Effect of Mandatory IFRS Adoption on Accounting-based Prediction Models for CDS Spreads

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Abstract

In this study, we examine the effects of mandatory IFRS adoption on accounting-based prediction models of CDS spreads for a sample of 292 firms in 16 countries. In our examination, we estimate the models for both financial and nonfinancial firms before and after mandatory IFRS adoption. We find that mean and median absolute percentage prediction errors are larger for both financial and non-financial firms after mandatory IFRS adoption. We also estimate accounting-based prediction models of CDS spreads separately for financial and non-financial US firms as a benchmark. Although US firms also show an increase in the mean and median absolute percentages of prediction errors over the same period, our findings from regressions that use a difference-in-difference design indicate that the increase is significantly greater for firms in countries that adopted IFRS mandatorily. We also find that in the post-adoption period, prediction errors are larger for firms in countries with weaker institutions such as low levels of property rights and more restrictive access to credit.

Key words: International financial reporting standards, credit markets

1 Introduction

The primary research question we address is whether mandatory adoption of International Financial Reporting Standards (IFRS) affect accounting-based prediction models on the spreads of credit default swaps (CDS). To address this question, we calculate prediction errors based on CDS spreads from models estimated before and after 2005 when 16 countries adopted IFRS. We also examine whether the prediction errors in the pre- and post-adoption periods differ because of a country's institutional legal and regulatory framework in which a firm is domiciled.

The mandatory adoption of IFRS in 2005 substantially affected the financial reporting of firms around the world. There is a large body of literature that examines the effects of mandatory adoption of IFRS on the quality of financial reporting, the benefits to equity capital markets, and the comparability of accounting measures—as reflected in equity prices—between firms in countries that adopted IFRS mandatorily and US firms. However, to date there is little research that examines the effects of IFRS adoption on the informativeness of accounting measures for debt markets. Accounting measures are particularly important to participants in the debt market because, unlike equity, only a small percentage of corporate debt is publicly traded.[1] Not only does accounting information play a significant role in determining debt contracting terms at loan origination, but it plays a significant monitoring and contracting role thereafter because little other direct information is available to investors. Providing evidence on the effects of accounting information on the debt market as evidenced by CDS spreads is important for obtaining a fuller picture of the economic effect of IFRS in light of the fact that the amount of debt financing far exceeds the amount of equity financing throughout the world (Henderson et al. (2006)).

To address our primary research question, we estimate a credit risk model that relates CDS spreads to the accounting-based measures of the size, leverage, profitability, and interest coverage for financial and nonfinancial IFRS firms before and after mandatory IFRS adoption. The advent of CDS trading in the 1990s represented a major innovation in financial markets that enabled credit

[1] In the US, Rauh and Sufi (2010) provides evidence that, on average, publicly traded debt accounts for approximately 10% of all corporate debt.

investors to have access to timely credit information that was not otherwise available. Relative to CDS spreads, models that link accounting measures to credit ratings or other measures of credit risk have less utility to investors because measures such as credit ratings are updated infrequently, which contrasts with CDS spreads that are updated daily or even on an intra-day basis. Because the application of IFRS is not the only reason for potential changes in the predictability of CDS spreads after IFRS adoption, we also estimate these models for financial and non-financial US firms obtain prediction errors that serve as a benchmark. We then estimate regressions that use a difference-in-differences research design to assess whether changes in predictability for IFRS firms before and after IFRS adoption differ from those for the benchmark US sample. We find that the mean and median absolute percentage prediction errors are larger for both financial and nonfinancial firms after mandatory IFRS adoption. Although US firms also show an increase in their mean and median absolute percentage prediction errors over the same period, our findings from the regression analysis indicate that the increase is significantly larger for firms in countries that adopted IFRS mandatorily. The findings indicate that accounting measures based on IFRS are less informative to participants in the debt market than those based on domestic accounting standards.

Prior studies of the equity markets find that the capital market benefits that follow mandatory IFRS adoption are more likely to accrue to firms in countries with strong legal and regulatory enforcement as well as for firms in countries with well-developed capital markets (Daske et al. (2008), Christensen et al. (2013), Holthausen (2009), Burgstahler et al. (2006), Ball et al. (2003)). These findings motivate us to assess whether the prediction errors in the pre- and post-adoption periods differ for IFRS firms depending on the size and complexity of a country's credit market and several institutional factors such as the strengths of auditing and reporting standards and investor property rights as well as the ease of access to credit. We find that differences in prediction errors are smaller following IFRS adoption for firms in countries with stronger auditing and reporting standards and stronger investor property rights, and in countries where firms have relatively easy access to credit. Taken together, these findings indicate that the extent to which capital market

benefits accrue to firms after mandatory IFRS adoption depends on the strength of the legal and regulatory enforcement and the extent of debt market's development in the country in which a firm is domiciled.

We also conduct an analysis to determine whether there are decreases in the incremental explanatory power of a model that comprises only accounting measures. We do this analysis in an effort to determine the source of different inferences we draw from those obtained in Bhat et al. (2014), who conclude that there was no change in the relevance of credit risk for firms in countries after the mandatorythe mandatory IFRS adoption. In the analysis, we regress the residuals from a first-stage CDS regression that includes country and year fixed effects, standard deviation in stock returns, and S&P credit ratings on only the accounting measures. We estimate four residual regressions, one each for pre- and post-IFRS adoption for financial and nonfinancial firms in the mandatory IFRS sample and the US sample. Findings from the four first-stage regressions indicate that the relevance of credit risk in a model that excludes accounting measures remains unchanged following the mandatory adoption of IFRS. The findings from the residual regressions indicate that between the pre- and post-adoption periods the model's explanatory power falls for IFRS financial and nonfinancial firms relative to the benchmark sample. Thus, the creditthe credit risk relevance of accounting measures lessens after the mandatory adoption of IFRS, which is consistent with evidence from our main tests that show an increase in prediction errors from an accounting-based prediction model.

Our study contributes to the literature in four ways. First, although there are a few concurrent studies that examine the effects of IFRS adoption on debt markets—including credit ratings and CDS spreads— ours is the first to provide evidence that the predictability of CDS spreads that arise solely from accounting measures lessens following mandatory IFRS adoption. This finding contrasts with the findings in Bhat et al. (2014) who show that the relevance of credit risk in CDS spread regressions with accounting measures and additional variables remains unchanged in the period surrounding the mandatory IFRS adoption; Bhat et al. (2016) show an improved transparency by using the CDS term structure; and the findings in Florou et al. (2015) show that

the relevance of credit risk based on regressions of credit ratings increases following mandatory IFRS adoption. Second, we provide complementary evidence to that in Ball et al. (2015) and Chen et al. (2015) who show a significant decrease in the number of accounting-based debt covenants for new debt issues after mandatory IFRS adoption. Third, we develop a firm-year measure based on the absolute value of the prediction error from the accounting-based model on CDS spreads that enables us to examine whether country-level measures of legal and regulatory enforcement play a role in the extent to which accounting model-based prediction errors lessen after mandatory IFRS adoption. Fourth, our findings extend the literature that provides evidence of limited financial reporting benefits from IFRS adoption for the equity markets (Capkun et al. (2012); Ahmed et al. (2013); Daske et al. (2013)) to the debt markets.

2 Background, related literature and hypothesis development

There is a substantial number of studies that examine the effects that are associated with mandatory adoption of IFRS on accounting quality (Ahmed et al. (2013)), benefits to the equity capital market (Daske et al. (2008); Armstrong et al. (2010); DeFond et al. (2011); Brochet et al. (2012); Daske et al. (2013)), and the comparability of accounting measures with those of firms in countries that have not adopted IFRS (Barth et al. (2012); Cascino and Gassen (2015)) and those of firms in IFRS countries before and after IFRS adoption (Yip and Young (2012)). Evidence from these studies is somewhat mixed; the differences are likely attributable to differences in research design and sample firms.

The evidence from the studies on the benefits and comparability are based on the equity markets. Although the evidence on accounting quality is based on non-market measures such as earnings smoothing and equity market measures such as value relevance, whether the benefits to the capital market from increases in accounting quality apply to the debt markets remains unclear. Because the objectives of debt and equity investors likely differ, the way in which each

set of investors uses financial statement information likely differs as well.

A primary objective of debt holders is to assess the credit worthiness of borrowers. They make such assessments using accounting information provided by the borrowers and publicly available information to estimate firms' credit risk (Duffie and Lando (2001)). In doing so, they assess the firm's distance to default and loss given default as well as its ability to generate cash. The value of risky debt depends on the likelihood of default. The finance literature traditionally views bonds as contingent claims on firms' assets (e.g., Black and Scholes (1973); Merton (1974)). Under this view, an insufficient level of assets relative to outstanding debt triggers default. Thus, leverage is a primary determinant of credit risk as it measures the distance to default (Merton (1974)). Furthermore, current earnings predict future performance and cash flows (Dechow (1994); Dechow et al. (1998)). Consistent with this view, accounting measures such as size, leverage, and profitability ratios are associated with measures of credit risk and financial distress (Altman (1968); Zmijewski (1984); Duffie and Lando (2001)). Relatedly, prior literature shows that accounting measures have explanatory power incremental to market-based measures of risk in predicting bankruptcy. For example, Shumway (2001) and Das et al. (2009) find that the accounting measures such as profitability and leverage are not subsumed by market risk measures such as past excess stock returns and the standard deviation in past stock returns. Because accounting information is useful for assessing credit risk, accounting measures play a key role in determining the terms in debt contracting terms (Smith and Warner (1979)) and a key role in monitoring the borrower's financial condition and performance subsequent to loan origination.[2]

Mandatory adoption of IFRS in 2005 substantially affected the financial reporting requirements for firms in adopting countries, such as changes in rules regarding measurement and recognition of measures in the financial statements as well as rules regarding financial disclosures. Moody's (2008) examines the practical effect of IFRS for rated issuers in the European Union and finds that although IFRS generally require more comprehensive reporting than domestic standards and

[2]Consistent with this, Easton et al. (2009) provide evidence that accounting information on earnings is important to investors in publicly traded bonds.

are designed to better portray the economic substance of debt-like obligations, the comparability of financial statement measures does not appear to increase after the mandatory IFRS adoption. Moody's (2008) cites a lack of standardization and inconsistent interpretation of the standards as the primary causes. For example, the introduction of IFRS resulted in greater use of fair value measurement (Barth et al. (2014)). Fair value information provides early warning signals if asset values decline and risk increases (Linsmeier (2011)). However, in the absence of liquid market prices, fair values depend on managerial judgments when firms use discretion to 'market-to-model' and are thus subject to potential opportunism (Kothari et al. (2010)).

There are reasons to expect IFRS—relative to domestic standards—to provide participants in the credit market with financial reporting information that is more useful for assessing a firm's creditworthiness. First, relative to domestic standards in European Union countries, IFRS mandate more comprehensive financial reporting. For example, domestic standards in Spain and Italy do not require publicly listed firms to include a cash flow statement in their annual reports. As another example, relative to most countries' domestic standards, IFRS require firms to provide greater information on their pension obligations, leased assets, and changes in provisions/accruals for liabilities of uncertain timing or amount. Second, relative to most countries' domestic standards—particularly those with code law traditions—IFRS emphasize principles rather than rules with an aim to better portray the underlying economics of transactions based on their substance rather than their legalistic form. As a result, they mandate that financing transactions that often are treated as off-balance sheet items under domestic standards are more likely to be reported as on-balance sheet debt, which potentially affects leverage ratios. For example, IFRS require that a special purpose entity used in a securitization be consolidated when the substance of the transaction indicates that the entity is controlled by the transferor of the assets. In addition, whenever the sale of a financial asset leaves substantially all the risks and rewards of ownership with the 'seller,' the 'seller' must continue to recognize the asset on its balance sheet with the sale proceeds reported as a liability. In the same vein, when minority shareholders hold put options that give them the right to sell their interest to the majority shareholder, these instruments are regarded as financial

liabilities under IFRS rather than off-balance sheet commitments.[3]

On the other hand, there are reasons to expect the contrary. First, Moody's notes the lack of standardization, inconsistent interpretations, spurious volatility, and undue complexity of the measures in financial statements (Moody's (2008)). Although in some instances, reporting choices are potentially more transparent and the users of financial statements can easily adjust for differences in the choices that firms make; in other instances, IFRS allows more flexibility and choice of methods that are less transparent to the users of financial statements that potentially makes it more difficult to compare reported accounting measures.[4] For example, during our sample period, IFRS permit the choice between proportionate consolidation and the one-line equity method for jointly controlled entities. This choice affects accounting ratios, such as leverage, that participants in the credit market likely use when assessing a firm's creditworthiness. However, a user of financial statements cannot easily adjust leverage ratios to reflect different consolidation choices that firms make, thereby reducing comparability. Furthermore, Moody's (2008) mentions several instances in which firms appear to have applied the same underlying accounting principle differently. The first example is the 'control' principle of *IAS 27*: "Consolidated and Separate Financial Statements" (IASB (2003)), that) that requires that a parent company consolidates all entities that it controls. However, because *IAS 27* did not initially provide guidance on whether de facto control exists, there was diversity in practice regarding the application of the standard (Moody's (2008)). The second example concerns the decision as to whether an arrangement constitutes a lease, which is supposed to be based on the substance of the transaction. This decision requires the exercise of judgment in each specific case. For example, some firms include arrangements related to the provision of satellite transmission services or ship charters as leases and others exclude them.

When firms adopt IFRS for the first time they need to disclose the reconciliations of earnings

[3]As another illustration, while treasury shares are often presented as marketable securities under many countries' domestic standards, IFRS require that they be deducted from shareholders' equity.

[4]For example, until 2008 IFRS permitted the choice between capitalizing the interest that was incurred during construction and expensing it. This choice affected the reported interest expense that was used in interest coverage ratios. Furthermore, IFRS require that received and paid interest, received dividends, and paid income taxes be reported under different headings in the cash flow statement. However, users of financial statements can easily adjust their calculations of the ratios that involve cash flows to reflect these differences in firms' choices.

and equity book values based on the local GAAP to those based on IFRS. Because adoption of IFRS represents a substantial shift in financial reporting for many firms, *IFRS 1* "First-time Adoption of International Financial Reporting Standards" (IASB (2004)) require firms to provide a reconciliation of net income and equity book value based on domestic standards to those based on IFRS for the year preceding adoption and provide sufficient detail to enable users to understand the reconciliations. Examining these reconciliations, Barth et al. (2014) find substantial differences in net incomes and equity book values based on domestic standards and IFRS in the year of adoption. For example, the average adjustment needed to restate the 2004 net income based on domestic standards to net income based on IFRS as a percentage of equity market value amount to 5% for financial and 2% for nonfinancial firms. These adjustments mean that the reported accounting amounts that affect how firms determine leverage and profitability ratios are likely from amounts that they would have reported if domestic standards had continued to be applied. Presumably, the participants in the debt market of various countries would have developed models that relate the accounting measures to credit risk based on knowledge of a particular country's institutions and accounting standards. Whether such models continue to be efficacious in the presence of differences in income and equity book values based on domestic standards and IFRS is a largely unexplored empirical matter.

Consistent with Moody's numerous concerns and the evidence in Barth et al. (2014), Ball et al. (2015) find evidence of a significant decrease in the number of accounting-based debt covenants and an increase in the number of non-accounting covenants for new public and private debt issues after mandatory IFRS adoption. Ball et al. (2015) hypothesize that IFRS may sacrifice debt contracting usefulness in favor of other objectives, such as providing fair value information in the financial statements that is potentially useful to equity investors but not to debt holders. The concern that debt investors could suffer a loss of information in countries that mandate IFRS stems from the fact that many of the countries have sophisticated and well-developed debt markets (Henderson et al. (2006)) and the commensurate accounting systems that have evolved over time to meet the information needs of the providers of debt capital. To the extent that IFRS provide

information with more of an equity investor focus than that associated with domestic standards, IFRS adoption could result in a reduction in information to debt market participants. Relatedly, for a sample of bank loans made in countries that mandate IFRS, Chen et al. (2015) find anfind an increase in loan interest rates, a reduction in the use of accounting-based financial covenants, an increase in the likelihood of collateralization, and a reduction in loan maturity after IFRS adoption.[5]

Although the Ball et al. (2015), Chen et al. (2015), and Barth et al. (2014) findings suggest that debt contracting usefulness of accounting amounts based on IFRS could be lower than those based on domestic standards, Florou et al. (2015) find that the relevance of financial statements to credit, defined as the ability of accounting measures to explain credit ratings, is higher following the mandatory adoption of IFRS. The increase in credit relevance is particularly pronounced for higher risk speculative-grade issuers, and for IFRS adopters with large first-time reconciliations.

Whether an increase in credit relevance of financial statement measures based on credit ratings translates into an increase in their relevance based on market credit measures is an open question. A study closely related to ours, Bhat et al. (2014) compare the credit risk information conveyed by accounting measures before and after the mandatory adoption of IFRS. Bhat et al. (2014) measure credit risk with CDS spreads and focus on three fundamental accounting metrics that inform about credit risk: earnings, leverage, and book value equity. Using a difference-in-differences research design, they find that adoption of IFRS did not change the credit risk informativeness of accounting measures. There are two key differences between Bhat et al. (2014) and our study. First, while Bhat et al. (2014) focus on the explanatory power of their model—adjusted R^2—we develop a firm-year measure to predict credit risk that permits us to directly test whether country-level institutional features affect the decision-usefulness of accounting measures for CDS spreads. Second, and perhaps more significantly, our predictability tests are based solely on the accounting

[5]Not all studies conclude that mandatory adoption of IFRS reduced the usefulness of accounting information to debt contracts. For example, Florou and Kosi (2015) find that firms in countries that mandate IFRS are more likely to issue public rather than private debt, and that public debt issues have lower yields than before IFRS adoption. Taken at face value, these findings indicate that IFRS adoption and improvements in accounting quality made accessing the public debt markets less costly.

measures we consider. In contrast, the evidence in Bhat et al. (2014) is based on comparisons of R^2 from models that include additional variables beyond the accounting measures. Hence, the total explanatory power of their model may have remained unchanged with the relation between non-accounting measures and CDS spreads increasing and that between accounting measures and CDS spreads decreasing. We address this issue in a later section of our study.

In summary, based on the discussion above, we have no directional prediction for the change in accounting model-based prediction errors of CDS spreads for firms in countries that mandate IFRS. As a result, the alternative hypothesis underlying our tests is that accounting model-based prediction errors of CDS spreads change after mandatory IFRS adoption.

Prior research shows that the extent to which mandatory adoption of IFRS is likely to affect the usefulness of financial statement information for both equity and debt investors is likely to depend on the features of a country's financial reporting system beyond simply differences between IFRS and domestic standards. Such differences include the way in which IFRS is interpreted in a particular country as well as that country's legal, contractual, and regulatory frameworks. These frameworks differ in the incentives and constraints they offer firms. As noted earlier, the principle-based focus of IFRS could bring economic benefits to the capital markets—including debt markets—if their application reduces private information. However, the application of IFRS involves judgment and the exercise of managerial discretion relative to a set of accounting standards that are more rules based. How firms use this discretion depends on the interplay between incentives and countries' legal, contractual, and regulatory environments (Ball et al. (2000), Ball et al. (2003), Daske et al. (2008), Christensen et al. (2013), Daske et al. (2013)). Such differences in countries' legal and regulatory environments motivate us to examine whether any changes in prediction errors before and after mandatory adoption of IFRS can be explained by these differences. We do not predict how the extents of legal or regulatory enforcements affect prediction errors. This is because higher levels of legal or regulatory enforcements can limit the discretionary information that arises from the application of IFRS and is helpful to debt holders, but at the same time, it can help to ensure managers apply IFRS so as to increase the credit relevance of

accounting measures. How these two effects net is a matter we test empirically. Nonetheless, if the inference based on findings from prior studies in the equity markets showing capital market benefits following mandatory IFRS adoption are more likely to accrue to firms in countries with strong legal and regulatory enforcement (Daske et al. (2008), Christensen et al. (2013)) applies) applies to the debt markets, then we expect the prediction errors to be lower for firms in countries with strong legal and regulatory enforcement. In addition, because prior research also indicates that thethat the benefits to capital markets are more likely to accrue to firms in countries with more developed ones (Holthausen (2009), Burgstahler et al. (2006), Ball et al. (2003)), then we also expect the prediction errors to be lower for firms within countries with greater access to debt capital.

3 Research design

To address our primary research question, we estimate a credit risk model that relates CDS spreads to the accounting-based measures of firm size, leverage, interest coverage, and profitability separately for financial and nonfinancial firms before and after the mandatory IFRS adoption. We select CDS spreads as our economic outcome variable because they are a summary measure of a firm's credit risk that is frequently applied in empirical studies that examine the determinants of credit risk (Blanco et al. (2005); Longstaff et al. (2005); Zhu (2006)). Prior literature finds that CDS spreads are timely and contain non-public information due to information leakage. CDS spreads lead rating changes (Hull et al. (2004); Norden and Weber (2004)), and changes in the CDS spread have significant predictive power for changes in future stock price (Acharya and Johnson (2007)). Private information might leak from banks into the CDS market (Norden (2016)). Chava et al. (2018) show that stock prices react less to rating changes when firms are traded in the CDS market, which indicates that equity investors pay increasingly more attention to the CDS market than to rating agencies. Overall, the evidence is consistent with timely price discovery in CDS markets even relative to equity markets and rating agencies.

We select size, leverage, profitability, and interest coverage of firms as accounting measures because the accounting and finance research has extensively used them as determinants to credit risk (Fisher (1959); Altman (1968); Zmijewski (1984); Duffie and Lando (2001); Shumway (2001)). In addition, as in prior research, focusing on these measures permits us to use parsimonious models that relate accounting ratios to credit risk.[6]

We estimate accounting-based prediction models for CDS spreads separately for financial and nonfinancial firms before and after mandatory IFRS adoption. We calculate our measure of absolute prediction errors in three steps for each industry grouping. First, we separately pool the firm-years of the IFRS and benchmark sample that occur in either the pre- or postor the post-adoption periods. This produces four distinct subsamples for each industry. We estimate the relations between CDS spreads and accounting ratios within these four subsamples. Following prior research (Callen et al. (2009), Andrade et al. (2011)), we use the natural logarithm of the CDS spread ($Ln(CDS)$) as the dependent variable rather than its level because CDS spreads tend to be skewed in the cross-section. We use the accounting measures for size, leverage, interest coverage, and profitability as explanatory variables, They are the natural logarithm of equity book value ($Ln(BV)$), the ratio of long-term debt to total assets (LEV), operating income after depreciation divided by interest expense on debt ($Interest\ coverage$), and the ratio of net income available to common shareholders to total shareholders' equity (ROE).[7] We estimate the following CDS

[6]By design, our empirical measure of credit risk predictability is based on four financial statement-based ratios. In principle, we could extend the models to include additional ratios, although doing so generally results in a significant loss in sample observations with a resulting loss in power of our tests. Our accounting-based measure of credit risk predictability also ignores the relevant information on credit risk that is disclosed in the footnotes of financial statements. This omission potentially affects the inferences we draw because IFRS mandate more comprehensive disclosures of debt-like obligations than are mandated by most countries' domestic standards. To the extent that such information is relevant to debt holders in their assessments of credit worthiness and orthogonal to improvements in recognized measures, our measure of credit risk predictability will fail to reflect such information.

[7]In robustness tests, we use different combinations of accounting variables, such as return on assets instead of return on equity, total assets instead of equity book value, and including earnings volatility and the ratio of cash flow from operations to debt, as additional explanatory variables. Although including additional variables causes significant reductions in sample size, untabulated findings from tests based on this version of equation (1) result in no change in inferences from those based on the tabulated findings. In addition, we disaggregate earnings into accruals and cash flows and find no change in inferences.

prediction model for each subsample:

$$Ln(CDS)_{i,t} = \alpha_0 + \alpha_1 Ln(BV)_{i,t} + \alpha_2 LEV_{i,t} + \alpha_3 ROE_{i,t} + \alpha_4 Interest\,coverage_{i,t} \quad (1)$$

Subscripts i and t refer to year and firm. Based on prior research, we predict the signs of α_1, α_2, α_3, α_4, and α_{53} are negative, positive, negative, and negative. Second, for each subset of sample firm-years we calculate the fitted CDS spreads, $\exp(Ln(\hat{CDS})_{i,t})$, that use the estimated relations from the first step. Third, for each firm-year, we calculate the absolute value of the difference between the fitted CDS spread obtained in the second step and the actual CDS spread and scale this difference by the actual CDS spread. The scaled absolute difference, $GAP_{i,t} \equiv \left|(\exp(Ln(\hat{CDS})_{i,t}) - CDS_{i,t})\right|/CDS_{i,t}$, is our measure of a firm-year prediction error.[8]

We then test for differences in prediction errors between the pre- and post-adoption periods for both the IFRS and benchmark samples of firms. More importantly, we also test whether the IFRS sample has a mean change in prediction errors that is incremental to that of the benchmark sample. To do this, we estimate the following equation:

$$GAP_{i,t} = \beta_0 + \beta_1 IFRS_{i,t} + \delta_0 y2005_{i,t} + \delta_1 IFRS_{i,t} * y2005_{i,t} \quad (2)$$

$IFRS$ is an indicator variable that equals one (zero) if an observation is from the IFRS (benchmark) sample; $y2005$ is an indicator variable that equals one (zero) if an observation relates to a firm-year after (before) 2005; and therefore its coefficient, δ_0, reflects the mean difference in GAP for benchmark firms before and after 2005. The key variable of interest is the interaction, $IFRS * y2005$. Its coefficient, δ_1, reflects the mean difference in GAP for IFRS firms before and after 2005 that is incremental to the mean difference that corresponds to US firms. If GAP increases, on average, more (less) for IFRS firms than US firms after 2005, then we infer there is a decrease

[8]We also calculated prediction errors based on a jack-knifing procedure in which, for each firm, we estimate a version of equation (1) that excludes that firm. Not surprisingly, the untabulated prediction errors are virtually identical to those tabulated in the text, and inferences based on them are identical to those based on the tabulated findings.

(increase) in accounting-model-based predictability following IFRS adoption.[9] Our alternative hypothesis is that δ_1 does not equal zero; that is, it is two-sided. This is because based on the discussion in section 2 there are reasons to predict that mandatory IFRS can increase or decrease the relevance of credit risk information reflected by recognized accounting measures.

Next we test the relation between county-level characteristics and the change in CDS spreads associated with mandatory IFRS adoption The country-level measures we use reflect the size and complexity of a country's credit market and several institutional factors such as the strengths of auditing and reporting standards and of investor property rights as well as the ease of access to credit. Therefore, we estimate the following equation:

$$\begin{aligned} GAP_{i,t} = \gamma_0 + \gamma_1 y2005_{i,t} + \gamma_2 PC\_GDP_{i,t} + \gamma_3 y2005_{i,t} PC\_GDPi,t \\ +\gamma_4 INSTITUTIONS_{i,t} + \gamma_5 y2005_{i,t} INSTITUTIONS_{i,t} \end{aligned} \tag{3}$$

PC_GDP is the ratio of private credit to GDP and measures the size and complexity of the credit market. Following prior research, we use the ratio of private credit to gross domestic product (GDP) as our proxy for the size, complexity, and the sophistication of the credit sector of the economy. We predict the change in prediction errors to be increasing in PC_GDP; that is, $\gamma_2 > 0$, because we expect more heterogeneity in firms' credit risk, we thus expect a firm-specific relation between its accounting measures and CDS spreads. Using the ratio of private (i.e., non-government) credit to GDP, Djankov et al. (2007) shows that the availability of credit is determined by two factors: the level of creditor protection and the existence of credit bureaus. Creditor protection allows lenders to force repayment, grab collateral, or gain control of the firm. Public or private credit bureaus collect information on borrowers and share it with lenders. Both creditor rights and credit bureaus determine the amount of credit available (Porta et al. (1998), Japelli and Pagano (2002)). We measure $INSTITUTIONS$ with a series of specific country-level measures that relate to the

[9] A maintained assumption necessary to draw such inferences is that there is no change in the underlying economic relation between CDS spreads and the economic constructs captured by the accounting measures before and after 2005. For example, we assume that the relation between a firm's economic leverage and its credit risk remains constant during the sample period.

strengths of auditing and reporting standards ($Finrep$) and of property rights ($Propertyrights$) as well as the ease of access to credit ($Accesscredit$). Each of these country-level measures is taken from the survey by the World Economic Forum (2009). Based on the discussion in section 2, we make no predictions regarding the signs of the association between these alternative country-level variables and the change in predictions, and therefore have no signed predictions for the γ_5 coefficients. All variables that relate to equations (1) and (2) are defined in the Appendix A. Appendix B contains the definitions that relate to the country-level variables in equation (3).

4 Data and sample

We obtain CDS spread data from Markit and the accounting information from Worldscope (for IFRS firms) and Compustat (for US firms). We require firm-years to have non-missing data for our main accounting variables of size, leverage, and profitability. We also impose a common sample restriction that requires each firm to have at least one observation before and after IFRS adoption. All countries in the IFRS sample adopt IFRS in the fiscal year-end of 2005. Markit covers the global CDS contracts and provides their daily CDS spreads and contract terms. Regarding the IFRS sample, Markit covers 1,439 firms in our sample countries that adopt IFRS. Out of these 1,439 firmsfirms, we find a match by company name for 877 firms in Worldscope, and after imposing data availability and common sample restrictions, the resulting sample comprises 292 firms (1,664 firm-years). After we apply similar sampling criteria to US firms, we have a benchmark US sample of 702 firms (5,774 firm-years). Table 1, panels A and B, provides a breakdown of the number of firm-year observations by year and country. The sample period ranges from 2000 to 2012. The year 2000 is the earliest for which Markit provides CDS spreads. Most firm-year observations occur in the years surrounding IFRS adoption. For IFRS firms, most sample observations are from five countries: United Kingdom, Germany, France, Australia, and the Netherlands.

4.1 CDS spreads

A CDS is a contract in which two parties enter into an agreement that the protection seller will compensate the protection buyer in the event of failure to pay or the bankruptcy of the reference entity. The protection buyer pays the protection seller a premium, or CDS spread. The CDS spread is the annual amount paid by the protection buyer to the protection seller that is denominated in basis points. For example, if the CDS spread is 108 basis points for Heidelberger Druckmaschinen, the protection buyer will pay the protection seller 108 basis points multiplied by the notional of the trade annually. If the reference entity defaults, the protection seller pays the protection buyer the par value of the reference bond in exchange for physical delivery of the bond, although settlement may also be in cash.

We focus on CDS contracts with five-year maturities because they are the most common and most liquid (Jorion and Zhang (2009); Zhang et al. (2009)). For each firm-year we obtain the earliest available spread for CDS contracts with a 5-year maturity after the reference entity's fiscal year-end. CDS contracts differ by their tier that refers to one of four levels of debt in the capital structure of the reference entity. Each tier represents a different level of seniority or preference in liquidation or bankruptcy. We retain contracts that refer to senior unsecured debt (SNRFOR) only. This is the most common tier for corporations and financial institutions in our sample.

A credit event triggers settlement under the CDS contract. Since the original ISDA Agreement in 1999, six categories of credit events have been defined: bankruptcy, failure to pay, debt restructuring, obligation default, obligation acceleration, and repudiation (Markit (2005)). The last three refer to events that typically relate to sovereign obligations. Debt restructuring is a credit event whereby the loss to the owner of the reference obligation is not obvious. The exact definitions of restructuring differ slightly around the world. In Asia, CDS contracts typically have a full restructuring clause (CR). This clause allows the protection buyer to deliver bonds of any maturity after restructuring of any form occurs. In the US, contracts typically have a modified restructuring clause (MR). This clause limits deliverable obligations to bonds with maturities of less than 30

months after a credit event. In Europe, the most prevalent document clause is modified restructuring (MM). This is a modified version of the Modified Restructuring clause whereby deliverable obligations can mature up to 60 months following the credit event. The least common document clause in the sample is no restructuring (XR) that excludes restructuring altogether from the CDS contract. The XR document clauses are more common for high-yield issuers in North America. To maximize the sample size, we retain contracts with the most common document clause in a given country. We find that the MR document clauses are most prevalent in the US and Australia, MM document clauses in Europe, and CR document clauses in Japan and Hong Kong.[10]

CDS contracts have various currency denominations. In our sample, USD and EUR are the most common. For example, BASF has contracts outstanding in 14 different currencies. We calculate the CDS spread as the average of the CDS spreads across all outstanding currencies. We also calculate alternative CDS spreads as the average CDS spreads for USD- and EUR-denominated currencies only. Because these two variables are highly correlated with each other (correlation coefficient of 0.9985), we use the first measure for our analyses.

4.2 Descriptive statistics

Table 2 presents the descriptive statistics of the main variables in the analysis for the IFRS and benchmark US samples. These variables include the natural logarithm of the CDS spread ($Ln(CDS)$), size that is measured as the natural logarithm of equity book value ($Ln(BV)$), leverage that is measured as ratio of long-term debt to total assets (LEV), profitability that is measured as the ratio of net income available to common shareholders to total shareholders' equity (ROE), interest coverage that is operating income after depreciation divided by interest expense on debt ($Interestcoverage$), and an industry indicator that equals one if the firm is nonfinancial and zero if the firm is a financial institution ($NonFinancial$). Although we do not use the CDS spread directly in our analyses, we include statistics for this variable as well. To mitigate the effect of outliers,

[10] In untabulated tests, we find that the 5-year CDS spreads of all four document clauses are very highly correlated. In robustness tests, we use the CDS spreads of MM and MR contracts as dependent variable and find very similar results.

we winsorize LEV, ROE, and BV at the top and bottom 1%. We winsorize $Interest\,coverage$ at 0 and 100 following the methodology in Blume et al. (1998). Table 2 shows that mean (median) CDS spreads are higher for US benchmark firms than for IFRS firms: 174 basis points (86 bps) versus 130 basis points (67 bps). On average, IFRS and US benchmark firms have similar leverage, profitability, and interest coverage.

Table 3, panels A and B, presents sample Pearson correlations among the variables in our analysis for the IFRS and benchmark US samples. We expect larger, more profitable, less leveraged firms as well as those with greater interest coverage to have smaller CDS spreads. All of the correlations between the equation (1) dependent variable, $Ln(CDS)$, and the four accounting variables are significant at the 5% level and have the predicted signs. Specifically, $Ln(CDS)$ is negatively correlated with $Ln(BV)$, ROE, and $Interest\,coverage$ and positively correlated with LEV. In addition, the positive correlation between $Ln(CDS)$ and $NonFinancial$ indicates that nonfinancial firms have higher CDS spreads, which supports our choice of research design of estimating separate prediction models of CDS spreads for financial and nonfinancial firms.

5 Results

5.1 CDS spread model

Table 4 presents the findings for the estimation of equation (1) for each of the four subsamples.[11] Consistent with our predictions and prior research (Merton (1974), Duffie and Lando (2001)), CDS spreads generally increase with leverage and decrease with size, profitability, and interest coverage. All the significant coefficients have the expected signs. Panel A presents the findings for nonfinancial firms. For both IFRS and US firms, $Ln(BV)$ is negatively associated with $Ln(CDS)$. The $Ln(BV)$ coefficient is significant in three of the four subsamples, but not for the IFRS-post subsample. The coefficient for LEV is significantly positive in three of the specifications. ROE is significantly and negatively associated with $Ln(CDS)$ in all four subsamples. $Interest\,coverage$

[11] Standard errors are robust and clustered by firm.

is significantly and negatively associated with $Ln(CDS)$ in all three subsamples. The insignificant coefficients have the predicted sign. The model based on the four accounting measures explains between 10% and 26% of the variation in the IFRS sample, and between 31% and 41% in the US sample.

Panel B presents the findings for financial firms. For both IFRS and US firms, $Ln(BV)$ is negatively associated with $Ln(CDS)$, and significantly so except for the post-IFRS subsample. The LEV coefficient is significant only for the pre-IFRS subsample but with a negative sign, which is the opposite of our prediction. ROE is negatively associated with $Ln(CDS)$ in three of the specifications. *Interest coverage* is negatively associated with $Ln(CDS)$ in all four specifications. The model based on the four accounting measures explains between 8 and 34% in the IFRS sample and 19 and 21% in the US benchmark sample.

5.2 Prediction errors

Table 5 presents the mean and median values of the prediction error, GAP, for nonfinancial and financial firms.[12] Panel A shows that the mean (median) GAP for the nonfinancial IFRS firms increases by 0.42 (0.11) between the pre- and post-adoption periods, that is, from 0.66 to 1.08 (0.47 to 0.58). In percentage terms, this increase amounts to a 64% (23%) increase in the mean (median) GAP. In contrast, the mean (median) GAP for the benchmark US firms increases much less over the same period, 0.11 (0.01), that is, from 0.83 to 0.94 (from 0.55 to 0.57), which represents a percentage increase of 14% (3%). Relative to the US firms, the mean (median) change for nonfinancial IFRS firms is 0.31 (0.09) higher. Thus, although average prediction errors increase for both IFRS and US firms between pre- and post-adoption periods, the increase is significantly higher for firms in countries that adopt IFRS.

The findings for the financial firms in panel B have similar inferences to those relating to the nonfinancial firms in panel A. In particular, the mean (median) GAP for the financial IFRS firms

[12]To avoid the influence of extreme prediction errors, we also conduct analyses winsorizing GAP at the top 1%. Untabulated findings indicate that the inferences based on these statistics are the same as those based on the tabulated findings.

increases by 1.42 (0.27) between the pre- and post-adoption periods, that is, from 0.44 to 1.86 (0.36 to 0.63). In percentage terms, this increase amounts to a 322% (76%) for the mean (median) GAP. In contrast, the mean (median) GAP for US firms increases much less over the same period, 0.53 (0.17), that is, from 0.60 to 1.12 (0.47 to 0.65) and represents a percentage increase of 88% (36%). Thus, relative to the US firms, the mean (median) change for financial IFRS firms is significantly (insignificantly) higher at 0.89 (0.10). The findings in panels A and B indicate that IFRS adoption is associated with a loss in predictability of the accounting measures for CDS spreads.

The large increase in GAP between the pre- and post-adoption periods for IFRS and US firms indicates the possibility that the financial crisis could affect our inferences. In particular, the financial crisis may have disproportionately affected credit markets in the EU and other non-US countries more than in the US. If this is the case, then our inference that the larger decrease in predictability of the accounting measures for CDS spreads is attributable to IFRS adoption could be confounded by the effects of the financial crisis.

To mitigate the financial crisis as a confounding factor, we re-estimate the CDS prediction model, equation (1), for each of the post-adoption period subsamples but exclude the financial crisis period, which we define as 2008.[13] Table 5, panels C and D, presents the mean and median GAP statistics for nonfinancial and financial firms by excluding the financial crisis. The mean and median increases in GAP for both IFRS and US firms in the post-period are similar in magnitude to those with the financial crisis excluded from the post-period. For example, the mean increases in GAP for nonfinancial and financial IFRS firms are 0.37 and 1.15 versus 0.42 and 1.42 when 2008 is not/is included. In addition, the mean change in GAP for nonfinancial (financial) IFRS firms is significantly higher relative to US firms at 0.32 (0.76). Thus, taking into account the effects of the financial crisis does not eliminate the relative difference in full in model-based accounting predictability of CDS spreads between IFRS and US firms following IFRS adoption.

Aggregation of all sample years in the post-adoption period —even excluding the financial

[13]We also estimated equation (1) for the post-adoption period by defining the financial crisis as 2008 and 2009, and 2007 through 2009. The inferences based on GAP statistics using these alternative definitions are the same as those using the 2008 definition.

crisis period—assumes that there are no changes in the way accounting measures map into CDS spreads following IFRS adoption. There are at least three reasons why this assumption may be unwarranted. First, the quality of accounting measures could improve over time as firms apply IFRS more consistently. Second, participants in the debt market may take time to develop a better understanding of the implications of accounting measures based on a new set of accounting standards for firms' credit risk. Third, relatedly, the findings of Ball et al. (2015) and Chen et al. (2015) indicate that parties to debt contracts shifted accounting-based covenants to non-accounting-based covenants following IFRS adoption. Therefore, once the parties became more familiar with IFRS, they could have shifted the relative mix of accounting and non-accounting-based covenants in later years.

To assess whether there are differences in GAP changes over the post-adoption period, we re-estimated the CDS prediction model, equation (1), for each of the post-adoption period subsamples using two different post-periods, 2005-2008 and 2009-2012. Table 5, panels E and F, reports mean and median GAP statistics for nonfinancial and financial firms for the pre-period and the two post-periods. Post-I refers to the initial post-adoption period and comprises the years 2005 to 2008. Post-II has the years 2009 to 2012. The panels show that the Post-II mean and median GAP values are substantially smaller than the Post-I GAP values for all groups of firms. For example, for nonfinancial IFRS firms, the mean (median) GAP values for Post-II and Post-I are 0.62 and 1.06 (0.48 and 0.64). In addition, the mean and median Post-II GAP values are both smaller or unchanged when compared to analogous pre-adoption measures for both financial and nonfinancial firms in both the IFRS and US samples. However, relative to the US benchmark sample, the mean and median changes in GAP between the pre-period and both the Post-I and Post-II periods are larger for IFRS nonfinancial and financial firms. Each of the eight differences in changes in means and medians between the IFRS and US firms are positive, with only the median difference in the Post-I period being insignificant. Taken together, the findings in panels E and F show that although there is evidence that accounting model-based predictability of CDS spreads improves over time, the improvement is less than that evidenced by the US benchmark sample.

Table 6 presents the findings from the estimation of equation (2) that permits us to test for the significance of differences in changes in GAP between IFRS and US firms reported in Table 5.[14] Columns 1, 2, and 3 give the findings separately for the combined sample and the nonfinancial and financial samples, respectively. For all three estimations, the coefficients for $IFRS$, -0.182, -0.170, and -0.156, are significantly negative that indicate the mean absolute prediction errors are smaller for IFRS firms than US firms in the pre-adoption period. In addition, for all three estimations, the coefficients for $y2005$, 0.180, 0.112, and 0.525, are significantly positive that indicates the mean absolute prediction errors are larger in the post-adoption period than in the pre-adoption period. More importantly, the coefficients for $y2005 * IFRS$, 0.463, 0.309, and 0.894, are significantly positive in all estimations. This result means that the mean absolute prediction error for IFRS firms increases by a significantly greater amount than that for the US firms between the pre- and post-adoption periods.[15]

Columns (4)-(6) of Table 6 present the findings from the separate estimations of equation (2) for the combined sample and the nonfinancial and financial samples but excluding the financial crisis. The inferences with respect to the coefficients for $IFRS$ and $y2005$ remain unchanged relative to those based on the full post-period. More importantly, the coefficients for $y2005 * IFRS$, 0.433, 0.315, and 0.761, are significantly positive in all estimations. These coefficients show that the mean absolute prediction error for IFRS firms increases by a significantly greater amount than that for the US firms between the pre- and post-adoption periods, even when the financial crisis is excluded.[16]

[14]Standard errors are robust and clustered by firm.

[15]Untabulated findings based on estimations of equation (2) using winsorized GAP measures result in the same inferences as those based on the tabulated findings.

[16]We also estimate equation (2) using only Post-I and Post-II sample years. Untabulated findings show that the mean absolute prediction error for IFRS firms increases by a significantly greater amount than that for the US firms.

5.3 Prediction errors and country characteristics

Table 7 presents the findings from the estimation of equation (3) that examines how changes in prediction errors for IFRS firms between the pre- and post-adoption periods relate to country-level institutional characteristics. The standard errors are robust and clustered by country. Table 7 includes three sets of findings. Columns 1 through 3 present the findings based on estimations that use one of the three country-level measures of $INSTITUTIONS$, strength of auditing and reporting standards ($Finrep$), strength of property rights ($Propertyrights$), and the ease of access to credit ($Accesscredit$).[17]

Consistent with the findings presented in Table 6, the findings in Table 7 show that the $y2005$ coefficient is positive (significantly so in columns 2 and 3), that is, prediction errors are higher on average for IFRS firms after 2005. Contrary to predictions, the findings also show that PC_GDP has no association with changes in GAP, as indicated by the insignificant coefficient for the interaction of $y2005$ with PC_GDP across all three specifications. Regarding the institutional variables, the findings in Table 7 show that the change in GAP is smaller after IFRS adoption for firms in countries with stronger auditing and reporting standards and stronger investor property rights, and in countries where companies have relatively easy access to credit. In particular, the coefficients for the interactions of $y2005$ with $Finrep$, $Propertyrights$, and $Accesscredit$, -0.161, -0.233, and -0.376, are significantly negative, although only marginally so for $Finrep$.[18]

5.4 Additional analyses

5.4.1 Changes in credit risk relevance

We also conduct an analysis to determine whether there are decreases in incremental explanatory power for a model that includes only accounting measures. We do this analysis in an effort to

[17] We also estimate versions of equation (3) using other alternative measures of country-level institutional variables including strength of legal rights, the ratio of private international bonds to GDP, and investor perceptions of the rule of law. Untabulated results show none of these variables is significantly related to changes in prediction errors for IFRS firms.

[18] Untabulated findings that relate to estimations that exclude observations relating to the financial crisis years yield the same inferences as those based on the full sample.

determine the source of different inferences we draw from those obtained in Bhat et al. (2014), who conclude that there was no change in credit-risk relevance for firms in countries that adopted IFRS. The models that Bhat et al. (2014) estimate include accounting measures similar to those we include. However, Bhat et al. (2014) also include industry and time fixed effects as well market-based measures of risk—notably the standard deviation in stock returns and the S&P credit rating.

To isolate the effects of changes in the relevance of credit risk that is attributable to the accounting measures we include in our primary tests, we follow a two-step process that is similar to that used in Barth et al. (2012). In the first step, we estimate a version of equation (1) that excludes our accounting measures but includes the standard deviation in stock returns, S&P rating, and year and country fixed effects. In particular, in the first step, we regress $Ln(CDS)$ on year and country fixed effects, standard deviation of stock return (STD_RET), and S&P credit rating ($RATING$):

$$Ln(CDS)_{i,t} = \alpha_0 + \alpha_1 STD\_RET_{i,t} + \alpha_2 RATING_{i,t} + \sum_m \alpha_m country\_FE + \sum_n \alpha_n year\_FE \quad (4)$$

As with equation (1), we estimate equation (4) separately for financial and nonfinancial firms in the pre- and post-adoption periods for the IFRS sample and the US benchmark sample. Then, in step two, we regress the residuals from each of the equation (4) estimations on the accounting variables, $Ln(BV)$, LEV, and ROA. To replicate the model in Bhat et al. (2014), we replace ROE with ROA and exclude $Interest\,coverage$.[19]

$$RESIDUAL_{i,t} = \alpha_0 + \alpha_1 Ln(SIZE)_{i,t} + \alpha_2 LEV_{i,t} + \alpha_3 ROA_{i,t} \quad (5)$$

We then calculate the change in the model's explanatory power, adjusted R^2, based on equation (5) between the post- and pre-adoption periods for the IFRS and US samples, and the difference in the change in R^2 between the two samples.

[19]Untabulated robustness tests give similar inferences when we use the four accounting variables in our main specification, and when we include earnings volatility as an additional explanatory variable.

The findings and inferences from equation (4) estimations indicate that the relevance of credit risk after excluding the accounting measures for IFRS and benchmark firms is essentially unchanged or increases following mandatory IFRS adoption. In particular, the adjusted R^2 is 0.68 and 0.77 (0.60 and 0.86) for the nonfinancial (financial) IFRS firms before and after IFRS adoption. Comparative measures for the US firms are 0.75 and 0.75 (0.71 and 0.76). Thus, for both the IFRS and US samples, credit risk relevance either remains unchanged or increases following mandatory adoption of IFRS.

Table 8 presents the findings that relate to the estimation of equation (5). Panel A (B) presents the findings for nonfinancial (financial) firms. Regarding nonfinancial firms, panel A shows that the adjusted R^2 falls from 0.033 to 0.020 for the IFRS firms – a decrease of 39.4% – and from 0.044 to 0.031 for the benchmark US sample – a decrease of 29.5%. Following Barth et al. (2008), we test whether the decline is significantly greater for IFRS firms using a bootstrapping procedure in which firms are randomly classified as IFRS or US firms by re-estimating equation (5) and repeating this procedure 1,000 times.[20] Untabulated findings show that the decline in adjusted R^2 is significantly greater for IFRS firms (p-value < 0.01). Regarding financial firms, panel B shows that the adjusted R^2 falls from 0.099 to -0.005 for the IFRS firms – a decrease of 105.1% – but increases from 0.016 to 0.098 for the benchmark US sample – an increase of 512.5%. In light of the sign differences, untabulated findings unsurprisingly show that the decline in adjusted R^2 is significantly greater for IFRS firms (p-value < 0.01). Hence, the credit relevance of a model based solely on accounting measures falls for IFRS firms following mandatory adoption of IFRS relative to the benchmark US sample.[21] Taken together, the findings from the credit risk relevance regressions in Table 8 provide additional evidence consistent with the findings in our main tests that show an increase in prediction errors from an accounting-based prediction model for IFRS firms. In addition, the finding that credit risk relevance based on models that exclude accounting measures increases but

[20]Because the number of IFRS and US firms differ, random assignments are based on the relative proportion of IFRS and US firms in the pre- and post-IFRS adoption periods.

[21]We also estimate equation (5) excluding the financial crisis. Untabulated findings show the same inferences as those based on tabulated findings.

credit risk relevance based on models that include only accounting measures does not indicates that the finding in Bhat et al. (2014) that no change exists in the relevance of credit risk after mandatory IFRS adoption is attributable to offsetting influences of accounting and market-based determinants.

5.4.2 Effects of earnings management, audit quality, and earnings volatility

Prior research that relates to equity markets finds that improvements in financial reporting quality following IFRS adoption are more pronounced for firms that engage in less earnings management (Barth et al. (2008), Kim et al. (2012)). In addition, if IFRS adoption provides firms with greater opportunities for earnings management because of more discretion arising from fair value accounting for example, then the increase in CDS prediction errors is likely to be concentrated among firms that engage in more earnings management. These two lines of reasoning lead us to predict that the increase in CDS prediction errors is negatively related with the extent of earnings management. Prior research also finds that improvements in financial reporting quality following IFRS adoption are more pronounced for firms whose financial statements are audited by Big 4 auditors. We test these predictions by estimating versions of equation (2) that include indicator variables for whether a firm's level of real earnings management is above the mean level for firms in its industry and for whether a firm is audited by a Big 4 auditor, and interactions of these variables with each of the variables included in equation (2). We expect that firms that engage in higher levels of earnings management have higher increases in CDS prediction errors, that is, the sign of the coefficient of the three-way interaction of each earnings management indicator variable, $y2005$ and $IFRS$, is positive. We expect the sign of the three-way interaction coefficient that relates to $Big4$ is negative. We measure real earnings management using 10 proxies used in prior literature (Roychowdhury (2006), Cohen et al. (2008), Cohen and Zarowin (2010), Zang (2012)), that are based on abnormal levels of signed and absolute values of operating cash flow, production cost, discretionary costs, and two combinations thereof. The calculation of the composite measures of real earnings management proxies follows Cohen and Zarowin (2010) as well as Zang (2012). Big

4 auditors include KPMG, PwC, EY, and Deloitte.

Regarding the estimations of earnings management, untabulated findings show that coefficients for only two (out of 10 specifications) of the interaction variables are significantly positive for nonfinancial firms.[22] Hence, we fail to find consistent evidence that IFRS firms that engage in higher levels of earnings management have higher increases in CDS prediction errors following IFRS adoption. Regarding the estimations on Big 4 auditors, untabulated findings show that the three-way interaction coefficient is insignificant for both nonfinancial and financial firms. Thus, we fail to find evidence that IFRS firms whose financial statements are audited by Big 4 auditors have lower increases in CDS prediction errors following IFRS adoption.[23]

6 Conclusion

In this study, we examine the effects of mandatory IFRS adoption on accounting-based prediction models for CDS spreads with a sample of firms in 292 firms in 16 IFRS countries. We do this by separately estimating these models for financial and nonfinancial firms before and after mandatory IFRS adoption. We find that the mean and median absolute percentage prediction errors are greater for both financial and nonfinancial firms after mandatory IFRS adoption. We also estimate accounting-based prediction models for CDS spreads separately for financial and nonfinancial US firms before and after mandatory IFRS adoption to obtain prediction errors that serve as a benchmark. Although US firms also show an increase in the mean and median absolute percentage prediction errors over the same period, the findings from regressions that use a difference-in-differences design indicate that the increase is significantly greater for firms in coun-

[22] In particular, the coefficients on the absolute value of abnormal discretionary costs and the composite measure combining signed abnormal discretionary operating cash flow, abnormal production cost, and abnormal discretionary costs load in three-way interactions. The coefficients on the other eight proxies' three-way interactions are not significant. The results are the same if we exclude the financial crisis. We do not examine earnings management for financial firms because the traditional measures do not apply to them.

[23] We also test for the possibility that firms that experience greater changes in accrual-based earnings management, real earnings-based management, and earnings volatility have greater prediction errors following IFRS adoption. Untabulated findings show no evidence of an association between changes in earnings management and volatility and prediction errors.

tries that adopted IFRS mandatorily. We also find that prediction errors for IFRS firms increase more in countries with low levels of perceived strength of financial reporting standards, property rights, and access to credit.

Taken together, our findings show that although mandatory adoption of IFRS could have increased accounting quality and provided capital market benefits to equity investors, there is no clear evidence of similar benefits for debt investors. In addition, our evidence shows that the imposition of a "one size fits all" set of accounting rules on firms in countries with different political and economic institutions might result in a loss of information that creditorsthat creditors need from financial statement information. This is potentially a reason for the findings in Ball et al. (2015) and Chen et al. (2015) that creditors in countries that adopted IFRS mandatorily changed loan contracts to rely less on accounting information.

We note the following caveats: First, our empirical measure of credit risk predictability is based on four financial statement-based ratios. In robustness tests, we extend the estimating models to include additional and alternative ratios but we cannot rule out that we omitted relevant variables. Our accounting-based measure of credit risk predictability also ignores relevant credit risk information disclosed in the footnotes of financial statements. This omission potentially affects the inferences we draw because IFRS mandates more comprehensive disclosures of debt-like obligations than is mandated by most countries' domestic standards. To the extent that such information is relevant to debt holders in their assessments of credit worthiness and orthogonal to improvements in recognized measures, our measure of credit risk predictability will fail to reflect such information. Second, a maintained assumption necessary to draw our inferences is that there is no change in the underlying economic relation between CDS spreads and the accounting measures before and after IFRS adoption. We estimate the model separately by industry and for the pre- and post periods, but we rely on the assumption that within these subsamples, the relation between a firm's economic constructs and its credit risk remain constant. Third, while the literature on price discovery in the CDS market generally finds that CDS are very timely and even contain some non-public information due to leakage, we cannot rule out that the price discovery and efficiency

in the international CDS market might be subject to adverse changes over time. Fourth, our study only considers one mechanism, earnings management, as a potential source of the deterioration in prediction errors. Even though we find no evidence in support of this mechanism, it is possible that future studies could use other measures of financial reporting quality that could provide insights into the mechanism.

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APPENDIX A: Variable definitions for firm-level variables

Variable	Description	Worldscope	Compustat
CDS spread	Five-year CDS spread that is averaged over all currencies of outstanding contracts.	n/a	n/a
Ln(CDS)	Ln(CDS spread).	n/a	n/a
BV	Total shareholder's equity in USD million that is converted with the monthly currency exchange rate, and winsorized at 1%.	wc03995	seq*1000
Ln(BV)	Ln(BV).	log(wc02999-wc03351)	log(at-lt)
LEV	Long-term debt divided by total assets, winsorized at 1%.	wc03255/wc02999	(dltt+dlc)/at
ROE	Net income available to common divided by total shareholders' equity, and winsorized at 1%.	wc01751/wc03995	ibcom/seq
ROA	Operating income after depreciation divided by total assets, and winsorized at 1%.	wc01250/wc02999	ibcom/seq
Interest coverage	Operating income after depreciation divided by interest expense on debt, and winsorized at 0 and 100.	wc01250/wc01251	oiadp/xint
NonFinancial	Indicator equals one if firm belongs to nonfinancial industry by GIC, and zero otherwise.	wc06010	ggroup
GAP	Absolute value of the difference between the fitted CDS spread and the CDS spread divided by the CDS spread.	n/a	n/a
IFRS	Indicator equals one if the firm is from an IFRS country, and zero otherwise.	n/a	n/a
y2005	Indicator equals one if the observation is in 2005 or later, and zero otherwise.	n/a	n/a
GAP_change	Difference between the average GAP in the pre- and post-period for each firm.	n/a	n/a
RATING	Numerical value assigned to letter rating from 1 (=AAA) to 21 (=C). Source: S&P Rating Express from Compustat.	n/a	n/a
STD_RET	Standard deviation of most recent 12 monthly stock returns for the fiscal year-end. Source: CRSP and Datastream.	n/a	n/a

APPENDIX B: Variable definitions for country-level variables

Variable	Description	Index values
PC_GDP	Private credit divided by GDP. Source: Djankov et al. (2007).	n/a
Finrep	Strength of auditing and reporting standards. Survey score for whether financial auditing and reporting standards regarding company financial performance in your country are weak or strong. Source: World Economic Forum, Executive Opinion Survey 2008, 2009.	Estimate of strength of reporting standards (1 = extremely weak; 7 = extremely strong).
Propertyrights	Strength of property rights. Survey score for whether property rights over financial assets are poorly defined and not protected by law; or are clearly defined and well protected by law. Source: World Economic Forum, Executive Opinion Survey 2008, 2009.	Estimate of strength of property rights (1 = are poorly defined and not protected by law; 7 = are clearly defined and well protected by law).
Accesscredit	Ease of access to credit. Survey score for whether durng the past year, obtaining credit for your company has become easier or more difficult. Source: World Economic Forum, Executive Opinion Survey 2008, 2009.	Estimate of ease of access to credit (1 = impossible; 7 = very easy).

Table 1: Sample composition by year and country
Sample of IFRS firms and benchmark firms.

Panel A: Year breakdown	N (firm-years)	Percent
2000	235	2.7%
2001	464	5.3%
2002	669	7.6%
2003	847	9.7%
2004	950	10.8%
2005	954	10.9%
2006	896	10.2%
2007	828	9.4%
2008	739	8.4%
2009	715	8.1%
2010	655	7.5%
2011	630	7.2%
2012	192	2.2%
Total	8,774	100.0%

Panel B: Country breakdown	N (firm-years)	Percent
IFRS countries		
Australia	234	9.1%
Austria	20	0.8%
Belgium	48	1.9%
Denmark	49	1.9%
Finland	69	2.7%
France	441	17.1%
Germany	356	13.8%
Hong Kong	119	4.6%
Ireland	31	1.2%
Italy	147	5.7%
Netherlands	151	5.8%
Norway	57	2.2%
Portugal	50	1.9%
Spain	89	3.4%
Sweden	125	4.8%
United Kingdom	597	23.1%
Total IFRS	2,583	100.0%
Benchmark country		
United States	6,191	100.0%

Table 2: Descriptive statistics for IFRS and benchmark firms

Sample of IFRS firms and benchmark firms. *CDS spread* is the five-year CDS spread (basis points). *Ln(CDS)* equals Ln(CDS spread in %). *BV* measures total shareholders' equity (USD million). *Ln(BV)* equals Ln(total shareholder's equity). *LEV* equals the ratio of long-term debt to total assets. *ROE* equals net income divided by total shareholders' equity. *Interest coverage* equals operating income divided by interest expense on debt. *NonFinancial* is an indicator that equals one if a firm belongs to a nonfinancial industry, and zero otherwise.

	mean	p5	p50	p95	N
IFRS firms					
CDS Spread	130	12	67	426	2,583
Ln(CDS)	-0.354	-2.081	-0.396	1.450	2,583
Ln(BV)	15.452	12.847	15.507	17.799	2,583
LEV	0.283	0.015	0.281	0.554	2,583
ROE	0.115	-0.158	0.121	0.364	2,583
Interest coverage	7.811	0.000	3.598	28.714	2,583
NonFinancial	0.776	0.000	1.000	1.000	2,583
Benchmark firms					
CDS Spread	174	19	86	600	6,191
Ln(CDS)	-0.066	-1.639	-0.146	1.792	6,191
Ln(BV)	14.846	13.016	14.770	16.953	6,191
LEV	0.348	0.061	0.324	0.709	6,191
ROE	0.103	-0.215	0.114	0.383	6,191
Interest coverage	8.358	0.143	3.968	29.957	6,191
NonFinancial	0.838	0.000	1.000	1.000	6,191

Table 3: Pearson Correlation

Sample of IFRS firms and benchmark firms. *CDS spread* is the five-year CDS spread. *Ln(CDS)* equals Ln(CDS spread). *Ln(BV)* equals Ln(total shareholders' equity). *LEV* equals the ratio of long-term debt to total assets. *ROE* equals the ratio of net income to total shareholders' equity. *Interest coverage* equals operating income divided by interest expense on debt. *NonFinancial* is an indicator that equals one if a firm belongs to nonfinancial industry, and zero otherwise. * denotes significance at 5%.

Panel A: IFRS firms	*CDS Spread*	*Ln(CDS)*	*Ln(BV)*	*LEV*	*ROE*	*Interest coverage*
CDS Spread	1.000					
Ln(CDS)	0.601*	1.000				
Ln(BV)	-0.028	-0.058*	1.000			
LEV	0.014	0.075*	-0.134*	1.000		
ROE	-0.160*	-0.212*	-0.033	0.025	1.000	
Interest coverage	-0.060*	-0.139*	-0.107*	-0.365*	0.154*	1.000
NonFinancial	0.027	0.169*	-0.206*	0.036	0.058*	0.106*

Panel B: Benchmark firms	*CDS Spread*	*Ln(CDS)*	*Ln(BV)*	*LEV*	*ROE*	*Interest coverage*
CDS Spread	1.000					
Ln(CDS)	0.711*	1.000				
Ln(BV)	-0.212*	-0.345*	1.000			
LEV	0.192*	0.247*	-0.251*	1.000		
ROE	-0.360*	-0.340*	0.069*	-0.095*	1.000	
Interest coverage	-0.182*	-0.329*	0.200*	-0.403*	0.189*	1.000
NonFinancial	0.006	0.037*	-0.108*	-0.161*	0.052*	0.058*

Table 4: Estimation of CDS prediction model

The table presents the results of the OLS estimation of the regression of *Ln(CDS)* on accounting ratios for the samples of IFRS firms and benchmark firms. Panel A presents the results for nonfinancial firms. Panel B presents the results for financial firms. *Ln(CDS)* equals Ln(CDS spread in %). *BV* measures total shareholders' equity (USD million). *Ln(BV)* equals Ln(total shareholders' equity). *LEV* equals the ratio of long-term debt to total assets. *ROE* equals net income divided by total shareholders' equity. *Interest coverage* equals operating income after depreciation divided by interest expense on debt. Robust standard errors are in parentheses and are clustered by firm. *** denotes p<0.01, **denotes p<0.05, and * denotes p<0.1.

Panel A: Nonfinancial firms		(1)	(2)	(3)	(4)
Group		IFRS	IFRS	Benchmark	Benchmark
Period		Pre	Post	Pre	Post
Dependent variable	Pred. sign	*Ln(CDS)*	*Ln(CDS)*	*Ln(CDS)*	*Ln(CDS)*
Ln(BV)	(-)	-0.100**	-0.017	-0.235***	-0.249***
		(0.035)	(0.035)	(0.027)	(0.022)
LEV	(+)	0.481	1.113*	1.475***	0.656***
		(0.374)	(0.433)	(0.256)	(0.171)
ROE	(-)	-0.833***	-0.695***	-1.170***	-0.718***
		(0.182)	(0.175)	(0.103)	(0.069)
Interest coverage	(-)	-0.010***	-0.005	-0.015***	-0.014***
		(0.003)	(0.003)	(0.003)	(0.002)
Constant		0.936	-0.018	3.058***	3.696***
		(0.577)	(0.625)	(0.432)	(0.356)
Observations		630	1,374	1,950	3,240
F Statistic		16.482	8.848	119.773	141.268
Adjusted R-squared		0.200	0.080	0.380	0.280

Table 4 (continued): Estimation of CDS prediction model

The table presents the results of the OLS estimation of the regression of *Ln(CDS)* on accounting ratios for the samples of IFRS firms and benchmark firms. Panel A presents the results for nonfinancial firms. Panel B presents the results for financial firms. *Ln(CDS)* equals Ln(CDS spread in %). *BV* measures total shareholders' equity (USD million). *Ln(BV)* equals Ln(total shareholders' equity). *LEV* equals the ratio of long-term debt to total assets. *ROE* equals net income divided by total shareholders' equity. *Interest coverage* equals operating income after depreciation divided by interest expense on debt. Robust standard errors are in parentheses and are clustered by firm. *** denotes p<0.01, **denotes p<0.05, and * denotes p<0.1.

Panel B: Financial firms		(1)	(2)	(3)	(4)
Group		IFRS	IFRS	Benchmark	Benchmark
Period		Pre	Post	Pre	Post
Dependent variable	Pred. sign	*Ln(CDS)*	*Ln(CDS)*	*Ln(CDS)*	*Ln(CDS)*
Ln(BV)	(-)	-0.197***	0.036	-0.218***	-0.093*
		(0.044)	(0.067)	(0.046)	(0.036)
LEV	(+)	-1.096***	-0.795	-0.150	-0.172
		(0.309)	(0.436)	(0.248)	(0.220)
ROE	(-)	-2.852***	-1.155	-1.329**	-1.426***
		(0.495)	(0.613)	(0.444)	(0.227)
Interest coverage	(-)	-0.012*	-0.014**	-0.007*	-0.020***
		(0.004)	(0.005)	(0.003)	(0.004)
Constant		2.465**	-0.601	3.029***	1.734**
		(0.758)	(1.180)	(0.728)	(0.570)
Observations		195	384	390	611
F Statistic		16.666	6.393	12.219	28.420
Adjusted R-squared		0.330	0.070	0.200	0.190

Table 5: Descriptive statistics of difference-in-difference of *GAP*

The table presents descriptive statistics of *GAP* that equals the absolute value of the difference between the *fitted CDS spread* and the CDS spread, scaled by the CDS spread. *Fitted CDS spread* is the exponential of the fitted value of the regressions in Table 4 for each subset of the samples of IFRS firms and benchmark firms. In Panels A and B, Pre refers to the 2000-2004 period, Post refers to the 2005-2012 period. In Panels C and D, Pre refers to the 2000-2004 period, Post refers to the 2005-2012 period but excludes the financial crisis. In Panels E and F, Pre refers to 2000-2004, Post-I refers to 2005-2008, and Post-II refers to 2009-2012. The difference in GAP is in bold if it is significant at least at the 10 percent level (two-tailed test).

Panel A: Nonfinancial firms

	Pre	Post	Difference	T-statistic
IFRS				
mean	0.66	1.08	**0.42**	5.55
p50	0.47	0.58	**0.11**	3.79
N	630	1,374		
US				
mean	0.83	0.94	**0.11**	2.73
p50	0.55	0.57	0.01	0.87
N	1,950	3,240		
Difference				
mean			**0.31**	3.73
p50			**0.09**	2.92

Panel B: Financial firms

	Pre	Post	Difference	T-statistic
IFRS				
mean	0.44	1.86	**1.42**	3.72
p50	0.36	0.63	**0.27**	5.84
N	195	384		
US				
mean	0.60	1.12	**0.53**	7.16
p50	0.47	0.65	**0.17**	4.02
N	390	611		
Difference				
mean			**0.89**	2.95
p50			0.10	1.48

Panel C: Nonfinancial firms (excluding financial crisis)

	Pre	Post	Difference	T-statistic
IFRS				
mean	0.66	1.03	**0.37**	5.07
p50	0.47	0.56	**0.09**	3.01
N	630	1,208		
US				
mean	0.83	0.88	0.06	1.35
p50	0.55	0.55	0.00	0.16
N	1,950	2,798		
Difference				
mean			**0.32**	3.89
p50			**0.09**	2.77

Panel D: Financial firms (excluding financial crisis)

	Pre	Post	Difference	T-statistic
IFRS				
mean	0.44	1.59	**1.15**	6.66
p50	0.36	0.65	**0.29**	6.14
N	195	334		
US				
mean	0.60	0.98	**0.38**	5.89
p50	0.47	0.58	**0.11**	3.11
N	390	530		
Difference				
mean			**0.76**	4.87
p50			**0.18**	3.28

Table 5 (continued): Descriptive statistics of difference-in-difference of *GAP*

The table presents descriptive statistics of *GAP* that equals the absolute value of the difference between the *fitted CDS spread* and the CDS spread, scaled by the CDS spread. *Fitted CDS spread* is the exponential of the fitted value of the regressions in Table 4 for each subset of the samples of IFRS firms and benchmark firms. In Panels A and B, Pre refers to the 2000-2004 period, Post refers to the 2005-2012 period. In Panels C and D, Pre refers to the 2000-2004 period, Post refers to the 2005-2012 period but excludes the financial crisis. In Panels E and F, Pre refers to 2000-2004, Post-I refers to 2005-2008, and Post-II refers to 2009-2012. The difference in GAP is in bold if it is significant at least at the 10 percent level (two-tailed test).

Panel E: Nonfinancial firms

				Difference		T-Statistic	
	Pre	Post I	Post II	Post I-Pre	Post II-Pre	Post I-Pre	Post II-Pre
IFRS							
mean	0.66	1.06	0.62	**0.40**	**-0.04**	9.56	-2.62
p50	0.47	0.64	0.48	**0.16**	0.01	7.59	1.37
N	630	758	616				
US							
mean	0.83	0.98	0.63	**0.16**	**-0.20**	7.36	-2.04
p50	0.55	0.64	0.47	**0.09**	**-0.08**	6.30	-2.95
N	1,950	2,039	1,201				
Difference							
mean				**0.24**	**0.16**	5.36	3.11
p50				**0.08**	**0.09**	4.47	2.76

Panel F: Financial firms

				Difference		T-Statistic	
	Pre	Post I	Post II	Post I-Pre	Post II-Pre	Post I-Pre	Post II-Pre
IFRS							
mean	0.44	1.39	0.53	**0.95**	**0.09**	4.77	6.47
p50	0.36	0.81	0.33	0.45	**-0.03**	2.50	-5.70
N	195	232	152				
US							
mean	0.60	1.09	0.50	**0.49**	**-0.10**	10.79	-5.59
p50	0.47	0.78	0.41	**0.31**	-0.07	6.38	-1.46
N	390	388	223				
Difference							
mean				**0.46**	**0.19**	3.70	2.74
p50				0.14	**0.04**	0.69	2.83

Table 6: Regression analysis of difference-in-difference of *GAP*

The table presents the results of the OLS estimation of the regression of *GAP* on *IFRS*, *y2005*, and their interaction, *y2005*IFRS*. *GAP* equals the absolute value of the difference between the *fitted CDS spread* and the CDS spread, scaled by the CDS spread. *Fitted CDS spread* is the exponential of the fitted value of the regressions in Table 4 for each subset of the samples of IFRS firms and benchmark firms. *IFRS* is an indicator that equals one if the firm is from an IFRS country. *y2005* is an indicator that equals one if the observation is in 2005 or later. Robust standard errors are in parentheses and are clustered by firm. *** denotes p<0.01, **denotes p<0.05, and * denotes p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	All firms	Nonfinancial firms	Financial firms	All firms	Nonfinancial firms	Financial firms
Time period	all sample years	all sample years	all sample years	excl. financial crisis	excl. financial crisis	excl. financial crisis
Dependent variable	*GAP*	*GAP*	*GAP*	*GAP*	*GAP*	*GAP*
IFRS	-0.182***	-0.170**	-0.156***	-0.182***	-0.170**	-0.156***
	(0.047)	(0.058)	(0.046)	(0.047)	(0.058)	(0.046)
y2005	0.180***	0.112**	0.525***	0.109**	0.055	0.385***
	(0.036)	(0.040)	(0.059)	(0.035)	(0.040)	(0.056)
*y2005*IFRS*	0.463***	0.309***	0.894**	0.433***	0.315***	0.761***
	(0.090)	(0.073)	(0.294)	(0.072)	(0.075)	(0.152)
Constant	0.789***	0.827***	0.597***	0.789***	0.827***	0.597***
	(0.032)	(0.038)	(0.033)	(0.032)	(0.038)	(0.033)
Observations	8,774	7,194	1,580	8,035	6,586	1,449
F Statistic	37.868	22.410	39.010	34.428	15.238	41.237
Adjusted R-squared	0.011	0.006	0.030	0.012	0.004	0.075

Table 7: Regression of *GAP* on country level variables

The table presents the results of the OLS estimation of the regression of *GAP* on county-level variables and the interaction between country-level variables and *y2005* for IFRS adopting firms. *GAP* equals the absolute value of the difference between the fitted CDS spread and the CDS spread, scaled by the CDS spread. *Fitted CDS spread* is the exponential of the fitted value of the regressions in Table 4 for each subset of the samples of IFRS firms and benchmark firms. *PC_GDP* equals the ratio of private credit to GDP. *Finrep* measures the strength of auditing and reporting standards. *Propertyrights* measures the strength of property rights. *Accesscredit* measures the ease of access to credit. For more detailed variable definitions see Appendix B. Robust standard errors are in parentheses and are clustered by country. *** denotes p<0.01, ** denotes p<0.05, and * denotes p<0.1.

		(1)	(2)	(3)
Dependent variable	Pred. sign	*GAP*	*GAP*	*GAP*
y2005	(+)	1.215	1.723*	1.807***
		(0.646)	(0.687)	(0.524)
PC_GDP	(+)	0.029	0.035	-0.059
		(0.108)	(0.107)	(0.098)
*y2005*PC_GDP*	?	0.303	0.259	-0.151
		(0.290)	(0.291)	(0.232)
Finrep		0.025		
		(0.037)		
*y2005*Finrep*	?	-0.161		
		(0.094)		
Propertyrights			0.040	
			(0.045)	
*y2005*Propertyrights*	?		-0.233*	
			(0.098)	
Accesscredit				-0.091
				(0.048)
*y2005*Accesscredit*	?			-0.376*
				(0.153)
Constant		0.432	0.336	0.914***
		(0.222)	(0.285)	(0.189)
Observations		2,583	2,583	2,583
F Statistic		1.528	1.885	4.023
Adjusted R-squared		0.015	0.016	0.018

Table 8: Regression of residuals from a first-stage regression on accounting variables

The table presents the results of the OLS estimation of the regression of residuals from a first-stage regression on *Ln(BV)*, *LEV*, *ROE*, and *Interest coverage*. The residuals are from the regression of *Ln(CDS)* on country- and year-fixed effects as well as *RATING* and *STD_RET*. Panel A presents the results for nonfinancial firms. Panel B presents the results for financial firms. *Ln(CDS)* equals Ln(CDS spread in %). *BV* measures total shareholders' equity (USD million). *Ln(BV)* equals Ln(total shareholders' equity). *LEV* equals the ratio of long-term debt to total assets. *ROE* equals net income divided by total shareholders' equity. *Interest coverage* equals operating income after depreciation divided by interest expense on debt. Robust standard errors are in parentheses and are clustered by firm. *** denotes p<0.01, **denotes p<0.05, and * denotes p<0.1.

Panel A: Nonfinancial firms	(1)	(2)	(3)	(4)
Group	IFRS	IFRS	Benchmark	Benchmark
Period	Pre	Post	Pre	Post
Dependent variable	*Residual*	*Residual*	*Residual*	*Residual*
Ln(BV)	0.018	0.037*	0.015	0.024
	(0.023)	(0.017)	(0.018)	(0.018)
LEV	0.439*	0.295*	0.440**	0.458***
	(0.209)	(0.141)	(0.133)	(0.121)
ROA	-0.932	-0.520	-1.321***	-0.693***
	(0.515)	(0.281)	(0.290)	(0.200)
Constant	-0.344	-0.619*	-0.242	-0.438
	(0.352)	(0.264)	(0.285)	(0.286)
Observations	440	888	1,721	2,652
F Statistic	1.789	7.408	11.386	12.608
Adjusted R-squared	0.033	0.020	0.044	0.031

Table 8 (continued): Regression of residuals from a first-stage regression on accounting variables

The table presents results of the OLS estimation of the regression of residuals from a first-stage regression on *(BV)*, *LEV*, *ROE*, and *Interest coverage*. The residuals are from the regression of *Ln(CDS)* on country- and year-fixed effects as well as *RATING* and *STD_RET*. Panel A presents the results for nonfinancial firms. Panel B presents the results for financial firms. *Ln(CDS)* equals Ln(CDS spread in %). *BV* measures total shareholders' equity (USD million). *Ln(BV)* equals Ln(total shareholders' equity). *LEV* equals the ratio of long-term debt to total assets. *ROE* equals net income divided by total shareholders' equity. *Interest coverage* equals operating income after depreciation divided by interest expense on debt. Robust standard errors are in parentheses and are clustered by firm. *** denotes p<0.01, **denotes p<0.05, and * denotes p<0.1.

Panel B: Financial firms	(1)	(2)	(3)	(4)
Group	IFRS	IFRS	Benchmark	Benchmark
Period	Pre	Post	Pre	Post
Dependent variable	*Residual*	*Residual*	*Residual*	*Residual*
Ln(BV)	-0.057	-0.032	-0.044	0.025
	(0.033)	(0.021)	(0.028)	(0.022)
LEV	-0.637*	-0.045	-0.126	0.786***
	(0.267)	(0.146)	(0.128)	(0.122)
ROA	0.536	0.433	0.792	-1.645*
	(3.606)	(2.184)	(0.905)	(0.706)
Constant	1.088	0.519	0.677	-0.583
	(0.592)	(0.382)	(0.458)	(0.336)
Observations	160	264	351	584
F Statistic	3.180	1.487	1.071	11.540
Adjusted R-squared	0.099	-0.005	0.016	0.098