Testing the Transparency Implications of Mandatory IFRS Adoption: The Spread/Maturity Relation of Credit Default Swaps

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December 2014

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Acknowledgements
Callen gratefully acknowledges the Humanities and Social Sciences Research Council of Canada for financial support. We thank participants at Hong Kong Polytechnic University, Singapore Management University and the 2012 Canadian Academic Accounting Association Annual Meeting for helpful comments.

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This study is the first to test whether IFRS adoption increased accounting transparency based on sharp *model-driven* hypotheses. The model by Duffie and Lando (2001) shows that changes to accounting transparency affect the spread/maturity relation of CDS instruments in very specific ways. Consistent with the Duffie-Lando model, we find that CDS spreads are lower across maturities following the adoption of IFRS, and the slope and concavity of the CDS spread/maturity relation are higher. These changes did not occur to the spread/maturity relation of control sample of CDS instruments. Predicted changes apply particularly to firms with low pre-IFRS transparency. Overall, this study provides strong evidence that IFRS adoption increased accounting transparency.

Key words: Credit Default Swaps, Credit Risk, Maturity, IFRS
JEL Classification: M40, M41, G13, G20

1. Introduction

The large literature investigating the relation between International Financial Accounting Standards (IFRS) and transparency has to date yielded inconclusive if not contradictory results. Given that increased transparency is one of the prime motivators for IFRS adoption, the inconclusive results are nothing short of dismaying. We claim that the primary issue is one of research design. Absent a model that gives sharp predictions about the relation between changes in transparency (however measured) and observables, such as security prices, it is hardly surprising that extant tests of the relation between IFRS adoption and those observables are inconclusive. But such a model does indeed exist in the form of the Duffie-Lando (2001) model published over a decade ago in *Econometrica*.[1] Validated by the finance literature, to the extent that any model can be validated, the Duffie-Lando (2001) model provides sharp predictions about the impact of changes in transparency on the functional relation between Credit Default Swap (CDS) spreads and CDS maturities.

This study uses the predictions of Duffie and Lando (2001) (hereinafter DL) to derive model-driven hypotheses about the impact of IFRS adoption on the spread/maturity relation of CDS instruments. Besides testing claims regarding IFRS-induced transparency, this study provides insights into the impact of IFRS adoption on the large, important, and relatively little studied CDS market.

[1] Although some of the IFRS literature loosely references this model, no use has been made of the essential results generated by the model regarding accounting transparency and the CDS spread/maturity relation in order to test the effect of IFRS on transparency.

In the DL model, investors receive imperfect (noisy) accounting reports about the levered firm's asset dynamics and asset values and, hence, imperfect accounting information about the probability that the firm will go bankrupt. The model shows that the relation between CDS spreads and their maturity structure is contingent upon the transparency of the imperfect accounting system. In particular, the model predicts three specific hypotheses about the relation between changes in transparency and changes to the spread/maturity relation of CDS spreads, which we utilize to test the impact of IFRS on accounting transparency. If the switch to IFRS increased accounting transparency as claimed by its proponents, then the spread/maturity relation of firm-level CDS instruments should have changed in ways consistent with the implications of the model.

Like all models, the DL model is an abstraction from reality and a stylized representation of the CDS market. Nevertheless, empirical tests of the model, both with reference to the bond market (Yu 2005) and the CDS market (Bajlum and Larsen 2007), have tended to validate the model. The maintained hypothesis of this paper is that the DL model provides a "realistic-enough" description of CDS spreads as determined in a world of imperfect accounting information and that the DL model provides a fertile testing ground for judging whether IFRS indeed increased the transparency of the accounting reporting system. The essence of the DL model is the impact of accounting transparency on the relation between CDS spreads and the maturity structure of CDS instruments, especially for short-end maturities. Thus, while Bhat et al (2014) and Kraft and Landsman (2014) examine the impact of IFRS on the credit informativeness of accounting information and loosely reference the DL model, their studies cannot test the effect of IFRS on the spread/maturity *relation* of the DL model as they limit their

analyses to a fixed five year CDS maturity. Moreover, by focusing solely on the relatively lengthy five year maturity, these studies are least likely to be based on the DL model (see Section 2.2).

Controlling for liquidity, ratings, and other factors known to affect CDS spreads we find that the spread/maturity relation of CDS instruments for our IFRS sample changed subsequent to IFRS adoption in ways entirely consistent with the implications of the DL model. In contradistinction, no such changes occurred to the CDS spread/maturity relation of a control sample of non-IFRS firms. We further document that predicted changes to the CDS spread/maturity structure apply most compellingly to countries with strong legal enforcement, countries with low earnings management, and countries in the European Union.[2] In addition, we document that the impact of IFRS on the spread/maturity relation of CDS's is moderated by *firm-level* transparency as proxied by analysts forecast errors and forecast dispersion. Importantly, changes to the CDS spread/maturity relation predicted by the DL model are shown to apply more intensely to firms with low pre-IFRS transparency.

In what follows, Section 2 develops the hypotheses. Section 3 describes the data and provides summary statistics. Section 4 presents the empirical tests. Section 5 briefly concludes.

[2] Daske et al.'s (2008) find that equity-market effects of mandatory IFRS reporting are stronger in the EU countries than elsewhere, probably resulting from the fact that the EU had concurrent changes in financial reporting enforcement as well as in other financial market regulation. Furthermore, the EU regulations explicitly required member states to take appropriate measures to ensure compliance with IFRS adoption.

2. Hypotheses Development

This study proposes that IFRS adoption changed the spread/maturity relation of CDS instruments--in ways to be specified below--because (i) IFRS increases accounting transparency and (ii) following the DL model, accounting transparency changes the spread/maturity relation of CDS instruments. Consonant with this standard two-step approach, this section initially discusses why IFRS likely enhance the transparency of credit risk instruments. We then describe the intuition underlying the DL model and the three specific predictions derived from this model regarding the relation between accounting transparency and the CDS spread/maturity relation. We also briefly describe the extant empirical evidence validating the DL model.

2.1 IFRS Transparency and Credit Risk

Credit markets are an important component of the financial system and the financing of public corporations. Although IFRS adoption has direct implications for the functioning of credit markets, the extant research on IFRS adoption focuses primarily on equity markets (see, for example, Daske et al. 2012 and Li 2010). Far less attention has been given to the impact of IFRS on credit markets. Of the handful of such studies, most are based either on credit ratings or corporate bond yield spreads (see the discussion below). There are many reasons why the CDS market dominates the corporate bond market and credit ratings for analyzing credit risk (see Callen et al. 2009 and Griffin 2014). For example, unlike CDS contracts, bond spreads include factors unrelated to credit risk such as interest rate risk and other systematic risk factors (Elton et al. 2001), Moreover, credit risk price discovery appears to take place in the CDS market first (

Berndt and Ostrovnaya 2008). Unlike bond and CDS spreads, credit ratings are not market prices and are subject to many incentive issues (Bar-Isaac and Shapiro. 2011).

There are four main reasons why IFRS likely increased the transparency of accounting information in the CDS market. First, the reporting requirements under IFRS are more comprehensive than those under many local accounting standards (GAAPs), especially for cash flows, pension obligations, leases and liabilities of uncertain timing and amount. Cash flow and liability information, in particular, are helpful to creditors to assess whether the firm will be able to generate sufficient cash flows to service its debt. Moreover, even if participants in the CDS market are sophisticated and privately privy to such information under local GAAP, the additional information regarding cash flows and liabilities publicly provided under IFRS will likely result in lower variances in the estimation errors of asset values, consistent with the transparency metric of DL.

Second, IFRS emphasizes greater use of fair value accounting than most of the local GAAPs. Fair value information provides early warning signals to investors and regulators of changes in current market expectations, especially in an environment characterized by declining asset prices and increasing risk (Vyas 2011). These early warning signals are particularly relevant for the analysis of credit risk. Unlike historical cost accounting where the recognition of declines in asset prices (impairments) depends on management discretion, once a firm adopts fair value accounting it is by and large committed to recognizing bad news (Linsmeier 2011). Of course, firms have some discretion for asset write-downs where asset values are "marked to model" but that discretion is there under historical cost accounting as well. On balance, fair value accounting should reduce asset estimation error noise by comparison to local GAAPs,

especially for assets with observed market prices. Indeed, Blankespoor et al. (2012) provide empirical evidence that leverage measured using the fair values of financial instruments explains significantly more variation in bond yield spreads, implying that fair value accounting is more informative for debt holders.

Third, IFRS is principles-based rather than rules-based so that the accounting information under IFRS should better reflect the economic performance of the firm. Although principles based accounting yields more discretion than rules based, if management and the auditors take principles based seriously, asset values should reflect the underlying economics and the "true" asset values should be better estimated relative to rules based. Finally, one set of standards promotes uniformity and comparability across countries, so that together with increased transparency, IFRS should allow for better assessment of credit risk and reduce asset estimation uncertainty in cross-county investments.

To the best of our knowledge, two studies to date analyze the impact of IFRS adoption on the CDS market. Bhat et al. (2014) examine the impact of IFRS adoption on the relevance of accounting information (earnings, book values and leverage) in pricing credit risk in the CDS market. While they find that earnings, book value and leverage are informative both before and after IFRS in the pricing of credit risk, they also find no evidence that IFRS adoption had any impact on the informativeness of these metrics. Since Bhat et al. (2014) limit their analysis to a fixed CDS maturity their study *cannot* and does not test the impact of IFRS-induced transparency on the relation between CDS spreads and the maturity structure of CDS instruments, which is the essence of the DL model. Furthermore, their study essentially examines changes in earnings, leverage, and

book value response coefficients vis a vie CDS premia. It is quite possible that response coefficients do not change even if transparency increases or decreases. Callen et al. (2005) among others show that the response coefficient depends on the persistency of the underlying variables. Because changes in transparency need not necessarily affect persistency, one cannot infer that changes or lack thereof in response coefficient have any implications for the transparency of the accounting reports. In a recent related study, Kraft and Landsman (2014) find that IFRS adoption increased the error of accounting-based prediction models for CDS spreads. But again, by focusing solely on five year CDS's, their study cannot test the impact of IFRS-induced transparency on the CDS spread/maturity relation.

Several papers examine the impact of IFRS on credit markets. Beneish et al. (2012) find that IFRS adopting countries attract more debt investment especially in in countries that have weaker investor protection and higher financial risk. They argue that their findings indicate that IFRS adoption reduces the agency costs of debt in countries with less developed investor protection and greater financial risk, consistent with IFRS providing more transparent information. While their evidence suggests that IFRS resulted in greater accounting transparency, the evidence is related to transparency only indirectly. In contrast, our methodology allows for direct testing of the impact of IFRS on transparency. Kosi and Florou (2009) examine whether the mandated introduction of IFRS affects the source and cost of corporate debt. They find that mandatory IFRS adopters are more likely to issue public bonds than to borrow privately. They also find that mandatory IFRS adopters pay lower bond yield spreads, but not in the case of private loans. They argue that their findings are consistent with IFRS enhancing the quality and

comparability of accounting information. Florou et al. (2013) show that IFRS adoption affects credit ratings. However, credit ratings are not market prices, and are affected by factors unrelated to transparency such as rating agency incentives, rating agency competition, and the ability of rating agencies to predict credit risk well and in unbiased fashion (Bar-Isaac and Shapiro. 2011).[3]

2.2 The DL Model-An Intuitive Description

In the continuous time DL credit risk model, bankruptcy (liquidation) of the levered firm occurs if the unobserved total asset value falls below some lower bound, at which point the firm has a negative net present value. Investors receive periodic imperfect (noisy) accounting reports about the asset dynamics of the firm and the unobserved asset values. As a consequence, investors can estimate and update the probability of bankruptcy each period based on these reports. In their model, the transparency of the accounting system is measured by the variance of the noise of the asset values reported by the accounting system.[4] The more transparent the accounting system, the smaller is the variance and the better able are investors to estimate the probability of bankruptcy from the periodic noisy accounting reports.

The CDS instrument is a fixed-maturity insurance derivative that pays off to the holder of the instrument if the firm goes bankrupt.[5] Absent bankruptcy, the holder of the CDS pays a spread to the insurer until maturity. Importantly, DL show that relation

[3] On the potential effect of IFRS on debt contracting, see Christensen, et al. 2009 and Kim et al. 2011.

[4] Variance-type measures of transparency are common in the empirical earnings quality literature as reflected for example in the Jones and Dichow-Dichev metrics. Empirically, we measure transparency in our study by the IFRS shock and by analyst earnings forecast dispersion and forecast errors, which are related to the uncertainty in the reporting system (which in turn generate uncertainty in asset values).

[5] DL focus on bankruptcy (defined as liquidation). However, CDS contracts are often written on multiple types of significant credit events (including bankruptcy) such as debt restructuring.

between the spread and the maturity structure of the CDS instrument depends directly on the transparency of the periodic accounting reports. The principle empirical implications of the DL model, as far as changes in accounting transparency are concerned, can best be illustrated with reference to their Figure 8 replicated below as Figure 1. This figure shows the relation between CDS spreads and contract maturity for three different levels of accounting transparency. The CDS spread is on the vertical axis. The contract maturity is on the horizontal axis. Each curve represents a different level of accounting transparency; the higher is α, the less transparent the accounting information.

(Insert Figure 1 about here)

The DL model yields three specific implications regarding the relation among CDS spreads, maturity, and accounting transparency, as illustrated in Figure 1. We now state each of these three implications in (the alternative) hypothesis form where the mnemonic IFRS in the hypotheses statements is synonymous with an increase in accounting transparency.

H1: IFRS reduces the intercept in the relation between CDS spreads and maturity.

H2: IFRS increases the slope of the relation between CDS spreads and maturity.[6]

H3: IFRS causes the relation between CDS spreads and maturity to be more concave for all but perhaps the lowest maturities (where the relation could become more convex).

H1 conjectures that increases in accounting transparency (as a consequence of IFRS adoption), lowers CDS rates for all relevant maturities.[7] This is illustrated in Figure

[6] The horizontal axis in this diagram is measured in log scale so that although the slope does not increase for all maturities, it increases for short-end maturities.

1 in that the more transparent curves lie below the less transparent curves. Intuitively, with increases in accounting transparency that reduce estimation error of the firm's asset values, investors are better able to judge the future asset dynamics of the firm and thus distance from bankruptcy, leading to a reduction in CDS rates for all relevant maturities.[8] H2 states that the greater accounting transparency regarding credit risk, the greater the sensitivity of CDS spreads to changes in maturity. This is shown in Figure 1 in that the slope of the more transparent curve is steeper than the slope of the less transparent curve for all (relevant) maturities. Intuitively, CDS spreads become more sensitive to changes in maturity with increased accounting transparency because with more transparent information regarding the firm's asset values, investors are better able to judge the effect of a change in maturity on the probability that a credit event will occur and on the impact of a credit event on firm wealth (asset values). As a consequence, investor beliefs about the impact of a credit event are more likely to be revised over time causing CDS rates to be more sensitive to maturity increases. H3 implies that although CDS spreads become more sensitive to changes in maturity with increased accounting transparency, the change in sensitivity is lower for longer maturities than for shorter maturities. Intuitively, changes in accounting transparency have less of an impact on changes in CDS rates for longer maturities because imperfect accounting information about the firm's asset values

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[7] By relevant maturities, we mean maturities prior to where the curve reaches its maximum.

[8] More formally, in the absence of arbitrage, the CDS spread is equal to the corporate bond yield spread—that is, the corporate bond yield less the risk-free rate (Duffie 1999). In turn, a corporate bond is equivalent to a riskless bond plus a short put option on the value of the firm's assets, giving the bond price a concave relation with underlying asset value. Increased transparency reduces the value of the put option (through Jensen's inequality) and increases the bond price. As a result, the CDS spread, like the corporate bond yield spread, falls. Also, see the next footnote.

is going to be less informative about distant adverse credit events than more current credit events.[9]

We are aware of two studies to date that have directly tested the transparency implications of the DL model. Yu (2005) correlates corporate bond spreads and maturities in the period 1991-96 with Association for Investment Management and Research (AIMR) analyst rankings of corporate disclosure. He finds that higher AIMR rankings tend to have lower credit spreads and that this "transparency" spread is especially large for short-term bonds, consistent with DL.

In a similar vein to Yu (2005), Bajlum and Larsen (2007) correlate CDS spreads and maturities with the accounting transparency measure of Berger et al. (2006). They find that their transparency spread is insignificant for long-end maturities and highly significant at the short-end, supportive of DL.

The empirical analysis which follows tests these three hypotheses in the IFRS context, controlling for other non-maturity determinants of CDS pricing. Specifically, we control for leverage, ratings, return volatility, firm size and the risk-free rate of interest based on the well-known Merton (1974) model, firm profitability following Callen et al. (2009) and liquidity following Tang and Yan (2007) and Bongaerts et al. (2011). Beyond the risk-free rate, we also check the robustness of our results to country-level macroeconomic differences including GDP growth and the (change in the) rate of

[9] More formally, the absence of transparency effect on long-term credit spreads is because of two reasons: 1) With a fixed default boundary and a positive firm value drift rate, the bond price reaches its maximum risk-free value more quickly as a function of firm value when the maturity is longer (this is the same reason that the credit spread on long-maturity bonds converges to zero in the Merton (1974) model); and 2) With an almost linear (and nearly horizontal) relation between the CDS price and firm value, the Jensen inequality effect mentioned in the previous footnote is mostly absent.

unemployment. We further check for a number of country-level institutional differences such as code law versus common law.

3. Sample Data and Univariate Empirical Results

CDS data, currency exchange rates and interest rates are collected from Thomson DataStream Navigator. Thomson has Credit Market Analysis (CMA) data covering CDS contracts for 70 countries from 2003 through 2008. For each firm-quarter we obtain data for CDS contracts with maturities ranging from 1 year to 10 years issued 45 days after the fiscal-quarter-end. If there are no CDS's issued at the 45th day after fiscal quarter-end, we utilize the first CDS contract issued in the range from 42 to 48 days after the quarter-end. The spread for each CDS contract, denominated in basis points, is derived from mid-market quotes contributed by investment banks and default-swap brokers. The initial sample includes 111,723 CDS contracts. For each CDS contract, we collect data on its seniority (senior or subordinated) and the initial maturity of the CDS contract.[10]

We obtain quarterly financial statement data required to compute market value of equity, return on assets, and leverage from the Worldscope database. The financial information is downloaded in US dollars wherever available; otherwise, we convert the variables to US dollars using the exchange rate as of the fiscal quarter-end. Short-term credit ratings from S&P are used when available; else, long-term credit ratings are used.

We impose the following restrictions on the sample: first, all sample CDS contracts in this study are limited to senior debt both because there are few junior CDS contracts in our initial sample and because their pricing determinants are very different

[10] Restructuring clauses are only available from 2008. As a result, we are unable to control for this variable.

from senior contracts. Hence, we eliminate 8,775 junior CDS contracts. Second, we require positive leverage (measured as short term debt plus long term debt scaled by market value of equity plus total liabilities), and non-missing values for each of the following variables: market value of equity, profitability as proxied by the return on assets (computed as income before extraordinary items scaled by total assets), standard deviation of stock returns (computed on a rolling basis using the most recent 12 monthly returns with at least 6 data points), a CDS liquidity measure (computed as the log bid-ask spread orthogonalized for certain firm characteristics as described further below), credit rating, and industry classification. These restrictions reduce the sample size by 24,675 CDS contracts. Third, we further eliminate a total of 990 CDS contracts of small firms with market value of equity less than 100M, firms that adopted IFRS voluntarily, and CDS contracts where the spread exceeds 10,000 basis points. Fourth, we eliminate Japanese firms from our sample, reducing the sample by 9,117 CDS contracts. Japanese accounting converged with IFRS during our sample period, and consequently Japanese firms cannot be uniquely classified as either IFRS or non-IFRS as of a particular date. Fifth, we require at least 100 CDS contracts per country with a minimum of 10 CDS contracts in each of the pre and post IFRS periods. This restriction eliminated 474 observations. Finally, to alleviate concerns related to stale prices, we also eliminate 2,807 CDS contracts where the spread did not change throughout the fiscal quarter. Hence, the final sample comprises 64,885 CDS contracts. Table 1, Panel A presents a summary of the data filters.

The IFRS sample is comprised of firms that employ IFRS following Dec. 31, 2005 and are domiciled in countries that adopted IFRS following Dec. 31, 2005. The

non-IFRS control sample includes two sets of firms: 1. firms from countries that did not adopt IFRS during the sample period including the U.S, Canada, Taiwan, and Malaysia. 2. Firms that use US GAAP instead of IFRS during the sample period and are domiciled in countries that adopted IFRS (these firms are generally cross-listed in the U.S.).

Table 1 Panel B, lists the number of firms, firm-quarters, and CDS contracts by country for the IFRS and Control samples both pre and post the 2005 IFRS adoption year. The IFRS sample comprises 15,891 CDS contracts, of which 12,235 (3,656) are in the post (pre) IFRS period. The total number of firms (firm-quarters) in the post and pre IFRS period are 159 (1,278) and 116 (486), respectively. The sample firms are primarily from countries in Europe although firms from Australia, Hong Kong, and Singapore are also represented. Most of the data are from four countries: France, Germany, Sweden and the U.K. The control sample comprises 48,994 CDS contracts – 33,289 (15,705) in the post (pre) IFRS period. The number of firms (firm-quarters) in the post and pre periods is 353 (3,532) and 316 (2,305), respectively. The control sample is dominated by U.S firms which account for 44,109 CDS contracts, or about 90% of the observations in the control sample. The number of CDS contracts from the other countries that did not adopt IFRS (Canada, Taiwan, Malaysia) is 3,392; the number of CDS contracts referencing firms domiciled in IFRS countries that employ US GAAP is 1,493.

Panel C shows the number of observations (CDS contract-quarters) by CDS maturity both pre and post IFRS. Not surprisingly, the most popular maturity is 5 years, followed by maturities 1, 3, 7, and 10.

(Insert Table 1 about here)

Table 2 provides descriptive statistics of the main variables used in this study for the IFRS and control samples, respectively. To mitigate the effect of outliers, the continuous variables in each sample are winsorized at the top and bottom 1%. The CMA database computes the CDS spread as the mid-point of the bid-ask spread. As a result, the CDS spread and the bid-ask spread are highly correlated (Pearson correlation of 0.8). Furthermore, the bid-ask spread is likely endogenous to other determinants of the CDS spread such as firm size and maturity (see Qiu and Yu 2012 on the endogeneity of CDS liquidity). To address these issues, we regress the bid-ask spread on firm characteristics that are also likely to affect the CDS spread, and use the residual as our measure of liquidity. Specifically, we regress the log of the bid-ask spread on firm size (log of market value of equity), equity return volatility, credit rating, leverage, maturity and a crisis period indicator variable. The residual from this regression is our liquidity measure (LIQUIDITY). The greater LIQUIDITY, the more illiquid the CDS instrument and the higher is the expected CDS premium.

Panel A shows the means and medians of market value of equity (MV), CDS spreads (5-year instruments only), Return on Assets (ROA), Leverage (LEV), Standard Deviations of Returns (SD_RET), the country's risk-free rate of interest (SPOT), S&P firm ratings (RATING) and the CDS liquidity measure (LIQUIDITY) pre- and post-IFRS adoption. The higher is RATING, the lower the credit rating quality.[11] The POST-PRE column shows differences between the post and pre in the means and medians, and their significance. The panel indicates that the sample firms are bigger and exhibit greater

[11] Credit rating, takes numerical values from 1 to 20, 1 being the highest for rating AAA+ and 20 being the lowest for rating CCC.

volatility in the post-IFRS period as compared to the pre-IFRS period for both samples. Interest rates are also higher in the post period. Interestingly, whereas IFRS firms experienced improvement (decline) in credit ratings (liquidity), the control sample experienced a decline (improvement) in credit ratings (liquidity). More importantly, CDS spreads are significantly higher in the post period for both samples. Possible explanations for the higher CDS spreads include the overall impact of the credit crisis and the increase in the number of reference entities in the post-IFRS period.

Panel B shows main variable differences between the IFRS and control samples pre-IFRS, post-IFRS and overall. The two samples differ in firm characteristics. In both periods, firms in the control sample have a higher CDS spread, greater return volatility, and lower liquidity. In addition, they have lower leverage and lower credit rating, are less profitable, and face higher interest rates in the post-IFRS period.

To alleviate concerns that our reported results are attributable to differences in firm characteristics, we also use matched sample design where we match each IFRS firm-quarter with a firm-quarter from the control sample. The matched control sample acts as a (imperfect) counterfactual to help control for potential time-period effects (Meyer 1995, Bertrand et al. 2004) and other potential correlated omitted variables (Cram et al. 2009). We facilitate the matching using propensity score matching. For each fiscal quarter, we estimate the propensity score using CDS determinants: profitability, size, leverage, credit ratings, stock return volatility and liquidity. We select the match from the control sample based on the closest propensity score without replacement. However, we require an exact match for CDS maturity. We remove CDS contracts from the IFRS sample that have no available control match for each maturity. This restriction assures that the two samples

are completely balanced in terms of firm-quarters and CDS contracts. The matched sample comprises a total of 28,040 CDS contracts – 14,020 contracts from each sample.

Panel C shows the means of the main variables by country. Panel D shows mean and median CDS spreads by maturity in the pre and post-IFRS periods for the IFRS and control samples. Not surprisingly, CDS spreads increase almost monotonically with maturity and CDS spreads in the post-period are significantly larger than in the pre-period for all maturities.

Panel E presents the correlations between the CDS spread and the primary determinants of the spread pre- and post-IFRS adoption for both the IFRS and control samples. With the exception of the spot rate, the correlations both pre and post-IFRS are consistent with the underlying theory and highly significant at the 1% level. Specifically, the CDS spread is significantly inversely related to MV and ROA and significantly positively related to LEV, SD_RET, RATING (the higher the ratings number, the lower the credit rating) and LIQUIDITY (the higher LIQUIDITY, the less liquid the instrument). The correlation between the risk-free rate and CDS spread is supposed to be negative theoretically. However, this correlation is insignificant in the pre-IFRS period for both samples and positive and significant in the post-IFRS period for the IFRS sample. We elaborate more on this issue below.

(Insert Table 2 about here)

4. Multivariate Empirical Results

We analyze the impact of IFRS on CDS spreads using a levels regression analysis in the spirit of Collin-Dufresne et al. (2001), Benkert (2004), Das et al. (2009) and Callen et al. (2009). Section 4.1 examines the impact of IFRS on the relation between CDS

spreads and maturity for the IFRS and control samples. Section 4.2 analyzes the potential moderating effect of institutional factors on the impact of IFRS adoption on the CDS spread/maturity structure. Section 4.3 examines the impact of IFRS adoption on the CDS spread/maturity structure controlling for changes in firm-level transparency. Section 4.4 analyzes differences between pre- and post-IFRS CDS spreads across maturities.

4.1 Impact of IFRS on the Maturity Structure of CDS

To understand the empirical approach in the tables below, let the CDS spread for firm i, at time t, with contract maturity T be denoted $S_{i,t,T.}$ Using a parabolic function to estimate the CDS curve, allows us to express the CDS premium as:

$$S_{i,t,T} = a\,(X_{i,t}, Y_t, D_t) + b\,(X_{i,t}, Y_t, D_t)\,(T-t) + c\,(X_{i,t}, Y_t, D_t)\,(T-t)^2 \qquad (1)$$

where $X_{i,t}$ represents firm-specific control variables, Y_t represents institutional and macro-economic conditions, and D_t is a dummy variable that takes on the value one in years 2006-8 and zero otherwise. This specification allows the shape of the CDS curve to change not only as a result of the change to IFRS following 2005, but also when a firm's credit risk profile or the institutional and general macroeconomic environments change. Linearizing equation (1) around D_t, $X_{i,t}$ and Y_t yields the regression specification used in the tables that follow:

$$S_{i,t,T} = a_1(D_t) + b_1(D_t)\,(T-t) + c_1(D_t)\,(T-t)^2 + a_2(D_t)\,X_{i,t} + b_2(D_t)\,X_{i,t}\,(T-t) + c_2(D_t)\,X_{i,t}\,(T-t)^2$$
$$+ \; a_3(D_t)Y_t + b_3(D_t)Y_t\,(T-t) + b_3(D_t)Y_t\,(T-t)^2 \qquad (2)$$

Columns (1) and (4) of Table 3 show baseline regression of the CDS spread on an intercept term, maturity, maturity-squared, and the major determinants of credit risk--profitability, leverage, credit rating, equity return volatility, risk-free (spot) rate and

liquidity--for the IFRS and control samples, respectively. Figures in parentheses are two-tailed p-values. All regressions are estimated using OLS with robust standard errors corrected for firm clustering and multiple CDS contracts per firm. We also control for industry, fiscal quarter and country fixed effects (not tabulated). In addition, consistent with equation (2), we allow for the possibility that the impact of the control variables also depends on maturity by including interaction terms of the control variables with each of maturity and maturity-squared.[12]

Following DL, we expect the intercept term to be positive, the maturity coefficient to be positive and the maturity-squared coefficient to be negative, consistent with concavity in the CDS spread/maturity relation.[13] Following the predictions of Merton (1974) and Callen et al. (2009), CDS spreads should be decreasing with the reference firm's profitability, size, ratings quality and liquidity and increasing with the reference firm's leverage, and the volatility of its stock returns.

The baseline IFRS sample regression in column (1) yields results consistent with model predictions for the intercept and maturity terms. The intercept is positive and significant. The coefficient on maturity (maturity squared) is positive (negative) and highly significant indicating an increasing and concave relation between CDS spreads and maturity. With the exception of the risk free rate, the coefficients on the control variables have the expected sign and are (mostly highly) significant. Specifically, credit risk is positively related to leverage and volatility, and negatively related to profitability,

[12] In contrast to the tables that follow, Table 3 (excluding the base regression) does not include an intercept term which helps to capture correlated omitted variables. Instead, this specification facilitates the pre and post-IFRS graphical analysis in Figures 2 and 3.

[13] Although in theory it is possible to have convexity in the relation for very short-term maturities the overall relation is far more likely to be concave as in Figure 1. Further, we let the data determine whether the shape of the function is concave or convex.

size, credit rating quality and liquidity. The coefficient on the risk-free rate is positive and significant for the IFRS sample. We checked the correlation of CDS spreads with the spot rate by country to see if the latter result is driven by specific countries, but we obtain positive correlations across all countries. One plausible explanation for the positive correlation is that when interest rates are low, the cost of financing is also low leading to a lower probability of default.[14] The results also indicate that several of the interaction terms of the control variables with the maturity variables are significant, thereby providing empirical justification as well for the interaction specification. The control sample baseline regression results in column (4) are similar and the coefficients on the independent variables have similar signs and statistical significance to those of the IFRS sample, except for the coefficient on the risk free rate which is negative and significant. Importantly, the base line case shows that the signs of the intercept, maturity and maturity-squared are consistent with the predictions of the DL model both for the IFRS and control samples.

(Insert Table 3 about here)

Columns (2) and (5) of Table 3 replicate columns (1) and (4), respectively, except that now the intercept, maturity and maturity square terms are bifurcated into pre- and post-IFRS. These columns also exclude the crisis period data (July 1, 2007 to December 31, 2008) because of the potentially unique behavior of CDS spreads during the crisis period. Focusing on the IFRS sample--column (2)—both the pre and post IFRS intercept coefficients are positive and highly significant (p-value<0.001). The coefficients on

[14] Offsetting this explanation is the possibility that lower interest rate regimes are often symptomatic of a recessionary economy and therefore of increased credit risk.

maturity (maturity-squared) are positive (negative) and highly significant (p-value<0.001) both pre and post IFRS. The signs of the other determinants are highly significant and almost identical to those of the base line regressions with the exception of ROA. Importantly, a comparison of the pre- and post- intercepts yields results consistent with the predictions of the DL model. In particular, looking at the bottom of the table, the post-IFRS intercept is significantly smaller than the pre-IFRS intercept (p-value<0.001), the post-IFRS coefficient on maturity is significantly greater than the pre-IFRS coefficient (p-value<0.001), and the post-IFRS coefficient on maturity-squared is significantly more negative than the pre-IFRS coefficient (p-value<0.001). An F-test indicates that the joint change in all three coefficients of the maturity structure is highly significant (p-value<0.001).

These results for the IFRS sample indicate that average CDS spreads decreased significantly in the post-IFRS period, and the CDS spread/maturity curvature became steeper and more concave, consistent with the implications of the DL model. The change in the maturity structure is also economically significant. Comparing the pre with the post period yields a decrease of 8% in the intercept from 2.118 to 1.951, which translates to a decrease of 15% in the spread (note that the spread is expressed in log form), an increase in the slope of 5% from 0.802 to 0.839 and an increase in the concavity of the curvature of 4% from -0.048 to -0.050.

In contrast, the results for the control sample excluding the crisis period data, column (5), are not consistent overall with the predictions of the DL model. In particular, although the post-IFRS intercept is significantly smaller than the pre-IFRS intercept (p-value<0.001), the changes in the slope and concavity of the maturity structure pre and

post-IFRS are insignificant (p=0.959 and p=0.390, respectively). These findings provide partial support that results documented for the IFRS sample are indeed attributable to the adoption of IFRS and not to some worldwide effect.

Instead of eliminating crisis period data, columns (3) and (6) estimate the regressions for each of the IFRS and control samples, respectively, using all of the available data but controlling for the crisis period using an indicator variable. The results for the IFRS sample in column (3) are once again consistent with the DL model. In particular, the post-IFRS intercept is significantly smaller than the pre-IFRS intercept (p-value=0.029), the post-IFRS coefficient on maturity is significantly greater than the post IFRS coefficient (p-value<0.01), and the post-IFRS coefficient on maturity-squared is significantly more negative (p-value=0.032). In contrast, the results for the control sample essentially contradict the DL model. Specifically, the change in the intercept from pre to post IFRS is insignificant (p-value<0.465), the post-IFRS slope coefficient on maturity is significantly *smaller* than the pre-IFRS coefficient (p-value<0.001), and the post-IFRS coefficient on maturity squared is significantly *less* negative (p-value<0.001).

Although the regressions above control for country fixed-effects and the country-level rate of interest, we further checked the robustness of our results to country-level macroeconomic differences by including GDP growth and the rate of unemployment (or rate of change in unemployment in a different specification) as regressors. We find that GDP growth is negative and significant, consistent with the findings of Tang and Yan (2010), and that the rate of unemployment is insignificant (untabulated). Remaining results are similar to those of Table 3.

The previous analysis examines each sample (IFRS and control) separately. Table 4 estimates pooled regressions combining the IFRS sample with the control sample. Given the pooled design, we include two indicator variables: POST takes the value one if the financial report date is after 2005 and zero otherwise, and IFRS takes the value one if the observation belongs to a firm in the IFRS sample and zero otherwise.

To gauge the impact IFRS adoption on the maturity structure, we include all possible interactions of each of maturity and maturity-squared with the POST and IFRS indicators. Under this specification, the control firms serve as a baseline. The coefficient on POST provides the average difference in CDS spread between the pre-and post-IFRS period for the control sample; the coefficient on IFRS provides the average difference in the CDS spread between the IFRS and control samples; and the coefficient on the interaction of POST and IFRS measures the impact of IFRS adoption on CDS spreads for the IFRS sample relative to the control sample. Hence, we test H1 based on the coefficient of the interaction term of POST and IFRS. The interaction variables of maturity with IFRS and POST can be interpreted in a similar vein. The interaction of maturity and POST provides the difference in the slope of the maturity structure in the pre and post-IFRS periods for the control sample; the interaction of maturity with IFRS and POST gives the impact of IFRS adoption on the slope of the IFRS sample relative to the control sample. Thus, we test H2 based on the coefficient of the interaction term of maturity, IFRS, and POST. Similarly, we include interaction variables with maturity-squared, and test H3 using the coefficient on the coefficient of the interaction term of maturity-squared, IFRS, and POST.

To account for the possibility that the impact of the control variables on the CDS spread differs between the IFRS and control samples, we also include all interactions of each of the control variables (including their interaction with maturity and maturity-squared) with IFRS. As before, we include country, quarter and industry fixed-effects.

(Insert Table 4 about here)

Table 4, Columns (1)-(3) present the pooled analysis results for the full sample. Column (1) shows the base regression controlling for the crisis period. The base results are once again consistent with theory except for the risk-free interest rate which is insignificant. Column (2) presents the results where crisis period data are excluded from this regression. Column (3) replicates the regression in Column (2) but controls for the crisis period using a crisis period dummy instead of excluding crisis period data. The results for both columns (2) and (3) are consistent with the DL model. Based on the coefficient of the POST-IFRS interaction term, the adoption of IFRS significantly reduced the intercept of IFRS firms relative to the control sample ($p<0.001$ in both cases) consistent with H1. Based on the coefficient of the MATURITY-IFRS-POST interaction term, the adoption of IFRS significantly increased the CDS spread/maturity slope of IFRS firms relative to the control sample ($p<0.001$ in both cases) consistent with H2. Lastly, based on the coefficient of the MATURITY-SQUARED-IFRS-POST interaction term, the adoption of IFRS significantly increased the CDS spread/maturity concavity of IFRS firms relative to the control sample ($p=0.002$ and $p<0.001$, respectively) consistent with H3. Moreover, the signs for the control variables are largely significant and consistent with underlying theory.

Columns (4) and (5) replicate the specification in Columns (2) and (3) using the matched sample data. The results, both excluding the crisis period and controlling for the crisis period, are also consistent with the DL model. The adoption of IFRS significantly reduced the intercept of IFRS firms relative to the control sample ($p=0.006$ and $p<0.001$, respectively), increased the CDS spread/maturity slope of IFRS firms relative to the control sample ($p=0.019$ and $p<0.001$, respectively), and significantly increased the CDS spread/maturity concavity of IFRS firms relative to the control sample ($p=0.088$ and $p=0.001$, respectively). Once again, the signs for the control variables are largely significant and consistent with underlying theory.

Overall, the results from Tables 3 and 4 indicate that the CDS maturity structure for firms that adopted IFRS changed in a manner consistent with the predictions of the DL model, whereas the control sample firms did not by and large show similar changes over the same period. The pooled and matched sample results provide additional support that the evidence from the IFRS sample is not merely a consequence of time series changes unrelated to IFRS adoption.

4.2 Institutional Differences and CDS Spreads

Accounting transparency is the result of complex interactions among managerial motives, country-level accounting standards, and country-level enforcement of those accounting standards (Ball 2006). Christensen et al. (2013) also provide evidence that IFRS-related liquidity benefits in the equity market are attributable to concurrent institutional reforms in financial reporting enforcement by some countries. Therefore, we further gauge accounting information transparency for IFRS firms after controlling for country-level factors that may affect the quality of the accounting information, namely,

origin of the legal system, level of legal enforcement of the rule of law, country-wide level of earnings management, whether the country is in the European Union, and countries whose local supervisory authorities shifted from reactively reviewing financial statements to a proactively reviewing them at the time of mandatory IFRS adoption.[15]

Multicollinearity concerns induced by the correlations among the conditioning variables and exacerbated by the extensive breakdowns of the intercept, maturity and maturity squared pre- and post-IFRS, interacted with a relatively large number of conditioning variables, preclude us from controlling for all institutional factors simultaneously. Instead, we evaluate each of the conditioning variables separately interacting them with intercept, maturity and maturity squared indicators both pre and post IFRS.

(Insert Table 5 about here)

The regressions results are reported in Table 5 (with control variables untabulated). COND refers to Code law countries, countries with strong (above median) legal enforcement of the Rule of Law, countries with high (above median) earnings management, countries in the European Union and countries which are strongly (above median) proactive, respectively. NO-COND refers to Common law countries, countries with weak (below median) legal enforcement of the Rule of Law, countries with low (below median) earnings management, countries not in the European Union and countries which are weakly (below median) proactive, respectively. Although CDS spreads fell for all categories post versus pre IFRS, the results at the bottom of the table indicate a

[15] See Christensen et al. (2013) and Florou and Kosi (2013) regarding the latter two country-wide institutional controls.

significant reduction in spreads for countries irrespective of strength of legal enforcement of the Rule of Law (p=.042 and p=0.83), in countries with low earnings management (p=0.001), and countries in the European Union (p=0.062). Additionally, although CDS spread/maturity slopes increased for all categories post versus pre IFRS, the results are significant only for code law countries (p=0.026), countries with strong legal enforcement (p=0.011), countries with low earnings management (p<0.001), countries in the European Union (p=0.014) and countries that are not highly proactive (p=0.008). Although CDS spread/maturity concavity increased for all categories post versus pre IFRS, the results are significant only for code law countries (p=0.098), countries with strong legal enforcement (p=0.034), countries with low earnings management (p=0.011), countries in the European Union (p=0.063) and countries that are not highly proactive (p=0.020). In terms of direction but without considering statistical significance, our results are consistent with the DL model irrespective of country-wide institutional factors. In accordance with intuition, countries with strong legal enforcement, countries with low earnings management, and countries in the European Union provide statistically significant results consistent with all three hypotheses of the DL model.

Overall, the result in Table 5 indicate that the impact of change in accounting information transparency on the CDS maturity structure appears to be moderated by institutional factors that potentially could affect the application of accounting standards and the quality of the reported financial information.

4.3 Firm Transparency Analysis

In the previous analyses, accounting transparency was measured solely by reference to IFRS adoption without taking into consideration inter-firm differences in

accounting transparency prior to IFRS adoption.[16] Hence, in this section, we investigate whether firms whose accounting was less transparent before the adoption of IFRS are more likely to conform to the predictions of the DL model. Intuition suggests that firms that were more transparent to begin with should be less affected by IFRS adoption.

Following Byard et al. (2011), we measure transparency in terms of two quarterly analyst forecast metrics: (1) absolute value of analyst forecast accuracy and (2) analyst forecast dispersion. The greater are the firm's forecast accuracy and the smaller the firm's forecast dispersion, the more transparent the firm's accounting data. Analyst forecast accuracy is computed as the absolute value of the difference between analyst quarterly earnings per share forecast and actual earnings per share. Analyst forecast dispersion is computed as the dispersion of the quarterly earnings per share forecasts among analysts. Both measures of transparency are scaled by price per share at the beginning of the quarter.

(Insert Table 6 about here)

Table 6, Panel A shows the pre and post-IFRS period means of each of the firm-level transparency measures for the IFRS and control samples with analyst data. The results for the IFRS sample show a significant decrease in analyst forecast error and analyst forecast dispersion in the post-IFRS period relative to the pre-IFRS period.[17] For the control sample, we observe a significant *increase* in dispersion and *decrease* in accuracy. The difference in differences is highly significant for both analyst forecast error and dispersion. These difference-in-differences results provide evidence that

[16] Byard et al. (2011) show that the adoption of IFRS did not increase the transparency of accounting information uniformly.
[17] All results in this panel are significant at the 1% level.

transparency, as measured by analyst forecast accuracy and dispersion, increased in the post IFRS period, even by comparison to the control sample.[18]

Table 6, Panel B regresses the CDS spread on firm-level transparency including interactions with maturity and maturity-squared. This purpose of this panel to provide some corroborating evidence that analyst forecast error and dispersion are valid measures of transparency for CDS pricing. In particular, we find that the CDS spreads decrease significantly with firm-level transparency (p=0.002 and p=0.005, respectively) thereby helping to validate these metrics as transparency measures. The interaction terms are either not statistically significant or, in one case, statistically but not economically significant.

Table 6, Panel C replicates the pre and post IFRS sample regressions in Table 3 controlling for firm-level transparency in the *pre-IFRS period*. The major point of this analysis is to see whether prior results regarding the impact of IFRS adoption on the CDS spread/maturity relation still hold after controlling for pre-IFRS firm-level transparency. We also wish to investigate whether firms with low levels of transparency pre-IFRS benefitted more from IFRS adoption than did firms with high levels of transparency pre-IFRS, as suggested by intuition.

In columns (1) and (2), TRANSPERANCY PRE-PERIOD is defined as the firm's average pre-IFRS transparency utilizing the analyst forecast error and dispersion metrics, respectively. Since both forecast error and forecast dispersion are negatively correlated with transparency, the higher is TRANSPERANCY PRE-PERIOD the *lower* the average

[18] Notwithstanding the changes to accuracy and dispersion, accuracy (dispersion) is significantly higher (lower) for the control sample by comparison to the IFRS sample both in the pre and post-IFRS periods, which is not surprising given that the control sample is comprised primarily of highly followed US firms.

firm transparency pre-IFRS, and the higher should be the CDS spread. The results indeed show that the lower the average pre-IFRS transparency, the higher is the overall CDS spread ($p<0.001$ in both regressions) as expected. Furthermore, the results for POST, POST-MATURITY and POST-MATURITY SQUARED are by and large consistent with the evidence in Table 3.[19] More importantly, the interaction variables with POST-TRANSPERANCY PRE-PERIOD indicate that the lower the firm's average pre-IFRS transparency, the lower is the CDS spread/maturity intercept in the post period ($p=.001$ and $p<0.001$, respectively), the higher the slope coefficient (significant only for dispersion $p=0.021$) and the greater the concavity in the post-period (significant only for dispersion $p=0.026$), consistent with DL. These results imply that the lower pre-IFRS transparency firms experienced a greater change in the maturity structure from IFRS adoption.

The variable TRANSPERANCY PRE-PERIOD in columns (3) and (4) is an indicator variable measured as one for firms with *below* median levels of transparency in the pre-IFRS period and zero otherwise. Column (3) measures transparency by analyst forecast error and column (4) by forecast dispersion. As in columns (1) and (2) TRANSPERANCY PRE-PERIOD is negatively correlated with transparency. Again, the results show that firms with low transparency in the pre-period had significantly higher CDS spreads as expected ($p=0.046$ and $p=0.001$, respectively). Based on analyst forecast dispersion, the results of the interaction variables with TRANSPERANCY PRE-PERIOD show that these low pre-IFRS transparency firms experienced a significantly lower CDS

[19] All signs are in the right direction for both metrics, all coefficients are significant for the forecast error metric as is the POST coefficient for the dispersion metric. However, the slope is significant at the one-tailed level and the concavity insignificant for the dispersion metric.

spread/maturity intercept (p=0.005), higher slope coefficient (p=0.081) and greater concavity (p=0.074) in the post-period relative to high pre-IFRS transparency firms, again implying that low pre-IFRS transparency firms experienced a greater change to the maturity structure from adopting IFRS. Although the forecast error interaction variables with TRANSPERANCY PRE-PERIOD yield the same signs, the results are not significant.

In other analyses (not tabulated), we replicated Table 3 controlling either for average post-IFRS transparency or for changes in average transparency between pre and post IFRS. The IFRS results remained consistent with the DL model (based on POST and its interactions with maturity and maturity squared) despite the ex post firm-level transparency controls.

4.4 Spread Differences

Figure 1 implies that differences between pre- and post-IFRS CDS spreads decrease for relevant maturities as contract maturity increases. In other words, changes in accounting transparency affect primarily short-end maturities. The intuition is similar to that of H3, namely, changes in the transparency of accounting information are likely less informative about distant (in time) events because of the higher uncertainty of such distant events. Therefore, changes in transparency have less of an impact on longer maturities CDS rates, much in the same way as accounting information focuses on short term performance. DL do not prove this result formally but base it on intuition. Is the intuition borne out by the data?

We investigate the relation between the change in CDS spread and maturity in Figures 2 and 3. To facilitate the analysis, we use the estimated regressions of Table 3 to

compute CDS prices for each maturity in the pre and post-IFRS periods controlling for the crisis period. Results are similar if we exclude crisis period observations. Figure 2 shows the CDS spreads and differences in the spread by maturity for the IFRS sample. We find that the post-IFRS spread is significantly lower (95% confidence interval) for the one and two-year maturities consistent with transparency affecting primarily the shorter-term maturities consistent with DL. Furthermore, we find that the difference in the spread (i.e. post minus pre) is decreasing with maturity. Specifically, upon regressing the difference in the spread on maturity (untabulated), we find that the coefficient on maturity is negative and significant, consistent with Figure 1.

Figure 3 replicates Figure 2 for the control sample. We observe that that the post curve lies everywhere under the pre-curve and the difference is significant (95% confidence interval) for all maturities contrary to DL. Moreover, the difference in the spread increases with maturity, a result that is quite counter-intuitive and contrary to Figure 1.

(Insert Figures 2 and 3 about here)

5. Sensitivity Analyses

5.1 Fama-Macbeth Analysis

We also did a Fama-Macbeth analysis for each of the IFRS and control samples. Specifically we estimated the CDS spread/maturity cross-sectionally by quarter. The regression specification is identical to the Base regression in Table 4; that is, the regression of CDS on maturity, maturity squared, and the CDS determinants. We did not include the interactions of the control variables with each of maturity and maturity squared because the sample sizes are not sufficiently large especially in the pre IFRS

quarters. We then average each of the intercept, slope and concavity coefficients both for pre-IFRS and post-IFRS periods. Overall significance for each parameter is obtained (separately pre and post) using the time-series of the quarterly parameter estimates. We then compare the pre and post changes in the parameters.

Focusing on the IFRS sample, we find that both the pre and post coefficient estimates conform to the DL model (untabulated). Specifically, the intercepts and slopes are positive and significant and the concavity estimates are significantly negative. The change in the intercept, slope and concavity coefficients from pre-to post conform to the change in transparency predictions of the DL model, but only the change in the slope and concavity are significant ($p=0.27$, $p=0.06$ and $p=0.01$ for changes from pre to post in the intercept, slope and concavity coefficients, respectively). Focusing on the control sample, we again find that the intercepts and slopes are positive and significant both pre and post-IFRS and the concavity estimates are significantly negative both pre and post-IFRS. However, in contrast to the IFRS sample, the changes in the coefficients are insignificant ($p=0.44$, $p=0.56$ and $p=0.61$ for changes from pre to post in the intercept, slope and concavity coefficients, respectively) and do not conform to the DL predictions.

5.2 Timing Test

IFRS became mandatory with the 2006 financial reports so that we expect our analysis to be strongest when POST takes on the value one from 2006-2008 and zero from 2003-2005. As a placebo test, we also examine our results by varying the adoption date. Specifically, we changed the definition of the adoption year to 2005 (post=2005-8, pre=2003-4) and 2007 (post=2007-8, pre=2003-6) and re-estimated the Table 4 analyses

(untabulated).[20] We find that when the adoption year is defined as 2005, the change in the CDS spread/maturity relation is consistent with Duffie-Lando in terms of signs but the results are not significant. When the adoption year is set to 2006 we obtain results that contradict Duffie-Lando– the spread is higher and slope and concavity are lower in the "post" period.

5.3 Control Samples

As noted above, the control sample is comprised of U.S, Canadian, Taiwanese, Malaysian and cross-listed firms (that are domiciled in IFRS countries and that use US GAAP instead of IFRS). Putting all of these control firms together increases the power of our tests. As a sensitivity analysis, we re-estimated the regressions of Table 4 for each of the following three control groups separately: 1. US firms; 2. Canadian, Taiwanese, and Malaysian firms; and 3. cross-listed firms. The results (untabulated) are consistent with our main findings. Sample sizes are quite small for the latter two control groups. Nevertheless, the results (untabulated) are consistent with our main findings. In particular, unlike the IFRS sample, for each of these three control groups, the intercept, slope and concavity coefficients of the CDS spread/ maturity relation are either insignificant or contrary to the predictions of the DL model.

5.4 Liquidity

We measure liquidity in the Tables above as the bid-ask spread orthogonalized for those firm characteristics that are used to explain CDS spreads, in order to mitigate endogeneity issues. In a sensitivity analysis, we also measure liquidity by the raw bid-ask

[20] Note that we cannot define 2004 as the post year because the number of observations in 2003 is small.

spread, the log bid-ask spread normalized by the log of the CDS spread, and the number of days (in the trading quarter) for which there were no trades in the CDS contract. The results (untabulated) were insensitive to these alternate measures.[21]

6. Conclusion

This study is the first to test whether IFRS adoption increased accounting transparency based on sharp *model-driven* hypotheses. The model by Duffie and Lando (2001) shows that changes to accounting transparency affect the spread/maturity relation of CDS instruments. Consistent with the DL model, we find that CDS spreads are significantly lower, especially across short-term maturities, following the adoption of IFRS, and the slope and concavity of the CDS spread/maturity relation are higher. These changes did not occur to the spread/maturity relation of a control sample of CDS instruments. Predicted changes hold even after controlling for pre-IFRS firm transparency levels and for firm-level transparency changes. Overall, this study provides robust evidence that IFRS adoption increased accounting transparency.

An interesting related issue is how transparency affects the CDS spread/maturity relation for different credit events (bankruptcy, debt restructuring, etc.). Different credit events may be differentially related to accounting-based measurement errors in asset values. We leave this unexplored issue for future research.

[21] The number of days for which there were no trades in the CDS contract turned out to be inversely correlated with the CDS spread. This counter-intuitive result suggests that either the latter is a poor measure of liquidity and/or that this measure is endogenous to other firm characteristics. Unfortunately, given the time period and the cross-country nature of our study, we were unable to obtain alternative comprehensive liquidity proxies.

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Table 1: Sample selection

Pane A: Data Filters

Criteria	**Number of CDS Contracts**
Initial Sample, 2003-2008	111,723
Less Junior CDS contracts	(8,775)
Less missing financial statement data required for CDS determinants, industry classification, credit rating	(24,675)
Less small firms, voluntary adopters, CDS premia exceeds 10,000 basis points	(990)
Less Japanese firms	(9117)
Less countries with less than 100 CDS contracts and a minimum of 10 contracts in the Pre or Post IFRS periods	(474)
Less staled CDS contracts	(2,807)
Final Sample	**64,885**

Panel B: Number of firms, firm quarters and CDS contract quarters for the control and IFRS samples

		PRE IFRS			POST IFRS		
	Country	**Firms**	**Firm-Quarters**	**CDS Contracts**	**Firms**	**Firm-Quarters**	**CDS Contracts**
IFRS Sample	Australia	16	50	240	17	76	695
	Belgium	1	4	40	3	28	265
	Denmark	2	12	102	2	20	200
	Finland	2	13	85	4	52	520
	France	20	71	605	21	171	1,666
	Germany	1	4	40	19	179	1,746
	Hong Kong	5	13	88	10	52	487
	Ireland	3	9	79	3	18	160
	Italy	9	28	255	8	94	901
	Netherlands	8	43	412	8	81	810
	Norway	1	3	3	4	19	190
	Poland	2	20	138	2	24	204
	Portugal	1	7	70	1	11	110
	Singapore	3	16	79	3	32	220
	Spain	6	41	315	7	66	616
	Sweden	12	80	559	13	136	1,320
	Switzerland	1	3	30	8	64	632
	United Kingdom	23	69	516	26	155	1,493
	Total	116	486	3,656	159	1,278	12,235
Control Sample	Canada	15	108	672	16	174	1,655
	France	1	7	70	1	13	130
	Germany	5	24	222	5	29	290
	Malaysia	5	30	255	5	49	490
	Netherlands	1	7	52	1	13	130
	Norway	2	11	92	2	15	149
	Singapore	1	11	31	1	7	37
	Switzerland	1	5	50	2	19	190
	Taiwan	3	23	155	2	19	165
	USA	281	2,075	14,066	317	3,193	30,043
	United Kingdom	1	4	40	1	1	10
	Total	316	2,305	15,705	353	3,532	33,289
	Grand Total	432	2,791	19,361	512	4,810	45,524

Panel C: Number of Observations by CDS Maturity, Pre and Post IFRS

MATURITY	PRE IFRS	POST IFRS	TOTAL
1	1,998	4,701	6,699
2	1,722	4,407	6,129
3	2,001	4,692	6,693
4	1,741	4,414	6,155
5	2,731	4,733	7,464
6	1,722	4,399	6,121
7	2,001	4,689	6,690
8	1,722	4,402	6,124
9	1,722	4,397	6,119
10	2,001	4,690	6,691
Total	19,361	45,524	64,885

Notes Table 1:
Panel A shows the sample selection criteria. Panel B shows the number of firms, the number of firm-quarter observations and the number of CDS contracts before and after IFRS adoption by country for each of the control and IFRS samples. Panel C shows the number of CDS contracts by maturity.

Table 2: Descriptive Statistics

Panel A: Mean (Median) of Main Variables PRE and POST IFRS

	IFRS Sample			Control Sample		
	PRE-IFRS	POST-IFRS	POST-PRE	PRE-IFRS	POST-IFRS	POST-PRE
MV (in millions)	16,941 (9,431)	28,215 (15,303)	11,274*** (5,872)***	17,269 (7,706)	19,589 (9,083)	2,320*** (1,377)***
CDS (5 YR)	60 (32)	117 (56)	57*** (24)***	96 (46)	167 (68)	71*** (22)***
ROA	0.015 (0.011)	0.016 (0.012)	0.001 (0.001)	0.014 (0.012)	0.013 (0.012)	-0.002*** (0)
LEV	0.242 (0.233)	0.238 (0.219)	-0.005 (-0.014)	0.208 (0.18)	0.215 (0.183)	0.008 ** (0.003)
SD_RET	0.059 (0.053)	0.072 (0.063)	0.012*** (0.01)***	0.068 (0.06)	0.076 (0.066)	0.007*** (0.006)***
SPOT	2.766 (2.137)	4.037 (4.15)	1.271*** (2.013)***	2.686 (2.584)	4.441 (5.02)	1.754*** (2.436)***
RATING	9.589 (9)	9.16 (9)	-0.429** (0)	10.052 (9)	10.379 (9)	0.326*** (0)
LIQUIDITY	0.411 (-0.336)	0.42 (-0.36)	0.009** (-0.024)	0.462 (-0.103)	0.458 (-0.226)	-0.004*** (-0.123)***

Panel B: Differences in Mean (Median) between IFRS and Control Samples

	Control-IFRS		
	PRE-IFRS	POST-IFRS	OVERALL
MV (in millions)	329*** (-1,725) ***	-8,626*** (-6,220)***	-6,464 *** (-4,636)***
CDS (5 YR)	36*** (14) ***	50*** (12)***	37*** (11) ***
ROA	-0.001*** (0.001)	-0.004*** (-0.000)	-0.003*** (0)
LEV	-0.035*** (-0.053) ***	-0.023*** (-0.036) ***	-0.027*** (-0.041) ***
SD_RET	0.009*** (0.007) ***	0.004*** (0.003)**	0.004*** (0.003) ***
SPOT	-0.079*** (0.447) ***	0.404*** (0.87) ***	0.057 (0.186)
RATING	0.463*** (0)	1.219*** (0)	0.972*** (0)
LIQUIDITY	0.051*** (0.233)	0.038*** (0.134) ***	0.042*** (0.175) ***

Panel C: Mean of Main variables by country

	MV (in millions)	CDS (5 Yr.)	ROA	LEV	SD_RET	SPOT	RATING	LIQUIDITY
AUSTRALIA	19,401	54	0.038	0.170	0.060	5.969	8.341	-0.158
BELGIUM	23,235	46	0.010	0.185	0.052	3.675	8.219	-0.344
CANADA	15,458	138	0.018	0.177	0.080	3.496	10.772	-0.055
DENMARK	14,295	94	0.008	0.446	0.049	3.375	11.000	-0.282
FINLAND	23,120	245	0.011	0.250	0.079	3.542	11.754	-0.049
FRANCE	28,481	119	0.012	0.220	0.072	3.215	10.107	-0.325
GERMANY	36,535	100	0.007	0.247	0.070	3.705	8.212	-0.433
HONG KONG	21,026	231	0.028	0.266	0.095	4.569	9.922	0.186
IRELAND	13,361	50	0.005	0.369	0.064	3.252	8.000	-0.505
ITALY	23,715	104	0.006	0.320	0.061	3.514	9.385	-0.398
MALAYSIA	9,103	58	0.012	0.211	0.051	3.057	10.380	-0.055
NETHERLANDS	25,564	56	0.015	0.162	0.064	3.304	9.312	-0.418
NORWAY	29,451	169	0.013	0.218	0.088	3.987	9.426	-0.279
POLAND	1,522	79	0.003	0.342	0.114	3.170	10.810	-1.153
PORTUGAL	10,343	31	0.002	0.401	0.070	3.095	8.444	-1.107
SINGAPORE	13,499	61	0.004	0.157	0.061	2.002	10.906	-0.304
SPAIN	39,044	74	0.013	0.297	0.058	3.174	8.934	-0.357
SWEDEN	11,172	55	0.019	0.186	0.067	2.758	8.593	-0.340
SWITZERLAND	44,970	88	0.018	0.205	0.067	2.008	7.600	-0.339
TAIWAN	10,763	80	0.000	0.168	0.083	2.981	9.786	0.107
USA	18,396	143	0.013	0.217	0.073	3.810	10.275	-0.136
UNITED KINGDOM	34,708	108	0.027	0.207	0.066	4.769	9.341	-0.172

Panel D: Mean (Median) CDS Spread by Maturity and Period for the IFRS and Control Samples

	IFRS Sample			Control Sample		
MATURITY	PRE-IFRS	POST-IFRS	POST-IFRS	PRE-IFRS	POST-IFRS	POST-PRE
	25	77	52***	46	112	66***
1	(10)	(17)	(7)***	(14)	(24)	(10)***
	37	94	58***	55	136	81***
2	(15)	(29)	(14)***	(19)	(36)	(18)***
	45	100	55 ***	70	144	73***
3	(21)	(36)	(16)***	(27)	(46)	(19)***
	58	114	57***	80	163	83***
4	(26)	(50)	(24)***	(34)	(59)	(26)***
	60	117	57 ***	96	167	71***
5	(32)	(56)	(24)***	(46)	(68)	(22)***
	73	128	55***	98	182	84***
6	(36)	(64)	(28)***	(48)	(77)	(29)***
	73	126	53***	105	180	75***
7	(39)	(65)	(27)***	(55)	(82)	(27)***
	82	134	52 ***	107	188	80***
8	(43)	(72)	(29)***	(58)	(88)	(30)***
	86	136	50 ***	112	191	79***
9	(46)	(73)	(27)***	(62)	(91)	(29)***
	83	133	50***	117	188	71***
10	(47)	(75)	(28)***	(67)	(94)	(27)***

Panel E: Correlation with CDS Spread (P-values in Parentheses)

	IFRS Sample		Control Sample	
	PRE-IFRS	POST-IFRS	PRE-IFRS	POST-IFRS
MV	-0.189	-0.218	-0.208	-0.252
	(<0.01)	(<0.01)	(<0.01)	(<0.01)
ROA	-0.232	-0.263	-0.328	-0.436
	(<0.01)	(<0.01)	(<0.01)	(<0.01)
LEV	0.310	0.361	0.446	0.483
	(<0.01)	(<0.01)	(<0.01)	(<0.01)
SD_RET	0.426	0.551	0.487	0.641
	(<0.01)	(<0.01)	(<0.01)	(<0.01)
SPOT	-0.006	0.052	0.012	-0.293
	(0.757)	(<0.07)	(0.569)	(<0.01)
RATING	0.519	0.249	0.450	0.366
	(<0.01)	(<0.01)	(<0.01)	(<0.01)
LIQUIDITY	0.325	0.543	0.377	0.462
	(<0.01)	(<0.01)	(<0.01)	(0.000)

Notes Table 2:
Panel A (B) presents sample means and medians (in parentheses) of main variables used in the analysis for the IFRS and Control sample. Market Value of Equity (MV) is denominated in $U.S adjusted for exchange rate changes at the fiscal quarter-end. The CDS spread (CDS) for the 5 years contract is measured in basis points. Return on Assets (ROA) is measured as earnings before extraordinary items divided by total assets. Leverage (LEV) is computed as the sum of short term and long term debt divided by market value of asset (computed as market value of equity plus total liabilities). Return Volatility (SD_RET) is the standard deviation of equity returns (computed on a rolling basis using the most recent 12 monthly returns with at least 6 data points). Spot Rate (SPOT) is the annualized 3-month Treasury-Bill rate. Debt Rating (RATING) is the S&P rating; the higher is the RATING, the lower the credit rating quality. LIQUIDITY is the residual from a regression of the log of the bid-ask spread on firm size (log market value of equity), equity return volatility, credit rating, leverage, crisis indicator, and maturity. Panel C presents sample means of the main variables in the analysis by country. Panel D shows mean and median (in parentheses) CDS spreads by maturity and period for the IFRS and Control samples. Panel E presents sample correlations of CDS spreads with its determinants in the pre- and post-IFRS adoption periods both for the IFRS and Control samples. ***, **, * indicates statistical significance at the 1%, 5%, 10%, respectively.

Table 3: CDS Spreads Before and After IFRS Adoption

VARIABLES	IFRS Sample			Control Sample		
	Base	Excluding Crisis	All Observations	Base	Excluding Crisis	All Observations
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	1.953***			3.483***		
	(0.000)			(0.000)		
PRE-IFRS		3.333***	2.118***		3.837***	3.632***
		(0.000)	(0.000)		(0.000)	(0.000)
POST-IFRS		3.053***	1.951***		3.619***	3.672***
		(0.000)	(0.000)		(0.000)	(0.000)
MATURITY	0.788***			0.450***		
	(0.000)			(0.000)		
MATURITY PRE-IFRS		0.540***	0.802***		0.444***	0.403***
		(0.000)	(0.000)		(0.000)	(0.000)
MATURITY POST-IFRS		0.622***	0.839***		0.443***	0.324***
		(0.000)	(0.000)		(0.000)	(0.000)
MATURITY SQUARED	-0.047***			-0.028***		
	(0.000)			(0.000)		
MATURITY SQUARED PRE-IFRS		-0.032***	-0.048***		-0.029***	-0.025***
		(0.000)	(0.000)		(0.000)	(0.000)
MATURITY SQUARED POST-IFRS		-0.036***	-0.050***		-0.028***	-0.021***
		(0.000)	(0.000)		(0.000)	(0.000)
ROA	-1.969**	-0.685	-2.042**	-2.602***	-1.148	-2.027***
	(0.041)	(0.511)	(0.032)	(0.001)	(0.209)	(0.006)
ROA_MATURITY	-0.054	-0.407	0.010	-0.606***	-1.695***	-0.718***
	(0.830)	(0.166)	(0.970)	(0.009)	(0.000)	(0.001)
ROA_MATURITY SQUARED	0.017	0.035	0.013	0.069***	0.157***	0.075***
	(0.376)	(0.135)	(0.500)	(0.000)	(0.000)	(0.000)
SIZE	-0.212***	-0.339***	-0.213***	-0.274***	-0.364***	-0.283***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIZE_MATURITY	-0.010	0.007	-0.012	0.005	0.017**	0.008*
	(0.206)	(0.472)	(0.104)	(0.245)	(0.016)	(0.070)
SIZE_MATURITY SQUARED	0.001	-0.001	0.001	-0.000	-0.001	-0.000
	(0.373)	(0.534)	(0.238)	(0.450)	(0.121)	(0.242)
LEV	1.880***	1.834***	1.883***	2.025***	2.132***	1.948***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEV_MATURITY	-0.225***	-0.255***	-0.223***	-0.029	-0.080	-0.010
	(0.001)	(0.002)	(0.001)	(0.405)	(0.151)	(0.770)
LEV_MATURITY SQUARED	0.014***	0.018***	0.014***	-0.003	0.003	-0.004
	(0.006)	(0.005)	(0.006)	(0.332)	(0.528)	(0.185)

RATING	0.054***	0.064***	0.053***	0.066***	0.079***	0.067***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
RATING_MATURITY	-0.001	-0.002	-0.001	-0.004**	-0.008***	-0.004**
	(0.637)	(0.344)	(0.795)	(0.012)	(0.000)	(0.012)
RATING_MATURITY SQUARED	0.000	0.000	0.000	0.000**	0.001***	0.000**
	(0.799)	(0.717)	(0.934)	(0.029)	(0.003)	(0.025)
SD_RET	14.026***	11.812***	14.327***	11.503***	12.422***	10.799***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SD_RET_MATURITY	-1.774***	-1.042***	-1.887***	-0.988***	-0.826***	-0.767***
	(0.000)	(0.005)	(0.000)	(0.000)	(0.000)	(0.000)
SD_RET_MATURITY SQUARED	0.102***	0.063**	0.108***	0.051***	0.048***	0.039***
	(0.000)	(0.048)	(0.000)	(0.000)	(0.001)	(0.000)
SPOT	0.114***	0.086**	0.103***	-0.120***	-0.098***	-0.159***
	(0.000)	(0.034)	(0.001)	(0.000)	(0.004)	(0.000)
SPOT_MATURITY	-0.009**	0.005	-0.014***	0.020***	0.021***	0.034***
	(0.033)	(0.423)	(0.006)	(0.000)	(0.000)	(0.000)
SPOT_MATURITY SQUARED	0.000	-0.001	0.001*	-0.001***	-0.001***	-0.002***
	(0.243)	(0.165)	(0.071)	(0.000)	(0.002)	(0.000)
LIQUIDITY	1.121***	1.060***	1.107***	1.211***	1.527***	1.212***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LIQUIDITY_MATURITY	-0.116***	-0.138***	-0.117***	-0.166***	-0.276***	-0.164***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LIQUIDITY_MATURITY SQUARED	0.009***	0.012***	0.010***	0.013***	0.023***	0.013***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CRISIS Indicator			0.895***			0.636***
			(0.000)			(0.000)
Observations	15,891	10,118	15,891	48,994	32,755	48,994
Adjusted R-Squared	0.888	0.989	0.991	0.879	0.989	0.990
PRE-IFRS=POST-IFRS		14.06***	4.883**		16.84***	0.534
P-value		0.000	0.029		0.000	0.465
MATURITY_PRE=MATURITY_POST		35.25***	6.984***		0.003	73.23***
P-value		0.000	0.009		0.959	0.000
MATURITY SQUARED_PRE-IFRS=MATURITY SQUARED_POST-IFRS		16.90***	4.675**		0.740	39.47***
P-value		0.000	0.032		0.390	0.000

Notes to Table 3:
Table 3 shows the regressions of the CDS spread on its determinants. All regressions control for industry, fiscal quarter, and country fixed-effects (not reported). Two-tailed p-values are in parentheses. All regressions are estimated using OLS with robust standard errors corrected for firm clustering and multiple CDS contracts per firm. Columns 1 through 3 (Columns 4 through 6) show the regressions using the IFRS sample (Control sample). Columns 1 shows the base regression of the CDS spread on maturity, maturity square, CDS determinants (profitability (ROA), firm size (log market value of equity, SIZE), leverage (LEV), the country risk-free interest rate (SPOT), volatility of returns (SD_RET), credit rating (RATING), liquidity (LIQUIDITY)) and the interaction of the determinants with maturity and maturity squared. Column 2 replicates the base regression with the intercept replaced by pre-IFRS and post-IFRS indicator variables which take the value of 1 if the fiscal quarter is in the pre-IFRS and post-IFRS periods, respectively, and zero otherwise. In addition, Maturity is bifurcated into maturity prior to the adoption of IFRS (Maturity Pre-IFRS) and after the adoption of IFRS (Maturity Post-IFRS); Maturity Squared is similarly bifurcated into Maturity Squared Pre-IFRS and Maturity Squared Pre-IFRS. The regression is estimated excluding the financial crisis period (July 2007 through 3nd of 2008) observations. F-tests compare the estimated Pre-IFRS and Post-IFRS, and the Maturity and Maturity Squared coefficients pre- and post-IFRS. Column 3 replicates the regression in column 2 including all observations and controlling for the crisis period using a CRISIS indicator variable. ***, **, * indicates statistical significance at the 1%, 5%, 10%, respectively.

Table 4: CDS Spreads Before and After IFRS Adoption Pooled Analysis

	Full Sample			Matched Sample	
	BASE	Excl. Crisis	All Observations	Excl. Crisis	All Observations
	(1)	(2)	(3)	(4)	(5)
Constant	3.242***	3.402***	3.143***	3.232***	3.328***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
POST		-0.057	0.202***	0.002	0.304***
		(0.242)	(0.000)	(0.982)	(0.000)
IFRS		-0.191	-1.243***	-0.126	-1.451***
		(0.645)	(0.001)	(0.780)	(0.000)
POST_IFRS		-0.291***	-0.432***	-0.232***	-0.427***
		(0.000)	(0.000)	(0.006)	(0.000)
MATURITY	0.454***	0.442***	0.402***	0.461***	0.375***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY_IFRS		0.107	0.401***	0.084	0.460***
		(0.435)	(0.000)	(0.613)	(0.000)
MATURITY_POST		-0.003	-0.079***	-0.003	-0.087***
		(0.830)	(0.000)	(0.885)	(0.000)
MATURITY_IFRS_POST		0.079***	0.115***	0.069**	0.111***
		(0.000)	(0.000)	(0.019)	(0.000)
MATURITY SQUARED	-0.028***	-0.029***	-0.025***	-0.028***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)
MATURITY SQUARED_IFRS		-0.003	-0.023***	-0.003	-0.029***
		(0.786)	(0.003)	(0.848)	(0.001)
MATURITY SQUARED_POST		0.001	0.004***	0.001	0.004***
		(0.318)	(0.000)	(0.637)	(0.000)
MATURITY SQUARED_IFRS_POST		-0.005***	-0.006***	-0.004*	-0.006***
		(0.002)	(0.000)	(0.088)	(0.001)
ROA	-2.372***	-1.190	-1.918***	-1.695	-3.166**
	(0.000)	(0.209)	(0.010)	(0.310)	(0.034)
ROA_MATURITY		-1.732***	-0.747***	-2.058***	-0.371
		(0.000)	(0.001)	(0.000)	(0.308)
ROA_MATURITY SQUARED		0.161***	0.077***	0.184***	0.052*
		(0.000)	(0.000)	(0.000)	(0.058)
ROA_IFRS		1.771	0.263	0.821	0.247
		(0.188)	(0.822)	(0.691)	(0.892)
ROA_MATURITY_IFRS		1.159**	0.718**	1.539**	0.434
		(0.016)	(0.038)	(0.015)	(0.352)
ROA_MATURITY SQUARED_IFRS		-0.109***	-0.061**	-0.133**	-0.041
		(0.005)	(0.018)	(0.012)	(0.239)
SIZE	-0.253***	-0.353***	-0.275***	-0.287***	-0.201***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIZE _MATURITY		0.018**	0.009*	0.015*	0.005
		(0.015)	(0.061)	(0.068)	(0.372)
SIZE _MATURITY SQUARED		-0.001	-0.000	-0.001	-0.000
		(0.112)	(0.214)	(0.181)	(0.253)
SIZE _IFRS		-0.001	0.050*	-0.018	0.033
		(0.967)	(0.089)	(0.644)	(0.290)
SIZE_MATURITY_IFRS		-0.009	-0.021**	-0.004	-0.018*
		(0.486)	(0.023)	(0.788)	(0.069)
SIZE_MATURITY SQUARED_IFRS		0.000	0.001	-0.000	0.001
		(0.804)	(0.110)	(0.964)	(0.138)
LEV	1.660***	2.084***	1.939***	2.387***	2.175***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEV _MATURITY		-0.086	-0.009	-0.100	0.008
		(0.134)	(0.783)	(0.190)	(0.855)
LEV _MATURITY SQUARED		0.004	-0.004	0.004	-0.006*
		(0.465)	(0.198)	(0.558)	(0.087)
LEV _IFRS		-0.028	0.074	-0.290	-0.166

		(0.926)	(0.763)	(0.402)	(0.542)
LEV_MATURITY_IFRS		-0.192*	-0.214***	-0.158	-0.228***
		(0.070)	(0.004)	(0.197)	(0.004)
LEV_MATURITY SQUARED_IFRS		0.017**	0.018***	0.016	0.020***
		(0.049)	(0.003)	(0.126)	(0.002)
RATING	0.056***	0.081***	0.068***	0.083***	0.058***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
RATING _MATURITY		-0.008***	-0.004***	-0.011***	-0.005**
		(0.000)	(0.009)	(0.000)	(0.012)
RATING_MATURITY SQUARED		0.000***	0.000**	0.001***	0.000**
		(0.004)	(0.022)	(0.002)	(0.023)
RATING _IFRS		-0.013	-0.011	-0.011	0.002
		(0.223)	(0.166)	(0.370)	(0.816)
RATING_MATURITY_IFRS		0.005	0.003	0.009**	0.004
		(0.112)	(0.187)	(0.037)	(0.153)
RATING_MATURITY SQUARED_IFRS		-0.000	-0.000	-0.001*	-0.000
		(0.152)	(0.222)	(0.060)	(0.203)
SD RET	8.445***	12.539***	10.878***	12.893***	9.614***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SD RET _MATURITY		-0.824***	-0.753***	-0.724***	-0.615***
		(0.000)	(0.000)	(0.006)	(0.000)
SD RET _MATURITY SQUARED		0.047***	0.038***	0.035	0.027**
		(0.002)	(0.000)	(0.113)	(0.015)
SD RET _IFRS		0.585	3.937***	-0.515	5.004***
		(0.634)	(0.000)	(0.735)	(0.000)
SD RET_MATURITY_IFRS		-0.317	-1.122***	-0.449	-1.326***
		(0.459)	(0.000)	(0.379)	(0.000)
SD RET_MATURITY SQUARED_IFRS		0.028	0.071***	0.046	0.088***
		(0.448)	(0.000)	(0.314)	(0.000)
SPOT	-0.009	-0.100***	-0.144***	-0.121***	-0.194***
	(0.421)	(0.000)	(0.000)	(0.000)	(0.000)
SPOT _MATURITY		0.022***	0.034***	0.031***	0.048***
		(0.000)	(0.000)	(0.001)	(0.000)
SPOT _MATURITY SQUARED		-0.001***	-0.002***	-0.002***	-0.002***
		(0.002)	(0.000)	(0.009)	(0.000)
SPOT _IFRS		0.122***	0.236***	0.157***	0.266***
		(0.002)	(0.000)	(0.000)	(0.000)
SPOT_MATURITY_IFRS		-0.014*	-0.047***	-0.025**	-0.062***
		(0.095)	(0.000)	(0.040)	(0.000)
SPOT_MATURITY SQUARED_IFRS		0.000	0.002***	0.001	0.003***
		(0.497)	(0.000)	(0.235)	(0.000)
LIQUIDITY	0.864***	1.553***	1.230***	1.493***	1.127***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LIQUIDITY _MATURITY		-0.283***	-0.168***	-0.270***	-0.137***
		(0.000)	(0.000)	(0.000)	(0.000)
LIQUIDITY _MATURITY SQUARED		0.023***	0.013***	0.023***	0.010***
		(0.000)	(0.000)	(0.000)	(0.000)
LIQUIDITY _IFRS		-0.343***	-0.094**	-0.275**	0.012
		(0.001)	(0.031)	(0.017)	(0.793)
LIQUIDITY _MATURITY_IFRS		0.124***	0.051***	0.107***	0.019
		(0.000)	(0.001)	(0.004)	(0.227)
LIQUIDITY _MATURITY SQUARED_IFRS		-0.009***	-0.004***	-0.007**	-0.000
		(0.001)	(0.004)	(0.027)	(0.712)
CRISIS Indicator	0.709***		0.689***		0.366***
	(0.000)		(0.000)		(0.000)
Observations	64,885	42,873	64,885	16,252	28,164
Adjusted R-squared	0.874	0.867	0.882	0.861	0.879

Notes to Table 4:
The table shows the pooled regression results. The Full Sample (Matched Sample) columns present the results for the full (matched) sample. The BASE column reports the regression results of CDS on its determinants. Excl. Crisis shows the results excluding the financial crisis period (July 2007 through 3nd of 2008) observations. POST (IFRS) is an indicator variable taking on the value one if the fiscal quarter is after 2005 (firm belongs to the IFRS sample) and zero otherwise. Variable names with an underscore represent interaction variables. For example, MATURITY_IFRS_POST is the interaction between Maturity, IFRS, and POST. The regressions control for industry and fiscal quarter fixed effects (not reported). The pooled regressions control for country fixed effects. The Matched Sample regression do not control for country fixed effect because almost all firms in the matched control sample are from the U.S. Two-tailed p-values are in parentheses. All regressions are estimated using OLS with robust standard errors corrected for firm clustering and multiple CDS contracts per firm. ***, **, * indicates statistical significance at the 1%, 5%, 10%, respectively

Table 5: CDS Spreads Before and After IFRS Adoption and Conditioning Variables

VARIABLES	CODE	Rule of Law	Earnings Management	European Union	Proactive
PRE-IFRS_COND	1.973***	1.940***	2.102***	1.915***	1.781***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
POST-IFRS_COND	1.853***	1.775***	2.036***	1.767***	1.682***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PRE-IFRS_NO_COND	1.870***	2.096***	2.038***	1.917***	1.938***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
POST-IFRS_NO_COND	1.724***	1.921***	1.747***	1.886***	1.805***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY PRE-IFRS_COND	0.793***	0.795***	0.834***	0.807***	0.884***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY POST-IFRS_COND	0.837***	0.836***	0.860***	0.845***	0.903***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY PRE-IFRS_NO_COND	0.812***	0.795***	0.829***	0.764***	0.803***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY POST-IFRS_NO_COND	0.842***	0.824***	0.888***	0.795***	0.851***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY SQUARED PRE-IFRS_COND	-0.048***	-0.047***	-0.051***	-0.048***	-0.054***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY SQUARED POST-IFRS_COND	-0.050***	-0.050***	-0.053***	-0.051***	-0.055***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY SQUARED PRE-IFRS_NO_COND	-0.048***	-0.048***	-0.051***	-0.044***	-0.048***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY SQUARED POST-IFRS_NO_COND	-0.049***	-0.049***	-0.054***	-0.047***	-0.051***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CONTROL VARIABLES	YES	YES	YES	YES	YES
Observations	15,891	15,891	15,549	15,891	15,891
Adjusted R-squared	0.990	0.990	0.990	0.990	0.990

PRE_COND=POST_COND	1.688	4.203**	0.433	3.521*	1.328
P-value	0.196	0.042	0.512	0.062	0.251
PRE_NO_COND=POST_NO_COND	2.698	3.042*	10.85***	0.058	2.560
P-value	0.102	0.083	0.001	0.810	0.112
MATURITY_PRE_COND=MATURITY_POST_COND	5.066**	6.631**	1.530	6.218**	1.137
P-value	0.026	0.011	0.218	0.014	0.288
MATURITY_PRE_NO_COND=MATURITY_POST_NO_COND	2.145	1.450	12.81***	0.880	7.284***
P-value	0.145	0.230	0.000	0.349	0.008
MATURITY_SQUARED_PRE_COND=MATURITY_SQUARED_POST_COND	2.771*	4.592**	1.335	3.491*	0.386
P-value	0.098	0.034	0.250	0.063	0.535
MATURITY_SQUARED_PRE_NO_COND=MATURITY_SQUARED_POST_NO_COND	1.186	0.873	6.703**	1.370	5.537**
P-value	0.278	0.352	0.011	0.244	0.020

Notes to Table 5:
The table shows the regressions of the CDS spread on its determinants conditioning on institutional factors. The conditioning variables are the origin of legal system (CODE), strength of enforcement of Rule of Law, level of earnings management (Earnings Management), membership in the European Union (EU), and countries whose local supervisory authorities proactively reviewed financial statements at the time of mandatory IFRS adoption (PROACTIVE). The control variables include the CDS determinants [profitability, size, leverage, rating, volatility, spot rate, and liquidity] as well as the financial crisis period dummy. Two-tailed p-values are in parentheses. All regressions are estimated using OLS with robust standard errors corrected for firm and time clustering and multiple CDS contracts per firm. The variables in each column are defined as follows:

The columns labeled CODE conditions on Code vs. Common law countries. Suffix COND (NO_COND) implies code law (common law) country. For example, PRE-IFRS_COND (PRE-IFRS_NO_COND) = 1 if code (common) law country and pre-IFRS period, zero otherwise. The column labeled Rule of Law conditions on the strength of legal enforcement. Values above (below) the median represent countries with strong (weak) legal enforcement. Suffix COND (NO_COND) indicates a country with strong (weak) legal enforcement. The column labeled Earnings Management conditions on extent of earnings management prior to the adoption of IFRS. Values above (below) the median represent countries with high (low) earnings management. Suffix COND (NO_COND) indicates a country with high (low) earnings management. The column labeled European Union conditions on membership in the EU. Suffix COND (NO_COND) indicates a country which belongs (does not belong) to the EU. The column labeled PROACTIVE conditions on countries whose local supervisory authorities proactively reviewed financial statements at the time of mandatory IFRS adoption. Suffix COND (NO_COND) indicates a country which was (was not) proactive. ***, **, * indicates statistical significance at the 1%, 5%, 10%, respectively.

Table 6: Transparency Analysis

Panel A: Difference in Differences Transparency Analysis

		IFRS	Control	DIFF(IFRS_Control)
Forecast Error	Pre-IFRS	0.012	0.002	**0.010*** **
	Post-IFRS	0.006	0.004	**0.002*** **
	DIFF (PRE-POST)	**0.006*** **	**-0.002*** **	**0.008*** **
Dispersion	Pre-IFRS	0.004	0.002	**0.002*** **
	Post-IFRS	0.003	0.002	**0.001*** **
	DIFF (PRE-POST)	**0.001*** **	**-0.001*** **	**0.002*** **

Panel B: CDS and Transparency Level

VARIABLES	FORECAST ERROR	DISPERSION
Constant	1.659***	1.316**
	(0.002)	(0.012)
TRANSPARENCY	-0.139***	-0.153***
	(0.002)	(0.005)
MATURITY	0.990***	1.093***
	(0.000)	(0.000)
MATURITY*TRANSPARENCY	0.004	-0.016
	(0.693)	(0.302)
MATURITY SQUARED	-0.061***	-0.068***
	(0.000)	(0.000)
MATURITY SQUARED* TRANSPARENCY	0.001	0.002*
	(0.410)	(0.085)
ROA	-2.908	-3.690*
	(0.176)	(0.089)
ROA_MATURITY	-0.634	-0.633
	(0.240)	(0.247)
ROA_MATURITY SQUARED	0.059	0.058
	(0.131)	(0.123)
SIZE	-0.199***	-0.170***
	(0.000)	(0.001)
SIZE_MATURITY	-0.025**	-0.031***
	(0.020)	(0.005)
SIZE_MATURITY SQUARED	0.002**	0.002***
	(0.026)	(0.003)
LEV	1.816***	1.901***
	(0.000)	(0.000)
LEV_MATURITY	-0.324***	-0.355***
	(0.001)	(0.000)
LEV_MATURITY SQUARED	0.023***	0.024***
	(0.002)	(0.000)
RATING	0.048***	0.052***
	(0.000)	(0.000)
RATING_MATURITY	0.003	0.002
	(0.158)	(0.372)
RATING_MATURITY SQUARED	-0.000*	-0.000
	(0.075)	(0.170)
SD_RET	13.623***	13.594***
	(0.000)	(0.000)
SD_RET_MATURITY	-1.930***	-2.072***
	(0.000)	(0.000)
SD_RET_MATURITY SQUARED	0.124***	0.133***
	(0.000)	(0.000)
SPOT	0.129**	0.147**
	(0.035)	(0.017)
SPOT_MATURITY	-0.026***	-0.030***
	(0.001)	(0.001)
SPOT_MATURITY SQUARED	0.001*	0.001*
	(0.064)	(0.063)
LIQUIDITY	1.011***	0.934***
	(0.000)	(0.000)
LIQUIDITY_MATURITY	-0.125***	-0.131***
	(0.000)	(0.000)
LIQUIDITY_MATURITY SQUARED	0.011***	0.011***
	(0.000)	(0.000)
CRISIS Indicator	1.039***	0.332**
	(0.000)	(0.013)
Observations	7,642	5,277
Adjusted R-squared	0.907	0.914

Panel C: CDS and Transparency Level in the Pre Period

VARIABLES	TRANSPARENCY=AVERAGE LEVEL		TRANSPARENCY=LOW/ HIGH INDICATOR	
	FORECAST ERROR	DISPERSION	FORECAST ERROR	DISPERSION
Constant	2.389***	3.406***	2.307***	4.536***
	(0.000)	(0.000)	(0.000)	(0.000)
TRANSPARENCY PRE PERIOD	13.932***	58.052***	0.220**	0.415***
	(0.000)	(0.000)	(0.046)	(0.001)
POST	-0.228*	-0.217**	-0.150	-0.241*
	(0.058)	(0.045)	(0.433)	(0.068)
POST * TRANSPARENCY PRE PERIOD	-6.953***	-32.628***	-0.078	-0.317***
	(0.001)	(0.000)	(0.450)	(0.005)
MATURITY	0.653***	0.625***	0.637***	0.597***
	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY*POST	0.055**	0.042	0.061**	0.043
	(0.015)	(0.147)	(0.023)	(0.172)
MATURITY*POST* TRANSPARENCY PRE PERIOD	0.449	2.882**	0.007	0.040*
	(0.281)	(0.021)	(0.719)	(0.081)
MATURITY SQUARED	-0.035***	-0.035***	-0.034***	-0.033***
	(0.000)	(0.000)	(0.000)	(0.000)
MATURITY SQUARED*POST	-0.003**	-0.002	-0.004*	-0.002
	(0.045)	(0.290)	(0.052)	(0.318)
MATURITY SQUARED*POST* TRANSPARENCY PRE PERIOD	-0.026	-0.190**	-0.001	-0.003*
	(0.399)	(0.026)	(0.720)	(0.074)
ROA	1.613	0.657	1.285	0.004
	(0.308)	(0.680)	(0.402)	(0.998)
ROA_MATURITY	-0.631	-0.435	-0.602	-0.182
	(0.198)	(0.387)	(0.226)	(0.727)
ROA_MATURITY SQUARED	0.042	0.031	0.040	0.012
	(0.200)	(0.345)	(0.245)	(0.717)
SIZE	-0.142***	-0.256***	-0.158***	-0.456***
	(0.007)	(0.000)	(0.007)	(0.000)
SIZE_MATURITY	-0.000	-0.002	0.001	0.000
	(0.979)	(0.805)	(0.922)	(0.946)
SIZE_MATURITY SQUARED	-0.000	0.000	-0.000	-0.000
	(0.867)	(0.751)	(0.729)	(0.917)
LEV	1.783***	1.587***	2.224***	1.992***
	(0.000)	(0.000)	(0.000)	(0.000)
LEV_MATURITY	-0.247**	-0.207**	-0.238**	-0.202**
	(0.016)	(0.044)	(0.024)	(0.040)
LEV_MATURITY SQUARED	0.014*	0.012	0.014*	0.011
	(0.060)	(0.120)	(0.084)	(0.110)
RATING	0.019*	0.015	0.028***	0.024**
	(0.071)	(0.190)	(0.008)	(0.022)
RATING_MATURITY	0.008***	0.007***	0.008***	0.008***
	(0.007)	(0.004)	(0.005)	(0.002)
RATING_MATURITY SQUARED	-0.001***	-0.001***	-0.001***	-0.001***
	(0.006)	(0.004)	(0.004)	(0.001)
SD_RET	13.077***	11.114***	13.407***	11.312***
	(0.000)	(0.000)	(0.000)	(0.000)
SD_RET_MATURITY	-1.996***	-1.555***	-1.881***	-1.456***
	(0.000)	(0.000)	(0.000)	(0.000)
SD_RET_MATURITY SQUARED	0.104***	0.070***	0.098***	0.065***
	(0.000)	(0.002)	(0.000)	(0.005)
SPOT	0.089*	0.092	0.086*	0.092
	(0.084)	(0.130)	(0.087)	(0.155)
SPOT_MATURITY	-0.033***	-0.035**	-0.034***	-0.038**
	(0.007)	(0.019)	(0.005)	(0.012)

SPOT_MATURITY SQUARED	0.002**	0.002**	0.002**	0.002**
	(0.020)	(0.041)	(0.014)	(0.025)
LIQUIDITY	0.963***	0.906***	1.009***	0.920***
	(0.000)	(0.000)	(0.000)	(0.000)
LIQUIDITY_MATURITY	-0.147***	-0.150***	-0.145***	-0.139***
	(0.000)	(0.000)	(0.000)	(0.000)
LIQUIDITY_MATURITY SQUARED	0.011***	0.011***	0.011***	0.010***
	(0.000)	(0.000)	(0.000)	(0.000)
CRISIS Indicator	1.179***	0.973***	1.199***	0.877***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	6,640	5,316	6,640	5,316
Adjusted R-squared	0.927	0.936	0.922	0.931

Notes to Table 6:
Panel A compares the transparency measures – forecast error and dispersion, pre and post-IFRS for the IFRS and control samples. Forecast error is computed as the absolute value of the difference between analyst quarterly earnings per share forecast and actual earnings per share, scaled by share price. Dispersion is computed as the dispersion of the quarterly earnings per share forecasts among analysts. Both measures of transparency are scaled by price per share at the beginning of the quarter. Panel B shows the regression results of CDS on its determinants including the transparency measure and its interaction with maturity and maturity squared. Panel C presents the results when we control for transparency in the pre IFRS period. In the LEVEL columns TRANSPARENY PRE PERIOD is the average level of forecast error and dispersion in the pre period. High level implies greater forecast error and dispersion and hence lower transparency. In the LOW/HIGH INDICATOR regressions TRANSPARENCY PRE PERIOD is an indicator with 1 if the forecast error or dispersion are above the median and zero otherwise. Hence, TRANSPARENCY PRE PERIOD takes the value of 1 for low transparency firms in the pre period. The regressions control for industry, fiscal quarter, and country fixed-effects, and are estimated using OLS with robust standard errors corrected for firm clustering and multiple CDS contracts per firm.***, **, * indicates statistical significance at the 1%, 5%, 10%, respectively.

Figure 1: Credit spreads for varying accounting precision from Duffie and Lando (2001)

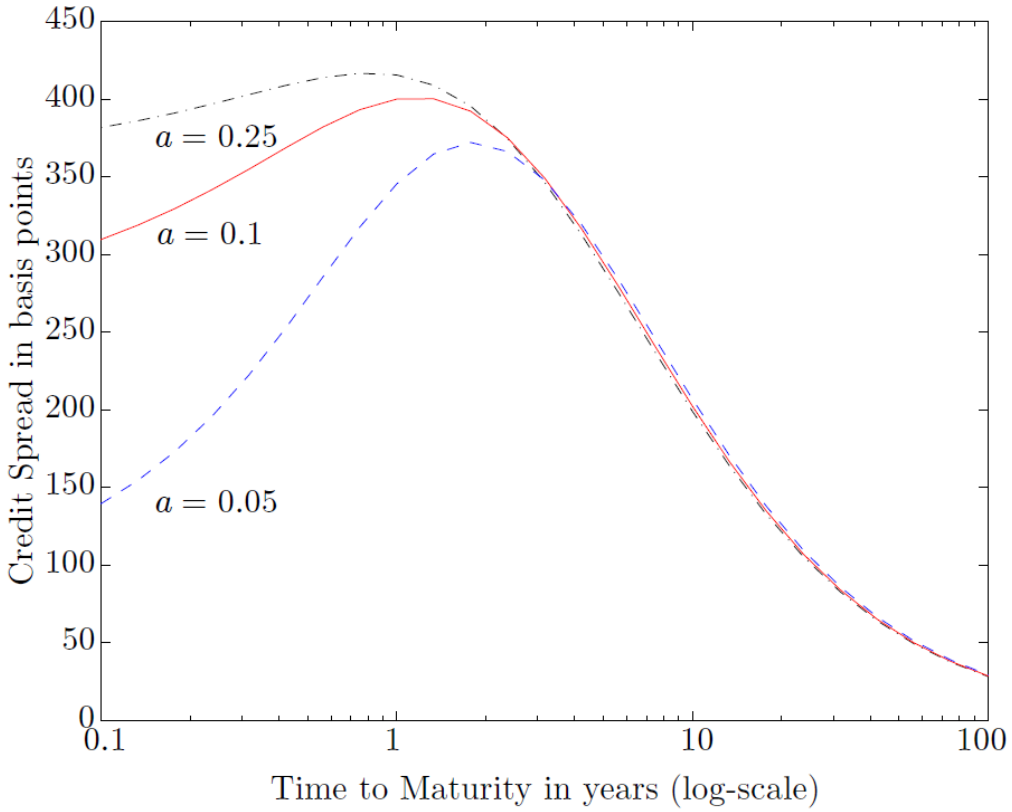

Figure 8: Credit spreads for varying accounting precision.

Figure 2: CDS Spread Pre and Post-IFRS for IFRS Adopters

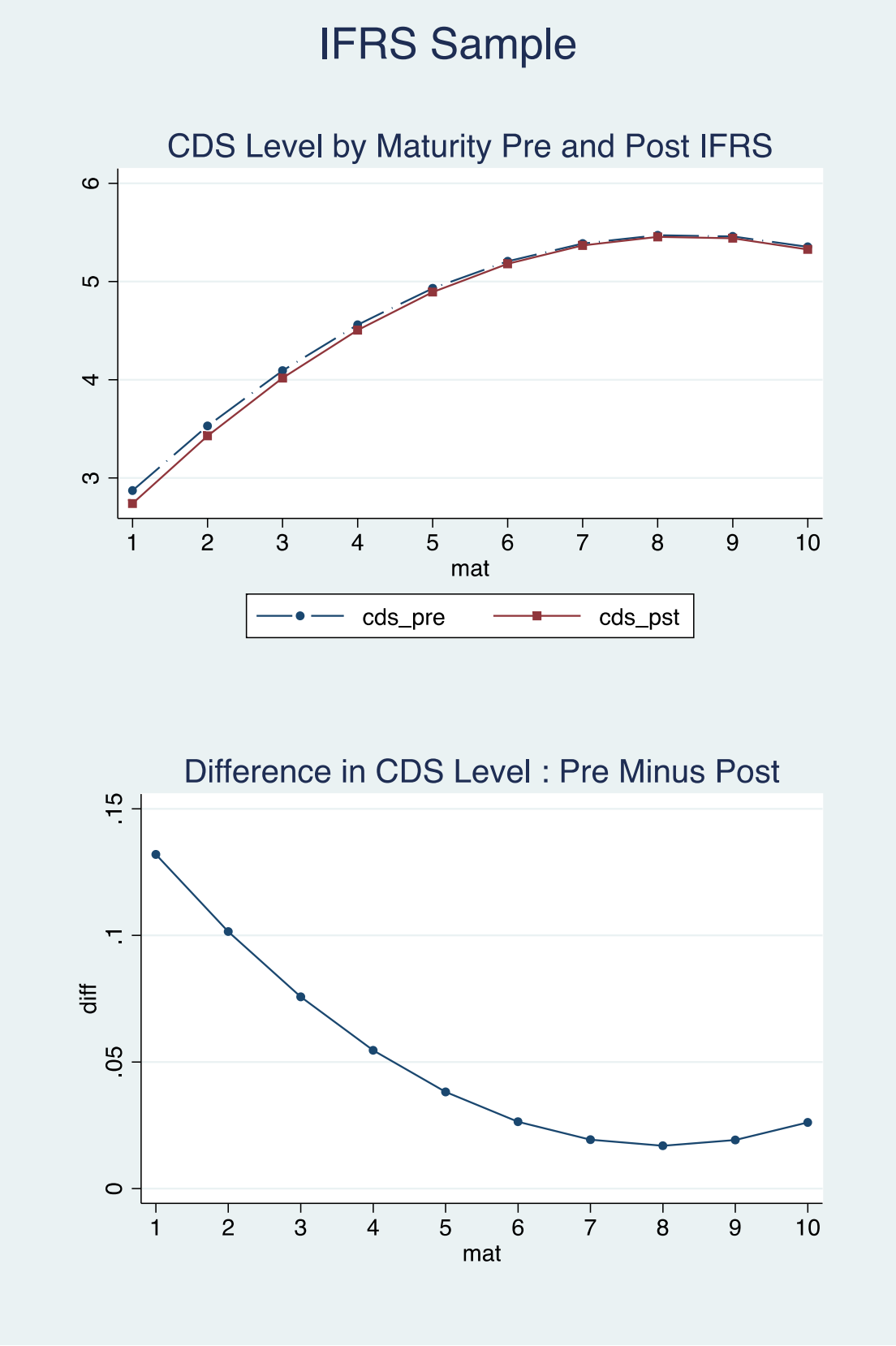

Figure 3: CDS Spread Pre and Post-IFRS for the Control Sample