

FINANCIAL REPORTING DIFFERENCES AND DEBT CONTRACTING

by

ANNA BERGMAN BROWN

A dissertation submitted to the Graduate Faculty in Business in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

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## Abstract

### FINANCIAL REPORTING DIFFERENCES AND DEBT CONTRACTING

By

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I examine the relationship between contracting parties' familiarity with one another's accounting information and the terms and structure of debt contracts. I use the differences in generally accepted accounting principles (GAAP) among contracting parties domiciled in different countries as a proxy for how familiar a lending bank will be with a borrower's accounting information. I find that a larger difference between the GAAP of the lender and the GAAP of the borrower is associated with a higher credit spread and higher fees. I also find that a larger difference between the GAAP of the lender and the GAAP of the borrower is associated with a more concentrated loan syndicate, suggesting a closer monitoring relationship between the borrower and the lender. Finally, I find that when there is a larger difference between the GAAP of the lender and the GAAP of the borrower, banks rely less on financial covenants as a contracting tool. Moreover, banks tend to alter the types of covenants they write, relying more on capital-based financial covenants and less on earnings-based covenants. My results are consistent with banks experiencing information problems when contracting with parties whose accounting information they find to be unfamiliar. These results provide new evidence on the importance of financial reporting for debt contracting.

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## Chapter 1: Literature Review

### 1. Introduction

In this dissertation, I examine the association between a lender's familiarity with a borrower's accounting information and the terms of debt contracts and the structure of loan syndicates. Accounting information plays two principal roles in debt contracting: accounting information helps the bank make an initial assessment of the borrower's credit risk and helps the bank monitor the borrower's ongoing credit risk over the life of the loan through debt covenants. A lending bank experiences information asymmetry with a borrower as the borrower has private information about its own credit risk. Publicly available accounting information can reduce information asymmetries between contracting parties to the extent that the bank is able to understand and use accounting information for its two principal contracting roles. When a bank is more familiar with a borrower's accounting information, the bank should experience a greater ease in contracting using the borrower's accounting information. Therefore, *ceteris paribus*, a bank's familiarity with a borrower's accounting information should be associated with lower information asymmetry between these two contracting parties.

As a proxy for a bank's familiarity with a borrower's accounting information, I use differences in Generally Accepted Accounting Principles (GAAP) between banks and borrowers domiciled in different countries. As I isolate borrowers and lenders that are subject to different accounting standards and these differences can be measured, I exploit a unique and powerful setting to test the effects of differences in accounting information between lenders and borrowers on debt contracting. In addition, because of my choice of setting, I am also able to address the question of how diversity in international accounting standards across countries affects debt contracting.

In this literature review chapter, I first review the institutional background on information asymmetries and debt contracting. I next discuss the literature on the debt contracting role of accounting information, and how accounting information is used to reduce information asymmetry in a debt contracting setting. In addition, as my setting examines loan contracting in an international setting, I review the literature on debt contracting and international accounting standards. While substantial prior literature has addressed international accounting standards and equity markets, relatively little research has addressed the effects of international accounting standards on debt markets.

In section 2, I discuss the institutional background of information asymmetry in debt contracting. In section 3, I examine the literature on the role of accounting information in debt contracting. In section 4, I discuss the literature on international accounting standards and debt contracting. Finally, section 5 concludes and discusses how my own research helps fill some of the gaps in the extant literature.

## **2. Information Asymmetry in Debt Contracting**

In private bank loans, theory proposes that information asymmetries among contracting parties will affect the terms of the loan and the design of an optimal contract (Leland and Pyle, 1977; Holmstrom, 1982; Diamond, 1984). In these types of contracting arrangements, banks contract directly with the borrower to establish the terms of the loan. This type of relationship banking contrasts with public debt markets, where arm's length transactions and dispersed loan ownership prevents the direct contracting relationship. For this reason, private bank loans tend to emerge as an area of interest for studies of the effects of accounting information on debt contracting. In addition, banks are among the most sophisticated users of financial statements (Bharath et al., 2008), so private bank loans represent a setting in which researchers may

implement a somewhat conservative test of the effects of accounting information on debt contracting. Furthermore, private debt relies heavily on monitoring and the relationships between the contracting parties, which may represent a mechanism by which to overcome poor accounting quality. In addition, the availability of bank loan contract data allows researchers to directly measure a variety of contract terms across a large sample of loan contracts through Thomson Reuters Loan Pricing Corporation's DealScan. Finally, the prevalence of accounting-based debt covenants in bank loans (as compared to their paucity in public debt) makes this market a good setting to test if and how contracting parties rely on accounting information. For this reason, the literature has seen an emergence of research examining the information asymmetry among contracting parties using private bank loan data and accounting information.

As private bank loans rely on relationship banking, one or more banks contract directly with the borrowing firm to establish the terms of the loan. In bilateral loans, a single bank contracts directly with the borrower to establish the amount of the loan and the terms, including the maturity, the credit spread, and the covenants. The lending bank makes an assessment of the borrower's credit risk and forms a private relationship with the borrower to facilitate the transfer of private information and the monitoring of borrower activities over the life of the loan. In the syndicated loan market (loans involving a syndicate of two or more lending banks), one or more bank acts as the lead arranger (or "lead bank") and works with the borrower to establish the terms of the loan in a preliminary loan agreement. The preliminary loan agreement is signed when the lead bank and the borrower agree on the major terms of the loan: the loan amount, maturity, debt covenants, and a range for the credit spread. Subsequent to signing the preliminary loan agreement, the lead bank will seek out other banks to participate in the syndicate. The non-lead ("participant") banks must also approve the terms of the loan, and have

the power to propose changes to the preliminary loan agreement before agreeing to participate in the syndicate. The final loan contract is signed when all syndicate members have agreed upon the terms of the loan contract and the lead bank has established the structure of the syndicate, including the number of participant banks involved and the amount of the loan each bank will hold.

In syndicated loans, information asymmetry may also exist between the lead bank and the other syndicate participants. This information asymmetry results from the private relationship the lead bank develops with the borrower, and the private information the lead bank obtains from the borrower. This private information may result in *ex ante* adverse selection, whereby participant banks fear that the lead bank is withholding private information or misrepresenting the real credit quality of the borrower. In addition, given that the lead bank's effort in performing due diligence and monitoring the borrower is unobservable, there is also the potential for *ex post* moral hazard. Participant banks may fear that the lead bank will shirk its monitoring duties, which require costly time and effort.

### **3. Accounting Information and Debt Contracting**

#### **3.1 Debt Contracting Value of Accounting Information**

The idea that the primary role of accounting information is that of facilitating contracts dates back to Watts and Zimmerman (1978, 1986). Watts and Zimmerman propose that a firm is essentially a nexus of contracts, and that the primary role of accounting information is to facilitate the formation and performance of those contracts. As the authors attempt to develop a theory of the factors determining accounting standards, their research examines the forces within a country, including those at the firm level, which drive the formation of accounting standards within a country. Watts and Zimmerman's theory of the firm suggests that debt contracting

demands informative, verifiable performance measures. Accounting information has evolved to facilitate this debt contracting role through a preference for verifiable account over relevant accounting numbers. Despite the plethora of research examining the value of accounting information for equity valuation, the role of accounting information in debt contracting is paramount.

Despite the importance of accounting information in debt contracting, empirical research examining the effect of accounting numbers on debt contracts has primarily emerged only over the last few years. Ball, Bushman, and Vasvari (2008) are perhaps the first to explicitly refer to a “debt contracting value” of accounting information and to attempt to quantify this value. The authors argue that for accounting information to be most suitable for debt contracting, it must capture credit quality deterioration in a timely manner. Accounting information that is informative about the borrower’s credit quality, and that reflects changes in credit quality in a timely manner, will be best suited for debt contracting. This should allow the lead bank in the syndicate to use the accounting information to make assessments of credit risk and to write into the contract in the form of debt covenants. Ball, Bushman, and Vasvari propose that the accounting information which is better suited for debt contracting will result in a lower information asymmetry between the bank and the borrower. They develop a measure of the “debt-contracting value”, or DCV: an industry-level measure of ability of accounting earnings to predict deterioration in credit ratings over time. The authors find that debt contracts involving borrowers whose DCV is high result in a less-concentrated loan syndicate, where the lead bank holds a smaller proportion of the loan. This suggests that banks monitor borrowers more carefully when DCV is low, and thus contracting on accounting numbers is relatively more difficult or less reliable.

Sufi (2007) examines a question that is similar in nature to Ball, Bushman and Vasvari's (2008). In this study, Sufi also examines a sample of syndicate loans and attempts to capture the strength of the monitoring relationship through the percent of the loan held by the lead bank. However, Sufi refers more broadly to the opacity of the information environment, which encompasses the accounting information environment, as well as the credit ratings environment. However, the motivation of the hypothesis is still similar: a transparent information environment, in the form of readily available, high quality financial reports, and public credit ratings, may reduce information asymmetry among debt contracting parties. Sufi uses the availability of SEC filings and credit ratings as a proxy for the strength of the information environment, where borrowers are deemed information opaque if they are lacking in one or both of these areas. The study provides evidence that the lead bank forms a more concentrated syndicate when borrowers have an opaque information environment. One important conclusion of this study is that lenders compensate for a lack of transparent accounting information by monitoring borrowers more carefully through the lending relationship.

### 3.2 Debt Contracting and Accounting Quality

A number of studies attempt to capture the relationship between accounting information and debt contracting by identifying a setting in which borrowers may have lower accounting quality. A large body of literature has studied accounting quality in the setting of equity markets, leading to generally accepted proxies for high quality financial reporting for equity market purposes. However, settling on a measure of accounting quality for debt contracting purposes may not be as simple as borrowing from the equity markets literature. This issue is reminiscent of the fair value vs. historical cost accounting debate of relevant accounting information vs. reliable and verifiable accounting information. For this reason, a number of studies have studied

the association between accounting quality and debt contracting, using multiple proxies of borrower accounting quality.

One study which examines the effects of accounting information quality on information asymmetry between debt contracting parties is Graham, Li, and Qiu (2008). In this study, the authors focus on a sample of restating firms, under the hypothesis that firms which have experienced an earnings restatement are a greater information risk for lenders. If an earnings restatement is an indication that accounting information is less reliable, a bank may perceive a borrower with a recent earnings restatement to be riskier than a borrower without an earnings restatement, *ceteris paribus*. The authors find evidence that borrowers with recent accounting restatements experience loan contracts with higher credit spreads, shorter maturities, a greater likelihood of being secured, and more debt covenants. They conclude that transparent and reliable accounting information may reduce information asymmetries between a borrower and a lender, and result in more lenient loan contract terms. Following an earnings restatement, a bank experiences greater information asymmetry with the borrower as accounting information is perceived as less reliable, and therefore cannot fulfill its role of reducing information asymmetry. This study further suggests that lenders compensate for borrowers which post an information risk by imposing a greater number of covenant restrictions. These results run contrary to the expectation that accounting information must be perceived as informative and reliable in order to best fulfill the contracting role of writing debt covenants.

Costello and Wittenberg-Moerman (2011) examine another setting in which lenders may perceive a borrower to be an information risk: a report of material internal control weaknesses. The authors use the setting of borrowers which have received a report of material internal control weaknesses as a proxy for poor quality financial reporting and the ensuing greater information

risk. This study provides evidence that lenders tend to trade-off between monitoring mechanisms. When contracting with borrowers with recent material internal control weaknesses, lenders tend to charge a higher credit spread and rely on performance pricing measures tied to a borrower's credit ratings. In turn, lenders decrease their reliance on financial covenants and performance pricing measures tied to accounting numbers. This study suggests that accounting information must be perceived as both informative and reliable in order to be most appropriate for debt contracting. This study further suggests that in the event of information risk, lenders tend to avoid contracting mechanisms relying on accounting numbers, and substitute contracting mechanisms which rely on non-accounting performance measures. Further, in contrast with Graham, Li, and Qiu's (2008) results, Costello and Wittenberg-Moerman (2011) provide evidence that lenders most readily rely on financial covenants as a contracting mechanism when they perceive a borrower's accounting information to be reliable and transparent. This suggests that financial covenants, rather than being simply another element of a restrictive loan package, are in fact a sophisticated contracting mechanism which requires a thorough understanding of a borrower's financial reporting.

Bharath, Sunder and Sunder (2008) study the effects of accounting quality on debt contracting using a traditional proxy for accounting quality from the equity markets literature. The authors use abnormal operating accruals as a measure of a borrower's financial reporting quality. Abnormal operating accruals are a widely-used measure of accounting quality in the literature examining the effects of accounting quality on equity markets. Specifically for debt contracting, large abnormal operating accruals suggest large deviations between earnings and operating cash flows. If these deviations are unexpected, and lenders therefore cannot reliably anticipate operating cash flows, then borrowers with large abnormal operating accruals may



present a greater information risk, as well as a greater credit risk. The authors propose that accounting quality, as measure by abnormal operating accruals, will affect a borrowing firm's choice of public vs. private debt, as well as the terms of loan contracts in both public and private debt markets. This study provides evidence that borrowers with poorer accounting quality are more likely to choose private debt. The authors interpret this result as evidence that private banking relationships in the private debt market allow borrowers to transmit private information to their lenders, thus helping to overcome adverse selection costs. In public debt markets, on the other hand, financing is at arm's-length relationships, and thus the reliance on high quality publicly-available accounting information is paramount. In addition, the authors find that borrowers with poor accounting quality experience higher credit spreads in both private and public debt markets, though the effect of accounting quality on credit spreads is significantly higher in public debt markets. However, in private debt markets, borrowers with poor accounting quality also experience stricter non-price terms, namely maturity and collateral. Overall, this study provides evidence that while high quality publicly-available accounting information affects debt contracting in both private and public markets, the relationship banking in private debt markets mitigates some adverse selection costs, and allows for alternative contracting mechanisms.

### 3.3 Performance Pricing and Financial Covenants

Asquith, Beatty, and Weber (2005) examine the use of performance pricing in loan contracts. Performance pricing is a relatively new contracting mechanism which links a borrower's credit spread to a measure of firm performance, and thus allows the credit spread to change over the life of the loan contract. The authors identify two different types of performance pricing. Interest-increasing performance pricing commits borrowers to a credit spread which

increases in the event of poor borrower performance. Interest-decreasing performance pricing allows credit spreads to decrease in the event of superior borrower performance. Performance pricing measures can be tied to accounting numbers, such as earnings, or alternatively can be tied to credit quality measures such as credit ratings. The authors find evidence that interest-increasing performance pricing is associated with significantly reduced credit spread, while interest-decreasing performance pricing is only marginally associated with higher credit spread. The authors conclude that the primary pricing effect of performance pricing is that lenders are willing to offer reduced credit spreads in exchange for interest-increasing performance pricing. The authors further find some evidence that interest-increasing performance pricing is more common for inferior quality lenders: they find that lenders tend to add interest-increasing performance pricing provisions in exchange for lower credit spreads when credit ratings downgrades are more likely. These results suggest that lenders extract rent from lower quality borrowers by offering a lower credit spread up front, in exchange for increasing credit spreads in the future. This method is intuitive, akin to a mortgage lender offering variable interest mortgages to prospective home buyers with poor credit quality.

Nikolaev (2010) also examines the effects of a characteristic of a borrower's accounting quality on the reliance on financial covenants in loan contracts. Specifically, Nikolaev examines whether borrowers that tend to have loan contracts with more financial covenant restrictions also tend to have more timely loss recognition. Similar to Ball, Bushman and Vasvari (2008), the author argues that for accounting information to be most appropriate for debt contracting, and thus to best serve the role of reducing information asymmetry between contracting parties, it must provide a timely signal of deteriorating credit quality. One way to test this hypothesis is to examine whether lenders tend to write loan contracts with more financial covenant restrictions

when borrowers have timely loss recognition. The author finds evidence of a positive association between a borrower's timely recognition of economic losses in accounting earnings and the reliance on financial covenants. This suggests that lenders tend to trade off different contracting mechanisms, relying most on financial covenants when accounting earnings provide a timely signal of deteriorating credit quality.

Finally, Christensen and Nikolaev (2012) examine the use of two different types of accounting-based covenants: performance covenants and capital covenants. Performance covenants rely on performance measures such as accounting earnings or operating cash flows. These covenants set a minimum performance threshold whereby if a borrower's performance falls below this threshold, the bank steps in and takes control for the borrowing firm, presumably to renegotiate and extract rents. Capital-based covenants set minimum levels of working capital, maximum levels of debt, or minimum levels of net worth. These covenants serve to restrict borrower behavior: minimum levels of working capital restrict investment behavior, and maximum levels of debt restrict financing behavior. The authors provide evidence that lenders tend to trade-off between these two types of financial covenants and about the determinants of each type of covenant. As capital-based covenants restrict borrower behavior, borrowers which face greater financial constraint tend to have loan contracts with more performance-based covenants. In addition, and perhaps, most notably, this study suggests that performance-based covenants are most effective when a borrower's accounting information provides a timely signal of underlying credit risk. This is due to the trip-wire feature, whereby performance-based covenants transfer control of the borrower to the lender in the event of poor financial performance. For this reason, performance-based covenants are used most often when a borrower's accounting information more reliably captures changes in credit risk. This study

provides the interesting insight that borrowers appear to have negotiating power to trade-off between different types of financial covenants. For example, borrowers that are financially constrained may find capital-based covenants to be too costly, and so are able to avoid these constraints by instead committing to performance-based covenants.

#### **4. International Accounting Standards and Debt Contracting**

International accounting standards have received considerable attention in equity markets research. Early research examined the effects of voluntary adoption of International Accounting Standards (IAS), while more recent studies have examined the effects of mandatory IFRS adoption in the European Union, South Africa, and Australia, as well as the effects of accounting standards enforcement and interpretation. However, relatively little research has examined the effects of international accounting standards on debt contracting.

Ball, Li, and Shivakumar (2013) examine the effect of mandatory IFRS adoption on the use of covenants in debt contracts. The authors find that in the post-mandatory IFRS adoption period, borrowers in mandatory IFRS adopting countries experience loan contracts with fewer accounting-based covenants but more non-accounting based covenants. The authors propose that IFRS's fair-value orientation introduces transitory shocks into earnings, and thus makes accounting information less suitable for debt contracting. A key takeaway of this study is that lenders substitute contracting mechanisms for borrowers based on the borrowers' accounting information. The authors conclude that IFRS do not meet the demand for accounting information which is reliable and informative for debt contracting purposes. This study also expresses concern that IFRS fair-value numbers may open windows for earnings manipulation, as fair-value estimates are inherently more subjective than historical cost.

Another paper examining the effects of post-IFRS adoption on debt contracting is Chen, Chin, Wang, and Yao (2013). Similar to the Ball et al. (2013) study, this study also looks at the effects of post-IFRS adoption on debt contracting by examining a sample of firms from countries that adopt IFRS and others that do not adopt. In this study, the authors examine a wider set of loan characteristics, examining the loan spread, the accounting-based covenants, the maturity, and the collateralization of the loan. They find evidence that in the post-IFRS period, borrowers from mandatory IFRS adopting countries experience loan contracts with a higher credit spread, fewer accounting-based covenants, greater likelihood of collateralization, and a shorter maturity. They further find that these results are strongest for borrowers with more aggressive reporting of accruals in the post-IFRS period, or increased income smoothing. The authors conclude that IFRS introduced opportunities for earnings management, and therefore makes accounting information less suitable for debt contracting. Lenders compensate for the additional information risk that accompanies IFRS numbers by relying less on accounting-based covenants, and instead charging a higher credit spread, structuring a shorter maturity, and collateralizing loans more often.

Finally, Florou and Kosi (2013) examine the effect of mandatory IFRS adoption on another aspect of debt contracting. The authors examine whether borrowers domiciled in mandatory IFRS adopting countries tend to alter their reliance on public vs. private debt in the post-IFRS adoption period. They find evidence that borrowers in mandatory IFRS adopting countries are more likely to issue public bonds than private debt in the post-IFRS adoption period. The authors propose that the arm's length transactions in public debt financing make this market particularly reliant on publicly-available accounting information. Private debt, on the other hand, involves private relationships between banks and borrowers, where privately

transmitted information can substitute for high quality public financial reporting. The authors propose that IFRS offers higher quality financial reporting and enhanced comparability. They argue that this improvement in financial reporting quality and comparability will most benefit public debt transactions. The authors also find that mandatory IFRS adoption is associated with a decrease in public bond yields, but no significant change in private loan credit spreads. Again, the authors conclude that publicly available accounting information is paramount to public debt, while private debt tends to rely more on private relationships. This paper's results lie in contract to Chen, Chin, Wang, and Yao (2013), whose study concludes that private borrowers in fact experience higher credit spreads in the post-IFRS adoption period. Finally, Florou and Kosi (2013) focus on a subsample of mandatory-IFRS adopters which did not experience concurrent institutional changes. They show that their results are robust to this subsample, which suggests that the results they document may truly be attributable the prescribed accounting standards, and not concurrent changes in regulation or enforcement.

## **5. Contributions and Conclusions**

My study contributes to the literature on how variations in accounting information affect its use for contracting purposes. The question of how accounting information is used for debt contracting has long been of interest to accounting researchers, practitioners, and policy makers. As summarized in this chapter, multiple studies have attempted to quantify the degree to which a lender perceives a borrower's accounting information as suitable for debt contracting. This may be referred to as "accounting quality" or accounting with a high "debt contracting value". What is truly being studied is the degree to which the accounting information is "usable" for lenders writing loan contracts. To study this research question, researchers must isolate a setting where accounting differences exist – across borrowers, or among borrowers and lenders – and then test

how these differences affect debt contracts. However, it can be difficult to identify settings in which differences in accounting rules among contracting parties lead to explicit differences in accounting information. For this reason, past research has often attempted to isolate cross-sectional variation in properties of accounting numbers among firms subject to the same accounting standards. For example, using a sample of firms that report in US GAAP, prior studies identify properties of accounting numbers that make the accounting information more or less transparent (Sufi, 2007; Graham et al., 2008) and thus more or less appropriate for debt contracting (Ball et al., 2008; Christensen and Nikolaev, 2012), and then examined how these cross-sectional differences affect the terms of the firms' debt contracts (e.g. credit spread, syndicate structure, use of covenants). A study of this nature is therefore a joint test: first, that cross-sectional variation in properties of borrowers' accounting information reflects more or less transparency, and second, that this transparency affects debt contracting. As I isolate a setting where contracting parties are subject to different accounting rules, my study is a direct test of the degree to which familiarity with accounting information affects debt contracting. My measure also focuses on the users of accounting information (in this case, the banks), and the degree to which they will be familiar with the borrower's accounting information. Previous studies, on the other hand, have relied on properties of accounting information, a firm output, and hypothesized as to how this output will be perceived by the users. Finally, I take advantage of an exogenous shock to the accounting system in order to isolate the debt contracting effects of prescribed accounting standards. For this reason, my study contributes to the literature by quantifying the degree to which a lender's familiarity with a borrower's accounting information affects the terms of loan contracts and the structure of the syndicate.

## Chapter 2: Financial Reporting Differences and Debt Contracting

### 1. Introduction

Accounting researchers and regulators have long been interested in the effects of accounting information on debt contracting. Watts and Zimmerman (1978, 1986) propose that a firm is essentially a nexus of contracts, and that the primary role of accounting information is to facilitate the formation and performance of those contracts. Despite the importance of the debt contracting role of accounting, the effect of accounting information on debt contracts receives relatively little attention in the accounting literature. I address this deficiency by examining the relationship between financial reporting differences and the terms and structure of debt contracts.

Beatty (2008) posits that accounting information plays two direct roles in debt contracting. First, accounting plays an *ex ante* contracting role. Before signing a contract, a bank makes an initial assessment of a borrower's credit risk. There is information asymmetry between the bank and the borrower as the borrower has private information about its own credit risk (Leland and Pyle, 1977). Publicly available accounting information can reduce this information asymmetry by helping the bank to make an assessment of credit risk. Therefore, accounting information can best serve the *ex ante* contracting role to the extent that the bank is familiar with the borrower's accounting information and finds it to be useful for an assessment of credit risk.

Second, accounting information plays an *ex post* direct contracting role. When the bank and the borrower enter into a debt contract, the bank uses accounting information to write the contract in the form of financial covenants. The bank wishes to monitor the borrower's credit risk over the life of the loan. Covenants help the bank to monitor the borrower either by restricting borrower investing or financing activity or by transferring control of the borrower to



the lender in the event of deteriorating financial performance. For this reason, accounting-based covenants can most effectively serve the *ex post* direct contracting role if the bank is familiar with how the borrower's accounting information reflects economic fundamentals. Therefore, for accounting information to be most effective in each of these two debt contracting roles, the bank must be familiar with the borrower's accounting information and how the accounting numbers reflects credit risk.

In this paper, I examine how a bank's familiarity with a borrower's accounting information affects the terms of debt contracts and the structure of loan syndicates. I use differences in local generally accepted accounting principles (GAAP) among banks and borrowers domiciled in different countries as a proxy for how familiar a lending bank will be with a borrower's accounting information. Prior to mandatory IFRS adoption in the European Union, Australia, and South Africa in 2005, there was significant variation across prescribed local GAAP. I exploit this variation to measure the degree of differences between the GAAP of country-pairs, based on the country of origin of the lending bank and the country of origin of the borrowing firm (Bae et al., 2008).<sup>1</sup> Applying the Bae et al. (2008) GAAP differences measure within a sample of international private debt contracts offers a powerful setting in which explicit differences in accounting standards between contracting parties can be systematically measured

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<sup>1</sup> For borrowing firms, I collect the actual accounting standards used to ensure that my borrowing firms are in fact using local standards. I control for firms that voluntarily adopt IFRS. For banks, I assume that the bank's country of origin is reflective of the bank's familiarity with local standards in that country. I acknowledge that it is possible that some banks may be familiar with multiple sets of standards, e.g. if a German bank actually reports using US GAAP, and lends to a US borrower, the bank may be equally familiar with US GAAP as with German GAAP. In this case, assigning a *GAAP Differences* value equivalent to the differences between US and German GAAP would mean assuming GAAP differences where they did not actually exist. However, this would bias against me finding results. As GAAP differences are synonymous with a higher level of information asymmetry between the bank and the borrower, this would be equivalent to assigning a higher value for information asymmetry between the bank and the borrower than that which truly exists. This would make it more difficult for me to find a significant association between loan contract terms and GAAP differences.

and examined. I take advantage of this unique opportunity to test how differences in accounting information among contracting parties affect the design of debt contracts.

Using a sample of international loans prior to mandatory IFRS adoption, I examine the impact of international GAAP differences on four different aspects of loan agreements: the credit spread and fees, the syndicate structure, the reliance on debt covenants, and the relative importance of the different types of financial covenants. I find that a larger difference between the GAAP of the lender and the GAAP of the borrower is associated with a higher credit spread and fees. I also find that a larger difference between the GAAP of the lender and the GAAP of the borrower is associated with a closer monitoring relationship between the borrower and lender, which is characterized by fewer banks in the syndicate and the lead bank holding a larger proportion of the loan. Next, I examine the use of financial covenants, which should capture how banks directly use accounting information in loan contracts. I find that larger GAAP differences decrease banks' overall reliance on financial covenants as a debt contracting tool. However, I also find that banks significantly alter the types of covenants they use. With larger GAAP differences, banks tend to write loan contracts that rely more heavily on capital-based covenants, which restrict levels of debt or set minimum levels for capital requirements. They also tend to write loan contracts which rely less on performance-based covenants, which are based upon earnings numbers.

One key concern with my analysis is that a test relying on a sample of international loans, in which the borrower and lender are domiciled in different countries, may suffer from a self-selection bias. That is, there may be something unique about the nature of international loans that makes them fundamentally different from domestic loans. This raises concerns that my results may be particular to international lending and would not generalize to other parties

writing debt contracts. In addition, GAAP differences among country pairs are not randomly assigned. Accounting principles arise over time as a result of country-specific pressures and forces and are likely correlated with a country's culture, legal system, or stage of development. The ensuing endogeneity problem raises concerns that my results may not be attributable to prescribed accounting standards, but rather to omitted correlated country-specific variables.

To mitigate these issues, I add international loans in the post-mandatory IFRS adoption period to my sample. The mandatory adoption of IFRS offers an exogenous shock to the accounting system at the firm level whereby, in the post-IFRS period, the differences in prescribed accounting standards across countries are nonexistent (among IFRS users, in theory) or significantly reduced (between IFRS users and US GAAP users), while other country-level differences and lending incentives remain.<sup>2</sup> I take advantage of this exogenous shock to the global accounting system in order to capture the effects on loan contracting attributable solely to differences in prescribed accounting standards.

The Bae et al. (2008) *GAAP differences* measure is designed to measure levels of differences in prescribed accounting standards under local GAAP. I propose that, in the post-IFRS period, this measure should capture national differences in accounting that persist as a result of differences in prior local GAAP. After mandatory IFRS adoption, certain elements of the accounting culture should not change simply due to a sudden change in prescribed accounting standards. Financial reports are also a product of managerial reporting incentives, which are unlikely to change with new accounting standards (Burgstahler et al., 2006). In addition, recent studies of post-IFRS financial reports suggest that when IFRS users face

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<sup>2</sup> I control for concurrent changes in legal enforcement to the extent possible using the Kaufmann et al. (2009) rule of law index. I acknowledge that this index may not fully capture all concurrent changes in enforcement and interpretation (Christensen, Hail, and Leuz, 2013). In a sensitivity test to address concerns about concurrent changes in country-level characteristics, I find that my results are robust to shortening the window around mandatory IFRS adoption to only a few years before and after.

accounting options, they tend to select accounting policies which retain prior national GAAP treatments (Christensen and Nikolaev, 2013). Differences in how each country implements IFRS are strongly correlated with each country's accounting treatment under their (prior) local GAAP (KPMG and von Keitz, 2006; European Commission, 2008; Kvaal and Nobes, 2010; Kvaal and Nobes, 2012; Haller and Wehrfritz, 2013). The GAAP differences measure in the post-IFRS period should therefore capture residual differences in accounting that persist as a result of differences in national GAAP prior to IFRS. The change in the effect of GAAP differences on loan contract terms from the pre- to the post-IFRS periods should thus capture the amount of the effect attributable solely to differences in prescribed standards.

In my analyses including the post-IFRS periods, I find that a significant portion of the effect of GAAP differences on debt contracting terms disappears in the post-IFRS period<sup>3</sup>. Isolating the portion of the effect that goes away in the post-IFRS period, I find that greater differences in prescribed accounting standards between the borrower and the lender are associated with a larger credit spread and higher fees, a more concentrated loan syndicate, and a substitution of capital-based covenants for performance-based covenants. In my test of reliance on financial covenants, consistent with Ball et al. (2013), I document that banks tend to rely less on financial covenants as a contracting tool in the post-IFRS period. In addition, I document that while banks tend to rely less on financial covenants when contracting with borrowers with significantly different local accounting systems, the effect largely disappears in the post-IFRS period.<sup>4</sup>

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<sup>3</sup> In this analysis, the effect is measured as the difference between the pre- and post-IFRS periods of the effect of GAAP differences on loan contract terms. In other words, it is the amount of the effect of GAAP differences on loan contract terms that “disappears” after mandatory IFRS adoption.

<sup>4</sup> While the coefficient on the interaction term is not significant, I find that the sum of the coefficients on GAAP Differences and GAAP Differences\*Post-IFRS is insignificantly different from zero. I conclude that this effect largely disappears in the post-IFRS period.

My results are consistent with banks experiencing greater information problems when contracting with parties whose accounting information they find less familiar, and therefore harder to understand and interpret. I find that banks compensate for these information problems by charging additional interest and fees, monitoring more carefully through their relationship with the borrower, and restricting the borrower's activities through capital-based requirements. Banks also respond to these information problems by relying less heavily on all financial covenants, and in particular earnings-based covenants. My results suggest that differences in accounting standards impose costs on debt markets. My results also provide new insights and evidence regarding the reliance on covenants in the presence of accounting differences, which, to my knowledge, no prior research has shown. Most importantly, this setting provides a unique opportunity to shed new light on the more general question about how variation in users' familiarity with accounting information affects how parties write debt contracts.

This study contributes to the literature on how variation in accounting information affects debt contracting. As it can be difficult to identify settings in which contracting parties have explicit differences in accounting information, prior studies of the relationship between accounting information and debt contracting effectively constitute a joint test: isolating cross-sectional variations in observable properties of accounting numbers among firms subject to the same accounting standards, and then testing how this cross-sectional variation affects loan contracting. As I isolate a setting where contracting parties are subject to different accounting standards, my study is a direct and powerful test of the degree to which a user's familiarity with accounting information affects debt contracting. My measure also focuses on the users of accounting information (in this case, lenders), and the degree to which they are familiar with a borrower's accounting information. Previous studies, on the other hand, rely on one or more

properties of accounting information (e.g. the significance of lagged earnings in a model of the prediction of credit ratings changes), and hypothesize how this empirical feature of an output of a firm's accounting system will affect lenders.

As debt contracting is one of the key economic roles of accounting information (Watts and Zimmerman, 1986), understanding how international differences in accounting standards affect debt contracting is critical. In addition, private debt represents an important source of firm financing, with issuances totaling US\$37.8 trillion worldwide since 2000.<sup>5</sup> Despite the economic importance of this market, and the explicit reliance of debt contracting on accounting information, relatively little research has examined how differences in accounting standards across countries affect debt contracting. Ball et al. (2013) provide evidence that the post-mandatory IFRS adoption period is associated with a decrease in the reliance on financial covenants. My results are consistent with and complement their findings by providing unique evidence that contracting across jurisdictions subject to differing accounting standards is associated with a lower reliance on financial covenants and a substitution of capital- for performance-based covenants.

This study also contributes to the international accounting literature by providing evidence of the economic costs of contracting across different jurisdictions, consistent with the idea that local accounting standards evolve to facilitate contracting in a particular geographical area (Schipper, 2005; Ball, 2006). This evidence is very relevant to a post-IFRS world. In spite of widespread adoption of IFRS in the European Union and multiple other countries, studies of post-IFRS financial statements have documented significant country-level differences in the implementation and enforcement of IFRS which persist and prevent full comparability across countries. These differences tend to be highly correlated with the prior local GAAP (Kvaal and

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<sup>5</sup> Total issuances per DealScan from 2000 – 2012.

Nobes, 2010; Kvaal and Nobes, 2012; Christensen and Nikolaev, 2013; Haller and Wehrfritz, 2013). For this reason, evidence of how local GAAP differences affect debt contracting is relevant to post-IFRS debt contracting.

The rest of the paper is structured as follows. Section 2 provides institutional background and literature review. Section 3 develops my hypotheses. Section 4 provides my research design and section 5 discusses data. Finally, section 6 discusses my main results, section 7 presents additional analyses, and section 8 concludes.

## **2. Institutional Background and Literature Review**

### **2.1 Institutional Background and Literature Review - Private Loans**

In private bank loans, one or more banks contract directly with the borrowing firm to establish the terms of the loan. In bilateral loans, a single bank contracts directly with the borrower to establish the amount of the loan and the terms, including the maturity, the credit spread, and the covenants. The lending bank makes an assessment of the borrower's credit risk, based in part on the borrowing firm's publicly available accounting information. The lending bank also forms a private relationship with the borrower, to facilitate the transfer of private information and the monitoring of borrower activities over the life of the loan.

In the syndicated loan market (loans involving a syndicate of two or more lending banks), one or more bank acts as the lead arranger (or "lead bank") and works with the borrower to establish the terms of the loan in a preliminary loan agreement. The preliminary loan agreement is signed when the lead bank and the borrower agree on the major terms of the loan: the loan amount, maturity, debt covenants, and a range for the credit spread. Subsequent to signing the preliminary loan agreement, the lead bank will seek out other banks to participate in the syndicate. The non-lead ("participant") banks must also approve the terms of the loan, and have

the power to propose changes to the preliminary loan agreement before agreeing to participate in the syndicate. The final loan contract is signed when all syndicate members have agreed upon the terms of the loan contract and the lead bank has established the structure of the syndicate, including the number of participant banks involved and the amount of the loan each bank will hold.

Theory proposes that information asymmetries among different contracting parties will affect the terms of the loan and the design of an optimal contract. Information asymmetry in private bank loans exists between the borrower and the lender as the borrower has private information about its own credit risk. Information asymmetry between the borrower and the lender demands that the lender perform the due diligence required to assess the borrower's credit quality prior to signing the loan contract. In addition, this type of information asymmetry requires that the lender monitor the borrower throughout the life of the loan. In bilateral loans, the lending bank is responsible for the monitoring and due diligence efforts. In syndicated loans, the monitoring and due diligence efforts are delegated to the lead bank(s). This allows one or more banks to take more responsibility for due diligence and monitoring by forming a relationship with the borrower (Leland and Pyle, 1977; Holmstrom, 1982; Diamond, 1984). The lead bank then uses that relationship to gain access to private information about the borrower and to monitor the borrower. The amount of due diligence and monitoring required depends on the degree of information asymmetry between the borrower and the lending bank(s).

One of the factors affecting this information asymmetry is the borrower's accounting information. Accounting information can help relieve agency problems by reducing information asymmetries when banks are able to understand and trust the degree to which the accounting information reflects underlying credit risk. The reverse is also true: consistent with greater



information asymmetry, less transparent borrowers generally face stricter loan terms. Diamond and Verrecchia's (1991) theory suggests that information transparency (through additional disclosures) can reduce a firm's cost of capital, while Bharath et al. (2008) find that borrowers with poorer accounting quality (measured using unsigned abnormal operating accruals) experience higher credit spreads. Graham et al. (2008) find that firms with recent accounting restatements experience more restrictive loan contract terms, including higher credit spreads and more financial covenants. They attribute these more stringent terms to banks experiencing uncertainty with respect to a borrower's financial reporting following a restatement. Nikolaev (2010) finds that lenders are more likely to use debt covenants when a borrower has more timely loss recognition. More timely loss recognition may be beneficial to lenders relying on earnings-based covenants, as the lenders can trust that earnings will provide a timelier signal of deterioration in credit quality. These results suggest that lenders are more likely to use financial covenants when they are familiar with the degree to which a borrower's accounting information transparently reflects changes in credit risk. Lowery and Wardlaw (2011) suggest that some types of earnings-based covenants are used more often with more repeat lending between the lender and the borrower. This suggests that better bank monitoring makes earnings-based covenants more valuable. Finally, Christensen and Nikolaev (2012) find that banks are more likely to use earnings-based covenants than capital-based covenants when a borrower's accounting information more reliably captures changes in credit risk.

For syndicated loans, theory suggests that banks may address information asymmetries and agency problems through the structure of the syndicate, for example, by requiring the lead bank to hold a relatively larger share of the loan when there is a greater potential for adverse selection or moral hazard (Leland and Pyle, 1977). This ensures that the lead bank has a

sufficient stake in the loan to provide incentives for due diligence and monitoring. Sufi (2007) finds that firms with more opaque information environments (as measured by the availability of credit ratings and SEC filings) have loans with a more concentrated syndicate structure, where the lead bank holds a greater proportion of the loan and fewer banks are involved in the syndicate. Ball, Bushman, and Vasvari (2008) find that banks form more concentrated loan syndicates when borrowers' accounting information is less useful for predicting future deterioration in credit quality. They propose that the lead bank's monitoring through a relationship with the borrower may serve as an alternative to monitoring through accounting-based debt covenants. If this is true, banks should trade off monitoring through a closer relationship with the borrower and relying more heavily on financial covenants. Therefore, banks will form a more concentrated syndicate when contracting with debt covenants is more difficult.

## 2.2 Literature Review – International Accounting Standards and Debt Markets

Despite widespread interest in international accounting standards, relatively little research has focused on the effects of variation in accounting standards across countries on the debt markets. Ball et al. (2013) document a decrease in the use of financial covenants and an increase in the use of non-financial covenants in IFRS-adopting countries following mandatory IFRS adoption. The authors conclude that IFRS's fair-value orientation makes it less suitable for long-term debt contracting. Chen et al. (2013) find that following mandatory IFRS adoption, loans for borrowers domiciled in mandatory IFRS-adopting countries are associated with a greater credit spread and a reduction in the use of financial covenants. The authors conclude that IFRS's principles-based approach to accounting standards makes accounting numbers less reliable for debt contracting and increases the probability of earnings management. Finally, Florou and Kosi

(2013) examine the effect of mandatory IFRS adoption on borrowers' choice between private and public debt. They find that mandatory IFRS adopters are more likely to issue public debt than private debt after mandatory IFRS adoption. They conclude that private debt relies primarily on private communication between borrowers and lenders, and thus should not be substantially affected by differences in accounting information.

Studies that examine the relationship between international accounting standards and debt contracting have generally focused on the effects of mandatory IFRS adoption on features of debt contracts. In contrast, this paper examines the effects of differences in accounting information on debt contracting, and simply exploits pre-IFRS differences in accounting standards as a powerful setting to test this research question. Mandatory IFRS adoption serves as an exogenous shock at the firm level in my setting. This additional analysis addresses endogeneity problems due to the self-selection bias in my sample and the correlation between a country's accounting standards and other country-specific factors. By examining the differences in effects from the pre- to post-IFRS periods, I am therefore able to isolate the effect that is truly attributable to prescribed differences in accounting standards.

### **3. Research Question and Hypothesis Development**

#### **3.1 Credit Spread and Fees**

Perhaps the most direct measure of costs to borrowing firms are the fees and credit spread paid to the lending (lead) bank. The credit spread and fees in a loan are typically modeled as a function of borrower characteristics, loan characteristics, the nature of the relationship with the lending bank, and macroeconomic factors (Bharath et al, 2011). In addition, when examining international loans, it is important to control for country-specific factors such as the strength of enforcement and the legal system (Esty and Megginson, 2003; Qian and Strahan, 2007; Bae and

Goyal, 2009). Each of these factors is intended to capture some element of the borrower's credit risk.

If differences in accounting standards increase information asymmetries by affecting a bank's ability to perceive how accounting numbers reflect credit risk, we may expect that larger GAAP differences between the borrower and the lending bank will be associated with higher fees and higher credit spreads. The lending bank (or the lead bank(s), in a syndicated loan) determines the credit spread based on the perceived credit risk of the borrower, or the risk that the borrower will not be able to repay the loan. Banks will use tighter loan contract terms, such as a higher spread, to price protect for information risk associated with information asymmetry. Graham et al. (2008) provide evidence that banks write loan contracts with higher credit spreads following accounting restatements, when banks face greater uncertainty about the quality of a borrower's accounting information. However, restating firms are likely different from non-restating firms, and likely have a different credit risk profile than non-restating firms. The bank's familiarity with the borrower's accounting standards should directly affect the degree to which the bank is able to make an assessment of credit risk based on the borrower's publicly available accounting information. If the bank faces greater information asymmetry due to a lack of familiarity with the borrower's accounting information, it will price protect against this information risk via a higher credit spread. The fees paid to the lending (lead) bank are also determined by the degree of effort required to make an assessment of credit risk. If the borrower's accounting standards are significantly different from those in the lending bank's country of origin, the bank may charge higher fees and a higher credit spread to compensate for their reduced ability to understand how the firm's accounting numbers map into its credit risk,

and for the additional effort and risk they assume in order to understand the borrower's accounting information and credit risk.

Alternatively, it is also possible that GAAP differences between the borrower and the lending bank have no effect on fees and credit spreads. Banks are sophisticated users of financial statements. It is possible that they are able to overcome differences in how different accounting standards reflect credit risk without significant effort. In addition, prior studies emphasize the importance of private relationships and monitoring among contracting parties in private bank loans. Florou and Kosi (2013) find no effect of mandatory IFRS adoption on credit spreads in syndicated bank loans and conclude that a change in accounting standards does not affect private debt markets as these markets rely primarily on private monitoring and not on publicly disclosed information. It is possible that if lending banks rely significantly on private monitoring and private information in assessing borrower credit risk, publicly available accounting information would not significantly affect the information asymmetry with the borrower. If there is no significant association between differences in accounting standards and fees and credit spreads this would provide evidence that banks do not experience information problems when lending to borrowers who use different accounting standards.

My first hypothesis, stated in alternative form, is as follows:

H1: A larger GAAP difference between the bank and borrower is associated with a higher credit spread and higher fees.

### 3.2 Syndicate Structure

In syndicated loans, the lead bank establishes a relationship with the borrower which facilitates monitoring and the exchange of private information and which gives the bank greater insight into the borrower's creditworthiness. The lead bank can lessen the effects of information

asymmetries with the borrower by forming a more concentrated syndicate, providing incentives to monitor the borrower more carefully. A more concentrated syndicate is typically identified by a smaller number of banks in the syndicate and a syndicate in which the lead bank holds a greater proportion of the loan.

When borrowers use accounting standards that are significantly different from the lead bank's local standards, banks may find it difficult to understand how the borrower's accounting information reflects underlying credit risk. As a result, banks may rely more heavily on monitoring through their private relationship with the borrower. If banks are unfamiliar with a borrower's accounting standards, they may perceive the borrower to be a greater information risk and in greater need of monitoring. If this is the case, we would expect that larger GAAP differences between the borrower and the lead bank's home country will be associated with a more concentrated lending syndicate.

My second hypothesis, stated in alternative form, is as follows:

H2: A larger GAAP difference between the bank and borrower is associated with a more concentrated lending syndicate.

### 3.3 Financial Covenants

#### *3.3.1 Reliance on Financial Covenants*

Banks write loan contracts using financial (accounting-based) covenants in order to overcome the conflicts of interest inherent to the borrower-lender relationship. Covenants may help align the interests of a borrower and lender by helping to control agency problems (Smith and Warner, 1979) or by acting as trip wires that transfer control of the borrowing firm to the lender if specific performance measures are not upheld (Christensen and Nikolaev, 2012). While past research has identified determinants of the use of financial covenants in private debt

contracts, including legal regimes and the level of enforcement of creditor rights in the borrower's country of origin, to my knowledge no prior research has established a link between the use of financial covenants in debt contracts and differences in local accounting standards.

The direction of the relationship between the use of financial covenants and differences in accounting standards is not clear. On one hand, we may expect that banks are less likely to use financial covenants when dealing with borrowers whose accounting standards are significantly different from their own. Ball, Bushman, and Vasvari (2008) propose that when accounting information is a poor predictor of changes in credit quality, banks form a more concentrated syndicate in order to monitor the borrower more carefully as their ability to contract directly through debt covenants will be impaired. Costello and Wittenberg-Moerman (2011) document that borrowers with internal control weaknesses have debt contracts with lower reliance on accounting-based debt covenants. The authors interpret that when a borrower has internal control weaknesses, the bank will not wish to rely on the borrower's accounting information and will rely more heavily on contracting tools that don't use accounting information. If banks are unfamiliar with a borrower's accounting information, they may not wish to use debt contracting tools which require a reliance on accounting information. Therefore, banks may rely less on financial covenants when contracting with borrowers whose accounting standards are significantly different from their own.

However, it is also possible that a lack of familiarity with a borrower's accounting information will make banks more likely to use financial covenants. Bradley and Roberts (2004) find that smaller firms and firms with higher growth opportunities are more likely to have financial covenants included in their loan agreements. This is consistent with banks being more likely to include financial covenants in loan agreements when a borrower's accounting

information is less reliable. Graham et al. (2008) find that following accounting restatements, banks experience greater information asymmetry as a result of uncertainty about a borrower's financial reporting. They find that banks overcome this information asymmetry by using more restrictive loan terms, including more financial covenant restrictions. A pivotal conclusion of Graham et al.'s (2008) study is that covenants are used more often when borrowers require more monitoring. Therefore, it is possible that banks perceive financial covenants as simply another element of restrictive loan contracts, not necessarily one which requires a sophisticated understanding of a borrower's accounting information. Therefore, we might expect that banks will write contracts using more financial covenants when a borrower's accounting information is perceived to be less familiar.

Finally, it is possible that larger GAAP differences are not associated with a greater or lesser reliance on financial covenants. Banks may be sufficiently sophisticated to be able to adjust any loan covenants for the potential effects of GAAP differences. Alternatively, as discussed in the following section, it is possible that banks react to differences in accounting standards by changing the types of financial covenants they use, and not by increasing or decreasing their overall use of covenants. As the relationship between GAAP differences and the reliance on financial covenants is unclear, I state my third hypothesis in null form:

H3: There is no significant association between the GAAP difference between the bank and borrower and the reliance on financial covenants in the loan contract.

### *3.3.2 Types of Financial Covenants*

In addition to the degree to which lending banks rely on financial covenants, we can analyze the types of covenants used in loan contracts. Banks may respond to a lack of familiarity with the borrower's GAAP by altering the package of financial covenants they write into the



contract. Christensen and Nikolaev (2012) identify two main types of financial covenants: performance-based covenants, which include measures of performance such as net income or EBIT, and capital-based covenants, which restrict levels of debt or set minimum requirements for working capital. Performance-based covenants are forward-looking and act as “trip wires”, allocating control of the borrower to the lender in the event of poor performance. Capital-based covenants, on the other hand, align debt holder-shareholder interests by requiring the borrowing firm to maintain minimum levels of capital. As performance-based covenants allocate control of the borrowing firm to the lender if firm performance falls below a threshold, these types of covenants require earnings to provide a timely signal of the deterioration of firm performance. If earnings do not reflect deteriorating firm performance in a timely manner, then a performance-based covenant will be inefficient and costly to the lender. Capital-based covenants restrict debt or set minimum levels of working capital, and are thus based on cumulative balance sheet information. If earnings are a noisy signal of credit quality (or if earnings management is severe), these fluctuations tend to reverse over time. Noise in earnings should thus have less of an effect on covenants based upon cumulative balance sheet information. Christensen and Nikolaev (2012) find that loan contracts rely more heavily on performance-based covenants than capital-based covenants when the borrower’s accounting information is a better predictor of deterioration in credit quality. If the lending bank is unfamiliar with a borrower’s accounting standards, they may be unable to attest to the timeliness of earnings with respect to changes in credit risk. The bank may be unwilling to rely on a contracting mechanism which requires timely earnings if they lack familiarity with the borrower’s accounting standards and the degree to which those accounting standards result in timely earnings. Therefore, when there are larger

differences between the GAAP of the lender and the GAAP of the borrower, banks may rely more heavily on capital-based covenants and less heavily on performance-based covenants.

However, Lowery and Wardlaw (2011) find that debt-to-cash-flow based covenants (one type of performance-based covenants) are used more often with repeat lending between the lender and the borrower, which suggests that as a bank learns more about a borrower, earnings-based covenants become more valuable. This suggests that performance-based covenants may be used more often in conjunction with a greater degree of monitoring by the lending bank. Therefore, if banks monitor borrowers with unfamiliar accounting information more closely, we may expect that they will rely more heavily on performance-based covenants. As the direction of the relationship between GAAP differences between the borrower and the lender and the types of covenants used in the loan contract is unclear, I state my fourth hypothesis in null form:

H4: There is no significant association between the GAAP difference between the bank and borrower and the reliance on capital-based vs. performance-based covenants.

#### 4. Research Design

In examining the effects of GAAP differences on loan contract terms and syndicate structure, I run the following OLS regression, using as a dependent variable the contract term or the property of the syndicate structure being tested in each hypothesis:

$$\begin{aligned} \text{Contract/Syndicate characteristic} = & \alpha_1 + \alpha_2 \text{GAAP Differences} + \alpha_3 \text{Borrower} \\ & \text{Characteristics} + \alpha_4 \text{Loan Characteristics} + \alpha_5 \text{Country Characteristics} + \alpha_6 \text{Year} \\ & \text{Dummy Variable} + \alpha_7 \text{Industry Dummy Variable} + \varepsilon \end{aligned}$$

##### 4.1 Contract/Syndicate characteristics:

To test **H1** I use the dependent variable *Log Spread*, the log of *All in Spread*, which captures all fees and credit spreads, measured as the basis point spread over LIBOR on the loan initiation date. To test **H2**, I use two different dependent variables. I first use *Number of Lenders*, defined as the total number of banks in the loan syndicate. I next use *Percent Held Lead*, defined as the percentage of the loan held by the lead bank in the loan syndicate. In loan observations with more than one lead bank, this variable represents the average percentage of the loan held by all lead banks (Sufi, 2007; Ball et al., 2008).<sup>6</sup> Both of the variables used to test **H2** are measures of the degree of concentration of a loan syndicate. A more concentrated syndicate is characterized by fewer lenders and the lead bank holding a larger percentage of the loan, and is consistent with a closer monitoring relationship between the bank and the borrower.

To test **H3** and **H4** I use measures of the financial covenants in the loan contract. In these analyses, I eliminate observations for which DealScan does not provide covenant data. DealScan's data on covenants is missing for a substantial portion of loan observations. As it is unlikely that these loan contracts are all written without financial covenants, I elect to drop these observations, rather than set their covenant variables equal to zero (Christensen and Nikolaev, 2012). For **H3**, the test of overall reliance on financial covenants, I run a regression with the dependent variable *Financial Covenants*, which counts the number of financial covenants included in the loan contract. For **H4**, the test of the types of covenants included in the loan contract, I use measures of performance- and capital-based covenants. The variable *P-covenants* measures the number of performance-based or "P-covenants" included in the loan contract. These are covenants that include measures of performance or earnings, including the fixed-charge coverage ratio, debt service coverage ratio, interest coverage ratio and cash interest

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<sup>6</sup> In bilateral loans the *Number of Lenders* is equal to 1, and the *Percentage Held Lead* is equal to 100, as a single bank holds the entire amount of the loan. My results are robust to the exclusion of bilateral loans from this analysis.

coverage ratio, and ratios of debt or senior debt to EBITDA. The variable *C-covenants* measures the number of capital-based or “C-covenants” included in the loan contract. These are covenants which require a borrower to maintain minimum levels of capital or restrict maximum levels of debt, including the leverage ratio, debt-to-tangible net worth ratio, debt-equity ratio, current ratio, and minimum levels of net worth or tangible net worth. Finally the *P-ratio* measures the ratio of performance-to-total financial covenants included in the loan contract, or P-covenants/(P-covenants + C-covenants). This should capture the relative degree to which a contract relies on P-covenants versus C-covenants (Christensen and Nikolaev, 2012).

## 4.2 GAAP Differences

In order to capture the degree of differences between the accounting standards used by the borrower and the accounting standards used by the lender, I use Bae, Tan, and Welker’s (2008) measure, *gaapdiff1* (*GAAP Differences*). To calculate this measure, I define each borrowing firm’s country of origin, and ensure that the firm uses the local accounting standards in that country in the pre-IFRS period (i.e., controlling for voluntary IFRS adopters).<sup>7</sup> I then define the country of origin of the bank (or lead bank, for syndicated loans). I assume that a bank’s country of origin should proxy for the bank’s familiarity with the local standards in that country, and lack of familiarity with other standards. However, as explained earlier, to the extent that this may not be the case for some banks, I would be applying GAAP differences where truly none exist. This would make it more difficult for me to find a significant association between GAAP differences in loan contract terms, and would thus bias against my finding results. For each borrower-lender country pair, the *GAAP Differences* measure is defined as in Bae, Tan, and Welker (2008), where each country is assigned values for each of 21 different key accounting

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<sup>7</sup> For a handful of observations where the borrowing firm reports using US GAAP (and is not a US firm), I code this firm as if it were a US firm.

items (from *GAAP 2001: A Survey of National Accounting Rules Benchmarked Against International Accounting Standards*, Nobes, 2001), and whether their treatment of this accounting item differs or not from IAS. Then, for each country pair, I add up the total number of differences between their treatments of the 21 different items. The values range from a minimum of 0 GAAP differences, between Ireland and the UK, to a maximum of 17 GAAP differences between Luxembourg and the UK. In addition, a substantial number of observations have more than one lead bank (46% of my sample). In the calculation of the *GAAP Differences* variable, when there is more than one lead bank, I use the smallest of the *GAAP Differences* measures for all of the lead banks (Giannetti and Yafeh, 2011). This measure is conservative as it assumes that the bank with the fewest number of GAAP differences with the borrower will be able to monitor borrowers most effectively, thus compensating for the larger number of differences that the other lead banks may have with the borrower. This will be the case if this lead bank is able to capitalize on its relative familiarity with the borrower's accounting information and express this familiarity to other lead banks. In cases where there is only a single lender or a single lead bank, or if all lead banks are domiciled in the same country, the *GAAP Differences* variable is simply equal to the number of GAAP differences between the lender (lead) and the borrower.

#### 4.3 Borrower Characteristics

The terms of loan contracts and the syndicate structure are largely determined by characteristics of borrower risk, including borrower size, profitability, leverage, the collateral value of assets, and growth opportunities. Studies examining the determinants of loan contract terms and syndicate structure use a variety of variables to control for these properties of borrower risk. To study a set of international borrowers domiciled in 43 different countries, I

adopt the firm control variables used by Bae and Goyal (2009) and Costello and Wittenberg-Moerman (2011). Larger firms are more mature and often better diversified, so they will have a lower default risk. To control for borrower size I use *LN Assets*, the natural log of total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed. Profitability should affect loan contract terms and syndicate structure as profitable firms have a lower default risk. I measure profitability as the return on assets (*ROA*), defined as the ratio of operating income to total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed. It is also important to control for a borrower's leverage, as more highly levered firms are inherently riskier, and will experience greater difficulty in paying back the new debt being issued. More highly levered firms are also more likely to underinvest if shareholders perceive that creditors claim a substantial portion of the firms' returns (Myers, 1977). *Leverage* is defined as total debt divided by total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed. I also control for the tangibility of assets, as tangible assets will be easier to collateralize and potentially hold greater liquidation value in the event of distress (Bae and Goyal, 2009). *Tangibility* is defined as the ratio of PP&E to total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed. Finally, I control for growth opportunities with the market-to-book ratio of assets. Agency theory argues that growth firms will tend to have higher contracting costs. These firms are inherently riskier and they lose a greater amount of their value in distress. The market-to-book value of assets (*MTB Assets*) is defined as the market value of assets (total assets less book value of equity plus market value of common equity) divided by total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed. Finally, I control for two more non-financial firm characteristics. *Voluntary IFRS* is an indicator variable which takes the value of 1 if the firm uses IFRS instead

of local GAAP in the financial statements at the end of the most recent fiscal year before the loan contract is signed.<sup>8</sup> *Past Relation* controls for the proximity of the past relationship between the borrower and the lending bank (or lead bank for syndicated loans). Banks that have had multiple previous loans with a borrower will likely have a better understanding of the borrower's financial statements and operations, and may require less additional monitoring and due diligence going forward. A closer relationship between the bank and borrower will thus be associated with lower information asymmetry between the bank and the borrower (Bharath et al., 2011) and should be associated with a greater reliance on financial covenants, as the lender has gained a better understanding of the borrower's financial statements during past lending relationships, and thus finds it easier to contract based on the borrower's financial statements. The variable is defined as the number of private loans initiated by the borrowing firm in the past five years (with respect to the loan tranche) which were made with the same bank (lead bank) divided by the total number of private loans initiated by the borrowing firm in the past five years. Calculating the *Past Relation* variable in this way allows the variable to capture the strength of the borrower-lender relationship with respect to total borrowing activity, and allows the measure to be comparable among borrowers with different degrees of borrowing activity (Bharath et al., 2011; Chen et al., 2013). Finally, as a large percentage of my loans come from US borrowers, I control for US firms using *US-dummy*, a dummy variable that takes the value of 1 if the borrower is a US-based firm (Esty and Megginson, 2003; Hong et al., 2011).

#### 4.4 Loan Characteristics

I control for several loan characteristics which likely affect the terms of the loan contract

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<sup>8</sup> These firms are still coded for *GAAP Differences* by their country of origin. The *Voluntary IFRS* variable should control for the effect of voluntary IFRS adoption on loan contract terms and syndicate structure. However, there are very few voluntary adopters in my sample (only 100 loan observations) and my results are robust to the exclusion of these observations.

and the syndicate structure. *Term Loan Indicator* is an indicator variable which takes the value of 1 if the loan is a term loan, and zero otherwise. I create several indicator variables to capture the primary purpose of the loan proceeds: working capital, backup, refinancing, acquisitions, and other. *Performance Pricing Indicator* is an indicator variable which takes the value of 1 if the loan contract includes performance pricing, and zero otherwise. *LN Tranche Amount* is equal to the natural log of the loan tranche amount (in \$US). *LN Maturity* is equal to the natural log of the maturity (in months). *All in Spread* controls for the credit spread and fees.<sup>9</sup> Finally, *Secured* and *Senior* are indicator variables taking the value of 1 if the loan is secured or senior, respectively, and 0 otherwise.

#### 4.5 Country Characteristics

As I am examining a sample of loans from firms based in different countries, it is important to control for country-specific characteristics which may influence the terms of loan contracts or the syndicate structure. *LN GDP* is the natural log of annual GDP per capita for the borrower's country. GDP per capita should control for the level of economic development in the country in which the borrower is domiciled. It is important to control for GDP per capita as greater economic development is often correlated with political stability, and hence, more lenient contract terms. *LN Sovereign Rating* is the natural log of the country-level sovereign risk rating (from Fitch), transformed to an ordinal scale so that smaller numbers represent the least risky ratings. The sovereign risk rating should control for the level of country risk, and should likewise be correlated with political and economic stability. Finally, *Rule of Law* is a country-year-level measure of the quality of a country's legal and enforcement environment from

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<sup>9</sup> This control variable is only included for the test of **H2-H4**. For my other tests, following prior literature, I do not include in each test the loan/syndicate characteristics not being tested (e.g., in the test of the determinants of syndicate structure (**H2**), I do not include the financial covenants). However, my results are robust to the inclusion of these other loan/syndicate characteristics as control variables in each test.



Kaufmann et al. (2009). This measure should control for the quality of a country's enforcement environment (Byard et al., 2011), where higher scores equate to a greater quality enforcement environment. The quality of the enforcement environment in the borrower's country should affect the lender's perception of borrower risk, as it is a proxy for how strictly debt contracts can be enforced, and is thus correlated with the likelihood of the lender being repaid in the event of bankruptcy. Stronger legal enforcement is often associated with lower rates of interest and a greater reliance on financial covenants. It is also typically associated with a more concentrated loan syndicate, as lenders will likely be most willing to monitor borrowers when they believe the borrower's country of origin will effectively enforce their creditor rights in the event of bankruptcy (Esty and Megginson, 2003; Qian and Strahan, 2007; Bae and Goyal, 2009; Hong et al., 2011).<sup>10,11</sup>

## **5. Data and Descriptive Statistics**

### **5.1 Data Sources**

I collect bank loan data from the Dealscan database of Thomson Reuters' Loan Pricing Corporation. For my primary (pre-mandatory IFRS adoption) analysis, I start with all loans issued from 2000 to 2005. As many loan and syndicate characteristics vary across tranches of the same loan deals, I perform my analysis at the tranche level, treating each tranche as a separate observation (Esty and Megginson, 2003). I collect the borrower's and lender's (lead

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<sup>10</sup> Esty and Megginson (2003), Qian and Strahan (2007), and Bae and Goyal (2009) emphasize that it is the borrower's country of origin that matters for legal enforcement, as this is the country where funds will be located and creditor rights will be enforced in the event of bankruptcy. Many syndicated loans contain a "choice of law" clause that allows for the enforcement of the loan contract under US or UK law, which would tend to attenuate the effects of the strength of the legal system on loan contract and syndicate structure terms. In addition, the choice of law clause affects the enforcement of the loan contract, and not the enforcement of property rights under bankruptcy.

<sup>11</sup> I rely on the Kaufmann et al. (2009) measure of legal enforcement as it provides a score for each country-year, and is updated to more recent years than alternate measures. My results are robust to controlling for different measures of the strength of legal enforcement, including the following: International Country Risk Guide's property rights measure, which combines measures of corruption, risk of repudiation, and risk of expropriation of private investment (Bae and Goyal, 2009); LaPorta et al.'s (1998) measure of creditor rights (Esty and Megginson, 2003, Qian and Strahan, 2007); and LaPorta et al.'s (1998) measure of the rule of law (Hong et al., 2011).

bank's) country of origin for each loan observation. This enables me to isolate international loans, where the borrower and the lending bank (or lead bank) are domiciled in different countries. I eliminate all domestic loan observations, where the borrower and the lending (lead) bank are domiciled in the same country. I collect the *GAAP Differences* variable from the information given in Table 1 of Bae et al. (2008), eliminating any loans originating from borrowers or lenders not domiciled in one of the 49 countries covered by Bae et al. (2008). Dealscan also provides data for my dependent variables: credit spread, the number and types of covenants used, and the number of banks in the loan syndicate. Data on the percentage of the loan held by each bank in the syndicate is available for about half (49%) of my sample. Multiple loan observations are missing data for the variable which captures the credit spread and fees (all in spread drawn, in Dealscan), so, consistent with prior studies, I do not require the loan observations to have data about credit spread for tests of **H2 – H4**.<sup>12</sup> Finally, Dealscan provides data for the loan characteristics included as control variables, including the tranche amount (converted to US\$ for loans in international currencies), the maturity of the loan (in months), the type of the loan (generally revolver/line of credit or term loan), the primary purpose of the loan, the terms of performance pricing, if any, and whether the loan tranche is secured and senior.

For my US borrowers, I collect firm data using Compustat. Dealscan does not have a firm identifier that can be used to merge with other databases, so, consistent with prior studies, I use the Roberts Dealscan-Compustat linking table (August 2010 vintage; Chava and Roberts, 2008). For international borrowers, I use Datastream's Worldscope Fundamentals and merge the international borrowers to Worldscope identifiers by firm name. I keep all loan observation for which I am able to locate sufficient data to compute *LN Assets*, *ROA*, *Leverage*, *Tangibility*,

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<sup>12</sup> Consistent with Esty and Megginson (2003) and Qian and Strahan (2007), only about 30% of my non-US loans have data for *all in spread drawn*. Virtually all (95%) of my US loans have data for *all in spread drawn*.

*MTB Assets*, and *Past Relation*. In addition, for international observations, I require the firms to have data from Worldscope about the accounting standards used to prepare financial statements (local GAAP, IFRS, or US GAAP).<sup>13</sup> I winsorize borrower financial characteristics at the .5% level.

Finally, for country-level variables, I consult multiple sources. I obtain values for per capita GDP from the World Development Indicators database from the Worldbank website. I obtain values for sovereign ratings from Fitch and translate the letter ratings to an ordinal scale whereby lower numbers reflect less risky ratings. Finally, my legal enforcement measure, *Rule of Law*, is a country-year level measure from Kaufmann et al. (2009).

## 5.2 Descriptive Statistics

Table 1 presents the distribution of my loan sample by borrower country, lender country, and year. After restricting loan observations by requiring each observation to have data for all variables listed above (except the credit spread and the amount of the loan held by the lead bank, as explained in section 5.1), my final sample consists of 4,223 international loan tranches over the years 2000-2005. The loans originate from borrowers in 42 different countries. The majority of loans originate from US borrowers (55%). The high concentration of US borrowers is due to the paucity of firm-level variables available on Worldscope. Other countries substantially represented in my borrower sample include Hong Kong (11%), Australia (7.7%), the United Kingdom (3.7%) and South Korea (3.1%). The loans originate from lenders in 32 countries. The total number of loans listed in the lender country distribution is substantially larger, at 7,089 loans, as a substantial portion of my sample are syndicated loans with more than one lead bank (46%), often domiciled in different countries. The number of lead banks is consistent with prior studies at an average of 1.7 lead banks per loan (Sufi, 2007). The largest countries represented

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<sup>13</sup> My results are robust to the exclusion of financial firms.

by lending banks are the US (24%) and the United Kingdom (21%), followed by Germany (11%), Switzerland (8.5%), France (8.1%) and Canada (7.7%).

Table 2 presents descriptive statistics for the variables in my regression analyses. The mean (median) credit spread is 203 (183) basis points. This variable is available for 2,850 loan observations, or about 67% of my sample. Consistent with prior research, I find that DealScan does not provide data about credit spreads for many loans originating with non-US borrowers (Qian and Strahan, 2007). My mean (median) credit spread is substantially higher than credit spreads reported in prior research which focus on within-country lending which may suggest that firms pay more for loans with international banks than they would with a domestic bank (or alternatively, that firms which borrow internationally have a higher credit risk). The mean (median) number of lenders in my sample is 10.26 (8), and the mean (median) percent of the loan held by the lead bank is 21.46% (15.49%).<sup>14</sup> Covenant data is available for approximately 39% of my sample. This represents a slightly lower availability than prior studies relying only on US borrowers. However, among US borrowers the availability of covenant data is consistent with prior studies, and I control for US borrowers in my analyses. The mean (median) number of financial covenants in a loan contract is 2.57 (3), which is comprised of approximately 1.92 (2) P-covenants, and 0.65 (1) C-covenant. The P-ratio has a mean of 0.72, which confirms that contracting favors performance-based covenants by about 2-to-1. My statistics are largely consistent with prior research (Qian and Strahan, 2007; Bae and Goyal, 2009; Christensen and Nikolaev, 2012). My *GAAP Differences* variable reflects the degree of differences in accounting systems between the borrower and the lending (lead) bank, and has a mean (median) of 4.05 (4).

I also provide descriptive statistics for borrower characteristics. *Assets* reflects that the

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<sup>14</sup> The *Number of Lenders* and *Percent Held Lead* variables are presented after excluding bilateral loans, where these variables are equal to 1 and 100%, respectively.

mean (median) value of total assets is approximately \$US 11 billion (\$US 236 million). The mean (median) ROA is 6.1% (5.4%). The average leverage is about 30%, and the average tangibility is 28%. Finally, the mean (median) market-to-book ratio of assets is 1.5 (1.2). Only about 1% of borrowers have voluntarily adopted IFRS, and approximately 13% of the borrowers' past loans have been with the same lending (lead) bank.

Finally, I provide descriptive statistics for the loan characteristics, and the country characteristics of the borrower country. On average about 31% of the loan tranches are term loans. The most common loan purposes represented in my sample are working capital (57%), refinancing (18%), and acquisition (15%). Approximately 27% of loans include some performance pricing. This is lower than the frequency of performance pricing reported by other studies (Asquith et al. (2005) report 41%), and is due to the international nature of my sample. Consistent with prior studies, 43% of my loan tranches for US borrowers include performance pricing provisions. The mean (median) tranche amount is US\$ 291 million (US\$ 100 million). The mean (median) maturity is 39 months (48 months), which is consistent with samples in prior studies (Hong et al., 2011; Bae and Goyal, 2009, Qian and Strahan, 2007). Finally, approximately 35% of loans are secured, and 99% are senior, consistent with prior studies (Ball et al., 2008; Qian and Strahan, 2007). The mean (median) GDP per capital is \$US 25,592 (\$US 33,190). The average sovereign debt rating is 1.65, which translates to a rating between AAA and AA+. The high rating is primarily due to the preponderance of US borrowers. Finally, the average Rule of Law score is 1.41, where higher numbers indicate a stronger system of legal enforcement.

## **6. Main Results**

### **6.1 Credit Spread**

Table 3 presents the results of my test of **H1**. The coefficient on my test variable, *GAAP Differences*, is 0.01 (3.04 if translated from the log into *allinspreaddrawn*) and is significant at the 5% level (p-value = 0.05). This provides evidence that, in the pre-IFRS period, larger *GAAP Differences* between the borrower and the lender are associated with a higher credit spread. A higher credit spread in the presence of larger GAAP differences suggests that banks experience information problems when they experience difficulty in understanding and interpreting the borrower's financial statements due to accounting standards differences. Although banks are among the most sophisticated users of financial statements, these results suggest that banks are not fully able to overcome differences in accounting standards when examining a non-domestic borrower's financial statements. This provides evidence that differences in accounting standards impose contracting costs. Further, these costs are economically significant. The least number of GAAP differences between countries in my sample is 0 (between the United Kingdom and Ireland), while the largest difference is 17 (between Luxembourg and the United Kingdom). My results suggest that if a borrowing company were to switch from a lender with the maximum number of GAAP differences to a lender with the minimum number of GAAP differences (e.g. a borrower in the United Kingdom switching from a Luxembourgish bank to an Irish bank) the borrower could save in interest costs approximately 52 basis points ( $3.04 * 17$ ). My results suggest that lending banks experience difficulty understanding how accounting information translates into default risk when financial statements are based on accounting standards which are different from their own. More broadly, my results suggest that lending banks assign additional fees and spreads to compensate for the additional effort and risk they assume by lending to a borrower whose accounting information they find to be unfamiliar.

The results for the control variables are largely consistent with prior studies. Consistent with prior studies, the coefficient on *LN Assets* is negative and significant, which suggests that larger companies have lower cost of debt. The ROA coefficient is negative and significant, and appears to be one of the strongest determinants of the credit spread. This is consistent with expectations that higher profitability is associated with a lower cost of debt. The coefficient on *Leverage* is positive and significant: more highly levered firms generally experience a higher cost of debt, as the default risk on subsequent debt is greater when a firm has a greater amount of debt outstanding. Table 3 also suggests, consistent with prior studies, that term loans are associated with a higher credit spread, as are tranches with the purpose of working capital, CAPEX, refinancing, acquisitions, and other. The inclusion of a performance pricing term is associated with a lower cost of debt. This is consistent with prior research on performance pricing which suggests that performance pricing compensates the lender in the event of poor borrower performance, and thus should decrease overall credit spread.<sup>15</sup> Larger loan amounts are associated with smaller credit spreads, consistent with past studies which suggest that better quality borrowers tend to be granted larger loan amounts as well as lower credit spreads. Secured loans and loans with a longer maturity are associated with higher credit spreads, while senior loans are associated with lower credit spreads. *LN Sovereign Rating* has a negative coefficient, suggesting that borrowers from countries with superior sovereign debt ratings are in

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<sup>15</sup> Asquith, Beatty and Weber (2005) distinguish between interest-increasing performance pricing, which increases credit spreads in the event of poor borrower performance, and interest-decreasing performance pricing, which decreases credit spreads in the event of superior borrower performance. They find that interest-increasing performance pricing is associated with significantly reduced credit spread, while interest-decreasing performance pricing is only marginally associated with higher credit spread. The authors conclude that the primary pricing effect of performance pricing is that lenders are willing to offer reduced credit spreads in exchange for interest-increasing performance pricing. As my analysis does not control for the different types of performance pricing, I can assume that either the effects of interest-increasing performance pricing overpower the effects of interest-decreasing performance pricing in my sample, or that interest-increasing performance pricing terms are used more often in my sample. Whether lenders would be more likely to use interest-increasing performance-pricing terms for international loans remains a question for future research.

fact charged a higher credit spread. This unusual result may be attributable to the preponderance of US firms dominating my sample.<sup>16</sup> Indeed the *US dummy* variable has a positive and significant coefficient, suggesting that US firms are charged a higher credit spread to borrow internationally than are firms in other countries. This is consistent with a cross-listing story, where US borrowers seek out international sources of financing, and are willing to pay a premium for these loans, in order to expand operations internationally. It is likely that US firms seek loans internationally for internationally-based projects, which are inherently riskier. Finally, the *Rule of Law* variable has a negative and significant coefficient, consistent with prior findings that a stronger legal system is associated with a lower credit spread (Qian and Strahan, 2007; Bae and Goyal, 2009).

## 6.2 Syndicate Structure

Table 4 presents the results of my test of **H2**. The dependent variables tested in columns 1 and 2 are the number of lenders and the percentage of the loan held by the lead bank, respectively. In both columns, the coefficient on *GAAP Differences* is significant in the direction predicted ( $p=0.00$ ). Together, these results suggest that lending banks form a more concentrated loan syndicate when lending to a borrower using significantly different accounting standards from their own. A concentrated syndicate is characterized by fewer banks in the syndicate and the lead bank holding a larger proportion of the loan. The coefficients in columns 1 and 2 suggests that if a lead bank were to switch from a borrower with a maximum number of GAAP differences to a borrower with a minimum number of GAAP differences, the bank would be able

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<sup>16</sup> Alternatively this may suggest one of two explanations: only the riskiest borrowers from countries with superior debt ratings tend to borrow internationally; and/or only the least risky borrowers from countries with low debt ratings tend to borrow internationally.



to form a syndicate with approximately 5.78 more member banks ( $0.34 \times 17$ ) and would be able to hold approximately 39% ( $2.29 \times 17$ ) less of the loan.<sup>17</sup>

The coefficients on my control variables are largely consistent with prior research. A more concentrated syndicate structure is associated with strict legal enforcement. This is consistent with prior research on the effects of country-level legal enforcement on syndicated loan structure, and suggests that banks are only willing to invest in monitoring and due diligence efforts when they believe the borrower's legal regime will enforce creditor rights in the event of default (Esty and Megginson, 2003; Qian and Strahan, 2007). Syndicate structure is less concentrated for larger loans, term loans, senior loans, and loans with performance pricing contract terms, consistent with prior studies.

### 6.3 Financial Covenants

#### 6.3.1 *Reliance on Financial Covenants*

Table 5 presents the results of my test of **H3**. The coefficient on *GAAP differences* is negative and significant ( $p=0.00$ ). This provides evidence that banks write loan contracts with fewer financial covenants when lending to borrowers with significantly different accounting standards from their own, and whose accounting information they therefore find to be less familiar. The lower reliance on financial covenants in the presence of GAAP differences suggests that when banks are less familiar with a borrower's accounting information, they are less willing to contract using those accounting numbers. The coefficient on *GAAP Differences* of -0.010 suggests that if a borrower switches from a lender with the maximum number of

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<sup>17</sup> These regressions include bilateral loans where the syndicate size is 1 and the bank holds 100% of the loan. Running the regressions in columns 1 and 2 excluding single-lender banks yields coefficients of -0.28 and 0.70, respectively. Thus, within the syndicated loan sample, the effect of switching from a borrower with maximum GAAP differences to minimum GAAP differences would be a loan syndicate with 4.8 more member banks ( $.28 \times 17$ ) and a lead bank holding 12% less of the loan ( $.70 \times 17$ ). The significance of my results is robust to the exclusion of bilateral loans.

GAAP differences to a lender with the minimum number of GAAP differences, the borrower will be subject to a loan contract with 0.17 more financial covenants ( $0.010 \times 17$ ). Given that the average loan contract in my sample contains 2.57 covenants, this represents a 6.6% ( $0.17/2.57$ ) change in the use of financial covenants. Prior literature suggests that financial covenants may act as a substitute for monitoring, helping the lender to monitor the borrower and thus reducing the cost of debt (Bradley and Roberts, 2004). My results suggest that lenders will only substitute covenants for monitoring when they are familiar with a borrower's accounting standards. A firm borrowing from a lender with significantly different accounting standards thus likely pays a higher cost of debt and is subject to a closer monitoring relationship in exchange for a lower reliance on direct contracting through the use of financial covenants.

My control variables in table 5 largely behave consistently with prior studies. Borrowers are generally subject to more financial covenants when they are smaller, more highly leveraged, and their assets are more tangible. They also experience fewer covenant restrictions when their market-to-book ratio of assets is high; this suggests that firms with high growth potential have less restrictive covenant packages. There is also a greater reliance on financial covenants when the relationship between the borrower and the lender is stronger. This is consistent with banks relying more heavily on financial covenants when they are more familiar with a borrower's accounting information. Loan tranches are more likely to include financial covenants when they are term loans, have a larger loan amount and a longer maturity, include performance pricing provisions, are secured, have a higher credit spread, and are for the purposes of working capital, refinancing or acquisition.

### *6.3.2 Types of Financial Covenants*

Table 6 presents the results of my test of **H4**. Columns 1 displays the results of the regression of the variable *P-covenants* on *GAAP Differences*. In column 1 the coefficient on *GAAP Differences* is negative and highly significant ( $p=0.00$ ), which suggests that lenders tend to write loan contracts using fewer performance-based covenants when they are unfamiliar with borrowers' accounting standards. Columns 2 displays the regression of the variable *C-covenants* on *GAAP Differences*. In column 2 the coefficient on *GAAP Differences* is positive and significant ( $p=0.00$ ), which suggests that lenders tend to write loan contracts using more capital-based covenants when they are unfamiliar with borrowers' accounting standards. The coefficients in columns 1 and 2 suggest that if a borrower were to switch from a lender with the maximum number of GAAP differences to a lender with the minimum number of GAAP differences, she would face a loan contract with approximately 0.37 additional performance-based covenants ( $0.022 \times 17$ ), and 0.20 fewer capital-based covenants ( $.012 \times 17$ ). Based on the mean values from table 2, this would represent an increase in reliance on performance-based covenants of 19% ( $0.37/1.92$ ) and a decrease in reliance on capital-based covenants of 31% ( $0.20/0.65$ ). Finally, column 3 uses as a dependent variable the P-ratio, or the ratio of performance-based covenants to total financial covenants, and should capture the choice of the mix of covenants in contracts using both P-and C-covenants. In column 3 the coefficient on *GAAP Differences* is negative and significant ( $p=0.00$ ). This suggests that lenders alter the mix of covenants away from P-covenants and toward C-covenants when faced with a borrower using substantially different accounting standards. These results are consistent with Christensen and Nikolaev's (2012) findings that banks tend to use performance-based covenants only when they find borrowers' accounting information to be contractible. My results complement these

findings, and shed new light on another factor affecting the choice between performance- and capital-based financial covenants.

## **7. Additional Analyses**

As an additional analysis, I examine the same model while adding the post-IFRS period to my analyses. One key concern with my analyses is that a test of international loans may suffer from self-selection bias. As I rely on a sample of international loans, where the borrower and lender are domiciled in different countries, one concern is that there may be something particular about the nature of international loans that makes them fundamentally different than domestic loans, and thus my results may not generalize to other parties writing debt contracts. A borrower seeking out international financing could be similar to an equity cross-listing firm, who does so for “good business” reasons, such as seeking out international markets as a point of entry for operational expansion (Lang et al., 2003). That is, a borrower could seek out international debt to establish itself in a foreign market in which it wishes to do business. Alternatively, a borrower with existing international operations might seek international lenders as a hedging tool to offset foreign assets or simply because they would tend to work with international banks as part of their foreign operations. In addition, banks sometimes enter foreign markets for competitive purposes, which could be a major driving factor behind international lending. I capitalize on the exogenous shock of mandatory IFRS adoption, after which prescribed differences in accounting standards are nonexistent, while incentives to borrow internationally should be largely unchanged.

In addition, a test that includes the post-mandatory IFRS period can also correct for endogeneity problems due to omitted correlated country-level variables. While the Bae et al. (2008) *GAAP Differences* measure purports to capture differences in prescribed accounting

standards, this measure may also pick up other country-level effects to the extent that it is correlated with enforcement, interpretation, cultural differences, or a country's stage of development. The ensuing endogeneity problem raises concerns that my findings are not truly attributable to differences in prescribed standards but rather to omitted correlated variables capturing other country-level differences. I capitalize on the exogenous shock of mandatory IFRS adoption, an event after which accounting standards differences drastically decrease, but other country-level differences should largely be unchanged.<sup>18</sup> Differences in accounting systems across countries include differences in prescribed financial reporting standards as well as differences in the application, interpretation, and enforcement of these standards. For example, while the same set of IFRS are prescribed across the European Union, Australia, and South Africa since fiscal year 2005, research suggests that this harmonization of prescribed accounting standards has not resulted in a uniform interpretation and application of the standards (Daske et al., 2008; Daske et al., 2013). Christensen and Nikolaev (2013) examine the accounting treatment of various assets before and after IFRS adoption in a sample of German and UK firms. They find evidence that borrowers' measurement choice of assets under IFRS is significantly associated with the measurement under prior local GAAP. KPMG and by the European Commission performed studies of the 2005 and 2006 financial statements, respectively, for a set of large firms from IFRS adopting countries. These studies concluded that differences in the application of IFRS existed at the country level, and were strongly associated with accounting policies under prior national GAAP (KPMG and von Keitz, 2006; European Commission, 2008). Haller and Wehrfritz (2013) and Kvaal and Nobes (2010, 2012) study accounting choices that

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<sup>18</sup> The Kaufmann et al. (2009) measure controls for concurrent changes in enforcement. In addition, as a sensitivity test, I run all tests on a shorter window. I restrict the pre-IFRS period to 2003-2005 and the post-IFRS period to 2006-2007. This should help control for concurrent changes in legal enforcement surrounding IFRS adoption (Christensen, Hail, and Leuz, 2013). This should also address any concerns about the credit bubble in 2000-2002, and the financial crisis beginning in 2008. My results are robust to this alternative time period.

are available under IFRS and conclude that firms tend to choose options which retain accounting policies under national GAAP. Further, these studies document that these national differences persist from 2005 to 2009. These studies strongly suggest that in the post-IFRS period, national accounting differences persist and prevent full comparability, and that these differences are strongly correlated with national GAAP differences prior to IFRS adoption. For this reason, in the post-IFRS period, the *GAAP Differences* measure should capture national accounting differences which persist after IFRS adoption as a result of prior differences in local GAAP. I run the following model:

$$\begin{aligned} \text{Contract/Syndicate characteristic} = & \alpha_1 + \alpha_2 \text{GAAP Differences} + \alpha_3 \text{Post-IFRS} + \alpha_4 \text{GAAP} \\ & \text{Differences*Post-IFRS} + \alpha_5 \text{Borrower Characteristics} + \alpha_6 \text{Loan Characteristics} + \\ & \alpha_7 \text{Country Characteristics} + \epsilon \end{aligned}$$

The coefficient  $\alpha_2$  captures the effect of GAAP differences on the dependent variable in the pre-IFRS period. The *Post-IFRS* dummy variable controls for fixed (levels) differences between the pre- and post-IFRS periods. Thus the coefficient  $\alpha_4$  on the interaction term *GAAP Differences\*Post-IFRS* measures the change in the effect of GAAP differences on the dependent variable from the pre- to post-IFRS periods. This coefficient therefore captures the amount of the GAAP differences effect that disappears in the post-IFRS period. This may be interpreted as the effect of GAAP differences attributable solely to differences in prescribed standards, and not differences in other country-level factors. As the coefficient measures the portion of the effect that disappears in the post-IFRS period, this test can isolate the portion of the effects that are attributable to differences in prescribed accounting standards.

Table 7 presents the results of my additional analyses. I find that my results hold from the pre-IFRS tests, and my inferences are largely unchanged. In column 1 in the top row, the

coefficient on the interaction term *GAAP Difference\*Post-IFRS* is negative and significant. The coefficient on the interaction term captures the portion of the effect of GAAP differences on credit spreads that disappears with the exogenous shock of mandatory IFRS adoption. I interpret that a greater difference in prescribed GAAP is associated with a higher credit spread. Columns 2 and 3 test the effects of GAAP differences on the syndicate structure. The coefficients in Column 2 suggest that a single GAAP difference is associated with a loan syndicate with 0.37 fewer members, and that 0.15 of this effect is attributable to differences in prescribed standards, and thus disappears after mandatory IFRS adoption ( $p=0.00$ ). Similarly, column 3 suggests that a single GAAP difference is associated with a lead bank holding 2.79% more of the loan, and that 1.83% of this effect is attributable to differences in prescribed standards ( $p=0.00$ ).

In the lower panel, the test of financial covenants, I find that the post-IFRS period is associated with a significantly lower reliance on financial covenants, consistent with Ball et al. (2013), as evidenced by the negative and significant coefficient on *Post-IFRS* ( $p=0.00$ ). I also find that GAAP differences are associated with a significantly lower reliance on financial covenants, and that this effect largely disappears in the post-IFRS period. Although the coefficient on the interaction term is not significant, untabulated tests confirm that the sum of the coefficients on *GAAP Differences* and the interaction term are insignificantly different from zero. I conclude that while GAAP differences are associated with a lower reliance on financial covenants in the pre-IFRS period, this effect largely disappears in the post-IFRS period and thus is likely attributable to differences in prescribed accounting standards. Columns 2 – 4 in the lower panel confirm my findings that GAAP differences are associated with a greater reliance on capital-based covenants and a lesser reliance on performance-based covenants. This table further demonstrates that this effect is almost solely attributable to differences in prescribed accounting

standards, as evidenced by the similar values for the coefficients on *GAAP Differences* and on the interaction term (i.e., the effect of GAAP differences in the pre-IFRS period almost completely disappears in the post-IFRS period). In addition, consistent with Ball et al. (2013) I find that the post-IFRS period is associated with a lower reliance on both performance- and capital-based covenants, as evidenced by the negative and significant coefficients on *Post-IFRS* in the tests of *P-covenants* and *C-covenants* ( $p=0.00$  and  $0.06$ , respectively).<sup>19</sup> However, the post-IFRS effect appears to be strongest for P-covenants, which suggests that lenders most strongly reduce their reliance on performance-based covenants in the post-IFRS period. This analysis thus complements the results of Ball et al. (2012) by showing that in the post-IFRS period, banks are especially like to reduce their reliance on performance-based covenants.

## 8. Conclusion

The purpose of this paper is to examine the relationship between financial reporting differences and the terms and structure of debt contracts. I focus on differences in accounting information that arise in debt contracts where contracting parties are domiciled in different countries and are thus subject to different accounting standards. I find that larger GAAP differences are associated with higher credit spreads and fees, suggesting that borrowers are charged a higher spread and higher fees to compensate for the bank's lack of familiarity with their accounting system. I find that larger GAAP differences between a borrower and a lending (lead) bank are associated with a more concentrated loan syndicate, i.e. fewer banks in the syndicate, and the lead bank holding a greater portion of the loan. I find that larger GAAP differences between a borrower and a lending (lead) bank are associated with less reliance on debt covenants. I also find that when GAAP differences are larger, banks rely more heavily on

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<sup>19</sup> Ball et al. (2013) test separately the effects of income-statement and balance-sheet covenants. This should be largely similar to a test of performance-based and capital-based covenants.



capital-based covenants, and less heavily on performance-based covenants. My results suggest that when banks are unfamiliar with a borrower's accounting information, they are less likely to write contracts using performance-based covenants, which require the borrower's accounting information to be a timely reflection of deteriorating credit risk. I conclude that when banks find a borrower's accounting information to be unfamiliar, they are particularly unwilling to attest to the timeliness of earnings with respect to credit risk. However, it is also possible that some borrowers purposely seek out lenders with GAAP differences, and are willing to pay more for this type of loan, in order to avoid committing to performance-based covenants. This may be profitable for a firm which has private information about future volatility of earnings. This question could be a fruitful area for future research.

Finally, in additional analyses using the mandatory adoption of IFRS as an exogenous shock to the accounting system, I document that a significant portion of the effects of GAAP differences on debt contracting disappear in the post-IFRS period. I conclude that a significant portion of the effects I document are indeed attributable to differences in prescribed accounting standards. These results speak more generally to the costs of contracting among parties with accounting differences. My results are also consistent with the idea that local accounting standards evolve to facilitate contracting in a particular geographical area (Schipper, 2005; Ball, 2006), and further suggest that contracting across different jurisdictions may be more costly than contracting within a single jurisdiction. These results are particularly relevant to a post-IFRS world in which significant evidence suggests that country-level differences in accounting systems persist among IFRS users.

**TABLE 1**

**DISTRIBUTION OF LOAN SAMPLE BY COUNTRY AND YEAR**

**Panel A: Borrower Country**

<b>Borrower Country</b>	<b># Loans</b>	<b>Borrower Country</b>	<b># Loans</b>
Argentina	9	South Korea	132
Australia	327	Luxembourg	5
Belgium	3	Malaysia	46
Brazil	3	Mexico	2
Canada	64	The Netherlands	27
Chile	2	New Zealand	16
China	39	Norway	30
Czech Republic	3	Philippines	4
Denmark	21	Poland	12
Egypt	5	Portugal	6
Finland	7	Russia	1
France	65	Singapore	76
Germany	23	South Africa	11
Greece	15	Spain	11
Hong Kong	449	Sweden	17
Hungary	5	Switzerland	8
India	77	Taiwan	98
Indonesia	1	Thailand	34
Ireland	13	Turkey	16
Israel	3	United Kingdom	158
Japan	33	United States	2346
		<b>TOTAL</b>	<b>4223</b>

**Panel B: Lender Country**

<b>Lender Country</b>	<b># Loans</b>	<b>Lender Country</b>	<b># Loans</b>
Australia	208	Japan	322
Austria	13	South Korea	31
Belgium	34	Malaysia	14
Canada	543	The Netherlands	74
China	154	Norway	30
Denmark	24	Philippines	4
Egypt	2	Portugal	2
France	571	Singapore	110
Germany	755	South Africa	9
Greece	14	Spain	56
Hong Kong	104	Sweden	8
Hungary	3	Switzerland	602
India	21	Taiwan	90
Ireland	15	Thailand	25
Israel	10	United Kingdom	1487
Italy	37	United States	1717
		<b>TOTAL</b>	<b>7089</b>

**Panel C: Loan Year**

<b>Year</b>	<b># Loans</b>
2000	445
2001	607
2002	734
2003	837
2004	824
2005	776
<b>TOTAL</b>	<b>4223</b>

**TABLE 2**  
**DESCRIPTIVE STATISTICS**

Variable	N	Mean	SD	P25	P50	P75
<b>Dependent Variables</b>						
<i>All in Spread</i>	2850	203.25	149.37	85.00	182.50	280.00
<i>Number of Lenders</i>	3119	10.26	10.27	4.00	8.00	14.00
<i>Percent Held Lead</i>	1024	21.46	17.18	10.00	15.49	25.00
<i>Financial Covenants</i>	1637	2.57	0.99	2.00	3.00	3.00
<i>P-covenants</i>	1637	1.92	1.10	1.00	2.00	3.00
<i>C-covenants</i>	1637	0.65	0.74	0.00	1.00	1.00
<i>P-ratio</i>	1637	0.72	0.34	0.50	0.80	1.00
<b>Test Variables</b>						
<i>GAAP Differences</i>	4223	4.05	3.76	0.00	4.00	7.00
<b>Borrower Characteristics</b>						
<i>LN Assets</i>	4223	23.12	3.16	15.83	19.28	21.17
<i>ROA</i>	4223	0.06	0.05	0.02	0.05	0.10
<i>Leverage</i>	4223	0.30	0.18	0.16	0.29	0.45
<i>Tangibility</i>	4223	0.28	0.25	0.03	0.23	0.50
<i>MTB Assets</i>	4223	1.49	0.64	1.03	1.24	1.73
<i>Voluntary IFRS</i>	4223	0.01	0.12	0.00	0.00	0.00
<i>Past Relation</i>	4223	0.13	0.25	0.00	0.00	0.16
<b>Loan Characteristics</b>						
<i>Term Loan Indicator</i>	4223	0.31	0.46	0.00	0.00	1.00
<i>Purpose - Working Capital</i>	4223	0.57	0.50	0.00	1.00	1.00
<i>Purpose - CAPEX</i>	4223	0.03	0.16	0.00	0.00	0.00
<i>Purpose - Refinancing</i>	4223	0.18	0.38	0.00	0.00	0.00
<i>Purpose - Acquisition</i>	4223	0.15	0.36	0.00	0.00	0.00
<i>Purpose - Backup</i>	4223	0.03	0.17	0.00	0.00	0.00
<i>Purpose - Other</i>	4223	0.05	0.21	0.00	0.00	0.00
<i>Performance Pricing Indicator</i>	4223	0.27	0.45	0.00	0.00	1.00
<i>LN Tranche Amount</i>	4223	19.49	1.53	17.28	18.42	19.41
<i>LN Maturity</i>	4223	3.66	0.73	3.18	3.87	4.09
<i>Secured</i>	4223	0.35	0.48	0.00	0.00	1.00
<i>Senior</i>	4223	0.99	0.09	1.00	1.00	1.00
<b>Country Characteristics</b>						
<i>LN GDP</i>	4223	10.15	0.79	10.11	10.41	10.51
<i>LN Sovereign Rating</i>	4223	0.50	0.75	0.00	0.00	1.10
<i>Rule of Law</i>	4223	1.41	0.43	1.47	1.53	1.62

**Variable Definitions:** See Appendix A.

**TABLE 3****EFFECT OF GAAP DIFFERENCES ON CREDIT SPREAD AND FEES**

Variables	<i>Log Spread</i>		
	<i>Coeff</i>		<i>T-stat</i>
<i>GAAP Differences</i>	0.0093	**	2.03
<i>LN Assets</i>	-0.1274	***	-6.26
<i>ROA</i>	-1.6323	***	-4.70
<i>Leverage</i>	0.9111	***	10.02
<i>Tangibility</i>	0.0921		0.95
<i>MTB Assets</i>	-0.0627		-1.17
<i>Voluntary IFRS</i>	0.1350		0.71
<i>Past Relation</i>	0.0541	**	2.42
<i>Term Loan Indicator</i>	0.2244	***	13.25
<i>Purpose - Working capital</i>	0.4221	***	8.15
<i>Purpose - CAPEX</i>	0.3494	***	3.64
<i>Purpose - Refinancing</i>	0.4119	***	4.25
<i>Purpose - Acquisition</i>	0.6815	***	19.38
<i>Purpose - Other</i>	0.5751	***	9.20
<i>Performance Pricing Indicator</i>	-0.0734	***	-4.04
<i>LN Tranche Amount</i>	-0.0430	***	-3.83
<i>LN Maturity</i>	0.0758	***	5.04
<i>Secured</i>	0.3593	***	10.28
<i>Senior</i>	-0.8635	***	-9.02
<i>LN GDP</i>	0.0534		0.39
<i>LN Sovereign Rating</i>	-0.3315	**	-2.11
<i>Rule of Law</i>	-0.5048	*	-1.60
<i>US-Dummy</i>	1.3744	***	7.24
<i>Intercept</i>	6.9196	***	5.81
<i>Industry Indicators</i>	Yes		
<i>Year Indicators</i>	Yes		
<i>Adjusted R<sup>2</sup></i>	0.61		
<i>Number of Observations</i>	2850		

This table reports coefficient estimates from OLS regressions relating credit spreads and fees to how familiar a lending bank is with a borrower's accounting information. The degree of familiarity between the borrower and the lender is measured as the degree of GAAP differences between each party's country of origin. All borrowing firm financial variables are winsorized at the .5% level. Standard errors are clustered by borrower country. Industry and year indicator variables are included. For definitions of all variables, see Appendix A. \*, \*\*, and \*\*\* represent the 10%, 5% and 1% significance levels, respectively.

TABLE 4

## EFFECT OF GAAP DIFFERENCES ON SYNDICATE STRUCTURE

Variables	Number of Lenders			Percentage Held Lead		
	Coeff		T-stat	Coeff		T-stat
<i>GAAP Differences</i>	-0.34	***	-4.13	2.29	***	4.58
<i>LN Assets</i>	-0.03		-0.19	0.74		1.49
<i>ROA</i>	-7.63	**	-2.46	-19.81		-0.94
<i>Leverage</i>	2.91	***	3.56	-15.49	**	-2.08
<i>Tangibility</i>	-0.94		-1.00	-6.99		-1.25
<i>MTB Assets</i>	0.40		1.18	-3.46	*	-1.75
<i>Voluntary IFRS</i>	6.18		1.60	-3.28		-0.60
<i>Past Relation</i>	0.54		1.09	-1.49		-0.24
<i>Term Loan Indicator</i>	2.30	***	4.84	-12.08		-1.32
<i>Purpose - Working capital</i>	-1.53	*	-1.66	15.86	*	1.88
<i>Purpose - CAPEX</i>	0.36		0.32	10.98		0.94
<i>Purpose - Refinancing</i>	-0.09		-0.12	4.76		0.80
<i>Purpose - Acquisition</i>	-1.07	**	-2.43	22.57	***	2.72
<i>Purpose - Other</i>	-1.94		-1.30	18.72	**	2.07
<i>Performance Pricing Indicator</i>	3.63	***	5.24	-23.98	***	-12.04
<i>LN Tranche Amount</i>	2.39	***	12.01	-11.40	***	-9.54
<i>LN Maturity</i>	-0.50		-0.93	1.49		1.25
<i>Secured</i>	-0.04		-0.09	-0.99		-0.41
<i>Senior</i>	4.54	***	7.45	-30.58	***	-5.75
<i>LN GDP</i>	0.55		1.06	0.39		0.15
<i>LN Sovereign Rating</i>	-1.13		-1.23	0.41		0.17
<i>Rule of Law</i>	-2.87	**	-2.07	11.93	**	2.24
<i>US-Dummy</i>	-2.13	*	-1.86	-1.27		-0.46
<i>All in Spread</i>	0.00		-1.27	0.01	***	3.55
<i>Intercept</i>	-38.34	***	-4.99	255.70	***	7.65
<i>Industry Indicators</i>	Yes			Yes		
<i>Year Indicators</i>	Yes			Yes		
<i>Adjusted R<sup>2</sup></i>	0.28			0.61		
<i>Number of Observations</i>	4223			2128		

This table reports coefficient estimates from OLS regressions relating syndicate structure to how familiar a lending bank is with a borrower's accounting information. The degree of familiarity between the borrower and the lender is measured as the degree of GAAP differences between each party's country of origin. Syndicate structure is measured as alternatively *Number of Lenders*, the number of banks in the syndicate, and *Percentage Held Lead*, the amount of the loan held by the lead bank. All borrowing firm financial variables are winsorized at the .5% level. Standard errors are clustered by borrower country. Industry and year indicator variables are included. For definitions of all variables, see Appendix A. \*, \*\*, and \*\*\* represent the 10%, 5% and 1% significance levels, respectively.

TABLE 5

## EFFECT OF GAAP DIFFERENCES ON THE USE OF FINANCIAL COVENANTS

Variables	<i>Financial Covenants</i>		
	<i>Coeff</i>		<i>T-stat</i>
<i>GAAP Differences</i>	-0.010 ***		-4.56
<i>LN Assets</i>	-0.114 ***		-6.61
<i>ROA</i>	0.403		1.21
<i>Leverage</i>	0.267 ***		3.05
<i>Tangibility</i>	0.234 ***		4.09
<i>MTB Assets</i>	-0.071 **		-2.02
<i>Voluntary IFRS</i>	1.027		1.38
<i>Past Relation</i>	0.296 ***		16.97
<i>Term Loan Indicator</i>	0.076 ***		4.37
<i>Purpose - Working capital</i>	0.430 ***		21.82
<i>Purpose - CAPEX</i>	0.134		1.36
<i>Purpose - Refinancing</i>	0.318 ***		7.90
<i>Purpose - Acquisition</i>	0.555 ***		30.46
<i>Purpose - Other</i>	0.040		1.55
<i>Performance Pricing Indicator</i>	0.182 ***		11.69
<i>LN Tranche Amount</i>	0.053 **		2.24
<i>LN Maturity</i>	0.203 ***		8.28
<i>Secured</i>	0.249 ***		8.26
<i>Senior</i>	0.032 *		1.77
<i>LN GDP</i>	-0.156 ***		-2.71
<i>LN Sovereign Rating</i>	-0.437 *		-1.96
<i>Rule of Law</i>	0.057		0.23
<i>US-Dummy</i>	0.770 ***		3.51
<i>All in Spread</i>	0.001 ***		5.37
<i>Intercept</i>	2.649 ***		3.36
<i>Industry Indicators</i>	Yes		
<i>Year Indicators</i>	Yes		
<i>Adjusted R<sup>2</sup></i>	0.25		
<i>Number of Observations</i>	1637		

This table reports coefficient estimates from OLS regressions relating the use of financial covenants in debt contracts to how familiar a lending bank is with a borrower's accounting information. The degree of familiarity between the borrower and the lender is measured as the degree of GAAP differences between each party's country of origin. *Financial Covenants* is measured as the number of accounting-based covenants included in the loan contract. All borrowing firm financial variables are winsorized at the .5% level. Standard errors are clustered by borrower country. Industry and year indicator variables are included. For definitions of all variables, see Appendix A. \*, \*\*, and \*\*\* represent the 10%, 5% and 1% significance levels, respectively.

TABLE 6

## EFFECT OF GAAP DIFFERENCES ON TYPES OF FINANCIAL COVENANTS

Variables	<i>P-covenants</i>			<i>C-covenants</i>			<i>P-ratio</i>		
	<i>Coeff</i>		<i>T-stat</i>	<i>Coeff</i>		<i>T-stat</i>	<i>Coeff</i>		<i>T-stat</i>
<i>GAAP Differences</i>	-0.02	***	-11.21	0.01	***	5.72	-0.01	***	-5.11
<i>LN Assets</i>	-0.02		-1.41	-0.09	***	-14.13	0.01	**	2.18
<i>ROA</i>	0.16		0.45	0.25		1.09	0.33	*	1.94
<i>Leverage</i>	1.14	***	15.00	-0.87	***	-22.86	0.40	***	22.51
<i>Tangibility</i>	-0.39	***	-8.11	0.62	***	20.26	-0.18	***	-10.72
<i>MTB Assets</i>	0.09	***	5.19	-0.16	***	-4.01	0.05	***	7.99
<i>Voluntary IFRS</i>	0.64		1.13	0.39		1.06	-0.17		-0.87
<i>Past Relation</i>	0.20	***	13.42	0.09	***	5.37	0.00		-0.16
<i>Term Loan Indicator</i>	0.13	***	5.75	-0.06	***	-3.04	0.03	***	3.25
<i>Purpose - Working capital</i>	0.37	***	14.99	0.06	***	3.40	0.07	***	4.83
<i>Purpose - CAPEX</i>	-0.06		-0.47	0.19	***	4.14	-0.06	*	-1.98
<i>Purpose - Refinancing</i>	0.37	***	13.18	-0.06	**	-2.15	0.12	***	7.94
<i>Purpose - Acquisition</i>	0.68	***	26.07	-0.12	***	-5.76	0.16	***	8.35
<i>Purpose - Other</i>	0.13	***	4.17	-0.09	***	-3.68	0.04	*	2.03
<i>Performance Pricing Indicator</i>	0.29	***	16.21	-0.11	***	-5.99	0.07	***	9.75
<i>LN Tranche Amount</i>	0.06	***	2.92	-0.01		-1.25	0.01		0.99
<i>LN Maturity</i>	0.40	***	14.58	-0.20	***	-16.49	0.10	***	7.43
<i>Secured</i>	0.39	***	20.69	-0.14	***	-6.02	0.10	***	12.10
<i>Senior</i>	-0.23	***	-12.15	0.26	***	16.10	-0.12	***	-14.75
<i>LN GDP</i>	-0.25	***	-3.33	0.10		1.59	-0.11	**	-2.34
<i>LN Sovereign Rating</i>	-0.79	***	-6.26	0.35		1.56	-0.38	***	-3.99
<i>Rule of Law</i>	0.18		0.65	-0.12		-0.44	0.04		0.35
<i>US-Dummy</i>	0.06		0.34	0.71	***	2.77	-0.21	*	-1.78
<i>All in Spread</i>	0.00	***	17.43	0.00	***	-5.58	0.00	***	15.57
<i>Intercept</i>	0.60		1.07	2.05	***	2.91	0.92	**	2.01
<i>Industry Indicators</i>	Yes			Yes			Yes		
<i>Year Indicators</i>	Yes			Yes			Yes		
<i>Adjusted R<sup>2</sup></i>	0.43			0.29			0.36		
<i>Number of Observations</i>	1637			1637			1637		

This table reports coefficient estimates from OLS regressions relating the use of different types of financial covenants in debt contracts to how familiar a lending bank is with a borrower's accounting information. The degree of familiarity between the borrower and the lender is measured as the degree of GAAP differences between each party's country of origin. *P-covenants* is defined as the number of earnings-based covenants included in the loan contracts, including the fixed-charge coverage ratio, debt service coverage ratio, interest coverage ratio and cash interest coverage ratio, and ratios of debt or senior debt to EBITDA.. *C-covenants* is defined as the number of capital-based covenants included in the loan contract, including the leverage ratio, debt-to-tangible net worth ratio, debt-equity ratio, current ratio, and minimum levels of net worth or tangible net worth. The *P-ratio* is defined as the ratio of performance-based covenants total financial covenants. All borrowing firm financial variables are winsorized at the .5% level. Standard errors are clustered by borrower country. Industry and year indicator variables are included. For definitions of all variables, see Appendix A. \*, \*\*, and \*\*\* represent the 10%, 5% and 1% significance levels, respectively.



TABLE 7

# **EFFECT OF GAAP DIFFERENCES ON TERMS OF DEBT CONTRACTS, CONTROLLING FOR MANDATORY IFRS ADOPTION**

	<i>Log Spread</i>			<i>Number of Lenders</i>			<i>Percentage Held Lead</i>		
Variables	<i>Coeff</i>		<i>T-stat</i>	<i>Coeff</i>		<i>T-stat</i>	<i>Coeff</i>		<i>T-stat</i>
<i>GAAP Differences</i>	0.011	***	2.60	-0.369	***	-5.25	2.788	***	5.25
<i>Post-IFRS</i>	0.607	***	4.65	-2.238	***	-3.75	-6.804		-1.17
<i>GAAP Differences * Post IFRS</i>	-0.014	**	-2.08	0.153	***	2.90	-1.832	***	-4.45
<i>Industry Indicators</i>	Yes			Yes			Yes		
<i>Year Indicators</i>	Yes			Yes			Yes		
<i>Adjusted R<sup>2</sup></i>	0.58			0.27			0.65		
<i>Number of Observations</i>	7491			10941			4054		

	<i>Financial Covenants</i>			<i>P-covenants</i>			<i>C-covenants</i>			<i>P-ratio</i>		
Variables	<i>Coeff</i>		<i>T-stat</i>	<i>Coeff</i>		<i>T-stat</i>	<i>Coeff</i>		<i>T-stat</i>	<i>Coeff</i>		<i>T-stat</i>
<i>GAAP Differences</i>	-0.014	***	-4.85	-0.031	***	-13.62	0.017	***	7.69	-0.009	***	-7.52
<i>Post-IFRS</i>	-0.376	***	-6.17	-0.252	***	-3.92	-0.124	*	-1.95	0.061		1.39
<i>GAAP Differences * Post IFRS</i>	0.012		1.16	0.028	***	4.12	-0.016	***	-3.14	0.004	**	2.20
<i>Industry Indicators</i>	Yes			Yes			Yes			Yes		
<i>Year Indicators</i>	Yes			Yes			Yes			Yes		
<i>Adjusted R<sup>2</sup></i>	0.27			0.36			0.36			0.36		
<i>Number of Observations</i>	3472			3472			3472			3472		

This table reports the results of an additional analysis in which I add the post-mandatory IFRS adoption period (post 2005) to my tests in tables 3-6. The coefficient on the interaction term *GAAP Difference\*Post-IFRS* should capture the change in the effect of GAAP Differences on the dependent variable from pre-IFRS to post-IFRS. This should therefore be the portion of the effect which is attributable solely to prescribed differences in financial reporting standards. The coefficient estimates are from OLS regressions and all variables are defined as in tables 3-6. All borrowing firm financial variables are winsorized at the .5% level. Standard errors are clustered by borrower country. Industry and year indicator variables are included. For definitions of all variables, see Appendix A. \*, \*\*, and \*\*\* represent the 10%, 5% and 1% significance levels, respectively.

## APPENDIX A: VARIABLE DEFINITIONS

### Test Variables:

*GAAP Differences*: The number of differences between the GAAP used by the borrower and the GAAP in the lending bank's country of origin, as defined in Table 1 of Bae et al. (2008). In the event of multiple lead banks domiciled in different countries, *GAAP Differences* takes the value of the smallest of the *GAAP Differences* measures for all of the lead banks.

*Log Spread*: The log of *All in Spread Drawn*, a variable from LPC's Dealscan which measures all fees and credit spreads, measured as the basis point spread over LIBOR.

*Number of Lenders*: The total number of banks in the loan syndicate.

*Percent Held Lead*: The percentage of the loan held by the lead bank in the loan syndicate or, in loan observations with more than one lead bank, the average percentage of the loan held by all lead banks.

*Financial Covenants*: The number of financial covenants included in the loan contract

*P-covenants*: The number of earnings-based covenants included in the loan contracts, including the fixed-charge coverage ratio, debt service coverage ratio, interest coverage ratio and cash interest coverage ratio, and ratios of debt or senior debt to EBITDA.

*C-covenants*: The number of capital-based covenants included in the loan contract, including the leverage ratio, debt-to-tangible net worth ratio, debt-equity ratio, current ratio, and minimum levels of net worth or tangible net worth.

*P-ratio*: The ratio of performance-to-total financial covenants included in the loan contract, or  $P\text{-covenants} / (P\text{-covenants} + C\text{-covenants})$ .

*Post-IFRS*: Indicator variable that takes the value of 1 if the loan is issued in 2006 or later, and 0 otherwise.

### Borrower Characteristics:

*LN Assets*: The natural log of total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed.

*ROA*: The ratio of operating income to total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed.

*Leverage*: Total debt divided by total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed.

*Tangibility*: The ratio of PP&E to total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed.

*MTB Assets*: The market value of assets (total assets less book value of equity plus market value of common equity) divided by total assets (in US\$) at the end of the most recent fiscal year before the loan contract is signed.

*Voluntary IFRS*: An indicator variable which takes the value of 1 if the firm uses IFRS instead of local GAAP in the financial statements at the end of the most recent fiscal year before the loan contract is signed, and 0 otherwise.

*Past Relation*: The number of private loans initiated by the borrowing firm in the past five years (with respect to the loan tranche) which were made with the same bank (lead bank) divided by the total number of private loans initiated by the borrowing firm in the past five years.

*US-Dummy*: An indicator variable which takes the value of 1 if the borrower is a US-based firm, and 0 otherwise.

## APPENDIX A: VARIABLE DEFINITIONS - Continued

### Loan Characteristics:

*Term Loan Indicator:* An indicator variable which takes the value of 1 if the loan is a term loan, and 0 otherwise.

*Purpose- Working Capital:* An indicator variable which takes the value of 1 if the loan has a Primary purpose of working capital, and 0 otherwise.

*Purpose – CAPEX:* An indicator variable which takes the value of 1 if the loan has a primary purpose of capital expenditures, and 0 otherwise.

*Purpose – Refinancing:* An indicator variable which takes the value of 1 if the loan has a primary purpose of refinancing, and 0 otherwise.

*Purpose – Acquisition:* An indicator variable which takes the value of 1 if the loan has a primary purpose of acquisition, and 0 otherwise.

*Purpose – Backup:* An indicator variable which takes the value of 1 if the loan has a primary purpose of backup, and 0 otherwise.

*Purpose – Other:* An indicator variable which takes the value of 1 if the loan has a primary purpose that does not fall into one of the five previous categories listed, and 0 otherwise.

*Performance Pricing Indicator:* an indicator variable which takes the value of 1 if the loan contract includes performance pricing, and 0 otherwise.

*LN Tranche Amount:* The natural log of the loan tranche amount (in \$US).

*LN Maturity:* The natural log of the maturity of the loan, in months.

*Secured:* An indicator variable which takes the value of 1 if the loan is secured, and 0 otherwise.

*Senior:* An indicator variable which takes the value of 1 if the loan is senior, and 0 otherwise.

### Country Characteristics:

*LN GDP:* the natural log of annual values of GDP per capita for the borrower's country.

*LN Sovereign Rating:* The natural log of the country-level sovereign risk rating (from Fitch) issued most recently prior to the deal active date, transformed to an ordinal scale so that smaller numbers represent the least risky ratings.

*Rule of Law:* A country-year-level measure of the quality of a country's legal and enforcement environment from Kaufmann et al., (2009), where higher scores equate to stronger legal enforcement.

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