



A Tale of Two Supervisors: Compliance with Risk Disclosure Regulation in the Banking Sector*

JANNIS BISCHOF , *University of Mannheim*[†]

HOLGER DASKE , *University of Mannheim*

FERDINAND ELFERS , *Erasmus University Rotterdam*

LUZI HAIL , *University of Pennsylvania*

ABSTRACT

We examine how the presence of multiple supervisory agencies affects firm-level compliance in form and substance with disclosure regulations. This analysis is important because coordination problems among regulators are frequently present in practice but often overlooked in academic research. We exploit that banks are subject to equivalent risk disclosure rules under securities laws (IFRS 7) and banking regulation (Pillar 3 of the Basel II Accord) but that different regulators start enforcing the rules at different points in time. We find that banks substantially increase their formal risk disclosures upon the adoption of Pillar 3 even if they already had to comply with the same requirements under IFRS 7. The effects are stronger if the central bank is responsible for bank supervision and bank regulators are equipped with more supervisory resources, but are less pronounced if the securities market regulator is an independent entity. In turn, banks facing more market pressures are more compliant with the rules. We further find persistent liquidity benefits of the increased risk disclosures but only after Pillar 3 became effective and its compliance was enforced by the banking regulator. Our results suggest that formal and material compliance with risk disclosure regulation are a function of both the resources of the supervisory agency and its incentive alignment with the regulated firms. In our setting, the banking regulator seems more effective in fulfilling this role.

Keywords: disclosure regulation, risk disclosures, liquidity, financial institutions, IFRS, Basel II

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

*Accepted by Eddie Riedl. We appreciate the helpful comments of two anonymous reviewers, Anne Beatty, Elizabeth Chuk, Dan Collins, Peter Demerjian, João Granja, Bjorn Jorgensen, Mark Lang, Jeffrey Ng, Martin Wallmeier, and workshop participants at the 2014 Dopuch Accounting Conference at Washington University, the 2015 London Business School Accounting Symposium, the 2015 Rotman Accounting Research Conference at the University of Toronto, the 2015 European Financial Management Association meeting, the 2015 European Accounting Association meeting, the 2015 American Accounting Association meeting, the 2016 meeting of the Verein für Socialpolitik, the University of Bristol, the University of Chicago, Erasmus University Rotterdam, the University of Exeter, Freie Universität Berlin, the University of Göttingen, the University of Graz, HEC Paris, Lancaster University, London School of Economics, BI Norwegian Business School, the University of Padova, Stockholm School of Economics, Tilburg University, the University of Wisconsin, and the University of Zurich. Jannis Bischof, Holger Daske, and Ferdinand Elfers gratefully acknowledge funding from the German Research Foundation (DFG) under the SPP 1578 program (“Financial Market Imperfections and Macroeconomic Performance”), Project-ID 201541626. An earlier version of this paper circulated under the title “A Tale of Two Regulators: Risk Disclosures, Liquidity, and Enforcement in the Banking Sector.”

†Corresponding author.

© 2021 The Authors. *Contemporary Accounting Research* published by Wiley Periodicals LLC on behalf of the Canadian Academic Accounting Association.

Vol. 39 No. 1 (Spring 2022) pp. 498–536

doi:10.1111/1911-3846.12715

Un conte de deux superviseurs : conformité avec la réglementation relative à la divulgation des risques dans le secteur bancaire

RÉSUMÉ

Nous examinons de quelle façon la présence de plusieurs organismes de surveillance influence la conformité des entreprises avec la réglementation relative à la communication de l'information, tant sur le plan de la forme que sur le fond. Cette analyse est importante, car les problèmes de coordination entre les organismes de réglementation sont fréquents dans la pratique, mais sont souvent mis de côté dans le cadre de la recherche universitaire. Nous faisons valoir que les banques sont assujetties à des règles équivalentes en matière de divulgation des risques en vertu des lois sur les valeurs mobilières (IFRS 7) et de la réglementation du secteur bancaire (pilier 3 de l'accord de Bâle II), mais que les divers organismes de réglementation appliquent les règles à différents moments. Nous établissons que les banques augmentent de façon importante leurs divulgations des risques formelles depuis l'adoption du pilier 3 même si elles étaient déjà tenues de respecter les mêmes exigences aux termes de la norme IFRS 7. Les effets sont plus marqués lorsque la banque centrale est responsable de la supervision des banques et que les organismes de réglementation du secteur bancaire disposent de plus de ressources de surveillance, mais sont moins prononcés lorsque l'organisme de réglementation du marché des valeurs mobilières est une entité indépendante. En retour, les banques qui font face à des pressions plus importantes du marché respectent davantage les règles. Nous trouvons aussi des avantages persistants en termes de liquidité associés avec la hausse des divulgations des risques, mais seulement depuis l'entrée en vigueur du pilier 3 et lorsque son application était assurée par l'organisme de réglementation des banques. Nos résultats portent à croire que la conformité formelle et matérielle avec la réglementation en matière de divulgation des risques est fonction des ressources de l'organisme de surveillance et de son harmonisation sur le plan des incitatifs avec les entreprises réglementées. Dans notre contexte, l'organisme de réglementation du secteur bancaire semble plus efficace pour s'acquitter de cette tâche.

Mots-clés : réglementation de la communication d'information, divulgations des risques, liquidité, institutions financières, IFRS, Bâle II

“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, introductory letter to the report)

1. Introduction

Disclosure regulation plays a key part in well-functioning capital markets. 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, public enforcement is often seen as an important determinant of the effectiveness of financial reporting regulation (e.g., Glaeser et al. 2001; Holthausen 2009; Christensen et al. 2016). One important aspect of public enforcement is the choice and structure of the supervisory institutions. In practice, there often exists a specialized industry regulator aside from the securities market regulator that shares the charge of designing and monitoring the disclosure regime. From a public-interest view of regulation (Posner 1974), the existence of multiple regulators should not affect the effectiveness of their supervisory activities as they all have the overall well-being of financial markets and their constituents in mind. However, in line with the self-interest view of regulation (Stigler 1971), different regulators could also follow their own agenda and, for example, view the role of transparency for the functioning of capital markets differently (e.g., Flannery 2020). In addition, variation in the endowment of regulators with staff and resources and, hence, in their supervisory capabilities can further affect how multiple supervisory agencies perform their tasks (e.g., Jackson and Roe 2009).

Prior research offers evidence on the supervisory outcomes of multiple regulators that substitute for each other over time (Agarwal et al. 2014; Costello et al. 2019). Less is known about the regulatory outcomes of a design in which multiple supervisory agencies are simultaneously tasked with overlapping responsibilities. In this paper, we examine how the parallel existence of multiple supervisory bodies with different tool sets and potentially diverging priorities affects formal compliance with disclosure rules as well as regulated firms' material transparency of financial reports. To address this research question, we identify a setting in the context of international banking that has several desirable features. First, our setting holds the written rules constant (not literally, but in a fundamental sense), while we can exploit cross-country variation in the attributes and objectives of who is responsible for the enforcement of the rules. More specifically, IFRS 7 requires disclosures about the nature and extent of risks arising from financial instruments and applies to all firms subject to IFRS reporting. Its enforcement, in general, lies with the agency supervising national securities markets and 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 equivalent to IFRS 7 but fall under the auspices of the national banking supervisor.¹

Second, the staggered adoption of IFRS 7 and Pillar 3 offers better identification of how the different types of regulators impact the effectiveness of the rules than if both sets of rules had been enacted at the same time. This staggered adoption extends to the analysis of capital-market effects. We exploit the (arguably exogenous) monthly variation in when banks initially release the risk disclosures under IFRS 7 and Pillar 3 to identify their effects on stock liquidity. Third, both IFRS 7 and Pillar 3 are the result of supranational regulatory efforts and impose a periodic schedule of when banks have to disclose the information. This institutional feature mitigates concerns that the regulated firms actively influence the content, timing, or even avoidance of the new regulations. Fourth, focusing on a clearly defined set of disclosure items lets us objectively measure compliance with the new rules (i.e., firms either disclose an item or not) and then link observed differences to market perceptions. This setup enables us to distinguish between compliance in form, which also can include boilerplate language or a pure "check-the-box" approach, and compliance in substance when market participants update their priors in response to new information. Only the latter outcome is consistent with effective enforcement of the enhanced disclosure rules.

Our sample comprises 119 banks from 29 Basel II countries that report under IFRS and issue Pillar 3 reports. To enable difference-in-differences (DiD) estimation, we include 147 benchmark firms: (i) 28 banks domiciled in Basel II countries that are exempt from Pillar 3 (because they are part of a consolidated group whose parent entity already fulfills the Pillar 3 requirements); (ii) 69 banks reporting under IFRS but located in non-Basel II countries; and (iii) 50 manufacturing, service, and insurance firms with substantive use of financial instruments. The benchmark firms help us control for general trends and independent shocks to banks' risk disclosures. The sample period starts in 2005, two years before IFRS 7 became effective, and runs through 2009, at which point Pillar 3 had been in place for at least a year. We construct two distinct yearly disclosure scores: (i) the *Risk Disclosures* score is the sum of 39 items required under both IFRS 7 and Pillar 3—this measure represents the overlap between the two rules and serves as the dependent variable in the disclosure tests, and (ii) the *Fair Value Disclosures* score is the sum of 18 items required under IFRS 7 but not under Pillar 3—and serves as the time-varying

1. For instance, in Italy, the Bank of Italy is responsible for prudential supervision 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 is responsible for the regulation and control of securities markets, including accounting and auditing matters, and the supervision of audit firms. Other countries like Spain or Greece have a similar institutional structure, while countries like Belgium and Finland have a single unified regulator overseeing both areas (see the Appendix).

control variable for changes in banks' disclosures amid Pillar 3 adoption. In the market-based tests, we use monthly bid-ask spreads as the dependent variable. Stock liquidity is well suited for our purposes as it is quick moving and conceptually tied to a firm's disclosure policy (e.g., Glosten and Milgrom 1985; Diamond and Verrecchia 1991; Verrecchia 2001). In a short-window event study, we also use abnormal returns, volatility, and trading volume to test for the immediate market reaction to the enhanced risk disclosures.

When we plot the aggregate *Risk Disclosures* scores, we find an increase in the year IFRS 7 became effective but yet another increase upon Pillar 3 adoption. No such pattern exists for the *Fair Value Disclosures*. We confirm these results by estimating annual panel regressions. We find that compliance with risk disclosure rules increases by up to 13 percentage points for all firms following IFRS 7 but that it increases by another 14 percentage points for regulated banks after Pillar 3. The results hold when we control for concurrent changes in fair value disclosures, firm attributes, and firm fixed effects plus country-by-year fixed effects. The latter mitigate concerns about the influence of the global financial crisis that took place in the second half of our sample period. We do not find an increase in *Risk Disclosures* for banks that are domiciled in Basel II countries but exempt from Pillar 3 following its effective date, which alleviates concerns that other provisions of the Basel II Accord (i.e., Pillars 1 and 2) contribute to the results.² Our findings are consistent with banks not being in full compliance with the new disclosure rules when the securities market regulator acts as the primary supervisory body. Only after the same rules were also monitored by the banking regulator did formal compliance levels reach 80% or more.

We next examine cross-sectional variation among Pillar 3 banks. First, we analyze country-level differences and find that compliance with risk disclosure rules following IFRS 7 is higher when the securities market regulator is an independent organizational unit (instead of a separate department within a unified agency). In those countries, we also find that banks strengthen compliance with Pillar 3 if the country's central bank acts as their primary supervisor (instead of a special financial services authority; Barth et al. 2006) and if the banking regulator has relatively more supervisory resources at its disposal (Jackson and Roe 2009). This observed variation in formal compliance suggests that a regulator's *will* (i.e., its institutional design, resources, and incentives) is crucial for the regulatory outcome in the presence of multiple supervisory agencies and not just its industry focus, consistent with Agarwal et al. (2014) or Costello et al. (2019).³ When we analyze variation among regulated banks, we find that banks facing higher uncertainty (measured by past stock return volatility) and with weaker past stock performance are more compliant with Pillar 3. These findings suggest that banks most likely to attract regulatory scrutiny from the banking supervisor are more forthcoming in their risk disclosures and point to the importance of firm-level incentives for regulatory outcomes.

In the market-based tests, we find no significant liquidity reaction for the regulated banks around IFRS 7 but a reduction in bid-ask spreads on the order of 12 to 17 percentage points following Pillar 3. These results hold after including firm and country-by-month fixed effects, which effectively control for invariant (unobservable) firm attributes and local trends in liquidity. They also hold when we limit the sample to the 13 months around the release of the initial Pillar 3 disclosures and are stronger when the Pillar 3 information is published in a separate report. This evidence suggests that, on average, the enhanced risk disclosures only become material to investors once the bank regulators start to play a dominant supervisory role. To gauge their short-term

-
2. Pillar 1 of the Basel II Accord tightens the capital adequacy requirements for banks (e.g., introduces model-based risk-weights or includes operational risks). Pillar 2 requires banks to periodically assess their internal capital adequacy as well as the supervisory agencies to monitor these assessments and intervene if necessary (Basel Committee on Banking Supervision 2006).
 3. We note that we only can test the sequence of adopting IFRS 7 followed by Pillar 3, and hence the banking regulator is almost always second in the line of supervision (see also footnote 11). We therefore cannot preclude the possibility that our results are partly driven by a "doubling of efforts," even though such reinforced monitoring would not fully explain the cross-sectional variation that we observe.

informativeness, we conduct an event study and find only modest abnormal returns, return volatility, and heightened trading volume in the three days around the initial release of the Pillar 3 disclosures but that the results vary with the amount of new information. This finding suggests that markets likely need some time to fully interpret the enhanced risk disclosures.

Our study contributes to the literature on how the design of the oversight infrastructure relates to firms' compliance with new disclosure regulation. First, we show that there exists heterogeneity in firms' responses to the same set of disclosure rules implemented and enforced by different regulatory agencies. Independent regulators with more supervisory resources seem better suited to impose the written rules, whereas firms fearing regulatory scrutiny are better at following the rules. In contrast to Agarwal et al. (2014) and Costello et al. (2019), which also focus on the banking sector but exploit the periodic rotation between industry-specific federal and state-level agencies, we derive our insights from a setting in which two regulators—a general securities market regulator and a specialized industry regulator—simultaneously share the supervisory tasks. We show that banks increase their compliance with risk disclosure regulation, in form and substance, when they are under the auspices of the bank regulator as compared to the securities market regulator. We do so for a regulation that is specifically geared toward improving market discipline through disclosures (and not linked to banks' capital requirements), which traditionally aligns with the preferences of securities market regulators but not bank regulators (Flannery 2020). Our evidence adds to findings of regulatory inconsistency in the implementation and monitoring of laws in the presence of multiple supervisors (e.g., Berger et al. 2001; Macher et al. 2011; Christensen et al. 2016).

Second, we document that regulatory outcomes are jointly determined by attributes of the supervisory authority and the regulated firms. The presence of a regulator can improve formal compliance with disclosure rules; however, it does not guarantee material implementation by the regulated firms (e.g., Ball et al. 2003). Institutional features like stronger supervisory powers or better resources also seem necessary to affect the materiality of the new risk disclosures, as do firm-level reporting incentives (e.g., Jackson and Roe 2009; Christensen et al. 2013; Daske et al. 2013; Bischof et al. 2021).

Finally, we add to the literature on the capital-market effects of corporate risk disclosures (e.g., Jorion 2002; Bischof and Daske 2013; Campbell et al. 2014; Hope et al. 2016; Badia et al. 2020) and provide a systematic assessment of the transparency effects of the Pillar 3 disclosures for banks.

2. Conceptual underpinnings and institutional setting

Link between disclosure regulation, public enforcement, and compliance

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). On a more practical level, governments define the mandate for a supervisory agency and determine its endowment with resources and powers to achieve these goals. Sometimes, they prefer to assign a regulatory task not just to one agency but to two separate agencies in parallel. These agencies share the responsibilities of oversight and enforcement. Such a structure can improve supervisory performance, as it offers protection against the failure of a single agency and likely mitigates the risk of one agency being captured by its constituents (Freeman and Rossi 2012). On the flip side, the presence of multiple regulators could create redundancies and increase coordination efforts (e.g., Martimort 1999; Ting 2003; Krause and Douglas 2006).⁴

4. It could also lead to (desirable) competition among regulators or give rise to regulatory arbitrage, with regulated firms opportunistically catering to one but not the other agency (Tiebout 1956; Parisi et al. 2006).

We examine a setting in which a general securities market regulator and a specialized banking regulator jointly monitor the implementation of enhanced risk disclosure requirements for banks. From a public-interest view of regulation (e.g., Pigou 1938; Posner 1974), the coexistence of multiple regulators should not matter because both the securities market and banking regulator pursue the overall well-being of financial markets and, specifically regarding Pillar 3, aim to improve transparency and market discipline. Under this view, we would expect securities market regulators to fully enforce, and banks to fully comply with, the new disclosure requirements as soon as they become effective under IFRS 7. The later adoption of Pillar 3 should affect neither formal nor material compliance with the rules.

However, prior literature has documented ample variation in the public enforcement of accounting standards and disclosure regulation (e.g., Christensen et al. 2013; Brown et al. 2014). This observation is more in line with the self-interest view of regulation (e.g., Stigler 1971; Peltzman 1976), which suggests that regulatory agencies follow their own agenda. Similarly, if multiple regulators bear responsibility, their enforcement activity has been shown to vary with the extent of effort they are willing or able to spend (Rosen 2003), the degree of information asymmetry between regulator and regulatee (Macher et al. 2011), or the regulatory strictness that they apply (Agarwal et al. 2014; Costello et al. 2019). Supervisory agencies also might have little latitude or no interest to push banks beyond formal compliance and force out material information, in particular when the information could trigger adverse market reactions (Gallemore 2021). Many of these factors driving heterogeneity in public enforcement are a function of the supervisory powers and resources (e.g., Barth et al. 2006; Jackson and Roe 2009). Thus, under this view, we expect a regulator's institutional design, expertise, incentives, or resources (i.e., its "will") to matter and the regulatory outcomes of IFRS 7 and Pillar 3 to reflect imbalances along these dimensions between the general securities market regulator and the specialized banking regulator. If we assume that the banking regulator is better equipped in terms of staff, expertise, and resources and has more interest in implementing the risk transparency rules, then we expect to observe a more pronounced reaction in form and substance following Pillar 3 than IFRS 7.⁵

Firm-level incentives and factors specific to the regulated firms have the potential to reinforce (or counteract) a regulator's supervisory activities (e.g., Ball et al. 2003; Fisman and Miguel 2007; Daske et al. 2013). In the banking industry, the relationship between the bank supervisor and the regulated institution is particularly strained when a bank shows signs of financial distress. In such an event, the survival of the bank is largely at the supervisor's discretion (e.g., Brown and Dinç 2005; Gallemore 2021), and banks could try to appease the regulator by proactively increasing compliance. At the same time, the nature of written disclosure regulation often affords firms with ample discretion even perfect enforcement cannot avoid (e.g., Auffhammer and Kellogg 2011). Firms can then adopt a "check-the-box" approach and release statements that formally meet the disclosure requirements yet do not convey insightful information because they are boilerplate, highly aggregated, or overly complex (e.g., Dyer et al. 2017; Dong et al. 2019). Against this backdrop, we expect banks that are in doubt about their future viability and fear regulatory or market scrutiny to increase their formal compliance with disclosure regulation, most pronouncedly when they foresee regulatory actions by the banking supervisor which could harm their ongoing operations.

5. We use different constructs to test for formal and material compliance. The analysis of banks' actual disclosure practices provides evidence of formal compliance with the new disclosure rules, whereas the liquidity analysis provides evidence on the materiality of these disclosures for investors (i.e., compliance in substance). However, we note that risk disclosures—unlike other information typically examined in the literature—do not relate to information about future expected cash flows but to the underlying risk of these cash flows. Such disclosures can reduce information asymmetries and cost of capital by lowering the variance uncertainty premium that investors place on firms (Jorgensen and Kirschenheiter 2003; Heinle and Smith 2017).

Risk disclosures under IFRS 7 and the third pillar of the Basel II Accord

The IASB introduced IFRS 7 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.⁶ IFRS 7 superseded the International Accounting Standard (IAS) 30, which was only applicable to banks, and also contains certain disclosure requirements already required by IAS 32. IFRS 7 is not industry-specific and is mandatory for all firms holding financial instruments. Firms could voluntarily adopt IFRS 7 one year ahead of schedule. The risk disclosures under IFRS 7 form an integral part of the audited footnotes to firms' financial statements. Yet they only constitute a small portion of the disclosures to be audited and, hence, potentially lack materiality for triggering a qualified audit opinion (or an enforcement action by the securities market regulator).

The Basel II Accord is a supranational agreement on the capital regulation of banks. The Basel Committee on Banking Supervision (BCBS) first published the accord in 2004 and recommended that its member states transpose the guidelines into national banking laws. The BCBS structured the accord around three pillars. The first two cover the minimum capital requirements and the supervisory review process; the third one introduces requirements about risk disclosures. Most of these risk disclosures were already privately made available to the bank supervisors through the ongoing regulatory filing process. Thus, the primary goal of Pillar 3 is not to improve the information available to prudential supervisors but to enhance publicly available information (Basel II Accord, para. 809). In that sense, the objectives are very similar to IFRS 7 as Pillar 3 is aimed at establishing market discipline (e.g., Flannery 2001; Herring 2004). Pillar 3 does not prescribe a standardized disclosure format. Banks can publish a separate Pillar 3 report or integrate the disclosures in the annual report. The standard emphasizes that banks can meet the Pillar 3 requirements even without additional disclosures when they already provide the information under local accounting standards or regulations (Basel II Accord, para. 814). A bank's external auditor typically does not attest compliance with Pillar 3 unless the disclosures are an integral part of the financial statements.

The IASB and the BCBS developed IFRS 7 and Pillar 3 independently but coordinated their efforts; the BCBS participated in IASB advisory groups and commented publicly on the IFRS 7 exposure draft. In terms of substance, the Pillar 3 disclosure items are very similar to the respective items under IFRS 7. Table 1, panel A, in section 3 provides a mapping of the disclosure items that are common between Pillar 3 and IFRS 7.⁷ 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 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). Once IFRS 7 and the Basel II regulations were published, legislators had to transpose them into national law and ensure proper oversight (with no role for the IASB or the BCBS). Some countries split the oversight charge between the local securities market regulator for IFRS 7 and the local banking regulator for Pillar 3 (e.g., Australia), whereas in other countries (e.g., Denmark) both functions are combined in a single agency (sometimes with multiple internal units). In the Appendix, we list the supervisory agencies responsible for the enforcement of IFRS 7 and Pillar 3 and indicate the sources of this information.

To better understand the institutional forces at work, we conduct an in-depth analysis for four sample countries (see supporting information in section 2 of the online Appendix for details). We

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

7. We use this mapping to construct our *Risk Disclosures* score. The table also lists the earlier IAS preceding IFRS 7 and, in panel B, the disclosure items that are unique to IFRS 7. For examples of banks' actual disclosures under IFRS 7 and Pillar 3, see section 1 of supporting information in the online Appendix, as an addition to the online article.

TABLE 1
Composition of 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	Reference to IAS 30/32 (and other)	Compliance		
				Basel II banks (%)	Benchmark banks (%)	Nonbanks (%)
A. Capital Adequacy Disclosures						
1. Amount of tier 1 capital	Table 2(b-e)		IAS 1.134-136 (2007)	98	91	0
2. Amount of tier 2, 3, and eligible capital	Table 2(b-e)		IAS 1.134-136 (2007)	99	89	0
B. Credit Risk Disclosures						
3. Discussion of credit risk management (qualitative: e.g., definition past-due/impaired, approach for specific allowances)	Table 4(a)	IFRS 7.33b	IAS 32.56	100	100	94
4. Discussion of counterparty credit risk (methods, policy for collaterals, and impact of downgrade)	Table 8(a)	IFRS 7.33b	IAS 32.56	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	IAS 32.76 (a)	98	89	70
6. Inclusion of off-balance sheet commitments to the credit exposure	Table 4(b)	IFRS 7.36 (a), B10	IAS 30.26, 32.76 (a), 82	89	82	8
7. Geographic distribution of credit exposures	Table 4(c)	IFRS 7.36 (a), 34 (c)	IAS 30.40, 32.76 (b)	97	78	18
8. Distribution of credit exposure by industry	Table 4(d)	IFRS 7.36 (a), 34 (c)	IAS 30.40, 32.76 (b)	89	95	4
9. Distribution of credit exposure by counterparty type (corporate/retail)	Table 4(d)	IFRS 7.36 (a), 34 (c)	IAS 30.40, 32.76 (b)	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. Breakdown of credit risk exposure (neither past due nor impaired) by internal or external rating classes	Tables 5(b) and 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. Aging analysis for assets past due	Table 4(f)	IFRS 7.37 (a), IG28		91	89	66

(The table is continued on the next page.)

TABLE 1 (continued)

Description of individual disclosure items as defined in Pillar 3		Reference to Pillar 3	Reference to IFRS 7	Reference to IAS 30/32 (and other)	Compliance		
					Basel II banks (%)	Benchmark banks (%)	Nonbanks (%)
14. Amount of individual and collective impairments	Table 4(f)	IFRS 7.37 (b), 20 (e), IG29	IAS 30.43 (b)	79	57	0	
15. Amount of specific and general allowances	Table 4(f)	IFRS 7.16, 37 (b), 20 (e)	IAS 30.43 (c)	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)	IAS 30.43 (b)	98	59	40	
17. Reconciliation of changes in the allowances for loan impairment	Table 4(h)	IFRS 7.16	IAS 30.43 (b), IAS 37.84	98	99	64	
18. Amount of impaired (past due) loans by counterparty type	Table 4(f)	IFRS 7.34 (c), 37 (b), 20 (e), IG29		75	59	4	
19. Amount of impaired (past due) loans by industry	Table 4(f)	IFRS 7.34 (c), 37 (b), 20 (e), IG29		56	16	0	
20. Amount of impaired (past due) loans by geographic region	Table 4(g)	IFRS 7.34 (c), 37 (b), 20 (e), IG29		75	16	0	
21. Gross positive fair value of financial instruments subject to counterparty credit risk	Table 8(b)	IFRS 7.36 (a), B10	IAS 32.76 (a)	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	

(The table is continued on the next page.)

TABLE 1 (continued)

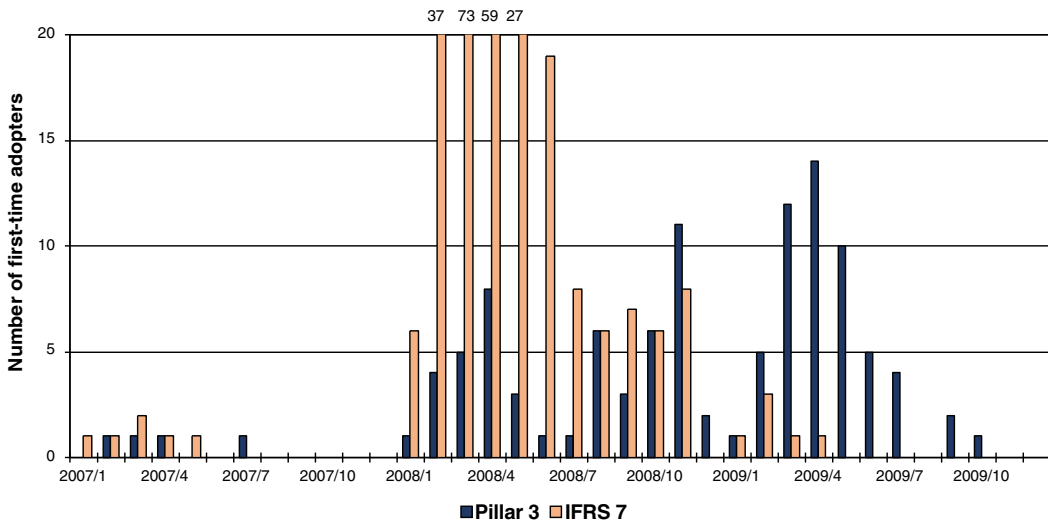
Panel A: Elements of Risk Disclosures score under Pillar 3 disclosure requirements					Compliance	
Description of individual disclosure items as defined in Pillar 3	Reference to Pillar 3	Reference to IFRS 7	Reference to IAS 30/32 (and other)	Basel II banks (%)	Benchmark banks (%)	Nonbanks (%)
27. Amount of total credit exposure covered by guarantees/credit derivatives (past due or impaired)	Table 7(c)	IFRS 7.37 (c)		30	15	0
C. Market Risk Disclosures						
28. Discussion of market risk management (general methods)	Table 11(a)	IFRS 7.33 (b)	IAS 32.56	100	98	96
29. Discussion of IRRBB management (qualitative)	Table 14(a)	IFRS 7.33 (b)	IAS 32.56, 67	98	71	0
30. Description of characteristics of 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. Quantitative disclosures on the interest rate risk in the banking book	Table 14(b)	IFRS 7.40, B22, IG34	IAS 32.67–75	96	84	0
34. 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
D. Securitization Disclosures						
35. Discussion of securitization management	Table 9(a)	IFRS 7.33 (b)	IAS 32.56	57	9	0
36. Description of accounting policies for securitization transactions	Table 9(b)	IFRS 7.21, B5, IAS 1.117	IAS 32.60 (b)	52	17	0
37. Total amount of exposures securitized (by exposure type)	Table 9(d)	IFRS 7.13	IAS 32.94	59	18	0
38. Aggregate amount of securitization exposures retained or purchased (broken down by exposure type).	Table 9(f)	IFRS 7.13	IAS 32.94	54	9	0
E. Operational Risk Disclosures						
39. Description of operational risk	Table 12(a–c)	IFRS 7.33 (b), IG15 (b), (i)		99	81	0

(The table is continued on the next page.)

TABLE 1 (continued)

Description of individual disclosure items as defined in IFRS 7		Reference to IFRS 7	Reference to IAS 30/32	Compliance		
				Basel II banks (%)	Benchmark banks (%)	Nonbanks (%)
1. Quantitative disclosures on the fair value hierarchy	IFRS 7.27B (a)	IAS 32.92 (a), (b), (c)	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)	IAS 32.94 (e)(ii)	33	23	2	
3. Quantitative disclosures on assets designated at FVTPL in the notes	IFRS 7.8 (a)	IAS 32.94 (e)(ii)	70	53	18	
4. Profit and loss from assets designated at FVTPL on the face of the income statement	IFRS 7.20 (a) (i)	IAS 32.94 (h)	19	10	0	
5. Quantitative disclosures on profit and loss from assets designated at FVTPL in the notes	IFRS 7.20 (a) (i)	IAS 32.94 (h)	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	IAS 32.86	67	87	84	
8. Fair value of assets held to maturity	IFRS 7.25	IAS 32.86	46	55	4	
9. The accounting policy for day one profits and losses	IFRS 7.28 (a)	IAS 32.60 (b)	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	IAS 30.30	95	93	68	
12. Maturity analysis for financial assets	IFRS 7.39, B11E	IAS 30.30	71	72	5	
13. Funding gap	IFRS 7.39, B11E	IAS 30.30, 34	47	69	24	
14. Expected maturities of financial liabilities/assets	IFRS 7.B11E, BC58	IAS 30.37	14	20	0	
15. Quantitative disclosures for hedging derivatives	IFRS 7.22 (b)	IAS 32.58 (b)	71	46	58	
16. Quantitative disclosures for trading derivatives	IFRS 7.8 (a), (e)	IAS 32.94 (e)(i)	73	60	46	
17. Notional amount of derivatives	IFRS 7.39 (b), B11D	IAS 32.63 (a)	88	73	44	
18. Fair value of derivative assets and liabilities	IFRS 7.25	IAS 30.24, IAS 32.86	84	85	56	

Notes: 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 one 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 (noncompliance or lack of applicability) to one (full compliance). We group the disclosure items into five topical categories. 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 for both disclosure scores, some items were already part of other IFRS (mainly IAS 30 and 32), as indicated in the table. The table also reports 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) nonbanks in Basel II countries (i.e., industrial, service, and insurance firms).

Figure 1 Time-series pattern of actual first-time adoption of IFRS 7 and Pillar 3

Notes: The figure illustrates the staggered adoption pattern of IFRS 7 and Pillar 3. It depicts the monthly frequency of the first-time release of the new risk disclosures under the two regulations for our sample firms.

identify several main insights from this analysis. Regulators mostly limit their attention to the enforcement of the disclosure regime to which they are legally bound. We find little evidence of institutionalized harmonization of efforts or information sharing across agencies. Enforcement of IFRS 7 is generally stricter when bank and securities market regulators are separate. One explanation could be that under unified supervision, the prudential perspective (Flannery 2020) seems to dominate accounting and transparency enforcement. The monitoring of Pillar 3 is part of the ongoing review process, and bank regulators usually require strict formal compliance. As a result, they view published financial statements primarily as inputs for their prudential risk assessment. Imbalances of powers are also deemed important for guiding an agency's regulatory efforts, and, typically, the banking regulator is better equipped with resources, expertise, and possible sanctions.

In terms of timeline, the BCBS expected its member states to implement Basel II from 2007 onwards (Basel II, para. 2). Most developed economies adhered to this schedule.⁸ For instance, the European Union introduced Basel II in 2007 but allowed for a transition period until 2008. Other countries followed in 2009 (e.g., United Arab Emirates) or later. Some countries chose to only implement Pillars 1 and 2 and postpone Pillar 3 (e.g., Russia) or to completely skip its adoption.⁹ The main factors influencing the adoption timing of Basel II were the length of the national legislative process and the ability of local supervisors and banks to implement the sophisticated capital regulation under Pillar 1. Figure 1 illustrates the staggered adoption pattern on a monthly basis for both IFRS 7 and Pillar 7 for our sample firms. As the graph shows, the bulk of the initial IFRS 7 disclosures became available in the first six months of 2008 (reflecting a December 2007 fiscal year-end). The release of the Pillar 3 reports is more dispersed, starting as early as February

8. In Kuwait, Basel II (and Pillar 3) became effective in 2006.

9. For instance, 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, 12).

2007 but with the majority being published in 2008 and 2009. We exploit the staggered adoption of the two regulations to improve our identification in the empirical tests.

3. Research design and data

Identification strategy and empirical model

We build the identification strategy of our main tests on the following key features: (i) the estimation of panel regressions with yearly risk disclosure scores or monthly bid-ask spreads as the dependent variable, (ii) the use of various benchmark samples, and (iii) the staggered adoption of IFRS 7 and Pillar 3. Combined, these features allow us to implement a generalized DiD design. Figure 2 provides a schematic overview of our identification strategy.

The use of benchmark samples lets us control for general time trends or market-wide changes (e.g., macroeconomic shocks such as the financial crisis) that are concurrent with but unrelated to the regulatory change. 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, we include banks domiciled in Basel II countries but exempt from Pillar 3 because they are part of a consolidated group whose parent entity already publishes a Pillar 3 report. These banks are subject to the same institutional and economic forces (and, notably, also have to adopt Pillars 1 and 2) and fall under the same oversight regime as the treatment banks. We further include large industrial, service, and insurance firms located in Basel II countries with substantive financial instrument exposure. Their reporting incentives should be similar to the Pillar 3 banks. Finally, we include banks domiciled in countries that did not sign the Basel II Accord to help control for industry-specific trends.

We code the staggered rollout of both IFRS 7 and Pillar 3 based on the first fiscal year a firm applies the respective risk disclosure rules. IFRS 7 became effective for fiscal years beginning on January 1, 2007, at the earliest. Only very few banks voluntarily adopted IFRS 7 in 2005 or 2006. The introduction of Pillar 3 varied across Basel II countries. Most countries required the

Figure 2 Schematic overview of IFRS 7 and Pillar 3 adoption types

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

Notes: The figure illustrates our identification strategy for the disclosure analyses. We define *IFRS 7* and *Pillar 3* as binary indicator variables that are equal to one beginning in the first year a firm applies the risk disclosure rules under IFRS 7 or the third pillar of the Basel II Accord and zero otherwise. Aside from the treatment group of banks subject to Pillar 3, the sample includes the following benchmark firms: (i) banks domiciled in Basel II countries but exempt from Pillar 3 (e.g., subsidiaries of a parent entity that already publishes a Pillar 3 report), (ii) nonbanks 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.

regulatory risk disclosures for fiscal years beginning in 2008 or 2009, with a few requiring the disclosures in 2007. In the liquidity tests, we can apply a finer coding scheme based on the actual month when a firm, for the first time, released the risk disclosures under IFRS 7 or Pillar 3 (see Figure 1 for the resulting adoption time-series pattern).¹⁰ The staggered rollout lets us include time fixed effects in the model, which we allow to vary by country in some specifications. These time fixed effects effectively control for common trends and shocks in a period (and country); most importantly, they control for the effects of the global financial crisis in 2008 and 2009. As a result, the identification stems from the within-sample variation in the adoption timing of the new rules.¹¹

Combining the above features, we examine the impact of IFRS 7 and Pillar 3 on banks' actual risk disclosures by estimating the following OLS regression model:

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

The dependent variable is a self-constructed *Risk Disclosures* score measuring a firm's compliance with the overlap of the IFRS 7 and Pillar 3 disclosure requirements. Specifically, we identify 39 distinct disclosure items that are required both under IFRS 7 and the third pillar of the Basel II Accord (see Table 1, panel A). We assign a score of one for each disclosure item reported by a firm in a fiscal year and divide the sum by 39 so that the total score ranges from zero (noncompliance or lack of applicability) to one (full compliance).¹² Importantly, and unlike typical proxies of disclosure quality, our measure is relatively free of bias and error as we are simply focusing on the presence of certain disclosure items but do not judge their content and, hence, the quality of a firm's risk disclosures.¹³ For details on the construction of the *Risk Disclosures* variable (and reporting examples), see supporting information in section 1 of the online Appendix.

Our main variables of interest are two binary indicators that are equal to one beginning in the first fiscal year a firm is subject to the risk disclosure rules under *IFRS 7* or *Pillar 3* and zero otherwise. Because all sample firms adopt *IFRS 7* at some point, this variable represents a pre–post comparison. To allow for DiD estimation, we include a separate indicator for the *Benchmark Firms* (and its interaction with *IFRS 7*). *Pillar 3* then compares the *Risk Disclosures* following Pillar 3 adoption to the pre-period and the disclosure changes among the benchmark firms.

-
10. We determine the release date of the respective reports as the earliest of (i) the publication date indicated on the corporate website (e.g., in a press release), (ii) the filing date on Thomson Reuters or S&P Global Market Intelligence, or (iii) the file properties of the downloaded annual report or Pillar 3 report.
 11. With the exception of Kuwait, all sample countries introduced IFRS 7 either at the same time or before Pillar 3. Thus, we have to interpret our results as conditional on this particular ordering. Canada (not in our sample) would be an example of a reverse ordering because the IFRS mandate did not take effect until 2011, while Pillar 3 was adopted in 2008. Yet, the Accounting Standards Board of Canada harmonized Canadian GAAP with IFRS ahead of time and introduced Section 3862 (which is essentially identical to IFRS 7) simultaneously with Pillar 3. Consistently, we do not find changes in the *Risk Disclosures* score for a subset of Canadian firms in 2011.
 12. To mitigate concerns about the dependent variable being bounded between zero and one, we repeat the analyses (i) using a generalized linear model (GLM) regression to estimate the fractional response in the *Risk Disclosures* score (Papke and Wooldridge 1996) or (ii) with a logit transformed *Risk Disclosures* score as the dependent variable (i.e., $\ln[x/(1-x)]$). We also (iii) scale the yearly sum of the disclosure items by the maximum score for each firm to account for the fact that not all items apply to each firm (e.g., Tier 1 capital is only available for banks). In all three cases, the results are largely similar to those reported, and none of the inferences change.
 13. The manual coding of quantitative disclosures is straightforward, and we always assign a score of one if a bank provides the required (disaggregated) numbers. For qualitative disclosures, we ignore overly general statements without any firm-specific information content that would allow comparisons with other entities.

$Controls_j$ denotes a set of firm-level control variables. Among other things, we explicitly control for contemporaneous changes in firms' disclosure behavior around Pillar 3 adoption. We construct a *Fair Value Disclosures* score comprising 18 disclosure items required under IFRS 7 but not Pillar 3.¹⁴ 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, country-by-year, or firm fixed effects. In all our tests, we draw statistical inferences based on standard errors clustered by country.

For the liquidity analyses, we adjust the regression model in equation (1) as follows:

$$\begin{aligned} \text{Log}(\text{Bid-Ask Spread}) = & \beta_0 + \beta_1 \text{IFRS 7} + \beta_2 \text{IFRS 7} \times \text{Benchmark Firms} + \beta_3 \text{Pillar 3} \\ & + \sum \beta_j \text{Controls}_j + \sum \beta_i \text{Fixed Effects}_i + \varepsilon \end{aligned} \quad (2)$$

The monthly median of daily quoted *Bid-Ask Spreads* serves as the dependent variable. This measure is a commonly used proxy of information asymmetry and market liquidity (e.g., Leuz and Verrecchia 2000; Daske et al. 2008). The definition of *IFRS 7* and *Pillar 3* is similar as before, but now the *IFRS 7* indicator is equal to one beginning in the first month a firm releases its annual financial report, whereas the *Pillar 3* indicator is equal to one beginning in the first month a firm releases its Pillar 3 report (see Figure 1). $Controls_j$ denotes a set of firm-specific factors related to liquidity. The model includes firm, month, or country-by-month fixed effects, and, when the benchmark firms are part of the sample, we estimate the time fixed effects separately for banks and nonbanks. We cluster the standard errors by country.

Sample selection and description

Our sample starts in 2005, two years before IFRS 7 became effective, and runs through 2009. Table 2, 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 change in accounting standards during the sample period. We search the websites of the 577 banks that satisfy these criteria for an English version of the consolidated IFRS financial statements and, if applicable, a separate document containing the Pillar 3 disclosures. We need these files to construct the disclosure scores. This procedure yields a sample of 216 banks, of which 147 are from Basel II countries, and the remaining 69 banks are part of the benchmark sample. In Basel II countries, 28 banks are exempt from Pillar 3.¹⁵ We complement the benchmark sample with 50 large industrial, service, and insurance firms from Basel II countries.¹⁶ We require these nonbanks to have a financial instruments-to-total assets ratio of at least 30% so that their reporting incentives are sufficiently comparable to those of banks. The final sample comprises 266 individual firms, giving rise to a maximum of 1,220 firm-year observations with data available. For the liquidity analyses, we lose 42 firms (17 from Basel II countries) because of missing market data. The liquidity sample comprises a maximum of 10,569 firm-month observations.

In panel B (Basel II countries) and panel C (benchmark countries) of Table 2, we provide a breakdown of the sample composition and IFRS 7/Pillar 3 adoption patterns by country and year.

14. We label the score *Fair Value Disclosures* but acknowledge that it also includes items like the maturity of financial assets and liabilities or hedging and derivatives trading. See panel B of Table 1 for details.

15. Pillar 3, in principle, also applies to nonlisted banks, which could report under IFRS. A preliminary analysis shows that out of the more than 1,100 nonlisted banks in BvD Bankscope from Basel II countries, only about 500 have IFRS reports since 2005. Of those banks, the vast majority is exempt from Pillar 3 or does not satisfy the sample criteria, especially because the reports are rarely made available in English.

16. To ensure adequate geographic dispersion, we choose the nonbanks 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.

TABLE 2
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 (BvD Bankscope)	877	1,005	1,882
Less: countries without IFRS mandate	(445)	(860)	(1,305)
Number of listed IFRS banks	432	145	577
Less: banks without IFRS report in English	(164)	(76)	(240)
Less: banks without Pillar 3 report in English	(117)	—	(117)
Less: firms with missing control variables	(4)	—	(4)
Bank sample	147	69	216
Plus: nonbanks as additional benchmark	50	—	50
Total sample (disclosure analysis)	197	69	266
Less: firms with missing liquidity data	(17)	(25)	(42)
Total sample (liquidity analysis)	180	44	224

Panel B: Sample composition and disclosure adoption patterns for Basel II countries

Basel II countries (banks and nonbanks)	Adoption pattern							
	First-time adopters of IFRS 7/ Pillar 3 disclosure requirements						Thereof: Nonbanks	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	5/3	0/0	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	6/0	0/4	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

(The table is continued on the next page.)

TABLE 2 (continued)

Panel B: Sample composition and disclosure adoption patterns for Basel II countries

Basel II countries (banks and nonbanks)	Adoption pattern							Thereof: Non-Pillar 3 banks
	First-time adopters of IFRS 7/ Pillar 3 disclosure requirements						Thereof: Nonbanks	
	2005	2006	2007	2008	2009	Sum		
Slovakia	0/0	0/0	3/0	0/0	0/0	3/0	0	3
South Africa	0/0	0/0	3/0	2/4	0/0	5/4	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	9/1	0/4	0/0	9/5	4	0
United Arab Emirates	0/0	0/0	10/0	0/0	0/5	10/5	4	1
United Kingdom	0/0	1/0	15/2	0/9	0/0	16/11	5	0
Total	1/0	6/4	170/25	20/81	0/9	197/119	50	28

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	1	2	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	64	5	0	69

Notes: 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 216 publicly listed banks (with data available in BvD Bankscope) and 50 representative nonbanks (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 English-language 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 domiciled in Basel II countries are exempt from Pillar 3 disclosures (e.g., because they are subsidiaries of a parent entity that already publishes a Pillar 3 report). We select the 50 nonbanks 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% and are domiciled in Basel II countries.

The panels show that no country dominates the sample, with Germany having the largest number of IFRS 7 firms (17) and the United Kingdom having the largest group of Pillar 3 banks (11). 234 of the 266 sample firms adopt IFRS 7 in 2007, while 81 of 119 eligible banks switch to Pillar 3 reporting in 2008.

In Table 3, we present descriptive statistics for the variables used in the regression analyses. The two disclosure scores, *Risk Disclosures* and *Fair Value Disclosures*, 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; Dechow et al. 2010): we measure firm size by *Total Assets*, a firm's information environment by the number of analysts covering the firm (*Analyst Following*), leverage by the *Capital Ratio*, profitability by *Return on Assets*, and future growth prospects by *Asset Growth*. In the liquidity analyses, we follow prior literature (e.g., Leuz and Verrecchia 2000; Daske et al. 2008) and include *Market Value*, the monthly median of daily *Share Turnover*, and *Return Variability* measured by the standard deviation of daily stock returns as controls. We also include the absolute value of monthly *Abnormal Stock Returns* (based on a simple market model) to control for contemporaneous performance. 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 to control for seasonal trends (except for *Abnormal Stock Return*). See the table notes for more details on data sources and variable measurement.

4. Results of disclosure tests

Graphical analyses of changes in risk disclosures following IFRS 7 and Pillar 3

We begin with graphically plotting firms' risk disclosure behavior over the years 2005 to 2009 and present results in Figure 3. The graphs distinguish among (i) banks in Basel II countries that started complying with Pillar 3 in 2007, 2008, or 2009;¹⁷ (ii) benchmark banks exempt from Pillar 3 or in non-Basel II countries; and (iii) nonbanks.

Panel A plots the *Risk Disclosures* score. We observe essentially no change in *Risk Disclosures* leading up to IFRS 7. The flat pattern in the years 2005 and 2006 indicates that firms did not voluntarily preempt the pending rule change. It also mitigates concerns about the parallel-trends assumption underlying our DiD design. The figure shows that all firms exhibit a substantial increase in *Risk Disclosures* upon adoption of IFRS 7 in 2007. For instance, both benchmark and Pillar 3 banks start off with an initial disclosure level of about 30% to 40% and increase their *Risk Disclosures* by 20 to 30 percentage points. Nonbanks exhibit an increase of about 10 percentage points. Notably, the treatment banks display yet another increase when they initially adopt Pillar 3, widening the gap between treatment banks and benchmark firms. This additional increase in risk disclosures once Pillar 3 becomes effective is similar for adoption periods in 2007, 2008, and 2009. By the end of the sample period, *Risk Disclosures* of the Pillar 3 banks reach a compliance level of about 75% and surpass the benchmark banks by up to 20 percentage points. The nonbanks exhibit a substantially lower level of *Risk Disclosures* before and after IFRS 7, likely due to their different nature of business.

Panel B plots the *Fair Value Disclosures* score and highlights the importance of controlling for contemporaneous trends in firms' disclosure behavior. The graph reveals a general upward trend in *Fair Value Disclosures* by about 15 percentage points over the sample period. However, no distinct patterns or spikes for individual groups are apparent, except for the difference in levels between banks and nonbanks, and the 2006 increase for the nine sample banks that adopted Pillar 3 in 2009. Thus, the disclosure changes we observe around IFRS 7 and Pillar 3 seem attributable to the differential enforcement level of the two regulations and do not extend to other reporting areas.

17. Because of their low number, we do not separately plot the Pillar 3 banks that adopted in 2006.

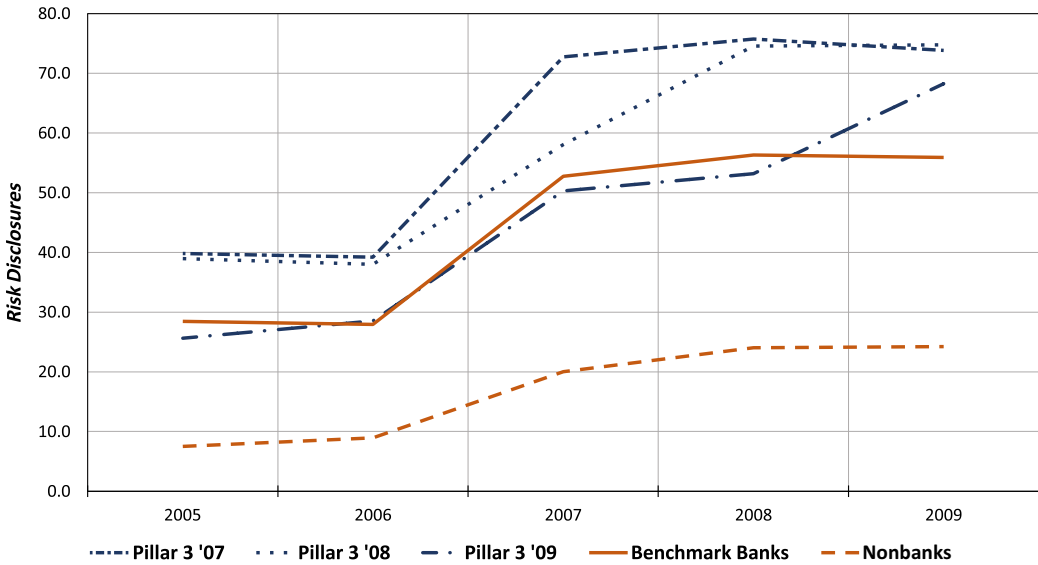
TABLE 3
Descriptive statistics for variables used in the regression analyses

	Mean	Std. dev.	P1	P25	Median	P75	P99
Disclosure analyses ($N = 1,220$ firm-years):							
<i>Risk Disclosures</i> (score)	0.468	0.229	0.051	0.282	0.487	0.641	0.949
<i>Fair Value Disclosures</i> (score)	0.440	0.174	0.046	0.318	0.455	0.546	0.818
<i>Total Assets</i> (EUR million)	117,282	312,759	115	3,494	10,835	55,403	1,632,053
<i>Analyst Following</i> (number)	7.813	9.708	0.000	0.000	2.113	14,292	35,333
<i>Capital Ratio</i> (ratio)	0.168	0.139	0.030	0.115	0.143	0.195	0.591
<i>Return on Assets</i> (ratio)	0.015	0.083	-0.102	0.007	0.013	0.025	0.163
<i>Asset Growth</i> (%)	0.174	0.345	-0.307	0.012	0.128	0.261	1.243
Liquidity analyses ($N = 10,569$ firm-months):							
<i>Bid-Ask Spread</i> (%)	0.010	0.018	0.000	0.002	0.005	0.011	0.103
<i>Abs(Abnormal Stock Return)</i> (%)	0.064	0.074	0.001	0.020	0.044	0.084	0.336
<i>Market Value</i> (EUR million)	10,017	18,929	52	1,073	3,237	9,863	93,216
<i>Share Turnover</i> (%)	0.003	0.004	0.000	0.000	0.002	0.004	0.016
<i>Return Variability</i> (std. dev.)	0.021	0.017	0.006	0.012	0.017	0.026	0.075

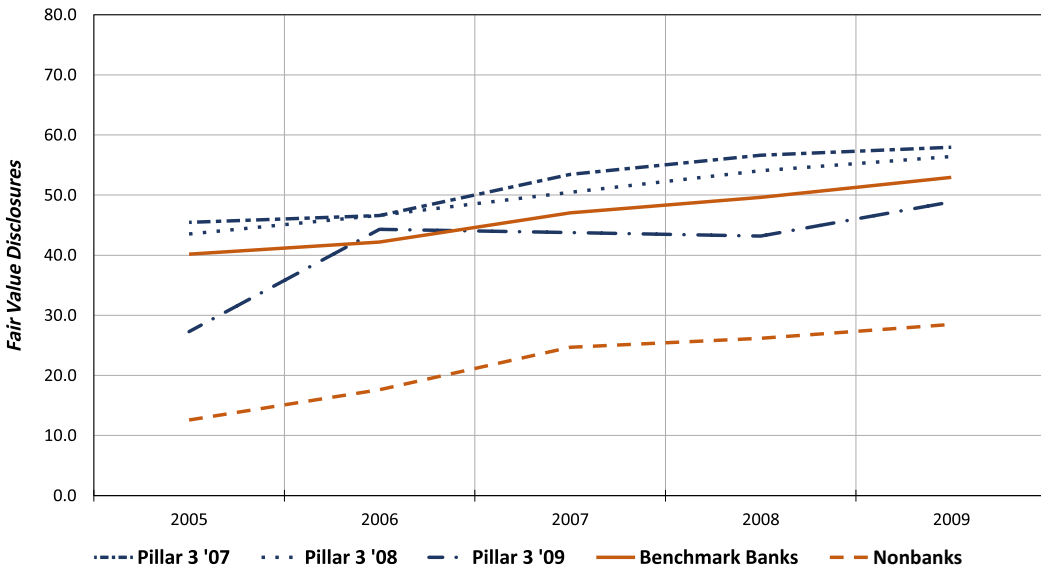
Notes: The table presents descriptive statistics for the variables used in the disclosure and liquidity regressions. The disclosure sample (liquidity sample) comprises all available firm-year (firm-month) observations from 266 (224) banks and nonbanks over the 2005 to 2009 period as described in Table 2. For details on the *Risk Disclosures* score and the *Fair Value Disclosures* score, see Table 1. *Total Assets* are denominated in EUR million (using conversion rates at the respective fiscal year-end if necessary). 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. 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 nonbanks. *Return on Assets* is the ratio of net income divided by average total assets. *Asset Growth* is the percentage change in total assets, calculated as the ratio of the year $t + 1$ to the year t values minus one. The *Bid-Ask Spread* is the monthly median quoted spread (i.e., the difference between the bid and ask price divided by the midpoint and measured at the end of each trading day). We measure *Abs(Abnormal Stock Return)* as the absolute value of the monthly percentage change in stock prices adjusted for market movements from a simple market model with local market index returns and computed over a rolling 36-month window. *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 month. We collect financial data for banks from BvD Bankscope, for nonbanks from Compustat Global, and market data from Datastream.

Figure 3 Risk Disclosures score and Fair Value Disclosures score over time

Panel A: Risk Disclosures by Pillar 3 adoption type



Panel B: Fair Value Disclosures by Pillar 3 adoption type



Notes: 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. For details on the calculation of the two scores, see Table 1. The sample comprises all firm-years from 234 banks and nonbanks over the 2005 to 2009 period that adopted IFRS 7 in 2007 (see also Table 2). 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) nonbanks 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.

Regression analyses of changes in risk disclosures following IFRS 7 and Pillar 3

To test these patterns more formally, we estimate various specifications of equation (1) and report the results in Table 4. Moving from left to right, we start with a basic DiD estimation that includes the *Benchmark Firms* variable and the *Fair Value Disclosures* score to account for concurrent trends in disclosures (plus country and year fixed effects).¹⁸ We next add the additional firm-level controls in model (2) and replace the country fixed effects with firm fixed effects in model (3). Given that our sample period partly overlaps with the global financial crisis, which hits countries at different points in time and affects them to a different degree, a concern is that this market turmoil changes banks' disclosure incentives and increases demand for risk information. We therefore replace the year fixed effects with country-by-year fixed effects in model (4), which accounts for the average change in risk disclosures in a country and year including the portion driven by an economy's exposure to the financial crisis. To the same end, in model (5), we drop all observations from the crisis years 2008 and 2009 from the sample.

The tenor of the results is very similar across these five specifications. The *IFRS 7* coefficient is always positive and significant, suggesting that compliance with risk disclosure rules increases by up to 13 percentage points following *IFRS 7* adoption for all firms. The effect is no different for Pillar 3 banks and benchmark firms as generally the interaction term between *IFRS 7* and *Benchmark Firms* is insignificant. Only when we include country-by-year fixed effects in model (4) is the interaction significantly negative. The negative and significant main effects of *Benchmark Firms* in models (1) and (2) capture the generally lower level of *Risk Disclosures* by benchmark firms, which include nonbanks. More to the point, the coefficient on *Pillar 3* is positive and significant throughout and indicates an incremental increase in *Risk Disclosures* by 14 to 16 percentage points upon Pillar 3 adoption. These results prevail when using firm fixed effects and explicitly controlling for the impact of the financial crisis in models (4) and (5).

Another concern is that the results for *Pillar 3* are affected by institutional or economic changes closely aligned with the adoption of the risk disclosures—that is, the implementation of Pillars 1 and 2 of the Basel II Accord. To address this concern, we reestimate equation (1) but limit the sample to the 97 benchmark banks and replace *Pillar 3* with a *Pseudo Pillar 3* indicator that is equal to one for all local benchmark banks beginning in the year when Pillar 3 reporting becomes mandatory for the treatment banks in that country, and zero otherwise. That is, this variable is coded as one only for the 28 banks domiciled in Basel II countries that are exempt from Pillar 3 reporting (but not from implementing Pillars 1 and 2). As the results in model (6) show, the coefficient on *Pseudo Pillar 3* is insignificant (and negative). Thus, we find no indication that concurrent changes in the local environment of our treatment banks or their adoption of Pillars 1 and 2 affect the documented increase in their risk disclosures after Pillar 3 becomes effective.

In sum, the results reveal uneven compliance among firms over time. Regulated banks are less than fully compliant with the new risk disclosure rules when the securities market regulator acts as the primary supervisory body. Only after the banking regulator becomes responsible for the monitoring of similar disclosure rules, banks attain higher compliance levels and get closer to full compliance. Put differently, the evidence suggests that having multiple regulators in charge of implementation and enforcement creates heterogeneity in the timing and extent of regulated firms' compliance with the written rules.

Heterogeneity in the compliance with risk disclosure rules

We next examine cross-sectional variation in the compliance with risk disclosure rules among Pillar 3 banks. To do so, we extend the OLS model in equation (1) by interacting both the *IFRS 7* and *Pillar 3* indicators with binary partitioning variables that we compute on either the country

18. In untabulated sensitivity tests, we replace the year fixed effects with linear or nonlinear trend variables and obtain very similar results to those reported.

TABLE 4
Analysis of risk disclosures following the adoption of IFRS 7 and Pillar 3

<i>Risk Disclosures</i> as dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
Test variables						
<i>IFRS 7</i>	0.132*** (5.42)	0.131*** (5.36)	0.125*** (5.26)	0.108* (1.92)	0.127*** (4.95)	0.156*** (5.74)
<i>IFRS 7</i> × <i>Benchmark Firms</i> [1]	0.024 (1.12)	0.023 (1.05)	0.020 (0.99)	-0.041* (-1.87)	0.004 (0.19)	—
<i>Pillar 3</i> [2]	0.139*** (10.93)	0.140*** (10.86)	0.140*** (11.61)	0.145*** (8.07)	0.157*** (6.88)	—
<i>Pseudo Pillar 3</i>	—	—	—	—	—	-0.044 (-1.49)
<i>p</i> -value: [1] = [2]	[<0.01]	[<0.01]	[<0.01]	[<0.01]	[<0.01]	—
Control variables						
<i>Benchmark Firms</i>	-0.255*** (-7.75)	-0.167*** (-5.94)	—	—	—	—
<i>Fair Value Disclosures</i>	0.175*** (4.39)	0.119*** (3.30)	0.041 (0.97)	0.090* (1.92)	0.046 (1.02)	0.029 (0.45)
<i>Log(Total Assets)</i>	—	0.043*** (6.97)	0.026* (1.69)	0.008 (0.50)	0.060** (2.39)	-0.012 (-0.47)
<i>Log(Analyst Following + 1)</i>	—	-0.003 (-0.37)	0.011 (1.18)	0.002 (0.28)	0.030*** (3.00)	0.020** (2.52)
<i>Capital Ratio</i>	—	0.002 (0.07)	0.044 (0.98)	0.029 (0.36)	0.180** (2.60)	0.038 (0.77)
<i>Return on Assets</i>	—	0.014 (0.46)	0.064* (1.86)	0.125 (1.15)	-0.167 (-1.17)	0.069*** (3.52)
<i>Asset Growth</i>	—	0.007 (0.79)	-0.002 (-0.22)	0.002 (0.17)	0.008 (0.76)	-0.027* (-1.84)
Fixed effects	Y, C	Y, C	Y, F	C × Y, F	Y, F	Y, F
<i>R</i> ²	0.728	0.790	0.821	0.884	0.761	0.838
# firms/# firm-years	266/1,220	266/1,220	266/1,220	266/1,220	262/697	97/450

(The table is continued on the next page.)

TABLE 4 (continued)

Notes: The sample comprises up to 1,220 firm-year observations from 266 banks and nonbanks over the 2005 to 2009 period as described in Table 2. We use the 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 are equal to one beginning in the first year a firm applies the risk disclosure rules under IFRS 7 or the third pillar of the Basel II Accord, and zero otherwise. *Benchmark Firms* is a binary indicator variable that is equal to one for banks that are exempt from Pillar 3 requirements or domiciled in non-Basel II countries as well as for nonbanks in Basel II countries, and zero otherwise. For details on the remaining control variables see Table 3. In column (5), we drop the years of the global financial crisis (i.e., 2008 and 2009) from the sample. In column (6), we limit the sample to the 97 benchmark banks and include a *Pseudo Pillar 3* indicator that is equal to one beginning in the year when Pillar 3 reporting becomes mandatory in a country (i.e., this variable is only coded as one for the 28 benchmark banks domiciled in Basel II countries), and zero otherwise. We include year (Y), country (C), firm (F), or country times year (C×Y) 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 *** represent significance levels of 10%, 5%, and 1%, respectively (two-tailed).

level or firm level. These partitioning variables allow us to examine whether the compliance with risk disclosure rules systematically varies across subsets of Pillar 3 banks. That is, the coefficients on the interaction terms provide an estimate of the marginal change in *Risk Disclosures* for banks with a partitioning variable equal to one relative to banks with a partitioning variable equal to zero after they have adopted IFRS 7 and Pillar 3, respectively. We estimate the same general model as in Table 4, column (3), and hence the firm fixed effects subsume the main effects of the partitioning variables.¹⁹ We run the cross-sectional analyses only for the treatment banks because we are interested in differences in risk disclosures among the banks affected by Pillar 3. As a result, the *Benchmark Firms* variable (and its interaction with *IFRS 7*) drops from the model.

Table 5, panel A, reports by-country descriptive statistics on the various partitioning variables that we use. We create three partitioning variables on the country level. First, in column (1), we code countries with two separate regulatory bodies for the oversight of securities markets and banks versus countries where the two areas are overseen by a single entity (see also the Appendix). The idea is to examine if this distinct setup has an effect on regulatory outcomes. On the one hand, the coexistence of two separate agencies could increase competition (e.g., for funding or attention) as both agencies have to justify their presence. On the other hand, they both could try to curry favor with their constituents or rely on the other party to take a leading role in the enforcement of the new rules, giving rise to a free-rider problem. In column (2), we identify those countries among the jurisdictions with separate regulators in which the central bank (i.e., the institution responsible for the monetary policy) acts as the primary banking supervisor. Because central banks that perform all functions of prudential oversight including bank supervision are typically well staffed and funded, the imbalance of powers is likely larger relative to a separate securities market regulator. In column (3), we develop a more direct measure of the relative strength of supervisory resources (e.g., Jackson and Roe 2009) and compare the full-time staff members available for banking versus general securities market regulation. We split the countries by the sample median, and a partitioning variable of one indicates that a country dedicates relatively more resources to the (separate) banking regulator. Because the country-level factors are time independent, we interact both the *IFRS 7* and *Pillar 3* variables with the same partitioning indicator.

We also create three firm-level partitioning variables. We use a bank's *Return Variability*, measured by the standard deviation of daily stock returns over the fiscal year, and annual buy-and-hold *Stock Price Performance* in columns (4) and (5). Banks with more volatile stock prices and lower stock returns likely face more market pressure and regulatory scrutiny. Similarly, banks with a lower Tier 1 *Capital Ratio* are perceived as riskier and more likely to draw the attention of the bank regulator (column (6)). To create the respective high or low indicators, we separately compare the firm-level values in the year of IFRS 7 adoption and the year of Pillar 3 adoption to the sample median. That is, we code a first partitioning variable for *IFRS 7* that is conditioned on the year IFRS 7 took effect, and a second partitioning variable for *Pillar 3* conditioned on when Pillar 3 was adopted. This coding of two indicators allows us to separately examine the market pressure and regulatory scrutiny at the time of each regulatory change. The table notes provide further detail on the data sources and variable measurement of our partitioning variables.

Panel B of Table 5 reports the results from the cross-sectional tests. We only tabulate the variables of interest, but the full set of controls plus year and firm fixed effects are included in the regressions. Column (1) shows the results for separate regulators. Only when the securities market regulator is an independent unit do banks increase their risk disclosures following IFRS 7 adoption, as can be seen from the significant interaction term. Around Pillar 3 adoption, no such distinction exists. This evidence suggests that independent securities market regulators engage in stricter enforcement, consistent with potentially beneficial effects of two separate supervisory

19. When we use firm-level attributes to create partitioning variables, we also include the respective raw values of the firm attributes as controls in the models.

TABLE 5
Cross-sectional differences in risk disclosures among banks adopting Pillar 3

Country	Country-level partitioning variables						Firm-level partitioning variables																																														
	For subset with separate regulators						High Return Variability			Low Stock Price Performance																																											
	Separate Regulators (1)	Bank Supervision by Central Bank (2)	Stronger Supervisory Resources of Bank Regulator (3)	0.018	0.019	0.017	0.028	0.014	0.027	0.019	0.018	0.018	0.18	0.03	0.14	0.40	0.28	0.13	0.25	0.10	0.23	0.17	0.17	0.10	0.07	-0.14	0.07	0.36	0.08	0.17	0.28	0.27	0.07	8.04	14.32	9.82	9.48	11.00	8.25	8.25	7.80	9.68	10.20	8.33	7.03	16.01	16.00	16.71	14.41	9.50	10.00	11.57	12.47
Australia	(1)	(0)	0.26	(0)	(35/9)	(0/16)	(4/17)																																														
Bahrain	(0)	—	—	(25/21)	(25/21)	(35/22)	(29/4)																																														
Belgium	(0)	—	—	(0/5)	(0/5)	(5/6)	(1/4)																																														
Cyprus	(1)	(1)	0.56	(10/15)	(10/15)	(20/8)	(4/13)																																														
Denmark	(0)	—	—	(0/3)	(0/3)	(5/10)	(5/8)																																														
Finland	(0)	—	—	(5/5)	(5/5)	(10/5)	(1/6)																																														
France	(1)	(1)	0.63	(5/10)	(5/10)	(0/10)	(0/15)																																														
Germany	(1)	(1)	0.55	(5/22)	(5/22)	(5/19)	(0/24)																																														
Greece	(1)	(1)	0.50	(0/15)	(0/15)	(20/9)	(9/13)																																														
Hong Kong	(1)	(1)	0.26	(30/24)	(30/24)	(30/25)	(31/18)																																														
Ireland	(1)	(1)	0.26	(20/13)	(20/13)	(0/13)	(5/14)																																														
Italy	(1)	(1)	0.44	(0/5)	(0/5)	(0/12)	(2/13)																																														
Kuwait	(1)	(1)	—	(5/15)	(5/15)	(25/12)	(19/1)																																														
Liechtenstein	(0)	—	—	(0/1)	(0/1)	(0/3)	(5/0)																																														
Malta	(0)	—	—	(5/3)	(5/3)	(5/4)	(9/1)																																														
Mauritius	(1)	(1)	0.23	(10/0)	(10/0)	(10/1)	(5/0)																																														
Netherlands	(1)	(1)	0.47	(0/5)	(0/5)	(5/10)	(0/4)																																														
Norway	(0)	—	—	(5/5)	(5/5)	(0/3)	(0/0)																																														
Oman	(1)	(1)	0.33	(0/3)	(0/3)	(5/1)	(0/1)																																														
Poland	(1)	(1)	0.72	(15/10)	(15/10)	(10/6)	(7/1)																																														
Portugal	(1)	(1)	0.53	(5/1)	(5/1)	(5/3)	(0/5)																																														

(The table is continued on the next page.)

TABLE 5 (continued)

Panel A: Country-level and firm-level partitioning variables

Country	Country-level partitioning variables			Firm-level partitioning variables		
	For subset with separate regulators					
	Separate Regulators (1)	Bank Supervision by Central Bank (2)	Stronger Supervisory Resources of Bank Regulator (3)	High Return Variability (4)	Low Stock Price Performance (5)	Low Capital Ratio (6)
Saudi Arabia	(1)	(1)	0.91 (1)	0.024 (33/21)	-0.01 (28/18)	14.50 (33/1)
Singapore	(1)	(1)	0.23 (0)	0.018 (0/1)	0.21 (10/4)	11.00 (15/3)
South Africa	(1)	(1)	0.20 (0)	0.024 (20/15)	0.08 (5/10)	11.00 (6/8)
Spain	(1)	(1)	0.62 (1)	0.014 (5/1)	0.19 (5/7)	7.35 (0/14)
Sweden	(1)	(0)	0.72 (1)	0.023 (4/5)	0.08 (5/5)	10.20 (0/4)
Switzerland	(1)	(0)	0.66 (1)	0.021 (5/15)	0.06 (10/14)	21.40 (15/1)
United Arab Emirates	(1)	(1)	—	0.028 (9/13)	0.13 (23/10)	14.50 (19/0)
United Kingdom	(1)	(0)	0.18 (0)	0.020 (35/29)	0.12 (15/33)	9.75 (11/24)

Panel B: Regression analyses of country-level and firm-level cross-sectional differences

Risk Disclosures as dependent variable	Country-level partitioning variables			Firm-level partitioning variables		
	For subset with separate regulators					
	Separate Regulators (1)	Bank Supervision by Central Bank (2)	Stronger Supervisory Resources of Bank Regulator (3)	High Return Variability (4)	Low Stock Price Performance (5)	Low Capital Ratio (6)
Test variables						
IFRS 7	0.059 (1.02)	0.149*** (10.33)	0.168*** (6.96)	0.088** (2.36)	0.116*** (3.05)	0.122*** (2.19)
IFRS 7 × Partitioning Variable _{CIFRS 7}	0.070* (1.70)	0.031 (1.34)	-0.003 (-0.12)	0.034 (1.68)	0.007 (0.33)	-0.035 (-1.18)

(The table is continued on the next page.)

TABLE 5 (continued)

Panel B: Regression analyses of country-level and firm-level cross-sectional differences

Risk Disclosures as dependent variable	Country-level partitioning variables			Firm-level partitioning variables		
	Separate Regulators (1)	For subset with separate regulators		High Return Variability (4)	Low Stock Price Performance (5)	Low Capital Ratio (6)
		Bank Supervision by Central Bank (2)	Stronger Supervisory Resources of Bank Regulator (3)			
<i>Pillar 3</i>	0.186*** (4.81)	0.116*** (6.55)	0.119*** (6.34)	0.127*** (7.91)	0.123*** (7.47)	0.140*** (9.98)
<i>Pillar 3</i> × <i>Partitioning Variable</i> _{<i>CPillar 3</i>}	-0.046 (-1.26)	0.037** (2.72)	0.044** (2.13)	0.024* (1.81)	0.036*** (3.53)	0.016 (1.03)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Y, F	Y, F	Y, F	Y, F	Y, F	Y, F
R ²	0.846	0.854	0.860	0.844	0.846	0.857
# firms/# firm-years	117/568	97/468	86/416	119/578	119/578	107/430

Notes: Panel A reports information on the partitioning variables used in the cross-sectional regressions in panel B. We use the following three country-level variables: (1) We code *Separate Regulators* as one if a country has a separate authority for the oversight of banks aside from the general authority that supervises securities markets, and zero otherwise. (2) *Bank Supervision by Central Bank* is equal to one if the country's central bank (i.e., the institution responsible for monetary policy) acts as the primary supervisory authority of banks and zero otherwise. For details on the coding of both variables, see the Appendix. (3) *Stronger Supervisory Resources of Bank Regulator* is equal to one if the ratio of resources dedicated to bank supervision over total resources for bank and securities market supervision exceeds the median and zero otherwise. We measure regulatory resources by full-time staff members dedicated to bank and general securities market supervision (source: Central Banking Publications 2013 and the World Bank's "Bank Regulation and Supervision" surveys). We measure staff data in 2008 or, if unavailable, in any other year for which we can obtain the data. We then interact each of these country-level partitioning variables with both the *IFRS 7* and *Pillar 3* variables in the model (as marked by the subscript C). The panel reports raw values or (in parentheses) binary indicators. We use the following three firm-level variables: (4) We measure *Return Variability* as the standard deviation of daily stock returns over a firm's fiscal year. (5) *Stock Price Performance* is the annual buy-and-hold stock return over a firm's fiscal year. (6) *Capital Ratio* is a bank's Tier 1 capital ratio at the beginning of the fiscal year. We then compare the firm-level value in the year of IFRS 7 adoption or the year of Pillar 3 adoption to the sample median to create two separate binary indicators (as marked by the respective subscript) and interact them with the corresponding *IFRS 7* or *Pillar 3* variables in the model. For instance, *High Return Variability*_{*IFRS 7*} is equal to one if *Return Variability* for bank *i* in year *t* of IFRS 7 adoption exceeds the sample median and zero otherwise, and is interacted with the *IFRS 7* variable. The panel reports country medians of the underlying raw variables plus (in parentheses) the number of firm-years with a value of one when interacted with *IFRS 7* and *Pillar 3*, respectively. For the regression analyses in panel B, we limit the

(The table is continued on the next page.)

TABLE 5 (continued)

sample to the 119 banks falling under the Pillar 3 disclosure requirements (see Table 2). We estimate the same general model as in Table 4, column (3), plus the interaction terms of *IFRS 7* and *Pillar 3* with the respective partitioning variables. We include the control variables, year (*Y*) and firm (*F*) fixed effects in the regressions but do not report the coefficients. The main effects of the partitioning variables are subsumed by the firm fixed effects. For models (4) to (6), we also include the raw values of the respective firm-level partitioning variables as additional controls. The table reports OLS coefficient estimates and (in parentheses) *t*-statistics based on robust standard errors clustered by country. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively (two-tailed).

agencies coexisting side-by-side. Columns (2) and (3) show the results for imbalances of power. Respectively, compliance with risk disclosure requirements is higher after Pillar 3 adoption when the banking regulator is part of the central bank and has relatively more resources at its disposal. Overall, the results are consistent with the self-interest view of regulation and suggest that a regulator's "will" (i.e., its institutional design, resources, and incentives) are crucial for the outcome of the regulatory process.²⁰

The next three columns show the results for the firm-level partitions. Banks whose stock prices are more volatile and perform worse during the year of Pillar 3 adoption seem more compliant with the new risk disclosure rules. In both columns (4) and (5), the interaction with *Pillar 3* is positive and statistically significant. The reaction around the implementation of IFRS 7 points in the same direction but is not significant. Column (6) reports results for our split based on banks' capital ratios. The interaction with *Pillar 3* is positive but insignificant. Our evidence suggests that economically weaker banks are more responsive to disclosure rules under the oversight of the banking regulator, consistent with the idea that they face more market pressure and foresee tighter scrutiny by the supervisory agency charged with prudential oversight. More generally, our results indicate that firm-level reporting incentives prevail even in the presence of multiple regulators.

5. Results of liquidity and market tests

Regression analyses of changes in liquidity following IFRS 7 and Pillar 3

In this section, we conduct tests of bid-ask spreads to assess the materiality of the enhanced risk disclosures. The implicit assumption is that only substantive compliance with risk disclosure rules is tantamount to providing decision-relevant information to investors. If firms were purely complying by the book without adjusting the information content of their disclosures, we would not expect information asymmetry among investors to decrease. To test this relation, we estimate various specifications of equation (2) and report the results in Table 6.

Moving from left to right, we start with the full sample and include the firm-level controls plus firm and month fixed effects (separately for banks and nonbanks) in model (1). The inclusion of monthly fixed effects is possible because we exploit the staggered rollout of actual risk disclosures under the two regulations in the coding of *IFRS 7* and *Pillar 3* (see Figure 1). In model (2), we allow the monthly fixed effects to vary by country, which lets us flexibly account for contemporaneous shocks and trends in the liquidity data—most notably, the average effects of the financial crisis on all banks in a country and month. Model (3) repeats this estimation but limits the sample to the treatment banks. We find consistent results across the three columns. The coefficients on *Pillar 3* are always negative and significant, indicating a reduction in bid-ask spreads on the order of 12 to 17 percentage points after Pillar 3.²¹ This effect is economically significant but not too large to be implausible. We find no comparable liquidity benefits following the implementation of *IFRS 7* as seen by the insignificant coefficients on *IFRS 7*. This finding suggests that the increase in *Risk Disclosures* around *IFRS 7* was not informative enough for investors to revise their priors, and it was only after the banking regulators became responsible for the enforcement that the risk disclosures conveyed new and material information to them.

20. In additional analyses (not tabulated), we also partition the sample by the median of the *Rule of Law* index from Kaufmann et al. (2010). This variable is often used in the IFRS literature to proxy for the general quality of the regulatory environment (e.g., Landsman et al. 2012; Christensen et al. 2013). We find no evidence that general legal quality explains the variation in *Risk Disclosures* among Pillar 3 banks, which increases our confidence in the bank-specific proxies that we use.

21. We compute the percentage effects for the bid-ask spreads as $(e^{-0.123} - 1) = -0.116$ and $(e^{-0.183} - 1) = -0.167$. For comparison, Christensen et al. (2013, 165) report average reductions in bid-ask spreads around mandatory IFRS adoption in the EU on the order of 17% to 35%.

TABLE 6
Liquidity analysis following the adoption of IFRS 7 and Pillar 3

Log(<i>Bid-Ask Spread</i>) as dependent variable	Full sample		Only Pillar 3 adopters (3)	±6 months around initial Pillar 3 report (4)	Separate Pillar 3 report (5)	Pillar 3 nonadopters (6)
	(1)	(2)				
Test variables						
<i>IFRS 7</i>	-0.023 (-0.20)	0.094 (1.32)	0.116 (1.43)	—	-0.117 (-0.97)	0.030 (0.32)
<i>IFRS 7</i> × <i>Benchmark Firms</i>	-0.072 (-0.67)	-0.117 (-1.40)	—	—	—	—
<i>Pillar 3</i>	-0.123* (-2.01)	-0.140** (-2.50)	-0.183*** (-3.86)	-0.196*** (-2.92)	-0.252*** (-3.45)	—
<i>Annual Report</i>	—	—	—	0.077 (0.97)	—	—
<i>Pseudo Pillar 3</i>	—	—	—	—	—	0.138 (0.73)
Control variables						
<i>Abs (Abnormal Stock Return_t)</i>	0.323* (1.97)	0.103 (0.89)	0.182 (0.84)	-0.049 (-0.40)	0.544** (2.71)	0.266 (1.38)
<i>Log(Market Value_{t-12})</i>	-0.086 (-1.44)	-0.211*** (-4.79)	-0.169** (-2.15)	-0.089 (-0.54)	0.059 (0.58)	-0.242*** (-3.65)
<i>Log(Share Turnover_{t-12})</i>	-0.049** (-2.61)	-0.032** (-2.07)	-0.034* (-1.86)	-0.031 (-1.01)	-0.001 (-0.02)	-0.057 (-1.73)
<i>Log(Return Variability_{t-12})</i>	0.047 (1.42)	-0.003 (-0.13)	0.034 (0.82)	-0.007 (-0.14)	0.093** (2.13)	-0.058 (-1.23)
Fixed effects	F, 2×M	F, 2×C×M	F, C×M	F, C×M	F, M	F, M
R ²	0.871	0.937	0.935	0.959	0.829	0.829
# firms/# firm-months	224/10,569	224/10,569	114/5,901	101/1,164	66/3,527	67/2,531

(The table is continued on the next page.)

TABLE 6 (continued)

Notes: The sample comprises up to 10,569 firm-month observations from 224 banks and nonbanks over the 2005 to 2009 period as described in Table 2. We use the natural logarithm of a firm's monthly median quoted daily *Bid-Ask Spread* as the dependent variable. As we use monthly data in this analysis, we redefine *IFRS 7* and *Pillar 3* as binary indicator variables that are equal to one beginning in the first month a firm releases the annual report in compliance with the risk disclosure rules under IFRS 7 or the regulatory risk report under the third pillar of the Basel II Accord and zero otherwise. We define *Benchmark Firms* as in Table 4; for details on the control variables, see Table 3. In column (3), we limit the sample to banks falling under the Pillar 3 disclosure requirements. In column (4), we include up to 13 observations per bank that fall into the ± 6 months around a bank's release of its initial Pillar 3 report (month $t = 0$). We include an *Annual Report* indicator that is equal to one beginning in the month of the release of a bank's annual report during this period and zero otherwise. In column (5), we limit the sample to banks that publish their initial Pillar 3 reports in a standalone document separate from their annual reports. In column (6), we limit the sample to the benchmark banks and include a *Pseudo Pillar 3* indicator that is equal to one beginning in the month of the release of a bank's annual report during the year when Pillar 3 reporting becomes mandatory in a country (i.e., this variable is only coded as "1" for the benchmark banks domiciled in Basel II countries) and zero otherwise. We include firm (F), month (M or, separately for banks and nonbanks, 2×M), and country times month ($C \times M$ or $2 \times C \times M$) fixed effects in the regressions but do not report the coefficients. Where indicated, we use the natural logarithm of the variables and lag them by 12 months. The table reports OLS coefficient estimates and (in parentheses) *t*-statistics based on robust standard errors clustered by country. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively (two-tailed).

We perform three additional tests to substantiate our evidence that the results are attributable to Pillar 3. In model (4), we limit the sample to the 13-month window surrounding banks' initial release of their Pillar 3 disclosures, centered on the release month. Because some banks publish the Pillar 3 disclosures in a standalone report and release it in a different month than they publish the regular annual report, we can control for the latter.²² Specifically, we create an *Annual Report* indicator that is equal to one beginning in the month the bank releases this document, and zero otherwise, and include it in the model. As the results show, we only find a significant reduction in bid-ask spreads following the release of the risk disclosures but not after the publication of the annual report. In model (5), we limit the sample to the 66 treatment banks that publish the Pillar 3 disclosures in a separate report instead of integrating them in their regular financial statements and estimate a reduced form of equation (2). The coefficient on *Pillar 3* is significantly negative and larger in size than in our full sample. We repeat this analysis for the 48 banks with combined Pillar 3/annual report disclosures (not tabulated) but find no significant change in liquidity following Pillar 3.

Finally, in model (6), we address the concern that the results for *Pillar 3* are affected by the implementation of Pillars 1 and 2 of the Basel II Accord or by concurrent changes in the local economy. We reestimate equation (2) for the 67 benchmark banks with liquidity data available and replace *Pillar 3* with a *Pseudo Pillar 3* indicator. This variable marks the period after a bank domiciled in a Basel II country but exempt from Pillar 3 reporting releases its first annual report under the Pillar 3 regime (28 banks). Similar to the disclosure analyses (see Table 4, column (6)), the coefficient on *Pseudo Pillar 3* is insignificant. This result suggests that the adoption of Pillars 1 and 2 or other local factors do not contribute to the significant liquidity benefits we show for the treatment banks following the implementation of Pillar 3.

Event study of market reactions around initial release of Pillar 3 disclosures

In our final set of tests, we conduct a short-window event study to examine the immediate market reaction to the release of banks' initial Pillar 3 disclosures. We consider three direction-neutral proxies for information content (see, e.g., DeFond et al. 2007; Landsman et al. 2012; Flannery et al. 2017): the absolute value of cumulative abnormal stock returns, abnormal return volatility, and trading volume.

We compute these measures for a three-day event window centered on the day of the release of the first Pillar 3 report or, when integrated, the release of the first annual report containing the Pillar 3 disclosures. We derive daily *Abnormal Stock Returns* from a simple market model with a local market index and a 120-day estimation period.²³ We then sum the daily abnormal returns over the event window and compute absolute values. *Abnormal Return Volatility* is the mean of squared daily abnormal returns over the three event days. *Trading Volume* is the daily number of shares traded as a proportion of shares outstanding and averaged over the three event days. To evaluate the market reaction during the event window, we compare the three variables to their own values computed over 120-day benchmark windows using parametric and nonparametric tests.²⁴ We form three different benchmark windows, one centered around the release of the Pillar 3 disclosures, one ending six months earlier, and one ending a year before the event. This structure should help us to account for the potentially confounding effects of the financial crisis, which overlaps substantially with the months surrounding the release of the initial Pillar 3 disclosures.

22. Of the 101 banks included in this analysis, 16 release the Pillar 3 report ahead of the annual report, and 37 release it later than the annual report.

23. Specifically, for the event window, the estimation period starts on calendar day ± 10 around the release of the Pillar 3 information and extends over 60 trading days in each direction; otherwise, the estimation period covers the same 120 trading days as the benchmark windows.

24. For *Abnormal Stock Returns*, we take the mean of three-day cumulative abnormal returns computed for each of the 120 trading days of the benchmark window. For *Abnormal Return Volatility*, we compute the variance of daily abnormal returns over the benchmark window.

TABLE 7

Short-term market reactions to release of initial Pillar 3 reports

Panel A: Univariate analysis

Test variables	Event window (EW): 3 trading days	Benchmark window (BW): 120 trading days		
	Release of Pillar 3 report [-1, +1] (1)	Pre/post event [-10 _c , -70] & [+10 _c , +70] (2)	Six months before [-180 _c , -300] (3)	One year before [-360 _c , -480] (4)
<i>Abs(Abnormal Stock Return)</i> (<i>N</i> = 101)	0.036	0.034	0.030	0.021
<i>t</i> -stat [EW] = [BW]		(0.53)	(1.51)	(3.79)***
<i>p</i> -value (nonparametric)		(0.489)	(0.491)	(0.002)***
<i>Abnormal Return Volatility</i> (<i>N</i> = 101)	0.085	0.102	0.095	0.031
<i>t</i> -stat [EW] = [BW]		(-1.23)	(-0.45)	(3.49)***
<i>p</i> -value (nonparametric)		(0.001)***	(0.146)	(0.002)***
<i>Trading Volume</i> (<i>N</i> = 94)	3.511	2.932	3.539	3.424
<i>t</i> -stat [EW] = [BW]		(2.68)***	(-0.10)	(0.29)
<i>p</i> -value (nonparametric)		(0.104)	(0.739)	(0.548)

Panel B: Regression analysis

Dependent variable	<i>Abs(Abnormal Stock Return)</i> (1)	<i>Abnormal Return Volatility</i> (2)	<i>Trading Volume</i> (3)
Test variable:			
Δ <i>Risk Disclosures</i>	0.024** (2.26)	0.026** (2.25)	-0.004 (-0.50)
Fixed effects	Y	Y	Y
<i>R</i> ²	0.052	0.051	0.062
# firms	101	101	94

Notes: The sample comprises up to 101 banks falling under the Pillar 3 disclosure requirements with data available. We use the following market reactions for the analysis: (1) *Abs(Abnormal Stock Return)* is the absolute value of three-day cumulative abnormal daily stock returns computed from a 120-trading day market model with local market index returns (equal to the mean when reported over a 120-day window); (2) *Abnormal Return Volatility* is the mean of squared (variance of) daily abnormal stock returns when reported over a three-day (120-day) window; and (3) *Trading Volume* is the mean of the daily number of shares traded scaled by the number of shares outstanding. For expositional purposes, we multiply *Abnormal Return Volatility* (*Trading Volume*) by 100 (1,000) in the univariate analysis. In panel A, we report variable values for the three-trading day event window (EW) surrounding the release of a bank's initial Pillar 3 report as well as for three different 120-trading day benchmark windows (BW). The BWs extend over the time periods indicated in the headings (and start on calendar day *c*). We also report *t*-statistics from paired *t*-tests (*p*-values from Wilcoxon rank sum tests) comparing the variable values across the EW and BW. In panel B, we scale the market reaction variables by their corresponding variable values over the "pre/post" BW and use the log transformations of the resulting ratios as dependent variables. We regress them on the continuous yearly change (Δ) in the *Risk Disclosures* score in the year leading up to the implementation of Pillar 3 plus year (Y) fixed effects. The panel reports OLS coefficient estimates and (in parentheses) *t*-statistics based on robust standard errors. ** and *** represent significance levels of 5% and 1%, respectively (two-tailed).

Table 7, panel A, reports the results of this univariate comparison. The average absolute cumulative abnormal return in the three days around the release of Pillar 3 information is 3.6%. This value is higher than in any of the three benchmark windows but only significant

when compared to benchmark returns one year before. Similarly, stock returns are more volatile—indicative of more new information getting into the market—compared to last year’s abnormal return volatility but not relative to the other benchmark windows. Trading volume during the event period is significantly higher than in the 120 trading days surrounding it.

In Table 7, panel B, we examine whether the market reaction during the event window varies with the extent of new risk information. To do so, we regress the three market outcome variables on the continuous yearly change in the *Risk Disclosures* score in the year leading up to the implementation of Pillar 3 plus year fixed effects.²⁵ The idea is that a greater increase in risk disclosures conveys more new information to the markets. As the table shows, we find a positive association between the magnitude of the disclosure change and abnormal returns or return volatility but not for trading volume. In sum, we only find evidence of modest market reactions in the three days around the initial release of the Pillar 3 disclosures, but we find that the results vary with the amount of new information. This evidence suggests that markets likely needed some time to fully interpret the enhanced risk disclosures.

6. Conclusion

In this study, we exploit the introduction of IFRS 7 and Pillar 3 of the Basel II Accord to draw inferences on how banks respond to an equivalent set of disclosure rules implemented and enforced by two different regulatory agencies. Employing a generalized DiD design together with the staggered adoption of the two regulations, we find that compliance with risk disclosure rules increases by up to 13 percentage points for all firms following IFRS 7 but that it increases by another 14 percentage points for regulated banks after Pillar 3. The heterogeneity in compliance is smaller when the two supervisory agencies are independent entities and stronger when there is a larger imbalance of power between them. Yet we continue to observe that firm-level incentives also play a role for banks’ compliance with the new rules. Our market-based tests show that the enhanced risk disclosures go along with a reduction in bid-ask spreads on the order of 12 to 17 percentage points following Pillar 3 but not around IFRS 7.

Our results point to heterogeneity in how firms respond to the same set of rules implemented and enforced by multiple regulatory agencies. The evidence 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). In particular, we show that when it comes to overseeing complex risk disclosure requirements for banks, the specialized banking regulator plays a dominant role, while the general securities market regulator seemingly underinvests in monitoring banks. In addition, the evidence shows that investors do not necessarily update their priors about the risks of firms’ future cash flows based on formal compliance but rather do so only when the disclosure changes are arguably material because they are forced out by stricter enforcement through the banking regulator.

Our findings are subject to several caveats. First, our results might be affected by the contemporaneous introduction of Pillars 1 and 2 of the Basel II Accord—for instance, through a general overhaul of banks’ risk management practices. We try to address this concern by running placebo tests for the subset of benchmark banks that are subject to the first two Pillars but not Pillar 3 and find no evidence of disclosure or liquidity effects. However, there remains a possibility that such indirect effects amplify our results. Second, the findings could be driven by the mere presence of an additional regulator and, thus, the duplication of existing enforcement efforts rather than the differential effectiveness of enforcement by a specialized banking regulator. Given that we only observe the implementation of IFRS 7 followed by Pillar 3, we cannot completely rule out such a duplication effect. Yet we do not argue that specialized industry regulators per se are more efficient enforcement agencies. Our cross-sectional results combined with the anecdotal evidence

25. Following Landsman et al. (2012), we scale the dependent variables by the corresponding variable values measured over the pre/post benchmark window and log transform the resulting ratio for use in the regression analyses.

from our case studies (see supporting information in section 2 of the online Appendix) emphasize the importance of individual institutional attributes in shaping the interaction between multiple regulators and, ultimately, regulatory outcomes. Finally, we note that our results do not speak to the issue of whether the observed regulatory outcome for risk disclosures in the banking system is socially optimal, or how they generalize to the broader population of listed firms and to different time periods. The banking system was hit hard by the global financial crisis during 2007 and 2008. Sensitivity analyses that control for time trends and concurrent economic shocks suggest that the crisis alone is not sufficient to explain our findings. However, the new disclosure regulation might have fallen on fruitful grounds, as many banks were struggling to stay afloat, which could partly amplify our results. We leave questions like these to future research.

Appendix: Supervisory institutions for Basel II countries

Country	Bank regulator	Securities market regulator/ Accounting enforcement authority	Separate regulators	Bank supervision by central bank
Australia	Australian Prudential Regulation Authority	Australian Securities and Investments Commission	Yes	No
Bahrain	Central Bank of Bahrain	Central Bank of Bahrain	No	Yes
Belgium	Banking, Finance, and Insurance Commission	Banking, Finance and Insurance Commission ^a	No	No
Cyprus	Central Bank of Cyprus	Cyprus Securities and Exchange Commission	Yes	Yes
Denmark	Danish Financial Supervisory Authority	Danish Financial Supervisory Authority (formally Danish Securities Council) ^b	No	No
Finland	Finnish Financial Supervisory Authority	Finnish Financial Supervisory Authority	No	No
France	Banking Commission of the Banque de France ^c	Financial Markets Authority	Yes	Yes
Germany	Deutsche Bundesbank	Federal Financial Supervisory Authority/Financial Reporting Enforcement Panel	Yes	Yes
Greece	Bank of Greece	Hellenic Capital Market Commission	Yes	Yes
Hong Kong	Hong Kong Monetary Authority	Securities and Futures Commission/ Financial Reporting Council	Yes	Yes
Ireland	Irish Financial Services Regulatory Authority ^d	Irish Auditing and Accounting Supervisory Authority (delegated)	Yes	Yes
Italy	Bank of Italy	Commissione Nazionale per le Società e la Borsa	Yes	Yes
Kuwait	Central Bank of Kuwait	Ministry of Commerce/Kuwait Stock Exchange	Yes	Yes
Liechtenstein	Liechtenstein Financial Markets Authority	Liechtenstein Financial Markets Authority	No	No
Malta	Malta Financial Services Authority	Malta Financial Services Authority	No	No
Mauritius	Bank of Mauritius	Financial Services Commission	Yes	Yes
Netherlands	De Nederlandsche Bank	Netherlands Authority for the Financial Markets	Yes	Yes
Norway	Financial Supervisory Authority of Norway	Financial Supervisory Authority of Norway	No	No

(The table is continued on the next page.)

(continued)

Country	Bank regulator	Securities market regulator/ Accounting enforcement authority	Separate regulators	Bank supervision by central bank
Oman	Central Bank of Oman	Capital Market Authority/Ministry of Commerce	Yes	Yes
Poland	Central Bank Poland (from 2008: Polish FSA)	Polish Securities and Exchange Commission (from 2006: Polish FSA)	Yes	Yes
Portugal	Bank of Portugal	Portuguese Securities Market Commission	Yes	Yes
Saudi Arabia	Saudi Arabian Monetary Agency	Capital Market Authority/Ministry of Commerce	Yes	Yes
Singapore	Monetary Authority of Singapore	Accounting and Corporate Regulatory Authority (delegated)	Yes	Yes
South Africa	South African Reserve Bank	Financial Services Board/GAAP Monitoring Panel ^e	Yes	Yes
Spain	Bank of Spain	National Commission of Securities Markets	Yes	Yes
Sweden	Swedish Financial Supervisory Authority	NASDAQ OMX Stockholm/Nordic Growth Market (delegated)	Yes	No
Switzerland	Federal Banking Commission (from 2009: FINMA)	SIX Swiss Exchange (delegated)	Yes	No
United Arab Emirates	Central Bank of the United Arab Emirates	Securities and Commodities Authority/ Dubai Financial Services Authority	Yes	Yes
United Kingdom	Financial Services Authority ^f	Financial Reporting Council/Financial Reporting Review Panel (delegated)	Yes	No

Notes: The table lists the institutions responsible for the supervision of banks and security markets for the Basel II countries. We use the annual reports of the local supervisory entities, the country reports from the IMF Financial Sector Assessment Program, and the ESMA Activity Reports on IFRS Enforcement as data sources for the classification. When the enforcement of financial accounting standards is fully delegated (e.g., to a stock exchange), we indicate this separate authority (e.g., Switzerland). When the securities market supervisor retains relevant competences for accounting enforcement together with a designated accounting enforcement institution, we indicate both institutions (e.g., Kuwait). The table serves as basis for the coding of the country-level partitioning variables *Separate Regulators* and *Bank Supervision by Central Bank* in Table 5. ^aThe Banking, Finance and Insurance Commission as a unified regulator was dissolved in 2011. Its responsibilities were transferred to the National Bank of Belgium (prudential oversight) and the Financial Services and Markets Authority (securities markets, etc.). ^bThe Danish Securities Council as formal securities market regulator has delegated its accounting enforcement activities to the Danish Financial Supervisory Authority (FSA) and the Danish Business Authority (DBA). Of these two, only the FSA is concerned with accounting by financial institutions, while the DBA is responsible for all nonlisted and nonfinancial firms. The role of the Danish Central Bank (Danmarks Nationalbank) is limited to the oversight of payment processes. ^cIn 2010, the Commission Bancaire (CB) was merged with other financial regulators to form the Autorité de contrôle prudentiel (ACP), which in 2013 became the Autorité de contrôle prudentiel et de résolution (ACPR). Like the CB, the ACP/ACPR is an independent subcommittee of the Banque de France, which controls its resources and whose governor chairs its board. ^dThe Irish Financial Services Regulatory Authority was a constituent of the Central Bank. It was dissolved, and its supervisory activities were fully integrated into the Central Bank's regular operations in October 2010. ^eThe GAAP Monitoring Panel was a joint venture of the Johannesburg Stock Exchange and the South African Institute of Chartered Accountants (SAICA). In 2010, the GAAP Monitoring Panel received additional resources and enforcement powers and was renamed the Financial Reporting Investigation Panel. ^fIn 2012, the Financial Services Authority was dissolved, and its responsibilities were transferred to two new authorities, the Prudential Regulation Authority and the Financial Conduct Authority.

References

- Agarwal, S., D. Lucca, A. Seru, and F. Trebbi. 2014. Inconsistent regulators: Evidence from banking. *Quarterly Journal of Economics* 129 (2): 889–938.
- Auffhammer, M., and R. Kellogg. 2011. Clearing the air? The effects of gasoline content regulation on air quality. *American Economic Review* 101 (6): 2687–722.
- Badia, M., M. Duro, B. Jorgensen, and G. Ormazabal. 2020. The informational effects of tightening oil and gas disclosure rules. *Contemporary Accounting Research* 37 (3): 1720–55.
- Ball, R., A. Robin, and J. Wu. 2003. Incentives versus standards: Properties of accounting income in four East Asian countries. *Journal of Accounting and Economics* 36 (1–3): 235–70.
- Barth, J., G. Caprio, and R. Levine. 2006. *Rethinking Bank Regulation: Till Angels Govern*. New York: Cambridge University Press.
- Basel Committee on Banking Supervision. 2006. International convergence of capital measurement and capital standards, <https://www.bis.org/publ/bcbs128.pdf>
- Berger, A., M. Kyle, and J. Scalise. 2001. Did U.S. bank supervisors get tougher during the credit crunch? Did they get easier during the banking boom? Did it matter to bank lending? In *Prudential Supervision: What Works and What Doesn't*, edited by F. Mishkin, 301–56. Chicago: University of Chicago Press.
- Bischof, J., and H. Daske. 2013. Mandatory disclosure, voluntary disclosure, and stock market liquidity: Evidence from the EU bank stress tests. *Journal of Accounting Research* 51 (5): 997–1029.
- Bischof, J., C. Laux, and C. Leuz. 2021. Accounting for financial stability: Bank disclosure and loss recognition in the financial crisis. *Journal of Financial Economics* 141 (3): 1188–217.
- Brown, C., and I. Dinç. 2005. The politics of bank failures: Evidence from emerging markets. *Quarterly Journal of Economics* 120 (4): 1413–44.
- Brown, P., J. Preiato, and A. Tarca. 2014. Measuring country differences in enforcement of accounting standards: An audit and enforcement proxy. *Journal of Business Finance & Accounting* 41 (1–2): 1–52.
- Campbell, J., H. Chen, D. Dhaliwal, H. Lu, and L. Steele. 2014. The information content of mandatory risk factor disclosures in corporate filings. *Review of Accounting Studies* 19 (1): 396–455.
- Central Banking Publications. 2013. *How Countries Supervise their Banks, Insurers and Securities Markets 2013*. London: Central Banking Publications.
- Christensen, H., L. Hail, and C. Leuz. 2013. Mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics* 56 (2–3): 147–77.
- Christensen, H., L. Hail, and C. Leuz. 2016. Capital-market effects of securities regulation: Prior conditions, implementation, and enforcement. *Review of Financial Studies* 29 (11): 2885–924.
- Costello, A., J. Granja, and J. Weber. 2019. Do strict regulators increase the transparency of banks? *Journal of Accounting Research* 57 (3): 603–37.
- Daske, H., L. Hail, C. Leuz, and R. Verdi. 2008. Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research* 46 (5): 1085–142.
- Daske, H., L. Hail, C. Leuz, and R. Verdi. 2013. Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. *Journal of Accounting Research* 51 (3): 495–547.
- Dechow, P., W. Ge, and C. Schrand. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics* 50 (2–3): 344–401.
- DeFond, M., M. Hung, and R. Trezevant. 2007. Investor protection and the information content of annual earnings announcements. *Journal of Accounting and Economics* 43 (1): 37–67.
- Diamond, D., and R. Verrecchia. 1991. Disclosure, liquidity, and the cost of capital. *Journal of Finance* 46 (4): 1325–59.
- Dong, M., E. Jondeau & M. Rockinger. 2019. Textual analysis of banks' Pillar 3 documents. Working paper, <https://ssrn.com/abstract=3365005>, accessed June 6, 2021.
- Dyer, T., M. Lang, and L. Stice-Lawrence. 2017. The evolution of 10-K textual disclosure: Evidence from Latent Dirichlet allocation. *Journal of Accounting and Economics* 64 (2–3): 221–45.
- Financial Stability Board. 2012. EDTF principles and recommendations for enhancing the risk disclosures of banks, http://www.fsb.org/2012/10/r_121029/

- Financial Stability Institute. 2014. FSI survey: Basel II, 2.5, and III implementation, <https://www.bis.org/fsi/fsiop2014.pdf>
- Fisman, R., and E. Miguel. 2007. Corruption, norms, and legal enforcement: Evidence from diplomatic parking tickets. *Journal of Political Economy* 115 (6): 1020–48.
- Flannery, M. 2001. The faces of “market discipline.” *Journal of Financial Services Research* 20 (2): 107–19.
- Flannery, M. 2020. Contrasting worldviews at bank and securities market regulators. *Journal of Money, Credit and Banking* 52 (S1): 43–62.
- Flannery, M., B. Hirtle, and A. Kovner. 2017. Evaluating the information in the Federal Reserve stress tests. *Journal of Financial Intermediation* 29: 1–18.
- Freeman, J., and J. Rossi. 2012. Agency coordination in shared regulatory space. *Harvard Law Review* 125 (5): 1131–211.
- Gallimore, J. 2021. Bank financial reporting opacity and regulatory intervention. Working paper, <https://ssrn.com/abstract=2838541>, accessed June 6, 2021.
- Glaeser, E., S. Johnson, and A. Shleifer. 2001. Coase vs. the Coasians. *Quarterly Journal of Economics* 116 (3): 853–99.
- Glosten, L., and P. Milgrom. 1985. Bid, ask and transaction prices in a specialist market with heterogeneously informed traders. *Journal of Financial Economics* 14 (1): 71–100.
- Heinle, M., and K. Smith. 2017. A theory of risk disclosure. *Review of Accounting Studies* 22 (4): 1459–91.
- Herring, R. 2004. How can the invisible hand strengthen prudential supervision? And how can prudential supervision strengthen the invisible hand? In *Market Discipline across Countries and Industries*, edited by C. Borio, 363–79. Cambridge, MA: MIT Press.
- Holthausen, R. 2009. Accounting standards, financial reporting outcomes, and enforcement. *Journal of Accounting Research* 47 (2): 447–58.
- Hope, O.-K., D. Hu, and H. Lu. 2016. The benefits of specific risk-factor disclosures. *Review of Accounting Studies* 21 (4): 1005–45.
- Jackson, H., and M. Roe. 2009. Public and private enforcement of securities laws: Resource-based evidence. *Journal of Financial Economics* 93 (2): 207–38.
- Jorgensen, B., and M. Kirschenheiter. 2003. Discretionary risk disclosures. *The Accounting Review* 78 (2): 449–69.
- Jorion, P. 2002. How informative are value-at-risk disclosures? *The Accounting Review* 77 (4): 911–31.
- Kaufmann, D., A. Kraay, and M. Mastruzzi. 2010. *The Worldwide Governance Indicators: Methodology and Analytical Issues*. Washington, DC: World Bank Policy Research.
- Krause, G., and J. Douglas. 2006. Does agency competition improve the quality of policy analysis? Evidence from OMB and CBO fiscal projections. *Journal of Policy Analysis and Management* 25 (1): 53–74.
- Landsman, W., E. Maydew, and J. Thornock. 2012. The information content of annual earnings announcements and mandatory adoption of IFRS. *Journal of Accounting and Economics* 53 (1): 34–54.
- Lang, M., and R. Lundholm. 1993. Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research* 31 (2): 246–71.
- Leuz, C., and R. Verrecchia. 2000. The economic consequences of increased disclosure. *Journal of Accounting Research* 38 (Supplement): 91–124.
- Macher, J., J. Mayo, and J. Nickerson. 2011. Regulator heterogeneity and endogenous efforts to close the information asymmetry gap. *Journal of Law and Economics* 54 (1): 25–54.
- Martimort, D. 1999. Renegotiation design with multiple regulators. *Journal of Economic Theory* 88 (2): 261–93.
- Papke, L. E., and J.-M. Wooldridge. 1996. Econometric methods for fractional response variables with an application to 401(K) plan participation rates. *Journal of Applied Econometrics* 11 (6): 619–32.
- Parisi, F., N. Schulz, and J. Klick. 2006. Two dimensions of regulatory competition. *International Review of Law and Economics* 26 (1): 56–66.
- Peltzman, S. 1976. Toward a more general theory of regulation. *Journal of Law and Economics* 19 (2): 211–40.

- Pigou, A. 1938. *The Economics of Welfare*. London: Macmillan.
- Posner, R. 1974. Theories of economic regulation. *Bell Journal of Economics and Management Science* 5 (2): 335–58.
- Rosen, R. 2003. Is three a crowd? Competition among regulators in banking. *Journal of Money, Credit and Banking* 35 (6): 967–98.
- Shleifer, A. 2005. Understanding regulation. *European Financial Management* 11 (4): 439–51.
- Stigler, G. 1971. The theory of economic regulation. *Bell Journal of Economics and Management Science* 2 (1): 3–21.
- Tiebout, C. 1956. A pure theory of local expenditures. *Journal of Political Economy* 64 (5): 416–24.
- Ting, M. 2003. A strategic theory of bureaucratic redundancy. *American Journal of Political Science* 47 (2): 274–92.
- Verrecchia, R. 2001. Essays on disclosure. *Journal of Accounting and Economics* 32 (1–3): 97–180.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Online Appendix. Supporting information