

Mandatory IFRS Reporting and Changes in Enforcement*

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Abstract

In recent years, a large number of countries have made reporting under International Financial Reporting Standards (IFRS) mandatory. The capital-market effects of this change have been extensively studied, but their sources are not yet well understood and still heavily debated. This paper presents new evidence that aims to distinguish between several potential explanations for these capital-market effects. We show that, across all countries, mandatory IFRS reporting had little impact on liquidity and, in line with prior work, the liquidity effects are concentrated in the European Union (EU). This finding is not driven by the fact that the EU consists of many countries with strong legal systems and a proven track record of implementing regulation. It is also not driven by concurrent changes in other financial market regulation in the EU. Instead, we show that five countries started to proactively review financial statements concurrent with IFRS reporting, and the liquidity effects are limited to those countries with enforcement changes. Liquidity does not increase in the other EU member states even if they have strong regulatory quality or legal systems. We also show that concurrent enforcement changes can explain the liquidity effects for voluntary IFRS adopters around the IFRS mandate. Thus, our results indicate that concurrent changes in reporting enforcement play an important, if not dominant, role for the documented liquidity benefits around mandatory IFRS adoption.

JEL classification: G14, G15, G30, K22, M41, M48

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1. Introduction

In recent years, a large number of countries have made reporting under International Financial Reporting Standards (IFRS) mandatory. This switch to IFRS reporting is probably the largest change in reporting standards in history and, not surprisingly, has been examined extensively (see, e.g., Barth 2006; Soderstrom and Sun 2007; Hail et al. 2010, for overviews). Much of the literature points towards positive and sometimes substantial capital market effects around the worldwide introduction of IFRS (e.g., Daske et al. 2008; Armstrong et al. 2010; Byard et al. 2011). However, the sources of these effects are still unclear and heavily debated. Given this debate and the global trend towards IFRS reporting, understanding the sources of these economic benefits seems to be of fundamental importance.

There are several reasons why the sources of the documented IFRS effects are not obvious. First, on a conceptual level, proponents of IFRS argue that the adoption of a comprehensive, capital-market oriented set of accounting standards should improve the transparency and comparability of financial statements over the use of disparate, less extensive national GAAP. This argument is rooted in theory and evidence suggesting that better reporting and disclosure can be beneficial to capital markets, for instance, by reducing information asymmetries, increasing liquidity, and lowering the cost of capital (see, e.g., Hail et al. 2010 for details). But there is also the argument that accounting standards give significant discretion to managers and hence, it is not clear that forcing firms to use IFRS indeed improves transparency and comparability. The new standards might not fit a country's institutional environment and they are unlikely to alter managers' reporting incentives (e.g., Ball et al. 2000, 2003; Burgstahler et al. 2006). The effects also might depend on countries' enforcement and legal systems. Consistent with this reasoning, many studies show substantial heterogeneity in the capital-market effects

around IFRS adoption across firms and countries (e.g., Christensen et al. 2007; Daske et al. 2008, 2011; Byard et al. 2011; Landsman et al. 2012). For instance, there is evidence that the documented effects around IFRS adoption are significantly stronger in countries with better functioning legal systems, often measured by the rule of law.

In addition to the conceptual issues, there are empirical concerns. It is possible, if not likely, that the introduction of IFRS coincided with other economic, regulatory or institutional changes. The clustered nature of IFRS adoption around the world makes it difficult to disentangle IFRS effects from other concurrent institutional changes or economic shocks. A specific concern is Daske et al.'s (2008) finding that capital-market effects around the introduction of mandatory IFRS reporting are stronger in the European Union (EU) than elsewhere. They conjecture that this result could be related to concurrent changes in financial reporting enforcement as well as in other financial market regulation in the EU. Starting with the Financial Services Action Plan (FSAP) in 1999, the EU created a series of new directives aimed at improving financial market efficiency, including insider trading and transparency rules (e.g., FSAP 1999; CRA 2009; Christensen et al., 2011). Moreover, the EU regulation that instituted IFRS reporting stated explicitly that member states are required to take appropriate measures to ensure compliance (EC Regulation No. 1606/2002). To the extent that these changes take place around the same time as the IFRS mandate, they could easily confound the estimation of IFRS effects.

Thus, it is still an open question to what extent capital-market effects *around* mandatory IFRS adoption are indeed attributable to the switch in the accounting standards. In light of the existing evidence, we can broadly distinguish between three explanations: (i) the switch from local GAAP to IFRS reporting played a primary role for the observed capital-market benefits; (ii) the introduction of IFRS had capital-market benefits but only in countries with strong institutions

and legal systems; (iii) the switch to IFRS itself had little or no effect and, instead, concurrent changes to countries' institutions, be it enforcement changes to support the introduction of IFRS or other financial regulation, drive the observed capital-market benefits.¹

Our study attempts to distinguish between these explanations. We construct a novel dataset that indicates whether and when enforcement changes occurred in each of 24 EU countries from 2001 to 2009.² We collect these data with a survey sent out to the national securities regulators as well as the technical partners at PricewaterhouseCoopers in each EU country and afterwards compare them with public sources providing information on institutional changes in the EU. Using this dataset, we conduct four related tests. Each test is designed to shed further light on the role of the different explanations in the observed capital-market effects.

Our global sample comprises a large number of firms from countries that introduced IFRS as well as those that did not and hence serve as a benchmark. We examine changes in liquidity, namely bid-ask spreads and the proportion of trading days with zero returns, between 2001 and 2009, which is longer than prior work. We use market liquidity as the dependent variable because it has a clear theoretical link to reporting quality, we can measure it over short intervals, and it is less anticipatory in nature than other economic constructs like cost of capital. The latter two features allow us to exploit the differential timing of various institutional changes. We estimate quarterly panel regressions for IFRS (treatment) and non-IFRS (benchmark) firms, introducing industry- and country-fixed effects. We also introduce three separate quarter-year

¹ It is also possible that both IFRS and enforcement changes have effects. Our tests allow for this possibility and attempt to distinguish between the two factors to the extent feasible. Moreover, it is conceivable that the effects around the IFRS mandate are simply spurious (e.g., due to unrelated economic shocks). However, given the large number of studies documenting effects for various metrics, this explanation seems less likely.

² We do not have sufficient accounting information for several EU member states (Bulgaria, Cyprus, Latvia, Malta, and Romania). At the same time, we include Iceland and Norway in the EU sample even though they are not members of the EU. We do so because they belong to the European Economic Area (EEA) and agreed, among other things, to adopt the EU capital market directives in exchange for access to the EU's single market. In unreported analyses, we check that the results are not sensitive to this choice.

fixed effects for the EU, other IFRS treatment countries and benchmark countries, exploiting the fact that firms began reporting under IFRS in different quarters based on their fiscal year-ends or, in some cases, did not have to adopt IFRS at all.³ This fixed-effects structure allows for separate liquidity trends and should absorb arbitrary shocks to quarterly liquidity levels within the three groups. Similarly, we utilize that some but not all EU member states introduced substantial changes to the enforcement of financial reporting. For instance, in 2005 and hence bundled with the IFRS mandate, Finland, Germany, the Netherlands, Norway, and the U.K. either created enforcement bodies that are in charge of proactively supervising compliance with IFRS or the existing body switched from reactively reviewing firms' financial statements on a referral basis to proactive reviews on a sample basis. Our design explicitly accounts for such changes.

Our first test starts out where prior literature has left it off, and examines whether there are differential capital-market effects in EU and non-EU countries around mandatory IFRS adoption (Daske et al. 2008; Li 2010). As we have a tighter research design and more data after the mandate, we test whether this result continues to hold. Moreover, we examine the concern that the EU's many FSAP directives might be responsible for the observed liquidity improvements around mandatory IFRS adoption. We find that, across all countries, market liquidity does not significantly change around mandatory IFRS adoption, but that it improves around IFRS adoption in the EU countries, using both bid-ask spreads and zero return days. This result holds with separate EU quarter-year fixed effects that account for common shocks and liquidity trends within the EU. More importantly, the liquidity benefits in the EU also obtain after explicitly

³ In the EU, IFRS reporting is required for the consolidated financial statements of firms with equity securities traded on EU regulated markets. Firms that had only debt instruments outstanding or reported under U.S. GAAP could defer the application of IFRS for two more years after the initial start date of December 31, 2005. The legal entity financial statements of publicly traded firms, firms whose shares trade on non-regulated EU markets or in the over-the-counter markets, as well as private firms are exempt from the IFRS requirement in the EU. However, they might have to report under IFRS to comply with national legislation or exchange listing requirements (see ICAEW 2007; Pownall and Wiczynska 2011).

controlling for the introduction of other key EU directives in the FSAP or using country-specific, quarter-year fixed effects, which in essence control for arbitrary quarterly shocks to market liquidity in any given country.⁴ Thus, it is unlikely that other EU directives are responsible for the liquidity changes around the IFRS mandate, even if they are implemented close to the mandate such as the Market Abuse Directive (implemented between 2004 and 2006).

In our second test, we account for the fact that five EU countries made significant changes to their enforcement of financial reporting, introducing new agencies and proactive reviews, around the same time IFRS reporting became mandatory. These changes would likely have an effect when firms start reporting under IFRS. Thus, in these five countries, IFRS adoption and enforcement changes are bundled. In other EU countries such a switch occurred either at an earlier date, later in time, or has yet to take place. We introduce indicators to distinguish between countries with and without bundled changes in enforcement and examine whether the liquidity effects around IFRS adoption are stronger for EU countries that concurrently initiated a proactive review process of financial reports. Exploiting this variation, we find that the positive liquidity effects around IFRS adoption occur in those five countries that concurrently tightened their enforcement, but generally not in the remaining EU countries (or outside the EU). Thus, the results suggest that concurrent changes in reporting enforcement play a crucial role for the documented liquidity benefits around IFRS introduction in the EU.

However, as the five EU countries with concurrent enforcement changes are all countries with a proven track record for implementing regulation and relatively strong legal systems, the results are also consistent with prior studies documenting that the capital-market effects around

⁴ It is important to recognize that a directive applies to all firms on regulated EU markets beginning in the quarter during which it comes into force in a given country. Thus, because we exclude firms from unregulated markets, a quarterly indicator for the directive or separate quarter-year fixed effects for each country control for the liquidity effects of the directives. See also Christensen et al. (2011).

IFRS adoption are concentrated in such economies. That is, it could be that the liquidity effects for the remaining EU countries and the IFRS adopting countries outside the EU are insignificant simply because they combine countries with strong and weak legal institutions and hence do not sufficiently account for differences in the way IFRS are implemented and enforced. To disentangle the role of enforcement changes and of existing differences in legal and regulatory systems, we estimate the liquidity effects around the mandate for high and low regulatory quality countries separately.⁵ We continue to find that the liquidity benefits are concentrated in the five EU countries that bundled enforcement changes with mandatory IFRS adoption. Our spread regressions do not indicate any increase in liquidity for the other EU countries, even those characterized by high regulatory quality or strong rule of law. The zero-return specifications indicate some effects in high regulatory quality regimes in the EU, but even then the effects are significantly weaker than in countries that increased their reporting enforcement concurrently with IFRS. We do not find significant liquidity effects outside the EU even after splitting by regulatory quality or rule of law.

In our third test, we attempt to separate the effects of IFRS adoption and changes in financial reporting enforcement by exploiting the fact that some firms are *not* affected by the IFRS mandate because they already report under IFRS on a voluntary basis. Yet, these firms are affected by enforcement changes supporting the IFRS mandate because their financial statements are subject to the (proactive) review process. Thus, we analyze whether the liquidity effects for voluntary adopters around the IFRS mandate in countries that changed enforcement are indeed different from the effects for voluntary adopters in countries without such changes. This test

⁵ In the main analyses, we use the regulatory quality index from Kaufmann et al. (2009) as a proxy for institutional quality as it is meant to capture a country's ability to implement regulation and government policies. However, the results are very similar and the inferences remain the same if we use other commonly used measures of regulatory quality, including the rule of law index (see Section 4.2).

amounts to analyzing triple differences. As such, the design also controls for spillover or network effects from the IFRS mandate on voluntary adopters (e.g., due to comparability effects) because such effects presumably occur in all EU countries. We find that market liquidity increases for *voluntary* IFRS adopters around the time of the IFRS mandate, similar in magnitude to the effect for first-time mandatory adopters, but only in the five EU countries with concurrent enforcement changes. These results provide strong evidence against the explanation that the IFRS mandate itself is the primary source of the capital-market benefits and point to a significant role for changes in financial reporting enforcement. It also casts doubt on the existence or at least magnitude of comparability (or network) effects from the IFRS mandate.

Our fourth and final test exploits the fact that some EU countries made changes to the enforcement of financial reporting at a different time and not concurrent with the IFRS mandate. For instance, Sweden did not introduce proactive reviews until 2007 but IFRS reporting became mandatory as of 2005. For these countries, the effects of mandatory IFRS reporting and changes in enforcement are potentially separable because they first apply to financial statements from different fiscal years, and therefore allow us to estimate separate coefficients for the two changes. The spread regressions suggest that the effects stem entirely from the enforcement changes, but the coefficients are not precisely estimated, probably due to lack of power. The zero-return regressions indicate that there exist modest liquidity effects around the IFRS mandate, even in countries that do not change enforcement during the sample period.

Our paper contributes to the literature in several ways. First, our analysis shows that the liquidity effects around the introduction of mandatory IFRS reporting are much more limited than previously thought. The liquidity effects are essentially confined to the EU. While prior evidence already points in this direction, we provide these results using a much tighter

identification strategy that exploits the higher frequency of liquidity changes. By focusing on quarterly changes in liquidity, we can use a more rigorous fixed-effects structure that allows for differential trends in IFRS treatment countries and controls for quarterly economic shocks as well as changes in the regulatory environment. Based on this design, we can show that other EU directives on financial market regulation cannot explain effects around the IFRS mandate.

Second, and more importantly, we identify five EU countries that instituted major changes to financial reporting enforcement concurrent with the IFRS mandate, namely they introduced proactive reviews of financial reports by the national supervisory authority. We show that liquidity effects around the IFRS mandate are concentrated in these countries and by and large do not extend to other EU countries. Attributing capital-market effects to concurrent *changes* in reporting enforcement is different from the interpretations in prior studies. Much of the literature concludes that IFRS has led to substantial capital-market improvements provided the standards were introduced in countries with strong institutions and legal systems. Our results show that this conclusion is too simple, at least for liquidity changes. While our results do not rule out that the move to IFRS and the institutional environment play a role for the observed liquidity changes, it seems that the improvements are largely attributable to changes in financial reporting enforcement. Thus, our analysis highlights the need to account for *changes* in countries' enforcement mechanisms in examining the effects of mandatory IFRS adoption.

Finally, our results suggest that we need to revisit prior findings that partition samples based on properties of countries' legal frameworks, rather than actual institutional changes. Our results indicate that liquidity effects around the IFRS mandate are by and large limited to a select group of countries with concurrent reporting enforcement changes. Our paper proposes a simple way for other studies to partition samples when studying the effects of mandatory IFRS adoption.

The remainder of the paper proceeds as follows. In Section 2, we discuss related literature, develop the hypotheses, and provide details on the regulatory changes in the EU that took place around the mandatory introduction of IFRS. In Section 3, we outline the research design, describe the sample selection and provide descriptive statistics. Section 4 contains the results of the four consecutive tests along with several robustness checks. Section 5 concludes.

2. Related Literature, Hypotheses, and Institutional Background

Considering that the recent adoption of mandatory IFRS reporting by many countries around the world was likely the single most important change in standards in accounting history, it is not surprising that there are many empirical studies and an ongoing debate among academics, regulators, and practitioners about the effects of this change. So far, several studies have documented positive capital-market consequences around the mandatory switch to IFRS reporting. Among other things, the studies show positive abnormal stock returns during important events leading up to IFRS adoption (Armstrong et al. 2010), an increase in market liquidity and decrease in cost of capital (Daske et al. 2008, 2011; Florou and Kosi 2009; Li 2010), more foreign investments in debt and equity instruments of firms domiciled in IFRS adopting countries (Brüggemann et al. 2009; Beneish et al. 2010; DeFond et al. 2011) together with a reduction in home bias among U.S. investors (Shima and Gordon 2011; Khurana and Michas 2011), higher information content of IFRS earnings (Landsman et al. 2012), an increase in stock price informativeness (Beuselinck et al. 2009), and improvements in financial analysts' information environment (Byard et al. 2011; Tan et al. 2011; Horton et al. 2012).⁶ Thus, based on the documented average market outcomes, one could conclude that mandatory IFRS adoption

⁶ Evidence of changes in the properties of accounting earnings (rather than in capital market outcomes) around mandatory IFRS adoption is more mixed with several studies finding improvements in 'accounting quality' (e.g., Gordon et al. 2009; Barth et al. 2010; Gebhardt and Novotny-Farkas 2011), while others find no or the opposite effects (e.g., Christensen et al. 2008; Ahmed et al. 2010; Atwood et al. 2011; Capkun et al. 2011).

has improved the transparency and comparability of financial statements as well as reduced information asymmetries.

However, this interpretation is problematic for several reasons. Conceptually, it is not clear to what extent a mandated switch to IFRS is expected to increase transparency and produce capital-market effects considering the discretion inherent in any set of accounting standards. Given this discretion, firms' reporting practices are likely to reflect countries' institutional factors and firm-level reporting incentives (Watts and Zimmerman 1986; Ball 2001). At a minimum, newly mandated accounting rules need to be properly enforced to have an effect on the properties of reported accounting numbers (e.g., Ball et al. 2003; Bushman and Piotroski 2005; Burgstahler et al. 2006). Consistent with this line of reasoning, many of the aforementioned studies find substantial heterogeneity in the capital-market effects around IFRS adoption. That is, the documented effects do not uniformly apply to all firms in the economy or to all countries. Moreover, the evidence does not line up as one would expect if mandatory IFRS reporting were the source of improved corporate transparency. Most studies find larger benefits for firms domiciled in countries with stronger legal institutions and/or reporting incentives (see, e.g., Hail et al. 2010, for an overview). Studies frequently point to differences in the level of enforcement as the primary explanation for these results. For instance, Daske et al. (2008) show that market liquidity increases only in countries with strong rule of law, which is commonly used as a proxy for legal enforcement. Following in this vein, Byard et al. (2011) find reductions in analyst forecast errors and forecast dispersion only for mandatory IFRS adopters from countries with strong enforcement regimes (and at the same time with large differences between local

GAAP and IFRS).⁷ Landsman et al. (2012) show that the increase in information content of annual earnings announcements around IFRS adoption depends on the strength of countries' legal enforcement. Thus, a common interpretation of the prior evidence is that mandatory IFRS reporting yields significant capital-market benefits as long as the standards are implemented in a rigorous fashion and paired with strong enforcement.

However, prior studies can rarely pinpoint the elements of a country's institutional environment that are deemed crucial for the success of new accounting standards.⁸ Neither do they distinguish between a country's existing legal system and institutions, including its past track record of implementing regulation and government policies, and recent changes to the enforcement of financial reporting. If there are changes in enforcement that are concurrent with the introduction of IFRS reporting, it is no longer clear that the documented effects around the mandate are attributable to the new standards or even separable from the concurrent changes in enforcement. In this case, the concurrent enforcement changes likely confound the estimation of the IFRS effects, and it is possible that the switch to IFRS had no effect, yet we observe significant capital-market benefits around the mandate. More generally, it is conceivable that other institutional changes and unrelated economic shocks that happen to fall into the same time period as the introduction of IFRS, drive the capital-market effects shown in prior studies, especially considering that the introduction of IFRS reporting is relatively clustered in time.

Based on this discussion, we can broadly distinguish between three different explanations for the extant capital-market evidence: (i) the switch from local GAAP to IFRS reporting played

⁷ If stringent enforcement institutions are missing, Byard et al. (2011) find that analyst forecast errors and dispersion decrease more for firms with stronger firm-level incentives for transparent reporting, consistent with the findings in Christensen et al. (2007) for the U.K. and Daske et al. (2011) for a global sample.

⁸ An exception in this regard is Landsman et al. (2012). They use path analysis to shed some light on the way IFRS adoption increases the information content of earnings announcements.

a primary role for the observed capital-market benefits; (ii) the introduction of IFRS had capital-market benefits, but only in countries with strong institutions and legal enforcement; (iii) the switch to IFRS reporting itself had little or no effect and, instead, the capital-market benefits are driven by concurrent changes to countries' institutions, be it enforcement changes to support IFRS reporting or changes in other financial regulation. Empirically, it is very challenging to distinguish between these explanations and to identify the sources of the observed capital-market effects, particularly if countries institute supporting enforcement changes together with the introduction of IFRS. Such bundling further complicates the identification of the IFRS effects.

In this regard, the EU is of particular concern. Prior evidence shows that the capital-market benefits around IFRS adoption are concentrated in the EU (e.g., Daske et al., 2008; Li, 2010). Hail and Leuz (2007) and Daske et al. (2008) conjecture that concurrent changes in EU financial market regulation could play an important role for the observed capital-market effects. Starting with the FSAP in 1999, the EU instituted a whole series of directives geared towards improving financial market regulation (e.g., FSAP 1999; CRA 2009). As one element of the FSAP, EC Regulation No. 1606/2002 (also called IAS Regulation) requires the use of IFRS in the consolidated financial statements of all publicly traded firms domiciled in the EU as of the fiscal-year end December 31, 2005. Compared to national GAAP requirements, the switch to IFRS reporting involves substantial changes and extensions in measurement and disclosure rules for many EU member states.⁹ As such, mandatory IFRS adoption has the potential to improve reporting and disclosure quality and to make reporting practices more comparable across countries and industries, which in turn should reduce information asymmetries and lead to lower cost of capital and higher liquidity (see, e.g., Hail et al. 2010, for an overview). However, the

⁹ For instance, using the Bae et al. (2008) metric of accounting differences between national GAAP and IFRS, the score ranges from a low of one in the U.K. to a maximum of 18 (out of 21) in Luxembourg.

IAS Regulation also requires member states to take appropriate measures to ensure compliance with IFRS.¹⁰ As a result, several EU countries made fundamental changes to their financial reporting enforcement. However, because the IAS Regulation is not specific as to what constitutes appropriate enforcement, many member states did not make major changes at the time of the IFRS mandate.

To identify such changes, we reviewed countries' enforcement systems and sent a survey to auditors and supervisory agencies in the EU. Based on this analysis, we identify five EU member states with substantial changes in their enforcement of financial reporting around the IFRS mandate. These countries created a new enforcement agency and/or moved to proactive reviews of financial statements to enforce compliance with IFRS. The proactive reviews are in many respects similar to the U.S. Securities and Exchange Commission's comment and review process and, given that none of the five countries had proactive review procedures prior to mandatory IFRS adoption, this enforcement change is likely significant. For instance, Germany went from no enforcement of financial reporting to the creation of a new enforcement body (the Financial Reporting Enforcement Panel, FREP), which proactively reviews approximately 130 firms per year (about 15 percent of listed firms). Indicating that these reviews matter, Ernstberger et al. (2011) show that the FREP found errors in 23 percent of the reviewed cases. Similarly, the U.K. authority charged with enforcing financial reporting requirements (the Financial Reporting Review Panel, FRRP) began reviewing financial statements proactively on a

¹⁰ Paragraph 16 of the IAS Regulation states: "A proper and rigorous enforcement regime is key to underpinning investors' confidence in financial markets. Member States, by virtue of [Article 10](#) of the Treaty, are required to take appropriate measures to ensure compliance with international accounting standards. The Commission intends to liaise with Member States, notably through the Committee of European Securities Regulators (CESR), to develop a common approach to enforcement." Article 10 of the treaty establishing the European Community states: "Member States shall take all appropriate measures, whether general or particular, to ensure fulfillment of the obligations arising out of this Treaty or resulting from action taken by the institutions of the Community." Hence, paragraph 16 of the IAS Regulation leaves EU member states significant latitude in how to enforce compliance with IFRS.

sample basis in 2005, rather than reviewing them on a referral basis only. The FRRP reviews approximately 300 firms per year (roughly 15 percent of the listed firms on U.K. regulated markets), and prescribes changes to financial reporting and restatements in approximately a third of the reviewed cases (FRRP 2007). In addition to the five countries that bundled proactive reviews with mandatory IFRS adoption, five other EU countries introduced such reviews over the sample period but not simultaneously with the IFRS mandate (see also Table 1).

Apart from the IAS Regulation and the ensuing changes in the enforcement of financial reporting, the FSAP brought numerous other legislative initiatives intended to improve EU financial market regulation. Among the ones geared at securities markets were the Market Abuse Directive on insider trading and market manipulation, the Transparency Directive, which addresses general reporting and disclosure requirements, the Prospectus Directive regulating the disclosures during public security offerings, the Markets in Financial Instruments Directive on the provision of investment services across the EU, and the Takeover Directive, which provides a common framework for mergers and acquisitions, and takeover bids in the EU. All these directives could potentially improve, or at least affect, market liquidity and as a result be confounding factors in an analysis of the IFRS effects (see also Christensen et al. 2011; Cumming et al. 2011). Thus, any estimation of IFRS effects in the EU (or elsewhere) needs to exert particular care in controlling for these other regulatory changes.

3. Research Design and Data

3.1. Identification Strategy and Empirical Model

We examine the capital-market effects of new accounting standards, existing legal and regulatory systems, and concurrent changes in financial reporting enforcement around the mandatory adoption of IFRS using a large panel dataset with quarterly firm-level observations

from around the world. We focus on stock market liquidity as proxy of economic outcomes for three reasons. First, theory predicts that enhancing transparency reduces information asymmetries in financial markets and hence increases market liquidity (e.g., Glosten and Milgrom 1985; Diamond and Verrecchia 1991; Verrecchia 2001). Second, we can measure liquidity reliably over relatively short intervals. Third, liquidity is less anticipatory in nature than other economic constructs like cost of capital or firm value.¹¹ These features are critical to our identification strategy as they allow us to measure liquidity changes around key events, i.e., when the first IFRS reports become available or the supervisory authority introduces proactive reviews, and at the same time let us account for general trends as well as other economic and regulatory shocks to liquidity over the sample period.

Specifically, our empirical strategy consists of three elements. First, we distinguish between IFRS (treatment) and non-IFRS (benchmark) firm-quarter observations. This distinction allows us to use variation in IFRS reporting across countries and firms over time. Our global sample comprises observations from countries that require IFRS reporting (mostly for fiscal years ending on or after December 31st, 2005) and from countries without an IFRS mandate. The latter group serves to better identify the control variables in the liquidity regressions and to account for global trends in market liquidity. As another source of variation we make use of the fact that not all firms in an economy must report under IFRS and that some firms have already switched to IFRS reporting voluntarily. In the EU, IFRS reporting is required only for consolidated financial statements of firms with securities traded on regulated markets, but not for firms that prepare legal-entity statements only, or for firms whose shares trade on non-regulated markets or in the

¹¹ While investors likely adjust market valuations or cost of capital estimates as soon as their expectations about future corporate transparency change, liquidity is less anticipatory because investors primarily worry about adverse selection and hence, the level of transparency at the moment they trade. It is of course possible that investors anticipate when buying shares that future transparency improvements will reduce adverse selection at the time they sell, but this anticipatory effect is likely small.

over-the-counter markets (e.g., Pownall and Wieczynska 2011). Moreover, because several countries allowed IFRS reporting ahead of the mandate, there exists substantial variation in the proportion of voluntary IFRS adopters around the globe.^{12, 13} Both types of firms (i.e., non-adopters and voluntary adopters in mandatory IFRS countries) help us to control for within-country liquidity trends and shocks, as the IFRS mandate should not affect them.¹⁴ More importantly, they allow us to separate the liquidity effects of concurrent changes in the regulatory environment that affect all firms in the economy (irrespective of their accounting standards or listing venue) from the IFRS mandate. Finally, we exploit the fact that not all firms have the same fiscal-year end. That is, in the initial year of the IFRS mandate, some firms released their first IFRS financial statements earlier than others because their fiscal-year ends differed (e.g., December 31st, 2005 vs. June 30th, 2006). The quarterly panel structure of the data utilizes this staggered release of IFRS reports in that we create an *IFRS* indicator variable that takes on the value of ‘1’ beginning in the calendar quarter immediately following a firm’s fiscal-year end. Figure 1, Panel A, illustrates the time-series pattern of the mandatory IFRS adoption given the fiscal-year end distribution of our global sample. Our coding allows us to introduce an extensive fixed-effects structure that accounts for quarterly trends within the treatment sample, within the EU, and even within each country (see also third element below).

The second element of our empirical strategy is that we explicitly control for the (staggered) introduction of various EU directives. These directives apply to all firms traded on a country’s regulated markets from a certain point in time and hence can be captured by quarterly indicators

¹² In some countries like the U.K. or Canada there were virtually no voluntary IFRS adopters, whereas in other countries like Germany (26 percent) or Russia (31 percent) the proportion of firms voluntarily reporting under IFRS prior to the mandate was high (see Daske et al. 2011, Table 1).

¹³ We identify firms that do not report under IFRS after the mandate based on the “accounting standards followed” field in Worldscope (field 07536). Voluntary IFRS adopters are drawn from Daske et al. (2011).

¹⁴ Note that voluntary IFRS adopters or non-adopters can still be affected by the IFRS mandate through network effects and spillover effects (e.g., Wang 2011). We explicitly account for this possibility in Section 4.3.

and country-specific quarter-year fixed effects (see also Kalemli-Ozcan et al. 2010a, 2010b; Christensen et al. 2011). In addition, we use our self-constructed dataset indicating major changes in the enforcement of financial reporting in the EU. Our main proxy of such changes is when a country's supervisory authority moves to a proactive and systematic review process of financial reports. As discussed in Section 2, such changes occur in several (but not all) EU member states over our sample period and they may be bundled with the switch to mandatory IFRS reporting. We code up a binary *Reviews* indicator variable for each firm that takes on the value of '1' beginning in the calendar quarter immediately following the first fiscal-year end after the initiation of the proactive review process. The reason for this coding is that the effects of the new review process likely take place when firms prepare and file their financial statements. Figure 1, Panel B, illustrates the time-series pattern of the initiation of proactive reviews in the EU. We use this variation to empirically disentangle the liquidity effects of mandatory IFRS adoption and changes in financial reporting enforcement.

The third element of our empirical strategy consists of an extensive fixed-effects structure. In our main specification, we include country, industry, and *separate* quarter-year fixed effects for EU countries, non-EU but IFRS adoption countries, and the benchmark countries. This three-trend specification eliminates shocks to liquidity common to all countries within each of the three separate groups in a given quarter, and uses solely within-group variation of when the first mandatory IFRS reports are released and the review process is initiated. Thus, for unrelated economic shocks (e.g., the financial crisis in 2007 and 2008) to create spurious results, they would have to be correlated with both these institutional changes *and* the fiscal-year end distribution in a given country, which is a fairly complex pattern. To tighten our empirical strategy even further, we also conduct separate tests using within-country estimation that derives

the IFRS effects from non-IFRS adopting firms and the variation in the release of the first IFRS financial statements.¹⁵ This design rules out country-specific factors or arbitrary shocks that apply to all firms in an economy in any given quarter.

Combining the three elements of our empirical strategy, we obtain the following generic regression model (without firm and time subscripts):

$$Liq = \beta_0 + \beta_1 IFRS + \sum \beta_j Controls_j + \sum \beta_i Fixed Effects_i + \varepsilon. \quad (1)$$

The dependent variable, *Liq*, stands for the liquidity proxies. *IFRS* is a binary variable marking firm-quarters with IFRS reporting after the mandate. *Controls_j* denotes a set of firm-level control variables. *Fixed Effects_i* represents country, industry, and *separate* quarter-year fixed effects for the corresponding groups. As mandatory IFRS adoption and proactive reviews are regulatory initiatives on the country level, we draw statistical inferences based on standard errors clustered by country, which is arguably conservative. Note that Eq. (1) does not include explanatory variables for legal quality or concurrent changes in enforcement. Yet, in our tests we will sequentially expand Eq. (1) to allow the estimation of separate IFRS liquidity effects conditional on EU membership, the regulatory environment, and the (bundled) introduction of proactive reviews. Figure 2 illustrates our consecutive series of tests, which aim to disentangle the various liquidity effects around IFRS adoption. For instance, when we distinguish between EU countries that bundled the IFRS mandate with proactive reviews, the remaining EU countries, and the IFRS adoption countries outside the EU, the model looks like follows (see the first panel under the ‘Test II’ heading in Figure 2):

¹⁵ We note that we have less variation in the initiation of proactive reviews (see Figure 1, Panel B) and therefore acknowledge that this specification could suffer from low power when estimating the review effects.

$$Liq = \beta_0 + \beta_1 IFRS_{EU_ENF} + \beta_2 IFRS_{EU_nonENF} + \beta_3 IFRS_{non-EU} + \sum \beta_j Controls_j + \sum \beta_i Fixed Effects_i + \varepsilon. \quad (2)$$

In this model we replace the single *IFRS* indicator from Eq. (1) with three non-overlapping indicators for (i) the five EU countries that switched to IFRS and, at the same time, introduced proactive reviews (*IFRS_{EU_ENF}*), (ii) the remaining EU countries that either already had a review process, introduced it at some time other than in 2005, or have yet to adopt proactive reviews (*IFRS_{EU_nonENF}*), as well as (iii) the non-EU countries that also switched to IFRS reporting (*IFRS_{non-EU}*). Thus, in this specification, we can directly compare the estimated liquidity effects of mandatory IFRS adoption across the three groups of treatment firms.

3.2. Sample and Variable Description

Our sample period starts in the first quarter of 2001 and ends in the fourth quarter of 2009. We include all the firm-quarter observations for which we have the necessary data to compute the liquidity and control variables to estimate our basic regression model stated in Eq. (1). The sample comprises up to 35 IFRS treatment countries, of which 24 belong to the EU, and 24 benchmark countries. Table 1 provides an overview of the sample composition by EU country. The bid-ask spread (zero returns) sample comprises 613,761 (762,110) firm-quarter observations. We exclude firms in treatment countries that follow U.S. GAAP in their financial reporting and firms with a U.S. cross-listing as they are already following a transparent accounting regime. In addition, we eliminate very small firms with, on average, market values below US\$ 5 million as well as firms trading on unregulated EU markets (e.g., the Alternative Investment Market in London). We further require that Worldscope accounting standards information is available after 2005 for any given firm, and only include benchmark countries with more than 20 firms.

Table 1 also lists the dates when IFRS reporting became mandatory (Daske et al. 2008), and the calendar quarter during which the proactive review process started. For the proactive reviews, we gather information on whether and when the local supervisory authority in each EU member state initiated such a procedure from self-constructed surveys that we sent out to the authority responsible for supervising compliance with accounting standards as well as the technical departments of PricewaterhouseCoopers, an international audit firm, in each EU country. To ensure accuracy we compare the answers to various sources, namely a report on enforcement mechanisms in Europe (FEE 2001), the annual reports of the local supervisory authorities, and a survey conducted by the Committee of European Securities Regulators (CESR) on the supervisory powers in each EU member state (CESR 2007). In case of discrepancies, we contact the national securities regulator to resolve the issue. As the table shows, one country has initiated the review process after the beginning of our sample period but before 2005 (Estonia), five countries have bundled the review process with IFRS adoption (Finland, Germany, the Netherlands, Norway, and the U.K.), and another four countries have started with the review process after 2005 but before the end of the sample period (Hungary, Ireland, Lithuania, and Sweden). Finally, the table also reports the *Regulatory Quality* index from Kaufmann et al. (2009) that measures a government's ability to formulate and implement sound policies and regulations (as of 2003, i.e., before countries adopted mandatory IFRS reporting). Higher index values indicate better regulatory quality. We use this index as a proxy to measure a country's ability and willingness to implement the IFRS mandate. For some of the analyses, we split the treatment sample countries by the median.

We use two proxies for market liquidity. The *Bid-Ask Spread* is conceptually close to the desired construct and commonly used in empirical research to capture information asymmetry

(e.g., Stoll 1978; Venkatesh and Chiang 1986; Glosten and Harris 1988). We obtain the closing bid and ask prices for each day and compute the daily quoted spread as the difference between the two prices divided by the mid-point. We then take the median daily spread over the quarter for a given firm. Our second proxy, *Zero Returns*, is the proportion of trading days with zero daily stock returns out of all potential trading days per quarter. It is also commonly used, more widely available than spreads because it relies just on returns data, and less affected by market-microstructure differences (e.g., Lesmond et al. 1999; Bekaert et al. 2007). In terms of control variables, we follow prior literature and include firm size using the market value of equity, share turnover, and return variability (Chordia et al. 2000; Leuz and Verrecchia 2000). We estimate the bid-ask spread regressions in a log-linear form using the natural logarithm of the bid-ask spreads and the control variables, and lag the control variables by four quarters. Price and volume data are from Datastream.¹⁶ We truncate all continuous variables at the first and 99th percentile. Table 2 reports descriptive statistics of the variables used in the regression analyses, and in the table notes we provide further details on the variable measurement.

4. Liquidity Effects of IFRS Adoption and Enforcement Changes

4.1. Test I: IFRS Adoption Globally versus in the EU

In this section, we conduct a series of tests that build on each other and attempt to disentangle the liquidity effects of mandatory IFRS adoption, legal quality and concurrent changes in enforcement. We start where prior literature left it off, and examine whether there are differential capital-market effects in EU and non-EU countries around mandatory IFRS adoption. Table 3 presents the results of this analysis, and reports coefficient estimates and (in parentheses)

¹⁶ Our primary source of bid-ask spread data is Datastream. To increase sample size in some of the smaller EU countries (i.e., Czech Republic, Luxembourg, Slovakia, and Slovenia) we complement this data with spreads from Bloomberg. For U.S. firms, we add spread data from CRSP because Datastream does not have this data in the early years of our sample period. Doing so does not materially affect the results.

t-statistics from estimating variations of Eq. (1) with bid-ask spreads (Panel A) or the proportion of zero returns (Panel B) as the dependent variable. As is common for liquidity models and given the extensive fixed-effects structure, the explanatory power of the regressions is high, ranging from 52 percent for zero returns to 80 percent for bid-ask spreads. All the firm-specific control variables are significant and exhibit the expected signs. Large firms and firms with a high share turnover have lower bid-ask spreads and fewer zero-return days. Firms with more volatile returns have larger spreads and a lower proportion of zero returns. The negative association between return volatility and zero returns likely stems from low-volatility firms mechanically having more days without trades and is common in zero-return models. To be sure, we check that excluding return volatility (or any other firm-specific control variable) from the model does not materially affect the results.

In the first two columns of Table 3, we estimate Eq. (1) either with a single set of quarter-year fixed effects for all countries assuming a common trend in the data (Model 1) or with two separate sets of quarter-year fixed effects for IFRS and non-IFRS countries (Model 2). This is a commonly used structure to account for general trends and arbitrary liquidity shocks in the data. We find insignificant bid-ask spread effects, and significant but small reductions in the proportion of zero return days around mandatory IFRS adoption for the entire treatment sample, suggesting that, across all countries, IFRS adoption had little impact on market liquidity.

However, a single global trend or a separate trend for all IFRS countries might not be enough to account for differential trends in market liquidity, especially in light of the concerns about concurrent enforcement and other regulatory changes in the EU as well as the prior evidence (Hail and Leuz 2007; Daske et al. 2008; Li 2010). Therefore, we replace the single *IFRS* indicator variable with two non-overlapping binary indicators, one for all EU member states

($IFRS_{EU}$) and one for the remaining IFRS adoption countries ($IFRS_{non-EU}$). In addition, we introduce a third quarter-year fixed effect for all EU member states, which lets us separately account for liquidity trends and shocks within the three country groups. As Model 3 shows, mandatory IFRS adoption is associated with a significant and substantial reduction in bid-ask spreads and zero return days, but only in the EU and not in the remaining IFRS adoption countries. This finding is consistent with our (second) explanation that IFRS adoption has differential effects across countries with stronger and weaker legal systems, but also the (third) explanation that regulatory changes in the EU following the FSAP in 1999 could drive the positive effects on market liquidity.

To discriminate between IFRS adoption and other regulatory changes not directly tied to the implementation of accounting standards (but also potentially affecting liquidity), we next include separate control variables for the Market Abuse Directive (*MAD*), the Transparency Directive (*TPD*), the Takeover Directive (*Takeover*), the Market in Financial Instruments Directive (*MiFID*), and the Prospective Directive (*Prospectus*), and report results in Model 4. For both spreads and zero returns the $IFRS_{EU}$ coefficient is hardly affected by the additional controls, which suggests that the omission of the directives from Model 3 is unlikely to induce a spurious relation with the $IFRS_{EU}$ coefficient. At the same time and consistent with Christensen et al. (2011), the coefficients on *MAD* and *TPD* are significantly negative while the effects of the other directives are mixed. To push this issue further, we re-estimate the model with separate quarter-year fixed effects for each country, essentially controlling for liquidity shocks common to all firms in a given country and calendar quarter like from the introduction of the various FSAP

directives (Model 5).¹⁷ Even in this specification, in which identification comes purely from the variation in fiscal-year ends and from firms not adopting IFRS, the $IFRS_{EU}$ coefficient remains significantly negative and has a similar magnitude as before. Thus, the other EU directives are likely not responsible for the documented liquidity changes around IFRS adoption in the EU.

Finally, to gauge the robustness of our findings and to mitigate concerns about the choice of the benchmark sample, we eliminate the non-IFRS adopting countries from the sample and repeat the analyses using separate quarter-year fixed effects and within-country estimation (Models 6 and 7, respectively). The results are very similar to those using the entire sample. Overall, we find strong liquidity improvements around mandatory IFRS adoption in the EU, but not for other countries. The liquidity effects are not explained by other concurrent regulatory changes in the EU, country-level shocks, or the choice of the benchmark sample.

4.2. Test II: IFRS Adoption versus Within-EU Levels of and Changes in Enforcement

As discussed in Section 2, the EU's IAS Regulation also requires member states to take appropriate measures to ensure compliance with IFRS. In response, several countries implemented substantial changes to financial reporting enforcement around the same time IFRS reporting became mandatory, and hence in these countries the IFRS indicator likely captures the effect of both the IFRS mandate and the enforcement changes. We use the switch to a proactive review process of financial statements as a proxy for concurrent changes in reporting enforcement. Five countries implemented a proactive review process in 2005, which likely became effective with the release of the first mandatory IFRS financial statements (Finland, Germany, the Netherlands, Norway, and the U.K.). In these five countries, we cannot disentangle the liquidity effects of IFRS adoption from enforcement changes. Thus, IFRS and

¹⁷ Because the EU directives like the MAD enter into force as of a given date and instantly affect all sample firms in a country, we cannot separately identify their liquidity effects once we apply within-country estimation.

enforcement changes are one bundle. However, we can compare the effects around the IFRS mandate in countries with such bundling with the effects in countries without concurrent enforcement changes. This analysis should provide a first estimate of the impact of such concurrent changes in enforcement. Specifically, we estimate Eq. (2), which distinguishes between EU countries that bundled the IFRS mandate with proactive reviews ($IFRS_{EU_ENF}$), the remaining EU countries ($IFRS_{EU_nonENF}$), and IFRS adoption countries outside the EU ($IFRS_{non-EU}$). As Model 1 in Table 4 shows, bid-ask spreads (Panel A) and zero return days (Panel B) significantly decrease in the five EU countries with bundled IFRS adoption. Such reduction in bid-ask spreads is neither present in the other EU countries (in which the review process took effect at another time than when IFRS was adopted or has yet to be instituted), nor outside the EU. For zero returns the effect is negative in the remaining EU countries, but significantly smaller than in the five countries with bundled IFRS adoption. These results remain virtually the same when controlling for other EU-wide directives under the FSAP (not tabulated).

The evidence so far is consistent with concurrent enforcement changes driving the liquidity increases documented around IFRS adoption. Yet, the results are also consistent with IFRS reporting having an effect only in countries with high regulatory quality that are able and willing to enforce IFRS compliance. Because the five EU member states with bundled IFRS adoption are all commonly classified as high regulatory quality countries, the lack of or weaker effects in countries without concurrent reporting enforcement could be due to the fact that countries with low regulatory quality are also included in this group. This is important because the former explanation implies that IFRS reporting per se has no or little liquidity effects whereas the latter explanation suggests that IFRS has an effect but only in countries with strong institutions and

regulatory quality. To discriminate between the two, we examine the role that regulatory quality (and other institutional proxies) plays for the estimated liquidity effects around IFRS adoption.

In Model 2 of Table 4 we split all treatment sample countries (EU and non-EU) into two groups based on the median value of the regulatory quality index taken from Kaufmann et al. (2009).¹⁸ We then estimate the liquidity effects of IFRS adoption in high ($IFRS_{High}$) and low ($IFRS_{Low}$) regulatory quality countries using two non-overlapping indicator variables. We find a negative association between IFRS adoption and both liquidity variables in countries with high regulatory quality, but the coefficient is statistically significant only for zero returns.¹⁹ IFRS adoption has no liquidity effects in low regulatory quality countries. Next, we condition on both regulatory quality and EU membership and hence, form four subgroups: EU countries with high regulatory quality ($IFRS_{EU_High}$), EU countries with low regulatory quality ($IFRS_{EU_Low}$), and the same two groups for non-EU countries ($IFRS_{non-EU_High}$ and $IFRS_{non-EU_Low}$). As the results for Model 3 indicate, only the $IFRS_{EU_High}$ coefficient is significantly negative (and different from the other IFRS coefficients). Since the five countries with bundled IFRS adoption are part of the $IFRS_{EU_High}$ group, these results still do not allow us to disentangle the level of enforcement from concurrent changes in reporting enforcement.

Thus, in Models 4 and 5, we exploit the variation in regulatory quality among the remaining EU countries (i.e., the ones that do not bundle proactive reviews with mandatory IFRS adoption), and further break up the $IFRS_{EU_High}$ coefficient into $IFRS_{EU_ENF}$ (the five EU members with bundled IFRS adoption) and $IFRS_{EU_High_nonENF}$ (the high regulatory quality countries among the

¹⁸ We obtain very similar results and draw the same conclusions when we use three alternative proxies for the strength of institutions that enforce IFRS compliance (results not tabulated): (i) the *Rule of Law* Index from La Porta et al. (1997), (ii) the *Public Enforcement* index from La Porta et al. (2006), and (iii) the *Anti-Self-Dealing* index from Djankov et al. (2008).

¹⁹ The lack of significance is likely explained by our conservative clustering at the country level. IFRS studies generally cluster at the firm or industry level, in which case the difference between $IFRS_{High}$ and $IFRS_{Low}$ is significant for both liquidity variables (not tabulated).

remaining EU member states). This split lets us separate the levels effect, which should affect both subsets, from the changes effect, which should only be present in the five countries with bundling. We present results for either the three-trend fixed effects structure (Model 4) or using within-country estimation (Model 5). Results from both models indicate that the liquidity benefits are primarily concentrated in the five EU countries with concurrent reviews. The $IFRS_{EU_ENF}$ coefficient is always significantly more negative than the coefficients for any other subgroup. In the bid-ask spreads regressions, none of the other IFRS coefficients are significantly negative, whereas the $IFRS_{EU_High_nonENF}$ coefficient is negative and significant in the zero returns regression.

Overall, the evidence in Table 4 suggests that the liquidity effects around IFRS adoption are primarily driven by concurrent changes in reporting enforcement. High regulatory quality and strong enforcement levels might be a necessary condition, but do not appear to be sufficient for liquidity benefits to realize around the IFRS mandate. Thus, the interpretation in much of the prior literature that there are IFRS effects as long as the standards are properly implemented in countries with strong legal regimes and high regulatory quality is too simple. In fact, the switch to IFRS could have little effect.

4.3. Test III: Changes in Enforcement Across Voluntary and Mandatory IFRS Adopters

As an alternative test to separate the effects of IFRS adoption and changes in financial reporting enforcement, we exploit the fact that voluntary IFRS adopters (i.e., firms that switched to IFRS reporting before 2005) are not affected by the IFRS mandate, but are subject to the newly introduced proactive review process. If enforcement changes are the primary driver of the liquidity effects, we also expect voluntary adopters to exhibit a reduction in spreads and zero returns.

To test this conjecture, we split the firms in EU countries with bundled IFRS adoption and the firms in the remaining EU countries into those that adopted IFRS before 2005 and those that reported under IFRS for the first time when the mandate took effect. More specifically, we break up the $IFRS_{EU_ENF}$ and $IFRS_{EU_nonENF}$ coefficients from Eq. (2) into non-overlapping binary indicators for voluntary ($vol_IFRS_{EU_ENF}$ and $vol_IFRS_{EU_nonENF}$) and first-time mandatory adopters ($man_IFRS_{EU_ENF}$ and $man_IFRS_{EU_nonENF}$). Table 5 reports results for three-trend fixed effects structure (Model 1) and the within-country estimation (Model 2). Using bid-ask spreads and zero return days, voluntary as well as mandatory IFRS adopters experience a significant increase in liquidity, but only if domiciled in the five EU countries in which IFRS adoption is bundled with enforcement changes. At the same time, the liquidity effects for voluntary and mandatory adopters in these countries are not distinguishable from each other (i.e., $vol_IFRS_{EU_ENF} = man_IFRS_{EU_ENF}$). These findings suggest that the concurrent enforcement changes play an important, if not dominant, role for the liquidity effects around IFRS adoption.

These results also speak to the existence of spillover or network effects from the IFRS mandate on voluntary adopters (e.g., due to comparability effects). As Daske et al. (2008) point out, the liquidity improvements for voluntary IFRS adopters in the year of the mandate could be due to concurrent enforcement changes *or* to network effects when mandatory adopters shift to the same accounting standards as the mandatory adopters make voluntary adopters more comparable. Unlike Daske et al. (2008), our setting lets us distinguish between these two alternative explanations because we have cross-sectional variation in the enforcement changes. Our evidence that the liquidity effects are similar for voluntary and mandatory adopters and present only in the five countries that bundle proactive reviews with IFRS adoption is more consistent with changes in reporting enforcement causing the liquidity improvements. If the

liquidity improvements were due to network effects, they should occur across all countries and regardless of whether IFRS adoption is bundled with enforcement changes or not.²⁰ Thus, our finding suggests that network effects are likely small.

4.4. Test IV: Bundling versus Unbundling of IFRS Adoption with Proactive Reviews

In a final set of analyses, we exploit that some EU countries implemented a proactive review procedure at a different time than the IFRS mandate. For these countries, we should be able to empirically separate the effects of mandatory IFRS reporting from the changes in the review process because they are not implemented concurrently and hence initially apply to financial statements from different fiscal years. There are five EU countries that initiate proactive reviews during our sample period but separately from IFRS adoption (Estonia, Hungary, Ireland, Lithuania, and Sweden). With the exception of Sweden, they are all relatively small, and we only have about 10,000 firm-quarter observations, reducing the power of this test. Nevertheless, we try to exploit this variation to gauge the relative importance of the IFRS mandate and the changes in reporting enforcement.

We first estimate the liquidity effects of proactive reviews in the EU on a stand-alone basis, regardless of when they took place over the sample period. Model 1 in Table 6 reports the results of this analysis. The coefficient on $Reviews_{EU}$ is significantly negative for bid-ask spreads and zero returns, confirming the results in prior tables. We note that the initiation timing of proactive reviews is more clustered than IFRS adoption (see also Figure 1) and therefore estimate this analysis only using the three-trend quarter-year fixed effects structure.²¹ The

²⁰ Following Daske et al. (2008), Table 7, we also split the IFRS observations in the EU into observations from industries with a high or a low proportion of voluntary IFRS adopters prior to the mandate. If positive externalities are present, we expect the liquidity effects for the voluntary adopters to be greater in industries with a low prior adoption rate. We do not find evidence of such a differential reaction (results not tabulated).

²¹ When we use within-country estimation for the models in Table 6, all our variables of interest, except $IFRS_{EU_ENF}$, are largely insignificant. This finding likely obtains because there is little within-country variation

evidence suggests that changes in reporting enforcement are associated with an increase in market liquidity.

Next, we jointly estimate the effect of proactive reviews and IFRS adoption, but only in countries in which they are not bundled. More specifically, we expand Eq. (2) with a binary indicator variable that captures the initiation of reviews in EU countries that do not bundle enforcement changes and IFRS adoption ($Reviews_{EU_nonENF}$), and report the results in Model 2. We find lower bid-ask spreads and fewer zero return days following the introduction of proactive reviews, although the coefficient in the spread regression is only marginally significant (p-value of 7 percent, one-sided). At the same time, IFRS adoption is significantly negatively related with zero returns in the EU countries without bundled reviews, but not with bid-ask spreads. To investigate this further, we split the $IFRS_{EU_nonENF}$ coefficient into (i) IFRS observations from countries that introduced proactive reviews at a different time than when they adopted IFRS ($IFRS_{EU_nonENF1}$), and (ii) IFRS observations from countries that did not change their reporting enforcement over the sample period ($IFRS_{EU_nonENF2}$). This specification allows us to assess whether the liquidity effects differ in countries in which firms perhaps anticipate that enforcement of financial reporting is going to be tighter in the future. We do not find evidence for this conjecture. The coefficient on $IFRS_{EU_nonENF1}$ is not significantly different from the coefficient on $IFRS_{EU_nonENF2}$ for both liquidity measures, even though for zero returns we again find a significant improvement in liquidity around IFRS adoption.

Overall, the results in Table 6 are mixed across the two liquidity proxies. The spread regressions suggest that the effects stem entirely from the initiation of proactive reviews, but they are not precisely estimated. The zero-return regressions suggest that both the IFRS mandate

in fiscal-year ends left among the few and relatively small countries initiating proactive reviews but not bundling them with IFRS adoption.

and the enforcement changes are associated with modest liquidity effects. Thus, while these results do not rule out that the move to IFRS plays a role for the observed liquidity changes, the general tenor of the results suggests that enforcement changes play an important, if not dominant, role for the documented liquidity effects around the IFRS mandate.

5. Conclusion

This paper examines the underlying sources of the capital-market benefits around the introduction of mandatory IFRS reporting, which prior work has documented. Prior work also shows that the effects around IFRS adoption are significantly stronger in countries with stricter and better functioning legal systems, and that they are stronger in the EU than in other regions of the world. We argue that this evidence is consistent with several interpretations and that it is still an open question to what extent these positive effects around mandatory IFRS adoption are indeed attributable to the switch to arguably better, more capital-market oriented, and globally harmonized accounting standards.

We focus on market liquidity and rely on within- and across-country variation in the timing of IFRS adoption and of other institutional changes to disentangle several possible explanations. Specifically, we explore whether (i) the switch from local GAAP to IFRS reporting played a primary role for the observed capital-market benefits; (ii) the introduction of IFRS had capital-market benefits, but only in countries with strong institutions and legal enforcement; or (iii) the switch to IFRS reporting itself had little or no effect and, instead, concurrent changes to countries' institutions drive the observed capital-market benefits.

We show that, across all countries, mandatory IFRS reporting had little impact on liquidity. Consistent with prior work, the liquidity effects are concentrated in the EU. When we probe deeper, we find that the liquidity effects are limited to only five EU countries that started to

proactively review financial statements concurrent with the introduction of IFRS. Liquidity generally does not increase in the other EU member states even if they have strong legal systems or a proven track record for implementing regulation and government policies. Thus, it does not appear to be the case that, in general, the IFRS mandate has an impact as long as countries have strong legal institutions and high quality regulatory quality.

Furthermore, the introduction of proactive reviews in some EU countries largely explains the liquidity effects for voluntary IFRS adopters around the IFRS mandate. For these firms, the standards do not change around the mandate but they are affected by countries' enforcement changes. We show that the liquidity benefits do not extend to voluntary adopters in countries without changes in reporting enforcement (or are much smaller). This differential reaction among voluntary adopters makes it unlikely that comparability (or other spillover) effects from the mandate are responsible for the findings as otherwise we should see them for all voluntary adopters. Thus, the results suggest that changes in financial reporting enforcement are a primary source of the observed liquidity changes.

In a final set of analyses, we exploit that some EU countries moved to a proactive review process at a different time than the IFRS mandate. For these countries, the effects of mandatory IFRS reporting and changes in the review process are potentially separable because they initially apply to financial statements from different fiscal years. When we focus on such countries, we can estimate separate coefficients for the effects of the IFRS mandate and the enforcement changes. The spread regressions suggest that the liquidity effects stem entirely from the enforcement changes, but the coefficients likely are not precisely estimated. The zero-return regressions suggest that both the IFRS mandate and the enforcement changes are associated with modest liquidity effects. Thus, while these results do not rule out that the move to IFRS or

countries' institutional environments play a role for the observed liquidity changes, the effects appear to be largely attributable to changes in financial reporting enforcement.

In sum, our findings show that the liquidity benefits around the IFRS mandate are much more limited than previously thought, extending primarily to countries with major enforcement changes. The paper suggests that we need to revisit prior findings that partition samples based on cross-sectional differences in countries' legal frameworks and should pay special attention to institutional changes around the IFRS mandate. An important caveat about our study is that the analysis focuses on market liquidity. We need more research to assess whether the results extend to other capital-market effects. However, it is important to keep the reasoning for this focus in mind. Liquidity can be measured over short intervals and with reasonably high frequency, which in turn allows us to disentangle the effects of the IFRS mandate, enforcement changes and other institutional effects. Our analysis is difficult to conduct with slow-moving outcomes and with variables that are highly anticipatory in nature (like stock returns or the cost of capital).

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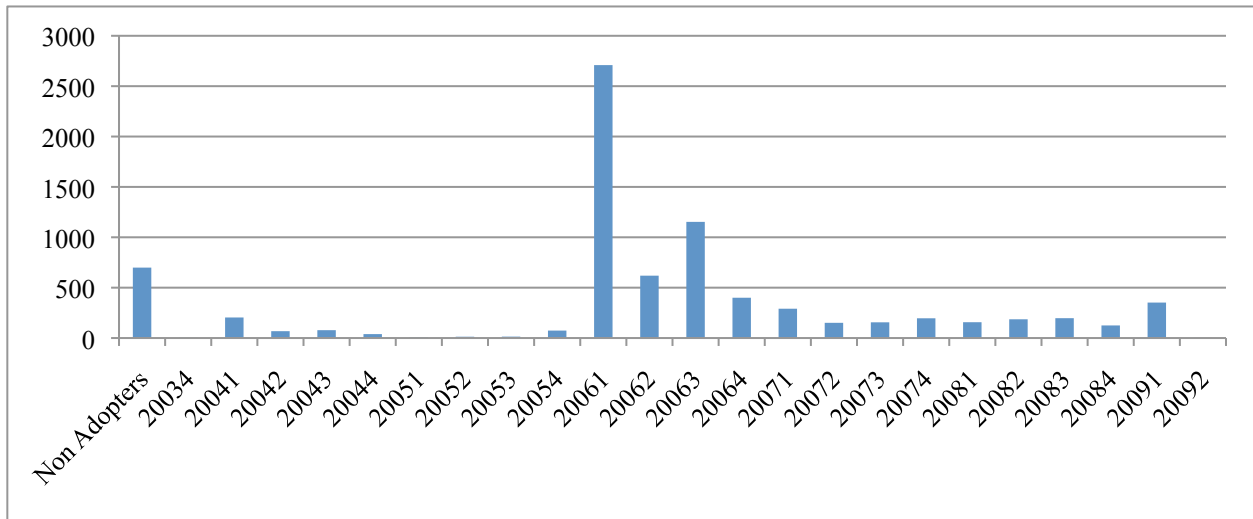
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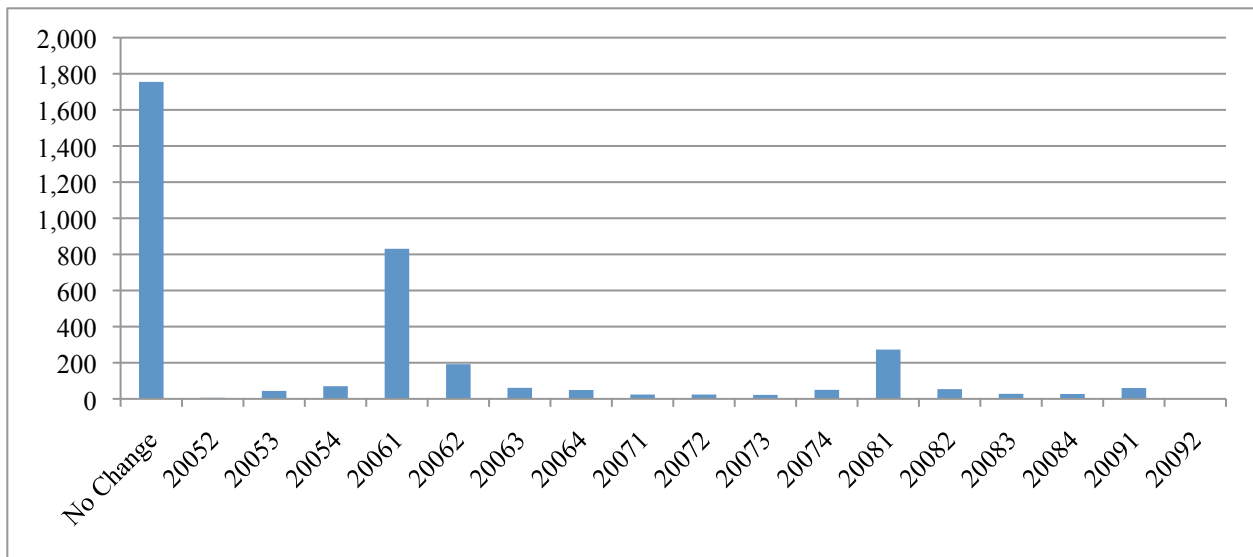
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Figure 1: Time-Series Variation of Mandatory IFRS Adoption and Proactive Reviews

Panel A: Time-Series Pattern of First-Time Mandatory IFRS Adoption



Panel B: Time-Series Pattern of Initiation of Proactive Reviews



The figure illustrates the time-series variation in first-time mandatory IFRS adoption (Panel A) and in the initiation of proactive reviews (Panel B), which we use for our identification strategy. In Panel A, the sample consists of all first-time mandatory IFRS adopters (with data available in Worldscope and Datastream) from 35 countries (EU and non-EU) over the 2001 to 2009 period. We determine the beginning of IFRS reporting as the calendar quarter immediately following the fiscal-year end after the IFRS mandate took effect. In Panel B, the sample comprises all firms in the 24 EU countries with data available. We determine the initiation of proactive reviews as the calendar quarter immediately following the first fiscal-year end after the local supervisory authority had adjusted its review procedures of financial statement information. The regulatory change affects all sample firms in a given country.

Figure 2: Research Strategy to Disentangle Mandatory IFRS Adoption Effects

Test I: IFRS Adoption Globally versus in the EU

		IFRS Reporting	
		Yes	No
		IFRS	Benchmark Observations

		IFRS Reporting	
		Yes	No
EU Membership	Yes	IFRS_{EU}	Benchmark Observations
	No	IFRS_{non-EU}	

Test II: IFRS Adoption versus Within EU Levels of and Changes in Enforcement

		IFRS Reporting		
		IFRS & Bundled with Reviews		No
		Yes	No	No
EU Membership	Yes	IFRS_{EU_ENF}	IFRS_{EU_nonENF}	Benchmark Observations
	No	IFRS_{non-EU}		

		IFRS Reporting		
		Yes	No	
Regulatory Quality	High	IFRS_{High}		Benchmark Observations
	Low	IFRS_{Low}		

		IFRS Reporting		
		IFRS & EU Membership		No
		Yes	No	No
Regulatory Quality	High	IFRS_{EU_High}	IFRS_{non-EU_High}	Benchmark Observations
	Low	IFRS_{EU_Low}	IFRS_{non-EU_Low}	

		IFRS Reporting		
		IFRS & EU Membership		No
		Yes	No	No
Regulatory Quality	High	IFRS_{EU_ENF*}	IFRS_{non-EU_High}	Benchmark Observations
	Low	IFRS_{EU_High_nonENF}	IFRS_{non-EU_Low}	

* IFRS Bundled with Reviews

Test III: Changes in Enforcement Across Voluntary and Mandatory IFRS Adopters

		IFRS Reporting		
		IFRS & Bundled with Reviews		No
		Yes	No	No
EU Membership	Yes	vol_IFRS_{EU_ENF*}	vol_IFRS_{EU_nonENF*}	Benchmark Observations
	No	IFRS_{non-EU}		

* Voluntary IFRS Adopters ** Mandatory IFRS Adopters

Test IV: Bundling versus Unbundling of IFRS Adoption with Proactive Reviews

		IFRS Reporting		
		IFRS & Bundled with Reviews		No
		Yes	No	No
EU Membership	Yes	IFRS_{EU_ENF}	IFRS_{EU_nonENF} Reviews_{EU_nonENF*}	Benchmark Observations
	No	IFRS_{non-EU}		

* Reviews not Bundled with IFRS

		IFRS Reporting		
		IFRS & Bundled with Reviews		No
		Yes	No	No
EU Membership	Yes	IFRS_{EU_ENF}	IFRS_{EU_nonENF1/2**} Reviews_{EU_nonENF*}	Benchmark Observations
	No	IFRS_{non-EU}		

* Reviews not Bundled with IFRS

** nonENF1 = Review Countries; nonENF2 = no Review Countries

Predictions (under the alternative hypothesis):

 = Significant increase in liquidity if bundling of proactive reviews with IFRS adoption is primary driver of market effects.

(continued)

Figure 2 (continued)

The figure illustrates our research strategy to disentangle the liquidity effects of mandatory IFRS adoption, the level of enforcement, and concurrent changes in enforcement. For each empirical test, we partition the sample into various subsets (represented by a box containing the respective regression coefficient). We utilize four main sources of variation: (i) whether firms in a country are subject to IFRS reporting (*IFRS/Benchmark Observations*), (ii) membership in the EU (*EU/non-EU*), (iii) whether IFRS adoption is bundled with proactive reviews of financial statements (*ENF/nonENF*), and (iv) a country's regulatory quality (*High/Low*). In some analyses we further distinguish between firms that voluntarily adopted IFRS before 2005 and first-time mandatory adopters (*vol/man*), we separately estimate the liquidity effects of proactively reviewing financial statements (*Reviews*), or we split the countries that did not bundle IFRS adoption with proactive reviews into countries with and without changes in the review procedures over the sample period (*nonENF1/nonENF2*). The figure also indicates for which subset of observations we predict an increase in liquidity under the alternative hypothesis that concurrent enforcement changes are the primary driver of the IFRS adoption effects.

Table 1: Sample Composition and Institutional Variables by Country (Treatment Sample)

Country	Liquidity Measures		Institutional Variables			
	Bid-Ask Spreads (N)	Zero Returns (N)	Adoption of Mandatory IFRS Reporting	Initiation of Proactive Reviews (ENF)	Regulatory Quality 2003	
<i>European Union Countries:</i>						
Austria	1,201	1,382	12/31/2005	no change	(0)	1.52 (1)
Belgium	3,250	3,282	12/31/2005	no change	(0)	1.36 (1)
Czech Republic	156	196	12/31/2005	no change	(0)	1.12 (0)
Denmark	4,802	4,899	12/31/2005	no change	(0)	1.79 (1)
Estonia	146	171	12/31/2005	2003 Q3	(0)	1.40 (1)
Finland	4,056	4,093	12/31/2005	2005 Q1	(1)	1.90 (1)
France	15,817	16,181	12/31/2005	no change	(0)	1.18 (0)
Germany	8,296	8,474	12/31/2005	2005 Q4	(1)	1.51 (1)
Greece	n.a.	9,237	12/31/2005	no change	(0)	1.01 (0)
Hungary	674	716	12/31/2005	2008 Q1	(0)	1.08 (0)
Iceland	89	95	12/31/2005	no change	(0)	1.67 (1)
Ireland	629	656	12/31/2005	2007 Q3	(0)	1.66 (1)
Italy	7,569	7,848	12/31/2005	no change	(0)	1.02 (0)
Lithuania	71	124	12/31/2005	2007 Q4	(0)	1.10 (0)
Luxembourg	11	43	12/31/2005	no change	(0)	1.94 (1)
Netherlands	3,443	3,454	12/31/2005	2005 Q4	(1)	1.76 (1)
Norway	4,897	5,002	12/31/2005	2005 Q4	(1)	1.39 (1)
Poland	5,454	6,067	12/31/2005	no change	(0)	0.61 (0)
Portugal	1,361	1,394	12/31/2005	no change	(0)	1.21 (0)
Slovakia	63	73	12/31/2005	no change	(0)	0.95 (0)
Slovenia	208	365	12/31/2005	no change	(0)	0.88 (0)
Spain	3,195	3,443	12/31/2005	no change	(0)	1.29 (1)
Sweden	8,071	8,408	12/31/2005	2007 Q3	(0)	1.69 (1)
United Kingdom	18,809	19,160	12/31/2005	2005 Q2	(1)	1.68 (1)
<i>IFRS Adoption Countries Outside the European Union:</i>						
Abu Dhabi	308	566	12/31/2003	n.a.		0.82 (0)
Australia	31,543	35,797	12/31/2005	n.a.		1.60 (1)
Hong Kong	23,221	25,514	12/31/2005	n.a.		1.76 (1)
Israel	385	3,135	12/31/2008	n.a.		0.91 (0)
New Zealand	3,060	3,534	12/31/2007	n.a.		1.71 (1)
Pakistan	722	3,726	12/31/2007	n.a.		-0.73 (0)
Philippines	4,495	4,761	12/31/2005	n.a.		-0.06 (0)
Singapore	14,842	16,090	12/31/2003	n.a.		1.84 (1)
South Africa	6,635	7,850	12/31/2005	n.a.		0.58 (0)
Switzerland	5,926	6,198	12/31/2005	n.a.		1.63 (1)
Turkey	5,841	7,461	12/31/2006	n.a.		0.08 (0)

The treatment sample consists of all countries in and outside the European Union (EU), which mandated IFRS reporting before 2009. We also include Iceland and Norway from the European Economic Area (EEA) in the EU sample, as they agreed to adopt the EU capital market directives in their entirety. The sample comprises all firm-quarter observations over the 2001 to 2009 period with liquidity and control variable data available in Datastream and accounting standards information in Worldscope. We exclude firms reporting under U.S. GAAP, cross-listed in the U.S., with market values of equity below US\$ 5 million, and trading on an unregulated EU market. We present the number of firm-quarter observations for the two liquidity measures used in the analysis: *Bid-Ask Spread* is the quarterly median quoted spread. *Zero Returns* is the proportion of trading days with zero daily stock returns in a quarter. We present the following three institutional variables: (i) the dates when IFRS reporting became mandatory in a country (Daske et al. 2008), (ii) the quarter when local supervisory authorities shifted from reactively reviewing financial statements to a proactive review process (source: self-constructed survey of supervisory authorities and audit firms), and (iii) the *Regulatory Quality* index taken from Kaufman et al. (2009) and measured as of 2003. We also indicate the five countries that bundled mandatory IFRS adoption with proactive reviews (*ENF* = 1), and the countries with high (1) or low (0) regulatory quality based on splitting the treatment sample by the median.

Table 2: Descriptive Statistics for Variables Used in the Liquidity Regressions

	<i>Mean</i>	<i>Std. Dev.</i>	<i>P1</i>	<i>P25</i>	<i>Median</i>	<i>P75</i>	<i>P99</i>
<i>Bid-Ask Spread Sample (N= 613,761):</i>							
Bid-Ask Spread _{<i>t</i>}	0.026	0.046	0.001	0.004	0.010	0.027	0.247
Market Value _{<i>t-4</i>}	1,158	7,701	3	36	126	478	17,207
Share Turnover _{<i>t-4</i>}	0.003	0.004	0.000	0.000	0.001	0.004	0.022
Return Variability _{<i>t-4</i>}	0.027	0.013	0.007	0.017	0.025	0.035	0.066
<i>Zero Returns Sample (N= 762,110):</i>							
Zero Returns _{<i>t</i>}	0.243	0.230	0.000	0.077	0.154	0.338	0.923
Market Value _{<i>t-4</i>}	1,098	7,662	2	30	105	414	16,625
Share Turnover _{<i>t-4</i>}	0.003	0.004	0.000	0.000	0.001	0.003	0.022
Return Variability _{<i>t-4</i>}	0.028	0.014	0.007	0.018	0.026	0.036	0.068

The sample consists of all firm-quarter observations with liquidity and control variable data available in Datastream and accounting standards information in Worldscope from up to 35 IFRS treatment countries and 24 benchmark countries over the 2001 to 2009 period. The table presents descriptive statistics for the dependent variables and the firm-level independent variables used in the analyses. The *Bid-Ask Spread* is the quarterly median quoted spread (i.e., difference between the bid and ask price divided by the mid-point and measured at the end of each trading day). *Zero Returns* is the proportion of trading days with zero daily stock returns out of all potential trading days in a given quarter. *Market Value* is stock price times the number of shares outstanding (in US\$ million) measured at the end of the quarter. *Share Turnover* is the quarterly median of the daily turnover (i.e., US\$ trading volume divided by the market value at the end of each trading day). We compute *Return Variability* as the standard deviation of daily stock returns in a given quarter. All variables are truncated at the 1st and 99th percentile. The subscript *t* indicates the calendar quarter of variable measurement.

Table 3: Liquidity Effects of IFRS Adoption Globally versus in the EU*Panel A: Ln(Bid-Ask Spread) as the Dependent Variable*

	<i>Global IFRS</i>		<i>EU vs. Non-EU IFRS</i>			<i>Treatment Countries Only</i>	
	<i>One Quarter- Year Trend</i>	<i>Two Quarter- Year Trends</i>	<i>Three Quarter- Year Trends</i>	<i>Other FSAP Directives</i>	<i>Within Country Estimation</i>	<i>Three Quarter- Year Trends</i>	<i>Within Country Estimation</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>IFRS Variables:</i>							
IFRS	0.040 (0.39)	-0.008 (-0.39)	–	–	–	–	–
IFRS _{EU}	–	–	-0.174** (-2.42)	-0.165** (-2.34)	-0.114** (-1.97)	-0.196*** (-3.19)	-0.132** (-2.49)
IFRS _{non-EU}	–	–	0.087 (1.11)	0.087 (1.11)	0.057 (0.67)	0.087 (1.07)	0.060 (0.69)
<i>F-test for Differences across Coefficients (p-value):</i>							
IFRS _{EU} = IFRS _{non-EU}	–	–	0.02	0.02	0.10	0.01	0.09
<i>Firm-level Control Variables:</i>							
Ln(Market Value _{<i>t-4</i>})	-0.385*** (-26.40)	-0.385*** (-26.57)	-0.385*** (-26.62)	-0.385*** (-26.66)	-0.387*** (-29.33)	-0.388*** (-25.15)	-0.391*** (-26.22)
Ln(Share Turnover _{<i>t-4</i>})	-0.307*** (-9.04)	-0.306*** (-9.05)	-0.306*** (-9.03)	-0.307*** (-9.05)	-0.307*** (-9.03)	-0.253*** (-17.57)	-0.260*** (-16.16)
Ln(Return Variability _{<i>t-4</i>})	0.388*** (6.92)	0.386*** (7.12)	0.383*** (6.92)	0.383*** (6.92)	0.384*** (7.06)	0.280*** (8.70)	0.273*** (7.73)
<i>Other FSAP Directives:</i>							
MAD	–	–	–	-0.231*** (-3.52)	–	–	–
TPD	–	–	–	-0.308** (-2.33)	–	–	–
Takeover	–	–	–	0.121* (1.68)	–	–	–
MiFID	–	–	–	0.021 (0.12)	–	–	–
PROSP	–	–	–	0.101 (1.34)	–	–	–
<i>Fixed Effects:</i>							
Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Year	Global	Global & IFRS Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries	For Each Country Separately	Global, IFRS & EU Countries	For Each Country Separately
R-squared	0.766	0.767	0.768	0.769	0.795	0.716	0.747
Observations	613,761	613,761	613,761	613,761	613,761	189,246	189,246

(continued)

Table 3 (continued)

Panel B: Zero Returns as the Dependent Variable

	<i>Global IFRS</i>		<i>EU vs. Non-EU IFRS</i>			<i>Treatment Countries Only</i>	
	<i>One Quarter- Year Trend</i>	<i>Two Quarter- Year Trends</i>	<i>Three Quarter- Year Trends</i>	<i>Other FSAP Directives</i>	<i>Within Country Estimation</i>	<i>Three Quarter- Year Trends</i>	<i>Within Country Estimation</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>IFRS Variables:</i>							
IFRS	-0.036*	-0.035*	–	–	–	–	–
	(-1.90)	(-1.75)					
IFRS _{EU}	–	–	-0.086***	-0.087***	-0.098***	-0.059***	-0.067***
			(-3.65)	(-3.63)	(-4.16)	(-2.85)	(-3.17)
IFRS _{non-EU}	–	–	-0.012	-0.012	-0.006	-0.008	0.010
			(-0.53)	(-0.53)	(-0.33)	(-0.36)	(0.49)
<i>F-test for Differences across Coefficients (p-value):</i>							
IFRS _{EU} = IFRS _{non-EU}	–	–	0.02	0.02	0.00	0.07	0.02
<i>Firm-level Control Variables:</i>							
Ln(Market Value _{<i>t-4</i>})	-0.057***	-0.057***	-0.057***	-0.057***	-0.057***	-0.077***	-0.077***
	(-11.39)	(-11.30)	(-11.28)	(-11.28)	(-10.91)	(-12.00)	(-11.95)
Ln(Share Turnover _{<i>t-4</i>})	-0.047***	-0.047***	-0.047***	-0.047***	-0.049***	-0.056***	-0.057***
	(-19.34)	(-19.42)	(-19.40)	(-19.38)	(-20.98)	(-15.89)	(-16.44)
Ln(Return Variability _{<i>t-4</i>})	-0.034***	-0.035***	-0.035***	-0.035***	-0.041***	-0.046***	-0.048***
	(-4.12)	(-4.12)	(-4.16)	(-4.16)	(-5.39)	(-3.86)	(-4.08)
<i>Other FSAP Directives:</i>							
MAD	–	–	–	-0.040***	–	–	–
				(-3.73)			
TPD	–	–	–	-0.037***	–	–	–
				(-2.67)			
Takeover	–	–	–	-0.022**	–	–	–
				(-2.46)			
MiFID	–	–	–	-0.003	–	–	–
				(-0.32)			
PROSP	–	–	–	-0.029***	–	–	–
				(-3.00)			
<i>Fixed Effects:</i>							
Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Year	Global	Global & IFRS Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries	For Each Country Separately	Global, IFRS & EU Countries	For Each Country Separately
R-squared	0.520	0.521	0.523	0.523	0.549	0.533	0.561
Observations	762,110	762,110	762,110	762,110	762,110	215,489	215,489

(continued)

Table 3 (continued)

The sample comprises firm-quarter observations from up to 35 (24) IFRS treatment (benchmark) countries over the 2001 to 2009 period. We use two dependent variables: (1) the *Bid-Ask Spread* measured as the quarterly median quoted spread (Panel A), and (2) *Zero Returns* measured as the proportion of trading days with zero daily stock returns in a quarter (Panel B). *IFRS* is a binary indicator variable for firm-quarters with IFRS reporting that takes on the value of '1' beginning in the calendar quarter following the first fiscal-year end after IFRS became mandatory. We identify firms that do not follow IFRS after the mandate based on the "accounting standards followed" field in Worldscope (field 07536). For the analyses in this table we partition the *IFRS* observations into firm-quarters within the EU ($IFRS_{EU}$) and outside the EU ($IFRS_{non-EU}$) using non-overlapping binary indicator variables. For a description of the firm-level controls see Table 2. In Model 4 we also include binary indicator variables for other regulatory changes in the EU, i.e., the Market Abuse Directive (*MAD*), the Transparency Directive (*TPD*), the Takeover Directive (*Takeover*), the Markets in Financial Instruments Directive (*MiFID*), and the Prospectus Directive (*PROSP*). See Christensen et al. 2011 for details. We include country-, Campbell (1996) industry-, and quarter-year-fixed effects (globally, for IFRS countries, EU countries, or each country separately, as indicated in the table) in the regressions, but do not report the coefficients. If indicated, we use the natural log of the raw values, and lag the variables by four quarters. The table reports OLS coefficient estimates and (in parentheses) t-statistics based on robust standard errors that are clustered by country. We also report p-values from Wald tests assessing the statistical significance of the differences across the IFRS coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 4: Liquidity Effects of IFRS Adoption versus Within-EU Levels of and Changes in Enforcement*Panel A: Ln(Bid-Ask Spread) as the Dependent Variable*

	<i>IFRS with or without Bundled Reviews in EU</i>	<i>High vs. Low Regulatory Quality</i>			
		<i>IFRS Countries</i>	<i>EU & non-EU Countries</i>	<i>With or without Reviews</i>	
				<i>EU & non-EU Countries</i>	<i>EU & non-EU Countries</i>
	(1)	(2)	(3)	(4)	(5)
<i>IFRS with Regulatory Quality:</i>					
IFRS _{High}	–	-0.064 (-0.63)	–	–	–
IFRS _{Low}	–	0.117 (1.17)	–	–	–
IFRS _{EU_High}	–	–	-0.298*** (-2.87)	–	–
<i>IFRS with Bundled Reviews in EU:</i>					
IFRS _{EU_ENF}	-0.427*** (-3.18)	–	–	-0.429*** (-3.20)	-0.191*** (-4.16)
<i>IFRS without Bundled Reviews in EU:</i>					
IFRS _{EU_nonENF}	-0.003 (-0.03)	–	–	–	–
IFRS _{EU_High_nonENF}	–	–	–	-0.062 (-0.76)	-0.070 (-1.21)
IFRS _{EU_Low}	–	–	0.035 (0.28)	0.034 (0.26)	-0.066 (-0.57)
<i>IFRS outside EU:</i>					
IFRS _{non-EU}	0.087 (1.11)	–	–	–	–
IFRS _{non-EU_High}	–	–	0.095 (0.92)	0.095 (0.92)	-0.052 (-1.17)
IFRS _{non-EU_Low}	–	–	0.054 (0.47)	0.054 (0.47)	0.209** (2.40)
<i>F-test for Differences across Coefficients (p-value):</i>					
IFRS _{EU_ENF} = IFRS _{EU_nonENF}	0.03	–	–	–	–
IFRS _{High} = IFRS _{Low}	–	0.21	–	–	–
IFRS _{EU_High} = IFRS _{EU_Low}	–	–	0.07	–	–
IFRS _{non-EU_High} = IFRS _{non-EU_Low}	–	–	0.82	–	–
IFRS _{EU_ENF} = IFRS _{EU_High_nonENF}	–	–	–	0.04	0.06
<i>Firm-level Control Variables</i>	Yes	Yes	Yes	Yes	Yes
<i>Fixed Effects:</i>					
Country	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
Quarter-Year	Global, IFRS & EU Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries	For Each Country Separately
R-squared	0.769	0.769	0.769	0.769	0.795
Observations	613,761	613,761	613,761	613,761	613,761

(continued)

Table 4 (Continued)*Panel B: Zero Returns as the Dependent Variable*

	<i>IFRS with or without Bundled Reviews in EU</i>	<i>High vs. Low Regulatory Quality</i>			
		<i>IFRS Countries</i>	<i>EU & non-EU Countries</i>	<i>With or without Reviews</i>	
				<i>EU & non-EU Countries</i>	<i>EU & non-EU Countries</i>
	(1)	(2)	(3)	(4)	(5)
<i>IFRS with Regulatory Quality:</i>					
IFRS _{High}	–	-0.050* (-1.91)	–	–	–
IFRS _{Low}	–	-0.005 (-0.25)	–	–	–
IFRS _{EU_High}	–	–	-0.117*** (-4.60)	–	–
<i>IFRS with Bundled Reviews in EU:</i>					
IFRS _{EU_ENF}	-0.137*** (-5.86)	–	–	-0.137*** (-5.89)	-0.149*** (-6.87)
<i>IFRS without Bundled Reviews in EU:</i>					
IFRS _{EU_nonENF}	-0.056** (-2.08)	–	–	–	–
IFRS _{EU_High_nonENF}	–	–	–	-0.081*** (-2.80)	-0.066*** (-3.05)
IFRS _{EU_Low}	–	–	-0.042 (-1.39)	-0.042 (-1.40)	-0.068 (-1.44)
<i>IFRS outside EU:</i>					
IFRS _{non-EU}	-0.012 (-0.53)	–	–	–	–
IFRS _{non-EU_High}	–	–	-0.013 (-0.43)	-0.013 (-0.43)	-0.029 (-1.35)
IFRS _{non-EU_Low}	–	–	-0.010 (-0.50)	-0.010 (-0.50)	0.025** (2.23)
<i>F-test for Differences across Coefficients (p-value):</i>					
IFRS _{EU_ENF} = IFRS _{EU_nonENF}	0.00	–	–	–	–
IFRS _{High} = IFRS _{Low}	–	0.06	–	–	–
IFRS _{EU_High} = IFRS _{EU_Low}	–	–	0.00	–	–
IFRS _{non-EU_High} = IFRS _{non-EU_Low}	–	–	0.94	–	–
IFRS _{EU_ENF} = IFRS _{EU_High_nonENF}	–	–	–	0.04	0.01
<i>Firm-level Control Variables</i>	Yes	Yes	Yes	Yes	Yes
<i>Fixed Effects:</i>					
Country	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes
Quarter-Year	Global, IFRS & EU Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries	For Each Country Separately
R-squared	0.524	0.523	0.524	0.524	0.549
Observations	762,110	762,110	762,110	762,110	762,110

(continued)

Table 4 (continued)

The sample comprises firm-quarter observations from up to 35 (24) IFRS treatment (benchmark) countries over the 2001 to 2009 period. We use *Bid-Ask Spreads* (Panel A) and *Zero Returns* (Panel B) as dependent variables. *IFRS* is a binary indicator variable for firm-quarters with IFRS reporting. For the analyses in this table we partition the *IFRS* observations into various non-overlapping subsets using binary indicator variables: (i) We distinguish between firms from EU countries that bundled IFRS adoption with proactive reviews ($IFRS_{EU_ENF}$), firms from EU countries with no such bundling ($IFRS_{EU_nonENF}$), and firms from outside the EU ($IFRS_{non-EU}$). (ii) We distinguish between firms from countries with above ($IFRS_{High}$) and below ($IFRS_{Low}$) median values of the *Regulatory Quality* index taken from Kaufman et al. (2009) and measured as of 2003. (iii) We combine EU membership (*EU* vs. *nonEU*) with the regulatory quality index (*High* vs. *Low*) to form four separate groups of firms. (iv) We further break up EU firms from high regulatory quality countries into firms from countries with ($IFRS_{EU_ENF}$) and without ($IFRS_{EU_High_nonENF}$) bundling of IFRS adoption with proactive reviews. Throughout the table, we include the full set of firm-level control variables and fixed effects in the models (see Models 3 and 5 in Table 3), but only report OLS coefficient estimates (t-statistics) for the IFRS variables. We also report p-values from Wald tests assessing the statistical significance of the differences across select IFRS coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 5: Liquidity Effects of Changes in Enforcement Across Voluntary and Mandatory IFRS Adopters

	<i>Ln(Bid-Ask Spread)</i>		<i>Zero Returns</i>	
	<i>Three Quarter- Year Trends</i>	<i>Within Country Estimation</i>	<i>Three Quarter- Year Trends</i>	<i>Within Country Estimation</i>
	(1)	(2)	(1)	(2)
<i>IFRS with Bundled Reviews in EU:</i>				
<i>vol_IFRS</i> _{EU_ENF}	-0.329*** (-4.39)	-0.265*** (-5.23)	-0.164*** (-4.64)	-0.197*** (-4.53)
<i>man_IFRS</i> _{EU_ENF}	-0.441*** (-3.20)	-0.177*** (-3.00)	-0.133*** (-5.37)	-0.141*** (-11.46)
<i>IFRS without Bundled Reviews in EU:</i>				
<i>vol_IFRS</i> _{EU_nonENF}	0.030 (0.28)	-0.070 (-0.73)	-0.047 (-1.60)	-0.055* (-1.74)
<i>man_IFRS</i> _{EU_nonENF}	-0.009 (-0.10)	-0.067 (-0.88)	-0.057** (-2.12)	-0.069** (-2.16)
<i>IFRS outside EU:</i>				
<i>IFRS</i> _{non-EU}	0.087 (1.11)	0.056 (0.67)	-0.012 (-0.53)	-0.006 (-0.33)
<i>F-test for Differences across Coefficients (p-value):</i>				
<i>vol_IFRS</i> _{EU_ENF} = <i>vol_IFRS</i> _{EU_nonENF}	0.00	0.03	0.00	0.01
<i>vol_IFRS</i> _{EU_ENF} = <i>man_IFRS</i> _{EU_ENF}	0.33	0.94	0.39	0.11
<i>Firm-level Control Variables</i>				
<i>Fixed Effects:</i>				
Country	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Quarter-Year	Global, IFRS & EU Countries	For Each Country Separately	Global, IFRS & EU Countries	For Each Country Separately
R-squared	0.769	0.795	0.524	0.549
Observations	613,761	613,761	762,110	762,110

The sample comprises firm-quarter observations from up to 35 (24) IFRS treatment (benchmark) countries over the 2001 to 2009 period. We use *Bid-Ask Spreads* and *Zero Returns* as dependent variables. *IFRS* is a binary indicator variable for firm-quarters with IFRS reporting. For the analyses in this table we partition the *IFRS* observations into various non-overlapping subsets using binary indicator variables. That is, we distinguish between voluntary and first-time mandatory IFRS adopters from EU countries that bundled IFRS adoption with proactive reviews (*vol_IFRS*_{EU_ENF} and *man_IFRS*_{EU_ENF}), voluntary and first-time mandatory IFRS adopters from EU countries with no such bundling (*vol_IFRS*_{EU_nonENF} and *man_IFRS*_{EU_nonENF}), and firms from outside the EU (*IFRS*_{non-EU}). We identify firms that voluntarily switched to IFRS reporting before 2005 based on Daske et al. (2011). Throughout the table, we include the full set of firm-level control variables and fixed effects in the models (see Models 3 and 5 in Table 3), but only report OLS coefficient estimates (t-statistics) for the IFRS variables. We also report p-values from Wald tests assessing the statistical significance of the differences across select IFRS coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 6: Liquidity Effects of Bundling versus Unbundling of IFRS Adoption with Proactive Reviews

	<i>Ln(Bid-Ask Spread)</i>			<i>Zero Returns</i>		
	<i>Proactive Reviews only</i>	<i>IFRS & Unbundled Reviews in EU</i>	<i>IFRS & Unbundled Reviews in EU</i>	<i>Proactive Reviews only</i>	<i>IFRS & Unbundled Reviews in EU</i>	<i>IFRS & Unbundled Reviews in EU</i>
	(1)	(2)	(3)	(1)	(2)	(3)
<i>Proactive Reviews Variables:</i>						
Reviews _{EU}	-0.363*** (-2.64)	–	–	-0.064*** (-2.80)	–	–
Reviews _{EU_nonENF}	–	-0.177 (-1.51)	-0.125 (-1.04)	–	-0.023* (-1.83)	-0.031*** (-2.97)
<i>IFRS with Bundled Reviews in EU:</i>						
IFRS _{EU_ENF}	–	-0.438*** (-3.30)	-0.436*** (-3.30)	–	-0.138*** (-5.90)	-0.138*** (-5.91)
<i>IFRS without Bundled Reviews in EU:</i>						
IFRS _{EU_nonENF}	–	0.002 (0.02)	–	–	-0.055** (-2.05)	–
IFRS _{EU_nonENF1} (Δ Reviews but not bundled)	–	–	-0.073 (-1.48)	–	–	-0.043* (-1.69)
IFRS _{EU_nonENF2} (No change in reviews)	–	–	0.015 (0.14)	–	–	-0.057** (-2.10)
<i>IFRS outside EU:</i>						
IFRS _{non-EU}	–	0.087 (1.11)	0.087 (1.11)	–	-0.012 (-0.53)	-0.012 (-0.53)
<i>Firm-level Control Variables</i>						
Country	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-Year	Global, IFRS & EU Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries	Global, IFRS & EU Countries
R-squared	613,761	613,761	613,761	0.523	0.524	0.524
Observations	0.769	0.769	0.768	762,110	762,110	762,110

(continued)

Table 6 (continued)

The sample comprises firm-quarter observations from up to 35 (24) IFRS treatment (benchmark) countries over the 2001 to 2009 period. We use *Bid-Ask Spreads* and *Zero Returns* as dependent variables. *IFRS* is a binary indicator variable for firm-quarters with IFRS reporting. *Reviews_{EU}* is a binary indicator variable that takes on the value of ‘1’ beginning in the calendar quarter following the first fiscal-year end after proactive reviews took effect. We identify the initiation of proactive reviews in EU countries based on a self-constructed survey of supervisory authorities and audit firms (see Table 1). For the analyses in this table we partition the *IFRS* and *Reviews_{EU}* observations into various subsets using binary indicator variables: (i) We distinguish between observations from EU countries that bundled IFRS adoption with proactive reviews (*IFRS_{EU_ENF}*), IFRS observations as well as review observations from firms in EU countries with no such bundling (*IFRS_{EU_nonENF}* and *Reviews_{EU_nonENF}*), and observations from outside the EU (*IFRS_{non-EU}*). (ii) We further break up the IFRS observations in EU countries with no bundling into observations from countries that instituted a proactive review process but did not bundle it with IFRS adoption (*IFRS_{EU_nonENF1}*) and observations from countries with no change in their review procedures of financial statement information (*IFRS_{EU_nonENF2}*). Throughout the table, we include the full set of firm-level control variables and fixed effects in the models (see Model 3 in Table 3), but only report OLS coefficient estimates (t-statistics) for the IFRS and review variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).