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**Contractibility and transparency of financial statement information prepared under IFRS: Evidence from debt contracts around IFRS adoption \***

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## Abstract

We outline several properties of IFRS that potentially affect the contractibility or the transparency of financial statement information, and hence the use of that information in debt contracts. Those properties include the increased choice among accounting rules IFRS gives to managers, enhanced rule-making uncertainty, and increased emphasis on fair value accounting. Consistent with reduced contractibility of IFRS financial statement information, we find a significant reduction in accounting-based debt covenants following mandatory IFRS adoption. The reduction in accounting covenant use is associated with measures of the difference between prior domestic standards and IFRS. Because IFRS adoption changed financial reporting in many ways simultaneously, it is difficult to trace the decline in accounting covenant use to individual IFRS properties, though we report larger declines in accounting covenant use in banks, which have a higher proportion of assets and liabilities that are fair-valued. Our findings are better explained by reduced contractibility than by increased transparency, which would predict reduced non-accounting covenant use as well, whereas we observe increases. Overall, we conclude that IFRS rules sacrifice debt contracting usefulness to achieve other objectives, such as provision of accounting information relevant to valuation.

*Keywords:* Bonds, Contractibility, Covenants, Debt, Enforcement, Fair Value Accounting, IFRS, Loans, Transparency

JEL codes: M40, M41, D86, G30

## 1. Introduction

We study changes to debt contracting around mandatory adoption of International Financial Reporting Standards (IFRS). Mandatory IFRS adoption changed the rules governing financial statement preparation and presentation, in some countries substantially, providing an ideal opportunity to investigate the contractibility of financial information.

Prior studies on mandatory IFRS adoption generally focus on equity markets and address the transparency of financial statement information, not contractibility. Most (e.g., Armstrong et al., 2010; Landsman et al., 2012) conclude that equity market participants respond positively to IFRS adoption and that share prices respond more to accounting numbers in the post-IFRS period. Daske and Gebhardt (2006) report perceived disclosure quality increases. Aharony et al. (2011) report increased value relevance of goodwill, R&D and asset revaluations. Barth et al. (2012) report increased value relevance and comparability with US firms. Yip and Young (2012) report increased similarity of accounting functions and increased information transfer. This body of evidence is consistent with the widely held belief that IFRS improved financial statement transparency and comparability, and hence informativeness. Against this, several studies conclude that informativeness increased in post-IFRS period only for firms with greater incentives to comply, or in countries concurrently improving enforcement (Ball et al., 2003; Daske et al., 2008; Christensen et al., 2013a; Daske et al., 2013; Cascino and Gassen, 2014). These latter studies cast doubt on IFRS reports being the cause for observed changes in informativeness and suggest that the transparency benefits of IFRS *per se* are not substantial. Regardless of the conclusions reached on transparency, prior studies on mandatory IFRS adoption do not address a different but important property of financial statement information: its usefulness in contracting contexts, or contractibility.

It is well known that the optimal accounting system depends on the use made of the information it produces. Gjesdal (1981) demonstrates this proposition by comparing firm valuation and contracting with managers. Crawford and Sobel (1982) demonstrate that

principals withhold information from agents when there is conflict of interest. Bresnahan et al. (1992) and Paul (1992) show that market prices incorporate information about asset value but optimal compensation contracts incorporate information about value added by managers.. Because the rankings of alternative accounting systems are user-dependent, there is not necessarily a one-for-one correspondence between the extent to which financial statements incorporate contemporary information that is useful in valuation (in equity and even debt markets) and its usefulness in contracting (including debt contracting).

While it is difficult to observe precisely in the data, the conceptual distinction between the contractibility of information and its usefulness for valuation is central to our analysis. For example, managers' private information about expected cash flows from an asset can be informative to many or all users, but at the same time a calculation of the asset's fair value based on the cash flow estimates that managers publicly disclose can lack contractibility. Basing contractual outcomes on one contracting party's disclosure of unobservable private information invites moral hazard that other contracting parties will seek to avoid. Another example is the IFRS option to record firms' own liabilities at fair value. This information might be more value-relevant to equity investors but, we argue below, it might be more useful for debt contracting purposes if balance sheets reflected the amount of the firm's contractual obligation to repay.

It follows that rankings of accounting systems based on equity market metrics, such as value relevance, timeliness, liquidity, information asymmetry, Tobin's  $q$ , and cost of equity capital, can be misleading indicators of debt contracting usefulness. Even usefulness in debt pricing does not necessarily carry over to contracting.<sup>1</sup> Similarly, we argue below that enforcement effectiveness does not have the same consequences in debt contracting as in equity market valuation contexts.

We propose that the debt contracting effects of IFRS are likely to be substantial, and

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<sup>1</sup> We address only the explicit use of financial statement information in formal written debt contracts, and not the use of accounting information in informal unwritten contracts or in debt pricing or negotiation.

report evidence consistent with that view. We canvass a variety of reasons why financial statements prepared under IFRS could be less useful in debt contracts, even if at the same time they provide more information that is useful in valuation. While there are several logically feasible debt-contracting responses to IFRS introduction, we argue that these responses involve costs, and that some would not be feasible in practice.

IFRS adoption could be viewed by lenders as affording greater discretion to opportunistic managers, because its standards are perceived to be more principles-based than many prior domestic rules-based standards and give borrowers greater choice among alternative accounting policies as well as greater discretion in their implementation.

The above concerns likely were compounded by uncertainty about the immediate and longer term effects of IFRS adoption on accounting covenants, together with uncertainty about future IASB rule-making. Such uncertainties add risk to both borrowers and lenders, including covenants being tripped by rule changes alone (Deloitte, 2011), and thereby reduce the efficiency of accounting covenants relative to alternatives. First-time adoption is an immediate one-time effect, impacting financial statements when they initially are converted to IFRS, but increased uncertainty in future rule-making for IFRS relative to local GAAP could be an on-going structural property of IASB rule-making, as it juggles an increasing range of national political and economic interests.

Relative to prior domestic standards, IFRS also make more use of fair value accounting, which has several properties that could reduce the effectiveness of financial statement information in debt contracting. Fair value gains and losses incorporate shocks to assets' cash flows that are transitory (Samuelson, 1965), making current-period earnings a poorer predictor of future debt service capacity, particularly for longer-maturity debt (Li, 2010; Christensen and Nikolaev, 2012). Fair value gains and losses also include shocks to assets' expected returns that are expected to reverse at least in part before the debt matures, making both balance sheet and earnings variables less efficient in debt contracting. Further,

the IFRS option to fair value certain financial liabilities lowers its contracting value because debt contracts require repayment of principal and interest, not the debt's fair value.

We investigate the effect of IFRS adoption on debt contracting in a sample of new debt issues between 2001 and 2010 in twenty-two IFRS-adopting countries and twenty-one non-IFRS countries. Employing a difference-in-difference specification that controls for firm and debt issue characteristics as well as country and year fixed effects, we document a significant decline in both the frequency and intensity of accounting-based covenants in IFRS-adopting countries after adoption, but not in other countries. The decline in accounting covenant use is observed for both income statement and balance sheet covenants. Greater declines in accounting covenant use are observed in countries whose pre-IFRS domestic standards differed more from IFRS, and for banks (whose financial statements are more exposed to fair value accounting), but not in countries with higher scores on enforcement. The results are robust to a variety of specifications.

An alternative explanation for these results is based on Demerjian (2014), who notes that information-asymmetry prior to lending can be reduced by incorporating covenants that trigger loan renegotiation when material information about borrower credit quality is subsequently revealed. If IFRS introduction and associated regulatory changes improve reporting quality and thus information asymmetry prior to lending, then there would be lesser need for future renegotiation. This would reduce the demand for debt contract covenants, both accounting and non-accounting. However, we find that non-accounting covenants actually increase in frequency after IFRS adoption, particularly in loans, implying that our findings are better explained by IFRS reducing contractibility than increasing transparency.

This paper contributes to the literature on economic consequences of IFRS adoption. Our evidence suggests that IFRS financial statements are less useful for covenant design than adopting countries' prior reporting. This is a "market test" of IFRS, analogous to Christensen

and Nikolaev (2013). We do not study IFRS usefulness in debt pricing, in either primary or secondary markets.<sup>2</sup>

The paper also contributes to the literature on the use of accounting information in debt contracting generally. Several studies have documented that properties of accounting numbers influence their use. Nikolaev (2010) finds that accounting covenant use is associated with the degree of timely loss recognition. Costello and Wittenberg-Moerman (2011) find that accounting covenant use falls when internal control weaknesses impede financial statement reliability. Our study is related to the seminal Leftwich (1983) study of non-GAAP contracting in private loan agreements, to the Demerjian (2011) evidence that increased fair value accounting in the US has eroded the use of balance sheet based debt covenants, and also to Christensen and Nikolaev (2012).

Our hypotheses, data and conclusions differ from those of a concurrent paper, Chen et al. (2015), which also reports a decline in accounting covenant use. Chen et al. (2015) study how transparency changes affect loan contracts, whereas our study examines both contractibility and transparency effects for both loans and bonds. Additionally, by studying substitution between accounting and non-accounting covenants and by separately studying banks, we are able to address alternative explanations for our findings. Finally, Chen et al. (2015) treat loans where data vendors record no covenants as covenant-free in fact. This occurs in approximately 90% of non-US loans in our sample, and since loans rarely are issued without any covenants, we view it as a missing data issue.

Brown (2013) examines accounting covenant changes around IFRS adoption for domestic loans (i.e. loan contracts between a borrower and a bank domiciled in the same country) relative to international loan contracts (i.e. contracts between a borrower and a banker domiciled in different countries). Consistent with our findings, she documents a

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<sup>2</sup> Chen et al. (2015) find that mandatory IFRS adoption is associated with increases in interest rates in syndicated bank loans. In contrast, Florou and Kosi (2015) find that interest rates are lower for public bonds issued after mandatory IFRS adoption.



decline in accounting covenants for domestic loan contracts. However, for international loans she finds that performance-based covenants (which are essentially income-statement based covenants) decrease after IFRS adoption, whereas capital-based covenants (essentially balance-sheet based covenants) increase. While we do not attempt to explain these mixed results for international loans, they are obtained from a comparison within IFRS firms, and not between IFRS and non-IFRS firms as in our study. Like Chen et al. (2015), Brown (2013) assumes debt contracts are covenant-free whenever data vendors record no covenants (accounting or non-accounting).

Our results contrast with those reported in a US setting by Demerjian et al. (2015), who find no evidence of changes in accounting covenant use following SFAS 159 adoption. We provide several plausible explanations for the difference, the most important of which lies in timing. Fair value accounting already was widely adopted in the US before SFAS 159 modified its rules, and accounting covenant use already had fallen (Demerjian, 2011).

There are several potential policy implications. The joint IASB/FASB Conceptual Framework project (IASB, 2010, ¶OB2) views the information needs of “investors, lenders, and other creditors” and decisions involving “buying, selling, or holding equity and debt instruments and providing or settling loans and other forms of credit” as homogeneous. The contrasting analyses and results for debt contracting and equity valuation challenge the rationale for general purpose accounting standards. Our arguments and results also imply that for debt contracting it is not optimal to use a consistent accounting measurement model for all assets and liabilities, as apparently favoured by IASB and FASB, and advocated by researchers ranging from Chambers (1966) to Barth (2013).

We hasten to add that our arguments and our results do not imply that IFRS are inferior to the adopting countries’ prior domestic standards. Our more modest conclusion is that financial statements cannot serve all masters and, in particular, financial statements prepared under IFRS have important limitations *in terms of debt contractibility*, the unique

properties of which do not appear to be reflected in standard-setting. We acknowledge that, while our difference-in-difference analyses with country and year fixed effects indicate a decline in accounting covenant use after IFRS adoption, the result could also be due to omitted correlated variables or concurrent events. These concerns are specifically germane in IFRS-adoption context as IFRS adoption by countries is clustered in time. We also acknowledge that the distinction between contractibility and transparency, while central to our analysis, is not clear-cut in practice. Finally, we note that our post-adoption sample of loan (but not bond) issuances in IFRS adopting countries is small, due to limited covenant data.

The remainder of the paper is organized as follows. Section 2 develops testable hypotheses. Section 3 describes the data and sample selection. Section 4 discusses results. Section 5 provides conclusions. An Internet Appendix contains additional data analyses and numerical examples to illustrate our hypotheses.

## **2. Hypotheses**

This section outlines several ways in which, we conjecture, the changes heralded by mandating IFRS affected the use of debt covenants.

### ***2.1 Uncertainties about IFRS first-time adoption effects and future IFRS revisions***

*2.1.1 Uncertain first-time adoption.* The IASB issued IFRS 1 (First-time Adoption of International Financial Reporting Standards) in June 2003. The standard requires firms reporting for the first time under IFRS to thoroughly revise balance sheets previously prepared under domestic rules. This involves adding, deleting, and remeasuring assets and liabilities. Christensen et al. (2009) argue that IFRS introduction consequently transferred wealth between debt and equity investors. Thus, prior to introduction, the first-time effect of IFRS on covenanted accounting ratios, and any attendant wealth transfers, would have been

uncertain. This would have constituted risk to both borrowers and lenders, including the risk of covenants being tripped by rule changes alone. Subsequent experience with IFRS is likely to have reduced uncertainty about its effects on accounting covenants over time, but it is unclear how long this uncertainty would have persisted.

*2.1.2 Uncertainty about future IASB rule-making.* We also conjecture that uncertainty about future IASB rule-making adds further risk to using accounting covenants based on IFRS financials. The IASB made frequent changes to IFRS prior to adoption by many countries in 2005. Figure 1 plots the number of new standards or amendments to existing standards by year from 1997 to 2012. The frequency of changes to IFRS standards substantially increased after the European Union's (EU) 2002 commitment to adopt them for publicly-listed firms and after the actual adoption in 2005. In addition, borrowers and lenders face uncertainty about the adoption or modification of individual IFRS standards BY their jurisdictions.

The IASB's governing body acknowledged this issue (IASB Foundation 2002, ¶22):

The IASB has no general policy of exempting transactions occurring before a specific date from the requirements of new financial reporting standards. When financial statements are used to monitor compliance with contracts and agreements, a new Standard may have consequences that were not foreseen when the contract or agreement was finalised. For example, covenants contained in banking and loan agreements may impose limits on measures shown in a borrower's financial statements. The IASB believes the fact that financial reporting requirements evolve and change over time is well understood and would be known to the parties when they entered into the agreement. It is up to the parties to determine whether the agreement should be insulated from the effects of a future accounting standard, or, if not, the manner in which it might be renegotiated to reflect changes in reporting rather than changes in the underlying financial position.

No mention is made of the expected cost of renegotiation in response to future changes to accounting rules (and to terminology), which reduces the efficiency of accounting covenants.

Frequent revision could be a temporary phenomenon associated with the development of the first complete set of IFRS standards and their adoption. Alternatively, it could be a structural property of the IASB rule-making process and multi-jurisdictional adoption of its rules. The IASB is subject to a considerably wider range of economic and political influences

than domestic standard setters, so it is reasonable to expect greater uncertainty about its future actions. This creates risk to borrowers and lenders using accounting covenants, including covenants being tripped by rule changes alone, and imposes costs of renegotiation. We conjecture that these effects cause borrowers and lenders to use fewer accounting covenants.

## ***2.2 Managerial discretion under IFRS***

Relative to the prior domestic standards in many adopting countries, IFRS are more principles-based, laying down broad rather than specific requirements that require more management judgement in application. Schipper (2003) argues that the detailed guidance provided by rules-based standards improves the verifiability of reported numbers. Verifiability is critical to contracting generally (Watts, 2003), so there is reason to expect that IFRS principles-based standards reduce the usefulness of accounting numbers for debt contracting purposes.

IFRS also provide managers with substantial choice of accounting methods, apparently to gain acceptability across diverse political, economic, institutional, and legal regimes. Moody's (2008) reports IFRS reduced standardisation across firms, in both interpretation and application of accounting rules. Capkun et al. (2012) point out that nearly a third of the standards were revised between 2003 and 2005, and that every revision, as well as the six additional standards issued during this period, allowed firms greater flexibility in choosing among alternative accounting methods. For example, IAS 40 allows firms to report investment property at either fair value or historical cost. IAS 19 gives an option to recognize actuarial gains and losses on post-retirement employee benefits fully in the income statement or in the statement of comprehensive income, or to partly defer recognition.<sup>3</sup>

Further, the fair value orientation of IFRS allows greater managerial flexibility over accounting estimates. Fair value manipulation can occur in two broad ways: trading at period-

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<sup>3</sup> The European Commission (2008) reports that, among IFRS-adopting European firms, the choice of accounting for post-retirement employee benefits varies across industries and countries.

end to manipulate asset prices in imperfectly liquid markets (Heaton et al., 2010; Milbradt, 2009); or manipulating subjective estimates of fair value when traded prices are unavailable (Watts, 2003; Benston, 2008).<sup>4</sup> Either way, from the perspective of lenders considering using accounting numbers for triggers, fair value manipulation creates uncertainties. While historical cost accounting also allows manipulation through delayed write-offs and strategic asset sales, it is unclear that fair value accounting improves accounting-based covenants.

Consistent with greater discretion under IFRS, Ahmed et al. (2013) find that IFRS firms exhibit increases in income smoothing, aggressive reporting of accruals, and decreased timeliness of loss recognition, relative to firms from countries that did not adopt IFRS. They also document that strong enforcement mechanisms at the time of IFRS adoption are insufficient to offset the greater flexibility relative to domestic GAAP. Similarly, Christensen et al. (2015) find evidence of a modest increase in earnings smoothing for German firms that switched to IFRS after it was mandated and Capkun et al. (2012) report an increase in earnings management for European firms reporting under IFRS in the post-2005 period. Finally, Magnan et al. (2015) find that analyst forecast accuracy is adversely affected by on the use of level 3 fair values, supporting the view that greater IFRS discretion increases uncertainties for capital market participants.

### ***2.3 IFRS, fair value accounting, and debt contracting***

IFRS adoption brings a strong tilt toward “fair value” accounting, reporting many assets and liabilities at fair value instead of historical cost (Ernst and Young, 2005). Fair value is defined as: “The price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date”

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<sup>4</sup> Mutual fund managers purchase illiquid stocks in which they already hold overweight positions on the last day of the quarter (Gallagher et al., 2009). Carhart et al. (2002) find that price manipulation is more intense at quarter-ends and primarily occurs in the last half hour before the daily close. Focussing on prosecutions by SEC for closing-price-manipulation, Comerton-Forde and Putniņš (2011) report that price manipulations are associated with substantial abnormal day-end returns, subsequent reversals, increased trading volume and wider spreads. Zuckerman and Fitzpatrick (2012) report evidence of managers manipulating their fair value marks. A notorious case of fair value manipulation is Enron (Benston and Hartgraves, 2002; Haldeman, 2006).

(IFRS 13, Appendix). Fair value measurements are incorporated in IAS 16 (Property, Plant and Equipment), IAS 19 (Employee Benefits), IAS 22 or IFRS 3 (Business Combinations), IAS 36 (Impairment of Assets), IAS 37 (Provisions, Contingent Liabilities and Contingent Assets), IAS 38 (Intangible Assets), IAS 39 and IFRS 9 (Financial Instruments: Recognition and Measurement), IAS 40 (Investment Property), IAS 41 (Agriculture), IFRS 2 (Share-based Payments), IFRS 4 (Insurance Contracts), IFRS 5 (Non-current Assets Held for Sale and Discontinued Operations), and IFRS 13 (Fair Value Measurement). In this section, we describe some of the potential shortcomings of fair value from a debt contracting perspective, and discuss the costs and feasibility of attempting to “contract around” those shortcomings.

*2.3.1 Effect of transitory fair value gains and losses on income covenants.* Following Campbell (1991), unexpected changes in asset prices can be decomposed into shocks to cash flows and shocks to expected returns (i.e., discount rates). Fair value gains and losses on assets that arise from shocks to expected cash flows are both transitory (Samuelson, 1965) and large (capitalized quantities, not flows). We therefore expect IFRS to incorporate substantial transitory components into earnings. Consistent with this expectation, Hung and Subramanyam (2007) report that, for German voluntary IFRS adopters, IFRS earnings are more volatile and transitory than previously reported under domestic standards.

A central role of debt covenants is to act as ex-post trip wires that transfer decision rights to lenders in states characterized by poor economic performance. Following Li (2010) and Christensen and Nikolaev (2012), we conjecture that an earnings variable incorporating transitory shocks is a less efficient predictor of future debt service capacity and hence less efficient for transferring decision rights to lenders in adverse future states. A numerical illustration of this effect is provided in the Internet Appendix.

*2.3.2 Effect of FV gains and losses due to discount rate shocks on income and balance sheet covenants.* In contrast to the effects of cash flow shocks, fair value gains and losses that arise from discount rate shocks are expected to reverse over asset lives. Given expected cash

flows, fair value gains (losses) due to an unanticipated falls (rises) in discount rates are expected to be offset by lower (higher) future returns. To the extent that fair value reversion is expected before the firm's debt matures, the shock is irrelevant for predicting future debt service capacity and hence for debt covenants, because it does not reflect a change in the expected cash available for servicing. We propose that any reversion in asset value due to discount rate shocks that is expected to occur before a debt instrument matures makes both book value and accounting income poorer indicators of capacity to repay if the asset is fair-valued. A numerical illustration of this effect is provided in the Internet Appendix.

This proposition supports the following observation in Cochrane (2011, p. 1088):

“I am not arguing that mark-to-market accounting is bad, or that fudging the numbers is a good idea. The point is only that what you *do* with a mark-to-market number might be quite different in a world driven by discount-rate variation than in a world driven by cashflow variation. The mark-to-market value is no longer a sufficient statistic.”

The reversion problem also applies to asset impairment standards. IAS 36 ¶56 specifies that the discount rate used for fair value impairment measurement is the current market rate. If the maturity of an impaired asset is less than that of the firm's debt, the fair value reduction is expected to completely reverse before debt maturity. It could be more efficient to contract on a leverage covenant that could not be violated due to discount rate shocks which do not affect debt service capacity.<sup>5</sup>

*2.3.3 Effect of firms fair valuing their own liabilities on balance sheet covenants.* IAS 39 (revised slightly in IFRS 9) gives firms an option to fair value certain of their own liabilities. This does not appear to be optimal from the viewpoint of debt contracting, because debt is an agreement to repay principal and interest, not to repay fair value.<sup>6</sup> Leverage covenants transfer to lenders some decision rights, such as veto rights on financing and investment

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<sup>5</sup> The comparable US standard (SFAS 121 and SFAS 142) triggers impairment based on undiscounted cash flows. However, if triggered, impairment is to fair value calculated at the current discount rate. Thus, while this inconsistency might seem nonsensical from an abstract accounting measurement model perspective, it makes more sense from a debt contracting perspective.

<sup>6</sup> It should be emphasized that fair values could be relevant for valuation roles of accounting. Our focus in this section is on the debt contracting use of accounting numbers.

transactions, repricing of debt or repayment, in states when the borrower's credit risk deteriorates according to agreed-upon metrics. Leverage covenants based on balance sheet data therefore involve comparing asset values with the amount of outstanding debt obligations, not with its fair value. However, fair valuing debt reduces the balance sheet amount of debt in tandem with the ability of the borrower to service it, so balance sheet ratios become inefficient trip-wires. A numerical illustration of this effect is provided in the Internet Appendix.

Fair value accounting apparently is founded on an accounting measurement model in which all users make more informed decisions if (1) the basis of measurement for all assets and liabilities is consistent (FASB, 2006 ¶P4; FASB, 2008 ¶P4) and (2) that basis is a measure of current market value (e.g., Chambers, 1966; Barth, 2013). This might be optimal for valuation uses, but debt contracts inherently require mismatched measurement bases for assets (fair value) and debt (the firm's contractual historical debt obligations).<sup>7</sup>

A similar issue arises for bonds with an attached option to convert to equity that is exercisable by lenders. IFRS 9 (previously, IAS 32 and IAS 39) requires the separate components of the issuance price to be valued and recorded as debt and equity. If credit quality deteriorates sufficiently, the option is not exercised and the full amount of the debt is repayable, but previous balance sheets will have recorded only part of that obligation.

#### ***2.4 Effect of changes in transparency on covenant use***

IFRS adoption generally is viewed by some academics and practitioners as having significantly improved financial transparency.<sup>8</sup> For instance, IFRS adoption forced Italian and Spanish firms to report cash flow statements, which previously were not mandatory. IFRS also requires more detailed disclosures and additional recognition of liabilities, such as off-balance sheet transactions and pensions. Increased use of fair values leads to timelier

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<sup>7</sup> Unrecorded assets create an additional problem. Consider a firm whose credit is downgraded due to an event that reduces enterprise value but is not recognized on the balance sheet. The fair value of liabilities decreases, but there is no offsetting decrease in fair value of assets, perversely causing balance sheet leverage to decline.

<sup>8</sup> See De George, Li and Shivakumar (2015).



recognition of gains and losses in the accounts. Whether these changes provided lenders with materially more useful information about borrowers is unclear, but if they did increase financial statement informativeness they could have impacted accounting and non-accounting covenant use.

Any effects of improved financial transparency could differ between loans and bonds. Our analysis builds on Demerjian (2014). Lenders have imperfect information about borrower credit quality (i.e., future capacity to meet contractual commitments) and can manage their exposure to this uncertain default risk in two ways. They can acquire information about borrower quality *ex ante* and thus make better risk screening and pricing decisions. Alternatively, Demerjian (2014) points out that lenders can insert contractual covenants that, conditional on subsequent contractible information about borrower quality being revealed as adverse *ex post*, trigger lender rights such as early repayment, repricing, the option to veto future borrower financing and investment, or renegotiation. Relative to private loans, it is costlier to obtain agreement among public bond holders on renegotiating terms or on deciding whether to exercise veto options. Hence, other things equal, bonds tend to contain fewer covenants (Smith and Warner, 1979) and bond issuance correspondingly involves greater acquisition of information prior to lending.<sup>9</sup>

If IFRS introduction and correlated regulatory enforcement changes were associated with an increase in financial reporting informativeness, the effects could vary between loans and bonds. Prior literature raises doubts on whether IFRS adoption alone leads to an improvement in informativeness, but also documents significant enforcement effects (Ball et al. 2003; Daske et al., 2008; Christensen et al., 2013a; Daske et al., 2013; Cascino and Gassen, 2014). For bonds, enhanced financial reporting informativeness could reduce lenders' initial uncertainty about borrower quality and make pre-screening more effective,

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<sup>9</sup> Kim et al. (2011) argue that banks are less likely to impose covenants on borrowers using IFRS because greater financial transparency reduces the demand for *ex post* monitoring and recontracting. Unlike Demerjian (2014), they predict reduced use of both accounting and non-accounting covenants. They find support for their arguments in a sample of voluntary IFRS adopters, but selection effects confound the result.

reducing the demand for both accounting and non-accounting covenants. For loans, a reduction in contractibility of financial statement information could cause substitution from accounting to non-accounting covenants, in addition to any increased pre-screening of borrowers.<sup>10</sup>

## **2.5 Costs of “contracting around” IFRS standards**

If it was costless, borrowers and lenders could contract around any limitations of IFRS. They could contract on the basis of pro-forma financial statements prepared under their country’s pre-IFRS rules (“frozen GAAP”), or on numbers recalculated without applying specific IFRS standards such as IAS 39 on financial assets and liabilities, or excluding specific parts of an IFRS standard such as fair valuing financial liabilities.

These actions might not be easy in practice. Frozen GAAP incurs the cost of keeping parallel books and of auditing them. These costs would increase over time, as cumulative changes in training, practice guides, software and other inputs to financial statement production make old GAAP more difficult to implement. Borrowers typically have outstanding debt that was issued at different dates in the past, when different sets of standards were in place, so frozen GAAP would require them to maintain multiple parallel books . In addition, to the extent that GAAP changes are optimal responses to changes in state variables, contractually excluding all changes might not be efficient. Kvaal and Nobes (2010) report that, when allowed under IFRS, many firms continue to use their country’s pre-adoption domestic standards, but this also requires parallel books.

The costs of contracting around mandatory implementation of IFRS are unobservable to us. If IFRS introduction reduced the contractibility of financial statement information, borrowers and lenders presumably would have trade off these costs against the costs of reducing their use of accounting covenants. For firms required to report under IFRS, we observe frozen GAAP provisions in only 1% of a hand-collected sample of bonds, as

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<sup>10</sup> This analysis is similar to the two-period budgetary model of Demski and Feltham (1978).

described in the Internet Appendix. We therefore expect to observe the adjustment to IFRS occurring primarily in reduced accounting covenant use.

Demerjian et al. (2015) discuss the costs and benefits of alternative responses to SFAS 159, which expanded US borrowers' fair value options. They find that 85% of US private loan contracts did not provide for the exclusion of fair value gains and losses after the standard became effective. When covenants did make exclusions, they typically related to fair value gains and losses on liabilities, but not on assets. While this evidence is broadly consistent with what we observe in IFRS-adopting countries, we are hesitant to draw general conclusions from it for several reasons. First, Demerjian et al. (2015) examine private loan contracts but, as noted above, adjustments for accounting standards are even rarer in our public bonds sample. Second, they study a single optional accounting standard whose effects are separately disclosed, whereas mandatory IFRS adoption introduced a wide range of fair value and other rule changes, the total effects of which are not separately reported. Third, fair value accounting already was widely adopted in the US before SFAS 159 was enacted, and accounting covenant use already had fallen (Demerjian, 2011).

### **3. Data and Sample Selection**

The primary data set combines multiple sources to compile a relatively large sample of new debt issues made between 2001 and 2010 by firms in 43 countries. Public bond issuance data are obtained from Mergent FISD, Capital IQ, SDC Thomson One, and Bloomberg. Private loan issuance data are obtained from DealScan and SDC Thomson One.<sup>11</sup> We match borrowers from these databases with Compustat Global and WorldScope data using available company identifiers such as Excel Company ID, Cusip, Sedol, ISIN, Ticker,

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<sup>11</sup> The bond sample starts with Mergent FISD data, and is augmented with (in order) Capital IQ, Bloomberg, and SDC, excluding duplication. The loan sample starts with DealScan and is augmented with SDC, again excluding duplication. We consider each loan facility as a separate observation, because loan features, such as yield spread, maturity, and offering amount, vary across facilities (Qian and Strahan, 2007; Kim et al., 2011). When data sources provide different numbers of accounting covenants, we use the one with the largest number. Nini et al. (2009) observe that DealScan under-reports the use of capital expenditure restrictions in loan contracts.

and CIK. For borrowers that cannot be matched by these identifiers, we manually match by borrower name and country.<sup>12</sup> We merge each debt issue with the borrower's accounting information on Compustat Global and WorldScope in the fiscal year immediately before the issuance date.<sup>13</sup> Countries that mandated IFRS in the sample period are the treatment sample. We ignore any pre-IFRS convergence of countries' standards to IFRS, possibly underestimating the true effects of IFRS adoption.<sup>14</sup> Countries that retained their domestic accounting standards during the period are the control.

For each issue, we require non-missing information on issue date, debt amount, yield spread, covenants, and maturity. We exclude issues with no covenants recorded by the data providers.<sup>15</sup> This generates 30,228 debt issues (16,429 loans and 13,799 bonds). We exclude firm-year observations in the control sample of non-IFRS countries that voluntarily used IFRS (55 observations). For our main analyses, we also exclude firm-years in the treatment sample of IFRS-adopting countries that voluntarily used IFRS or IAS before the mandatory adoption date (176 observations), or did not use IFRS after the mandatory adoption date (381 observations).<sup>16</sup> We exclude firm-years that did not disclose the accounting standards used

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<sup>12</sup> For borrowers in Mergent FISD, we use Cusip, Sedol, Ticker, and borrower name and country for matching. For borrowers in Capital IQ, we use the Excel Company ID-Gvkey and Excel Company ID-ISIN link tables provided by Capital IQ. For borrowers in SDC, we use CIK, Cusip, Sedol, and borrower name and country. For borrowers in Bloomberg, we use ISIN. For borrowers in DealScan, we use DealScan-Compustat link provided by Chava and Roberts (2008) for US firms and manually match by name and country for non-US firms.

<sup>13</sup> We use Compustat Global as the primary data source for borrower's accounting information and augment it with WorldScope. For the information on borrower's reported accounting standards, we primarily rely on WorldScope, as Daske et al. (2013) find that such information is less accurate in Compustat Global.

<sup>14</sup> While Brazil adopted IFRS in December 2010, the last year of our sample period, we treat it as a non-IFRS country because we use accounting data one year before the debt issuance date.

<sup>15</sup> Only 10% of international debt issues have at least one recorded covenant. We exclude the remainder because our data providers inform us this is likely to be caused by them failing to collect covenant information, rather than covenant-free debt. Excluding issues without covenants is consistent with prior literature (e.g., Demerjian, 2011; Christensen and Nikolaev, 2012). While this excludes some debt issues that actually are covenant-free, our data providers and extant research suggest that covenant-free debt was rare during the sample period. Nonetheless, we repeated our main regression (reported in Table 4) for an expanded constant sample that includes firms without covenant data and excludes US firms (which have substantially better covenant coverage than non-US firms in the database). We obtain essentially identical conclusions to those reported here (reported in Internet Appendix, Table IA9).

<sup>16</sup> Firms in the treatment sample that do not use IFRS after the mandatory adoption date are either not required to adopt IFRS, such as non-EU firms listed in UK's Alternative Investment Market and companies listed in Switzerland that are not multi-nationals, or were allowed to delay adoption, such as EU firms reporting under US GAAP at the time of mandatory IFRS adoption. We follow the coding scheme in Daske et al. (2013, Table

(325 observations).

For our main analyses we exclude debt issued by firms in financial industries (SIC 6) and analyse them separately because they face different regulatory, financial reporting, and debt contracting issues. We drop observations with insufficient data to calculate all variables. To calculate country fixed effects, we require each IFRS country to have at least one debt issue in each of the pre-adoption and post-adoption periods, and correspondingly require each non-IFRS country to have at least two debt issues. This results in a sample of 18,284 observations (10,865 loans and 7,419 bonds).

The final decision is whether to exclude US firms from the control group. Other things equal, expanding the size of the control group is desirable. There are two offsetting disadvantages. First, in September 2002, FASB and IASB formalized the “Norwalk Agreement,” under which they agreed to work toward converging US GAAP and IFRS. Prior to that point, the US had already moved substantially toward the fair value orientation imposed by IFRS.<sup>17</sup> This suggests that including US in the control group could taint the control with the treatment effect.<sup>18</sup> Second, US firms are larger in number and they also attract better coverage from the data vendors, so they are disproportionately represented and could unduly influence the results. Our data include more than 14,000 debt issuances by US firms, but only 2,712 issuances by firms in other non-IFRS countries and 1,479 debt issuances in the IFRS treatment sample. We balance these considerations by randomly selecting US observations until they comprise one third of the total control, and by separately

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A1) to identify firm-years reporting under IFRS. In the Internet Appendix, we also directly use the hand-collected data in Daske et al. (2013) and analyze voluntary adopters separately (Table IA2).

<sup>17</sup> Demerjian et al. (2015) observe that “In the years subsequent to adoption of SFAS 115, FASB has moved increasingly towards fair value accounting. This movement has largely departed from rules requiring that fair values be based on prices generated by organized exchanges. Examples include mortgage servicing rights (SFAS 122 / ASC 948), hedging transactions (SFAS 133 / ASC 815), and securitizations (SFAS 156 / ASC 860). Standards related to impairments, such as for goodwill (SFAS 142 / ASC 350) and fixed assets (SFAS 144 / ASC 360), have also expanded the use of estimated fair values, where carrying values are based on management’s estimated market values.” SFAS 115 mandated fair valuation of marketable securities in 1993.

<sup>18</sup> Consistent with tainting, we report below that including US firms in the control sample generally weakens the statistical significance of IFRS-adoption effects, but largely leaves our conclusions unaffected.

reporting results without US issuances in the control.<sup>19</sup>

The final sample comprises 5,547 observations (1,698 loans and 3,849 bonds), including 1,479 debt issues (273 loans and 1,206 bonds) from 22 IFRS adoption countries and 4,069 debt issues (1,425 loans and 2,643 bonds) from 21 non-IFRS adoption countries.

A potential concern with our analysis is that it could be affected by endogenous changes in the data vendors' coverage of covenants. This concern is to a degree mitigated by collecting data from a variety of sources, as it is unlikely that all vendors change coverage simultaneously in the same direction. The difference-in-difference design also assuages this concern. Moreover, as reported later, accounting covenant use is not affected for firms that adopt IFRS on a different date.

All non-ratio accounting variables are converted from local currencies to US dollars using the exchange rate at the fiscal year end. For debt denominated in local currencies, the borrowing amount is converted into US dollars using the exchange rate at the issue date. All continuous variables are Winsorized at their 1 and 99 percentage levels.

Table 1 reports the distribution of the primary sample of debt issues by country. For the loan sample, UK occupies 25% of the treatment group and US and Taiwan dominate the control group. For the bond sample, 47% of the treatment group are from UK and France, while within the control group, 78% of the observations are from US, Japan, and Canada.

## 4. Results

### 4.1 Sample statistics

Panel A of Table 1 reports, by country the IFRS adoption date, the sample frequency of debt issues with accounting covenants (the mean of  $D\_ACov$ ) and the intensity of use,

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<sup>19</sup>At the other extreme, when the entire US sample is the only control, results similar to Table 4 are obtained, though the coefficients of interest in OLS accounting-covenant intensity regressions are not statistically significant for loans, consistent with control sample tainting due to prior IFRS-US GAAP convergence. These results are reported in Internet Appendix, Table IA7.

defined as the average number of accounting covenants (the mean of *Num\_ACov*). At least two-thirds of loans issued in most IFRS-adoption countries and in all non-IFRS-adoption countries contain at least one accounting covenants. The average number of accounting covenants ranges from one to three across the sample countries. There is larger variation in use across countries for bond sample. Among IFRS-adoption countries, more than 40% of bonds issued by firms in Israel, Philippines, Singapore, and South Africa contain accounting covenants, while none of the bonds issued in Denmark, Finland, New Zealand, or Portugal contain any accounting covenants. Among non-IFRS-adoption countries, more than 70% of bonds issued by firms in Indonesia, Malaysia, and Thailand contain accounting covenants, with the average contract containing two to three, while no bond issued in Cayman Islands, China, Russia, or Taiwan contains any. For both IFRS-adoption and non-IFRS-adoption countries, loans generally contain more accounting covenants than bonds.

Panel B reports country-level institutional variables we use in cross-sectional tests within the IFRS-adopting treatment sample. First, we report two measures of the distance between prior domestic accounting standards and IFRS. The *Bae Total Index* is constructed from Bae et al. (2008, Table 1). Using the Nobes (2001) *GAAP 2001* survey, they assign a score of 1 for each of 21 key properties of domestic reporting that does not conform to IAS, the predecessor of IFRS.<sup>20</sup> We also use a modified index, *Bae Acct Index*, computed as the sum of the scores on those items that directly affect financial statement numbers, excluding requirements on non-numerical disclosure that are not used in debt covenants.<sup>21</sup> The two

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<sup>20</sup> Nobes' (2001) survey is based on accounting standards effective on Dec. 31, 2001 and does not reflect any subsequent revisions. After the 2002 EU vote to adopt IFRS, several IFRS-adoption countries changed their domestic standards to ease the transition to IFRS. Also, the survey ignores differences that might arise from IAS permitting alternative policies, but national rules allowing only one of those alternatives or providing more detailed or more restrictive standards. These factors are expected to weaken our estimates of adoption effects.

<sup>21</sup> Items excluded from Bae et al. (2008) are Item 1 (IAS No. 1.7: Do not require a primary statement of changes in equity), Item 3 (IAS No. 14: Require no or very limited segment reporting), Item 7 (IAS No. 2.36: Do not require disclosure of FIFO inventory cost when LIFO is used), Item 9 (IAS No. 24: Have no or very limited disclosure requirements for related-party transactions), Item 11 (IAS No. 32.77: Do not require the disclosure of the fair value of financial assets and liabilities), Item 12 (IAS No. 35: Do not have rules outlining the treatment of discontinued operations), and Item 19 (IAS No. 7: Do not require a statement of cash flow). The above items are listed in Nobes (2001) in the section titled "There are no specific rules requiring disclosures of."

indexes are highly correlated (Pearson correlation = 0.96). Higher index values indicate greater differences between prior domestic rules and IFRS. Based on these indexes, Luxembourg and Spain had the biggest difference between prior local rules and IFRS, while South Africa, Singapore, United Kingdom, and Ireland had the least differences. The sample medians for the *Bae Total Index* and *Bae Acct Index* are 10 and 6.5, respectively (above and below or equal to median scores are denoted in the table by H and L).

Results based on an index of only those differences between prior local rules and IFRS pertaining to using fair value accounting (*FV Index*) are similar to those based on all rule differences, which is not surprising because the indexes are highly correlated (Pearson correlation > 0.83).<sup>22</sup> This is consistent with, but does not prove, that a primary change introduced by IFRS is an increased emphasis on fair value accounting.

Panel B also reports, for IFRS adopting countries, the index of regulatory quality in Kaufmann et al. (2009). As in Christensen et al. (2013a, 2013b), we use the index to proxy for a country's IFRS enforcement level. We classify countries as high or low regulatory quality.

Table 2 reports accounting covenant use by calendar year of debt issuance. Figure 2, Panels A and B plot the frequency and average number of accounting covenants, respectively. The vertical lines indicate the date of IFRS adoption for most countries in our sample, December 2005, and the start of recent financial crisis, July 2007. Excluding the three countries that did not adopt IFRS in 2005 (viz., Israel, New Zealand, and Singapore), which account for less than 5% of the sample, has little impact in this figure or the conclusions drawn in the paper.

Prior to 2006, IFRS countries and non-IFRS countries are roughly comparable in accounting covenant use. For the combined loan and bond sample, *D\_ACov* appears steady between 40% and 67% in IFRS countries and between 50% and 60% in non-IFRS countries.

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<sup>22</sup> The value of *FV Index* by country and results using this index are reported in Internet Appendix, Table IA12.



From 2006 onward, the usage rates diverge. Both the frequency and intensity of accounting covenant use decline substantially in IFRS-adoption countries in 2006 and are relatively constant subsequently. In IFRS-adoption countries, debt issued with accounting covenants declines sharply in one year, from 45% in 2005 to 20% in 2006. In contrast, the corresponding numbers for non-IFRS countries are 50% and 47%, respectively.<sup>23</sup> This pattern is similar for loans and bonds. IFRS adoption is associated with substantially reduced accounting covenant use.<sup>24</sup>

Table 2 also reports a noticeable decrease after 2005 in the number of loans in IFRS countries, but not in non-IFRS countries. In contrast, bond issuances increase in both the treatment and control samples. Florou and Kosi (2015) attribute these trends to improved transparency under IFRS, though equity market research indicates the transparency benefits of IFRS are not large. However, these trends are also consistent with loans being more sensitive to IFRS-induced reductions in covenant effectiveness and consequently losing their comparative advantage relative to bonds, viz. easier renegotiation conditional on contractible variables triggering covenants.

Table 3, Panels A and B report summary statistics for the debt-specific variables for the treatment and control samples, aggregated across all years separately in the pre- and post-adoption periods.<sup>25</sup> Panel A reports statistics for loans. In IFRS-adopting countries, there are accounting covenants in 94% of loans issued in the pre-adoption period, but only 77% in the post-adoption period. The average number of accounting covenants (*Num\_ACov*) included in loans declines from 2.4 to 1.6 around IFRS adoption. These differences are statistically significant. While these decreases by themselves are consistent with IFRS adversely affecting

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<sup>23</sup> The correlation between IFRS and non-IFRS countries of average *D\_ACov* (*Num\_ACov*) is 0.62 (0.61) from 2001 to 2005 and -0.43 (-0.32) from 2006 to 2010.

<sup>24</sup> This would increase the monitoring costs for loans, leading to higher interest rates. Consistent with this expectation, Florou and Kosi (2015) find a positive coefficient on IFRS adoption in regressions of loan interest rates, but it is statistically insignificant. Chen et al. (2015) report a statistically significant increase in loan rates.

<sup>25</sup> For non-IFRS countries, we define the “post-adoption” period as fiscal years ending on or after December 31, 2005, since the majority of our treatment countries adopted IFRS in 2005.

debt covenant use, we are careful not to draw strong inference from univariate analyses of treatment firms alone because the characteristics of debt issuances in the pre- and post-IFRS periods are then not held constant. Our conclusions are based on difference-in-difference analyses and on multivariate analyses that control for firm and debt characteristics.

In contrast to the declines in accounting covenant usage and intensity for IFRS firms, there is an increase (insignificant change) in usage of accounting covenants (accounting covenant intensity) in loans issued in non-IFRS countries. In these countries, over the same period the percentage of loans with accounting covenants increases marginally from 94% to 98%, while the average *Num\_ACov* is largely unchanged at approximately 2.8 covenants per loan. These statistics indicate that the decline in accounting covenants around IFRS adoption is not part of a global trend. The last column of Table 3, Panel A reports difference-in-difference statistics, comparing the change in covenant usage between IFRS and non-IFRS countries. The mean difference-in-difference values for *D\_ACov* and for *Num\_ACov* are -0.216 (*t*-stat = -3.18) and -0.887 (*t*-stat = -4.17).

Table 3, Panel B reports equivalent statistics for bonds. In IFRS-adopting countries, we observe a significant decrease in both the frequency and intensity of accounting covenant use in bond contracts. In non-IFRS countries, there is a significant decrease in the average number (intensity) of accounting covenants. The mean difference-in-difference is negative and significant (insignificant) for accounting covenant frequency (intensity). As noted above, the changes in accounting covenant use in bonds are smaller than those in loans.

These difference-in-difference results from univariate analyses provide preliminary evidence that IFRS adoption leads to a decline in both the frequency and intensity of accounting covenant use in debt contracts.

## 4.2 Accounting covenant use pre- and post-IFRS: Regression model results

We use the following difference-in-difference models to estimate the change in accounting covenant use around mandatory IFRS adoption, where debt issued in non-IFRS mandating countries is the control sample:

$$Pr(D\_ACov=1) = \beta_1 Post\_IFRS + Control\ Variables + Country\ F.\ E. + Year\ F.\ E. \quad (1)$$

$$Log(1+Num\_ACov) = \beta_1 Post\_IFRS + Control\ Variables + Country\ F.\ E. + Year\ F.\ E. \quad (2)$$

*Post\_IFRS* is an indicator variable set to one for debt issued by firms in IFRS-mandating countries in fiscal years ending on or after the mandatory adoption date in the firm's country. *D\_ACov* and *Num\_ACov* are alternative measures of accounting covenant use. Equation (1) is a Probit model examining the presence of accounting covenants in debt contracts. *D\_ACov* is an indicator variable defined as one if the debt contract contains at least one accounting-based covenant, and zero otherwise.<sup>26</sup> Equation (2) is an OLS model examining the intensity of accounting covenant use.<sup>27</sup>  $Log(1+Num\_ACov)$  is the logarithm of one plus the count of the total number of accounting-based covenants. In both models, a negative (positive)  $\beta_1$  indicates a decline (increase) in accounting covenant use after mandatory IFRS adoption.

We include fixed effects for country and the calendar year of the debt issuance date, to control for unobserved country-specific and year-specific factors.<sup>28</sup> We control for firm and debt characteristics that might affect accounting covenant use. Firms that are smaller, higher-growth, less profitable, more levered or have fewer tangible assets likely have higher

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<sup>26</sup> For public bonds, we follow Nikolaev (2010) and identify declining net worth, indebtedness, leverage test, maintenance net worth, net earnings test, and fixed charge coverage covenants as accounting-based. For private loans, we follow Demerjian (2011) and Christensen and Nikolaev (2012) and identify interest coverage, fixed charge coverage, debt-to-earnings, leverage, net worth, and current ratio covenants as accounting-based. We also include dividend restrictions as accounting-based covenants, as they typically are based on the amount of accounting earnings or retained earnings (Healy and Palepu, 1990). As reported later, our conclusions are not sensitive to excluding dividend restrictions from accounting-based covenants.

<sup>27</sup> The main conclusions are unaffected when Equation (2) is estimated using Poisson or Negative Binomial models. These results are reported in Internet Appendix, Table IA10.

<sup>28</sup> Replacing country fixed-effects with country-level characteristics does not change the conclusions. These results are reported in Internet Appendix, Table IA12. The conclusions also are not affected by controlling for the total amount of debt issued in a country-year, as a proxy for debt-financing demand. These results are reported in Internet Appendix, Table IA6. Restricting the analysis to the pre-financial crisis period (defined as ending in either June 2007 or September 2008) does not change our conclusions, as reported in Internet Appendix Table, IA9.

agency costs of debt and hence greater demand for covenants.<sup>29</sup> Consequently, we control for firm size (logarithm of market value of equity), market-to-book ratio (market value of equity divided by book value of equity), asset tangibility (net PP&E divided by total assets), profitability (EBITDA divided by total assets), and leverage (total debt divided by total assets). The control variables are measured in the fiscal year immediately before debt issuance date. We include an indicator variable for the availability of US filings, since borrowers with public debt or equity traded in the US might be subject to different financial reporting incentives and face different agency costs.<sup>30</sup>

To control for debt-level determinants of covenant use, we include debt size (borrowing amount), maturity (number of months to maturity), yield spread (offering yield to maturity over benchmark risk-free rate)<sup>31</sup>, and indicators for secured debt, availability of credit ratings, and investment grade.<sup>32</sup>

In robustness analysis reported in the Internet Appendix, we allow the regression coefficients to vary between IFRS and non-IFRS countries to control for institutional differences and for changes in firm-level measures upon IFRS adoption. Our conclusions are unchanged (Table IA11).

We estimate standard errors clustered at the 2-digit SIC industry level, chosen as a trade-off between clustering at the most aggregate level possible versus having sufficient

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<sup>29</sup> Leverage reflects prior debt contracts with covenants or prior lending relationships, reducing the demand for covenants in new issues, though De Franco et al. (2013) report covenant use is persistent over time. Yi (2005) shows that the number of covenants in a loan contract decreases with the intensity of the lending relationship. Beatty et al. (2012) find that public bondholders may delegate borrower monitoring to existing senior creditors.

<sup>30</sup> For example, Ball et al. (2013) find that public bonds issued by foreign firms cross-listed in the US have lower interest rates. In robustness analysis included in Internet Appendix, Table IA12, we also include a dummy variable for the availability of London Stock Exchange filings, and our conclusions are unchanged.

<sup>31</sup> For public bonds, the proxy for the benchmark risk-free rate is the three-month LIBOR (interbank) rate at the country where the issuing firm is domiciled, obtained from Datastream. If the LIBOR rate is not available, we use the local Treasury bill or government bond rate obtained from IMF. For private loans, consistent with prior literature, we directly use the variable all-in-drawn. Results are not sensitive to the choice of the benchmark rate.

<sup>32</sup> We use the average credit rating of the issue provided by Standard & Poor, Moody's, and Fitch. If a rating is not available, we use the average rating for the issuer within one year of the issuance date. Credit ratings of "BBB" or above for Standard & Poor and Fitch and "Baa" or above for Moody's are identified as investment grade. As these debt characteristics are potentially simultaneously determined with covenant usage, in the robustness analysis included in the Internet Appendix, we evaluate the sensitivity of the results using three-stage-least-squares (Table IA3).

clusters to consistently estimate the within cluster variance-covariance matrix. Although our sample includes 43 countries, after imposing data requirements and country-level fixed effects in our regressions, some regressions would have fewer than 30 clusters at the country level. Petersen (2009) shows that standard errors based on fewer than approximately 40 clusters suffer from small sample bias, so we do not use country-level clustering for the main tables. However, as reported later, clustering at country-level yields similar conclusions, as does two-way clustering by industry and year or country and year. Table IA8 of the Internet Appendix reports results from alternative choices for clustering and fixed effects.

Public bond contracts and syndicated bank loans generally differ in borrowing incentives, monitoring, and contractual features. Syndicated bank lenders can monitor borrowers and renegotiate loans at lower cost than public bondholders, due to concentrated loan ownership, financial expertise, and access to private information (Smith and Warner, 1979). Thus, bank loans typically have a larger number of tightly set accounting covenants that are more frequently violated and renegotiated (Nini et al., 2012). In addition, public bonds often are subordinated and contain callable and/or convertible features, while syndicated bank loans often involve revolving credit or include performance pricing. These differences could interact with the effects of IFRS adoption, so we report all results separately for loans and bonds, as well as for the combined loan and bond sample with an indicator variable for loans. For the loan sample, we control for loan-specific features (indicators for revolving loan, term loan, and performance pricing feature). For the bond sample, we control for bond-specific features (indicators for subordinated bond, callable bond, and convertible bond).

Table 4 reports marginal effects for Equation (1) and regression coefficients for Equation (2). Consistent with the prediction that accounting covenant use declines after mandatory IFRS adoption, the coefficients on *Post\_IFRS* are negative and significant in all specifications. When both loan and bond samples are considered together, the marginal effect

of *Post\_IFRS* on *D\_ACOV* is -0.264 ( $t$ -stat = -4.63), indicating that IFRS adoption lowered the likelihood of at least one accounting covenant in a new debt issue by 26.4%, controlling for other factors. A similar decline is reflected in the OLS regressions of accounting covenant intensity, where the coefficient on *Post\_IFRS* is -0.141 ( $t$ -stat = -3.98). Column (2) for loans and Column (3) for bonds show that IFRS adoption is associated with significant accounting covenant-frequency declines. The marginal effect of *Post\_IFRS* is -0.175 ( $t$ -stat = -5.47) for loans and is -0.110 ( $t$ -stat = -4.01) for bonds in the Probit regressions. Similar results are shown in Columns (5) and (6) for accounting covenant intensity.

The coefficients on the firm and debt control variables generally are consistent with expectations. The negative coefficient on firm size is consistent with small firms facing higher agency costs of debt and therefore having more accounting covenants. The positive coefficient on ROA is consistent with the findings in Nikolaev (2010) for US bonds. The positive coefficient could indicate that accounting covenants, particularly those based on earnings, are less effective for less profitable or loss-making firms, or that accounting covenants could be unduly restrictive for such firms. Similarly, the negative coefficient on the market-to-book ratio could indicate that earnings and balance sheet data are less efficient measures for growth firms, or that such firms need more operating flexibility. The coefficient on leverage tends to be insignificant, suggesting that more borrowing by itself does not affect accounting covenant use.

Among debt-level control variables, the coefficient on yield spread is significantly positive for bond issuances, while those on the investment grade indicator for bonds are significantly negative. *D\_Rating* has a significantly positive coefficient for bonds, suggesting that rated bonds include more accounting covenants. Maturity is negatively related to bond covenants, but positively to loan covenants. We caution against drawing strong inferences from these coefficients due to potential endogenous effects. Our conclusions on IFRS adoption effects are unaffected by excluding these debt-level controls (reported in Internet

Appendix, Table IA11).

The pseudo  $R^2$  in Column (1) and Adjusted  $R^2$  in Column (4) are at least 60%, suggesting that the models explain a substantial part of the variation in accounting covenant use. In additional analysis excluding all controls and fixed effects (reported in Internet Appendix, Table IA11), we confirm that *Post\_IFRS* alone explains a significant amount of variation, with a pseudo  $R^2$  of 6.0% in Column (1) and adjusted  $R^2$  of 7.5% in Column (4).

#### ***4.3 Robustness of the regression model***

As discussed earlier, including US issuances in the control sample could taint it with the treatment (IFRS adoption) effect, because the FASB-IASB convergence project moved US reporting toward IFRS prior to the sample period. To test this, in Panel B of Table 4 we re-estimate Equations (1) and (2) after dropping US firms from the control. The estimated coefficient and *t*-statistic magnitudes for *Post\_IFRS* generally increase, despite the reduction in control sample size. For example, for the combined loans and bonds sample in Column (4), the coefficient on *Post\_IFRS* decreases from -0.14 to -0.18 and the corresponding *t*-statistic decreases from -3.98 to -4.93, consistent with tainting. Nevertheless, the results are similar.

To address the concern that the results might be driven by different sample compositions in the pre- and post-adoption periods, we repeat the analysis for a constant sample of firm issuing debt in both the pre- and post-adoption periods, excluding US firms from the control. The resulting sample size is 3,283 debt issues of which 920 are loans and 2,363 are bonds. The results, reported in Table 4, Panel C, show that the main conclusions are unchanged. The coefficients on *Post\_IFRS* are negative and significant in all model specifications and are comparable to those reported in Panel B. In additional robustness analysis, we also find similar results by requiring a constant sample and keeping US firms in the analysis (Internet Appendix, Table IA7). Differences between the pre- and post-IFRS periods in the types of firms raising debt do not appear to explain our results.

Results from using alternative definitions of accounting covenants are reported in

Table 4, Panel D. First, we estimate the regressions separately for income statement (performance) and balance sheet (capital) covenants, following Christensen and Nikolaev (2012). We report only the coefficients on *Post\_IFRS*. There is a significant decline in use of both categories of covenants following IFRS adoption, with the exception of balance sheet covenants in loans. Second, we exclude dividend restriction covenants from the definition of accounting covenants, because dividend decisions, while related to earnings, are not completely related on a period-to-period basis with accounting numbers. The results reported in Table 4, Panel E continue to show a negative and significant coefficient on *Post\_IFRS*.

We also apply the method of Heckman et al. (1997, 1998), estimating regressions based on a Kernel propensity score matching combined with a difference-in-difference analysis between the matched samples.<sup>33</sup> This controls for both observable differences and time-invariant unobservable differences between the treatment and control groups. The results in Table 4, Panel E indicate that our conclusions remain unchanged.

Finally, we examine the sensitivity of our results to alternative measures of standard errors, using a bootstrap method that clusters standard errors at the industry level and alternatively by clustering at the country level. The results are similar to those reported in Panel A except that the *t*-statistics are slightly lower.<sup>34</sup> We advise caution when interpreting the loan regressions clustered at the country level because they have as few as 25 clusters, which affects both the power and the unbiasedness of these standard errors.

The results are also robust to replacing the country fixed effects with firm-level fixed effects or additionally including industry-level fixed effects, and also to including country-level controls for legal origin, creditor rights index, and importance of the country's private

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<sup>33</sup> We match firms in the treatment and control samples on Kernel propensity scores calculated using all firm- and debt-specific controls and year fixed effects. We then conduct a standard two-way difference-in-difference analysis by taking into account the propensity scores. Countries that adopted IFRS in years other than 2005 are excluded. For an application of the Heckman et al. (1997, 1998) approach in the Accounting literature and for details of the implementation of this approach, see Shivakumar et al. (2014). We obtain qualitatively similar conclusions when we employ regular propensity matching (results reported in Internet Appendix, Table IA9.)

<sup>34</sup> When using the Kernel propensity score matching and bootstrap method, we can only fit OLS regressions, so the coefficients in regressions on *D\_Acov* are not directly comparable with those in Table 4, Panel A.



debt market (results reported in Internet Appendix, Tables IA8 and IA12, respectively).

#### **4.4 Effect of the difference between IFRS and prior domestic standards**

If the observed covenant changes are caused by IFRS adoption, they should increase with the degree to which IFRS alters a country's accounting standards. To test this implication, we classify IFRS countries as "High GAAP difference" and "Low GAAP difference" based on whether their *Bae Total Index* or *Bae Acct Index* is above or below the median. We then estimate whether the coefficient on *Post\_IFRS* varies between the groups.

Results are reported in Table 5.<sup>35</sup> The coefficients on *Post\_IFRS* are negative for both groups for both loans and bonds and in all model specifications. The magnitudes of the coefficients for the "Low-GAAP-difference" group are lower than those for the "High-GAAP-difference" group in all specifications (except for one tie), and in many cases by a substantial margin. The likelihood of reduced accounting covenant use thus was an increasing function of how radical a departure IFRS was from prior domestic standards. The reduction in accounting covenant use is more pronounced in loans, one comparative advantage of which (relative to bonds) is ease of renegotiation when triggered by covenant violations. Loans thus are more affected by perceived reductions in accounting covenant effectiveness.

#### **4.5 Banks versus Non-banks**

If fair value accounting plays an important role in the observed decline in accounting covenant use following IFRS adoption, the decline should be more pronounced in firms with a higher proportion of financial assets and financial liabilities on their balance sheets. These firms' financial statements are more affected by the change to fair value standards. We test this hypothesis by comparing debt issued by banks with issuances by non-banks. As Armstrong et al. (2010) note, fair value standards (primarily IAS 39 and to a lesser degree IAS 32) have a larger effect on banks. This presumably underlies the strong opposition of EU banks to these standards before the eventual modification of IAS 39 in 2005.

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<sup>35</sup> Similar results are observed in a constant sample, excluding US from the control and in a propensity-score-matched sample (results reported in Internet Appendix, Table IA13).

We add financial firms to the sample and re-estimate Equations (1) and (2), including all controls but allowing the coefficient on *Post\_IFRS* to differ between banks and non-banks. As in Armstrong et al. (2010), banks are defined as firms with a 2-digit SIC code of 60 or 61. Results are reported in Table 6.<sup>36</sup> The central result is that in all regressions of *D\_ACov*, the coefficients are significantly more negative for banks than non-banks. For loans, the coefficients on *Post\_IFRS* in the regressions of *D\_ACov* are -0.64 for banks and -0.20 for non-banks. The difference is significant, with a *p*-value of 0.03. This implies that the reduction in accounting covenant use in loans is three times as large in banks. In regressions of accounting intensity (*Num\_Acov*) for loans, the coefficient on *Post\_IFRS* again is significantly more negative for banks. The corresponding coefficient for bonds is marginally larger for banks, but the test has low power. There are only four bonds issued by IFRS banks that have more than one accounting covenant, consistent with bonds generally using them less frequently.<sup>37</sup> In additional analysis using Poisson and Negative Binomial regression models for *Num\_Acov*, we find the coefficients on *Post\_IFRS* are significantly more negative for banks than for non-banks in all samples (reported in Internet Appendix, Table IA14).

The finding that banks are more likely than other firms to reduce accounting covenants after IFRS adoption, especially in loan contracts, is consistent with fair value accounting being an important contributor to the post-IFRS reduction in accounting covenant use generally. As always, this result could reflect differences between banks and non-banks that are not captured in the control variables.

The stronger results in Table 4 when the US is omitted from the control sample also are consistent with fair value accounting being an important contributor to reduced accounting covenant use. Prior to the treatment sample adopting IFRS, the US had a substantial fair value orientation (Demerjian et al., 2015).

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<sup>36</sup> Similar results are obtained in a constant sample excluding US firms, with weakened statistical significance (results reported in Internet Appendix, Table IA14).

<sup>37</sup> The coefficients for non-banks are not directly comparable to those in baseline analysis, because non-banks here include firms in financial industries but not operating as banks.

#### ***4.6 Transparency and non-accounting covenant use in loans and bonds***

The observed post-IFRS reduction in accounting covenants could be due to reduced contractibility of financial statement information or to improved financial transparency (which we interpret as informativeness). It is not possible to precisely separate these effects in the data, but some insight can be obtained from observing associated changes in non-accounting covenant use. If IFRS adoption improved transparency, and thereby reduced lenders' uncertainty about borrowers' default risk, it would attenuate the demand from lenders to protect themselves through covenants. There would be increased use of information to pre-screen borrowers, and correspondingly reduced demand for all types of covenants, both accounting and non-accounting. In contrast, if IFRS reduced the contractibility of financial statement variables, it would reduce the demand for accounting covenants and increase the demand for non-accounting covenants, to the extent they are substitutes. These transparency and contractibility effects are not mutually exclusive, so we attempt to evaluate their relative importance.

Furthermore, as noted in Section 2.4, the relative importance of informativeness and contractibility could vary between bonds and loans. Bonds are more widely held than loans, and hence more costly to renegotiate, so they generally rely more on pre-screening and less on enforceable covenant rights that trigger renegotiation. Enhanced pre-screening could be expected to reduce their use of both accounting and non-accounting covenants. Loans would also benefit from increased pre-screening of borrowers, but generally rely more on covenants, so in addition they could be expected to respond to reduced financial statement contractibility by substituting from accounting to non-accounting covenants.

To examine these predictions, we identify four common types of non-accounting covenants based on their functionality: investment restrictions, asset sale restrictions, equity issue restrictions, and debt issue restrictions, as in Bratton (2006). We also examine

prepayment restrictions that are used in loans, as well as cross default clauses, merger restrictions, and prior claim restrictions that are used in bonds.

Panels A and B of Table 7 report separate difference-in-difference regressions results for loans and bonds, respectively. In the first five columns of Panel A, the dependent variable is defined as one if the loan contract has at least one covenant of the specified type, and zero otherwise. Four of the five covenant types exhibit increases, with equity and debt restrictions increasing significantly at the five and ten percent levels, respectively. The last two columns report an Ordered Probit regression where the dependent variable is the sum of the five dummies defined above (*NACov\_Types*), and an OLS regression of the accounting covenant to non-accounting covenant ratio. Overall, Panel A shows weak evidence of substitution of accounting covenants for non-accounting covenants in loans.

Panel C of Table 7 shows that the overall evidence of substitution from accounting to non-accounting covenants in loans appears weak due to combining heterogeneous effects. Significant substitution occurs in “High GAAP difference” countries, but there is no evident increase in non-accounting covenants in “Low GAAP difference countries”. The coefficient on *POST\_IFRS\_Index\_L* is insignificant in all regressions, indicating that substitution toward non-accounting-covenants was associated with the changes brought through IFRS adoption.<sup>38</sup>

The results for bonds are less straightforward. The difference-in-difference regressions in Table 7, Panel B reveal that six of the seven non-accounting covenant categories decline in the post-IFRS period, three significantly. The exception is merger restrictions, which increase.<sup>39</sup> The Ordered Probit regression of the combined seven non-accounting covenants indicates a significant decline. However, the OLS regression reveals no

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<sup>38</sup> The marginal effect implies the probabilities of zero, one, two, three, four, and five non-accounting covenants are 32%, 19%, 15%, 19%, 11%, and 3% (insignificant), respectively, for High-GAAP-difference countries after IFRS is adopted and when other variables are set at their mean values. In contrast, the equivalent probabilities for Low-GAAP-difference countries are 82%, 10%, 5% (insignificant), 2% (insignificant), 1% (insignificant), and 0% (insignificant). Due to the small sample size, we are unable to estimate the coefficient on *Post\_IFRS* for the high index group in the regression on prepayment restrictions.

<sup>39</sup> The sample size is smaller for some regressions of non-accounting covenants in the bond sample due to missing information on these covenant types from some of the data sources.

evidence of the ratio of accounting to non-accounting covenants in bonds changing (i.e., of substitution).

Panel D shows that the observed changes in bonds primarily occur in countries that are *least* affected by IFRS adoption. For example, the Ordered Probit regression of the seven non-accounting covenants combined reveals no significant change around IFRS adoption in ‘High GAAP difference’ countries, but a significant decline for ‘Low GAAP difference.’<sup>40</sup> If the decline in non-accounting covenant use among bonds is associated with IFRS adoption, then why does it occur mainly in countries that are least affected by IFRS adoption?

The answer to this question lies in the controls. We repeated the analyses after excluding US firms from the control sample to avoid the potential tainting from US and IFRS convergence. To control for differences in types of firms issuing bonds in the pre- and post-IFRS periods, we also conducted a propensity score-matching analysis.<sup>41</sup> The analyses reveal that, following IFRS adoption, non-accounting covenants (*NACov\_Types*) actually increase for firms in ‘High GAAP difference’ countries, while there is no significant change for ‘Low GAAP difference’ countries. These results for bonds are more in line with those observed for loans in Table 7, Panel C. The OLS analysis of the accounting to non-accounting covenants ratio continues to reveal insignificant evidence of substitution effect. These methodological choices do not affect the conclusions reported above for the loan sample.

Further, when we analyse a constant sample of treatment firms, for loans we find a significantly positive coefficient on *Post\_IFRS* in the Ordered Probit for *NACov\_Types* and a significantly negative coefficient in the OLS regression of the accounting to non-accounting covenants ratio. The corresponding coefficients are insignificant in the bond sample (results reported in Internet Appendix, Table IA15).

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<sup>40</sup> Due to the small sample size, we are unable to estimate the coefficient on *Post\_IFRS* for the low index group in the regressions on investment, equity issue, and debt issue restrictions.

<sup>41</sup> We are unable to estimate a Kernel propensity score matching as in Table 4, Panel E and use regular Propensity score matching. These results are reported in Internet Appendix, Table IA15.

Substitution of accounting for non-accounting covenants might not be observed in the bond sample due to ambiguity in how the data providers classify them. For example, a restriction on issuing additional debt if the fixed charge coverage ratio is below 2:1 could be flagged as a fixed charge coverage covenant (classified as accounting) or as a debt issue restriction covenant (classified as non-accounting). The data providers confirm this is not a concern for loans, and we observe substitution for non-accounting covenants in a hand-collected bond covenant sample (reported in Internet Appendix, Table IA4) that is free of this ambiguity.

It also is possible that increased transparency could affect covenant use in loan contracts by affecting the structure of loan syndicates. For example, Ball et al. (2008) find that improvements in the ability of accounting numbers to predict borrower credit quality leads to a decline in the syndicate share held by the lead arranger. Increased transparency also could lead to loans being more widely held, making their contracts more like bonds, using fewer accounting and more non-accounting covenants. To test this, we studied the number of lenders in a syndicate, lender share concentration, and the fraction of loans held by the lead arranger. Difference-in-difference regressions (reported in Internet Appendix, Table IA16) reveal no evidence of changes in syndicate structure following IFRS adoption. We also were unable to uncover any (empirical or anecdotal) evidence to indicate major structural changes in the loan market, particularly in Europe, around IFRS introduction.<sup>42</sup>

In sum, we observe increases in non-accounting covenant use in loans after IFRS adoption, inconsistent with transparency being the important driving force since that would predict a decline in all types of covenants. Significant substitution occurs in countries with the greatest distance between IFRS and prior domestic standards, indicating that substitution was associated with the changes associated with IFRS adoption. The mixed results for the bond sample do not paint a clear picture of either increased transparency or reduced

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<sup>42</sup> While covenant-lite loans (i.e., loans with fewer accounting-based maintenance covenants) have increased in Europe, these have occurred mainly after 2011, which is beyond our sample period.

contractibility. We do see a significant increase in non-accounting covenants for countries that were most affected by IFRS adoption once we exclude US firms from the control sample or control for differences in characteristics of firms issuing bonds before and after IFRS adoption, which also is inconsistent with transparency being an important driving force. Thus, even in the bond sample there is little evidence to support the argument that IFRS improved transparency, and some evidence against it.

Although we do not find clear evidence to support the contention that IFRS improved transparency for lenders, this conclusion is not very different to those made in recent studies that conclude that transparency benefits of IFRS are not substantial in the equity markets (Daske et al., 2008; Christensen et al., 2013a; Daske et al., 2013; Cascino and Gassen, 2014). Nevertheless, we caution that our empirical distinction between contractibility and transparency effects is not totally clear.

#### ***4.7 Effect on covenants of increased competition for domestic banks***

Another alternative explanation for the observed decrease in accounting covenants, especially for the private loan sample, is increased globalization of the loan market, which could increase competition among capital providers and cause a “race to the bottom.” Facing increased competition from foreign banks, domestic lenders could reduce the number of covenants to attract borrowers. This argument does not explain the substitution between accounting and non-accounting covenants observed in our sample. Nevertheless, we test the proposition by examining the differential effect of IFRS on the domestic versus international loans in our sample. We follow Brown’s (2013) methodology and define a loan as international if the borrower and the lead lender/arranger’s parent firm are from different countries. Among the 1,698 loans in our main sample, we are able to determine the geographic location of 796 loans, among which we identify 288 as international and 508 as domestic. We then repeat the baseline analysis by adding an indicator for international loans

*International*) and its interaction term with *Post\_IFRS* dummy (*Post\_IFRS\*International*). Consistent with the findings in Brown (2013), we observe a negative coefficient on *International* and a positive coefficient on *Post\_IFRS\*International*. However, neither coefficient is statistically significant. These results suggest that the post-IFRS reduction in accounting covenant use in our loan sample is not due to increased competition among banks, although we are aware that the lack of significant results could be due to low statistical power.

#### ***4.8 Effect of enforcement on accounting covenant use***

Mere adoption of standards is not expected to affect financial reporting unless combined with incentives to do so, including effective enforcement by monitors such as auditors, boards and analysts or by regulatory bodies (e.g., Ball, 2001; Ball et al., 2003). Consistent with this argument, Daske et al. (2008) find that the equity market benefits of IFRS adoption are observed only in countries where firms have incentives to be transparent and where legal enforcement is strong. Byard et al. (2011) find that IFRS adoption is associated with improvements in equity analysts' information environment only in countries with strong enforcement and where IFRS significantly differs from local GAAP. Christensen et al. (2013a) document that increases in equity market liquidity around IFRS adoption are restricted to countries that concurrently improved their financial reporting enforcement and conclude that controlling for factors associated with the enforcement changes can be important in studies investigating IFRS effects. These studies address equity market effects.

The implications of stronger enforcement on debt contracting are not clear. One could argue that stronger enforcement mitigates the opportunistic use of flexibility accorded borrowers under IFRS and thereby increases the usefulness of financial statement information for debt contracting. Alternatively, one could argue that stronger enforcement requires borrowers to implement fair value accounting and thereby decreases the usefulness of



financial statement information for debt contracting. Further, the degree of enforcement does not affect some limitations of IFRS for debt contracting, including the increased flexibility IFRS gives to managers in both selecting among and applying its standards, and the increased rule-making uncertainty that the IASB's multi-jurisdictional user base implies. All things considered, the expected effect of enforcement on debt contracting is ambiguous.

We test these opposing views using measures of cross-country variation in enforcement quality and in enforcement changes concurrent with IFRS adoption. The country-level measures are reported in Table 1. Initially, we follow Christensen et al. (2013a, 2013b) and use the index of regulatory quality provided by Kaufmann et al. (2009) to classify countries as high or low quality. We then re-estimate Equations (1) and (2) allowing the coefficient on *Post\_IFRS* to vary between the two groups.

The results presented in Table 8, Panel A show that the coefficient of interest is significantly negative for both the high and low regulatory quality groups. In general, there is little difference in coefficients between the two groups, suggesting that IFRS-adoption by itself, irrespective of enforcement levels, adversely affects the use of accounting covenants in debt contracts. The only exception is in the regression of *D\_ACOV* for the sample of loans, where the coefficient on *Post\_IFRS* is significantly more negative for the low-regulatory-quality countries. This is consistent with IFRS in low-enforcement regimes more adversely affecting the effectiveness of accounting numbers for use in debt contracts, possibly reflecting the increased managerial discretion afforded by IFRS domestically.

In additional analysis, we observe significantly negative coefficients of interest in a constant sample that also excludes US firms from the control group (reported in Internet Appendix, Table IA17). Moreover, the differences in coefficients between the high- and low-regulatory-quality groups are insignificant in all regressions except in the regression of *D\_ACOV* for the sample of loans, similar to the results using the full sample.

Christensen et al. (2013a) document that equity market effects around IFRS adoption are confined to a small number of EU countries that concurrently enhanced enforcement. We test for this effect on debt covenants by allowing the coefficient on  $Post\_IFRS$  in Equations (1) and (2) to vary among three groups of countries: Non-EU countries ( $Post\_IFRS_{non-EU}$ ); EU countries identified by Christensen et al. (2013a) as changing enforcement concurrently with IFRS adoption ( $Post\_IFRS_{EU\_ENF}$ ); and EU countries that did not change enforcement concurrently with IFRS adoption ( $Post\_IFRS_{EU\_nonENF}$ ). If enforcement changes explain the observed decline in accounting covenant usage, we expect the coefficient on  $Post\_IFRS_{EU\_ENF}$  to be significantly negative, and the other two coefficients (particularly,  $Post\_IFRS_{EU\_nonENF}$ ) to be insignificant.

The results are reported in Table 8, Panel B. For the loan sample, we observe a negative and significant coefficient for EU countries without concurrent enforcement. This indicates that, even in the absence of any changes in enforcement, IFRS adoption by itself is associated with a decline in accounting covenants. We cannot estimate the coefficient for non-EU countries in the regression on  $D\_ACOV$  due to small variation of the dependent variable. For the bond sample, we observe a significantly negative coefficient for all three country groups (EU with concurrent enforcement, Other EU, and Non-EU). Moreover, the coefficient on  $Post\_IFRS$  is more negative for EU countries without concurrent enforcement than for those with concurrent enforcement. The differences in coefficients are statistically significant for regression of  $D\_ACov$ . These results suggest that the effects of IFRS are not restricted to the sample of EU countries with concurrent enforcement changes.

The results in this section are not consistent with the observed decline in accounting covenant use being due to improved financial transparency associated with better enforcement. They are more consistent with direct IFRS effects.

## 5. Conclusions

Relative to the prior domestic standards they replaced, IFRS have a variety of attributes that, we argue, compromise the external contracting usefulness of financial statements. We predict a consequential decline in use of accounting debt covenants. This prediction is confirmed in our analyses of debt contracts issued by firms in countries that mandated IFRS adoption, and is not evident in countries that did not. Reduced accounting covenant use is, at least in part, substituted by greater reliance on non-accounting debt covenants. The decline in accounting covenant use increases in the aggregate difference between prior domestic GAAP and IFRS, and is larger for loans. It is also more pronounced for banks than for non-banks, consistent with the greater fair value exposure of the banks affecting usage of accounting covenants more for these firms.

These arguments and results do not imply that IFRS are dominated by adopting countries' prior domestic standards. They do imply that financial statements prepared under IFRS have important limitations for debt contracting, and possibly for contracting more generally, a result that does not appear to be reflected in standard-setting. The reader also should be aware that, while we attempt to address omitted correlated variables and concurrent events by using a difference-in-difference design with country and year fixed effects, these problems are germane in IFRS adoption studies because adoptions are clustered in time. We also caution that our post-adoption sample of loan issuances in IFRS adopting countries is small. Nevertheless, the results are robust with respect to a variety of tests, and hopefully shed some light on the wider issue of the relative roles of transparency and contractibility in financial reporting.

## References

- Aharony, J., R. Barniv, and H. Falk. 2010. The impact of mandatory IFRS adoption on equity valuation of accounting numbers for security investors in the EU. *European Accounting Review* 19 (3): 535-578.
- Ahmed, S. A., M. Neel, and D. Wang. 2013. Does mandatory adoption of IFRS improve accounting quality? Preliminary evidence. *Contemporary Accounting Research* 30 (4): 1344-1372.
- Armstrong, C. S., M. E. Barth, A. D. Jagolinzer, and E. J. Riedl. 2010. Market reaction to the adoption of IFRS in Europe. *The Accounting Review* 85 (1): 31-61.
- Bae, K.-H., H. Tan, and M. Welker. 2008. International GAAP differences: The impact on foreign analysts. *The Accounting Review* 83 (3): 593-628.
- Ball, R. 2001. Infrastructure requirements for an economically efficient system of public financial reporting and disclosure. *Brookings-Wharton papers on financial services* 2001 (1): 127-169.
- Ball, R., A. Robin, and J. S. Wu. 2003. Incentives versus standards: Properties of accounting income in four East Asian countries. *Journal of Accounting and Economics* 36 (1-3): 235-270.
- Ball, R. T., R.M. Bushman and F.P. Vasvari. 2008. The debt contracting value of accounting information and loan structure syndicate, *Journal of Accounting Research* 46(2): 247-287.
- Ball, R. T., L. Hail, and F. P. Vasvari. 2013. Equity cross-listings in the U.S. and the price of debt. *ECGI Finance Working Paper*.
- Barth, M. E. 2013. Measurement in financial reporting: The need for concepts. *Working Paper*, Stanford University.
- Barth, M. E., W. R. Landsman, and M. H. Lang. 2008. International Accounting Standards and accounting quality. *Journal of Accounting Research* 46 (3): 467-498.
- Barth, M. E., W. R. Landsman, M. Lang, C. Williams. 2012. Are IFRS-based and US GAAP-based accounting amounts comparable? *Journal of Accounting and Economics* 54 (1): 68-93.
- Beatty, A., S. Liao, and J. Weber. 2012. Evidence on the determinants and economic consequences of delegated monitoring. *Journal of Accounting and Economics* 53 (3): 555-576.
- Benston, G. J. 2008. The shortcomings of fair-value accounting described in SFAS 157. *Journal of Accounting and Public Policy* 27 (2): 101-114.
- Benston, G. J., and A. L. Hartgraves. 2002. Enron: What happened and what we can learn from it? *Journal of Accounting and Public Policy* 21 (2): 105-127.
- Bharath, S. T., S. Dahiya, A. Saunders, and A. Srinivasan. 2011. Lending relationships and loan contract terms. *Review of Financial Studies* 24 (4): 1141-1203.
- Bratton, W. 2006. Bond covenants and creditor protection: Economics and law, theory and practice, substance and process. *European Business Organization Law Review* 7, 39-87.
- Bresnahan T., P. Milgrom, and J.M. Paul, 1992. The Real Output of the Stock Exchange, in Z. Griliches (ed.), *Output Measurement in the Services Sector*, University of Chicago Press, Chicago.
- Brown, A. B. 2013. Financial reporting differences and debt contracting. *Working Paper*, City University of New York – Baruch College.
- Byard, D., Y. Li, and Y. Yu. 2011. The Effect of mandatory IFRS adoption on financial analysts' information environment. *Journal of Accounting Research* 49 (1): 69-96.
- Campbell, J. Y. 1991. A variance decomposition for stock returns. *Economic Journal* 101, 157-179.
- Capkun, V., D.W. Collins, and T. Jeanjean. 2012. Does adoption of IAS/IFRS deter earnings management? *Working Paper*, University of Iowa.
- Carhart, M., R. Kaniel, D. Musto, and A. Reed. 2002. Leaning for the tape: Evidence of gaming behavior in equity mutual funds. *Journal of Finance* 57 (2): 661-693.
- Cascino, S., and J. Gassen. 2014. What drives the comparability effect of mandatory IFRS adoption? *Review of Accounting Studies*, Forthcoming.
- Chambers, R. J. 1966. *Accounting, evaluation, and economic behavior*. Englewood Cliffs, N.J.: Prentice-Hall.
- Chava, S., and M. R. Roberts. 2008. How does financing impact investments? The role of debt covenants. *The Journal of Finance* 63 (5): 2085-2121.
- Chen, T., C. L. Chin, S. Wang, and C. Yao. 2015. The effects of financial reporting on bank loan contracting in global markets: Evidence from mandatory IFRS adoption. *Journal of International Accounting Research*, Forthcoming.

- Christensen, H. B., L. Hail, and C. Leuz. 2013a. Mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics* 56 (2-3): 147-177.
- Christensen, H. B., L. Hail, and C. Leuz. 2013b. Capital market effects of securities regulation: Prior conditions, implementation, and enforcement. *Working Paper*, University of Chicago.
- Christensen, H. B., E. Lee, and M. Walker. 2015. Incentives or standards: What determines accounting quality changes around IFRS adoption? *European Accounting Review* 24(1): 31-61.
- Christensen, H. B., E. Lee, and M. Walker. 2009. Do IFRS reconciliations convey information? The effect of debt contracting. *Journal of Accounting Research* 47 (5): 1167-1199.
- \_\_\_\_\_, and V. V. Nikolaev. 2012. Capital versus performance covenants in debt contracts. *Journal of Accounting Research* 50 (1): 75-116.
- \_\_\_\_\_. 2013. Does fair value accounting for non-financial assets pass the market test? *Review of Accounting Studies* 18 (3): 734-775.
- Cochrane, J. H., 2011. Discount rates. *Journal of Finance* 66, 1048-1108.
- Comerton-Forde, C., and T.J. Putniņš. 2011. Measuring closing price manipulation. *Journal of Financial Intermediation* 20 (2): 135-158.
- Costello, A. M., and R. Wittenberg-Moerman. 2011. The impact of financial reporting quality on debt contracting: Evidence from internal control weakness reports. *Journal of Accounting Research* 49 (1): 97-136.
- Daske, H., and G. Gebhardt. 2006. International financial reporting standards and experts' perceptions of disclosure quality. *Abacus* 42 (3-4):461-498.
- Daske, H., L. Hail, C. Leuz, and R. Verdi. 2008. Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research* 46 (5): 1085-1142.
- Daske, H., L. Hail, C. Leuz, and R. Verdi, 2013. Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. *The Journal of Accounting Research* 51(3): 495-547.
- De Franco, G., F. Vasvari, D. Vyas, and R. Wittenberg-Moerman. 2013. Sticky covenants. *Working Paper*, University of Toronto.
- De George, E.T., X. Li and L. Shivakumar, 2015. Consequences and Effects of IFRS-Adoption: A Review of Empirical Evidence. *Working Paper*, London Business School.
- Deloitte. 2011. CFO insights: Will IFRS trip up your debt covenants? *Deloitte Touche Tohmatsu*, at: [http://filesite.deloittenet.deloitte.com/FileHost/2011-05-09/deloitte\\_us\\_cfo\\_ifrsdebt\\_021611.pdf](http://filesite.deloittenet.deloitte.com/FileHost/2011-05-09/deloitte_us_cfo_ifrsdebt_021611.pdf).
- Demerjian, P. R. 2011. Accounting standards and debt covenants: Has the “balance sheet approach” led to a decline in the use of balance sheet covenants? *Journal of Accounting and Economics* 52 (2-3): 178-202.
- \_\_\_\_\_. 2014. Uncertainty and debt covenants. *Working Paper*, University of Washington.
- Demerjian, P. R., J. Donovan and C. R. Larson. 2015. Fair Value Accounting and Debt Contracting: Evidence from Adoption of SFAS 159. *Working Paper*, University of Washington.
- Demski, J.S. and G. A. Feltham. 1978. Economic incentives in budgetary control systems. *The Accounting Review* 53, 336-359.
- Ernst and Young. 2005. How fair is fair value? *IFRS Stakeholder Series*, London, Ernst and Young.
- European Commission. 2008. Evaluation of the application of IFRS in the 2006 financial statements of EU companies, available at [http://ec.europa.eu/internal\\_market/accounting/docs/studies/2009-report\\_en.pdf](http://ec.europa.eu/internal_market/accounting/docs/studies/2009-report_en.pdf).
- FASB. 2006. Conceptual framework for financial reporting. Preliminary Views Norwalk, Connecticut: Financial Accounting Standards Board.
- FASB. 2008. Conceptual framework for financial reporting. Exposure Draft. Norwalk, Connecticut: Financial Accounting Standards Board.
- FASB. 2010. Statement of financial accounting concepts No. 8: Conceptual framework for financial reporting. Norwalk, Connecticut: Financial Accounting Standards Board.
- Florou, A., and U. Kosi. 2015. Does mandatory IFRS adoption facilitate debt financing? *Review of Accounting Studies*, Forthcoming.
- Gallagher, D. R., P. Gardner, and P. L. Swan. 2009. Portfolio pumping: An examination of investment manager quarter-end trading and impact on performance. *Pacific-Basin Finance Journal* 17 (1): 1-27.
- Gjesdal, F. 1981. Accounting for stewardship. *Journal of Accounting Research* 19, 208-231.

- Haldeman, R. G. 2006. Fact, fiction, and fair value accounting at Enron. *The CPA Journal* 76 (11): 14-21.
- Hanlon, M., S. Rajgopal, and T. Shevlin. 2003. Are executive stock options associated with future earnings? *Journal of Accounting and Economics* 36 (1-3): 3-43.
- Healy, P. M., and K. G. Palepu. 1990. Effectiveness of accounting-based dividend covenants. *Journal of Accounting and Economics* 12 (1-3): 97-123.
- Heaton, J.C., D. Lucas, and R. L. McDonald. 2010. Is mark-to-market accounting destabilizing? Analysis and implications for policy. *Journal of Monetary Economics* 57 (1): 64-75.
- Heckman, J. J., H. Ichimura, and P.E. Todd. 1997. Matching as an econometric evaluation estimator: Evidence from evaluating a job training programme. *The Review of Economic Studies* 64 (4): 605-654.
- Heckman, J. J., H. Ichimura, and P. Todd. 1998. Matching as an econometric evaluation estimator. *The Review of Economic Studies* 65 (1): 261-294.
- Hung, M., and K. R. Subramanyam. 2007. Financial statement effects of adopting international accounting standards: The case of Germany. *Review of Accounting Studies* 12 (4): 623-657.
- IASC Foundation. 2002. *Draft Preface to International Financial Reporting Standards*. London, United Kingdom: IASC Foundation.
- International Accounting Standards Board (IASB). 2006. Discussion Paper: Preliminary Views on an Improved Conceptual Framework for Financial Reporting - The Objective of Financial Reporting and Qualitative Characteristics of Decision-useful Financial Reporting Information. London, United Kingdom: IASB.
- Ivashina, V., and Z. Sun. 2011. Institutional stock trading on loan market information. *Journal of Financial Economics* 100 (2): 284-303.
- Kaufmann, D., A. Kraay, and M. Mastruzzi. 2009. Governance matters VIII: Governance indicators for 1996-2008. *World Bank Policy Research*, Washington, D.C.
- Kim, J. -B., J. S. L. Tsui, and C. H. Yi. 2011. The voluntary adoption of International Financial Reporting Standards and loan contracting around the world. *Review of Accounting Studies* 16 (4): 779-811.
- Kvaal, E., and C. Nobes. 2010. International differences in IFRS policy choice: A research note. *Accounting and Business Research* 40 (2): 173-187.
- Landsman, W. R., E. L. Maydew, and J. R. Thornock. 2012. The information content of annual earnings announcements and mandatory adoption of IFRS. *Journal of Accounting and Economics* 53 (1-2): 34-54.
- Leftwich, R. 1983. Accounting information in private markets: Evidence from private lending agreements. *The Accounting Review* 58 (1): 23-42.
- Lev, B., and T. Sougiannis. 1996. The capitalization, amortization, and value-relevance of R&D. *Journal of Accounting and Economics* 21 (1): 107-138.
- Li, N. 2010. Negotiated measurement rules in debt contracts. *Journal of Accounting Research* 48 (5): 1103-1144.
- Magnan, M., A. Menini and A. Parbonetti, 2015, Fair value accounting: Information or confusion for financial markets, *Review of Accounting Studies* 20: 559-591.
- Moody's. 2008. Are we better off under IFRS? *New York: Moody's Investors Service*, November.
- Milbradt, K. 2009. Trading and valuing toxic assets. *Working Paper*. Princeton University.
- Nikolaev, V. V. 2010. Debt covenants and accounting conservatism. *Journal of Accounting Research* 48 (1): 51-89.
- Nini, G., D. C. Smith, and A. Sufi. 2009. Creditor control rights and firm investment policy. *Journal of Financial Economics* 92 (3): 400-420.
- . 2012. Creditor control rights, corporate governance, and firm value. *Review of Financial Studies* 25 (6): 1713-1761.
- Nobes, C. 2001. GAAP 2001—A survey of national accounting rules benchmarked against International Accounting Standards. *International Forum on Accountancy Development (IFAD)*.
- Paul, J.M. 1992. On the efficiency of stock-based compensation. *Review of Financial Studies* 5, 471-502.
- Petersen, M. A. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22 (1): 435-480.

- Qian, J., and P. E. Strahan. 2007. How laws and institutions shape financial contracts: The case of bank loans. *The Journal of Finance* 62 (6): 2803–2834.
- Samuelson, P. A. 1965. Proof that properly anticipated prices fluctuate randomly. *Industrial Management Review* 6: 41–49.
- Schipper, K. 2003. Principles-based accounting standards. *Accounting Horizons* 17 (1): 61-72.
- Shivakumar, L., B. Sidhu, and R. Gao. 2014. Exchange-sponsored analyst coverage. *Working Paper*, London Business School.
- Smith Jr., C. W., and J. B. Warner. 1979. On financial contracting: An analysis of bond covenants. *Journal of Financial Economics* 7 (2): 117–161.
- Voulgaris, G., Stathopoulos, K. and Walker, M., 2014. IFRS and the use of accounting-based performance measures in executive pay. *The International Journal of Accounting* 49(4): 479-514.
- Watts, R. L. 2003. Conservatism in accounting Part I: Explanations and implications. *Accounting Horizons* 17 (3): 207-221.
- Whittington, G. 2008. Fair value and the IASB/FASB conceptual framework project: An alternative view. *Abacus* 44, 139-168.
- Yi, S. 2005. Firm characteristics, lending relationship, and loan covenant strictness. *Unpublished Dissertation*, Michigan State University.
- Yip, R.Y.W., and D. Young. 2012. Does mandatory IFRS adoption improve information comparability? *The Accounting Review* 87 (5): 1767-1789.
- Zuckerman, G., and D. Fitzpatrick. 2012. J.P. Morgan ‘Whale’ was prodded: Bank’s probe concludes trader’s boss encouraged boosting values of bets that were losing. *Wall Street Journal* August 3. [http://online.wsj.com/article/SB10000872396390443545504577565062684880158.html?mod=WSJ\\_hp\\_LEFTWhatsNewsCollection](http://online.wsj.com/article/SB10000872396390443545504577565062684880158.html?mod=WSJ_hp_LEFTWhatsNewsCollection), visited August 3, 2012.

**Table 1: Accounting covenant use and institutional variables by country**

Panel A reports the number of observations and mean values of measures for accounting covenants by country. IFRS countries designates debt (loans and bonds) issued by firms domiciled in 22 countries that mandated IFRS adoption. Non-IFRS countries include debt (loans and bonds) issued by firms domiciled in 21 countries that did not mandate IFRS during our sample period. *D\_ACov* is a dummy variable indicating the debt contract contains at least one accounting covenant. *Num\_ACov* is the total number of accounting covenants. Panel B reports institutional variables for the IFRS adopting countries. *Bae Total Index* counts the number of accounting requirements that differ between prior local GAAP and IAS, as reported in Bae et al. (2008, Table 1). *Bae Acct Index* excludes non-numerical disclosure requirements. H (L) indicates a value higher than (lower or equal to) the sample median of the index. Enforcement indexes are from Christensen et al. (2013a, Table 1). *Regulatory Quality* is from Kaufmann et al. (2009) as of 2003. Indicator variables designate European Union countries (*EU*), European Union countries with IFRS adoption bundled with substantive change in enforcement (*EU\_ENF*), and European Union countries having no enforcement changes concurrent with IFRS adoption (*EU\_nonENF*).

**Panel A: Sample composition**

Country	Adoption Date	Loan & Bond Sample			Loan Sample			Bond Sample		
		N	D_ ACov	Num_ ACov	N	D_ ACov	Num_ ACov	N	D_ ACov	Num_ ACov
<i>IFRS countries (Treatment sample)</i>										
Australia	12/31/2005	99	0.273	0.556	18	1.000	2.056	81	0.111	0.222
Belgium	12/31/2005	50	0.040	0.120	.	.	.	50	0.040	0.120
Denmark	12/31/2005	7	0.000	0.000	.	.	.	7	0.000	0.000
Finland	12/31/2005	34	0.059	0.147	2	1.000	2.500	32	0.000	0.000
France	12/31/2005	281	0.199	0.505	29	0.966	2.414	252	0.111	0.286
Germany	12/31/2005	99	0.242	0.687	10	0.800	2.700	89	0.180	0.461
Hong Kong	12/31/2005	21	0.667	1.143	17	0.765	1.176	4	0.250	1.000
Ireland	12/31/2005	27	0.556	1.741	11	1.000	2.909	16	0.250	0.938
Israel	12/31/2008	35	0.571	1.171	7	1.000	2.571	28	0.464	0.821
Italy	12/31/2005	54	0.204	0.537	9	0.667	1.111	45	0.111	0.422
Luxembourg	12/31/2005	32	0.188	0.625	8	0.250	1.000	24	0.167	0.500
Netherlands	12/31/2005	64	0.469	1.313	27	0.963	2.815	37	0.108	0.216
New Zealand	12/31/2007	13	0.385	0.692	5	1.000	1.800	8	0.000	0.000
Norway	12/31/2005	89	0.371	0.618	5	1.000	3.400	84	0.333	0.452
Philippines	12/31/2005	14	0.786	2.143	7	0.857	1.857	7	0.714	2.429
Portugal	12/31/2005	14	0.000	0.000	.	.	.	14	0.000	0.000
Singapore	12/31/2003	19	0.789	2.421	13	0.923	2.769	6	0.500	1.667
South Africa	12/31/2005	17	0.588	1.471	5	1.000	2.000	12	0.417	1.250



Spain	12/31/2005	44	0.295	0.500	5	1.000	1.200	39	0.205	0.410
Sweden	12/31/2005	38	0.079	0.184	2	0.500	2.000	36	0.056	0.083
Switzerland	12/31/2005	50	0.480	1.240	24	0.917	2.500	26	0.077	0.077
United Kingdom	12/31/2005	378	0.251	0.614	69	0.957	2.304	309	0.094	0.236
<i>Total</i>		<i>1,479</i>			<i>273</i>			<i>1,206</i>		

*Non-IFRS countries (Control sample)*

Bermuda		77	0.779	1.909	65	0.815	1.938	12	0.583	1.750
Brazil		99	0.475	1.020	8	0.875	2.750	91	0.440	0.868
British Virgin Islands		7	1.000	2.857	7	1.000	2.857	.	.	.
Canada		706	0.473	1.329	182	0.951	2.742	524	0.307	0.838
Cayman Islands		41	0.878	2.756	37	0.973	3.054	4	0.000	0.000
China		17	0.235	0.529	4	1.000	2.250	13	0.000	0.000
Curaçao		3	0.667	2.667	3	0.667	2.667	.	.	.
India		117	0.393	0.880	40	1.000	2.425	77	0.078	0.078
Indonesia		48	0.771	1.417	9	1.000	2.111	39	0.718	1.256
Japan		675	0.025	0.052	14	0.929	2.000	661	0.006	0.011
Jersey		10	0.700	1.400	6	0.833	2.000	4	0.500	0.500
Liberia		7	1.000	2.714	7	1.000	2.714	.	.	.
Malaysia		92	0.902	1.935	4	1.000	2.500	88	0.898	1.909
Marshall Islands		44	0.773	2.091	39	0.795	2.077	5	0.600	2.200
Mexico		123	0.520	1.244	21	0.810	2.238	102	0.461	1.039
Panama		6	0.833	2.000	6	0.833	2.000	.	.	.
Russia		5	0.600	1.400	3	1.000	2.333	2	0.000	0.000
South Korea		80	0.575	0.725	13	0.923	1.615	67	0.507	0.552
Taiwan		483	0.979	3.110	481	0.983	3.123	2	0.000	0.000
Thailand		72	0.875	1.125	1	1.000	3.000	71	0.873	1.099
United States		1,356	0.510	1.680	475	0.985	2.973	881	0.254	0.983
<i>Total</i>		<i>4,068</i>			<i>1,425</i>			<i>2,643</i>		

**Panel B: Institutional variables for IFRS countries**

Country	GAAP Distance Indexes		Enforcement Indexes			
	Bae Total Index	Bae Acct Index	Regulatory Quality	EU	EU_ENF	EU_nonENF
<i>IFRS countries (Treatment sample)</i>						
Australia	4 L	3 L	1.60 L	0	0	0
Belgium	13 H	8 H	1.36 L	1	0	1
Denmark	11 H	8 H	1.79 H	1	0	1
Finland	15 H	8 H	1.90 H	1	1	0
France	12 H	8 H	1.18 L	1	0	1
Germany	11 H	6 L	1.51 L	1	1	0
Hong Kong	3 L	2 L	1.76 H	0	0	0
Ireland	1 L	1 L	1.66 H	1	0	1
Israel	6 L	4 L	0.91 L	0	0	0
Italy	12 H	7 H	1.02 L	1	0	1
Luxembourg	18 H	12 H	1.94 H	1	0	1
Netherlands	4 L	3 L	1.76 H	1	1	0
New Zealand	3 L	3 L	1.71 H	0	0	0
Norway	7 L	6 L	1.39 L	1	1	0
Philippines	10 L	9 H	-0.06 L	0	0	0
Portugal	13 H	8 H	1.21 L	1	0	1
Singapore	0 L	0 L	1.84 H	0	0	0
South Africa	0 L	0 L	0.58 L	0	0	0
Spain	16 H	9 H	1.29 L	1	0	1
Sweden	10 L	7 H	1.69 H	1	0	1
Switzerland	12 H	7 H	1.63 H	0	0	0
United Kingdom	1 L	1 L	1.68 H	1	1	0
<i>Median</i>	<i>10</i>	<i>6.5</i>	<i>1.62</i>			

**Table 2: Sample composition and accounting covenant use by year**

This table reports the number of observations and the mean values of measures for accounting covenants by the calendar year of debt issuance date. The panel titled “IFRS countries” report statistics on debt (loans and bonds) issued by firms domiciled in IFRS-adopting countries, while the panel titled “Non-IFRS countries” report statistics from firms domiciled in countries that did not mandate IFRS during the sample period. *D\_ACov* is a dummy variable indicating that the debt contract contains at least one accounting-based covenant. *Num\_ACov* is the total number of accounting covenants contained in a debt contract.

Year	Loan & Bond Sample			Loan Sample			Bond Sample		
	N	D_ ACov	Num_ ACov	N	D_ ACov	Num_ ACov	N	D_ ACov	Num_ ACov
<i>IFRS countries(Treatment sample)</i>									
2001	114	0.404	1.096	30	0.967	2.667	84	0.202	0.536
2002	113	0.504	1.478	46	0.913	2.630	67	0.224	0.687
2003	126	0.460	1.389	54	0.907	2.741	72	0.125	0.375
2004	90	0.667	1.411	45	0.956	1.689	45	0.378	1.133
2005	128	0.453	1.086	45	0.933	2.133	83	0.193	0.518
2006	136	0.199	0.463	23	0.783	2.087	113	0.080	0.133
2007	178	0.180	0.382	8	0.625	1.500	170	0.159	0.329
2008	137	0.095	0.190	7	0.857	1.571	130	0.054	0.115
2009	313	0.125	0.224	5	1.000	1.800	308	0.110	0.198
2010	144	0.181	0.340	10	0.900	1.600	134	0.127	0.246
<i>Non-IFRS countries (Control sample)</i>									
2001	243	0.568	1.807	114	0.921	2.816	129	0.256	0.915
2002	253	0.585	1.806	114	0.904	2.728	139	0.324	1.050
2003	326	0.534	1.733	137	0.905	2.927	189	0.265	0.868
2004	355	0.603	1.868	159	0.956	2.830	196	0.316	1.087
2005	361	0.499	1.374	128	0.984	2.680	233	0.232	0.657
2006	354	0.466	1.319	108	0.954	2.731	246	0.252	0.699
2007	542	0.456	1.216	147	0.993	2.714	395	0.256	0.658
2008	460	0.489	1.415	170	0.988	2.994	290	0.197	0.490
2009	593	0.482	1.255	163	0.975	3.086	430	0.295	0.560
2010	581	0.499	1.368	185	0.995	2.892	396	0.268	0.657

### Table 3: Univariate analysis

This table reports univariate difference-in-difference results for debt specific variables. IFRS countries include debt (loans and bonds) issued by firms domiciled in IFRS-adopting countries. Non-IFRS countries include debt (loans and bonds) issued by firms domiciled in countries that did not mandate IFRS adoption during the sample period. For IFRS countries, pre-adoption period includes fiscal years ending before the mandatory adoption date (see Table 1) and post-adoption period includes fiscal years ending on or after the mandatory adoption date. For non-IFRS countries, we define pre-adoption period as fiscal years before December 31, 2005 and post-adoption period as fiscal years ending on or after December 31, 2005. The “Difference” column compares mean values in pre- and post-adoption periods using a *t*-test. The “Diff-in-diff” column reports mean difference-in-difference between IFRS countries and non-IFRS countries using a *t*-test. *D\_ACov* is a dummy variable indicating that the debt contract contains at least one accounting-based covenant. *Num\_ACov* is the total number of accounting covenants contained in a debt contract. *D\_ACov\_IS* is a dummy variable indicating that the debt contract contains at least one accounting covenant based on income statement items, such as dividend restriction, interest coverage ratio, fixed charge ratio, debt service coverage, etc. *Num\_ACov\_IS* is the total number of accounting covenants based on income statement items. *D\_ACov\_BS* is a dummy variable indicating that the debt contract contains at least one accounting covenant solely based on balance sheet items, such as current ratio, quick ratio, leverage ratio, net worth, etc. *Num\_ACov\_BS* is the total number of accounting covenants solely based on balance sheet items. *Investment Rstr*, *Asset Sale Rstr*, *Equity Issue Rstr*, *Debt Issue Rstr*, *Prepayment Rstr*, *Cross Default*, *Merger Rstr*, and *Prior Claim Rstr* are dummy variables indicating that the debt contract contains at least one covenant from the specified type, and zero otherwise. *Num\_NACov* is the total number of non-accounting covenants, defined as total number of covenants minus the number of accounting covenants *Num\_ACov*. *D\_Secured* is a dummy variable indicating that the debt contract is secured. *D\_Rating* is a dummy variable indicating that credit ratings are available for the issued debt or borrower at the time of issuance. *InvestGrade* is a dummy variable indicating that the average credit rating for the issued debt or borrower at the time of issuance is at investment grade (“BBB” or above for Standard & Poor and Fitch, and “Baa” or above for Moody’s). *Yield Spread* is all-in-drawn for private loans or the yield to maturity at offering minus benchmark (country-specific risk-free rate) for bonds (in percentages). *Log(Debt Size)* is the natural logarithm of debt offering amount (in million US dollars). *Maturity* is debt maturity in number of months. *Revolver*, *Term Loan*, and *PerfPricing* are dummy variables indicating the loan contract has revolving, term, and performance pricing features, respectively. *Subordinated*, *Callable*, and *Convertible* are dummy variables indicating the bond is subordinated, callable, and convertible, respectively. Panel A reports results for loan sample and Panel B reports results for bond sample. All continuous variables are Winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

**Panel A: Loan sample**

Variable	Pre-adoption period			Post-adoption period			Difference (Post-Pre)		Diff-in-diff (IFRS-Non-IFRS)	
	N	Mean	Std Dev	N	Mean	Std Dev	Mean	t	Mean	t
<i>IFRS countries(Treatment sample)</i>										
D_ACov	230	0.935	0.247	43	0.767	0.427	-0.167	-2.49	-0.216	-3.18
Num_ACov	230	2.383	1.312	43	1.605	1.198	-0.778	-3.85	-0.887	-4.17
D_ACov_IS	230	0.870	0.338	43	0.698	0.465	-0.172	-2.31	-0.224	-2.92
Num_ACov_IS	230	1.948	1.192	43	1.256	1.071	-0.692	-3.82	-0.125	-0.65
D_ACov_BS	230	0.391	0.489	43	0.256	0.441	-0.135	-1.81	-0.310	-3.93
Num_ACov_BS	230	0.435	0.586	43	0.349	0.686	-0.086	-0.77	-0.762	-6.14
Investment Rstr	230	0.170	0.376	43	0.070	0.258	-0.100	-2.15	0.126	2.48
Asset Sale Rstr	230	0.300	0.459	43	0.326	0.474	0.026	0.33	0.217	2.66
Equity Issue Rstr	230	0.213	0.410	43	0.395	0.495	0.182	2.27	0.301	3.66
Debt Issue Rstr	230	0.209	0.407	43	0.395	0.495	0.187	2.33	0.293	3.56
Prepayment Rstr	230	0.122	0.328	43	0.093	0.294	-0.029	-0.58	0.013	0.25
D_Secured	230	0.257	0.438	43	0.302	0.465	0.046	0.60	-0.108	-1.33
D_Rating	230	0.504	0.501	43	0.488	0.506	-0.016	-0.19	0.220	2.52
InvestGrade	230	0.170	0.376	43	0.186	0.394	0.016	0.25	0.085	1.27
Yield Spread	230	1.523	1.325	43	1.610	1.348	0.087	0.39	0.467	2.01
Log(Debt Size)	230	5.761	1.353	43	6.369	1.408	0.609	2.62	0.978	4.00
Maturity	230	45.652	27.8	43	43.953	25.1	-1.699	-0.40	-8.016	-1.80
Revolver	230	0.483	0.501	43	0.349	0.482	-0.134	-1.66	-0.041	-0.48
Term Loan	230	0.357	0.480	43	0.349	0.482	-0.008	-0.10	-0.154	-1.83
PerfPricing	230	0.557	0.498	43	0.442	0.502	-0.115	-1.38	0.164	1.89
<i>Non-IFRS countries (Control sample)</i>										
D_ACov	666	0.935	0.246	759	0.984	0.125	0.049	4.62		
Num_ACov	666	2.796	1.422	759	2.905	1.029	0.109	1.64		
D_ACov_IS	666	0.835	0.372	759	0.887	0.317	0.052	2.81		
Num_ACov_IS	666	1.938	1.347	759	1.372	0.966	-0.567	-9.02		
D_ACov_BS	666	0.568	0.496	759	0.742	0.438	0.174	6.99		
Num_ACov_BS	666	0.857	0.917	759	1.534	1.138	0.676	12.41		
Investment Rstr	666	0.302	0.459	759	0.076	0.266	-0.225	-11.13		
Asset Sale Rstr	666	0.359	0.480	759	0.167	0.374	-0.192	-8.32		
Equity Issue Rstr	666	0.209	0.407	759	0.090	0.286	-0.119	-6.31		
Debt Issue Rstr	666	0.215	0.411	759	0.108	0.311	-0.107	-5.47		
Prepayment Rstr	666	0.117	0.322	759	0.075	0.264	-0.042	-2.67		
D_Secured	666	0.392	0.489	759	0.545	0.498	0.154	5.87		
D_Rating	666	0.452	0.498	759	0.216	0.412	-0.236	-9.66		
InvestGrade	666	0.117	0.322	759	0.049	0.215	-0.068	-4.64		
Yield Spread	666	1.814	1.251	759	1.434	1.093	-0.380	-6.07		
Log(Debt Size)	666	4.805	1.437	759	4.436	1.430	-0.369	-4.85		
Maturity	666	46.805	25.0	759	53.123	23.7	6.318	4.88		
Revolver	666	0.524	0.500	759	0.431	0.496	-0.093	-3.53		
Term Loan	666	0.374	0.484	759	0.520	0.500	0.147	5.61		
PerfPricing	666	0.514	0.500	759	0.235	0.424	-0.279	-11.27		

**Panel B: Bond sample**

Variable	Pre-adoption period			Post-adoption period			Difference (Post-Pre)		Diff-in-diff (IFRS-Non-IFRS)	
	N	Mean	Std Dev	N	Mean	Std Dev	Mean	t	Mean	t
<i>IFRS countries(Treatment sample)</i>										
D_ACov	373	0.217	0.413	833	0.104	0.306	-0.113	-4.72	-0.099	-3.29
Num_ACov	373	0.595	1.291	833	0.204	0.689	-0.391	-5.51	-0.118	-1.26
D_ACov_IS	373	0.155	0.363	833	0.062	0.242	-0.093	-4.52	-0.057	-2.16
Num_ACov_IS	373	0.271	0.655	833	0.079	0.351	-0.192	-5.31	-0.114	-2.34
D_ACov_BS	373	0.204	0.403	833	0.088	0.283	-0.116	-5.03	-0.037	-1.30
Num_ACov_BS	373	0.324	0.679	833	0.125	0.429	-0.200	-5.22	-0.004	-0.07
Investment Rstr	229	0.013	0.114	174	0.006	0.076	-0.007	-0.78	-0.022	-1.95
Asset Sale Rstr	373	0.595	0.492	833	0.221	0.415	-0.374	-12.80	-0.052	-1.49
Equity Issue Rstr	229	0.148	0.356	174	0.017	0.131	-0.131	-5.14	-0.006	-0.20
Debt Issue Rstr	229	0.188	0.391	174	0.017	0.131	-0.171	-6.16	-0.067	-1.97
Cross Default	373	0.692	0.462	833	0.715	0.451	0.024	0.83	0.023	0.66
Merger Rstr	373	0.649	0.478	833	0.624	0.485	-0.025	-0.82	0.230	6.62
Prior Claim Rstr	373	0.426	0.495	833	0.131	0.337	-0.295	-10.48	-0.026	-0.76
D_Secured	373	0.021	0.145	833	0.000	0.000	-0.021	-2.86	0.008	0.80
D_Rating	373	0.753	0.432	833	0.753	0.432	-0.001	-0.02	0.145	4.54
InvestGrade	373	0.576	0.495	833	0.562	0.496	-0.015	-0.47	-0.002	-0.04
Yield Spread	373	1.900	2.690	833	2.673	3.175	0.773	4.36	1.399	6.49
Log(Debt Size)	373	5.945	1.114	833	5.944	1.251	-0.001	-0.01	0.167	2.02
Maturity	373	138.975	91.0	833	107.923	87.0	-31.053	-5.55	-0.760	-0.12
Subordinated	373	0.064	0.246	833	0.018	0.133	-0.046	-3.42	0.035	1.84
Callable	373	0.534	0.500	833	0.298	0.458	-0.236	-7.77	0.079	2.22
Convertible	373	0.129	0.335	833	0.082	0.274	-0.047	-2.38	-0.020	-0.81
<i>Non-IFRS countries (Control sample)</i>										
D_ACov	927	0.273	0.446	1,716	0.259	0.438	-0.014	-0.79		
Num_ACov	927	0.885	1.567	1,716	0.611	1.315	-0.273	-4.52		
D_ACov_IS	927	0.230	0.421	1,716	0.194	0.396	-0.036	-2.13		
Num_ACov_IS	927	0.415	0.785	1,716	0.338	0.842	-0.077	-2.35		
D_ACov_BS	927	0.251	0.434	1,716	0.172	0.378	-0.079	-4.66		
Num_ACov_BS	927	0.469	0.829	1,716	0.273	0.634	-0.196	-6.27		
Investment Rstr	671	0.004	0.067	567	0.019	0.138	0.015	2.35		
Asset Sale Rstr	927	0.769	0.422	1,716	0.446	0.497	-0.323	-17.61		
Equity Issue Rstr	671	0.224	0.417	567	0.099	0.299	-0.125	-6.12		
Debt Issue Rstr	671	0.207	0.406	567	0.104	0.306	-0.103	-5.09		
Cross Default	927	0.629	0.483	1,716	0.630	0.483	0.001	0.05		
Merger Rstr	927	0.803	0.398	1,716	0.548	0.498	-0.255	-14.34		
Prior Claim Rstr	927	0.565	0.496	1,716	0.296	0.457	-0.269	-13.69		
D_Secured	927	0.043	0.203	1,716	0.013	0.115	-0.030	-4.11		
D_Rating	927	0.814	0.389	1,716	0.669	0.471	-0.145	-8.51		
InvestGrade	927	0.433	0.496	1,716	0.420	0.494	-0.013	-0.64		
Yield Spread	927	2.986	2.986	1,716	2.360	3.025	-0.625	-5.12		
Log(Debt Size)	927	5.431	0.881	1,716	5.263	1.167	-0.168	-4.16		
Maturity	927	137.224	88.9	1,716	106.932	80.1	-30.293	-8.64		
Subordinated	927	0.154	0.361	1,716	0.073	0.260	-0.081	-6.06		
Callable	927	0.712	0.453	1,716	0.397	0.489	-0.315	-16.58		
Convertible	927	0.162	0.368	1,716	0.135	0.341	-0.027	-1.86		

## **Table 4: Difference-in-difference analysis on usage of accounting covenants**

This table reports our multivariate regression results for difference-in-difference analysis. Panel A reports the results for baseline analysis for the loan and bond combined sample, loan sample, and bond sample separately. We use Probit model for regressions on the binary variable  $D\_ACov$  and OLS model for regressions on the natural logarithm of  $1+Num\_ACov$ . Marginal effects are reported for all Probit models and regression coefficients are reported for OLS models.  $D\_ACov$  is a dummy variable indicating that the debt contract contains at least one accounting-based covenant.  $Num\_ACov$  is the total number of accounting covenants contained in a debt contract.  $Post\_IFRS$  is defined as one for observations from the IFRS countries and with fiscal year ends on or after mandatory adoption date, and zero otherwise.  $Size$  is the natural logarithm of market capitalization (in million US dollars).  $MTB$  is market capitalization to book value of equity.  $Leverage$  is total debt divided by total assets.  $ROA$  is EBITDA divided by total assets.  $Tangibility$  is net PP&E divided by total assets.  $USFiling$  is a dummy variables indicating that a firm has SEC filings available, i.e. when the firm has public equity, ADR, or debt listed in the US.  $Loan\ Indicator$  is defined as one if the debt is a loan, and zero otherwise. Other variables are as defined in Table 3. Panel B reports the regression results after excluding US firms from the sample. In Panel C, we require a constant sample in addition to excluding US firms as done in Panel B. To be included in the constant sample, we require a firm to issue at least one debt in pre-adoption period and a debt in post-adoption periods if the firm is located in an IFRS country and a firm to issue at least two debts during the sample period if the firm is located in a non-IFRS country. In Panel D, we use alternative definitions for accounting covenants. In columns titled “Income Statement/Performance Covenants”,  $D\_ACov\_IS$  and  $Num\_ACov\_IS$  are used as dependant variables.  $D\_ACov\_IS$  is a dummy variable indicating that the debt contract contains at least one accounting covenant based on income statement items, such as dividend restriction, interest coverage ratio, fixed charge ratio, debt service coverage, etc.  $Num\_ACov\_IS$  is the total number of accounting covenants based on income statement items. In columns titled “Balance Sheet/Capital Covenants”,  $D\_ACov\_BS$  and  $Num\_ACov\_BS$  are used as dependant variables.  $D\_ACov\_BS$  is a dummy variable indicating that the debt contract contains at least one accounting covenant solely based on balance sheet items, such as current ratio, quick ratio, leverage ratio, net worth, etc.  $Num\_ACov\_BS$  is the total number of accounting covenants solely based on balance sheet items. In columns titled “Ex. Dividend Rstr for ACov”, we exclude dividend restrictions when counting accounting-based covenants. Panel E reports robustness results based on employing one of the following approaches: (i) Kernel propensity score matching difference-in-difference method, where IFRS countries that adopted IFRS in years other than 2005 are excluded from this analysis; (ii) standard errors computed from bootstrapping technique that re-samples data 1000 times and estimates bootstrapped standard errors clustered by industry; and (iii) standard errors clustered at the country level. Note that for the first two approaches, we use OLS model for regressions on both  $D\_ACov$  and  $Num\_ACov$ . The table reports marginal effects for all Probit models, regression coefficients for all OLS models, and  $z$ - or  $t$ -statistics in parentheses. Standard errors are clustered by industry (2-digit SIC) unless otherwise stated. All regressions include country fixed effects and year (calendar year of debt issuance date) fixed effects. In Panels B to E, coefficients for control variables are omitted for brevity. All continuous variables are Winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles. \*\*\*, \*\*, and \* indicate significance at 1%, 5%, and 10% levels, respectively.

**Table 4 (contd)**

**Panel A: Baseline analysis**

	Probit: D_ACov			OLS: Log (1+Num_ACov)		
	Loan & Bond (1)	Loan (2)	Bond (3)	Loan & Bond (4)	Loan (5)	Bond (6)
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS</b>	<b>-0.264***</b> <b>(-4.63)</b>	<b>-0.175***</b> <b>(-5.47)</b>	<b>-0.110***</b> <b>(-4.01)</b>	<b>-0.141***</b> <b>(-3.98)</b>	<b>-0.187***</b> <b>(-3.30)</b>	<b>-0.127***</b> <b>(-3.63)</b>
Leverage	0.074 (1.03)	0.022 (1.31)	-0.012 (-0.24)	0.041 (0.70)	0.065 (0.91)	-0.025 (-0.32)
Size	-0.059*** (-4.34)	-0.002 (-0.93)	-0.038*** (-4.82)	-0.056*** (-5.39)	-0.025** (-2.01)	-0.074*** (-5.31)
MTB	-0.002 (-0.52)	-0.001** (-2.55)	0.002 (0.86)	-0.002 (-0.72)	-0.006* (-1.78)	0.004 (1.24)
ROA	0.863*** (7.73)	0.046 (1.31)	0.342*** (4.17)	0.656*** (7.85)	0.449*** (3.28)	0.386*** (2.96)
Tangibility	-0.062 (-1.01)	-0.028*** (-2.64)	-0.007 (-0.20)	0.023 (0.59)	-0.070 (-1.41)	0.071 (1.32)
USFiling	0.085** (2.02)	0.008 (1.38)	0.063*** (2.83)	0.114*** (4.29)	0.085* (1.81)	0.124*** (4.29)
D_Secured	0.117* (1.72)	0.004 (0.66)	0.044 (0.73)	0.052 (1.36)	0.007 (0.23)	0.235 (1.64)
D_Rating	0.164*** (4.81)	0.001 (0.15)	0.057*** (3.41)	0.195*** (6.84)	0.064** (2.55)	0.200*** (6.57)
InvestGrade	-0.261*** (-7.29)	-0.008 (-1.04)	-0.162*** (-9.44)	-0.280*** (-8.57)	-0.268*** (-6.72)	-0.298*** (-7.87)
Yield Spread	0.073*** (9.50)	0.003 (1.17)	0.027*** (5.45)	0.063*** (8.85)	0.014 (1.14)	0.052*** (7.34)
Log(Debt Size)	0.013 (0.76)	-0.003 (-1.24)	0.001 (0.10)	0.013 (1.12)	-0.024* (-1.74)	0.025 (1.27)
Log(Maturity)	-0.050** (-2.23)	0.009*** (2.71)	-0.045*** (-2.58)	-0.044*** (-3.31)	0.043** (2.06)	-0.076*** (-3.89)
Loan Indicator	0.765*** (14.71)			0.755*** (20.17)		
Revolver		0.002 (0.44)			-0.006 (-0.14)	
Term Loan		-0.005 (-1.09)			0.040 (1.10)	
PerfPricing		0.015** (2.47)			0.160*** (5.19)	
Subordinated			0.128*** (3.26)			0.249*** (4.58)
Callable			0.012 (0.49)			0.072** (2.61)
Convertible			-0.139*** (-7.39)			-0.391*** (-8.23)
Fixed effects	Country; Year	Country; Year	Country; Year	Country; Year	Country; Year	Country; Year
N	5,547	1,698	3,849	5,547	1,698	3,849
Pseudo/Adj. R <sup>2</sup>	60.0%	33.5%	43.9%	62.8%	23.2%	43.7%



**Table 4 (contd)**

**Panel B: Excluding US firms**

	Probit: D_ACov			OLS: Log (1+Num_ACov)		
	Loan & Bond (1)	Loan (2)	Bond (3)	Loan & Bond (4)	Loan (5)	Bond (6)
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS</b>	<b>-0.289***</b> <b>(-5.38)</b>	<b>-0.219***</b> <b>(-5.87)</b>	<b>-0.112***</b> <b>(-4.04)</b>	<b>-0.183***</b> <b>(-4.93)</b>	<b>-0.251***</b> <b>(-3.87)</b>	<b>-0.119***</b> <b>(-3.50)</b>
N	4,191	1,223	2,968	4,191	1,223	2,968
Pseudo/Adj. R <sup>2</sup>	59.6%	34.7%	44.3%	65.1%	25.6%	42.2%
	All control variables included					
Fixed effects	Country; Year	Country; Year	Country; Year	Country; Year	Country; Year	Country; Year

**Panel C: Constant sample excluding US firms**

	Probit: D_ACov			OLS: Log (1+Num_ACov)		
	Loan & Bond (1)	Loan (2)	Bond (3)	Loan & Bond (4)	Loan (5)	Bond (6)
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS</b>	<b>-0.299***</b> <b>(-5.05)</b>	<b>-0.382***</b> <b>(-4.87)</b>	<b>-0.094***</b> <b>(-3.92)</b>	<b>-0.181***</b> <b>(-4.03)</b>	<b>-0.366***</b> <b>(-3.53)</b>	<b>-0.116***</b> <b>(-2.71)</b>
N	3,283	920	2,363	3,283	920	2,363
Pseudo/Adj. R <sup>2</sup>	62.8%	37.8%	48.8%	67.5%	26.4%	44.6%
	All control variables included					
Fixed effects	Country; Year	Country; Year	Country; Year	Country; Year	Country; Year	Country; Year

**Table 4 (contd)**

**Panel D: Alternative definitions on accounting covenants**

	Probit: D_ACov			OLS: Log (1+Num_ACov)		
	Loan & Bond	Loan	Bond	Loan & Bond	Loan	Bond
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Income Statement/Performance Covenants</b>						
<b>Post_IFRS</b>	<b>-0.202***</b> <b>(-4.59)</b>	<b>-0.309***</b> <b>(-4.65)</b>	<b>-0.048***</b> <b>(-2.86)</b>	<b>-0.105***</b> <b>(-4.38)</b>	<b>-0.196***</b> <b>(-3.15)</b>	<b>-0.072***</b> <b>(-3.35)</b>
N	5,547	1,698	3,849	5,547	1,698	3,849
Pseudo/Adj. R <sup>2</sup>	58.2%	24.4%	52.3%	60.9%	43.3%	43.5%
<b>Balance Sheet/Capital Covenants</b>						
<b>Post_IFRS</b>	<b>-0.117***</b> <b>(-3.56)</b>	<b>-0.107</b> <b>(-1.11)</b>	<b>-0.072***</b> <b>(-4.01)</b>	<b>-0.053*</b> <b>(-1.77)</b>	<b>-0.018</b> <b>(-0.27)</b>	<b>-0.079***</b> <b>(-2.91)</b>
N	5,547	1,698	3,849	5,547	1,698	3,849
Pseudo/Adj. R <sup>2</sup>	37.4%	32.0%	40.9%	45.9%	50.7%	38.0%
<b>Ex. Dividend Rstr from ACov</b>						
<b>Post_IFRS</b>	<b>-0.239***</b> <b>(-4.41)</b>	<b>-0.181***</b> <b>(-3.71)</b>	<b>-0.082***</b> <b>(-3.63)</b>	<b>-0.111***</b> <b>(-3.78)</b>	<b>-0.108*</b> <b>(-1.96)</b>	<b>-0.097***</b> <b>(-3.60)</b>
N	5,547	1,698	3,849	5,547	1,698	3,849
Pseudo/Adj. R <sup>2</sup>	55.5%	24.6%	40.3%	64.8%	25.0%	37.8%
All control variables included						
Fixed effects	Country; Year					

**Table 4 (contd)**

**Panel E: Robustness analysis**

<b>Kernel Propensity Score Diff-in-Diff</b>						
	OLS: D_AcCov			OLS: Log (1+Num_AcCov)		
	Loan & Bond	Loan	Bond	Loan & Bond	Loan	Bond
	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
Post	0.118 (1.13)	0.286 (1.66)	0.053 (1.01)	0.137 (1.22)	0.418* (1.77)	0.063 (1.25)
<b>Post_IFRS</b>	<b>-0.136***</b> <b>(-3.80)</b>	<b>-0.205***</b> <b>(-4.35)</b>	<b>-0.152***</b> <b>(-3.25)</b>	<b>-0.156***</b> <b>(-4.37)</b>	<b>-0.248***</b> <b>(-3.55)</b>	<b>-0.138***</b> <b>(-3.39)</b>
N	5,480	1,673	3,784	5,480	1,673	3,784
Adj. R <sup>2</sup>	53.7%	33.0%	35.4%	53.8%	38.5%	38.4%
<b>Bootstrap</b>						
	OLS: D_AcCov			OLS: Log (1+Num_AcCov)		
	Loan & Bond	Loan	Bond	Loan & Bond	Loan	Bond
	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS</b>	<b>-0.130***</b> <b>(-3.09)</b>	<b>-0.141***</b> <b>(-3.10)</b>	<b>-0.107***</b> <b>(-3.09)</b>	<b>-0.141***</b> <b>(-2.88)</b>	<b>-0.187***</b> <b>(-2.66)</b>	<b>-0.127***</b> <b>(-2.75)</b>
N	5,547	1,698	3,849	5,547	1,698	3,849
Adj. R <sup>2</sup>	63.6%	15.4%	42.3%	62.8%	23.2%	43.7%
<b>Cluster by country</b>						
	Probit: D_AcCov			OLS: Log (1+Num_AcCov)		
	Loan & Bond	Loan	Bond	Loan & Bond	Loan	Bond
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS</b>	<b>-0.264***</b> <b>(-3.46)</b>	<b>-0.175**</b> <b>(-2.32)</b>	<b>-0.110***</b> <b>(-3.27)</b>	<b>-0.141**</b> <b>(-2.43)</b>	<b>-0.187</b> <b>(-1.62)</b>	<b>-0.127***</b> <b>(-3.31)</b>
N	5,547	1,698	3,849	5,547	1,698	3,849
Pseudo/Adj. R <sup>2</sup>	60.0%	33.5%	43.9%	62.8%	23.2%	43.7%
All control variables included						
Fixed effects	Country; Year					

**Table 5: Effect of degree of IFRS departure from prior domestic standards**

This table splits the treatment effect into countries with high and low values based on difference between domestic GAAP index and IFRS, as measured by either the *Bae Total Index* or *Bae Acct Index*.  $Post\_IFRS_{Index\_H}$  ( $Post\_IFRS_{Index\_L}$ ) is defined as one for observations from the IFRS countries with a high (low) value of *Bae Total Index* or *Bae Acct Index* and with fiscal year ends on or after mandatory adoption date, and zero otherwise. The table reports marginal effects for all Probit models, regression coefficients for all OLS models, and  $z$ - or  $t$ -statistics (in parentheses) based on standard errors clustered by industry (2-digit SIC). Country and year (calendar year of debt issuance date) fixed effects are included. The table also reports  $p$ -values of  $\chi^2$ -test or  $F$ -test from testing the null hypothesis of whether  $Post\_IFRS_{Index\_H} = Post\_IFRS_{Index\_L}$  and clustering standard errors by industry. Control variables as defined in Table 4 are included in the regressions, but their coefficients are omitted for brevity. \*\*\*, \*\*, and \* indicate significance at 1%, 5%, and 10% levels, respectively.

	Probit: D_ACov			OLS: Log (1+Num_ACov)		
	Loan & Bond	Loan	Bond	Loan & Bond	Loan	Bond
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Bae Total Index</b>						
$Post\_IFRS_{Index\_H}$	<b>-0.333***</b> (-4.69)	<b>-0.992***</b> (-8.11)	<b>-0.122***</b> (-4.73)	<b>-0.180***</b> (-3.69)	<b>-0.499**</b> (-2.64)	<b>-0.171***</b> (-3.58)
$Post\_IFRS_{Index\_L}$	<b>-0.183***</b> (-3.30)	<b>-0.002</b> (-0.26)	<b>-0.067**</b> (-2.51)	<b>-0.110***</b> (-2.87)	<b>-0.064</b> (-1.01)	<b>-0.094**</b> (-2.49)
<i>Test for difference [p-value]:</i>						
$Post\_IFRS_{Index\_H} = Post\_IFRS_{Index\_L}$	[0.01]	[0.00]	[0.00]	[0.16]	[0.05]	[0.10]
N	5,547	1,698	3,849	5,547	1,698	3,849
Pseudo/Adj. $R^2$	60.0%	35.1%	44.1%	62.8%	23.5%	43.7%
<b>Bae Acct Index</b>						
$Post\_IFRS_{Index\_H}$	<b>-0.313***</b> (-3.93)	<b>-0.427***</b> (-4.59)	<b>-0.119***</b> (-4.15)	<b>-0.153***</b> (-3.20)	<b>-0.379**</b> (-2.41)	<b>-0.127***</b> (-3.05)
$Post\_IFRS_{Index\_L}$	<b>-0.220***</b> (-4.12)	<b>-0.050*</b> (-1.76)	<b>-0.082***</b> (-3.19)	<b>-0.133***</b> (-3.40)	<b>-0.094</b> (-1.63)	<b>-0.127***</b> (-3.04)
<i>Test for difference [p-value]:</i>						
$Post\_IFRS_{Index\_H} = Post\_IFRS_{Index\_L}$	[0.13]	[0.02]	[0.03]	[0.69]	[0.11]	[0.99]
N	5,547	1,698	3,849	5,547	1,698	3,849
Pseudo/Adj. $R^2$	60.0%	33.8%	44.0%	62.8%	23.3%	43.7%
All control variables included						
Fixed effects Country; Year						

**Table 6: Banks vs. Non-banks**

In this table, we split the treatment effect into banking and non-banking industries. Firms with 2-digit SIC code between 60 and 61 are defined as operating in banking industries. The sample used in this table additional includes financial firms which were initially excluded from our sample.  $Post\_IFRS_{Bank}$  is defined as one for observations from the IFRS countries operating in banking industries and with fiscal year ends on or after mandatory adoption date, and zero otherwise.  $Post\_IFRS_{non-Bank}$  is defined as one for observations from the IFRS countries operating in non-banking industries and with fiscal year ends on or after mandatory adoption date, and zero otherwise. The table reports marginal effects for all Probit models, regression coefficients for all OLS models, and  $z$ - or  $t$ -statistics (in parentheses) based on standard errors clustered by industry (2-digit SIC). Country and year (calendar year of debt issuance date) fixed effects are included in all regressions. We also report  $p$ -values of  $\chi^2$ -test or  $F$ -test by comparing coefficients of  $Post\_IFRS_{Bank}$  with  $Post\_IFRS_{non-Bank}$  and clustering standard errors by industry. Control variables are as defined in Table 4 and their coefficients are omitted for brevity. All continuous variables are Winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles. \*\*\*, \*\*, and \* indicate significance at 1%, 5%, and 10% levels, respectively.

	Probit: D_ACov			OLS: Log (1+Num_ACov)		
	Loan & Bond	Loan	Bond	Loan & Bond	Loan	Bond
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS<sub>Bank</sub></b>	<b>-0.240***</b>	<b>-0.641***</b>	<b>-0.086***</b>	<b>-0.037</b>	<b>-0.626***</b>	<b>-0.022</b>
	(-7.66)	(-4.35)	(-4.89)	(-1.43)	(-8.16)	(-0.86)
<b>Post_IFRS<sub>non-Bank</sub></b>	<b>-0.148**</b>	<b>-0.203***</b>	<b>-0.055</b>	<b>-0.118***</b>	<b>-0.176***</b>	<b>-0.083**</b>
	(-2.37)	(-6.38)	(-1.60)	(-4.10)	(-2.91)	(-2.31)
<i>Test for difference [p-value]:</i>						
<b>Post_IFRS<sub>Bank</sub></b> <b>=Post_IFRS<sub>non-Bank</sub></b>	<b>[0.02]</b>	<b>[0.03]</b>	<b>[0.04]</b>	<b>[0.02]</b>	<b>[0.00]</b>	<b>[0.09]</b>
N	7,615	1,896	5,719	7,615	1,896	5,719
Pseudo/Adj. R <sup>2</sup>	55.9%	27.3%	38.9%	61.5%	23.6%	38.8%
	All control variables included					
	Indicators for banking industries included					
Fixed effects	Country; Year					

## Table 7: Non-accounting covenant use

Panels A and B report difference-in-difference regression results on the use of non-accounting covenants as well as on the ratio of accounting to non-accounting covenants for loan and bond samples, respectively. Covenants on investment restriction, asset sale restriction, equity issue restriction, and debt issue restriction are common to both loan and bond contracts. Columns “Investment Rstr”, “Asset sale Rstr”, “Equity Issue Rstr”, and “Debt Issue Rstr” report the Probit regression results on  $D\_NACov$ , which is defined as one if the debt contract contains at least one non-accounting covenant from the specified type, and zero otherwise. Covenant on prepayment restriction is specific to loan contracts. Column “Prepayment Rstr” reports the Probit regression results on  $D\_NACov$ , which is defined as one if the loan contract contains at least one prepayment restriction, and zero otherwise. Covenants on cross default provision, merger restriction, and prior claim restriction are specific to bond contracts. Columns “Cross Default”, “Merger Rstr”, and “Prior Claim Rstr” report the Probit regression results on  $D\_NACov$ , which is defined as one if the bond contract contains at least one covenant from the specified type, and zero otherwise. Column “Ordered Probit (NACov\_Types)” presents Ordered Probit regression results where the dependant variable is the sum of dummy variables indicating different types of non-accounting covenants as described above.  $NACov\_Types$  includes five non-accounting covenant types for the loan sample and seven non-accounting covenant types for the bond sample. In the columns titled “Acct to Non-acct ratio”, we run OLS regressions on the natural logarithm of the ratio of accounting to non-accounting covenants, defined as  $(1+Num\_ACov)/(1+Num\_NACov)$ , where  $Num\_NACov$  is the total number of covenants minus the number of accounting covenants  $Num\_ACov$ .  $Post\_IFRS$  is defined as one for observations from the IFRS countries and with fiscal year ends on or after mandatory adoption date, and zero otherwise. In Panels C and D, we repeat the analysis in Panels A and B by splitting the treatment effect into countries with high and low values for  $Bae\ Total\ Index$ , as defined in Table 5. See Tables 4 and 5 legends for definitions on other variables. The table reports marginal effects for all Probit models, regression coefficients for all Odered Probit and OLS models, and  $z$ - or  $t$ -statistics (in parentheses) based on standard errors clustered by industry (2-digit SIC). Firm-level control variables, debt-level control variables, and country and year (calendar year of debt issuance date) fixed effects, as in Table 4, are included in all regressions, but are not reported for brevity. All continuous variables are Winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles. \*\*\*, \*\*, and \* indicate significance at 1%, 5%, and 10% levels, respectively.

**Panel A: Non-accounting covenants for loans**

	Probit: D_NACov					Ordered Probit: NACov_Types	OLS: Log (Ratio)
	Investment Rstr	Asset Sale Rstr	Equity Issue Rstr	Debt Issue Rstr	Prepayment Rstr	Five Non-acct Types	Acct to Non-acct ratio
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS</b>	<b>0.011</b> <b>(0.22)</b>	<b>0.191</b> <b>(1.23)</b>	<b>0.345**</b> <b>(2.54)</b>	<b>0.244*</b> <b>(1.66)</b>	<b>-0.033</b> <b>(-0.70)</b>	<b>0.565*</b> <b>(1.76)</b>	<b>-0.254</b> <b>(-1.65)</b>
N	1,698	1,698	1,698	1,698	1,698	1,698	1,698
Pseudo/Adj. R <sup>2</sup>	39.3%	22.2%	22.9%	22.3%	35.6%	27.1%	61.1%

Country fixed effects and year fixed effects included

All control variables included

**Panel B: Non-accounting covenants for bonds**

	Probit (D_NACov)							Ordered Probit: NACov_Types	OLS: Log (Ratio)
	Investment Rstr	Asset Sale Rstr	Equity Issue Rstr	Debt Issue Rstr	Cross Default	Merger Rstr	Prior Claim Rstr	Seven Non-acct Types	Acct to Non-acct ratio
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS</b>	<b>-0.001</b> <b>(-0.87)</b>	<b>-0.060</b> <b>(-1.30)</b>	<b>-0.034***</b> <b>(-2.97)</b>	<b>-0.066***</b> <b>(-2.76)</b>	<b>-0.066</b> <b>(-1.10)</b>	<b>0.207***</b> <b>(3.22)</b>	<b>-0.133***</b> <b>(-4.47)</b>	<b>-0.494***</b> <b>(-2.62)</b>	<b>-0.007</b> <b>(-0.13)</b>
N	1,641	3,849	1,641	1,641	3,849	3,849	3,849	1,641	3,849
Pseudo/Adj. R <sup>2</sup>	35.6%	48.8%	50.8%	40.8%	15.7%	58.1%	57.2%	15.8%	41.8%

Country fixed effects and year fixed effects included  
All control variables included



**Panel C: Non-accounting covenants in loans by GAAP distance measured using Bae Total Index**

	Probit: D_NACov					Ordered Probit: NACov_Types	OLS: Log (Ratio)
	Investment Rstr	Asset Sale Rstr	Equity Issue Rstr	Debt Issue Rstr	Prepayment Rstr	Five Non-acct Types	Acct to Non-acct ratio
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS</b> <sub>Index_H</sub>	<b>0.418**</b> (2.40)	<b>0.396</b> (1.60)	<b>0.547**</b> (2.01)	<b>0.644**</b> (2.53)		<b>1.494***</b> (3.26)	<b>-1.018***</b> (-3.99)
<b>Post_IFRS</b> <sub>Index_L</sub>	<b>-0.041</b> (-1.46)	<b>0.091</b> (0.56)	<b>0.219</b> (1.64)	<b>0.054</b> (0.39)	<b>-0.027</b> (-0.50)	<b>0.115</b> (0.31)	<b>0.047</b> (0.32)
<i>Test for difference [p-value]:</i>							
<b>Post_IFRS</b> <sub>Index_H</sub> = <b>Post_IFRS</b> <sub>Index_L</sub>	[0.00]	[0.23]	[0.28]	[0.02]		[0.01]	[0.00]
N	1,698	1,698	1,698	1,698	1,698	1,698	1,698
Pseudo/Adj. R <sup>2</sup>	39.6%	22.3%	23.0%	22.8%	35.5%	27.3%	61.5%
Country fixed effects and year fixed effects included All control variables included							

**Panel D: Non-accounting covenants in bonds by GAAP distance measured using Bae Total Index**

	Probit (D_NACov)							Ordered Probit: NACov_Types	OLS: Log (Ratio)
	Investment Rstr	Asset Sale Rstr	Equity Issue Rstr	Debt Issue Rstr	Cross Default	Merger Rstr	Prior Claim Rstr	Seven Non- acct Types	Acct to Non-acct ratio
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS<sub>Index_H</sub></b>	<b>-0.001</b> <b>(-0.76)</b>	<b>-0.099*</b> <b>(-1.70)</b>	<b>-0.020</b> <b>(-0.77)</b>	<b>-0.069</b> <b>(-1.60)</b>	<b>0.099</b> <b>(1.30)</b>	<b>0.217***</b> <b>(2.61)</b>	<b>-0.142***</b> <b>(-3.61)</b>	<b>-0.038</b> <b>(-0.14)</b>	<b>-0.041</b> <b>(-0.49)</b>
<b>Post_IFRS<sub>Index_L</sub></b>		<b>-0.032</b> <b>(-0.58)</b>			<b>-0.215***</b> <b>(-2.82)</b>	<b>0.178***</b> <b>(2.58)</b>	<b>-0.107***</b> <b>(-2.74)</b>	<b>-0.785***</b> <b>(-3.22)</b>	<b>0.019</b> <b>(0.42)</b>
<i>Test for difference [p-value]:</i>									
<b>Post_IFRS<sub>Index_H</sub>= Post_IFRS<sub>Index_L</sub></b>		<b>[0.30]</b>			<b>[0.00]</b>	<b>[0.60]</b>	<b>[0.41]</b>	<b>[0.03]</b>	<b>[0.36]</b>
N	1,641	3,849	1,641	1,641	3,849	3,849	3,849	1,641	3,849
Pseudo/Adj. R <sup>2</sup>	35.3%	48.8%	49.8%	39.5%	16.1%	58.1%	57.2%	15.9%	41.8%
Country fixed effects and year fixed effects included									
All control variables included									

**Table 8: Enforcement effects**

In Panel A, we split the treatment effect into countries with high and low enforcement based on regulatory quality index in Kaufmann et al. (2009). High enforcement group includes countries with regulatory quality index higher than sample median and low enforcement group includes countries with regulatory quality index lower or equal to sample median. Sample median is calculated using IFRS countries only.  $Post\_IFRS_{ENF\_H}$  is defined as one for observations from the high enforcement IFRS countries and with fiscal year ends on or after mandatory adoption date, and zero otherwise.  $Post\_IFRS_{ENF\_L}$  is defined as one for observations from the low enforcement IFRS countries and with fiscal year ends on or after mandatory adoption date, and zero otherwise. We also report  $p$ -values of  $\chi^2$ -test or  $F$ -test by comparing coefficients of  $Post\_IFRS_{ENF\_H}$  with  $Post\_IFRS_{ENF\_L}$  and clustering standard errors by industry. In Panel B, we split the treatment effect into countries within and outside European Union and the former is further split into those with and without bundled enforcement, as classified by Christensen et al. (2013a).  $Post\_IFRS_{EU\_ENF}$  is defined as one for observations from EU countries with bundled enforcement and with fiscal year ends on or after mandatory adoption date, and zero otherwise.  $Post\_IFRS_{EU\_nonENF}$  is defined as one for observations from EU countries that do not have bundled enforcement and with fiscal year ends on or after mandatory adoption date, and zero otherwise.  $Post\_IFRS_{non-EU}$  is defined as one for observations from the IFRS countries but outside European Union ( $EU=0$ ) and with fiscal year ends on or after mandatory adoption date, and zero otherwise. We also report  $p$ -values of  $\chi^2$ -test or  $F$ -test by comparing coefficients of  $Post\_IFRS_{EU\_ENF}$  and  $Post\_IFRS_{EU\_nonENF}$  with  $Post\_IFRS_{non-EU}$  and clustering standard errors by industry. See Table 1, Panel B for definitions on *Regulatory Quality*, *EU*, *EU\_ENF*, and *EU\_nonENF*. The table reports marginal effects for all Probit models, regression coefficients for all OLS models, and  $z$ - or  $t$ -statistics (in parentheses) based on standard errors clustered by industry (2-digit SIC). Country and year (calendar year of debt issuance date) fixed effects are included in all regressions. We use the full sample as defined in Table 4, Panel A for the regressions. Panel B reports results for only sample of bonds, as there are insufficient observations to estimate coefficients for the sample of loans. Firm-level control variables, debt-level control variables, and country and year (calendar year of debt issuance date) fixed effects, as in Table 4, are included in all regressions, but are not reported for brevity. All continuous variables are Winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles. \*\*\*, \*\*, and \* indicate significance at 1%, 5%, and 10% levels, respectively.

**Panel A: Regulatory quality index**

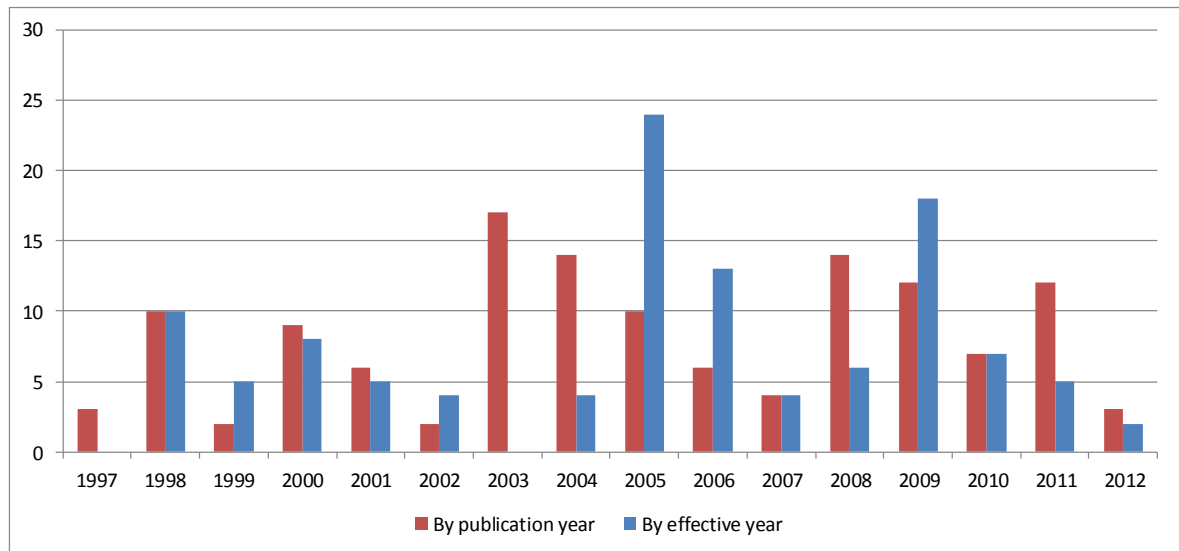
	Probit: D_ACov			OLS: Log (1+Num_ACov)		
	Loan & Bond	Loan	Bond	Loan & Bond	Loan	Bond
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS<sub>ENF_H</sub></b>	<b>-0.232**</b>	<b>-0.040*</b>	<b>-0.089**</b>	<b>-0.139**</b>	<b>-0.151*</b>	<b>-0.118**</b>
	(-2.35)	(-1.79)	(-2.08)	(-2.50)	(-1.68)	(-2.15)
<b>Post_IFRS<sub>ENF_L</sub></b>	<b>-0.276***</b>	<b>-0.462***</b>	<b>-0.105***</b>	<b>-0.142***</b>	<b>-0.237**</b>	<b>-0.135***</b>
	(-4.33)	(-4.32)	(-3.81)	(-3.40)	(-2.50)	(-3.09)
<i>Test for difference [p-value]:</i>						
<b>Post_IFRS<sub>ENF_H</sub> = Post_IFRS<sub>ENF_L</sub></b>	<b>[0.67]</b>	<b>[0.02]</b>	<b>[0.74]</b>	<b>[0.96]</b>	<b>[0.56]</b>	<b>[0.80]</b>
N	5,547	1,698	3,849	5,547	1,698	3,849
Pseudo/Adj. R <sup>2</sup>	60.0%	33.9%	43.9%	62.8%	23.1%	43.7%
All control variables included						
Country fixed effects and year fixed effects included						

**Panel B: Debt issuances by non-EU firms and EU firms with concurrent or non-concurrent enforcement changes**

	Probit: D_ACov			OLS: Log (1+Num_ACov)		
	Loan & Bond	Loan	Bond	Loan & Bond	Loan	Bond
	<i>M. E.</i>	<i>M. E.</i>	<i>M. E.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
<b>Post_IFRS<sub>EU_ENF</sub></b>	<b>-0.214***</b> (-3.26)	<b>-0.031</b> (-1.59)	<b>-0.077**</b> (-2.46)	<b>-0.136***</b> (-2.71)	<b>-0.107</b> (-1.31)	<b>-0.107*</b> (-1.90)
<b>Post_IFRS<sub>EU_nonENF</sub></b>	<b>-0.350***</b> (-4.92)	<b>-0.994***</b> (-13.31)	<b>-0.121***</b> (-4.64)	<b>-0.178***</b> (-3.47)	<b>-0.569***</b> (-3.18)	<b>-0.164***</b> (-3.87)
<b>Post_IFRS<sub>non-EU</sub></b>	<b>-0.147</b> (-1.39)		<b>-0.071*</b> (-1.96)	<b>-0.079</b> (-1.30)	<b>0.076</b> (0.56)	<b>-0.108*</b> (-1.70)
<i>Test for difference [p-value]:</i>						
<b>Post_IFRS<sub>EU_ENF</sub> = Post_IFRS<sub>non-EU</sub></b>	<b>[0.56]</b>		<b>[0.94]</b>	<b>[0.50]</b>	<b>[0.28]</b>	<b>[0.99]</b>
<b>Post_IFRS<sub>EU_nonENF</sub> = Post_IFRS<sub>non-EU</sub></b>	<b>[0.03]</b>		<b>[0.06]</b>	<b>[0.22]</b>	<b>[0.01]</b>	<b>[0.50]</b>
<b>Post_IFRS<sub>EU_ENF</sub> = Post_IFRS<sub>EU_nonENF</sub></b>	<b>[0.02]</b>	<b>[0.00]</b>	<b>[0.01]</b>	<b>[0.47]</b>	<b>[0.02]</b>	<b>[0.33]</b>
N	5,547	1,698	3,849	5,547	1,698	3,849
Pseudo/Adj. R <sup>2</sup>	60.0%	34.8%	44.0%	62.8%	23.6%	43.7%
All control variables included						
Country fixed effects and year fixed effects included						

## Figure 1: New IFRS statements and amendments

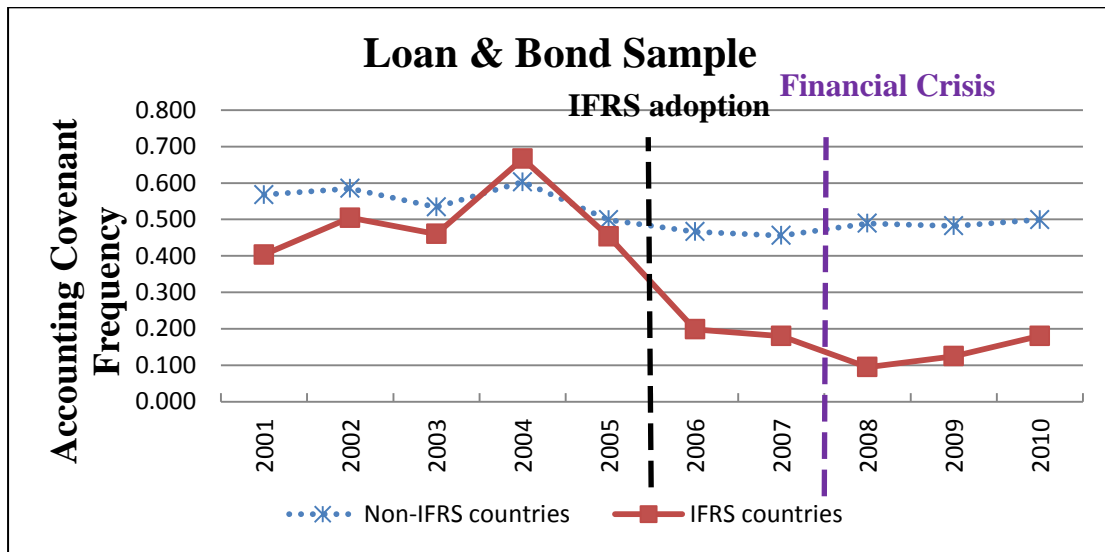
This figure plots the histogram of new statements and amendment to existing statements issued by IFRS between 1997 and 2012. Changes to multiple accounting standards from the issuance of a new standard or amendment of a standard are counted as a single change.



**Figure 2: Accounting covenant use over time**

In Panel A (B), the red solid line labelled “IFRS countries” plots the mean value of  $D\_ACov$  ( $Num\_ACov$ ) for debt (loans and bonds) issued by firms domiciled in IFRS-adopting countries. The blue dotted line labelled “Non-IFRS countries” plots the mean value of  $D\_ACov$  ( $Num\_ACov$ ) for debt issued by firms domiciled in countries that did not mandate IFRS adoption during the sample period.  $D\_ACov$  is a dummy variable indicating that the debt contract contains at least one accounting-based covenant.  $Num\_ACov$  is the total number of accounting covenants contained in a debt contract. The vertical line “IFRS adoption” indicates the date when IFRS was mandated in the treatment sample (December 2005). The line “Financial Crisis” indicates the date when the recent financial crisis started (July 2007).

**Panel A: Average accounting covenant frequency**



**Panel B: Average accounting covenant intensity**

