.45	1.12	-4.46	-1.80*
<i>US_listing</i>	1.11	0.90	79.55	0.70	2.26	4.38***
<i>Log(GDP)</i>	7.02	6.02***	207.41	1.95*	-2.19	-4.52***
Year fixed effects	Yes		Yes		Yes	
N	2,219		2,219		2,219	
Adj. R <sup>2</sup>	32.07%		20.14%		37.82%	

- This shows regression analyses of the effect of mandatory IFRS reporting conditional on legal origin, whether common law or civil law, using the difference-in-differences approach. In model 1, *Proportion\_lead* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Common\_law*, and control variables. In model 2, *Herfindahal\_index* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Common\_law*, and control variables. In model 3, *Num\_lender* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Common\_law*, and control variables. *Mandatory\_Adopter* is defined as an indicator variable that takes the value of one if the borrower is a mandatory IFRS adopter (the treatment firm) and zero otherwise. *Post\_mandatory* is an indicator variable taking the value of one if a firm-year observation falls into 2005 or later and 0 otherwise. *Common\_law* is defined as an indicator variable taking the value of one if the firm is domiciled in a country with a common-law legal system and 0 otherwise. Most countries, except for Singapore, in our sample did not mandatorily adopt IFRS until 2005, when it becomes mandatory to do so. All variables are defined in Appendix A.
- Regressions include year fixed effects.
- \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed test).

results in model 3 indicate that IFRS-borrowers in common-law countries have 1.54 (or 11% at the mean of 13.97) more loan participants than those in civil-law countries, as predicted. Together the results reveal that the effects of mandatory IFRS adoption on the loan structure of syndicated loans are less pronounced in common-law countries than in civil-law countries.

The second institutional factor under investigation is the strength of the enforcement regime. The interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Credit\_right*, indicates whether the effects of mandatory IFRS reporting on the syndicated structure are conditioned on the strength of a country's creditor rights. The coefficients on *Mandatory\_Adopter\*Post\_mandatory\*Credit\_right* are -2.72 (t-value=-3.58), -295.96 (t-value=-4.27), and 0.33 (t-value=1.04) for *Proportion\_lead* (model 1), *Herfindahal\_index* (model 2), and *Num\_lender* (model 3), respectively. The results show that the adverse effect of mandatory IFRS reporting on the syndicated loan structure is less pronounced in countries with strong creditor rights than in countries with weaker creditor rights. This is consistent with our predictions.

The findings in Tables 4 and 5 overall indicate that the negative effect of mandatory IFRS adoption on the ownership structure of syndicated loans is relatively weaker for mandatory adopters located in common-law countries or domiciled in countries with stronger enforcement regimes. These results highlight the important roles a country's institutional environment has at determining the extent to which mandatory IFRS adoption affects the syndicated loan market. This result has implications for regulators. Strengthening the legal institution thus benefits a firm's financial reporting and subsequently the functioning of the capital market.

## **5. Sensitivity analyses**

To ensure the robustness of our findings, we conduct a battery of sensitivity analyses in this section.



Table 5

## The effect of mandatory IFRS reporting conditional on the creditor right

Model	Model 1		Model 2		Model 3	
Dependent Variable	<i>Proportion_lead</i>		<i>Herfindahal_index</i>		<i>Num_lender</i>	
Independent Variable	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value
<i>Intercept</i>	56.25	7.81***	7142.11	10.91***	-8.85	-2.95***
<i>Mandatory_Adopter</i>	-5.56	-3.88**	-219.28	-1.68*	3.77	6.32***
<i>Post_mandatory</i>	5.37	1.91**	475.06	1.85**	-4.28	-3.64***
<i>Mandatory_Adopter*Post_mandatory</i>	10.84	4.52***	1118.72	5.13***	-3.03	-3.03***
<b><i>Mandatory_Adopter*Post_mandatory*Creditor_right</i></b>	<b>-2.72</b>	<b>-3.58***</b>	<b>-295.96</b>	<b>-4.27***</b>	<b>0.33</b>	<b>1.04</b>
<i>Log(Loan_size)</i>	-5.37	-10.60***	-331.16	-7.19***	1.68	7.98***
<i>Loan_maturity</i>	-0.15	-0.98	-6.50	-0.45	-0.07	-0.18
<i>Term</i>	-2.51	-2.31**	-325.85	-3.28***	1.48	3.26***
<i>Revolver</i>	-0.79	-0.78	-249.50	-2.69***	0.54	1.29
<i>Prior_lead</i>	0.11	0.16	-95.13	-1.43	0.32	1.06
<i>Syndicate_relationship</i>	-9.48	-1.83*	-1347.80	-2.86***	1.56	0.72
<i>Log(Firm_size)</i>	-1.08	-4.20***	-166.11	-7.04***	0.84	7.79***
<i>LEV</i>	-1.16	-0.48	171.86	0.78	-2.77	-2.75***
<i>ROA</i>	3.58	0.60	681.09	1.26	-4.84	-1.95*
<i>US_listing</i>	1.48	1.20	116.08	1.03	2.22	4.29***
<i>Log(GDP)</i>	7.26	6.25***	226.06	2.14**	-2.35	-4.85***
Year fixed effects	Yes		Yes		Yes	
N	2,215		2,215		2,215	
Adj. R <sup>2</sup>	33.13%		20.38%		37.60%	

- This table shows regression analyses of the effect of mandatory IFRS reporting conditional on the creditor right using the difference-in-differences approach. In model 1, *Proportion\_lead* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Creditor\_right*, and control variables. In model 2, *Herfindahal\_index* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Creditor\_right*, and control variables. In model 3, *Num\_lender* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Creditor\_right*, and control variables. *Mandatory\_Adopter* is defined as an indicator variable taking the value of one if the borrower is a mandatory IFRS adopter (the treatment firm) and zero otherwise. *Post\_mandatory* is an indicator variable taking the value of one if a firm-year observation falls into 2005 or later and 0 otherwise. *Creditor\_right* is the proxy for the creditor rights protected in a country, derived annually at the country level from La Porta *et al.* (1998). Most countries, except for Singapore, in our sample did not mandatorily adopt IFRS until 2005, when it becomes mandatory to do so. All variables are defined in Appendix A.
- Regressions include year fixed effects.
- \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed test).

## 5.1 Including interest rate in the models

Loan interest rate (*Spread*) is excluded in our main tests due to a huge loss of observations without loan spread data provided by the Dealscan database. Since interest rate is a very important element of a loan that influences the total borrowing cost, we re-run the regression analyses with the inclusion of *Spread*, and the results are listed in Table 6 Panel A to Panel C. The original sample size of 2,219 facility-years falls to 850 facility-years, indicating that about 60% of observations are lost due to a lack of loan spread data.

In Table 6 Panel A, when the syndicate ownership structure is measured by *Proportion\_lead*, the test variable of interest, *Mandatory\_Adopter\*Post\_mandatory*, is still significantly positive with a coefficient estimate of 3.28 and t-value of 2.52. This result suggests that lead banks retain a higher share of loans after mandatory IFRS adoption. We find similar results when the loan ownership structure is measured by *Herfindahal\_index* and *Num\_lender*. Both results show that IFRS adopters' loans are more concentrated in the post-IFRS period. The coefficient of *Spread* is significantly positive in models 1 and 2, suggesting that lead banks retain more of the loan if they can charge a higher interest rate on the borrower.

In Table 6 Panels B and C, we present regression analyses for the effect of mandatory IFRS reporting conditional on the legal origin and creditor right, respectively. In Panel B, *Mandatory\_Adopter\*Post\_mandatory\*Common\_law* negatively correlates with *Proportion\_lead* and *Herfindahal\_index*, though it does not significantly correlate with *Num\_lender*. Results reported in Panel C are similar to those in Panel B. After controlling *Spead*, the regression results are generally consistent with our main empirical results.

## 5.2 The deal-level analyses

The results for the syndicated loans presented so far are based on the facility level as opposed to a deal level. However, a syndicated loan deal may contain more than one loan facility. The actual syndicated loan contract is drafted at the

**Table 6**  
**Controlling interest rate in the models**

<b>Panel A H1 The Effect of mandatory IFRS reporting on the ownership structure of the syndicated loans</b>						
Model	Model 1		Model 2		Model 3	
Dependent Variable	<i>Proportion_lead</i>		<i>Herfindahal_index</i>		<i>Num_lender</i>	
Independent Variable	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value
<i>Mandatory_Adopter</i>	-2.60	-1.56	-257.32	-1.70*	3.67	3.34***
<i>Post_mandatory</i>	-3.54	-2.57**	-340.62	-2.62***	-0.64	-0.71
<b><i>Mandatory_Adopter*Post_mandatory</i></b>	<b>3.28</b>	<b>2.52**</b>	<b>279.49</b>	<b>2.49**</b>	<b>-2.53</b>	<b>-2.03**</b>
<b><i>spread</i></b>	<b>2.38</b>	<b>3.60***</b>	<b>243.14</b>	<b>3.90***</b>	<b>-0.04</b>	<b>-0.10</b>
<i>Control variables omitted</i>						
N	850		850		850	
Adj. R <sup>2</sup>	35.67%		21.85%		34.21%	
Original Testing Sample	2,219		2,219		2,219	
Original Testing Adj. R <sup>2</sup>	32.75%		19.74%		37.77%	
<b>Panel B The Effect of mandatory IFRS reporting conditional on the legal origin</b>						
Model	Model 1		Model 2		Model 3	
Dependent Variable	<i>Proportion_lead</i>		<i>Herfindahal_index</i>		<i>Num_lender</i>	
Independent Variable	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value
<i>Mandatory_Adopter</i>	-6.52	-3.38***	-447.35	-2.44**	4.54	3.52***
<i>Post_mandatory</i>	3.71	1.03	424.27	1.24	-4.07	-1.69*
<i>Mandatory_Adopter*Post_mandatory</i>	5.18	2.10**	435.22	2.20**	-1.30	-0.79
<b><i>Mandatory_Adopter*Post_mandatory*Common_law</i></b>	<b>-5.35</b>	<b>-2.34**</b>	<b>-473.73</b>	<b>-2.19**</b>	<b>-0.33</b>	<b>-0.22</b>
<b><i>spread</i></b>	<b>3.01</b>	<b>4.32***</b>	<b>286.42</b>	<b>4.33***</b>	<b>-0.08</b>	<b>-0.19</b>
<i>Control variables omitted</i>						
N	850		850		850	
Adj. R <sup>2</sup>	28.54%		25.85%		36.88%	
Original Testing Sample	2,219		2,219		2,219	
Original Testing Adj. R <sup>2</sup>	32.07%		20.14%		37.82%	
<b>Panel C The Effect of mandatory IFRS reporting conditional on the creditor right</b>						
Model	Model 1		Model 2		Model 3	
Dependent Variable	<i>Proportion_lead</i>		<i>Herfindahal_index</i>		<i>Num_lender</i>	
Independent Variable	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value	Coef.	<i>t</i> -value
<i>Mandatory_Adopter</i>	-6.53	-3.41***	-447.39	-2.46**	4.60	3.57***
<i>Post_mandatory</i>	2.96	0.83	358.44	1.06	-4.18	-1.75*
<i>Mandatory_Adopter*Post_mandatory</i>	5.33	2.06**	415.43	1.69*	-0.86	-0.50

<i>Mandatory_Adopter*Post_mandatory*Creditor_right</i>	-1.63	-2.36**	-131.57	-2.00**	-0.24	-0.53
<i>spread</i>	2.88	4.13***	274.73	4.15***	-0.02	-0.06
<i>Control variables omitted</i>						
N	846	846	846	846	846	846
Adj. R <sup>2</sup>	28.73%	28.73%	25.87%	25.87%	36.71%	36.71%
Original Testing Sample	2,215	2,215	2,215	2,215	2,215	2,215
Original Testing Adj. R <sup>2</sup>	33.13%	33.13%	20.38%	20.38%	37.60%	37.60%

1. By including *Spread*, this table shows regression analyses of the effect of mandatory IFRS reporting on the ownership structure of loans using the difference-in-differences approach. Regression analyses of the effect of mandatory IFRS reporting conditional on the legal origin and creditor rights are also presented. *Spread* is based on the All-in-Drawn-Spread measure reported by DealScan. All variables are defined in Appendix A.
2. Regressions include year fixed effects.
3. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed test).

deal level, and all lenders and covenants are listed together on this contract. Because loan terms of the facilities can vary within a syndicated loan deal, a deal typically includes facilities with different prices, types, or maturities (Houston *et al.*, 2007). In our sample, 80% of the loan deals contain only one facility, 15% of the loan deals have two facilities, and there is a total of 2,219 loan facilities for the 1,826 loan deals. Sufi (2007) argues that treating multiple facilities in the same syndicated loan deal as independent observations could lead to erroneously small standard errors. For these reasons, after repeating analyses of Tables 3-5 at the deal level, we find similar results. Table 6 presents the results for equation (1) based on the deal level and indicates that the primary results are very similar to those in Table 3. Therefore, our findings are robust to deal-level analyses.

### 5.3 Using country median-adjusted variables to control for country effects

Section 4.3 indicates that our main findings are conditional on certain institutional factors, including a country's legal origin and the strength of the enforcement regime. To further control for country-specific factors and potential problems of omitted variables, we re-conduct our analyses by including the within-country median-adjusted transformation of all continuous variables in equations (1) and (2). Specifically, we calculate the differences between the raw values and their medians within each country and then re-estimate equations (1)

**Table 7**  
**The effect of mandatory IFRS reporting on the ownership structure of the syndicated loans: Using the deal level**

Model	Model 1		Model 2		Model 3	
Dependent Variable	<i>Proportion_lead</i>		<i>Herfindahal_index</i>		<i>Num_lender</i>	
Independent Variable	Coef.	t-value	Coef.	t-value	Coef.	t-value
<i>Intercept</i>	57.64	7.17***	7073.55	9.66***	-8.28	-2.52**
<i>Mandatory_Adopter</i>	-3.49	-2.22**	-22.95	-0.16	2.82	4.40***
<i>Post_mandatory</i>	2.09	0.45	63.64	0.15	-0.64	-0.34
<b><i>Mandatory_Adopter*Post_mandatory</i></b>	<b>5.77</b>	<b>2.65***</b>	<b>380.81</b>	<b>1.92**</b>	<b>-0.94</b>	<b>-1.06</b>
<i>Log(Loan_size)</i>	-6.03	-10.81***	-384.13	-7.56***	1.69	7.46***
<i>Loan_maturity</i>	-0.09	-0.56	2.67	0.17	-0.09	-1.35
<i>Term</i>	-2.55	-2.14**	-348.69	-3.22***	1.58	3.27***
<i>Revolver</i>	-0.58	-0.52	-239.89	-2.34**	0.47	1.03
<i>Prior_lead</i>	-0.38	-0.48	-148.33	-2.04**	0.56	1.74*
<i>Syndicate_relationship</i>	-7.13	-1.31	-1218.64	-2.46**	1.40	0.63
<i>Log(Firm_size)</i>	-0.81	-2.79***	-136.94	-5.14***	0.75	6.32***
<i>LEV</i>	0.10	0.04	305.27	1.29	-2.48	-2.34**
<i>ROA</i>	4.70	0.76	377.31	0.67	-2.76	-1.10
<i>US_listing</i>	-0.61	-0.42	-85.89	-0.64	3.64	6.03***
<i>Log(GDP)</i>	6.71	5.37***	188.28	1.65*	-2.24	-4.39***
Year fixed effects	Yes		Yes		Yes	
N	1,894		1,894		1,894	
Adj. R <sup>2</sup>	31.82%		18.59%		37.82%	

- This table examines the effect of mandatory IFRS reporting conditional on the legal origin, common law or civil law, using the difference-in-differences approach. In model 1, *Proportion\_lead* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Common\_law*, and control variables. In model 2, *Herfindahal\_index* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Common\_law*, and control variables. In model 3, *Num\_lender* is regressed on the interested interaction term, *Mandatory\_Adopter\*Post\_mandatory\*Common\_law*, and control variables. *Mandatory\_Adopter* is defined as an indicator variable taking the value of one if the borrower is a mandatory IFRS adopter (the treatment firm) and zero otherwise. *Post\_mandatory* is an indicator variable taking the value of one if a firm-year observation falls into 2005 or later and 0 otherwise. *Common\_law* is defined as an indicator variable taking the value of one if the firm is domiciled in a country with a common-law legal system and 0 otherwise. Most countries, except for Singapore, in our sample did not mandatorily adopt IFRS until 2005, when it becomes mandatory to do so. All variables are defined in Appendix A.
- Regressions include year fixed effects.
- \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% levels, respectively (two-tailed test).

and (2) using these within-country median-adjusted variables. The results (not reported) are qualitatively comparable to those reported in Tables 3-5. Thus, our primary results are not attributable to country-specific effects.

#### **5.4 The effects of the 2008-2009 financial crisis**

Our sample period includes 2008 and 2009 when the financial crisis spread throughout the world. To examine whether the results are robust to this potential validity threat, we exclude loans issued in 2008 (or in 2008 and 2009). The results (not reported) indicate that our main findings remain qualitatively unchanged.

#### **5.5 Excluding outlier effects**

To remove the influence of extreme observations, we conduct two additional analyses. First, we include a contemporaneous variable *Market Benchmark* defined as the yearly median (or yearly mean) of the dependent variable from observations in the countries and duplicate the analyses for Tables 3-5. Second, we winsorize all variables at 1<sup>st</sup> and 99<sup>th</sup> percentiles in equations (1) and (2) except for the indicator variables and then re-run regressions (1) and (2). The analyses (not reported) are the same as those reported in Tables 3-5. Thus, our conclusion is not sensitive to extreme observations.

## **6. Conclusion**

This study examines if mandatory IFRS adoption influences the ownership structure of syndicated loans. The ownership structure of syndicated loans is an important measure to investors, practitioners, and policymakers for its implication of how creditors perceive IFRS reporting to affect syndicated loan contracting. Analyzing a large number of cross-country syndicated loan agreements from 2000 through 2009, we find after a borrower adopts IFRS reporting standards that lead banks retain a larger proportion of the syndicated loan and form a more concentrated syndicate with fewer loan participants after mandatory IFRS adoption.

Our findings suggest that the contracting perspective overwhelms at explaining the negative effects of IFRS adoption on the structure of syndicated loans. Specifically, the adoption of a principles-based accounting system (e.g., IFRS), characterized by limited interpretation and implementation guidance, increases the difference in professional judgment among debt contracting parties, which in turn forces lead arrangers to hold a larger share of the syndicated loan to compensate for information risk arising from mandatory IFRS adoption. This is consistent with arguments by Schipper (2003). We further examine if the effects are evenly distributed across countries. Empirical results show that the negative effects of IFRS adoption on the ownership structure of syndicated loans are the strongest in civil-law countries and in countries with a weak enforcement regime.

To sum up, our study provides management implications on the contractibility of IFRS financial reporting in the syndicated loan market. It is more difficult for participating lenders to screen and monitor borrowers that adopt IFRS. Participating lenders are generally now requiring lead lenders to retain more of the loan and form a more concentrated syndicate with fewer participants in the post-IFRS era. This indicates that it would be more difficult for lead lenders to recruit participant lenders if the borrower adopts IFRS. We suggest that firms applying IFRS should be cautious in using the flexibility offered by IFRS. The increased accounting choices and the extensive use of fair value accounting numbers can increase debtholders' concerns related to a firm's accounting numbers, which can in turn affect the syndication process and the contractibility of accounting information.

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## Appendix A: Data definitions

Variable	Definition
<b>Dependent Variables:</b>	
<i>Proportion_lead</i>	The fraction of the loan retained by the lead arranger. The lead lender is designated if the following descriptions appear in the DealScan database: lead bank, lead manager, lead agent, admin agent, arranger, agent, and book-runner.
<i>Herfindahal_index</i>	A syndicate ownership Herfindahal index measured as the sum of the squared percentage ownership of each lender in the loan.
<i>Num_lender</i>	The total number of lenders in the loan syndicate.
<b>Independent Variables:</b>	
<i>Mandatory_Adopter</i>	An indicator variable taking the value of 1 if the borrower is a mandatory IFRS adopter (the treatment firm) and zero otherwise.
<i>Post_mandatory</i>	An indicator variable taking the value of 1 if a firm-year observation falls into 2005 or later and 0 otherwise.
<i>Mandatory_Adopter</i>	The interaction term between the two indicator variables above.
<i>*Post_mandatory</i>	
<i>Common_law</i>	An indicator variable taking the value of 1 if the firm is domiciled in a country with a common-law legal system and 0 otherwise.
<i>Creditor_right</i>	The score of the creditor rights protected in a country, derived annually at the country level from La Porta <i>et al.</i> [1998].
<b>Control Variables:</b>	
<i>Log(Loan_Size)</i>	The natural log of the total dollar value of the loan converted into US dollars.
<i>Loan_maturity</i>	The number of years to maturity of the loan.
<i>Secured</i>	An indicator variable taking the value of 1 if the loan

	is secured with collateral and 0 otherwise.
<i>Term</i>	An indicator variable taking the value of 1 if the loan's type is a term loan and 0 otherwise.
<i>Revolver</i>	An indicator variable taking the value of 1 if the loan's type belongs to lines of credit and 0 otherwise.
<i>Prior_lead</i>	An indicator variable taking the value of 1 if at least one of the loan's lead arrangers had been a lead arranger of the borrower's previous loans over the five years preceding the loan's issuance date and zero otherwise.
<i>Syndicate_relationship</i>	The syndicate-specific reputation of the arranger, measured in terms of the previous arranger-participant relationships. The number of previous relationships between the lead arranger and the participant is deflated by the total number of deals syndicated by the arranger. The estimation is performed over five years preceding the loan's issuance.
<i>Log(Firm_Size)</i>	The natural log of a borrower's book value of the total assets.
<i>LEV</i>	The ratio of the borrower's long-term debt to total assets.
<i>ROA</i>	The borrower's earnings before interests and taxes (EBIT) scaled by average total assets at the time of the deal.
<i>US_Listing</i>	An indicator variable taking the value of 1 if the borrower has issued an ADR and 0 otherwise.
<i>Log(GDP)</i>	The natural log of per capita GDP.

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