A Tale of Two Regulators: Risk Disclosures, Liquidity, and Enforcement in the Banking Sector*

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August 2015

Abstract

This paper examines the effects of heterogeneity in regulatory supervision on firms' disclosure behavior and the ensuing capital market consequences. The effectiveness of regulation depends not only on the written rules, but also on how regulators and the firms they regulate enforce and adhere to these rules. We exploit the fact that banks are subject to quasi-identical risk disclosure rules under securities laws (IFRS 7) and banking regulation (Pillar 3 of the Basel II accord), but that different regulators enforce these rules at different points in time. We find that banks substantially increase their risk disclosures upon the adoption of Pillar 3 even if they had to comply with the same requirements under IFRS 7 beforehand. The increase is larger in countries where the banking regulator has more supervisory powers and resources and is less involved in the general oversight of securities markets. It is also larger for banks most likely to attract regulatory scrutiny from the banking supervisor due to higher distress risk. The improved risk disclosures translate into higher market liquidity around Pillar 3 but not around IFRS 7. The results indicate that the success of regulation depends on the institutional fit between regulator and regulatee, and that having multiple regulators may lead to inconsistent implementation and enforcement of the same rules.

JEL classification: F30, G21, G28, K22, M41

Key Words: *Disclosure regulation, Risk disclosures, Liquidity, Financial institutions, Market supervision, IFRS, Basel II, International accounting*

* We appreciate the helpful comments of Anne Beatty, Elizabeth Chuk, Dan Collins, João Granja, Bjorn Jorgensen, Mark Lang, Ryan Williams, and workshop participants at the 2014 Dopuch Accounting Conference at Washington University, 2015 London Business School Accounting Symposium, 2015 European Financial Management Association meeting, 2015 European Accounting Association meeting, University of Bristol, University of Chicago, Erasmus University, University of Exeter, Freie Universität Berlin, Lancaster University, London School of Economics, Stockholm School of Economics, University of Wisconsin, and University of Zurich.

"Rebuilding investors' confidence and trust in the banking industry is vital to the future health of the financial system – and responding to their demands for better risk disclosures is an important step in achieving that goal." Financial Stability Board (2012)

1. Introduction

Disclosure regulation plays a key part for well-functioning capital markets. Yet the success of any new disclosure requirements depends not only on the written rules, but also on how regulators and the firms they regulate implement and adhere to these rules. In particular, the enforcement of existing rules is seen as important determinant of financial reporting outcomes (e.g., Glaeser, Johnson, and Shleifer, 2001; Holthausen, 2009; Christensen, Hail, and Leuz, 2013). The exact role of enforcement and how it achieves its goal, however, is still not well understood. On the one hand, the written rules might afford firms with sufficient regulatory flexibility even perfect enforcement cannot avoid (e.g., Auffhammer and Kellogg, 2011). Similarly, firms via means of legal incorporation, the decision to cross-list or go dark often effectively choose their regulator, the degree of enforcement, and – implicitly – their compliance with regulation (e.g., Rosen, 2003; Doidge, Karolyi, and Stulz, 2004; Leuz, Triantis, and Wang 2008), leading to regulatory competition among supervisory bodies, exchanges, and jurisdictions (Tiebout, 1956). On the other hand, the existence of multiple regulators overseeing the same firms implies goal incongruence, different supervisory toolsets, resources, and decision rights, and diverging information gaps that likely introduce inconsistencies in how regulatory action takes place (e.g., Martimort, 1999; Parisi, Schulz, and Klick, 2006; Agarwal et al., 2014). This heterogeneity can even be present within the same regulatory agency (Macher, Mayo, and Nickerson, 2011), and extends to how individual firms react to the expected scrutiny by the regulator. Thus, in practice, the regulatory process is more nuanced than imposing a common set

of rules that is consistently enforced by a single regulator and with which the regulated firms uniformly comply.

In this paper, we use a clearly identified setting in the context of international banking to shed light on one aspect of the regulatory process. Namely, we go beyond the general notion of "enforcement matters," and examine the effects of heterogeneity in the regulatory supervision of banks on their compliance with risk disclosure rules and the ensuing capital market consequences. Our setting has several desirable features. First, it allows us to analyze the same disclosure requirements but instituted under different regulations, and hence overseen by different regulatory bodies (or branches within the same regulatory body). International Financial Reporting Standard no. 7 (IFRS 7) requires disclosures about the nature and extent of risks arising from financial instruments and applies to all firms subject to mandatory IFRS reporting. Its enforcement, in general, lies with the agency supervising national securities markets, or is sometimes delegated to a third party, like the local stock exchange. With the third pillar of the Basel II accord (Pillar 3) the Basel Committee on Banking Supervision issued risk disclosure requirements that in many aspects are almost identical to IFRS 7, but lie under the supervision of the national banking regulator.[1] Thus, our setting holds the written rules constant while at the same time it varies who is responsible for the enforcement of the rules.

Second, the staggered adoption of IFRS 7 and Pillar 3 offers better identification of how the different regulators impact the effectiveness of the rules than if both had been implemented at the

[1] For instance, in Italy the *Bank of Italy* is responsible for prudential regulation of the banking industry, while the *Commissione Nazionale per le Società e la Borsa* (CONSOB) conducts the securities market oversight. The Bank of Italy's primary goals are to ensure "sound and prudent bank management and the overall stability, efficiency, and competitiveness of the financial system" (art. 5 of the Consolidated Law on Banking). CONSOB, on the other hand, is responsible for the regulation and control of securities markets, including accounting and auditing matters, the supervision of audit firms, and the recommendation of auditing and accounting standards. Other countries have a similar structure (e.g., Spain with the *Bank of Spain* and the *Comisión Nacional del Mercado de Valores*) while countries like Poland with the *Polish Financial Supervision Authority* (PFSA) have only one unified regulator overseeing both areas.

same time. This staggered adoption extends to the analysis of the capital market effects because the new rules are tied to banks' financial reporting. We exploit the monthly variation in when banks actually release the risk disclosures under IFRS 7 and Pillar 3 to identify the liquidity effects. Third, both rules are the result of a supranational regulatory effort and impose a periodic schedule of when banks have to disclose the information, thereby minimizing the concerns that the regulated firms actively influence the content, timing, or even the avoidance of the new regulations. As a result, what we observe should reflect the institutional fit between regulator and regulatee, that is, how the two parties interact and their incentives match, rather than banks' innate preferences. Finally, focusing on clearly defined disclosure items lets us objectively measure the outcome of the new rules (i.e., firms either disclose an item or not), and then link those changes to market perceptions. At the same time, our coding of the risk disclosures is flexible enough to allow for variation in firms' implementation of a particular disclosure item.

Against this backdrop, we study the question of whether a new set of disclosure rules is enough to prompt material changes in banks' disclosure behavior, or whether and how characteristics of the regulators entrusted with implementing and supervising those rules as well as firms' incentives to adhere to the rules matter for the regulatory outcome. If the effects are primarily driven by the rules and/or the securities market regulator serves as the principal enforcer of any disclosure regulation in a country, then we expect to observe a change in risk disclosures and liquidity following the adoption of IFRS 7, but no further changes around Pillar 3.[2] If on the other hand the bank regulator plays a relatively more important role in shaping banks' reporting behavior because, for instance, it has vested interests, suffers less from

[2] This prediction assumes that the securities market regulator is incentivized and has the necessary means to effectively enforce the risk disclosures. As prior research in the IFRS area has shown, these conditions are not always met (e.g., Ball, Robin, and Wu, 2003; Daske et al., 2008; Byard, Li, and Yu, 2011; Christensen, Hail, and Leuz, 2013). However, our cross-country sample offers enough variation to control for this effect.

information asymmetries, or possesses better tools to intervene in cases of noncompliance, then we expect risk disclosures to increase around Pillar 3, even though the same disclosure requirements were already in place under IFRS 7. This increase in transparency, if material enough, should also translate to the capital markets.

We test the above arguments using a sample of 122 banks from 29 Basel II countries that issue Pillar 3 reports. To enable difference-in-differences estimation, we include various benchmark firms in the sample: (i) banks domiciled in Basel II countries that are exempt from Pillar 3 disclosures (e.g., because they are part of a group whose parent entity already fulfills the Pillar 3 requirements), (ii) banks reporting under IFRS but located in non-Basel II countries, and (iii) manufacturing, service, and insurance firms with substantive financial instrument use. These benchmark firms allow us to control for general trends, regulatory changes, and shocks to banks' risk disclosures unrelated to the new disclosure regime.

Our sample period starts in 2005, two years before IFRS 7 became effective. It runs through 2009, at which point Pillar 3 has been in place for at least a year. To track firms' disclosures over time, we construct two distinct disclosure scores based on the annual reports for each firm and year. First, we construct a *Risk Disclosures* score as the sum of 39 items required under both IFRS 7 and Pillar 3. This measure represents the overlap between the two disclosure rules, and serves as the dependent variable in our disclosure analyses. Second, we construct a *Fair Value Disclosures* score as the sum of 18 items required only under IFRS 7 but not under Pillar 3. The purpose of this second measure is to serve as time-varying control variable for changes in banks' disclosure behavior amid Pillar 3 adoption. In our liquidity analyses, we use monthly bid-ask spreads as the dependent variable. Market liquidity is a well-suited outcome variable for our setting, because we can measure it over relatively short intervals, thus enabling our identification

strategy. Furthermore, liquidity is conceptually tied to a firm's disclosure policy (e.g., Glosten and Milgrom, 1985; Diamond and Verrecchia, 1991; Verrecchia, 2001), even though the link with risk disclosures is more complex than transparency regarding future expected cash flows (e.g., Jorgensen and Kirschenheiter, 2003; Heinle and Smith, 2014).

We start the analyses by plotting the aggregate disclosure scores over time. The graphs reveal an increase in risk disclosures in the year IFRS 7 became effective, but an even steeper increase upon Pillar 3 adoption. No such pattern is present for fair value disclosures. We confirm these changes by estimating annual panel regressions for the treatment and benchmark firms. We find that compared to the pre-period, risk disclosures increase following the adoption of IFRS 7 for all firms, but that compliance with risk disclosure rules increases even further for banks after they become subject to Pillar 3 reporting. In aggregate, Pillar 3 banks experience an increase on the order of 26 percentage points in the risk disclosures score, while benchmark firms only show improvements of about 12 percentage points. The results hold after controlling for concurrent changes in fair value disclosures, multiple firm attributes, and year-, country-, or firm-fixed effects. The findings are consistent with bank regulators playing a distinct and important role for the disclosure policy of regulated banks (over and above securities markets regulators). They also show that different regulatory agencies implement quasi-identical disclosure rules in an inconsistent manner.

To probe deeper, we next examine cross-sectional differences among the Pillar 3 banks. We find that in countries where the banking regulator has relatively more supervisory powers and resources than the authority responsible for securities market oversight, and where the two are separated into two independent agencies, banks react more to the implementation of Pillar 3. Similarly, when the banking regulator is actively involved in the process of accounting standard

setting or the review of financial statements, more of the increase in banks' risk disclosures occurs around the adoption of IFRS 7. We find no differences among banks split by traditional proxies for the quality of a country's institutional environment, like the rule of law index by Kaufmann, Kraay, and Mastruzzi (2010). In line with, for instance, Jackson and Roe (2009), or Agarwal et al. (2014), this finding suggests that a regulator's *"will"* (i.e., its institutional design, resources, and incentives) are crucial for the outcome of the regulatory process. Yet, the incentives of the regulated firms also seem to matter. We find that the increase in risk disclosures around Pillar 3 is larger for banks that show signs of financial distress (e.g., have lower capital ratios, weaker stock price performance, or fail to pass a stress test by one of the European banking authorities). Hence, banks most likely to attract regulatory scrutiny seem more forthcoming in their disclosures. These banks might also react proactively by reducing bank-specific information asymmetries in an attempt to lower the risk and prevent the fallouts of a potential bank run (e.g., Park, 1991; Gorton and Winton, 2003).

Finally, in the liquidity analyses, we tie the changes in risk disclosures to capital market outcomes. We estimate monthly panel regressions of bid-ask spreads on indicator variables for IFRS 7 and Pillar 3. The monthly observation interval allows us to exploit the staggered release of the respective information in firms' annual reports. We do so by introducing monthly fixed effects that flexibly account for liquidity trends among Pillar 3 banks and our various benchmark groups, along with country- or firm-fixed effects. In this design, the identification of the IFRS 7 and Pillar 3 effects comes solely from the within-group variation in the release of the risk disclosures. We find no market reaction around IFRS 7, but an increase in liquidity on the order of 14 to 18 percent following Pillar 3. This result is consistent with the banking regulator playing the dominant role for banks, even when it comes to general regulation geared towards all

publicly listed firms. It is also consistent with the Pillar 3 risk disclosures being more material and insightful than the same disclosure items under IFRS 7.

Our study contributes to the literature in several ways. First, we show that written rules are not enough to prompt changes in firms' disclosure behavior, but that they have to be paired with adequate enforcement. This finding belongs to the line of literature on the country-level determinants of firms' reporting behavior (e.g., Ball, Kothari, and Robin, 2000; Leuz, Nanda, and Wysocki, 2003; Burgstahler, Hail, and Leuz, 2006), or more recently, on the observed heterogeneity in the capital market and information effects of mandatory IFRS adoption (e.g., Daske et al., 2008; Byard, Li, and Yu, 2011; Landsman, Maydew, and Thornock, 2012; Christensen, Hail, and Leuz, 2013). We add to this literature by focusing on a narrowly defined area of disclosure regulation with reporting outcomes that are clearly observable. Moreover, our identification strategy of the enforcement effects is not purely cross-sectional as in many cross-country studies, but relies on the time-series pattern of when enforcement should take place.

Second, going beyond the message of "enforcement matters", we show that there exists heterogeneity in how different regulatory agencies implement and enforce the same set of rules and that the success of regulation likely depends on the fit between regulator and regulatee. That is, regulators with higher incentives and better infrastructure are better at imposing the written rules while, in turn, firms fearing regulatory scrutiny or market pressure are better in following the rules. This evidence of heterogeneous enforcement of disclosure requirements adds to recent findings of regulatory inconsistency in the assignment of CAMELS ratings to U.S. banks (Berger, Kyle, and Scalise, 2001; Agarwal et al., 2014), the implementation of securities laws in the countries of the European Union (Christensen, Hail, and Leuz, 2014), or the inspection

activity by the U.S. Food and Drug Administration (Macher, Mayo, and Nickerson, 2011).[3] Our setting is unique in the sense that two different regulators (or branches of the same regulator) oversee the same firms and rules, but their goals likely vary and their supervisory task starts at different points in time.

Third, we contribute to the literature on the economic consequences of disclosure regulation (e.g., Leuz and Wysocki, 2015, for an overview) by providing evidence along the full conceptual spectrum between (i) new regulation and an improvement in information quality, and (ii) more transparent reporting and an increase in market liquidity. Typically, studies either focus on the first link (e.g., Byard, Li, and Yu, 2011; Barth et al., 2012; Yip and Young, 2012; Ahmed, Neel, and Wang, 2013), or infer changes to the information quality of new regulation from observed market outcomes (e.g., Hail and Leuz, 2006; Daske et al., 2008; Li 2010). We explicitly connect and test both links, thereby increasing our confidence in the underlying causality.

The remainder of the paper proceeds as follows. In Section 2, we develop the hypotheses and provide more details on the risk disclosures under IFRS 7 and the third pillar of the Basel II accord. In Section 3, we outline the research design, describe the sample selection, and provide descriptive statistics. Section 4 contains the results of the disclosure analyses, the cross-sectional tests along the dimension of the relative strength of the bank regulator and firm-level incentives, and the liquidity analyses. Section 5 concludes.

[3] In a related study, Costello, Granja, and Weber (2015) show how U.S. banks alter their reporting choices (i.e., accounting restatements of regulatory filings) when facing a more or less lenient regulator, and how, in turn, strict regulators focus their scarce enforcement resources on banks most likely in financial distress.

2. Hypothesis Development and Institutional Setting

2.1. Conceptual Link Between Disclosure Regulation, Enforcement, and Liquidity

Prior research offers evidence that firms apply identical accounting rules in different ways (e.g., Ball, Robin, and Wu, 2003; Leuz, 2003) and differ in the extent to which they comply with specific disclosure requirements (e.g., Glaum and Street, 2003). Public enforcement of existing rules is an important factor that helps explain these differences across countries and firms (Christensen, Hail, and Leuz, 2013; Brown, Preiato, and Tarca, 2014). Public enforcement implies that a supervisory agency imposes costly sanctions on firms that deviate from intended reporting practices and thereby establishes economic incentives for firms to apply a specific rule in the desired way (Shleifer, 2005). The efficacy of public enforcement depends, among other things, on the probability with which a regulator is able to detect any misbehavior as well as the expected costs of the penalties and sanctions involved.

Characteristics of both the supervisory agency and the regulated firms jointly determine public enforcement efficacy. On the one hand, legal powers granted to the supervisory agency allow it to intervene into a firm's reporting practices (Barth, Caprio, and Levine, 2006). Similarly, the economic resources at hand affect the likelihood and intensity of a supervisor being able to pursue individual cases of reporting malpractice (Jackson and Roe, 2009; Christensen, Hail, and Leuz, 2014). Differences in the endowment with legal powers and economic resources across multiple regulators overseeing the same set of firms but also across jurisdictions are therefore likely to produce (cross-country) differences in firms' reporting behavior.[4] Yet, even when subject to the same regulatory body, firms' incentives to follow

[4] As an illustration of the differences in legal powers across multiple regulators consider the settlement that Bank of America reached in 2014 with the U.S. Departement of Justice for financial fraud leading up to and during

specific rules vary; that is, the incentives to adhere to certain rules are shaped by factors specific to the regulated party (Fisman and Miguel, 2007).

In the banking industry, the relationship between the supervisory agency and regulated firms is particularly strained when a bank shows signs of financial distress and is close to violating regulatory thresholds. In such an event, the survival of the bank is largely at the supervisor's discretion (e.g., Brown and Dinç, 2005; Gallemore, 2014), and any additional malfeasance by the firm potentially dampens the supervisor's willingness to practice forbearance. Consequently, expected future regulatory action is likely to affect banks' disclosure behavior, in particular when these banks face economic difficulties. The ensuing change in disclosure practices is the result of an ex post settling up, which provides firms with incentives to mitigate the consequences ex ante. At the same time, banks in financial distress that are under the stern eyes of a regulator might proactively reduce bank-specific information asymmetries with the objective to lower the likelihood of a bank run by depositors (e.g., Park, 1991; Gorton and Winton, 2003).

If enforcement actions or the threat thereof lead to an increase in transparency, theory predicts beneficial effects in terms of market liquidity. The conceptual link between transparency and liquidity comes from the reduction in adverse selection (associated with information asymmetries between potential buyers and sellers of firm shares) via enhanced firm disclosures (e.g., Diamond and Verrecchia, 1991; Verrecchia, 2001). Many empirical studies provide support for the positive relation between a firm's disclosures and stock liquidity (Welker, 1995; Leuz and Verrecchia, 2000; Lang, Lins, and Maffett, 2012; Daske et al., 2013).

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the financial crisis (http://www.justice.gov/opa/pr/bank-america-pay-1665-billion-historic-justice-department-settlement-financial-fraud-leading). The bank agreed to pay total fines of $16.65 billion. This amount included $1 billion owed to the Federal Deposit Insurance Corporation (bank regulator) and $136 million owed to the Securities and Exchange Commission (accounting regulator). One might interpret the differences in monetary sanctions as a proxy for the relative bargaining power of the two agencies in the negotiations.

In the banking industry, the potential of public enforcement to enhance transparency is particularly large since banks' reporting is widely viewed as opaque (Morgan, 2002; Flannery, Kwan, and Nimalendran, 2013).

2.2. Risk Disclosures under IFRS 7 and the Third Pillar of the Basel II Accord

The Basel II accord and IFRS include requirements for risk disclosures. Banks domiciled in countries that adopted both regulations have to publish information about their risk exposure in compliance with both sets of rules. The risk disclosures mandated under IFRS belong to the general financial reporting process and form an integral part of the audited footnotes to firms' financial statements. The International Accounting Standards Board (IASB) introduced IFRS 7 "Financial Instruments: Disclosures" for fiscal years beginning on or after January 1, 2007, with the purpose of consolidating most of the existing disclosures on financial instruments as well as introducing new requirements.[5] IFRS 7 superseded the International Accounting Standard no. 30 (IAS 30), which was only applicable to banks. IFRS 7 is not industry-specific and mandatory for all firms holding financial instruments. Firms could voluntarily adopt IFRS 7 one year ahead of schedule.

The Basel II accord is a supra-national agreement on the capital regulation of banks. The Basel Committee on Banking Supervision (BCBS) first published the accord in 2004 and recommended that national banking laws of its member states transpose the guidelines. The BCBS structured the accord around three pillars. The first two pillars cover the minimum capital requirements and the supervisory review process; the third pillar introduces requirements about risk disclosures. Most risk disclosures included in Pillar 3 were already privately made available

[5] One standard that still requires certain disclosures related to financial instruments is IAS 1 (specifically about a firm's regulatory capital management).

to the bank supervisors through the ongoing regulatory filing process. Thus, the primary goal of Pillar 3 is not to improve regulatory supervision, but to provide information that is useful for decision making to the general public and market participants (Basel II accord, para. 809). In that sense, the objectives are similar to IFRS 7. Pillar 3 follows the notion that bank transparency helps establish market discipline. In brief, if investors are better able to understand risky positions, they become more informed about and sensitive to individual banks' risk exposure and, in conjunction with tighter regulatory monitoring and enforcement, increase the market pressure on banks to avoid excessive risk-taking (e.g., Flannery, 2001; Herring, 2004).

Countries implemented Basel II at different points in time, with a few countries choosing to postpone the adoption of Pillar 3 (e.g., Russia, Lebanon), or to skip Pillar 3 altogether and only implement the first two pillars (e.g., Jordan).[6] In Kuwait, Pillar 3 became effective in 2006; most developed countries followed in 2007 or 2008.[7] Countries also differ in whether banks had the option of early implementation of the disclosure rules. The IASB and the BCBS did not formally cooperate in the development of IFRS 7 and Pillar 3. While Pillar 3 requires some very specific disclosures on the technical details of the capital requirements calculation, most disclosure items aim at a more general understanding of a bank's risk exposure and risk management approaches. Hence, in terms of substance, they are very similar to the respective disclosure items under IFRS 7 (see also Section A.2 in the Appendix). The two rule makers expressly acknowledge the overlap and, when issuing IFRS 7, the IASB commented: *"This guidance is consistent with the disclosure requirements for banks developed by the Basel*

[6] The Central Bank of Jordan justifies its decision not to implement Pillar 3 as follows: *"[We] considered the adoption of IFRS 7 as being equivalent to compliance with Pillar 3 of Basel II, noting that all banks in Jordan are compliant with IFRS 7"* (Financial Stability Institute, 2014, p. 12).

[7] Several countries are still in the process of implementing the Basel II accord into national law. The Financial Stability Institute (2014) provides an overview of the recent implementation status in many jurisdictions.

Committee (known as Pillar 3), so that banks can prepare, and users receive, a single coordinated set of disclosures about financial risk" (IFRS 7.BC41).

Pillar 3 does not prescribe a standardized disclosure format. Banks can either publish a separate Pillar 3 report or integrate the disclosures in the annual IFRS report. The standard emphasizes that banks can even meet the Pillar 3 requirements without any additional disclosures when they already provide the information under local accounting standards or any other requirements (Basel II accord, para. 814). The explicit reference to accounting standards highlights that Pillar 3 offers more than a manual of technical instructions, and shares many characteristics of accounting regulation. The placement of the Pillar 3 disclosures, as a separate report or included in the financial statements, matters for the auditing and enforcement procedures that apply. A bank's external auditor reviews its financial statements and, implicitly, the application of IFRS 7, but is not required to attest compliance with Pillar 3 (except when these disclosures form an integral part of the financial statement footnotes). Similarly, the national securities market regulator or a delegated party (e.g., the local stock exchange) oversee the implementation of IFRS 7, while the banking supervisor is in charge of assuring banks' compliance with Pillar 3. Some bank regulators (e.g., in Hong Kong, Saudi Arabia, or the United Arab Emirates) issued compulsory reporting guidelines directly aimed at a uniform compliance with Pillar 3. In contrast, the IFRS 7 disclosures only constitute a small portion of the entire set of financial statements to be audited and reviewed, and hence, potentially lack materiality for triggering an enforcement action by the regulator or the issuance of a qualified opinion by the auditor. This co-existence of multiple institutions responsible for the oversight of quasi-identical disclosure requirements represents a key feature of our identification strategy.

3. Research Design and Data

In this section, we describe our empirical identification strategy and develop the regression models to test our main predictions regarding the effects of IFRS 7 and Pillar 3 on banks' risk disclosures and, consequently, market liquidity. We then discuss the sample selection and provide descriptive statistics on our international banking sample.

3.1. Identification Strategy and Empirical Model

We structure our tests of regulatory heterogeneity around the adoption of IFRS 7 and Pillar 3 in two stages. First, we analyze changes in banks' disclosure behavior using panel regressions with yearly risk disclosure scores as the dependent variable and second, we examine how markets perceive those changes in a panel of monthly bid-ask spreads. In both tests, we build our identification strategy on two key features: (i) the use of various benchmark samples, which allows a difference-in-differences estimation, and (ii) the staggered introduction of the two regulations. Panel A of Figure 1 provides a schematic overview of our identification strategy.

The use of benchmark samples allows us to control for general time trends or market-wide changes (e.g., macroeconomic shocks) that are concurrent with but unrelated to the regulatory change and also might affect firms' disclosure behavior and/or market liquidity. As the figure shows, we use three distinct groups of firms that report under IFRS 7 but do not have to comply with Pillar 3. Specifically, our sample includes banks domiciled in Basel II countries but exempt from Pillar 3 disclosures because they are subsidiaries of a parent entity that already publishes a Pillar 3 report. These banks are subject to the same institutional and economic environment and fall under the same oversight regime as the treatment banks. We further include industrial, service, and insurance firms located in Basel II countries with substantive financial instrument

use. Their reporting incentives should be similar to those of the Pillar 3 banks. Finally, we include banks domiciled in countries that did not sign the Basel II accord. They help controlling for industry specific trends in the data.

The second key feature of our research design is the staggered introduction of the two regulations. IFRS 7 became effective for fiscal years beginning on January 1, 2007. Depending on a firm's fiscal year end, we code the first annual reports containing the newly regulated risk disclosures in 2007 or 2008. The introduction of Pillar 3 varies across Basel II countries with a few early adopters, but the majority of countries requiring the risk disclosures for fiscal years beginning in 2007 or 2008. The initial adoption coding covers the years 2006 to 2009. Because of the monthly observations, we can apply a finer coding in the liquidity tests. We measure the release date of the new information as the actual month a firm, for the first time, provides the risk disclosures under IFRS 7 or Pillar 3.[8] Panel B of Figure 1 depicts the resulting time-series pattern. As the graph shows, the bulk of the initial IFRS 7 disclosures became available in the first six months of 2008 (primarily reflecting December 2007 fiscal-year ends). The release of the Pillar 3 reports is more dispersed, starting as early as February 2007 and ending in October 2009. The staggered adoption allows the inclusion of time-fixed effects in the analyses.[9] The purpose of these time-fixed effects is to eliminate trends and shocks common to all firms in a given period. As a result the identification stems from the within-sample variation in the adoption timing of the new rules.

[8] We determine the actual month a firm publishes its annual report as the earliest of either (i) the publication date indicated on the corporate website (e.g., in a press release), (ii) the filing date on Thomson Reuters, or (iii) the file properties of the downloaded annual report or Pillar 3 report.

[9] Specifically, we include year-fixed effects in the disclosure tests. In the liquidity tests, we introduce separate month-fixed effects for (i) the banks in Basel II countries, (ii) the non-banks, and (iii) the benchmark countries. This structure reduces the identification to the within-group variation in the release of the IFRS 7 information and the Pillar 3 reports.

Combining the above key features, we examine the impact of IFRS 7 and Pillar 3 on banks' disclosure behavior by estimating the following OLS regression model for a panel of treatment and benchmark firms over the 2005 to 2009 period:

$$\textit{Risk Disclosures} = \beta_0 + \beta_1 \textit{ IFRS 7} + \beta_2 \textit{ IFRS 7 * Benchmark Firms} + \beta_3 \textit{ Pillar 3} +$$
$$\beta_4 \textit{ Benchmark Firms} + \sum \beta_j \textit{ Controls}_j + \sum \beta_i \textit{ Fixed Effects}_i + \varepsilon. \quad (1)$$

The dependent variable is a self-constructed *Risk Disclosures* score measuring a firm's compliance with IFRS 7 and Pillar 3 disclosure requirements. Specifically, we assign a score of '1' to each of 39 distinct disclosure items required under both IFRS 7 and the third pillar of the Basel II accord, and then divide the sum by 39 so that the total score ranges from zero (non-compliance or lack of applicability) to one (full compliance). The score represents the overlap between the two disclosure rules and, unlike other proxies of disclosure or accounting quality, is relatively free of measurement bias. We provide further details on the construction of the *Risk Disclosures* score together with a few select examples of actual disclosures under IFRS 7 and Pillar 3 in the Appendix.[10]

Our main variables of interest are two binary indicators that take on the value of '1' beginning in the first year a firm is subject to the risk disclosure rules under *IFRS 7* or *Pillar 3*. Because all of our sample firms at some point have to comply with IFRS 7, this variable effectively represents a pre-post comparison identified via the differential adoption timing. To distinguish between Pillar 3 banks and the *Benchmark Firms* (i.e., the banks exempt from Pillar 3 or domiciled in non-Basel II countries as well as the non-banks) we include a separate indicator variable for the latter (and its interaction term with *IFRS 7*). The *Pillar 3* variable is a true

[10] To mitigate concerns about the regressand being bounded between zero and one, we repeat the disclosure analyses with the logit transformed *Risk Disclosures* score as the dependent variable. We compute $\ln(x/(1-x))$ where x is the raw value. Doing so produces largely similar results, and none of the inferences change. For ease of interpretation, we report results using the untransformed disclosure score in the tables.

difference-in-differences estimator comparing the risk disclosures scores following Pillar 3 adoption to the pre-period and the disclosure changes among the benchmark firms.

Controls$_j$ denotes a set of firm-level control variables. Among other things, we explicitly control for contemporaneous changes in firms' disclosure behavior amid Pillar 3 adoption. We construct a second disclosure score, *Fair Value Disclosures*, comprising 18 disclosure items required under IFRS 7 but not under Pillar 3.[11] For this score, Pillar 3 does not duplicate existing disclosure requirements of IFRS 7, and hence it serves as a firm-specific, time-varying control variable of disclosure practices. *Fixed Effects*$_i$ represents year-, country-, or firm-fixed effects. They account for (invariant) unobserved heterogeneity within a year, country, or firm, which subsumes common factors such as the global financial crisis, the quality of the legal system, or the development of capital markets, and idiosyncratic firm characteristics. In all our tests, we draw statistical inferences based on standard errors clustered by country.

For the liquidity analyses we employ a panel of monthly observations of treatment and benchmark firms over the 2005 to 2009 period. To test our hypotheses, we adjust the regression model in Eq. (1) like follows:

$$Log(Bid\text{-}Ask\ Spread) = \beta_0 + \beta_1\ IFRS\ 7 + \beta_2\ IFRS\ 7 * Benchmark\ Firms + \beta_3\ Pillar\ 3 + \beta_4\ Benchmark\ Firms + \sum \beta_j\ Controls_j + \sum \beta_i\ Fixed\ Effects_i + \varepsilon. \quad (2)$$

The monthly median quoted daily *Bid-Ask Spread* serves as the dependent variable. This measure is a commonly used proxy of information asymmetry and market liquidity, and conceptually ties into a firm's disclosure policy (e.g., Diamond and Verrecchia, 1991; Verrecchia, 2001). The definition of *IFRS 7* and *Pillar 3* is similar to before, but now these

[11] We label the second score *Fair Value Disclosures* but acknowledge that it also covers other disclosure areas like the maturity of financial assets and liabilities, or information on hedging and trading derivatives. See the Appendix for details.

indicators take on the value of '1' beginning in the first month a firm releases its risk disclosures under the two regulations (see also Panel B of Figure 1). $Controls_j$ denotes a set of firm-specific factors related to liquidity (different from Eq. 1). The model includes country- or firm-fixed effects and, depending on the specification, separate monthly fixed effects for Basel II countries, benchmark countries, Basel II banks, or non-banks. The multiple time indicators flexibly account for common liquidity trends and shocks within the different groups. Everything else is as defined in the disclosure model.

3.2. Sample Selection and Description

Our sample period starts in 2005, two years before IFRS 7 became effective, and runs through 2009. Table 1, Panel A, summarizes the sample selection process. We start by compiling all publicly listed banks with data available in *BvD Bankscope* (based on the fiscal year 2008). Next, we limit the sample to countries with mandatory IFRS adoption in 2005 to avoid the confounding effects of a switch in domestic accounting standards during the sample period. For each of the 501 banks that satisfy these criteria, we then search their websites for an English version of the consolidated annual reports under IFRS and, if applicable and not included in the annual report, a separate document containing the Pillar 3 disclosures. We need these files to construct the disclosure scores. The web-based search yields a sample of 220 banks, of which 151 are from Basel II countries, and hence potentially have to comply with the Pillar 3 disclosure requirements. The remaining 69 banks are part of our benchmark firms. 29 out of the 151 Basel II banks are exempt from Pillar 3 disclosures. We complement the benchmark sample with 50 large industrial, service, and insurance firms from Basel II

countries.[12] We require the non-banks to have a financial instruments-to-total assets ratio of at least 30 percent, so that their reporting incentives are more aligned with the banks, and an analysis of the risk disclosures is meaningful. The final sample comprises 270 individual firms, giving rise to 1,220 firm-year observations with data available (out of 270 firms*5 years = 1,350 firm-years possible).[13]

Panel B (Basel II countries) and Panel C (benchmark countries) of Table 1 provide a breakdown of the sample composition and the yearly adoption pattern of IFRS 7 and Pillar 3 by country. The panels show that none of the countries dominates the sample, with Germany having the largest number of IFRS 7 firms (17) and the U.K. the largest group of Pillar 3 banks (11). 240 firms adopt IFRS 7 in 2007, while two thirds of the eligible banks switch to Pillar 3 reporting in 2008.

In Table 2 we present descriptive statistics for the variables used in the regression analyses. The two disclosure scores, *Risk Disclosures* and *Fair Value Disclosures* (see the Appendix for details), reveal ample variation with an interquartile range of 0.359 and 0.228, respectively. In the disclosure analyses, we include the following firm-specific control variables (see e.g., Lang and Lundholm, 1993; Ahmed and Courtis, 1999; Dechow, Ge, and Schrand, 2010): we measure firm size by *Total Assets*, a firm's information environment by the number of financial analysts covering the firm (*Analyst Following*), leverage by the *Capital Ratio*, profitability by *Return on Assets*, and future growth prospects by *Asset Growth*. Our liquidity sample comprises 10,793 firm-month observations. The monthly median *Bid-Ask Spread* serves as proxy for market

[12] To ensure adequate geographic dispersion, we choose the non-banks as the largest firms (based on total assets) from each of five regions in Compustat Global. This procedure yields 7 firms from Northern Europe, 21 from Central Europe, 6 from Southern Europe, 7 from the Middle East, and 9 from the Asia-Pacific region.

[13] In the regression analyses we further lose two banks from the United Arab Emirates, one bank from South Africa, and one non-bank from Switzerland because of lack of data to compute the control variables.

liquidity. Following prior literature (e.g., Chordia, Roll, and Subrahmanyam, 2000; Leuz and Verrecchia, 2000; Daske et al., 2008), we include *Market Value*, the monthly median of daily *Share Turnover*, and *Return Variability* measured by the standard deviation of daily stock returns as firm-specific controls. We estimate the liquidity regressions in a log-linear form with the natural logarithm of the dependent and control variables, and lag the control variables by 12 months. For more details on data sources and variable measurement, see the notes to Table 2.

4. Empirical Results

In this section, we first describe the average results of the disclosure analyses. We then examine cross-sectional differences in risk disclosures based on the relative strength of the bank regulator vis-à-vis the securities market regulator in a country as well as individual banks' reporting incentives stemming from potential scrutiny by the supervisory authority. We conclude with an analysis of bid-ask spreads following the changes in risk disclosures.

4.1. Analyses of Changes in Risk Disclosures Following IFRS 7 and Pillar 3 Adoption

We start our analysis of the average effect of IFRS 7 and Pillar 3 on firms' disclosure behavior with graphically plotting the *Risk Disclosures* scores over the years 2005 to 2009. We do so separately for (i) banks in Basel II countries that started complying with the Pillar 3 rules in either 2007, 2008, or 2009,[14] (ii) banks exempt from Pillar 3 or in non-Basel II countries, and (iii) the industrial, service, and insurance firms. Figure 2, Panel A, presents the results. The graph allows three primary insights. First, we observe essentially no change in the *Risk Disclosures* scores leading up to the adoption of IFRS 7. This flat pattern in the years 2005 and

[14] Because of the low numbers, we do not separately plot the Pillar 3 banks that adopted in 2006 in Figure 2. Moreover, when we eliminate banks that voluntarily adopted Pillar 3 before it became mandatory in their country (5 banks), the results of our analyses remain largely unaffected and none of the inferences change.

2006 indicates that firms did not voluntarily preempt the pending rule change. It also mitigates concerns about the parallel trends assumption underlying our difference-in-differences design. Second, all firms exhibit a substantial increase in the *Risk Disclosures* scores in 2007, which coincides with the adoption of IFRS 7. For instance, banks start off with an initial disclosure level of about 30 to 40 percent in 2006, and increase their *Risk Disclosures* by 20 to 30 percentage points. Non-banks exhibit an increase by about 10 percentage points. This increase suggests that the adoption of the new risk disclosure rules of IFRS 7 had an effect on firm transparency. Third, and more to the point, the Pillar 3 banks show another, more pronounced increase in *Risk Disclosures* upon adoption of the third pillar of the Basel II accord. The timing is such that the gap in compliance with risk disclosure rules between Pillar 3 banks and benchmark firms substantially widens in the years 2007, 2008, and 2009, respectively. Thus, Pillar 3 seems to have had an incremental effect on banks' reporting even after IFRS 7 was already in place and mandated the disclosure of all applicable risk items included in the score. At the end of the sample period, the *Risk Disclosures* scores of the Pillar 3 banks surpass those of the benchmark banks by about 15 percentage points.

The graph in Panel A further shows that non-banks exhibit a substantially lower level of *Risk Disclosures* before and after IFRS 7, likely due to their different nature of business. Yet, these firms reveal a similar time-series pattern as the benchmark banks. Both the non-Basel II banks and the non-banks display a gradual increase in *Risk Disclosures* after the introduction of IFRS 7. These ongoing changes highlight the importance of controlling for contemporaneous trends in firms' disclosure behavior. To further test for the existence of concurrent disclosure trends, we plot the *Fair Value Disclosures* scores in Panel B of Figure 2. Even though the graph reveals a general upward trend in *Fair Value Disclosures* by about 15 percentage points over the

sample period, no distinct patterns or spikes for individual groups are apparent (except for the difference in levels between banks and non-banks, and the 2006 increase for the 11 sample banks that adopted Pillar 3 in 2009). Thus, the disclosure changes we observe around IFRS 7 and Pillar 3 seem unique to those two regulations, and do not extend to other reporting areas.

To test the above intuitive conclusions from the graphs more formally, we next estimate various specifications of Eq. (1) for the full sample using OLS regression analysis and report the coefficients in Table 3. Moving from left to right, we start with only including the *IFRS 7* and *Pillar 3* variables (plus country- and year-fixed effects) in Models 1 and 2. We then conduct a true difference-in-differences estimation by including the *Benchmark Firms* variable (main effect and interaction term with *IFRS 7*) in Model 3. Next, we explicitly account for concurrent trends in disclosures via the *Fair Value Disclosures* variable (Model 4) and for additional firm-level determinants of a firm's disclosure behavior (Model 5). In Model 6, we replace the country-fixed effects with firm-fixed effects.

The tenor of the results is very similar across the table. The *IFRS 7* coefficient is always positive and highly significant, suggesting an increase in *Risk Disclosures* of about 12 percentage points based on the most restrictive model. The effect is no different for Pillar 3 banks and benchmark firms as the interaction term between *IFRS 7* and *Benchmark Firms* is insignificant.[15] The *Pillar 3* coefficient is positive and significant throughout. Thus, banks subject to the Pillar 3 regulation show an additional increase in *Risk Disclosures* that exceeds the effects around the (earlier) adoption of IFRS 7 and results in a total improvement of about 26 percentage points. The results suggest that banks do not diverge in their compliance with risk disclosure rules until Pillar 3 becomes effective and the bank regulator supplements the securities market regulator in

[15] The negative and significant main effect of *Benchmark Firms* captures the difference in the level of the *Risk Disclosures* score relative to the Pillar 3 banks (e.g., due to inapplicability of some of the disclosure items).

the monitoring of the rules. Put differently, firms' reaction to new disclosure regulation seems to depend on the regulatory agency that implements and enforces the rules. The results prevail after controlling for concurrent trends in a firm's disclosure behavior (i.e., the *Fair Value Disclosures* variable loads positively in Models 4 and 5) and when using firm-fixed effects. The latter model effectively transforms the cross-sectional panel estimation into a changes specification.

4.2. Cross-sectional Differences in Risk Disclosures among Pillar 3 Banks

In this section, we provide cross-sectional evidence along the two dimensions 'relative strength of the bank regulator' and 'firm-level incentives' to corroborate our main findings of a differential reaction by banks to the introduction of IFRS 7 and Pillar 3. We expect banks in countries with a stronger banking supervisory agency (relative to the securities market regulator) to adjust their disclosure behavior more around Pillar 3, leading to a higher compliance with extant rules. Similarly, we expect banks that fear higher regulatory scrutiny, for example, because they display signs of financial distress, to react stronger to disclosure rules in the realm of the banking supervisor. To test these predictions, we conduct cross-sectional analyses by estimating the following extension of the OLS model in Eq. (1):

$$\begin{aligned} \textit{Risk Disclosures} = {} & \beta_0 + \beta_1\, \textit{IFRS 7} + \beta_2\, \textit{Pillar 3} + \beta_3\, \textit{Pillar 3} * \textit{PART} + \beta_4\, \textit{PART} + \\ & \sum \beta_j\, \textit{Controls}_j + \sum \beta_i\, \textit{Fixed Effects}_i + \varepsilon. \end{aligned} \tag{3}$$

PART stands for a binary partitioning variable that lets us examine whether the compliance with risk disclosure rules systematically varies across various subsets of Pillar 3 banks. We use country-level factors and firm-level characteristics to form distinct subsets of firms as described in more detail below. We include the partitioning variable as separate main effect and interaction term with the *Pillar 3* indicator in the model. Consequently, the model in Eq. (3)

estimates the marginal change in *Risk Disclosures* for banks with a partitioning variable equal to one before (β_4) and after (β_3) Pillar 3 adoption relative to firms with a partitioning variable equal to zero before (β_0+β_1) and after (β_2) Pillar 3. The model includes year- and firm-fixed effects.[16] The remaining variables in Eq. (3) are the same as before (see Section 3.1).

In Table 4, we report results using the country-level factors to partition the sample. We run the cross-sectional analyses for the treatment banks only because we are interested in differences in risk disclosures among the firms affected by the Pillar 3 regulation. The general idea underlying the country-level factors is to identify jurisdictions in which the bank regulator is relatively more powerful (e.g., because it has a better supervisory toolset, more executive powers, or higher resources at its disposal) than the securities market regulator. We expect Pillar 3 to have a more pronounced effect on banks' disclosure behavior in those circumstances. Panel A of Table 4 provides a by country listing of the institutional factors used to partition the sample, and (in parentheses) indicates the coding of the binary *PART* variable. First, we consider the *Rule of Law* index from Kaufmann et al. (2010), which is a commonly used proxy for the general quality of the regulatory environment (e.g., Daske et al., 2008; Byard, Li, and Yu, 2011; Landsman, Maydew, and Thornock, 2012; Christensen, Hail, and Leuz, 2013). This variable is not specific to the banking industry and helps us distinguish between general factors present for all firms and, more to the point of our analysis, factors specifically geared towards the regulated banks.

The remaining partitioning variables are bank-specific. In column 2, we differentiate between countries with and without *Separate Bank Supervision* aside from the general securities

[16] Because of the firm-fixed effects, the main effect of *PART* in Eq. (3) is only defined when the partitioning variable exhibits within-firm variation. In all the other cases (e.g., when we partition by country-level factors), the firm-fixed effects subsume the main effect.

market regulator (Source: Central Banking Publications, 2013; CESR, 2010; annual reports and websites of national regulators; see also Footnote 1). In those countries, we expect authorities to put more weight on the monitoring of banks and that the bank regulator bears higher reputational costs due to the higher profile. Next, in the spirit of the resource-based view of Jackson and Roe (2009), we compute the *Relative Bank Supervisory Staff* variable as the number of full-time employees working for the bank regulator divided by the number of staff dedicated to general securities market supervision (each scaled by the market capitalization of banks and all firms in an economy, respectively). We code *PART* as one if the bank regulator is better equipped, that is, has relatively more supervisory staff. The *Relative Power of Bank Supervisor* variable compares two indices of monitoring powers and enforcement strength; one specific to bank supervision (i.e., the SEAUDIT index measuring the strength of external bank audits by the bank supervisor drawn from Barth, Caprio, and Levine, 2013), and one capturing the general enforcement of financial accounting standards (i.e., the ENFORCE index from Brown, Preiato, and Tarca, 2014). We set *PART* equal to one if the bank regulator has more supervisory powers and is known for tighter enforcement (i.e., the SEAUDIT score is larger than the ENFORCE score, after normalizing the two indices to a range between zero and one). The last two country-level variables are based on a survey by the International Federation of Accountants (IFAC) and indicate whether the bank regulator is actively involved in the process of accounting standard setting (survey item 114b) and the review of financial statements (survey item 114c).[17] If so, we expect less of a reaction to the introduction of Pillar 3 because the bank regulator already took part in the implementation of IFRS 7 and/or authorities deem the general oversight of securities

[17] The survey results of more than 170 countries are available on the IFAC website: http://www.ifac.org/about-ifac/membership/compliance-program/compliance-responses (as accessed in August 2014). For our coding, we rely on the answers in part 1 of the survey about the regulatory and standard-setting framework in a country, particularly section 10 on monitoring and enforcement.

markets more important. In the notes to Panel A, we provide further details on the data sources and the measurement of the partitioning variables.

Panel B of Table 4 presents results of estimating Eq. (3) using the country-level partitions. The table allows the following three main insights: first, the within-treatment sample estimation confirms the results of the main analyses from Table 3. The increase in banks' risk disclosures upon the adoption of IFRS 7 is followed by an even more pronounced increase following the introduction of Pillar 3. Thus, banks seem more responsive to the bank regulator than to the general securities market regulator, regardless of a country's institutional set-up. Second, the traditional proxies for the quality of the legal environment do not explain the variation in *Risk Disclosures* among Pillar 3 banks. As column 1 shows, banks in countries with strong rule of law react no different to the Pillar 3 requirements than banks in countries with weak rule of law. This result increases our confidence that what we observe with regard to some of the other partitioning variables reflects differences in the regulatory environment of banks and not the overall economy.[18] Third, there exist cross-country differences in how banks respond to Pillar 3. Banks react more strongly to the new disclosure rules in countries where the bank regulator is set up as a separate organizational unit, and has more resources and supervisory powers at hand than the securities market regulator, and less strongly in countries where the bank regulator is already involved in the general process of standard setting and the review of financial statements before Pillar 3. The interaction term *Pillar 3*PART* is significant in the predicted direction for all the bank-specific partitioning variables. The results are consistent with the idea of a regulator's "will" (i.e., its institutional design, resources, and incentives) being crucial for the outcome of the regulatory process.

[18] When we repeat the analyses in column 1 with alternative proxies for a country's institutional strength (i.e., the code law versus common law distinction; the differences between national GAAP and IFRS from Bae, Tan, and Welker, 2008; the anti-self dealing index from Djankov et al., 2008), none of the inferences change.

We next consider individual banks' reporting incentives to partition the sample. In Table 5, Panel A, we report the average firm-level attributes and (in parentheses) the number of firm-years or firms by country for which the binary *PART* indicator is equal to one. The idea is to identify banks that are more likely to respond to the new disclosure rules because they fear attracting regulatory and/or market scrutiny in light of potential financial distress. We capture signs of financial distress with general market characteristics and bank-specific measures. We classify years with above average *Return Variability* based on daily stock returns, with below average annual buy-and-hold *Stock Price Performance*, and with a Tier 1 *Capital Ratio* below the sample median as more susceptible to default risk.[19] Our sample comprises a large fraction of banks from the European Union (EU). We exploit this fact and construct three variables based on the series of stress tests conducted in the EU during the financial and sovereign debt crisis (see Bischof and Daske, 2013): (i) *Stress-Test Participant* is set to one if a bank was selected for the 2011 Committee of European Banking Supervisors (CEBS) or the 2012 European Banking Authority (EBA) stress tests, (ii) *Stress-Test Failure (Conditional)* indicates if a bank included in the stress tests failed to meet the threshold Tier 1 capital ratio *before* considering any mitigating capital measures, and (iii) *Stress-Test Failure (Actual)* represents banks that still failed to meet the threshold capital ratio *after* mitigating capital measures. Because the stress tests were conducted after our sample period, they are *ex post* proxies of banks' financial distress. See the table notes to Panel A for further details on data sources and variable measurement.

Panel B of Table 5 presents results of estimating Eq. (3) using the firm-level partitions. The table allows the following main insight: firm-level incentives are systematically related to banks'

[19] Because these three firm-level characteristics vary over time, the main effect of *PART* is defined when estimating Eq. (3) with firm-fixed effects.

reporting behavior in the predicted direction. The coefficients on the interaction terms between the *Pillar 3* and *PART* variables are positive and significant in five out of the six cases. Banks with volatile stock returns that underperform their peers and with a low proportion of equity capital increase their *Risk Disclosure* scores by about 3 to 6 percentage points more than the other Pillar 3 banks. The effect is even more pronounced for banks that fail one of the EU-wide stress tests either before or after they take remediating actions by increasing the Tier 1 capital ratio. Only in column 4, in which we merely consider whether a bank was selected to participate in the stress tests or not, we do not find a differential disclosure effect. Overall, our evidence suggests that economically weaker banks are more responsive to disclosure rules under the oversight of the bank regulator, consistent with the idea that they foresee tighter scrutiny by the supervisory authority. In that sense, the behavior is indicative of an expected ex post settling up that prevents banks from hiding information ex ante. It also suggests that financially frail banks increase transparency to preempt the negative consequences of a potential bank run.

4.3. Analyses of Changes in Liquidity Following IFRS 7 and Pillar 3 Adoption

We conclude our analysis with an examination of whether the observed changes in banks' risk disclosures translate into a capital market reaction, specifically an increase in liquidity. This analysis addresses, amongst other things, the concern that our disclosure score measures the quantity and not necessarily the quality of a firm's disclosures. If firms were purely complying by the book without materially adjusting their disclosures, we would not expect markets to react. Yet, anecdotal evidence suggests that the Pillar 3 disclosures are more comprehensive and provide a finer level of detail than the disclosures of the same risk items under IFRS 7 (see Section A.3 in the appendix for examples). The test also provides direct evidence of the causal link between regulation and market liquidity through the channel of firm disclosures.

We estimate various specifications of Eq. (2) for the full sample and report the coefficients in Table 6. Monthly bid-ask spreads serve as the dependent variable. Moving from left to right, we first only include the *IFRS 7* and *Pillar 3* variables in Models 1 and 2. In Model 3, we separately estimate the liquidity effects of IFRS 7 for the combined benchmark sample (banks and non-banks) by including the *Benchmark Firms* indicator and interaction term. Because of the staggered release of firms' annual report information (see also Figure 1, Panel B), we can include monthly fixed effects in the model, and do so separately for the Basel II countries and the benchmark countries. In Models 4 and 5, we further split the *Benchmark Firms* coefficient into the marginal effects for banks (i.e., banks exempt from Pillar 3 or domiciled in non-Basel II countries) and non-banks (i.e., industrial, service, and insurance firms). We also introduce a third series of monthly time-fixed effects for the non-banks, thereby effectively reducing the identification of the *Pillar 3* coefficient to the within-group variation among Basel II banks over time. In Model 6, we replace the country-fixed effects with firm-fixed effects. Throughout the table, we control for commonly used firm-level determinants of liquidity.

Except for one case, we do not find a significant market reaction around the introduction of IFRS 7 for the sample firms. The finding of no change in liquidity equally applies to Pillar 3 banks and the benchmark firms, and suggests that the increase in *Risk Disclosures* around IFRS 7 is not material enough to reduce information asymmetries among investors. Another interpretation is that banks comply with IFRS 7 in form but not in substance because they enjoy an information advantage relative to the securities markets regulator (but not the bank regulator). Consistent with this argument, the only exception for which we find a significantly negative coefficient on *IFRS 7* is in Model 5 for the non-banks in the sample. For these firms, the

securities market regulator represents the primary authority responsible for the implementation and enforcement of the new disclosure rules.[20]

We do observe a statistically significant decrease in bid-ask spreads around the introduction of Pillar 3. Depending on the model, the magnitude of the reduction is on the order of 14 to 18 percent compared to the pre-adoption level, which is economically substantive but not too large to be implausible.[21] The results suggest that the expanded risk disclosures upon Pillar 3 adoption represent an increase in transparency. That is, once adequate enforcement by the bank regulator is in place to accompany already existing disclosure rules, banks adjust their reporting behavior. In turn, their increased compliance with risk disclosure requirements and/or the more substantive content of what they disclose help mitigate information asymmetries. This finding points to an economically relevant role that banking supervisors play in the enforcement of new regulations for banks and to inconsistencies in the implementation of identical rules by different regulators. Throughout the table, the firm-specific controls have the expected sign and except for the model with firm-fixed effects are statistically significant.

In additional analyses (not tabulated), we further find that the liquidity effects are most pronounced in the 12 months immediately following the release of the initial Pillar 3 report. The results also come through (albeit weaker, in particular in the firm-fixed effects specification) when we replace the binary IFRS 7 and Pillar 3 indicators with the continuous disclosure scores (i.e., instead of '1', we set the indicator variables *IFRS 7* and *Pillar 3* to the respective disclosure scores in the months following the adoption of the two regulations). Finally, we split the Pillar 3

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[20] Alternatively, it could be that banks were using other means to relay basic risk information to investors (which is essential in the banking business), so that the adoption of IFRS 7 did not substantially change their public information set. For non-banks, on the other hand, the introduction of IFRS 7 was the biggest regulatory change with regard to risk disclosures.

[21] We compute the percentage effects for the bid-ask spreads as $(e^{-0.145}-1) = -0.135$ and $(e^{-0.202}-1) = -0.183$. For comparison, Christensen, Hail, and Leuz (2013), p. 165, report average reductions in bid-ask spreads around mandatory IFRS adoption in the EU on the order of 35 to 17 percent.

banks into those with above and below median changes in the *Risk Disclosures* score around the introduction of the new rules, and find, as one would expect, that liquidity only significantly increases for the group of banks with above average improvements in the risk disclosures.

5. Conclusion

This paper examines the effects of heterogeneity in the regulatory supervision of banks on their compliance with risk disclosure rules and the ensuing capital market consequences. We focus on two regulations, IFRS 7 and Pillar 3 of the Basel II accord, that impose quasi-identical risk disclosure rules on the regulated banks but fall in the realm of separate supervisory agencies (or branches of the same agency), namely the general securities market regulator and the banking regulator. Moreover, the timing of when the two regulations were put in place differs, as does the timing of when banks disclosed the actual information for the first time (because it is tied to the release of their annual reports). This time-series variation helps us with our identification strategy as it alleviates common concerns in regulatory studies about concurrent but unrelated factors around the introduction of new regulation. We use this setting to estimate, first, the effect of the new regulations on banks' risk disclosure behavior and, second, the effects of changes in risk disclosures on market liquidity. Doing so lets us draw inferences on whether it is the written rules, the enforcement of the rules or, more specifically, some distinct characteristics of the supervisory agencies overseeing the rules as well as of the regulated firms adhering to them that drive the success of the new disclosure requirements. Disentangling these elements should be of interest to policymakers, preparers, and users of financial statement information.

Employing a sample of 122 banks from 29 Basel II countries, we find that compared to the pre-period (and to a benchmark sample) banks extend their risk disclosures following IFRS 7, but that this increase is followed by an even steeper increase in compliance with risk disclosure

rules upon Pillar 3 adoption. Specifically, Pillar 3 banks improve their risk disclosures scores by up to 26 percentage points relative to only about 12 percentage points for benchmark firms. The effects are stronger in countries where the banking regulator is incorporated as a separate unit, has more supervisory powers, is equipped with better resources, and is less involved in the general oversight of securities markets. They are also larger for banks that expect to attract heightened regulatory scrutiny from the banking supervisor and/or the general public due to higher distress risk. In our liquidity analyses, we find no market reaction around IFRS 7, but a reduction in bid-ask spreads on the order of 14 to 18 percent following Pillar 3.

Combined, the disclosure and liquidity results suggest that the banking regulator (and not the securities market regulator) plays the dominant role overseeing banks, even when it comes to general regulation geared towards all publicly listed firms in an economy. Furthermore, there exists systematic variation in how bank regulators implement and enforce the rules together with how the regulated banks react (ex ante and ex post). This evidence of regulatory heterogeneity in implementing identical rules is consistent with the idea of a regulator's *"will"* (i.e., its institutional design, resources, and incentives) being crucial for the outcome of the regulatory process (Agarwal et al., 2014). It also suggests the existence of a fit between regulator and regulatee that might help explain why in some instances the introduction of new regulation works, while in other situations it does not. A better understanding of how such a regulatory fit comes about and evolves over time is needed. We also do not speak to the issue of whether the observed regulatory outcome for risk disclosures in the banking system is optimal, or how the results generalize to the broader population of listed firms or to different time periods. The banking system was hit hard by the global financial crisis in the years 2007 and 2008. Thus, the

new disclosure regulation might have fallen on fruitful grounds, as many banks were struggling to stay afloat. We leave questions like these to future research.

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Appendix: Details on Risk Disclosures Score and Fair Value Disclosures Score

In this Appendix, we provide details on the construction of two of our primary variables used in the analyses: the *Risk Disclosures* score, which serves as the dependent variable in the disclosure tests, and the *Fair Value Disclosures* score, which we use to control for concurrent changes in firms' disclosure behavior. We also compare a few select disclosure requirements of IFRS 7 and Pillar 3 to illustrate the equivalence of the two regulations. Finally, we provide examples of risk disclosures drawn from banks' annual reports under IFRS 7 and Pillar 3, respectively. These examples demonstrate that even though the rules are similar in terms of disclosure requirements, the actual disclosures might differ in format and content from one set of rules to the other.

A.1. Construction of Disclosure Scores

Pillar 3 of the original Basel II accord (http://www.bis.org/publ/bcbs128.htm, Part 4) summarizes 69 risk disclosure requirements in fourteen tables.[22] Each table relates to a specific information category (e.g., capital disclosures, credit risk, market risk, etc.). The risk disclosure requirements under IFRS 7 "Financial Instruments: Disclosures" are organized in different sections and sometimes refer to other standards. We use the Pillar 3 tables as a starting point to identify the overlap with the IFRS 7 requirements.

First, we exclude the Pillar 3 provisions that relate to technical details of the calculation of the minimum capital requirements (e.g., disclosure of the specific inputs to the internal ratings-based approach for credit risk). These items are only applicable to the subset of Basel II adopters that choose this particular approach. From the rest, we identify 39 distinct disclosure items,

[22] The 2009/10 enhancements to Basel II and the introduction of Basel III added some additional disclosure requirements on securitizations and market risk.

which we are able to directly map into the IFRS 7 requirements. Table A1, Panel A, lists the 39 items that comprise the *Risk Disclosures* score. The panel also provides references to the respective tables in Pillar 3 or the specific paragraphs in IFRS 7, and indicates the maximum level of compliance with the individual disclosure items by various groups of sample firms. The disclosure provisions cover seven dimensions of a bank's risk-taking: (i) capital management (items 1-2), (ii) credit risk including counterparty risk from, for example, over-the-counter derivatives (items 3-21), (iii) credit risk mitigation (items 22-27), (iv) market risk (items 28-33), (v) securitizations (items 34-37), (vi) equity investment risk (item 38), and (vii) operational risk (item 39). The emphasis on credit risk reflects its importance for commercial banks.

We construct the *Fair Value Disclosures* score in a similar way, but derive the specific disclosure items from provisions that exclusively apply to IFRS 7. The score consists of 18 disclosure requirements that relate to a variety of topics, including fair values, liquidity risk, and derivatives. All these disclosure items have in common that they are not mandated under Pillar 3 (and hence, not included in the *Risk Disclosures* score). Panel B of Table A1 provides an overview. We note that not all of the disclosure items were new, but some were already part of earlier regulation (e.g., IAS 30 "Disclosures in the Financial Statements of Banks").

The data collection starts with searching firms' websites for an English version of the consolidated annual reports under IFRS and, if applicable and not included in the annual report, a separate document containing the Pillar 3 disclosures. In 52 percent of the cases, the Pillar 3 reports are separate documents. We read the information and manually code firms' disclosure choices to compute the *Risk Disclosures* score and the *Fair Value Disclosures* score. We assign a value of one to all disclosure items a firm reports (and zero otherwise). The manual coding of quantitative disclosures is straightforward, and we always assign a score of one if a bank

provides (disaggregated) numbers. The coding of qualitative items is more complex. We ignore boilerplate statements, but require meaningful information that allows comparisons with other entities.[23] We compute the scores as the ratio of the number of items a firm discloses divided by the maximum number of items possible. To ensure the internal consistency of our dataset, we use detailed disclosure checklists and guidelines and put in place a monitoring and review process of the data collection.

A.2. Comparison between IFRS 7 and Pillar 3 Disclosure Requirements

Below we provide several examples of disclosure requirements as outlined in IFRS 7 (or related standards) and the tables of Pillar 3. These examples serve as illustration for the quasi-identical nature of the two regulations. The examples relate to the following disclosure items of the *Risk Disclosures* score (see also Panel A of Table A1):

Items 1 and 2: Capital management

"(134) An entity shall disclose information that enables users of its financial statements to evaluate the entity's objectives, policies and processes for managing capital.

(135) To comply with paragraph 134, the entity discloses the following:

(a) qualitative information about its objectives, policies and processes for managing capital, including: (i) a description of what it manages as capital; (ii) when an entity is subject to externally imposed capital requirements, the nature of those requirements and how those requirements are incorporated into the management of capital; and (iii) how it is meeting its objectives for managing capital.

(b) summary quantitative data about what it manages as capital. (…)"

IAS 1.134-135

"Summary information on the terms and conditions of the main features of all capital instruments, especially in the case of innovative, complex or hybrid capital instruments.

The amount of Tier 1 capital, with separate disclosure of: (…). The total amount of Tier 2 and Tier 3 capital."

Pillar 3, Table 2 (b)-(c)

[23] An example of such a boilerplate is United Arab Bank's 2006 market risk disclosure: "Market risk arises from fluctuations in interest rates, foreign exchange rates and equity prices. The Board has set limits on the value of risk that may be accepted. This is monitored on a regular basis by the Asset and Liability Committee."

Items 5 and 6: Maximum credit risk exposure

"An entity shall disclose by class of financial instrument: (a) the amount that best represents its maximum exposure to credit risk at the end of the reporting period without taking account of any collateral held or other credit enhancements (e.g. netting agreements that do not qualify for offset in accordance with IAS 32)"

IFRS 7.36 (a)

"Total gross credit risk exposures (that is, after accounting offsets in accordance with the applicable accounting regime and without taking into account the effects of credit risk mitigation techniques, e.g. collateral and netting)"

Pillar 3, Table 4 (b)

Item 13: Ageing analysis of assets past due

"An entity shall disclose by class of financial asset: (a) an analysis of the age of financial assets that are past due as at the end of the reporting period but not impaired. (…)"

IFRS 7.37 (a)

"(…) Amount of impaired loans and if available, past due loans, provided separately. Banks are encouraged also to provide an analysis of the ageing of past-due loans. (…)"

Pillar 3, Table 4 (f)

Item 17: Reconciliation of changes in the allowances for loan impairment

"When financial assets are impaired by credit losses and the entity records the impairment in a separate account (e.g., an allowance account used to record individual impairments or a similar account used to record a collective impairment of assets) rather than directly reducing the carrying amount of the asset, it shall disclose a reconciliation of changes in that account during the period for each class of financial assets."

IFRS 7.16

"Reconciliation of changes in the allowances for loan impairment. (The reconciliation shows separately specific and general allowances; the information comprises: a description of the type of allowance; the opening balance of the allowance; charge-offs taken against the allowance during the period; amounts set aside (or reversed) for estimated probable loan losses during the period, any other adjustments (e.g., exchange rate differences, business combinations, acquisitions and disposals of subsidiaries), including transfers between allowances; and the closing of the allowance. Charge-offs and recoveries that have been recorded directly to the income statement should be disclosed separately.)"

Pillar 3, Table 4 (h)

A.3. Examples of IFRS 7 and Pillar 3 Disclosures from Banks' Annual Reports

Below we provide several representative examples of actual risk disclosures from banks' annual reports or Pillar 3 reports. We first show how banks complied with a particular disclosure item under IFRS 7, and then how they reported the same disclosure item under Pillar 3. In both cases, we assign a value of one to this particular disclosure item when compiling the *Risk Disclosures* score. However, as can be seen from the disclosure excerpts, the level of detail and

the format of the disclosures can vary substantially from one set of rules to the other. In general, the Pillar 3 disclosures are more comprehensive and geared towards the regulatory demands of capital structure requirements and prudential supervision. The examples relate to the following disclosure items of the *Risk Disclosures* score (see also Panel A of Table A1):

Items 1 and 2: Capital management – Allied Irish Bank AIB, Ireland

Initial IFRS 7 (or IAS 1) disclosure in 2007 (source: annual report, p. 169):

62 Capital adequacy information

The Group, its banking subsidiaries, and its other licensed subsidiaries are subject to requirements imposed by their relevant regulators.

The following table sets out for AIB Group and for Allied Irish Banks, p.l.c. certain information about its regulatory capital position:

	Group		Allied Irish Banks, p.l.c.	
	2007 € m	2006 € m	**2007 € m**	2006 € m
Risk weighted assets	**139,386**	123,034	**97,343**	82,197
Tier 1 capital	**10,491**	10,116	**6,957**	7,275
Ratio[1][3]	**7.5%**	8.2%	**7.2%**	8.9%
Minimum required ratio[2]	**4.25%**	4.25%	**4.0%**	4.0%
Total capital	**14,098**	13,644	**9,174**	7,784
Ratio[1][3]	**10.1%**	11.1%	**9.4%**	9.5%
Minimum required ratio[2]	**8.5%**	8.5%	**8.0%**	8.0%

[1]The ratio of capital to risk-weighted assets as defined by the Regulator.

[2]Minimum capital ratio to meet regulatory requirements.

[3]The Financial Regulator issued a requirement that a Prudential Filter be applied to proposed final dividends with effect from July 2007, accordingly these dividends have been deducted in calculating the Tier 1 and Total Capital Ratios as at 31 December 2007. If applied at 31 December 2006, the Group's Tier 1 and Total Capital Ratios would have been 7.9% and 10.8%, respectively. The ratios of Allied Irish Banks, p.l.c. are those submitted to the Regulator and do not include profits for the second half of the year or the proposed dividend.

During the period the Group and all its licensed subsidiaries complied with externally imposed capital requirements.

Subsequent Pillar 3 disclosure in 2008 (source: Pillar 3 report, p. 25):

Table 2: Capital adequacy information – components of capital base

	31 December 2008 € m	31 December 2007 € m
Tier 1		
Paid up ordinary share capital	**294**	294
Eligible reserves	**8,569**	8,566
Equity minority interests in subsidiaries	**354**	361
Supervisory deductions from core tier 1 capital	**(1,490)**	(1,176)
Core tier 1 capital	**7,727**	8,045
Non-equity minority interests in subsidiaries	**990**	990
Non-cumulative preference shares	**-**	169
Non-cumulative perpetual preferred securities	**864**	972
Reserve capital instruments	**497**	497
Supervisory deductions from tier 1 capital	**(172)**	(286)
Total tier 1 capital	**9,906**	10,387
Tier 2		
Eligible reserves	**232**	212
IBNR provisions (Standardised portfolio)	**536**	101
Subordinated perpetual loan capital	**692**	813
Subordinated term loan capital	**2,970**	2,651
Supervisory deductions from tier 2 capital	**(172)**	(286)
Total tier 2 capital	**4,258**	3,491
Gross capital	**14,164**	13,878
Supervisory deductions	**(114)**	(143)
Total capital	**14,050**	**13,735**
Risk weighted assets		
Credit risk	**124,602**	121,785
Market risk	**2,043**	5,796
Operational risk	**7,250**	6,510
Total risk weighted assets	**133,895**	**134,091**
Capital ratios		
Core tier 1	**5.8%**	6.0%
Tier 1	**7.4%**	7.7%
Total	**10.5%**	10.2%

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Item 11: Breakdown of credit risk exposure by rating classes – Dexia SA, Belgium

Initial IFRS 7 disclosure in 2007 (source: annual report, p. 204):

D. Credit quality of not impaired financial assets

	Dec. 31, 2007				
	AAA to AA-	A+ to BBB- grade or unrated	Non investment	DenizBank (1)	Total
Debt securities	166,801	64,749	6,478	1,581	239,609
Loans and advances	135,236	87,872	28,856	8,654	260,618
Other financial instruments	12,886	5,528	836	77	19,327
Off balance-sheet exposure	215,513	145,789	15,707	4,572	381,581
TOTAL	**530,436**	**303 938**	**51,877**	**14,884**	**901,135**

The credit quality of financial assets is assessed by reference to internal credit ratings or to external ones when internal ratings are not available. Credit quality reporting to management does not distinguish past due among not impaired financial assets. A group world risk information system has been implemented during 2007 allowing a detailed breakdown of credit quality of not impaired financial assets. The classification of rating has been reviewed together with the review of Basel II classification. Therefore, the same breakdown is not available for 2006 but, according to the analysis performed by the risk management on Dexia's global exposure, the content and the ratings of the portfolio have not significantly changed in comparison with 2007.

(1) In the course of 2007, the credit risks of DenizBank were gradually integrated into the Group's general scope by redefining the organization, integrating the reportings and starting the harmonization of internal ratings with those developed by Dexia following the introduction of Basel II.
As Dexia rating methodology is not yet fully implemented in DenizBank organization, and as few external ratings are available on Turkish exposures, Dexia reports the credit quality of DenizBank in a separate column.
However, the preservation of the internal scorings of DenizBank and of the credit risk monitoring systems allowed to keep a complete view on DenizBank's portfolio risks.

Subsequent Pillar 3 disclosure in 2008 (source: Pillar 3 report, p. 41):

3.5.3. Average PD, LGD and risk weight by exposure class and obligor grade

The table hereafter shows the total exposure, undrawn commitments, exposure-weighted average PD, LGD and exposure-weighted average risk weights broken down by exposure class and obligor grade at year-end 2008.

Exposure class	Obligor grade	Exposure	Average PD	Average LGD	Average RW	Undrawn commitment
Corporate	AAA to AA-	1,575	0.03%	31.74%	13%	266
	A+ to A-	9,109	0.07%	37.42%	27%	2,775
	BBB+ to BBB-	15,697	0.46%	50.16%	78%	5,896
	Others	10,604	4.49%	56.36%	152%	2,818
	Total	**36,985**	**1.50%**	**48.02%**	**84%**	**11,755**
Financial Institutions	AAA to AA-	34,409	0.04%	14.13%	10%	1,859
	A+ to A-	36,720	0.06%	17.92%	14%	1,761
	BBB+ to BBB-	4,480	0.35%	20.66%	42%	356
	Others	1,279	16.46%	31.21%	142%	476
	Total	**76,888**	**0.34%**	**16.60%**	**16%**	**4,452**
Monolines	AAA to AA-	13,491	0.04%	32.33%	20%	7,895
	BBB+ to BBB-	1,010	0.18%	41.80%	61%	30
	Others	249	30.87%	67.76%	430%	-
	Total	**14,750**	**0.57%**	**33.58%**	**30%**	**7,925**
Project Finance	AAA to AA-	118	0.04%	12.70%	8%	30
	A+ to A-	1,860	0.06%	12.62%	11%	242
	BBB+ to BBB-	10,269	0.45%	16.30%	33%	2,861
	Others	3,770	1.54%	18.19%	52%	984
	Total	**16,017**	**0.66%**	**16.29%**	**35%**	**4,117**
Public Sector Entities	AAA	77,444	0.01%	4.46%	1%	31,519
	AA+ to AA-	52,802	0.03%	8.01%	4%	19,731
	A+ to A-	41,306	0.08%	5.79%	4%	6,372
	BBB+ to BBB-	31,456	0.35%	2.63%	5%	3,169
	Others	4,002	2.06%	2.58%	8%	435
	Total	**207,010**	**0.12%**	**5.32%**	**3%**	**61,226**
Retail	AAA to AA-	15,991	0.03%	15.09%	2%	2,290
	A+ to A-	2,485	0.08%	19.27%	4%	405
	BBB+ to BBB-	9,914	0.36%	18.06%	10%	1,567
	Others	7,625	5.65%	21.36%	36%	1,076
	Total	**36,015**	**1.31%**	**17.53%**	**12%**	**5,338**
Sovereign	AAA	48,060	0.00%	6.40%	0%	2,665
	AA+ to A-	8,763	0.05%	10.77%	7%	18
	BBB+ to BBB-	5,995	0.22%	27.41%	42%	150
	Others	925	1.06%	29.56%	75%	73
	Total	**63,743**	**0.04%**	**9.31%**	**6%**	**2,906**
Equities	AAA to AA-	102	0.25%	59.31%	71%	-
	A+ to A-	142	0.09%	78.68%	84%	-
	BBB+ to BBB-	191	0.25%	84.80%	136%	-
	Others	39	11.85%	62.82%	299%	-
	Total	**474**	**1.15%**	**75.67%**	**120%**	**-**
Default		1,502	-	-	-	128
Total		**453,384**	-	-	-	**97,847**

Notes:
- Undrawn commitments are included in the exposure amount with a Credit Conversion Factor of 100%.
- The counterparts are the final counterparts, i.e. after taking into account the Basel II eligible guarantee (substitution principle).

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Item 13: Ageing analysis of assets past due – Saudi Investment Bank SAIB, Saudi Arabia

Initial IFRS 7 disclosure in 2007 (source: annual report, p. 18):

c) Credit quality of loans and advances

(i) Ageing of loans and advances (past due but not impaired)

2007	**Overdraft SAR '000**	**Consumer loans SAR'000**	**Commercial loans SAR'000**	**Total SAR'000**
Due within one year	**20,720**	**-**	**77,027**	**97,747**
Due beyond one year	**9,636**	**-**	**357**	**9,993**
Total loans and advances, net	**30,356**	**-**	**77,384**	**107,740**

2006	Overdraft SAR '000	Consumer loans SAR'000	Commercial loans SAR'000	Total SAR'000
Due within one year	218,554	-	136,129	354,683
Due beyond one year	4,245	-	398	4,643
Total loans and advances, net	222,799	-	136,527	359,326

SAR (000)

Subsequent Pillar 3 disclosure in 2008 (source: Pillar 3 report, p. 20):

TABLE 4 (STA): CREDIT RISK: GENERAL DISCLOSURES

Impaired Loans, Past Due Loans and Allowances (Table 4, (f))

Industry sector	Impaired loans	Defaulted	Aging of Past Due Loans (days)				Specific allowances			General allowances
			Less than 90	90-180	180-360	Over 360	Charges during the period	Charge-offs during the period	Balance at the end of the period	
Government and quasi government										
Banks and other financial institutions		3,162		2,074	751	337				
Agriculture and fishing										
Manufacturing	31,216	39,291				39,291			26,400	
Mining and quarrying										
Electricity, water, gas and health services	45,183	45,183			4,773	40,410			39,400	
Building and construction	301	1,457	26	957		500			300	
Commerce	4,050	9,171		1,108	679	7,384			3,500	
Transportation and communication										
Services										
Consumer loans and credit cards	228,393	507,452	10,047	282,830	130,013	94,609			116,900	
Others		363,485	12,579	28,005	60,405	320,258	15,113	12,076	22,119	
Total	**309,143**	**969,201**	**22,652**	**314,974**	**191,848**	**462,379**	**15,113**	**12,076**	**208,619**	**534,360**

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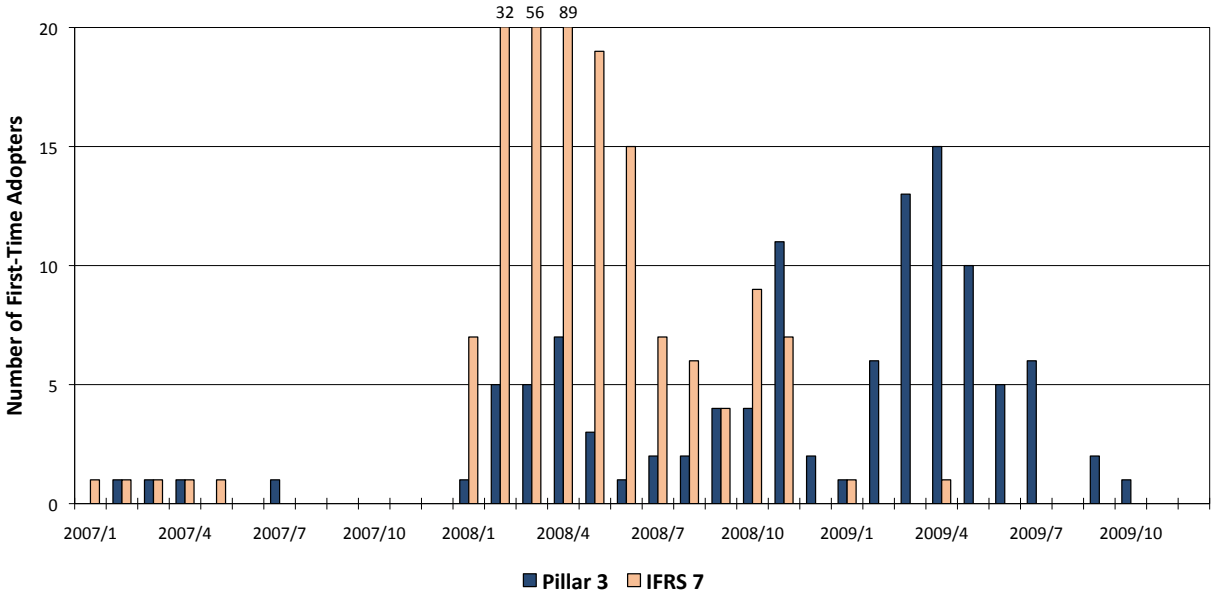
Figure 1: First-time Adoption of IFRS 7 and Pillar 3 Disclosure Requirements

Panel A: Schematic Overview of IFRS 7/Pillar 3 Adoption Types and Coding of Adoption Timing

Countries	Adoption Types		2005	2006	2007	2008	2009
Basel II countries	Banks subject to Basel II (Pillar 3 before IFRS 7)	IFRS 7	0	0	1	1	1
		Pillar 3	0	1	1	1	1
	Banks subject to Basel II (Pillar 3 at same time as IFRS 7)	IFRS 7	0	0	1	1	1
		Pillar 3	0	0	1	1	1
	Banks subject to Basel II (Pillar 3 after IFRS 7)	IFRS 7	0	0	0	1	1
		Pillar 3	0	0	0	0	1
	Banks subject to Basel II (Pillar 3 after IFRS 7)	IFRS 7	0	0	1	1	1
		Pillar 3	0	0	0	1	1
	Banks exempt from Basel II	IFRS 7	0	0	1	1	1
		Pillar 3	0	0	0	0	0
	Non-banks (industrial, service, and insurance firms)	IFRS 7	0	0	1	1	1
		Pillar 3	0	0	0	0	0
Benchmark countries	Banks not subject to Basel II	IFRS 7	0	0	1	1	1
		Pillar 3	0	0	0	0	0

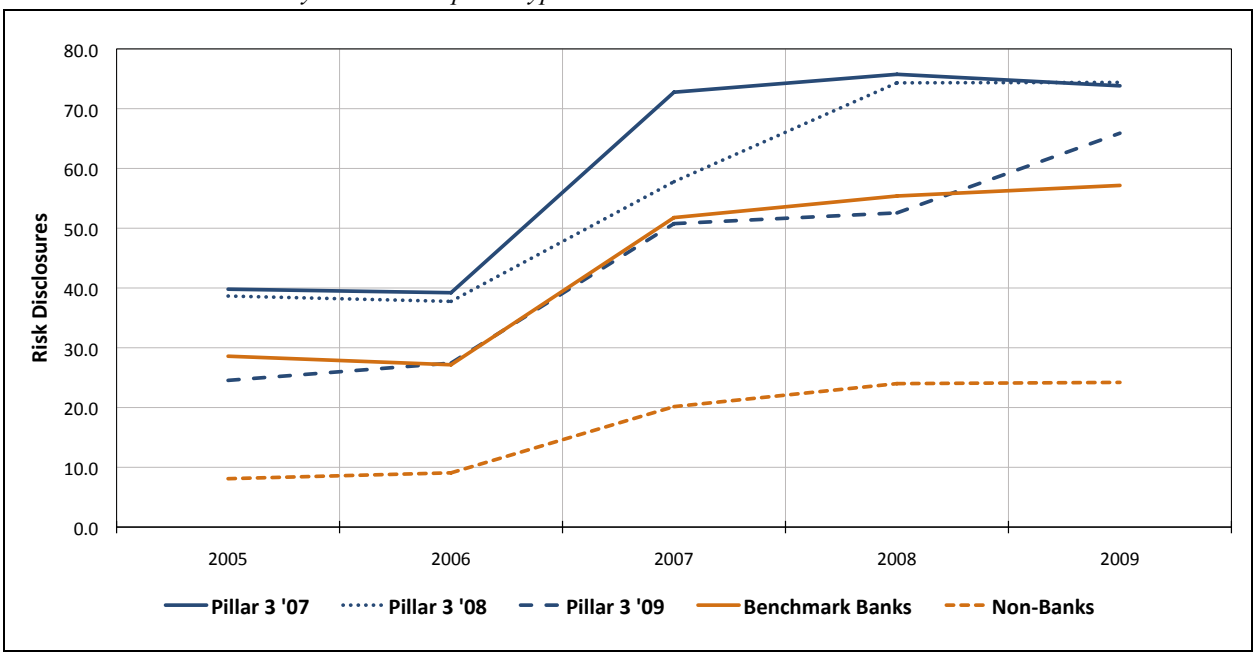
Panel B: Time-series Pattern of Actual First-time Adoption of IFRS 7 and Pillar 3



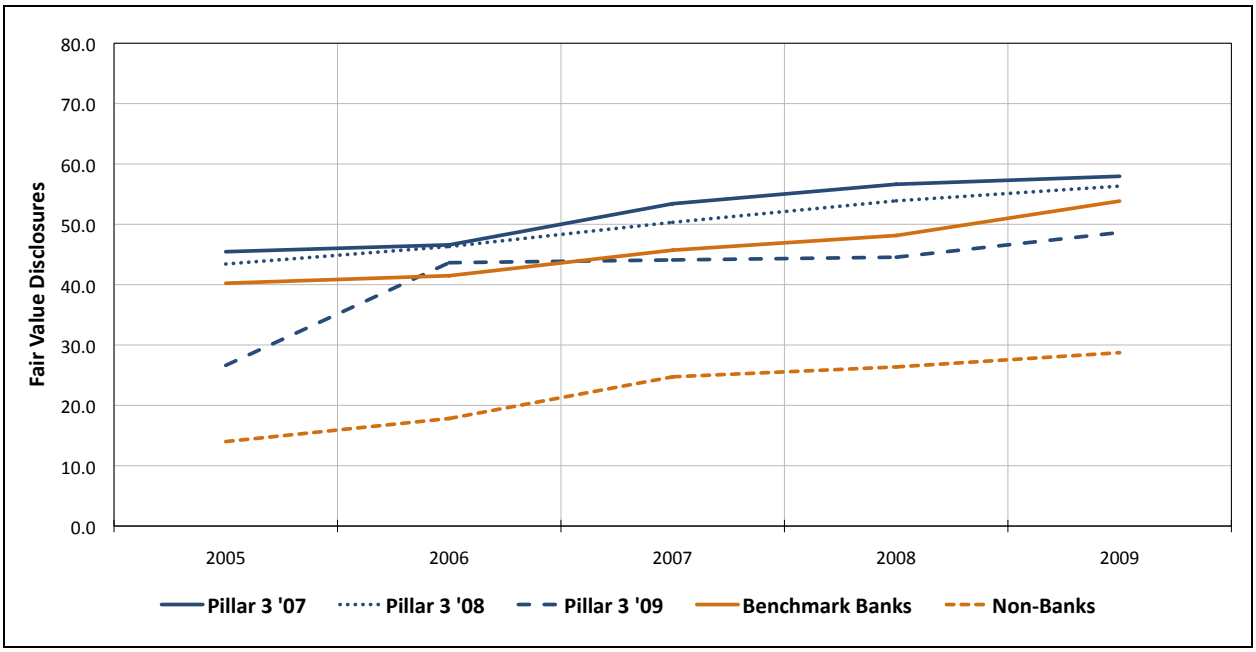
The figure illustrates our identification strategy for the two main variables of interest, *IFRS 7* and *Pillar 3*, using generic firm examples (Panel A) and the monthly time-series adoption pattern of the two disclosure standards (Panel B). In the disclosure analyses, we define *IFRS 7* and *Pillar 3* as binary indicator variables that take on the value of '1' beginning in the first year a firm applies the risk disclosure rules under IFRS 7 or the third pillar of the Basel II accord. IFRS 7 applies to fiscal years beginning on or after January 1, 2007. The effective dates of Pillar 3 vary across jurisdictions, but primarily fell in the 2007 to 2008 period with initial disclosures in the years 2008 and 2009. Aside from the treatment group of banks subject to Pillar 3 disclosures, the sample includes the following benchmark firms: (i) banks domiciled in Basel II countries but exempt from Pillar 3 disclosures (e.g., subsidiaries of a parent entity that already publishes a Pillar 3 report), (ii) non-banks in Basel II countries (i.e., industrial, service, and insurance firms), and (iii) banks domiciled in countries that did not sign the Basel II accord. In the liquidity analyses, we set the *IFRS 7* and *Pillar 3* indicator variables to '1' beginning in the actual month a firm, for the first time, releases those reports (as depicted in Panel B). The resulting variation in the *IFRS 7* and *Pillar 3* variables (across firms and over time) allows us to introduce country (or firm) and time (year or month) fixed effects in the disclosure and liquidity regression models.

Figure 2: Risk Disclosure Scores and Fair Value Disclosure Scores Over Time

Panel A: Risk Disclosures by Pillar 3 Adoption Type



Panel B: Fair Value Disclosures by Pillar 3 Adoption Type



The figure plots the time-series of the *Risk Disclosures* score (Panel A) and the *Fair Value Disclosures* score (Panel B) by various types of Pillar 3 adoption firms. We construct the *Risk Disclosures* score as the sum of 39 disclosure items required under both the third pillar of the Basel II accord and IFRS 7. We assign a score of '1' to each disclosure item if included in a firm's Pillar 3 report (or financial statements), and scale the sum by 39 so that the total score ranges from zero (non-compliance or not applicable) to one (full compliance). We construct the *Fair Value Disclosures* score in a similar way by summing 18 disclosure items required under IFRS 7 but not under Pillar 3. Note that some of these disclosure items were already part of other IFRS before IFRS 7 became effective. For details on the two disclosure scores see the Appendix. The sample comprises all firm-year observations from 270 banks and non-banks domiciled in 50 countries over the 2005 to 2009 period as described in Table 1. The different Pillar 3 adoption types are: (i) banks domiciled in Basel II countries that adopt Pillar 3 in either 2007, 2008, or 2009, (ii) benchmark banks that are exempt from Pillar 3 requirements or domiciled in non-Basel II countries, and (iii) non-banks in Basel II countries (i.e., industrial, service, and insurance firms). Because of the low number, we do not separately plot the scores of banks that adopt Pillar 3 in 2006.

Table 1: Sample Selection and Composition

Panel A: Overview of Sample Selection Process

Number of Individual Firms (based on fiscal year 2008)	*Basel II Countries*	*Benchmark Countries*	*Total Sample*
Number of listed banks in Bankscope	443	161	604
Less: countries without mandatory IFRS adoption	59	44	103
Less: firms with IFRS report not available	154	48	202
Less: firms with Pillar 3 report not available	79	0	79
Bank sample	151	69	220
Plus: Non-banks as additional benchmark	50	0	50
Total sample	201	69	270

Panel B: Sample Composition and Disclosure Adoption Patterns for Basel II Countries

	Adoption Pattern							
Basel II Countries (Banks and Non-Banks)	*First-Time Adopters of IFRS 7/Pillar 3 Disclosure Requirements*						*Thereof: Non-Banks*	*Thereof: Non-Pillar 3 Banks*
	2005	*2006*	*2007*	*2008*	*2009*	*Sum*		
Australia	0/0	0/0	1/0	13/7	0/0	14/7	6	1
Austria	0/0	0/0	2/0	0/0	0/0	2/0	0	2
Bahrain	0/0	0/0	9/0	0/9	0/0	9/9	0	0
Belgium	0/0	0/0	2/1	0/1	0/0	2/2	0	0
Cyprus	0/0	0/0	4/1	0/3	0/0	4/4	0	0
Denmark	0/0	1/0	5/2	0/1	0/0	6/3	3	0
Finland	0/0	0/0	2/1	0/1	0/0	2/2	0	0
France	0/0	0/0	9/0	0/4	0/0	9/4	5	0
Germany	0/0	0/0	16/1	1/5	0/0	17/6	7	4
Greece	0/0	0/0	6/1	0/3	0/0	6/4	0	2
Hong Kong	0/0	0/0	13/10	0/0	0/0	13/10	3	0
Ireland	0/0	0/0	3/0	1/3	0/1	4/4	0	0
Italy	0/0	1/0	8/0	0/4	0/0	9/4	4	1
Kuwait	0/0	0/4	9/0	0/0	0/2	9/6	3	0
Liechtenstein	0/0	0/0	1/0	0/1	0/0	1/1	0	0
Lithuania	0/0	0/0	1/0	0/0	0/0	1/0	0	1
Malta	0/0	1/0	1/0	1/2	0/0	3/2	0	1
Mauritius	0/0	0/0	0/0	2/2	0/0	2/2	0	0
Netherlands	1/0	0/0	3/0	0/3	0/0	4/3	0	1
Norway	0/0	1/0	2/0	0/1	0/0	3/1	1	1
Oman	0/0	0/0	1/1	0/0	0/0	1/1	0	0
Poland	0/0	0/0	10/2	0/0	0/1	10/3	0	7
Portugal	0/0	0/0	1/0	0/1	0/0	1/1	0	0
Romania	0/0	0/0	1/0	0/0	0/0	1/0	0	1
Saudi Arabia	0/0	0/0	7/0	0/7	0/0	7/7	0	0
Singapore	0/0	0/0	3/0	0/3	0/0	3/3	0	0
Slovakia	0/0	0/0	3/0	0/0	0/0	3/0	0	3
South Africa	0/0	0/0	4/0	2/5	0/0	6/5	0	1
Spain	0/0	1/0	5/0	0/3	0/0	6/3	2	1
Sweden	0/0	0/0	5/2	0/0	0/0	5/2	3	0
Switzerland	0/0	0/0	10/1	0/4	0/0	10/5	4	1
United Arab Emirates	0/0	0/0	12/0	0/0	0/7	12/7	4	1
United Kingdom	0/0	1/0	15/2	0/9	0/0	16/11	5	0
Total	1/0	6/4	174/25	20/82	0/11	201/122	50	29

(continued)

Table 1 (continued)

Panel C: Sample Composition and Disclosure Adoption Patterns for Benchmark Countries

Benchmark Countries (Non-Pillar 3 Banks only)	*Adoption Pattern*					
	First-Time Adopters of IFRS 7 Disclosure Requirements					
	2005	*2006*	*2007*	*2008*	*2009*	*Sum*
Barbados	0	0	0	1	0	1
China	0	0	10	0	0	10
Croatia	0	0	2	0	0	2
Georgia	0	0	1	0	0	1
Iceland	0	0	2	0	0	2
Jamaica	0	0	3	0	0	3
Jordan	0	0	10	0	0	10
Kazakhstan	0	0	6	0	0	6
Kenya	0	0	1	0	0	1
Lebanon	0	0	2	0	0	2
Moldova	0	0	1	0	0	1
Qatar	0	0	4	0	0	4
Russia	0	0	9	0	0	9
Saint Kitts and Nevis	0	0	0	2	0	2
Serbia	0	0	1	0	0	1
Togo	0	0	1	0	0	1
Turkey	0	0	13	0	0	13
Total	0	0	66	3	0	69

The table provides an overview of the sample selection process (Panel A), and indicates the number of individual firms plus the year when they started applying IFRS 7 or Pillar 3 reporting for Basel II countries (Panel B) and non-Basel II countries (Panel C). The sample comprises 220 publicly listed banks (with data available in BvD Bankscope) and 50 representative non-banks (with data available in Compustat Global) from 50 countries with mandatory IFRS reporting over the 2005 to 2009 period. We only include firms for which we are able to obtain annual reports under IFRS and, if applicable, Pillar 3 reports to compute the *Risk Disclosures* score and the *Fair Value Disclosures* score. The non-Pillar 3 banks are domiciled in Basel II countries but exempt from Pillar 3 disclosures (e.g., because they are subsidiaries of a parent entity that already publishes a Pillar 3 report). We select 50 non-banks as the largest industrial, service, or insurance firms (based on total assets) that have a financial instruments-to-total assets ratio of at least 30 percent and are domiciled in Basel II countries.

Table 2: Descriptive Statistics for Variables Used in the Regression Analyses

	Mean	*Std. Dev.*	*P1*	*P25*	*Median*	*P75*	*P99*
Disclosure Analyses (N=1,220 firm-years):							
Risk Disclosures (Score)	0.468	0.229	0.051	0.282	0.487	0.641	0.949
Fair Value Disclosures (Score)	0.440	0.174	0.046	0.318	0.455	0.546	0.818
Total Assets (EUR million)	161,862	436,441	144	4,699	14,668	76,860	2,354,266
Analyst Following (Number)	7.813	9.708	0.000	0.000	2.113	14.292	35.333
Capital Ratio (Ratio)	0.168	0.139	0.030	0.115	0.143	0.195	0.591
Return on Assets (Ratio)	0.015	0.083	-0.102	0.007	0.013	0.025	0.163
Asset Growth (%)	0.174	0.345	-0.307	0.012	0.128	0.261	1.243
Liquidity Analyses (N=10,793 firm-months):							
Bid-Ask Spread (%)	0.009	0.016	0.000	0.002	0.005	0.010	0.094
Market Value (EUR million)	9,811	18,529	52	1,052	3,175	9,673	90,738
Share Turnover (%)	0.003	0.004	0.000	0.000	0.002	0.004	0.016
Return Variability (Std. Dev.)	0.021	0.017	0.005	0.012	0.017	0.026	0.077

The table presents descriptive statistics for the variables used in the disclosure and liquidity regressions. The disclosure sample (liquidity sample) comprises all available firm-year (firm-month) observations from 270 banks and non-banks domiciled in 50 countries over the 2005 to 2009 period as described in Table 1. We construct the *Risk Disclosures* score as the sum of 39 disclosure items required under both the third pillar of the Basel II accord and IFRS 7. We assign a score of '1' to each disclosure item if included in a firm's Pillar 3 report (or financial statements), and scale the sum by 39 so that the total score ranges from zero (non-compliance or not applicable) to one (full compliance). We construct the *Fair Value Disclosures* score in a similar way by summing 18 disclosure items required under IFRS 7 but not under Pillar 3. For details on the two disclosure scores see the Appendix. *Total Assets* are denominated in EUR million. We use the natural logarithm of *Total Assets* in the analyses. We measure *Analyst Following* as the mean number of one-year-ahead earnings per share forecasts issued by financial analysts in a year as reported in the I/B/E/S monthly files. We use the natural logarithm of *Analyst Following* plus one in the analyses. The *Capital Ratio* is the ratio of total regulatory capital to risk-weighted assets for banks, and the ratio of book value of equity to total assets for non-banks. *Return on Assets* is the ratio of net income divided by average total assets. *Asset Growth* is the percentage growth in total assets from year t to t+1. The *Bid-Ask Spread* is the monthly median quoted spread (i.e., the difference between the bid and ask price divided by the mid-point and measured at the end of each trading day). *Market Value* is the monthly median of daily market values (i.e., stock price at the end of each trading day times the number of shares outstanding; in EUR million). *Share Turnover* is the monthly median of the daily turnover (i.e., trading volume in units of shares divided by the number of shares outstanding). We compute *Return Variability* as the standard deviation of daily stock returns in a given month. In the liquidity analyses, we use the natural logarithm of *Market Value*, *Share Turnover*, and *Return Variability*, and lag these variables by 12 months. We collect financial data for banks from BvD Bankscope, for non-banks from Compustat Global, and market data from Datastream.

Table 3: Analysis of Risk Disclosures Following the Adoption of IFRS 7 and Pillar 3 Disclosure Requirements

Risk Disclosures as Dependent Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Test Variables:						
[1] IFRS 7	0.158***	0.139***	0.130***	0.133***	0.128***	0.123***
	(8.05)	(7.34)	(5.59)	(5.44)	(5.17)	(5.23)
[2] IFRS 7 * Benchmark Firms	–	–	0.024	0.021	0.021	0.019
			(1.17)	(0.99)	(0.97)	(0.91)
[3] Pillar 3	–	0.150***	0.142***	0.140***	0.136***	0.136***
		(8.24)	(11.36)	(11.08)	(9.99)	(10.86)
P-value: [2] = [3]			[0.00]	[0.00]	[0.00]	[0.00]
Control Variables:						
Benchmark Firms	–	–	-0.290***	-0.243***	-0.160***	–
			(-8.21)	(-7.69)	(-5.92)	
Fair Value Disclosures	–	–	–	0.217***	0.126***	0.037
				(4.22)	(3.29)	(0.81)
Log(Total Assets)	–	–	–	–	0.043***	0.027
					(6.96)	(1.66)
Log(Analyst Following +1)	–	–	–	–	-0.004	0.009
					(-0.54)	(0.90)
Capital Ratio	–	–	–	–	0.005	0.052
					(0.16)	(1.04)
Return on Assets	–	–	–	–	0.010	0.063*
					(0.33)	(1.82)
Asset Growth	–	–	–	–	0.008	-0.002
					(0.77)	(-0.22)
Fixed Effects:						
Year	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes	Yes	Yes	Yes	Yes	No
Firm	No	No	No	No	No	Yes
R^2	0.387	0.518	0.680	0.734	0.793	0.812
# Firm-years	1,220	1,220	1,220	1,220	1,220	1,220
# Firms	266	266	266	266	266	266

The sample comprises all available firm-year observations of 270 banks and non-banks from 50 countries over the 2005 to 2009 period as described in Table 1. We use a self-constructed *Risk Disclosures* score measuring a firm's compliance with IFRS 7 and Pillar 3 disclosure requirements as the dependent variable. We define *IFRS 7* and *Pillar 3* as binary indicator variables that take on the value of '1' beginning in the first year a firm applies the risk disclosure rules under IFRS 7 or the third pillar of the Basel II accord. *Benchmark Firms* is a binary indicator variable that takes on the value of '1' for banks that are exempt from Pillar 3 requirements or domiciled in non-Basel II countries as well as for non-banks in Basel II countries. For details on the remaining variables see Table 2. We include year-, country-, or firm-fixed effects in the regressions, but do not report the coefficients. The table reports OLS coefficient estimates and (in parentheses) *t*-statistics based on robust standard errors clustered by country. We also report *p*-values from Wald tests assessing the statistical significance of differences across select coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 4: Country-level Differences in Risk Disclosures among Banks Adopting Pillar 3

Panel A: Country-level Partitioning Variables

	General Environment	*Strength of Bank Supervisory Authority (Relative to Market Supervisory Authority)*				
Country	*Rule of Law* (1)	*Separate Bank Supervision* (2)	*Relative Bank Supervisory Staff* (3)	*Relative Power of Bank Supervisor* (4)	*Involvement in Accounting Standard Setting* (5)	*Involvement in Financial Statement Reviews* (6)
Australia	1.71 (1)	Yes (1)	0.71 (0)	0.79 (0)	No (0)	No (0)
Bahrain	0.67 (0)	No (0)	0.75 (0)	1.60 (1)	No (0)	No (0)
Belgium	1.24 (0)	No (0)	1.21 (1)	0.95 (0)	No (0)	No (0)
Cyprus	0.89 (0)	Yes (1)	2.05 (1)	0.94 (0)	No (0)	No (0)
Denmark	1.94 (1)	Yes (1)	3.55 (1)	0.88 (0)	Yes (1)	Yes (1)
Finland	1.96 (1)	No (0)	140.98 (1)	0.71 (0)	No (0)	No (0)
France	1.40 (1)	Yes (1)	5.21 (1)	0.59 (0)	No (0)	Yes (1)
Germany	1.65 (1)	Yes (1)	10.18 (1)	0.81 (0)	No (0)	No (0)
Greece	0.77 (0)	Yes (1)	1.46 (1)	1.05 (1)	No (0)	No (0)
Hong Kong	1.60 (1)	Yes (1)	1.84 (1)	1.27 (1)	Yes (1)	Yes (1)
Ireland	1.57 (1)	Yes (1)	1.90 (1)	1.11 (1)	No (0)	No (0)
Italy	0.46 (0)	Yes (1)	0.89 (0)	0.54 (0)	Yes (1)	Yes (1)
Kuwait	0.60 (0)	No (0)	–	2.08 (1)	No (0)	No (0)
Liechtenstein	1.03 (0)	No (0)	–	–	No (0)	No (0)
Malta	1.41 (1)	No (0)	0.27 (0)	1.93 (1)	No (0)	No (0)
Mauritius	1.00 (0)	–	–	1.33 (1)	Yes (1)	Yes (1)
Netherlands	1.75 (1)	Yes (1)	2.75 (1)	0.87 (0)	Yes (1)	Yes (1)
Norway	1.91 (1)	No (0)	2.58 (1)	0.79 (0)	No (0)	No (0)
Oman	0.40 (0)	Yes (1)	0.29 (0)	–	–	–
Poland	0.42 (0)	No (0)	6.65 (1)	1.11 (1)	No (0)	Yes (1)
Portugal	1.19 (0)	Yes (1)	4.16 (1)	1.14 (1)	Yes (1)	No (0)
Saudi Arabia	0.10 (0)	Yes (1)	31.29 (1)	1.22 (1)	No (0)	No (0)
Singapore	1.76 (1)	Yes (1)	0.64 (0)	1.10 (1)	No (0)	No (0)
South Africa	0.13 (0)	Yes (1)	1.07 (1)	0.63 (0)	No (0)	No (0)
Spain	1.10 (0)	Yes (1)	1.37 (1)	0.81 (0)	Yes (1)	Yes (1)
Sweden	1.78 (1)	Yes (1)	4.15 (1)	0.76 (0)	Yes (1)	Yes (1)
Switzerland	1.89 (1)	Yes (1)	5.62 (1)	1.00 (1)	Yes (1)	Yes (1)
United Arab Emirates	0.48 (0)	Yes (1)	–	–	–	–
United Kingdom	1.55 (1)	Yes (1)	0.45 (0)	0.74 (0)	No (0)	No (0)

Panel A reports raw values and (in parentheses) the values of binary indicators of the following six country-level partitioning variables used in the cross-sectional regressions in Panel B: (1) *Rule of Law* takes on the value of '1' if a country's rule of law index as of 2005 is above the sample median (source: Kaufmann, Kraay, and Mastruzzi, 2010). (2) We code *Separate Bank Supervision* as '1' if a country has a separate authority for the oversight of banks aside from the general authority that supervises securities markets (source: Central Banking Publications, 2013; CESR, 2010; and annual reports and websites of national regulators). (3) *Relative Bank Supervisory Staff* takes on the value of '1' if the number of staff dedicated to bank supervision is larger than the number of staff dedicated to general securities market supervision. We scale the staff numbers by the total market capitalization in US$ of banks and all listed firms in an economy, respectively. We collect staff data from Central Banking Publications (2013) and the World Bank "Bank Regulation and Supervision" surveys. We measure market capitalization and staff data in 2008 or, if unavailable, in any other year we can obtain the data. (4) We set *Relative Power of Bank Supervisor* to '1' if the SEAUDIT index measuring the strength of external bank audits by the bank supervisor (source: Barth, Caprio, and Levine, 2013) is greater than the Brown, Preiato, and Tarca (2014) ENFORCE index measuring the general enforcement of financial accounting standards. To allow comparisons, we normalize the two indices to a range between zero and one. (5) *Involvement in Accounting Standard Setting* takes on the value of '1' if the banking regulator is involved in the general accounting standard setting process. (6) *Involvement in Financial Statement Reviews* takes on the value of '1' if the banking regulator is actively involved in the review of financial statements. We collect the involvement data from a survey by the International Federation of Accountants (IFAC) about the regulatory and standard-setting framework in a country (survey items 114b and 114c, respectively).

(continued)

Table 4 (continued)

Panel B: Regression Analyses of Country-level Cross-sectional Differences

	General Environment	*Strength of Bank Supervisory Authority (Relative to Market Supervisory Authority)*				
Risk Disclosures as Dependent Variable	*Strong Rule of Law*	*Separate Bank Supervision*	*Relatively More Bank Supervisory Staff*	*Relatively More Power of Bank Supervisor*	*Involvement in Accounting Standard Setting*	*Involvement in Financial State-ment Reviews*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Test Variables:						
[1] IFRS 7	0.108***	0.112***	0.123***	0.102***	0.101**	0.100**
	(2.95)	(2.84)	(3.10)	(2.80)	(2.67)	(2.66)
[2] Pillar 3	0.149***	0.120***	0.103***	0.076***	0.171***	0.174***
	(7.95)	(5.86)	(4.60)	(4.18)	(10.37)	(10.76)
[3] Pillar 3 * Country Indicator	-0.009	0.033*	0.050**	0.077***	-0.057**	-0.055**
	(-0.35)	(1.89)	(2.58)	(5.46)	(-2.06)	(-2.18)
Control Variables:						
Fair Value Disclosures	0.037	0.033	0.017	0.034	0.032	0.036
	(0.58)	(0.53)	(0.25)	(0.54)	(0.52)	(0.58)
Log(Total Assets)	0.033	0.034	0.038	0.020	0.014	0.012
	(1.35)	(1.35)	(1.60)	(0.81)	(0.60)	(0.47)
Log(Analyst Following +1)	-0.022	-0.020	-0.033*	-0.036**	-0.041***	-0.040***
	(-1.24)	(-1.26)	(-1.91)	(-2.26)	(-3.09)	(-2.86)
Capital Ratio	0.089	0.126	0.078	0.072	0.023	0.030
	(0.59)	(0.78)	(0.49)	(0.48)	(0.17)	(0.21)
Return on Assets	0.250**	0.182*	0.162*	0.260**	0.297***	0.309***
	(2.43)	(1.74)	(1.77)	(2.76)	(3.08)	(3.11)
Asset Growth	0.005	0.005	0.008	0.002	0.001	-0.000
	(0.41)	(0.37)	(0.50)	(0.16)	(0.12)	(-0.00)
Fixed Effects:						
Year	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.841	0.845	0.853	0.839	0.844	0.844
# Firm-years/Conditional Firm-years	578/304	568/431	511/333	545/274	550/161	550/191
# Firms/Conditional Firms	119/63	117/91	105/68	112/56	113/33	113/39

In Panel B, the sample comprises all available firm-year observations of up to 119 banks with Pillar 3 disclosures from 29 Basel II countries over the 2005 to 2009 period. We use a self-constructed *Risk Disclosures* score measuring a firm's compliance with IFRS 7 and Pillar 3 disclosure requirements as the dependent variable. We define *IFRS 7* and *Pillar 3* as binary indicator variables that take on the value of '1' beginning in the first year a firm applies the risk disclosure rules under IFRS 7 or the third pillar of the Basel II accord. *Country Indicator* is a binary indicator variable representing one of the six country-level characteristics defined in Panel A. For details on the remaining variables see Table 2. We include year- and firm-fixed effects in the regressions, but do not report the coefficients. The table reports OLS coefficient estimates and (in parentheses) *t*-statistics based on robust standard errors clustered by country. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 5: Firm-level Differences in Risk Disclosures among Banks Adopting Pillar 3

Panel A: Firm-level Partitioning Variables

	Market Characteristics				*Firm Characteristics*					
	Return Variability		*Stock Price Performance*		*Capital Ratio*		*Stress-Test Participant*	*Stress-Test Failure (Conditional)*	*Stress-Test Failure (Actual)*	
Country	*(1)*		*(2)*		*(3)*		*(4)*	*(5)*	*(6)*	
Australia	0.02	(9)	0.19	(12)	7.81	(17)	(0)	(0)	(0)	
Bahrain	0.02	(21)	-0.03	(22)	14.32	(4)	(0)	(0)	(0)	
Belgium	0.02	(5)	0.13	(6)	9.83	(4)	(2)	(0)	(0)	
Cyprus	0.03	(15)	0.33	(8)	9.48	(13)	(2)	(1)	(0)	
Denmark	0.01	(3)	0.24	(10)	11.00	(8)	(2)	(0)	(0)	
Finland	0.03	(5)	0.12	(5)	8.25	(6)	(1)	(0)	(0)	
France	0.02	(10)	0.22	(10)	8.25	(15)	(3)	(0)	(0)	
Germany	0.02	(22)	0.10	(18)	7.90	(24)	(4)	(0)	(0)	
Greece	0.02	(15)	0.21	(9)	9.68	(13)	(4)	(2)	(2)	
Hong Kong	0.02	(24)	0.16	(25)	10.20	(18)	(0)	(0)	(0)	
Ireland	0.02	(13)	0.16	(13)	8.33	(14)	(3)	(3)	(0)	
Italy	0.01	(5)	0.10	(12)	7.03	(13)	(4)	(1)	(0)	
Kuwait	0.02	(15)	0.06	(12)	16.01	(1)	(0)	(0)	(0)	
Liechtenstein	0.01	(1)	-0.15	(3)	16.00	(0)	(0)	(0)	(0)	
Malta	0.02	(3)	0.06	(4)	16.71	(1)	(1)	(0)	(0)	
Mauritius	0.00	(0)	0.36	(1)	14.41	(0)	(0)	(0)	(0)	
Netherlands	0.01	(5)	0.06	(10)	9.50	(4)	(2)	(0)	(0)	
Norway	0.02	(5)	0.15	(3)	10.00	(0)	(0)	(0)	(0)	
Oman	0.03	(3)	0.13	(1)	11.57	(1)	(0)	(0)	(0)	
Poland	0.02	(10)	0.24	(6)	12.47	(1)	(1)	(0)	(0)	
Portugal	0.02	(1)	0.07	(3)	7.10	(5)	(1)	(1)	(1)	
Saudi Arabia	0.02	(21)	-0.01	(18)	14.50	(1)	(0)	(0)	(0)	
Singapore	0.02	(1)	0.19	(4)	11.00	(3)	(0)	(0)	(0)	
South Africa	0.03	(15)	0.04	(10)	11.00	(8)	(0)	(0)	(0)	
Spain	0.01	(1)	0.17	(7)	7.35	(14)	(3)	(0)	(0)	
Sweden	0.02	(5)	0.07	(5)	10.20	(4)	(1)	(0)	(0)	
Switzerland	0.02	(15)	0.12	(11)	19.50	(1)	(0)	(0)	(0)	
United Arab Emirates	0.03	(13)	0.01	(10)	14.50	(0)	(0)	(0)	(0)	
United Kingdom	0.02	(29)	0.11	(31)	9.75	(24)	(4)	(0)	(0)	

Panel A reports country means of the firm-level raw values and (in parentheses) the number of firm-years or firms with a binary indicator value of '1' for the following six firm-level partitioning variables used in the cross-sectional regressions in Panel B: (1) *Return Variability* takes on the value of '1' if the standard deviation of daily stock returns over a firm's fiscal year exceeds the sample median. (2) We set *Stock Price Performance* to '1' if the annual buy-and-hold stock return is below the sample median. (3) *Capital Ratio* takes on the value of '1' if a bank's Tier 1 capital ratio at the beginning of the fiscal year falls below the sample median. (4) We code *Stress-Test Participant* as '1' if a bank was selected to take part in the 2011 Committee of European Banking Supervisors (CEBS) or the 2012 European Banking Authority (EBA) stress tests. (5) *Stress-Test Failure (Conditional)* takes on the value of '1' for a subset of banks included in (4) that fails to meet the threshold Tier 1 capital ratio *before* considering mitigating capital measures. (6) *Stress-Test Failure (Actual)* takes on the value of '1' for a subset of banks included in (5) that still fails to meet the threshold Tier 1 capital ratio *after* considering mitigating capital measures.

(continued)

Table 5 (continued)

Panel B: Regression Analyses of Firm-level Cross-sectional Differences

	Market Characteristics		*Firm Characteristics*			
Risk Disclosures as Dependent Variable	*High Return Variability* (1)	*Low Stock Price Performance* (2)	*Low Capital Ratio* (3)	*Stress-Test Participant* (4)	*Stress-Test Failure (Conditional)* (5)	*Stress-Test Failure (Actual)* (6)
Test Variables:						
[1] IFRS 7	0.109***	0.111***	0.105*	0.108***	0.111***	0.108***
	(2.94)	(3.08)	(1.85)	(3.03)	(3.02)	(3.00)
[2] Pillar 3	0.116***	0.129***	0.128***	0.143***	0.139***	0.143***
	(6.93)	(7.14)	(7.83)	(8.07)	(8.35)	(8.83)
[3] Pillar 3 * Firm-level Incentive	0.056***	0.027**	0.042*	0.003	0.090***	0.184***
	(2.85)	(2.56)	(1.77)	(0.14)	(5.71)	(13.05)
Control Variables:						
Firm-level Incentive	-0.035**	0.000	-0.030	–	–	–
	(-2.26)	(0.02)	(-1.61)			
Fair Value Disclosures	0.034	0.038	0.043	0.034	0.032	0.039
	(0.57)	(0.59)	(0.49)	(0.53)	(0.51)	(0.63)
Log(Total Assets)	0.034	0.034	0.027	0.033	0.032	0.031
	(1.38)	(1.37)	(0.64)	(1.32)	(1.43)	(1.26)
Log(Analyst Following +1)	-0.027*	-0.025	-0.004	-0.020	-0.019	-0.020
	(-1.81)	(-1.53)	(-0.19)	(-1.25)	(-1.21)	(-1.29)
Capital Ratio	0.136	0.085	0.039	0.092	0.087	0.090
	(0.94)	(0.58)	(0.19)	(0.59)	(0.59)	(0.60)
Return on Assets	0.241**	0.271***	0.302***	0.235**	0.221**	0.236**
	(2.53)	(3.16)	(3.08)	(2.49)	(2.13)	(2.36)
Asset Growth	0.004	0.006	0.033	0.005	0.006	0.005
	(0.28)	(0.46)	(1.14)	(0.41)	(0.47)	(0.36)
Fixed Effects:						
Year	Yes	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.844	0.841	0.856	0.832	0.843	0.841
# Firm-years/Conditional Firm-years	578/290	578/289	430/217	578/189	578/40	578/15
# Firms/Conditional Firms	119/108	119/116	107/68	119/38	119/8	119/3

In Panel B, the sample comprises all available firm-year observations of up to 119 banks with Pillar 3 disclosures from 29 Basel II countries over the 2005 to 2009 period. We use a self-constructed *Risk Disclosures* score measuring a firm's compliance with IFRS 7 and Pillar 3 disclosure requirements as the dependent variable. We define *IFRS 7* and *Pillar 3* as binary indicator variables that take on the value of '1' beginning in the first year a firm applies the risk disclosure rules under IFRS 7 or the third pillar of the Basel II accord. *Firm-level Incentive* is a binary indicator variable representing one of the six firm-level characteristics defined in Panel A. For details on the remaining variables see Table 2. We include year- and firm-fixed effects in the regressions, but do not report the coefficients. The table reports OLS coefficient estimates and (in parentheses) *t*-statistics based on robust standard errors clustered by country. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 6: Liquidity Analysis Following the Adoption of IFRS 7 and Pillar 3 Disclosure Requirements

Log(Bid-Ask Spread) as Dependent Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
Test Variables:					
[1] IFRS 7	0.020	0.039	0.069	0.098	-0.026
	(0.16)	(0.34)	(0.50)	(0.96)	(-0.24)
[2] IFRS 7 * Benchmark Firms/Banks	–	–	-0.065	0.005	-0.005
			(-0.64)	(0.05)	(-0.04)
[3] IFRS 7 * Non-Banks	–	–	–	-0.263	-0.206*
				(-0.85)	(-1.79)
[4] Pillar 3	–	-0.153**	-0.179**	-0.202**	-0.145**
		(-2.16)	(-2.44)	(-2.55)	(-2.37)
P-value: [2] = [4]			[0.22]	[0.02]	[0.26]
P-value: [3] = [4]				[0.85]	[0.68]
Control Variables:					
Benchmark Firms/Banks	–	–	0.028	0.113	–
			(0.40)	(0.81)	
Non-Banks	–	–	–	-0.117	–
				(-0.24)	
Log(Market Value$_{t-12}$)	-0.362***	-0.359***	-0.358***	-0.361***	-0.087
	(-20.47)	(-20.11)	(-18.39)	(-18.23)	(-1.40)
Log(Share Turnover$_{t-12}$)	-0.196***	-0.198***	-0.199***	-0.193***	-0.058***
	(-6.52)	(-6.52)	(-6.46)	(-6.61)	(-3.08)
Log(Return Variability$_{t-12}$)	0.189***	0.192***	0.190***	0.192***	0.057
	(4.98)	(5.12)	(5.03)	(4.98)	(1.64)
Fixed Effects:					
Month	Basel II Countries & Benchmark Countries	Basel II Countries & Benchmark Countries	Basel II Countries & Benchmark Countries	Basel II Banks, Non-Banks & Benchmark Countries	Basel II Banks, Non-Banks & Benchmark Countries
Country	Yes	Yes	Yes	Yes	No
Firm	No	No	No	No	Yes
R^2	0.777	0.778	0.778	0.779	0.871
# Firm-months	10,793	10,793	10,793	10,793	10,793
# Firms	230	230	230	230	230

The sample comprises all available firm-month observations of 270 banks and non-banks from 50 countries over the 2005 to 2009 period as described in Table 1. We use the natural logarithm of a firm's monthly median quoted daily *Bid-Ask Spread* as the dependent variable. We define *IFRS 7* and *Pillar 3* as binary indicator variables that take on the value of '1' beginning in the actual month in which a firm, for the first time, releases its annual report in compliance with the risk disclosure rules under IFRS 7 or the third pillar of the Basel II accord. *Benchmark Firms* is a binary indicator variable that takes on the value of '1' for banks that are exempt from Pillar 3 requirements or domiciled in non-Basel II countries as well as for non-banks in Basel II countries. In some of the analyses, we further split this variable into two separate indicators for *Benchmark Banks* and *Non-Banks*. For details on the remaining variables see Table 2. We include month- (separately for Basel II countries, benchmark countries, Basel II banks, and non-banks), country-, or firm-fixed effects in the regressions (as indicated in the table), but do not report the coefficients. The table reports OLS coefficient estimates and (in parentheses) *t*-statistics based on robust standard errors clustered by country. We also report *p*-values from Wald tests assessing the statistical significance of differences across select coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table A1: Composition of Self-constructed Risk Disclosures Score and Fair Value Disclosures Score

Panel A: Elements of Risk Disclosures Score under Pillar 3 Disclosure Requirements

Description of Individual Disclosure Items as Defined in Pillar 3	*Reference to Pillar 3*	*Reference to IFRS 7*	*Compliance*		
			Basel II Banks	*Benchmark Banks*	*Non-Banks*
1. Amount of tier 1 capital	Table 2 b)-e)	IAS 1.134-136	98%	91%	0%
2. Amount of tier 2, 3, and eligible capital	Table 2 b)-e)	IAS 1.134-136	99%	89%	0%
3. Discussion credit risk management (qualitative: e.g. definition past-due/impaired, approach for general and specific allowances)	Table 4 a)	IFRS 7.33b	100%	100%	94%
4. Discussion of counterparty credit risk (methods, policy for collaterals and impact of downgrade)	Table 8 a)	IFRS 7.33b	74%	30%	46%
5. Total Gross Credit Exposure (broken down by type and average over the year)	Table 4 b)	IFRS 7.36 (a), IG21	98%	89%	70%
6. Inclusion of off-balance sheet commitments to the credit exposure	Table 4 b)	IFRS 7.36 (a), IG21, B10	89%	82%	8%
7. Geographic distribution of credit exposures	Table 4 c)	IFRS 7.36 (a), 34 (c)	97%	78%	18%
8. Distribution of credit exposure by industry	Table 4 d)	IFRS 7.36 (a), 34 (c)	89%	95%	4%
9. Distribution of credit exposure by counterparty type (corporate/retail)	Table 4 d)	IFRS 7.36 (a), 34 (c)	97%	95%	4%
10. Explanation of internal rating process/description of external ratings used (and relation between internal and external ratings)	Table 5 a), Table 6 a)-c)	IFRS 7.36 (c), IG24, IG25	86%	57%	18%
11. Is the credit risk exposure (neither past due nor impaired) broken down by internal or external rating classes?	Table 5 b), Table 6 d)	IFRS 7.36 (c), IG23-IG25	86%	86%	28%
12. Amount of impaired and past-due loans	Table 4 f)	IFRS 7.37 (a), (b)	96%	91%	78%
13. Ageing analysis for assets past due	Table 4 f)	IFRS 7.37 (a), IG28	91%	89%	66%
14. Amount of individual and collective impairments	Table 4 f)	IFRS 7.37 (b), 20 (e), IG29	79%	57%	0%
15. Amount of specific and general allowances	Table 4 f)	IFRS 7.16, 37 (b), 20 (e)	86%	66%	16%
16. Amount of charges for specific allowances and charge-offs during the period	Table 4 f)	IFRS 7.37 (b), 7.20 (e)	98%	59%	40%
17. Reconciliation of changes in the allowances for loan impairment	Table 4 h)	IFRS 7.16, IAS 37.84	98%	99%	64%
18. Amount of impaired (past due) loans by counterparty type	Table 4 f)	IFRS 7.37 (b), 20 (e), IG29, 34 (c)	75%	59%	4%
19. Amount of impaired (past due) loans by industry	Table 4 f)	IFRS 7.37 (b), 20 (e), IG29, 34 (c)	56%	16%	0%
20. Amount of impaired (past due) loans by geographic region	Table 4 g)	IFRS 7.37 (b), 20 (e), IG29, 34 (c)	75%	16%	0%
21. Gross positive fair value of financial instruments subject to counterparty credit risk	Table 8 b)	IFRS 7.36 (a), B10	69%	39%	16%
22. Description of collateral received for financial assets neither past due nor impaired	Table 7 a)	IFRS 7.36 (b), IG22, 15	93%	78%	42%
23. Amount of total credit exposure covered by financial collateral (neither past due nor impaired)	Table 7 b)	IFRS 7.36 (b), 38, 15	84%	50%	10%
24. Amount of total credit exposure covered by guarantees/credit derivatives (neither past due nor impaired)	Table 7 c)	IFRS 7.36 (b), 38	66%	27%	4%
25. Description of collateral received for financial assets either past due or impaired	Table 7 a)	IFRS 7.37 (c), IG29 (c), 14	43%	31%	8%
26. Amount of total credit exposure covered by financial collateral (past due or impaired)	Table 7 b)	IFRS 7.37 (c)	68%	59%	4%
27. Amount of total credit exposure covered by guarantees/credit derivatives (past due or impaired)	Table 7 c)	IFRS 7.37 (c)	30%	15%	0%
28. Discussion of market risk management (general methods)	Table 11 a)	IFRS 7.33b	100%	98%	96%
29. Discussion of IRRBB management (qualitative)	Table 14 a)	IFRS 7.33b	98%	71%	0%
30. Description of the characteristics of the value at risk (VaR) model/sensitivity analysis used	Table 11 c)	IFRS 7.40-42, B20	82%	79%	88%
31. If VaR applied: high, mean and low VaR values over the reporting period	Table 11 e)	IFRS 7.40-42, B20, IG32-40	63%	40%	92%
32. If VaR applied: back-testing results on the VaR analysis	Table 11 e)	IFRS 7.40-42, B20, IG32-40	34%	8%	0%
33. Are there specific quantitative disclosures on the interest rate risk in the banking book?	Table 14 b)	IFRS 7.40, B22, IG34	96%	84%	0%
34. Discussion of securitization management	Table 9 a)	IFRS 7.33b	57%	9%	0%
35. Description of accounting policies for securitization transactions	Table 9 b)	IFRS 7.21, B5, IAS 1.117	52%	17%	0%
36. Total amount of exposures securitized (by exposure type)	Table 9 d)	IFRS 7.13	59%	18%	0%
37. Aggregate amount of securitization exposures retained or purchased (broken down by exposure type).	Table 9 f)	IFRS 7.13	54%	9%	0%
38. Fair values of equity investments (banking book), comparable with carrying amount	Table 13 b)	IFRS 7.25-30, IAS 28.37 (a)	68%	29%	18%
39. Description of operational risk	Table 12 a)-c)	IFRS 7.33 (b), IG15 (b), (i)	99%	81%	0%

(continued)

Table A1 (continued)

Panel B: Elements of Fair Value Disclosures Score under IFRS 7 Disclosure Requirements

Description of Individual Disclosure Items as Defined in IFRS 7	*Reference to IFRS 7*	*Compliance*		
		Basel II Banks	*Benchmark Banks*	*Non-Banks*
1. Quantitative disclosures on the fair value hierarchy	IFRS 7.27B (a)	86%	84%	32%
2. Assets designated at fair value through profit or loss (FVTPL) on the face of the balance sheet	IFRS 7.8 (a)	33%	23%	2%
3. Quantitative disclosures on assets designated at FVTPL in the notes	IFRS 7.8 (a)	70%	53%	18%
4. Profit and loss from assets designated at FVTPL on the face of the income statement	IFRS 7.20 (a) (i)	19%	10%	0%
5. Quantitative disclosures on profit and loss from assets designated at FVTPL in the notes	IFRS 7.20 (a) (i)	57%	50%	4%
6. Unrealized profit and loss from fair value option gains	IFRS 7.27B (d)	47%	33%	2%
7. Fair value of loans and receivables	IFRS 7.25	67%	87%	84%
8. Fair value of assets held to maturity	IFRS 7.25	46%	55%	4%
9. The accounting policy for day one profits and losses	IFRS 7.28 (a)	28%	16%	0%
10. Quantitative disclosures for day one profits and losses	IFRS 7.28 (b)	19%	7%	0%
11. Maturity analysis for financial liabilities	IFRS 7.39	95%	93%	68%
12. Maturity analysis for financial assets	IFRS 7, B11E	71%	72%	5%
13. Funding gap	IFRS 7.7.39, B11E	47%	69%	24%
14. Expected maturities of financial liabilities/assets	IFRS 7, BC58	14%	20%	0%
15. Quantitative disclosures for hedging derivatives	IFRS 7.22 (b)	71%	46%	58%
16. Quantitative disclosures for trading derivatives	IFRS 7.8 (a), (e)	73%	60%	46%
17. Notional amount of derivatives	IFRS 7.39 (b), B11D	88%	73%	44%
18. Fair value of derivative assets and liabilities	IFRS 7.25	84%	85%	56%

The table reports the detailed composition of the *Risk Disclosures* score (Panel A) and the *Fair Value Disclosures* score (Panel B). We construct the *Risk Disclosures* score as the sum of 39 disclosure items required under both the third pillar of the Basel II accord and IFRS 7. This measure represents the overlap between the two disclosure requirements. We assign a score of '1' to each disclosure item if included in a firm's Pillar 3 report (or annual financial statements), and scale the sum by 39 so that the total score ranges from zero (non-compliance or lack of applicability) to one (full compliance). We construct the *Fair Value Disclosures* score in a similar way by summing 18 disclosure items required under IFRS 7 but not under Pillar 3. For this score, Pillar 3 does not duplicate existing disclosure requirements of IFRS 7. Note that some of these disclosure items were already part of other IFRS (mainly IAS 30) before IFRS 7 became effective. The table also indicates the references to the specific paragraphs within IFRS 7 and Pillar 3 detailing the disclosure requirements as well as the maximum level of compliance with the individual disclosure items by (i) banks domiciled in Basel II countries that adopt Pillar 3, (ii) benchmark banks that are exempt from Pillar 3 requirements or domiciled in non-Basel II countries, and (iii) non-banks in Basel II countries (i.e., industrial, service, and insurance firms).