The Liquidity Effects of IFRS Adoption: Did Less Liquid Firms Benefit More?

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Abstract

We investigate whether less liquid firms experienced greater liquidity benefits from mandatory IFRS adoption, as such firms could have benefited the most from increased comparability, consistency, and transparency in accounting practices. Our investigation is important as Christensen et al. (2013) finds benefits only for European Union (EU) firms that concurrently bundled regulatory enforcement changes, concluding that enforcement changes, unobserved other factors, or IFRS adoption could be responsible for the benefits. For EU bundled firms, we find similar liquidity benefits, especially for those firms with the lowest liquidity. In addition, we find similar liquidity benefits for EU firms from high regulatory quality countries, which is also difficult to attribute solely to IFRS adoption due to such countries likely adopting smaller or more gradual concurrent regulatory changes. Moreover, consistent with liquidity benefits being attributable to IFRS adoption, we find evidence of such benefits for EU firms from low regulatory quality countries, with greater benefits for the lowest liquidity firms, and some evidence of such benefits for non-EU firms from low regulatory quality countries. Overall, we provide evidence of liquidity benefits arising from the mandatory adoption of IFRS that are unlikely to be attributable to the effects of other types of changes.

Keywords: *mandatory IFRS adoption, transaction costs, method of moments-quantile regression, liquidity*

Data Availability: *All data are publicly available from the sources identified in the text.*

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I. INTRODUCTION

The mandatory adoption of International Financial Reporting Standards (IFRS) since 2005 was a major shift in financial reporting standards for many large and small countries around the world. Countries moved to mandatory adoption of IFRS in the hope of increasing the comparability, consistency, and transparency of reported financial information worldwide. Before the mandatory adoption of IFRS, accounting standards and rules varied considerably and were often contradictory in their treatment of the measurement of certain income and balance sheet amounts. Increased comparability and consistency (i.e., increased harmonization) was expected to better facilitate the decision making of market participants, such as investors and analysts, when evaluating firms across countries and industries. In addition, increased transparency was expected to arise from improved accounting recognition, measurement, and disclosure rules, leading to fewer opportunities for firms to take advantage of favorable accounting practices and, consequently, more accurate financial statements. These changes arising from mandatory IFRS adoption had the potential to reduce information asymmetry and, accordingly, improve firms' liquidity and cost of capital. In contrast, voluntary IFRS adoption could have the same potential benefit but likely would come at a cost for voluntary adopters if other firms are not required to make similar disclosures (e.g., competitive harm).[1]

At the adoption of mandatory IFRS, prior research finds that firms experienced increased liquidity and a lower cost of capital. In early research, Daske et al. (2008) finds evidence of liquidity increases of between three and six percent in the year of IFRS adoption, as well as cost of equity capital declines and Tobin's q increases in the year prior to adoption, perhaps consistent with anticipatory effects. These differences are observed in relation to firms that did not adopt IFRS by the end of 2005. Daske et al. (2008) also finds evidence that voluntary adopters experience liquidity benefits when IFRS becomes mandatory, raising concerns that concurrent enforcement, governance, auditing changes or other factors led to concurrent liquidity benefits for firms in countries adopting IFRS. Li (2010), using a difference-in-differences design, also finds that mandatory adoption coincided with a reduction in firms' cost of equity capital but only for firms in countries with strong

[1]This would be especially true for firms with a low potential benefit of a liquidity improvement—e.g., firms whose shares are traded infrequently.

legal enforcement. Building off the concerns raised in Daske et al. (2008), Christensen et al. (2013) explore more systematically the possibility that other contemporaneous events are responsible for prior findings related to IFRS adoption. Importantly, the paper provides evidence that liquidity increases are only observed on average for firms in five European Union (EU) countries that concurrently made significant improvements in financial reporting enforcement. Events such as the change in EU directives typically occur at a point in time; therefore, careful research designs using different fiscal year ends for IFRS adoption should be used to obtain identification (see Daske et al. (2008) and Christensen et al. (2013) as examples) and, accordingly, measure the liquidity benefits of mandatory IFRS adoption.

In this study, we look more broadly at the question of whether the mandatory adoption of IFRS improved liquidity by focusing on if less liquid firms, for which illiquidity is likely largely driven by their lack of transparency, experienced greater liquidity improvements after the adoption of IFRS. Less liquid firms are likely to have greater adverse selection costs, which can arise from firms having poor information environments due to financial reporting practices leading to poor recognition and disclosure practices. If mandatory IFRS adoption had a greater effect on such firms, then mandatory IFRS adoption should have improved liquidity to a greater extent and, accordingly, lead to more powerful tests of the role of IFRS adoption on liquidity. Of course, firms in poor information environments could be inherently opaque and not experience larger increases in liquidity after the mandatory adoption of IFRS. That is, investors of such firms face significant uncertainty regarding firms' future performance that accounting policies are unlikely to resolve (e.g., a young biotech firm waiting for regulatory approval for a proposed new drug). Moreover, as Christensen et al. (2013) argues, it is unclear that mandatory adoption of IFRS should have led to capital market benefits. Specifically, IFRS adoption could have led to greater opportunities for managerial manipulation of reported accounting amounts and disclosures relative to that under home country GAAP. Related, as Christensen et al. (2007) notes, for firms from countries that did not allow voluntary adoption of IFRS, mandatory adoption may have resulted in worse financial reporting outcomes relative to those available under their home country GAAP rather than improved financial reporting outcomes as typically assumed—i.e., mandatory adoption could have constrained and, thus, reduced the quality of firms' reporting.

We investigate whether less liquid firms experienced greater liquidity improvements after the adoption of IFRS using quantile regression (e.g., Koenker and Bassett Jr, 1978). Quantile regression allows examination of the relationship between the mandatory adoption of IFRS and liquidity in different quantiles of liquidity, as well as comparisons of those relationships across quantiles. We employ recent innovations from Machado and Silva (2019) that represent the first approach that allows individual fixed effects to affect the entire dependent variable distribution; this is possible through the use of a method of moments estimation approach (MM-QR). Prior approaches (e.g., Canay 2011) only allow individual fixed effects to have an equal effect across all quantiles. Christensen et al. (2013) relies on staggered difference-in-difference (DiD) estimators, a commonly used approach which has recently been subjected to considerable criticism due to the potential for bias in such estimates (e.g., De Chaisemartin and d'Haultfoeuille, 2020; Goodman-Bacon, 2021). To avoid such concerns, we adopt a standard DiD approach using a narrow testing window that allows us to maintain the original country-year-quarter fixed effects from Christensen et al. (2013). The Christensen et al. (2013) country-year-quarter fixed effects is key to our identification of the liquidity effects of mandatory IFRS adoption, as the approach eliminates time period effects such as other economic or regulatory events.

We investigate the change in liquidity after mandatory adoption of IFRS using two measures: the approach developed by Lesmond et al. (1999) (i.e., LOT measure) and later modified by Goyenko et al. (2009)[2] and a liquidity factor based on four different liquidity measures. We differ from Christensen et al. (2013) and use the modified LOT measure because it is conceptually a more comprehensive measure of transaction costs that captures the bid-ask spread, but also trading commissions, fees, taxes, and expected price impact (Lesmond et al. 1999). In addition, we use the modified LOT measure rather than quoted bid-ask spreads, which are examined by Christensen et al. (2013), because quoted bid-ask spreads are problematic in emerging markets Lesmond (2005)—i.e., 10 of the 18 IFRS adopting countries in our sample are emerging markets.[3] We use the liquidity measure following Christensen et al. (2013), as it has the potential to reduce problems with measur-

[2]Zhao and Wang (2015) provides simulation and empirical evidence that the original LOT Mixed measure produces estimates of transaction costs that are biased upwards; in contrast, the modified LOT Y-split measure of Goyenko et al. (2009) does not suffer from such bias.

[3]See subsection 3.2.3 for a detailed discussion of problems with quoted bid-ask spreads in emerging markets.

ing liquidity. The approach relies on factor analysis and four liquidity proxies: the modified LOT measure, quoted bid-ask spreads, proportion of zero return days and the price impact measure of Amihud (2002).

Before conducting our primary tests, we replicate the analyses of Christensen et al. (2013) using our data but using the study's staggered DiD research design and sample selection procedures for the first quarter of 2001 to the end of the fourth quarter of 2009. Consistent with Christensen et al. (2013), we fail to find evidence that the mandatory adoption of IFRS results in a reduction in firms' liquidity. Also, consistent with Christensen et al. (2013), when we examine the liquidity changes of IFRS adoption for firms from EU countries with concurrent changes in enforcement separately from those from other EU countries and non-EU countries, we find that liquidity increases for firms from EU countries with concurrent changes in enforcement and firms from EU countries with prior strong regulatory enforcement—which as Christensen et al. (2013) indicate likely had ongoing gradual or smaller changes in enforcement during mandatory adoption of IFRS.

Using firms from 2005–2007 and the MM-QR approach, we provide evidence that mandatory adoption of IFRS provided greater liquidity benefits for firms with lower liquidity. In our baseline analysis, the liquidity improvement from IFRS adoption is approximately three times greater in magnitude for firms in the 90th percentile of transaction costs compared to those in the 10th percentile. When examining IFRS adoption in EU and non-EU countries separately, we find evidence that the liquidity improvements are significant only for firms from EU countries, especially for those with lower liquidity.

Regarding the primary analysis of Christensen et al. (2013), when dividing the EU countries that concurrently bundled improvements in financial reporting enforcement with IFRS adoption and those that did not, we find evidence of significantly greater liquidity improvements for firms with lower liquidity among firms from EU countries that bundled enforcement changes. We also find similar evidence that firms in EU countries that did not bundle enforcement changes—a contrast to the results in Christensen et al. (2013). These findings suggest that liquidity improvements could be attributable to the accounting changes that accompanied the adoption of IFRS for the firms with the greatest liquidity problems. In additional analysis, we find that firms from countries with high regulatory quality prior to mandatory IFRS adoption experienced improvements in liquidity,

especially for those firms with lower liquidity.

Lastly, when partitioning on EU bundled, EU non-bundled, and non-EU adopters partitioned by regulatory quality, we find evidence of liquidity benefits around mandatory IFRS adoption for firms in both high- and low-regulatory-quality EU countries that did and did not bundle enforcement changes, as well as limited evidence of benefits for low liquidity firms in non-EU countries with low regulatory quality.[4] In addition, we find that the benefits are greater for lower liquidity firms in both bundled and non-bundled EU countries with low regulatory quality. Overall, the evidence of liquidity benefits for EU firms from low regulatory quality countries, with greater benefits for the lowest liquidity firms, and the limited evidence of benefits for firms in non-EU countries with low regulatory quality provide direct evidence of mandatory IFRS adoption resulting in liquidity benefits. Again, our fixed effects research design controls for regulatory, economic, and other concurrent changes that may arise in a country during the event window.

This evidence offers several contributions to prior research that examined the costs and benefits of the worldwide mandatory adoption of IFRS.[5] First, we document that the liquidity benefits of the adoption of IFRS were significantly more concentrated in firms with lower liquidity, consistent with firms with worse information environments benefiting the most from the increased comparability, consistency, and/or transparency arising from IFRS adoption. We find evidence of greater benefits for firms with lower liquidity just in EU countries, however.

Second, using empirical measures and methods recently developed (e.g., the modified LOT measure from Goyenko et al. 2009), we confirm the findings of Christensen et al. (2013) that EU firms that had bundled enforcement changes around the time of mandatory adoption of IFRS experienced an improvement in liquidity following the mandatory adoption of IFRS. More importantly, we find that firms from EU countries that did not face bundled adoption and had low regulatory quality also experienced an improvement in liquidity.[6] This evidence provides the first on average evidence of

[4]We also find evidence of worsening liquidity following IFRS adoption for the highest liquidity firms in non-EU countries with low regulatory quality. This finding is similar to that in Christensen et al. (2013) and our Christensen et al. (2013) replication of worsening liquidity upon IFRS adoption for firms in non-EU countries with low regulatory quality. This evidence could be due to managers of less transparent firms being able to manipulate IFRS reported amounts and disclosures.

[5]Despite mandatory adoption first occurring almost 20 years ago, research investigating the effects of mandatory adoption of IFRS continues as an active area of research (e.g., Jiang et al. 2023; Liu et al. 2023; Kausar and Park 2024; Li et al. 2024).

[6]While we find similar evidence for firms from EU countries with high regulatory quality, as discussed earlier this

liquidity benefits after the mandatory adoption of IFRS that are not confounded by other changes in a country at IFRS adoption—the concern originally raised by Daske et al. (2008). Specifically, our inference of a financial reporting benefit to mandatory IFRS adoption would only be confounded if a regulatory, enforcement, economic, or other type of change in a country occurs in the same quarter as firms' adoption of IFRS but does not occur in that quarter for non-adopting firms from the same country.

Finally, our findings of liquidity benefits from mandatory IFRS adoption for certain types of firms and firms from certain types of countries help to resolve why benefits of IFRS adoption were found in other research settings but were not clearly found in liquidity benefits in capital markets. For example, previous research finds evidence that mandatory IFRS adoption led to improved comparability (e.g., Barth et al. 2012) and other types of capital market benefits such as increased cross-border investment (DeFond et al. 2011; Beneish et al. 2015) and greater pricing accuracy (e.g., Young and Zeng 2015). These findings previously made it surprising that previous research did not also find liquidity benefits from IFRS adoption.

II. PRIOR RELATED RESEARCH AND PREDICTION

In this section, we provide an overview of prior research that found that mandatory adoption of IFRS improved the comparability of accounting disclosure and recognition between countries. In addition, we provide an overview of prior research that found evidence of capital market benefits related to IFRS adoption. We then motivate and discuss our primary research prediction regarding the greater liquidity benefits of IFRS adoption for lower-liquidity firms.

A. Prior related research

Several prior studies have provided evidence consistent with the mandatory adoption of IFRS providing improved comparability and benefits to capital market participants. Regarding improved comparability, Barth et al. (2012) provides evidence that foreign firms adopting IFRS on a mandatory basis and US firms have comparable GAAP amounts and that firms that underwent mandatory

evidence could be confounded by regulatory changes that are partially phased in during the same quarter as IFRS adoption.

IFRS adoption and located in common law countries with high quality enforcement have more comparable GAAP amounts. Yip and Young (2012) finds an increase in the similarity of accounting capturing economic events, information transfer, and earnings and book value information content, the increase being more pronounced for firms from countries of the same legal origin. Wang (2014) provides evidence that the stock prices of the mandatory IFRS adoption firms react more strongly to the earnings releases of voluntary adoption firms after the adoption of IFRS but not to those of non-IFRS adopting firms.

With regard to capital markets, most studies find evidence of capital market improvements. Evidence that mandatory IFRS adoption increased comparability and reduced information asymmetry includes higher valuations after the EU decision to move to mandatory IFRS adoption (Armstrong et al. 2010), increased cross-border debt and equity investment (DeFond et al. 2011; Beneish et al. 2015), lower home bias by US investors (Khurana and Michas 2011; Shima and Gordon 2011), higher institutional ownership (Florou and Pope 2012), higher foreign mutual fund holdings (DeFond et al. 2011; Yu and Wahid 2014), lower profitability of insider purchases (Brochet et al. 2013), and improved pricing accuracy (Young and Zeng 2015). Increased comparability also led to improvements in analysts' forecasts and reductions in dispersion (Byard et al. 2011; Horton et al. 2013), improvements in analysts' target prices (Bilinski et al. 2013), and more frequent management earnings forecasts (Li and Yang 2016).

Most related to our study, early studies that examined liquidity found evidence of improvements in liquidity following the adoption of IFRS (Daske et al. 2008; Li 2010). Christensen et al. (2013), in contrast, only find such liquidity improvements for firms in countries with concurrent improvements in the enforcement of financial reporting. Given that the events are concurrent, either mandatory IFRS adoption or significant financial reporting enforcement improvements are plausible explanations for observed liquidity improvements.

B. Predictions

We examine liquidity improvements following mandatory IFRS adoption more closely by focusing on a set of firms that should benefit the most from improved comparability, consistency, and transparency and, consequently, lower information asymmetry. Specifically, we focus on firms that have

relatively low liquidity prior to mandatory IFRS adoption. Such firms likely have poor information environments related to their accounting disclosure and recognition practices prior to the adoption of IFRS, leading to higher adverse selection costs. If mandatory IFRS adoption benefits occur more so for firms with low liquidity, this could lead to a leveling of the playing field rather than firms with high liquidity necessarily losing out to firms with previous lower liquidity.

At least three reasons for why mandatory IFRS adoption may not lead to liquidity improvements. First, as discussed by Christensen et al. (2013), IFRS adoption could lead to more opportunistic reporting by managers firms if a wider range of choices for recording transactions and making disclosures becomes available. Second, as raised by Christensen et al. (2007), mandatory IFRS adoption, rather than improving the quality of firms' reporting relative to home country GAAP, could have constrained and, accordingly, reduced the quality of firms' reporting. Third, IFRS adoption may not improve a poor information environment if the poor environment is attributable to firms being inherently opaque (e.g., early-stage growth firms).

III. SAMPLE SELECTION, RESEARCH DESIGN, AND EMPIRICAL MODELS

In this section we describe our sample selection procedures in detail, as they differ from Christensen et al. (2013) due to using a standard DiD model with a short testing window research design. In addition, we describe our research design in detail, as our short-window DiD approach with country-year-quarter fixed effects is relatively unique, as is our decision to focus on the modified Lesmond et al. (1999) and liquidity factors as our dependent variables. Finally, we discuss our empirical model specifications.

A. Sample Selection

To construct a sample that avoids contamination from comparing newly treated firms with those already treated, we require that all treated firms be from countries with a mandatory IFRS adoption date of December 31, 2005. Given the variation in fiscal year ends between firms, the actual quarter in which a firm releases its first IFRS financial statements varies from Q1 2006 to Q4 2006. To account for this variation, we organize our data as follows. First, we construct the treatment

sample as firms adopting IFRS in Q1 2006 (i.e., first adopters) and maintain a six-quarter window $[-3, +3]$ around the IFRS adoption date of December 31, 2005, resulting in a sample period from Q2 2005 to Q3 2006. Second, the control group comprises firms which never adopted IFRS in the sample period from Q2 2005 and Q3 2006. The control group includes both IFRS-adopting-country firms which would adopt IFRS in Q4 2006 and non-IFRS-country firms. This sample construction gives rise to a standard DID approach and allows for inclusion of country-year-quarter fixed effects. We also exclude early adopters, non-adopters, and firms that dropped out from the sample before IFRS adoption, because these firms may have self-selected to adopt or avoid IFRS. We merge Datastream and Worldscope using the linking table provided by the Wharton Research Data Services (WRDS), obtaining firm-quarter observations with non-missing values for the LOT liquidity measure and control variables from these two datasets. Following the approach of Christensen et al. (2013), we exclude firms with a market capitalization below US$ 5 million, those adhering to US GAAP, those cross-listing in the US, or those traded on unregulated EU markets, such as Germany's Open Market, Ireland's Enterprise Securities Market, and the UK's Alternative Investment Market (AIM). These procedures result in a sample comprising 95,543 firm-quarter observations from 28 treated countries—23 of which are in the EU—and 24 control countries without an IFRS reporting requirement.[7] Panel A of Table 1 details the sample composition by country.

B. Research Design

1. Quantile regression and the Machado and Silva (2019) approach

Quantile regression has long been used in the economics field since the publication of Koenker and Bassett Jr (1978) and relies on changing the weights given to positive and negative residuals for each quantile—thereby avoiding issues of non-random sample selection based on the magnitude of the dependent variable in the regression model.[8] In contrast, the approach has rarely been

[7] Our sample countries differ from Christensen et al. (2013) in three aspects in terms of country composition. First, with IFRS adoption dates in 2003, Argentina and Singapore are excluded from our sample. Second, firms from Israel, New Zealand, Pakistan, and Turkey are included as control firms because the IFRS adoption dates for these countries occur after our sample period, which ends in Q3 2007. Specifically, with adoption dates of December 31, 2006 for Turkey, December 31, 2008 for Israel, and December 31, 2007 for both New Zealand and Pakistan, firms from these countries remain untreated throughout the entirety of our sample period. Third, the Channel Islands and Iceland are not included in the sample due to a lack of observations.

[8] OLS regression coefficients based on sub-samples for each quantile would suffer from sample truncation bias.

used in accounting research (see Armstrong et al. 2015 as one example) despite its advantages to ask more refined questions and more powerful tests of research hypotheses. In another setting of regulatory changes, such as the mandatory adoption of IFRS, Manning et al. (1995) tests the heterogeneous effects of an excise tax on alcohol on the use of alcohol. Prior research (e.g., Coate and Grossman 1988) provided evidence that individual consumption of alcohol decreased with higher prices. However, such evidence does not provide evidence of which drinkers responded to the higher prices, as OLS regression estimates only provide the average affect for all drinkers. The distinction is important because the welfare benefit only occurs if heavy drinkers are most affected by higher prices. Manning et al. (1995) directly examines this question using quantile regression. The study finds that alcohol use declines the least for light and heavy drinkers—the intended target of the tax—indicating that looking at average effects can be very misleading when trying to generalize elasticities for different groups and evaluate the efficacy of policy interventions.

Until recently, conducting a DiD approach using a quantile regression approach was not possible. Typical approaches such as Koenker (2004) and Canay (2011) only allow fixed effects by firm and year to have a constant effect for all quantiles. Machado and Silva (2019) develops a novel approach that allows heterogeneity in how fixed effects vary throughout the distribution of the dependent variable. This is done through the creation of a method of moments-quantile regression (MM-QR). The method, as with most standard models, ensures that the quantile functions do not cross.

2. Difference-in-differences estimator

The staggered DiD approach has been commonly used in research in the fields of economics, finance, and accounting. The approach was commonly believed to be less subject to confounding events affecting treatment, as multiple event dates are examined in this research design. However, recent research illustrates that the approach has the potential to produce significant biases—e.g., De Chaisemartin and d'Haultfoeuille (2020), Goodman-Bacon (2021), Barrios (2021), and Baker et al. (2022). As one example of how a large potential bias can arise in the staggered DiD approach, comparisons of treated firms are typically made against already treated firms that can have ongoing changes arising from treatment.

To avoid potential bias issues from the traditional staggered DiD model, we adopt a standard

DiD model with a short testing window. The primary goal of using a DiD appraoch is to rule out that other economic/regulatory events or financial market changes, especially shocks in non-EU countries that we are unable to even identify, confound our results. Following Christensen et al. (2013), we rely on firms adopting IFRS in different quarters to permit the use of country-year-quarter fixed effects to rule out factors other than the mandatory adoption of IFRS. As Christensen et al. (2013) and Leuz (2022) discuss, the use of country-year-quarter fixed effects narrows the focus to the change in financial reporting occurring from mandatory IFRS adoption as the fixed effects eliminate time-period effects—such as country level shocks that affect all firms at the same point in time (e.g., changes in securities enforcement).

To construct clean pre- and post-periods, we use firms adopting IFRS in the first quarter of 2006 (i.e., first adopters) as our treatment firms and those firms not adopting IFRS by the fourth quarter of 2016 as our control firms. That is, the testing window is the second quarter of 2005 through the third quarter of 2006, and the pre-period for the treatment firms are the first three quarters during the treatment window in the post-period for the treatment firms are the last three quarters during the treatment window. This design requires that firms adopting IFRS in the second or third quarters are excluded from the analyses, as their inclusion would confound our testing design of having three quarters in both the pre- and post-periods. We recognize that this design is quite demanding of the data—i.e., the testing window is tight and a significant number of firms are eliminated from the analyses.[9] This limitation, however, is outweighed by the benefit of ruling out competing explanations for our findings. In addition, this limitation is outweighed by the benefit of focusing on first time mandatory IFRS adopters, minimizing the possibility of anticipatory effects—an important concern in DiD research designs.[10]

[9] As an alternative design that maintains all IFRS adopting firms, we use all possible firm-quarter observations during Q1 2005 to Q3 2007 from the countries listed in Table 1 and a stacked regression estimator similar to Cengiz et al. (2019). Under this potentially less rigorous approach we form event-specific "clean 2x2" datasets (i.e., four stacks of four quarters for each pre- and post-IFRS adoption quarter in 2006) and fixed effects for an event-specific identifier and a country-quarter identifier. Our inferences are similar but stronger when using this approach. Specifically, in our most disaggregated analysis (i.e., our later Table 7 analyses), we further find that firms from non-EU countries with high pre-adoption regulatory quality and those from low pre-adoption regulatory quality experienced improved liquidity following IFRS adoption and that the improvement was more pronounced for low liquidity firms.

[10] Although we find in our later empirical tests that the standard DiD design leads to different inferences than the staggered DiD approach with respect to the importance of mandatory adoption of IFRS, we *a priori* have no reason to expect that different inferences would arise.

3. The modified Lesmond et al. (1999) (LOT) and liquidity factor measures

Our first liquidity measure that we examine is the Lesmond, Ogden and Trzcinka (1999) (LOT) measure of transaction costs. We select this measure for three primary reasons. First, the measure conceptually captures all the costs of trading. The LOT measure is intended to capture components of the bid-ask spread: commission, fees, and tax costs; potential price impact costs; and costs of informed trade. Second, the measure suffers from fewer measurement problems than other liquidity measures used in prior research. Specifically, quoted bid-ask spreads—a commonly used measure of liquidity and used by Christensen et al. (2013)—has limitations in a large number of countries in our sample—i.e., emerging market countries.[11] Quoted bid-ask spreads often deviate from estimates of the LOT measure in emerging markets. For instance, Lesmond (2005) finds relatively high correlations between the two in Portugal and Hungary (i.e., 79.80% and 69.93%) but only little correlation in Taiwan and Greece (i.e., 19.29% and 24.46%). Quoted bid-ask spreads in emerging markets are also often based on trades occurring at prices that differ from quoted spreads and even outside quoted spreads (see Lesmond 2005 for further discussion). Third, the LOT measure only requires daily returns data, resulting in a larger and more representative sample. Our choice to focus on the LOT measure rather than other trading cost measures when looking at both developed and emerging markets follows other prior related research (e.g., Griffin et al. 2010) and evidence that the measure best quantifies the trading costs of emerging market firms (e.g., Lesmond 2005).

The original LOT measure is based on the limited dependent variable model of Tobin (1958) and the friction model of Rosett (1959). The model is quite intuitive—trade by marginally informed investors will only occur if the value of their positive or negative information exceeds transactions costs; otherwise, no trade will occur. The formal LOT model is represented as, where R_{jt} is the measured return and R^*_{jt} is the true return:

$$R^*_{jt} = \beta_j R_{mt} + \epsilon_{jt}$$

[11] Relying on the 2005 MSCI emerging versus developed market classifications, there are 10 emerging market IFRS adopting countries in our sample: Czech Republic, Estonia, Greece, Hungary, Lithuania, Poland, Slovakia, Slovenia, Philippines, and South Africa.

$$
\begin{aligned}
R_{jt} = R^*_{jt} - \alpha_{1j} \qquad & if \qquad R^*_{jt} < \alpha_{1j} \\
R_{jt} = 0 \qquad & if \qquad \alpha_{1j} < R^*_{jt} < \alpha_{2j} \\
R_{jt} = R^*_{jt} - \alpha_{2j} \qquad & if \qquad R^*_{jt} > \alpha_{2j}
\end{aligned} \tag{1}
$$

In Lesmond et al. (1999), the first term in Eq. (1) is defined as the region of a non-zero measured return and a negative market return. The second term is defined as a zero measured return. The third term or region is defined as the region of a non-zero measured return and a positive market return. Numerous prior empirical studies have relied on the original LOT approach (e.g., Lesmond et al. 2004; Lesmond 2005; Ng et al. 2008; Griffin et al. 2010; Næs et al. 2011; Hwang et al. 2013; Patton and Weller 2020; Chen et al. 2021). Given the common use of the original LOT measure in accounting and finance studies and the publication date of Goyenko et al. (2009), it is not surprising that Daske et al. (2008) and Christensen et al. (2013) adopted the original measure.

Goyenko et al. (2009) argues that the empirical implementation of the original LOT measure (denoted the Mixed measure) did not correspond to the basic tenets of the model—i.e., that measured returns should dictate the three regions. The study advanced a modified model (denoted Y-split) that defines the first region for negative measured returns, the second region for zero measured returns, and the third region for positive measure returns. Goyenko et al. (2009), Zhao and Wang (2015), and Ahn et al. (2018) provide empirical evidence that the Y-split measure corresponds more closely to high frequency effective, quoted, and realized bid-ask spreads. Zhao and Wang (2015) also provides simulation evidence that the LOT Mixed measure provides estimates of spreads that are biased upward by significant amounts; in contrast, the Y-split measure exhibits little bias. For these reasons, we use the logarithmic transformation of the Y-split LOT measure, denoted $Ln(LOT)$, in our empirical tests.

The second liquidity measure that we use in our analyses is the liquidity factor measure of Daske et al. (2008) and Christensen et al. (2013). The measure uses factor analysis with four liquidity measures as input: the LOT measure, quoted bid-ask spreads, the proportion of zero return days, and the price impact measure of Amihud (2002). The motivation for using factor analysis is to reduce measurement error through the use of the four liquidity measures. Following Daske et al. (2008) and Christensen et al. (2013) we use factor analysis with the same variables but replace

the original LOT measure with the Y-split LOT measure and select the factor with an Eigenvalue greater than one as our variable of interest. We take the natural logarithm of one plus this factor to arrive at our second liquidity measure—denoted $Ln(Liq)$.

4. Empirical models

We begin by examining whether the effect of mandatory IFRS adoption varies by quantiles using the following method of moments-quantile regression model:

$$Ln(Liquidity)_{it} = \alpha_{C_{y_q}} + \beta_1 IFRS_{it} + \beta_2 Controls + \varepsilon_{it} \tag{2}$$

where C_{y_q} is an indicator variable that is equal to one for each country-year-quarter j and zero otherwise. The dependent variable $Ln(Liquidity_{it})$ is $Ln(LOT)_{it}$ in our first set of tests and $Ln(Liq)_{it}$ in our second set of tests. Our primary variable of interest, $IFRS$, is an indicator variable that equals one in quarters when a firm releases IFRS financial statements and zero otherwise. Following Christensen et al. (2013), our control variables are firm market capitalization, $Ln(MarketValue)$, share turnover, $Ln(Turnover)$, and return variability, $Ln(ReturnVolatility)$. If adoption of IFRS increased liquidity for firms with lower liquidity, then we expect more negative marginal effects for $IFRS$ for higher quantiles of $Ln(LOT)_{it}$ and $Ln(Liq)_{it}$.

Following Christensen et al. (2013), we modify Eq. (2) to examine the differential liquidity effects of IFRS adoption by separately examining firms from EU countries and non-EU countries as follows:

$$Ln(Liquidity)_{it} = \alpha_{C_{y_q}} + \beta_1 IFRS_{EU,it} + \beta_2 IFRS_{non-EU,it} + \beta_3 Controls + \varrho_{it} \tag{3}$$

where $IFRS_{EU}$ is an indicator variable that equals one in quarters when a firm from an EU country releases IFRS financial statements and zero otherwise and $IFRS_{non-EU}$ is an indicator variable that equals one in quarters when a firm from a non-EU country releases IFRS financial statements and zero otherwise. Separately examining firms from EU and non-EU countries is important as prior research (e.g., Daske et al. 2008 and Christensen et al. 2013) finds that firms from EU countries have a greater improvement in their liquidity. Based on this prior evidence, EU firms with lower liquidity could benefit more from IFRS adoption but it is also possible that non-EU firms with lower liquidity

will also experience liquidity benefits arising from the increased comparability and consistency in financial reporting brought about by the adoption of IFRS. Further, given that some EU countries enacted regulatory changes concurrently with IFRS adoption, examining liquidity changes for non-EU firms allows us to draw clearer inferences about the attribution of liquidity effects to accounting changes.

Next, to assess whether concurrent changes in regulatory enforcement explain the differential liquidity reduction for EU firms, we further divide $IFRS_{EU}$ into non-overlapping variables: $IFRS_{EU-ENF}$ and $IFRS_{EUnonENF}$.

$$\begin{aligned} Ln(Liquidity)_{it} = \alpha_{C_{yq}} + \beta_1 IFRS_{EU-ENF,it} + \beta_2 IFRS_{EUnonENF,it} \\ + \beta_3 IFRS_{non-EU,it} + \beta_4 Controls + \varsigma_{it} \end{aligned} \tag{4}$$

where $IFRS_{EU-ENF}$ is an indicator variable that equals one in quarters when firms from one of the five EU countries (Finland, Germany, the Netherlands, Norway, and the U.K.) that bundled IFRS adoption with substantive changes in regulatory enforcement and zero otherwise, and $IFRS_{EUnonENF}$ is an indicator variable that equals one in quarters when a firm from the remaining EU countries releasing IFRS financial statements and zero otherwise. In this refined analysis, Christensen et al. (2013) find that the higher liquidity experienced by EU firms following IFRS adoption is concentrated in those firms from five EU countries that had concurrent changes in their enforcement. Our prediction is that the liquidity benefits of IFRS adoption will be greater for lower liquidity firms from all types of countries because the expected benefits of harmonization in accounting standards should be greater for firms with greater information asymmetry problems, irrespective of enforcement. Nonetheless, bifurcating EU countries on the basis of bundled enforcement changes around IFRS adoption allows us to further refine our inferences about the extent to which we can attribute any liquidity changes to accounting standards rather than securities enforcement.

We then examine the role of regulatory quality on the liquidity benefits of mandatory IFRS adoption by partitioning the sample into firms from countries with high and low regulatory quality and estimate the following quantile regression model:

$$Ln(Liquidity)_{it} = \alpha_{C_{y_q}} + \beta_1 IFRS_{high,it} + \beta_2 IFRS_{low,it} + \beta_3 Controls + \varphi_{it} \quad (5)$$

where $IFRS_{high}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are domiciled in countries that had above-median pre-adoption regulatory quality based on Kaufmann et al. (2009) and zero otherwise, and $IFRS_{low}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are domiciled in countries that had below-median pre-adoption regulatory quality based on Kaufmann et al. (2009) and zero otherwise.[12] Consistent with evidence in prior mandatory IFRS studies (e.g., Byard et al. 2011; Barth et al. 2012; Wang 2014), because greater regulatory quality should lead to more careful oversight over the adoption and application of IFRS standards, the liquidity benefits for lower liquidity benefits could be higher in high regulatory countries. As with our other refinements of Eq. (2), examining variation in the liquidity effects of mandatory IFRS adoption across pre-adoption regulatory quality allows us to more clearly understand the role of the accounting changes brought about by IFRS adoption as a driver of any observed liquidity changes.

In our final investigation, we refine our test of EU bundled adopters against EU non-bundled and non-EU adopters in Eq. (4) by examining them by their regulatory quality, as follows:

$$\begin{aligned} Ln(Liquidity)_{it} = {} & \alpha_{C_{y_q}} + \beta_1 IFRS_{EU-ENF,it} + \beta_2 IFRS_{EUnonENF,high,it} \\ & + \beta_3 IFRS_{EUnonENF,low,it} + \beta_4 IFRS_{non-EU,high,it} \\ & + \beta_5 IFRS_{non-EU,low,it} + \beta_6 Controls + \vartheta_{it} \end{aligned} \quad (6)$$

Overall, we expect that the greater liquidity benefits of IFRS adoption for lower liquidity firms should occur across all groups of firms in Eq. (6). However, we could find variation in the magnitude of liquidity improvements across levels of firms illiquidity due to differences in the net benefits of IFRS adoption across adoption categories. For example, consistent with prior findings of greater liquidity

[12] Another potentially interesting cross-sectional difference to investigate would be the importance of differences between home country accounting standards and IFRS. Using the Bae et al. (2008) estimates of these differences, Christensen et al. (2013) finds that EU countries with bundled enforcement and with more differences unexpectedly have lower liquidity benefits after IFRS adoption. Because of this, we do not examine the role of such differences.

benefits of IFRS adoption for EU firms, liquidity benefits for lower liquidity firms could be greater in EU countries. In addition, liquidity benefits for lower liquidity firms could be greater in countries with higher pre-adoption regulatory quality. However, whether the liquidity benefits are greater for lower liquidity firms in these settings is not clear ex ante. For instance, lower liquidity firms from countries with lower regulatory quality may face the greatest liquidity benefits from IFRS adoption due to the prior lack of standardized accounting rules and, accordingly, the greatest incentive to faithfully apply IFRS standards to increase their liquidity.

IV. SAMPLE DESCRIPTION AND CHRISTENSEN ET AL. (2013) REPLICATION

In this section, we discuss our sample characteristics. In addition, to provide evidence that we obtain similar inferences when using our sample firms, we replicate the Christensen et al. (2013) study using the same sample selection procedures and research design.

A. Sample description

Table 2 presents descriptive statistics for the firm-quarters used in our analysis. This table incorporates all sample filters used in the main regression analyses, including the exclusion of firm-quarters with missing data for the LOT measure or any control variables. We winsorize all continuous variables at the 1st and 99th percentiles. In our sample, the standard deviations of 0.032 for LOT and 0.733 for Liq indicate significant variation in liquidity. On average, sample firm-quarters have a total market value of $790 million, a share turnover of 0.003, and a return variability of 0.028. Overall, these statistics are similar to those reported in Christensen et al. (2013).

B. Replication of the Christensen et al. (2013) study

Given the difference in the research designs with regard to using a staggered DiD research designs, we provide evidence that our sample leads to similar findings when we use the same research design choices as Christensen et al. (2013). Our replication is focused on $Ln(Liq)$, as the variable is common to our study and Christensen et al. (2013). Our sample is constructed using observations from the

first quarter of 2001 to the end of the fourth quarter of 2009. We follow the same sample selection procedures, data providers, and treatment and control countries as Christensen et al. (2013).[13] The research design relies on the same control variables, country and industry fixed effects and quarter-year fixed effects, and standard errors that are clustered at the country and year-quarter level.

We present the results of our replication of the Christensen et al. (2013) study in Table 1 of Appendix B. In columns (1) and (4), the coefficient estimates for $IFRS$ are insignificant in both analyses, which fails to provide evidence that the mandatory adoption of IFRS led to greater liquidity. In columns (2) and (5), $IFRS$ is examined separately for firms from EU and non-EU countries. The coefficients for $IFRS_{EU}$ are significantly negative in the original analysis and in our replication. This evidence suggests that mandatory adoption of IFRS improved liquidity only for firms located in EU countries.

In the last analysis, we investigate this finding more closely by separately examining the role of pre-existing legal and regulatory quality and concurrent changes in enforcement on changes in firms' liquidity. In columns (3) and (6), the coefficients for $IFRS_{EU\_ENF}$ and $IFRS_{EU\_nonENF,high}$ are significantly negative in both Christensen et al. (2013) and our replication. The coefficients for $IFRS_{EU\_nonENF,low}$ and $IFRS_{non-EU,high}$ are insignificant in both analyses, and $IFRS_{non-EU,low}$ are positive in both analyses. Christensen et al. (2013) suggests that the evidence of a significantly negative coefficient for $IFRS_{EU\_nonENF,high}$ in the $Ln(Liq)$ analysis, which is insignificant in their bid-ask spread analysis, could be attributable to smaller or more gradual enforcement changes that were not coded as a substantive change in the construction of the concurrent change in enforcement variable rather than attributable to the mandatory adoption of IRS. In addition, Christensen et al. (2013) indicates that they do not have an explanation for the positive coefficient for $IFRS_{non-EU,low}$. It is possible that the finding reflects that managers of firms in non-EU and low regulatory countries engaged in greater opportunistic reporting using the mandatory adoption of IFRS. Taken together, consistent with the finding of Christensen et al. (2013), this evidence suggests that significant concurrent changes in enforcement could be a confounding factor at the time of mandatory IFRS

[13] We are grateful to the authors of Christensen et al. (2013) for generously providing us with the list of firms used in their study.

adoption. While not ruling out the possibility that mandatory IFRS adoption improved liquidity, drawing the inference that only IFRS adoption is responsible for the improvement is not possible.

V. EMPIRICAL RESULTS

A. Liquidity changes for firms adopting IFRS: The importance of liquidity differences

In this section, we provide the results of our empirical analyses. First, we provide evidence of liquidity changes both overall and by different quantiles for all firms from countries that adopted IFRS on a mandatory basis. Second, we provide similar evidence for firms from EU countries separately from firms from non-EU countries. Third, we then delve deeper and provide the same evidence but after further separating EU firms into those that also had significant concurrent changes in enforcement and those that did not. Finally, we allow for differences in the effect of mandatory IFRS adoption based on regulatory quality differences across countries. For comparability, these tests are intentionally similar in focus to those in Christensen et al. (2013).

We begin our empirical analyses by examining whether the mandatory adoption of IFRS led to an overall increase in liquidity. The results of this analysis, which provides the average adoption effect, are presented in column (1) of Table 3, Panel A. The coefficient estimate for $IFRS$ of -0.274 is significantly negative, indicating that liquidity declined following adoption by 24.0 percent (i.e., $e^{(-0.274)} - 1$). This decline is much larger than that observed in prior related research—e.g., Daske et al. (2008) find that liquidity declined by 2.9 percent. The difference in the magnitude of the findings could be attributable to the use of the first-adopter standard DiD estimator rather than the traditional staggered difference-in-differences estimator. The coefficient estimates for the control variables $Ln(Market\ Value)$, $Ln(Turnover)$, and $Ln(Return\ Volatility)$ are also statistically negative.

Next, we examine our primary research question—did firms with the lowest liquidity have the greatest liquidity reduction after the mandatory adoption of IFRS? We find in columns (2)–(6) using the MM-QR approach that firms in the top quantile (90th percentile) of $Ln(LOT)$ had a statistically significant improvement in liquidity of 34.2 percent following IFRS adoption. In contrast, the

improvement in liquidity for firms in the bottom quantile (10th percentile) of $Ln(LOT)$ was only 12.5 percent. As shown at the bottom of the table, the difference in the coefficient estimates for firms in the 90th percentile of transaction costs versus those in the 10th percentile is statistically significant ($p < 0.01$), as is the difference between the coefficient estimates for firms in the 75th percentile versus those in the 25th percentile ($p < 0.01$). We also graphically depict the results for all deciles of $Ln(LOT)$ in Figure 1. These findings indicate that there is considerable heterogeneity in liquidity improvements following the mandatory adoption of IFRS with the improvements increasing with the illiquidity of the adopting firms. In addition, these findings indicate that an overall increase in liquidity occurred following IFRS adoption after ruling out potential bias in the staggered difference-in-differences estimator.

In Panel B of Table 3, we report the results of our baseline analysis of the liquidity effects of mandatory IFRS adoption using $Ln(Liq)$ as our dependent variable rather than $Ln(LOT)$. Overall, we find similar results, although with somewhat smaller economic magnitudes. Column (1) shows a 10.6 percent increase in liquidity, overall, following mandatory IFRS adoption. In addition, similar to the results in Panel A, the increase in liquidity is greatest among firms with the greatest illiquidity problems: firms in the 90th percentile of $Ln(Liq)$ experience an 17.2 percent increase in liquidity whereas firms in the 10th percentile of $Ln(Liq)$ experience a 5.6 percent increase in liquidity. The difference in the impact of the mandatory adoption of IFRS on liquidity between these groups of firms is statistically significant ($p < 0.05$) as is the difference between firms in the 75th percentile of $Ln(Liq)$ versus those in the 25th percentile ($p < 0.05$). We also graphically depict the results for all deciles of $Ln(Liq)$ in Figure 1. Overall, the results in Panel B of Table 3 offer corroborating evidence that the mandatory adoption of IFRS led to the greatest liquidity benefits for firms with the most significant illiquidity problems.[14]

[14]In untabulated analyses, we conduct an assessment of the parallel trends assumption in our setting for our analyses in column (1) of Table 3 for $Ln(LOT)$ and $Ln(Liq)$. Using the first quarter of 2005 as the benchmark quarter, we then included three quarterly indicator variables for the three quarters leading up to IFRS adoption and four quarterly indicator variables for the post-period. In both parallel trends tests, we fail to find evidence that the coefficient estimates for the quarterly indicator variables for the three quarters prior to adoption are statistically significant. Although the test does not provide definitive evidence that absent the adoption of IFRS differences in liquidity between adopters and non-adopters would not have changed, our results in the pre-IFRS-adoption period do not show evidence of such a difference.

B. Liquidity changes for EU versus non-EU adopters: The importance of liquidity differences

In Table 4, we present the results of analyses that examine the liquidity effects of mandatory IFRS adoption separately for firms domiciled in EU countries and those domiciled in non-EU countries. Like in our baseline analysis in Table 3, we use $Ln(LOT)$ as our measure of liquidity in Panel A and $Ln(Liq)$ in Panel B. In column (1) of Panel A, we report a statistically significant improvement in liquidity after mandatory adoption of IFRS for firms in EU ($p < 0.001$) countries but an insignificant improvement for non-EU countries. The magnitude of the liquidity improvement is approximately 32.7 percent for firms in EU countries. Beyond the overall effect, columns (2)–(6) show quantile-specific estimates of the liquidity effects of mandatory IFRS adoption using the MM-QR approach. For firms in EU countries, the liquidity improvements following mandatory IFRS adoption range from 15.9 percent (10th percentile) to 46.5 percent (90th percentile). The differences in the sizes of the effects across the liquidity quantiles are statistically significant for both the 90th versus 10th percentile comparison ($p < 0.001$) and the 75th versus 25th percentile comparison ($p < 0.001$). For firms in non-EU countries, a liquidity decline of 8.7 percent is found in 90th percentile, which as discussed earlier, is consistent with earlier findings by Christensen et al. (2013) and our replication of Christensen et al. (2013), and may be attributable to managers' opportunistic adoption of IFRS in non-EU countries. Overall, our evidence in Panel A of Table 4 is consistent with mandatory IFRS adoption leading to the greatest liquidity improvements for firms facing the most significant illiquidity issues for firms in EU countries.

In Panel B of Table 4, our results using $Ln(Liq)$ as our liquidity measure largely mirror those shown in Panel A. Using our alternative measure of liquidity, we find evidence of an overall liquidity increase of 15.1 percent for EU firms mandatory adoption of IFRS for firms in EU ($p < 0.001$) countries but for non-EU firms (column (1)). For EU firms, the magnitude of the liquidity improvement ranges from 6.6 percent (10th percentile) to 25.9 percent (90th percentile) in our quantile regression estimations. For non-EU firms, a liquidity decline of 9.4 percent is found in 90th percentile. For firms in EU but not in non-EU countries, the differences in the magnitudes of the liquidity effects are statistically significant for both the 90th versus 10th percentile comparison ($p < 0.001$) and the

75th versus 25th percentile comparison ($p < 0.001$).

Overall, our results in Table 4 suggest that mandatory adoption of IFRS led to liquidity improvements for firms in EU countries. Thus, our results offer evidence of the liquidity effects of mandatory IFRS adoption our similar to that provided in Christensen et al. (2013) since we find evidence of improved liquidity among adopting firms from EU countries. Moreover, we provide evidence that the liquidity improvements arising from the mandatory adoption of IFRS for firms from EU countries are greater among firms with the most significant illiquidity issues.

C. Liquidity changes for EU bundled adopters versus EU non-bundled and non-EU adopters: The importance of liquidity differences

Table 5 presents the results of analyses that examine the liquidity effects of mandatory IFRS adoption separately for firms domiciled in EU countries that bundled enforcement changes with IFRS adoption and in EU countries that did not bundle enforcement changes, as well as for firms in non-EU countries. As in our previous tables, we examine liquidity effects using $Ln(LOT)$ as our measure of interest in Panel A and $Ln(Liq)$ in Panel B. In column (1) of Panel A, we report a statistically significant improvement in liquidity following mandatory adoption of IFRS for firms in EU countries that bundled enforcement changes ($p < 0.01$). However, in contrast to Christensen et al. (2013), we find a statistically significant improvement in liquidity following mandatory adoption of IFRS for firms in EU countries that did not have a concurrent change in their enforcement regimes ($p < 0.01$). The magnitude of the overall liquidity improvement for firms in EU countries with bundled enforcement changes is approximately 41.2 percent, while the magnitude of the overall improvement for firms in EU countries that did not have a concurrent change in their enforcement is approximately 18.7 percent.

Beyond the overall effect, columns (2)–(6) show quantile-specific estimates of the liquidity effects of mandatory IFRS adoption using the MM-QR approach and reveal some findings in contrast to previous research. For firms in EU countries with bundled enforcement changes, liquidity improvements following mandatory IFRS adoption range from 23.2 percent (10th percentile) to 55.3 percent (90th percentile). The differences in the sizes of the effects across the liquidity quantiles are statistically significant for both the 90th versus 10th percentile comparison ($p < 0.001$) and the 75th versus

25th percentile comparison ($p < 0.001$). For firms in EU countries that did not have a concurrent change in their enforcement, the liquidity improvements range from a statistically indistinguishable 6.9 percent (10th percentile) to 29.4 percent (90th percentile). The differences in effect sizes in the 90th versus 10th percentile comparison and the 75th versus 25th percentile comparison are statistically significant ($p < 0.05$). For firms in non-EU countries, after estimating the quantile-specific liquidity effects of mandatory IFRS, we find evidence in the 90th percentile of $Ln(LOT)$ a deterioration in liquidity of 8.7 percent. Thus, Panel A of Table 5 provides some evidence that—different from Christensen et al. (2013)—mandatory adoption of IFRS led to liquidity improvements even in EU countries that did not make concurrent enforcement changes and suggests that liquidity improvements after mandatory adoption of IFRS can be attributed to accounting changes rather than possibly be due to or commingled with concurrent enforcement changes.

In Panel B of Table 5, our results using $Ln(Liq)$ as our liquidity measure largely mirror those shown in Panel A. Using our alternative liquidity measure, we find evidence of an overall liquidity increase of 18.2 percent for EU firms in countries where bundled enforcement changes occurred and 10.7 percent for EU firms in countries not bundling enforcement changes (column (1)). For EU firms with bundled enforcement changes, the magnitude of the liquidity improvement ranges from 9.2 percent (10 percentile) to 29.5 percent (90th percentile) in our quantile regression estimations. For EU firms in countries not bundling enforcement changes, the quantile regression results imply a liquidity improvement ranging from a statistically insignificant 3.7 percent (10th percentile) to 19.7 percent (90th percentile). As in Panel A, for firms in non-EU countries, after estimating the quantile-specific liquidity effects of mandatory IFRS, we evidence in the 90th percentile of $Ln(LOT)$ a deterioration in liquidity of 9.4 percent.

Furthermore, for firms in the two types of EU countries, the differences in the magnitudes of the liquidity effects are statistically significant for both the 90th versus 10th percentile comparison ($p < 0.001$) and the 75th versus 25th percentile comparison ($p < 0.001$). In addition, the differences in the magnitudes of the liquidity effects for the non-EU firms our statistically significant in the 90th versus 10th percentile comparison ($p < 0.05$) and the 75th versus 25th percentile comparison ($p < 0.01$).

Overall, our results in Table 5 suggest that mandatory adoption of IFRS led to liquidity im-

provements for firms in EU countries that did not bundle enforcement changes with accounting changes for firms with the greatest liquidity problems. Consequently, our results offer evidence that contrasts with that shown in Christensen et al. (2013) by providing evidence of a liquidity improvement that can be attributed to the accounting changes introduced with IFRS adoption even among EU firms.

D. Liquidity changes for high versus low regulatory quality adopters: The importance of liquidity differences

As in Daske et al. (2008) and Christensen et al. (2013), we examine whether our earlier evidence on the liquidity benefits of mandatory IFRS adoption is limited to firms in countries with stronger pre-existing regulatory institutions and legal systems and present the results of this analysis in Table 6. Following Christensen et al. (2013), we use the regulatory quality index from Kaufmann et al. (2009) and divide the IFRS adopters into two groups based on an above- and below-median split of the index. In Table 6, our variables of interest are $IFRS_{high}$ and $IFRS_{low}$, which capture the liquidity effect of the mandatory adoption of IFRS on companies in countries of high and low regulatory quality, respectively. In Panel A of Table 6, we use $Ln(LOT)$ as our liquidity measure. We find evidence of a significant positive liquidity effect for firms in countries with high ($p < 0.01$) but not for firms in countries with low regulatory quality. For firms adopting IFRS in high regulatory quality countries the overall liquidity improvement is approximately 31 percent, while for firms in low regulatory quality countries the overall liquidity effect is a statistically insignificant 5.7 percent. These results stand in contrast to those in Christensen et al. (2013), which fail to find evidence of IFRS capital market benefits for either group based on this simple data split.

Building on our overall results, we also obtain quantile-specific estimates of the liquidity effects of mandatory IFRS adoption on firms from countries with varying pre-IFRS regulatory quality. We present these results in columns (2)–(6) of Panel A of Table 6. For firms in high regulatory countries, the liquidity improvements arising from IFRS adoption range from 18.6 percent (10th percentile) to 41.7 percent (90th percentile). The differences in the quantile estimates are statistically significant between the 90th and 10th percentiles ($p < 0.01$) and the 75th and 25th percentiles ($p < 0.01$). For firms in low regulatory countries, the liquidity improvements arising from IFRS adoption are

statistically insignificant and statistically insignificant across deciles.

In Panel B of Table 6, we use $Ln(Liq)$ as our liquidity measure. Using this measure, we find evidence of an overall positive liquidity effect for firms in countries of high regulatory quality as well as for firms in countries of low regulatory quality. For firms adopting IFRS in high regulatory quality countries, the overall liquidity improvement is approximately 13 percent. Turning to columns (2)–(6), which show our quantile-specific effect estimates using $Ln(Liq)$ as our dependent variable, we show the increasing liquidity benefits of IFRS adoption for firms in countries of high and low regulatory. For firms in high regulatory quality countries, the liquidity benefits range from 7.1 percent (10th percentile) to 20.8 percent (90th percentile), with the effect difference being statistically significant between both the 90th and 10th percentiles ($p < 0.01$) and the 75th and 25th percentiles ($p < 0.01$). For firms in low regulatory quality countries, the liquidity benefits range from a statistically insignificant 3.4 percent (10th percentile) to a statistically insignificant 7.4 percent (90th percentile), with the differences being insignificant between both the 90th and 10th percentiles and the 75th and 25th percentiles. Despite this, the liquidity benefits of 4.0 percent (25th percentile) and 4.9 percent (50th percentile) are statistically significant, indicating that some firms adopting IFRS in low regulatory countries experienced liquidity improvements.

Taken together, the results in Table 6 provide limited evidence that our earlier results showing significant capital market benefits of mandatory IFRS adoption are not an artifact of pre-existing differences in legal and regulatory environments across countries but, rather, point toward the accounting changes as a significant driver of those observed benefits.

E. Liquidity changes for EU bundled adopters versus non-bundled and non-EU adopters across regulatory quality: The importance of liquidity differences

To examine how pre-existing legal and regulatory quality interacts with bundled regulatory changes at the time of mandatory IFRS adoption, we estimate the liquidity effects of IFRS adoption for several different groups: firms in EU countries that bundled enforcement changes ($IFRS_{EU-ENF}$); firms in EU countries that did not bundle regulatory changes and had high pre-adoption regulatory quality ($IFRS_{EUnonENF,high}$); firms in EU countries that did not bundle regulatory changes and had low pre-adoption regulatory quality ($IFRS_{EUnonENF,low}$); firms in non-EU countries that had

high pre-adoption regulatory quality ($IFRS_{non-EU,high}$); and firms in non-EU countries that had low pre-adoption regulatory quality ($IFRS_{non-EU,low}$).

In Panel A of Table 7, we present our results with $Ln(LOT)$ as our measure of liquidity. Column (1) shows the overall liquidity effect estimates for the different firm groups and indicates that liquidity improvements occurred for bundled EU firms, non-bundled EU firms in the high regulatory quality partition, and non-bundled EU firms in the low regulatory quality partition; we fail to find an overall liquidity effect of IFRS adoption for non-EU firms in the low regulatory quality partition and non-EU firms in the high regulatory quality partition. In terms of magnitude, the overall liquidity improvements range from 8.7 percent (EU firms in the low regulatory quality partition) to 41.2 percent (bundled EU firms). Compared to Christensen et al. (2013), we find evidence of capital market benefits arising from mandatory adoption of IFRS for firms in low regulatory EU countries that did not bundle regulatory changes. This evidence is important as it points to the mandatory adoption of IFRS being responsible for the liquidity improvement.

As in our previous analyses, we also present the quantile-specific estimates of the effect of IFRS adoption in columns (2)–(6). For bundled EU firms, quantile-specific liquidity improvements range from 23.2 percent (10th percentile) to 55.3 percent (90th percentile). In addition, the differences in the effects between the 90th and 10th percentiles ($p < 0.01$) and the 75th and 25th percentiles ($p < 0.001$) are statistically significant, indicating that the liquidity benefits of the adoption of IFRS increased with the extent of firms' liquidity problems. For non-bundled EU firms in countries of high regulatory quality, the effects four the 10th through 90th percentiles are all statistically significant; however, the differences in the effects between the 90th and 10th percentiles and the 75th and 25th percentiles are insignificant. Again, as Christensen et al. (2013) indicate, such evidence cannot be solely attributable to an IFRS effect as firms from such countries could have experienced smaller or more gradual enforcement changes that were not coded as concurrent changes in enforcement. More importantly, for non-bundled EU firms in countries of low regulatory quality, we find evidence of statistically significant liquidity benefits from the adoption of IFRS in the 50th, 75th, and 90th percentiles of $Ln(LOT)$, representing liquidity increases of 8.5, 14.4, an 19.5 percent, respectfully. The differences in the effects between the 90th and 10th percentiles and the 75th and 25th percentiles are statistically significant ($p < 0.05$).

Turning to non-EU firms in high regulatory quality countries, the quantile-specific liquidity changes are all insignificant except in the 90th percentile 7.8 percent decrease in liquidity. The differences in the effects across the 90th and 10th percentiles, however, is insignificant. Lastly, we find some evidence at the 10th percentile and 25th percentile of $Ln(LOT)$ a positive liquidity effect of IFRS adoption for firms in non-EU countries with low regulatory quality. In addition, as in Christensen et al. (2013), our replication of Christensen et al. (2013), and in our earlier tests, we find evidence at the 75th percentile and 90th percentile of a decrease in liquidity, potentially attributable to managerial manipulation of the reporting of IFRS amounts and disclosures. That is, even though the benefits can be the greatest for the most illiquid firms, such firms are also the most opaque and most likely to be subject to the manipulation of mandatory IFRS amounts and disclosures. Not surprisingly, the differences in the effects between the 90th and 10th percentiles and the 75th and 25th percentiles are statistically significant ($p < 0.001$).

In Panel B of Table 7, we use $Ln(Liq)$ as our measure of liquidity and repeat our analysis of the effects of IFRS adoption country groups based on bundled enforcement changes and pre-adoption regulatory quality. Overall, our results in Panel B mirror those in Panel A, including evidence of liquidity improvements for non-bundled EU firms from low regulatory countries both overall and at higher percentages of $Ln(Liq)$ (25th, 50th, 75th and 90th percentiles), as well as statistically significant liquidity improvements for non-EU firms from low regulatory countries at the 10th and 25th percentiles.

Based on the evidence presented in Table 7, as well as previous tables, we infer that the change in accounting standards brought about by the mandatory adoption of IFRS had a significant positive impact on the liquidity of firms and, to a greater extent, for firms with more significant liquidity problems before adoption. Specifically, the statistically greater effects in the higher percentiles of illiquidity, relative to the lower percentiles, for firms that did not experience a concurrent change in the regulatory environment at the time of IFRS adoption, particularly those that did not operate in a country with a high level of regulatory quality or institutional strength, offer strong evidence of liquidity benefits from mandatory IFRS adoption. This inference offers evidence beyond that found by Christensen et al. (2013) that concurrent enforcement changes is a likely confounding factor for interpreting the liquidity effects of mandatory IFRS adoption, as we provide evidence of liquidity

benefits of mandatory IFRS in countries without concurrent enforcement changes.

VI. CONCLUSION

The adoption of IFRS across the world has represented one of the most significant developments in accounting over the past several decades. Before the widespread adoption of IFRS, the diversity in financial reporting standards across different countries created significant barriers to global investment and economic integration. Companies operating in multiple jurisdictions faced complex, time-consuming, and expensive processes to reconcile their accounts to meet different national accounting requirements. The move towards IFRS has greatly alleviated these challenges by providing a single, high-quality set of global standards. This "harmonization" of accounting standards and practices has enhanced comparability and transparency of financial information across borders with the potential to facilitate international trade, investment, and economic growth.

One key purported benefit of the adoption of IFRS has been the potential to increase liquidity in equity markets. With enhanced comparability and transparency of financial reporting under IFRS, investors should plausibly have been able to make more informed decisions, reducing information asymmetry between company insiders and the market, and leading to higher liquidity. In addition, the improvement in the quality of financial reporting under IFRS, partly related to its principle-based approach, could have boosted investor confidence and attracted a broader base of international investors, improving the depth and liquidity of equity markets.

Despite the theoretical support for improved equity market liquidity after the mandatory adoption of IFRS by firms, prior research paints a potentially bleak picture of liquidity effects that can be attributed to the accounting changes occurring with IFRS adoption. Although Daske et al. (2008) provides early evidence of an overall increase in market liquidity following the mandatory adoption of IFRS, Christensen et al. (2013) finds—consistent with concerns raised earlier by Daske et al. (2008)—that the positive effects on market liquidity are not uniformly distributed among countries and that these benefits are more pronounced in the EU countries that also implemented substantive changes in reporting enforcement. The study highlights that without significant changes in enforcement, even countries with strong legal and regulatory systems do not exhibit liquidity benefits from

the mandatory adoption of IFRS. Thus, while Daske et al. (2008) finds a general positive impact associated with IFRS adoption, Christensen et al. (2013) finds that the observed liquidity benefits are not necessarily due to IFRS adoption but rather could be attributable to concurrent changes in enforcement. This discrepancy raises questions about the relative importance of accounting standards versus enforcement mechanisms in achieving the intended economic consequences of IFRS reporting.

Our study revisits the question of whether mandatory IFRS adoption led to improved liquidity for firms by focusing on the effects of adoption between firms with different levels of illiquidity. We posit that the potential liquidity benefits of harmonization from IFRS adoption are plausibly the greatest for firms with the greatest information asymmetry problems (i.e., more illiquid). Using a quantile regression approach to examine the liquidity effects of mandatory IFRS adoption, we find evidence that firms with lower pre-adoption liquidity levels benefited more substantially from the adoption of IFRS. To better understand the extent to which the change in accounting standards is responsible for our observed increases in liquidity effects across levels of firms' illiquidity, we examine liquidity changes separately for EU countries that bundled enforcement changes with IFRS adoption and those that did not. Similar in nature to the findings of Christensen et al. (2013), we find evidence of liquidity improvements among EU firms that bundled enforcement changes with IFS adoption, especially those with lower pre-adoption liquidity levels, and among EU firms without bundled enforcement (but could be subject to smaller undocumented enforcement changes that were concurrent with IFRS adoption) operating in countries with a high pre-adoption level of regulatory quality or institutional strength. In contrast to Christensen et al. (2013), we find evidence of liquidity improvements among EU firms without bundled enforcement that did not operate in countries with a high pre-adoption level of regulatory quality or institutional strength, especially those with lower pre-adoption liquidity levels. In addition, we find some evidence of liquidity improvements among non-EU firms that did not operate in countries with a high pre-adoption level of regulatory quality or institutional strength.

Our study contributes to the literature on the effects of mandatory IFRS adoption by providing evidence that less liquid firms, including those without bundled enforcement or a prior high level of regulatory quality or institutional strength, experienced more substantial benefits from mandatory

IFRS adoption. This finding suggests that increased comparability, consistency, and transparency was much more important to firms with poor information environments. In addition, this evidence stands apart from that of Christensen et al. (2013), which observed that the positive liquidity effects of IFRS adoption were largely confined to EU countries that made concurrent changes to their financial reporting enforcement. Thus, our study provides new evidence that mandatory IFRS adoption had liquidity benefits in countries that are not confounded by enforcement mechanisms. In addition, our study's results showing positive liquidity effects for both EU and non-EU firms suggest that the benefits of IFRS adoption are not limited to the EU context.

In addition, using a standard DiD estimation approach, rather than a staggered DiD estimation approach, and an updated liquidity measure (Goyenko et al., 2009), we confirm the findings of Christensen et al. (2013) that EU firms that had bundled enforcement changes around the time of mandatory adoption of IFRS and those from high-level regulatory environments experienced an improvement in liquidity following the mandatory adoption of IFRS, but more importantly find that firms from EU countries that did not face bundled adoption and non-EU countries from low-level regulatory environments also experienced an improvement in liquidity. This evidence provides the first evidence of liquidity benefits following from the mandatory adoption of IFRS that are not confounded by concurrent improvements in financial reporting enforcement—the concern originally raised by Daske et al. (2008) and documented by Christensen et al. (2013).

Finally, our findings of liquidity benefits from mandatory IFRS adoption for certain types of firms and firms from certain types of countries help to explain why benefits of IFRS adoption were found in other research settings but not manifested in liquidity benefits in equity markets. These findings previously made it surprising that other prior research did not also find liquidity benefits from mandatory IFRS adoption.

Appendix A

Descriptions for dependent and independent variables

Variable	Description
$Ln(LOT)$	Log of estimated transaction costs following the approach of Lesmond et al. (1999), as modified later by Goyenko et al. 2009.
$Ln(Liq)$	Log of one plus the liquidity factor measured following Christensen et al. (2013). Specifically, the measure uses factor analysis and four liquidity measures: the LOT measure, quoted bid-ask spreads, the proportion of zero return days and the price impact measure of Amihud (2002).
$IFRS$	An indicator variable that equals one in quarters when a firm releases IFRS financial statements and zero otherwise.
$IFRS_{EU}$	An indicator variable that equals one in quarters when a firm from an EU country releases IFRS financial statements and zero otherwise.
$IFRS_{non-EU}$	An indicator variable that equals one in quarters when a firm from a non-EU country releases IFRS financial statements and zero otherwise.
$IFRS_{EU-ENF}$	An indicator variable that equals one in quarters when firms from in the five EU countries (Finland, Germany,the Netherlands, Norway, and the U.K.) coupled IFRS adoption with substantive changes in regulatory enforcement and zero otherwise.
$IFRS_{EUnonENF}$	An indicator variable that equals one in quarters when a firm from the remaining EU countries releases IFRS financial statements and zero otherwise.
$IFRS_{high}$	An indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are domiciled in countries that had above-median pre-adoption regulatory quality based on Kaufmann et al. (2009)and zero otherwise.
$IFRS_{low}$	An indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are domiciled in countries that had below-median pre-adoption regulatory quality based on Kaufmann et al. (2009)and zero otherwise.
$MarketValue$	Stock price times the number of shares outstanding (in US$ million) measured at the end of the quarter.
$Turnover$	The quarterly median of the daily turnover (i.e., US$ trading volume divided by the market value at the end of each trading day).
$Return\ Volatility$	The standard deviation of daily stock returns in a given quarter.

Appendix B - Table 1
Replication of Christensen et al. (2013) Table 3 and 4 Staggered DiD Results

	Christensen et al. (2013) Originally Reported			**Christensen et al. (2013) Replication**		
	(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(Liq)$	$Ln(Liq)$	$Ln(Liq)$	$Ln(Liq)$	$Ln(Liq)$	$Ln(Liq)$
$IFRS$	**-0.035**			**0.009**		
	(-0.86)			**(0.15)**		
$IFRS_{EU}$		**-0.117*** **			**-0.129** **	
		(-2.91)			**(-2.45)**	
$IFRS_{EU\_ENF}$			**-0.195*** **			**-0.167*** **
			(-5.18)			**(-2.78)**
$IFRS_{EU\_nonENF,high}$			**-0.111*** **			**-0.121*** **
			(-6.54)			**(-3.15)**
$IFRS_{EU\_nonENF,low}$			**-0.056**			**-0.109**
			(-0.69)			**(-1.03)**
$IFRS_{non-EU}$		**0.028**			**0.031**	
		(0.75)			**(0.99)**	
$IFRS_{non-EU,high}$			**-0.021**			**0.026**
			(-0.88)			**(0.60)**
$IFRS_{non-EU,low}$			**0.095*** **			**0.043*** **
			(3.41)			**(2.89)**
$Ln(Market\ Value)$	-0.216***	-0.216***	NR	-0.137***	-0.138***	-0.138***
	(-21.26)	(-19.84)		(-7.60)	(-7.25)	(-7.25)
$Ln(Turnover)$	-0.146***	-0.150***	NR	-0.118***	-0.121***	-0.121***
	(-16.51)	(-18.53)		(-12.13)	(-12.31)	(-12.31)
$Ln(Return\ Volatility)$	0.259***	0.255***	NR	0.121***	0.122***	0.122***
	(11.42)	(10.63)		(6.08)	(6.08)	(6.08)
Country & industry FEs	Yes	Yes	Yes	Yes	Yes	Yes
Quarter-year FEs	Global & IFRS countries	Each country	Each country	Global & IFRS countries	Each country	Each country
Observations	561,590	561,590	561,590	512,504	512,504	512,504
Adj. R^2	0.652	0.653	0.677	0.67	0.69	0.69

This table compares the estimates from Christensen et al. (2013) with those using our sample and the staggered DiD design used in the original Christensen et al. (2013) study. The sample consists of firm-quarter observations from the first quarter of 2001 and the fourth quarter of 2009, as well as firms from the same treatment and control countries as (Christensen et al., 2013) study. The dependent variables, logged liquidity factor ($Ln(Liq)$), is constructed using factor analysis and four liquidity measures: the LOT measure (Lesmond et al., 1999; Lesmond, 2005), quoted bid-ask spreads, the proportion of zero return days and the price impact measure of Amihud (2002). The regressors are defined consistent with Christensen et al. (2013). $IFRS$ is an indicator variable that equals one in quarters when a firm releases IFRS financial statements and zero otherwise. $IFRS_{EU}$ is an indicator variable that equals one in quarters when a firm from an EU country releases IFRS financial statements and zero otherwise. $IFRS_{non-EU}$ is an indicator variable that equals one in quarters when a firm from a non-EU country releases IFRS financial statements and zero otherwise. $IFRS_{EU-ENF}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in an EU country that had changes in securities enforcement with the

adoption of IFRS and zero otherwise. $IFRS_{EUnonENF,high}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in an EU country that did not have changes in securities enforcement with the adoption of IFRS and had above-median pre-adoption regulatory quality based on Kaufmann et al. (2009), and zero otherwise. $IFRS_{EUnonENF,low}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in an EU country that did not have changes in securities enforcement with the adoption of IFRS and had below-median pre-adoption regulatory quality based on Kaufmann et al. (2009), and zero otherwise. $IFRS_{non-EU,high}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in a non-EU country and had above-median pre-adoption regulatory quality based on Kaufmann et al. (2009), and zero otherwise. $IFRS_{non-EU,low}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in a non-EU country and had below-median pre-adoption regulatory quality based on Kaufmann et al. (2009), and zero otherwise. The control variables are defined following (Christensen et al., 2013). $MarketValue$ is stock price times the number of shares outstanding (in US$ million) measured at the end of the quarter. $Turnover$ 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). $ReturnVariability$ is the standard deviation of daily stock returns in a given quarter. All continuous variables are winsorized at the 1^{st} and 99^{th} percentile. Standard errors are clustered at the country and year-quarter levels. The symbols ***, **, and * denote significance at the 0.01, 0.025, and 0.05 levels, respectively. NR denotes coefficients that were not reported in Christensen et al. (2013).

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FIGURE 1
Liquidity impact of mandatory IFRS adoption by illiquidity quantile

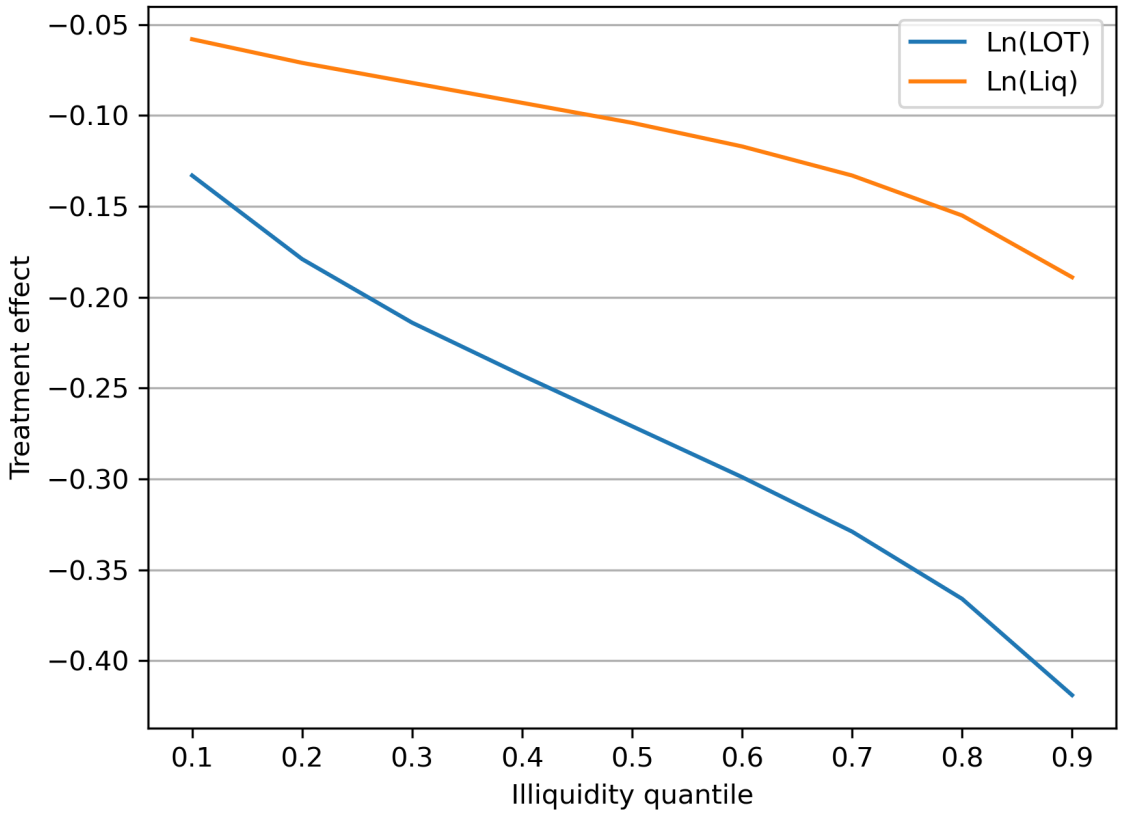

Figure 1 plots the coefficients from the estimation of Eq. (2) at each decile of illiquidity using both $Ln(LOT)$ and $Ln(Liq)$ as the dependent variables that measure illiquidity. $Ln(LOT)$ is the natural logarithm of the quarterly estimate of total round-trip transaction costs inferred from the time-series of daily security and aggregate market returns following the approach of Lesmond et al. (1999), as modified later by Goyenko et al. 2009. $Ln(Liq)$ is the natural logarithm of one plus the liquidity factor from factor analysis applied to the proportion of trading days with zero daily stock returns, the Amihud (2002) illiquidity measure, total trading costs, and bid-ask spreads following the approach in Daske et al. (2008) and Christensen et al. (2013).

TABLE 1
Sample Information
Panel A: Number of Observations and Institutional Variables

Country			Number of observations	Adoption date
European Union Countries ($IFRS_{EU}$):				
Austria	AT	AUT	214	12/31/05
Belgium	BE	BEL	515	12/31/05
Czech Republic	CZ	CZE	37	12/31/05
Denmark	DK	DNK	600	12/31/05
Estonia	EE	EST	43	12/31/05
Finland	FI	FIN	616	12/31/05
France	FR	FRA	2,390	12/31/05
Germany	DE	DEU	1,907	12/31/05
Greece	GR	GRC	1,427	12/31/05
Hungary	HU	HUN	101	12/31/05
Ireland	IE	IRL	32	12/31/05
Italy	IT	ITA	1,159	12/31/05
Lithuania	LT	LTU	99	12/31/05
Luxembourg	LU	LUX	17	12/31/05
Netherlands	NL	NLD	578	12/31/05
Norway	NO	NOR	681	12/31/05
Poland	PL	POL	800	12/31/05
Portugal	PT	PRT	224	12/31/05
Slovakia	SK	SVK	2	12/31/05
Slovenia	SI	SVN	23	12/31/05
Spain	ES	ESP	571	12/31/05
Sweden	SE	SWE	1,403	12/31/05
United Kingdom	GB	GBR	2,006	12/31/05
IFRS Adoption Countries Outside the European Union ($IFRS_{non-EU}$):				
Australia	AU	AUS	806	12/31/05
Hong Kong	HK	HKG	216	12/31/05
Philippines	PH	PHL	480	12/31/05
South Africa	ZA	ZAF	468	12/31/05
Switzerland	CH	CHE	723	12/31/05
Non-IFRS Countries (Benchmark Sample)**:**				
Argentina	AR	ARG	315	
Brazil	BR	BRA	216	
Canada	CA	CAN	7,755	
Chile	CL	CHL	442	
China	CN	CHN	6,538	
Egypt	EG	EGY	323	
India	IN	IND	2,945	
Indonesia	ID	IDN	971	
Israel	IL	ISR	1,069	
Japan	JP	JPN	19,291	
Korea (South)	KR	KOR	7,321	
Malaysia	MY	MYS	4,859	
Mexico	MX	MEX	101	
Morocco	MA	MAR	216	
New Zealand	NZ	NZL	535	
Pakistan	PK	PAK	736	
Qatar	QA	QAT	12	
Russian Federation	RU	RUS	121	
Saudi Arabia	SA	SAU	109	
Sri Lanka	LK	LKA	377	
Taiwan	TW	TWN	4,130	
Thailand	TH	THA	1,858	
Turkey	TR	TUR	1,473	
United States	US	USA	15,692	

Panel B: Country Classifications

	IFRS & Bundled Enforcement in EU		IFRS Conditional on Regulatory Quality and Enforcement Change					
	$IFRS_{EU\_ENF}$	$IFRS_{EU\_nonENF}$	$IFRS_{High}$	$IFRS_{Low}$	$IFRS_{EU\_nonENF\_High}$	$IFRS_{EU\_nonENF\_Low}$	$IFRS_{non-EU\_High}$	$IFRS_{non-EU\_Low}$
European Union Countries ($IFRS_{EU}$):								
Austria	0	1	1	0	1	0	0	0
Belgium	0	1	1	0	1	0	0	0
Czech Republic	0	1	0	1	0	1	0	0
Denmark	0	1	1	0	1	0	0	0
Estonia	0	1	1	0	1	0	0	0
Finland	1	0	1	0	0	0	0	0
France	0	1	0	1	0	1	0	0
Germany	1	0	1	0	0	0	0	0
Greece	0	1	0	1	0	1	0	0
Hungary	0	1	0	1	0	1	0	0
Ireland	0	1	1	0	1	0	0	0
Italy	0	1	0	1	0	1	0	0
Lithuania	0	1	0	1	0	1	0	0
Luxembourg	0	1	1	0	1	0	0	0
Netherlands	1	0	1	0	0	0	0	0
Norway	1	0	1	0	0	0	0	0
Poland	0	1	0	1	0	1	0	0
Portugal	0	1	0	1	0	1	0	0
Slovakia	0	1	0	1	0	1	0	0
Slovenia	0	1	0	1	0	1	0	0
Spain	0	1	1	0	1	0	0	0
Sweden	0	1	1	0	1	0	0	0
United Kingdom	1	0	1	0	0	0	0	0
IFRS Adoption Countries Outside the European Union ($IFRS_{non-EU}$):								
Australia	0	0	1	0	0	0	1	0
Hong Kong	0	0	1	0	0	0	1	0
Philippines	0	0	0	1	0	0	0	1
South Africa	0	0	0	1	0	0	0	1
Switzerland	0	0	1	0	0	0	1	0

Table 1 presents information about the countries used in our analysis. Panel A presents the number of observations from each country, the IFRS adoption of each country, and its 2003 Regulatory Quality index value from Kaufmann et al. (2009). Panel B presents the classifications of countries for the different treatment groups used in our analyses. The treatment period is from Q2 2005 to Q3 2006. Following the approach in Christensen et al. (2013), we include Norway as part of the EU sample for comparative purposes. Although the official IFRS reporting date was uniform (December 31, 2005), variations in fiscal year-ends meant companies adopted IFRS at different times throughout

2006 (from Q1 2006 to Q4 2006). To account for this variation, we organize our data as follows. First, we construct the treatment sample as firms adopting IFRS in the first quarter of 2006 (i.e., first adopters) and including data from the three calendar quarters before and after their actual IFRS adoption dates ([-3, +3]). Second, we form the control sample as firms not adopting IFRS by the fourth quarter of 2016 and including the same corresponding quarters as the treatment sample. Third, this sample construction gives rise to a standard DID approach and allows for inclusion of country-year-quarter fixed effects. We exclude early adopters and those that dropped out before adoption from our analysis. The final sample has a sample period from Q2 2005 to Q3 2006 and 95,543 firm-quarters. Panel A, presents the number of firm-quarter observations for each country, (ii) the mandatory IFRS reporting date, (iii) whether a bundled substantive change in enforcement occurred, and (iv) the Regulatory Quality index from Kaufmann et al. (2009) and measured as of 2003. Panel B presents the binary indicator variables for IFRS adoption and bundled substantive changes in enforcement by country.

TABLE 2
Summary Statistics

Variable	N	Mean	Standard Deviation	P1	P25	Median	P75	P99
LOT	99,543	0.017	0.032	0.000	0.002	0.006	0.015	0.207
Liq	77,618	-0.022	0.733	-0.511	-0.415	-0.285	0.019	3.886
$MarketValue$	99,543	790.111	2429.658	4.285	33.633	108.213	376.173	17833.981
$Turnover$	99,543	0.003	0.006	0.000	0.000	0.001	0.004	0.044
$Return\ Volatility$	99,543	0.028	0.018	0.007	0.016	0.023	0.034	0.112

Table 2 presents descriptive statistics for our sample of firm-quarter observations from from Q2 2005 to Q3 2006. LOT is the quarterly estimate of total round-trip transaction costs inferred from the time-series of daily security and aggregate market returns following the approach of Lesmond et al. (1999), as modified later by Goyenko et al. 2009. Liq is the liquidity factor from factor analysis applied to the proportion of trading days with zero daily stock returns, the Amihud (2002) illiquidity measure, total trading costs, and bid-ask spreads following the approach in Daske et al. (2008) and Christensen et al. (2013). $MarketValue$ is stock price times the number of shares outstanding (in US$ million) measured at the end of the quarter. $Turnover$ 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). $Return\ Volatility$ is the standard deviation of daily stock returns in a given quarter. All continuous variables are winsorized at their 1st and 99th percentile values.

TABLE 3
Liquidity changes for firms adopting IFRS: The importance of liquidity differences

Panel A: $Ln(LOT)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1) $Ln(LOT)_{All}$	(2) $Ln(LOT)_{Q10}$	(3) $Ln(LOT)_{Q25}$	(4) $Ln(LOT)_{Q50}$	(5) $Ln(LOT)_{Q75}$	(6) $Ln(LOT)_{Q90}$
$IFRS$	**-0.274*** **	**-0.133***	**-0.197** **	**-0.271*** **	**-0.347*** **	**-0.419*** **
	(-2.84)	**(-1.95)**	**(-2.56)**	**(-2.87)**	**(-2.97)**	**(-3.00)**
$Ln(Market\ Value)$	-0.298***	-0.279***	-0.287***	-0.297***	-0.307***	-0.317***
	(-12.17)	(-14.13)	(-13.57)	(-12.30)	(-10.87)	(-9.65)
$Ln(Turnover)$	-0.246***	-0.186***	-0.213***	-0.245***	-0.277***	-0.308***
	(-13.20)	(-10.15)	(-12.41)	(-13.21)	(-12.30)	(-10.92)
$Ln(Return\ Volatility)$	0.518***	0.472***	0.493***	0.518***	0.542***	0.566***
	(7.49)	(6.52)	(7.44)	(7.56)	(6.79)	(5.85)
$IFRS$ χ^2-tests:						
$Q90 = Q10$		**7.33*** **				
		0.007				
$Q75 = Q25$		**7.22*** **				
		0.007				
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	95,543	95,543	95,543	95,543	95,543	95,543
Within Adj. R^2	0.44	#N/A	#N/A	#N/A	#N/A	#N/A

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1) $Ln(Liq)_{All}$	(2) $Ln(Liq)_{Q10}$	(3) $Ln(Liq)_{Q25}$	(4) $Ln(Liq)_{Q50}$	(5) $Ln(Liq)_{Q75}$	(6) $Ln(Liq)_{Q90}$
$IFRS$	**-0.112*** **	**-0.058** **	**-0.077*** **	**-0.104*** **	**-0.143*** **	**-0.189*** **
	(-2.82)	**(-2.25)**	**(-2.65)**	**(-2.85)**	**(-2.84)**	**(-2.76)**
$Ln(Market\ Value)$	-0.103***	-0.087***	-0.092***	-0.101***	-0.112***	-0.126***
	(-8.38)	(-18.72)	(-15.16)	(-9.46)	(-6.11)	(-4.60)
$Ln(Turnover)$	-0.115***	-0.070***	-0.085***	-0.108***	-0.140***	-0.178***
	(-12.82)	(-11.30)	(-13.13)	(-13.23)	(-11.04)	(-9.58)
$Ln(Return\ Volatility)$	0.114***	0.061***	0.079***	0.106***	0.144***	0.188***
	(8.80)	(5.39)	(9.12)	(9.13)	(6.48)	(5.23)
$IFRS$ χ^2-tests:						
$Q90 = Q10$		**5.32** **				
		0.021				
$Q75 = Q25$		**5.36** **				
		0.021				
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(Liq)_{All}$	$Ln(Liq)_{Q10}$	$Ln(Liq)_{Q25}$	$Ln(Liq)_{Q50}$	$Ln(Liq)_{Q75}$	$Ln(Liq)_{Q90}$
Observations	77,618	77,618	77,618	77,618	77,618	77,618
Within Adj. R^2	0.43	#N/A	#N/A	#N/A	#N/A	#N/A

Table 3 reports the results from estimating the IFRS adoption effect on firms' liquidity using a sample of firm-quarter observations from Q2 2005 to Q3 2006. Panel A presents results using $Ln(LOT)$ as the dependent variable. Panel B presents results using $Ln(Liq)$ as the dependent variable. $Ln(LOT)$ is the natural logarithm of the quarterly estimate of total round-trip transaction costs inferred from the time-series of daily security and aggregate market returns following the approach of Lesmond et al. (1999), as modified later by Goyenko et al. 2009. $Ln(Liq)$ is the natural logarithm of one plus the liquidity factor from factor analysis applied to the proportion of trading days with zero daily stock returns, the Amihud (2002) illiquidity measure, total trading costs, and bid-ask spreads following the approach in Daske et al. (2008) and Christensen et al. (2013). The regressors are defined consistent with Christensen et al. (2013). $IFRS$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms and zero otherwise. $MarketValue$ is stock price times the number of shares outstanding (in US$ million) measured at the end of the quarter. $Turnover$ 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). $Return\ Volatility$ is the standard deviation of daily stock returns in a given quarter. All continuous variables are winsorized at their 1st and 99th percentile values. Standard errors are clustered at the country level. The symbols ***, **, and * denote significance at the 0.01, 0.025, and 0.05 levels, respectively.

TABLE 4
Liquidity changes for EU versus non-EU adopters: The importance of liquidity differences adopters

Panel A: $Ln(LOT)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1) $Ln(LOT)_{All}$	(2) $Ln(LOT)_{Q10}$	(3) $Ln(LOT)_{Q25}$	(4) $Ln(LOT)_{Q50}$	(5) $Ln(LOT)_{Q75}$	(6) $Ln(LOT)_{Q90}$
$IFRS_{EU}$	**-0.396*** (-4.22)**	**-0.173** (-2.22)**	**-0.276*** (-3.34)**	**-0.393*** (-4.25)**	**-0.512*** (-4.83)**	**-0.626*** (-5.21)**
$IFRS_{non-EU}$	**0.025 (0.35)**	**-0.031 (-0.25)**	**-0.005 (-0.05)**	**0.024 (0.34)**	**0.054 (1.23)**	**0.083*** (2.95)**
$Ln(Market\,Value)$	-0.297*** (-12.16)	-0.279*** (-14.10)	-0.287*** (-13.56)	-0.297*** (-12.30)	-0.307*** (-10.87)	-0.317*** (-9.65)
$Ln(Turnover)$	-0.246*** (-13.19)	-0.186*** (-10.14)	-0.213*** (-12.39)	-0.245*** (-13.21)	-0.277*** (-12.30)	-0.307*** (-10.92)
$Ln(Return\,Volatility)$	0.518*** (7.47)	0.472*** (6.51)	0.493*** (7.43)	0.517*** (7.55)	0.542*** (6.78)	0.565*** (5.84)
$IFRS_{EU}$ χ^2-tests:						
$Q90 = Q10$		**33.49*** <0.001**				
$Q75 = Q25$		**32.36*** <0.001**				
$IFRS_{non-EU}$ χ^2-tests:						
$Q90 = Q10$		**0.91 0.340**				
$Q75 = Q25$		**0.91 0.340**				
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	95,543	95,543	95,543	95,543	95,543	95,543
Within Adj. R^2	0.44	#N/A	#N/A	#N/A	#N/A	#N/A

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1) $Ln(Liq)_{All}$	(2) $Ln(Liq)_{Q10}$	(3) $Ln(Liq)_{Q25}$	(4) $Ln(Liq)_{Q50}$	(5) $Ln(Liq)_{Q75}$	(6) $Ln(Liq)_{Q90}$
$IFRS_{EU}$	**-0.164*** (-4.77)**	**-0.068*** (-2.73)**	**-0.101*** (-3.73)**	**-0.150*** (-4.63)**	**-0.219*** (-5.29)**	**-0.300*** (-5.43)**
$IFRS_{non-EU}$	**0.013 (0.29)**	**-0.041 (-0.64)**	**-0.022 (-0.39)**	**0.005 (0.11)**	**0.044 (1.20)**	**0.090*** (3.09)**
$Ln(Market\,Value)$	-0.103*** (-8.38)	-0.087*** (-18.66)	-0.092*** (-15.14)	-0.101*** (-9.46)	-0.112*** (-6.11)	-0.126*** (-4.61)
$Ln(Turnover)$	-0.115***	-0.070***	-0.085***	-0.108***	-0.140***	-0.178***

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(Liq)_{All}$	$Ln(Liq)_{Q10}$	$Ln(Liq)_{Q25}$	$Ln(Liq)_{Q50}$	$Ln(Liq)_{Q75}$	$Ln(Liq)_{Q90}$
	(-12.83)	(-11.27)	(-13.13)	(-13.22)	(-11.05)	(-9.61)
$Ln(Return\ Volatility)$	0.113***	0.061***	0.079***	0.106***	0.143***	0.188***
	(8.83)	(5.36)	(9.08)	(9.14)	(6.49)	(5.25)
$IFRS_{EU}$ χ^2-tests:						
$Q90 = Q10$		**27.70*** **				
		<0.001				
$Q75 = Q25$		**30.80*** **				
		<0.001				
$IFRS_{non-EU}$ χ^2-tests:						
$Q90 = Q10$		**6.60** **				
		0.010				
$Q75 = Q25$		**6.63*** **				
		0.010				
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	77,618	77,618	77,618	77,618	77,618	77,618
Within Adj. R^2	0.43	#N/A	#N/A	#N/A	#N/A	#N/A

Table 4 reports the results from estimating the differential IFRS adoption effect on firms' liquidity across EU and non-EU firms using a sample of firm-quarter observations from Q2 2005 to Q3 2006. Panel A presents results using $Ln(LOT)$ as the dependent variable. Panel B presents results using $Ln(Liq)$ as the dependent variable. $Ln(LOT)$ is the natural logarithm of the quarterly estimate of total round-trip transaction costs inferred from the time-series of daily security and aggregate market returns following the approach of Lesmond et al. (1999), as modified later by Goyenko et al. 2009. $Ln(Liq)$ is the natural logarithm of one plus the liquidity factor from factor analysis applied to the proportion of trading days with zero daily stock returns, the Amihud (2002) illiquidity measure, total trading costs, and bid-ask spreads following the approach in Daske et al. (2008) and Christensen et al. (2013). The regressors are defined consistent with Christensen et al. (2013). $IFRS_{EU}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in an EU country and zero otherwise. $IFRS_{non-EU}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in a non-EU country and zero otherwise. $MarketValue$ is stock price times the number of shares outstanding (in US$ million) measured at the end of the quarter. $Turnover$ 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). $Return\ Volatility$ is the standard deviation of daily stock returns in a given quarter. All continuous variables are winsorized at their 1st and 99th percentile values. Standard errors are clustered at the country level. The symbols ***, **, and * denote significance at the 0.01, 0.025, and 0.05 levels, respectively.

TABLE 5
Liquidity changes for EU bundled adopters versus EU non-bundled and non-EU adopters: The importance of liquidity differences

Panel A: $Ln(LOT)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1) $Ln(LOT)_{All}$	(2) $Ln(LOT)_{Q10}$	(3) $Ln(LOT)_{Q25}$	(4) $Ln(LOT)_{Q50}$	(5) $Ln(LOT)_{Q75}$	(6) $Ln(LOT)_{Q90}$
$IFRS_{EU-ENF}$	**-0.531*** (-4.63)**	**-0.264** (-2.29)**	**-0.387*** (-3.39)**	**-0.527*** (-4.66)**	**-0.670*** (-5.94)**	**-0.806*** (-7.05)**
$IFRS_{EUnonENF}$	**-0.207** (-2.36)**	**-0.071 (-0.80)**	**-0.134 (-1.62)**	**-0.205** (-2.37)**	**-0.278*** (-2.76)**	**-0.348*** (-2.89)**
$IFRS_{non-EU}$	**0.025 (0.35)**	**-0.031 (-0.24)**	**-0.005 (-0.05)**	**0.024 (0.34)**	**0.054 (1.23)**	**0.083*** (2.94)**
$Ln(Market\,Value)$	-0.297*** (-12.16)	-0.279*** (-14.08)	-0.287*** (-13.54)	-0.297*** (-12.29)	-0.307*** (-10.88)	-0.317*** (-9.65)
$Ln(Turnover)$	-0.246*** (-13.19)	-0.186*** (-10.14)	-0.213*** (-12.40)	-0.245*** (-13.21)	-0.277*** (-12.30)	-0.307*** (-10.92)
$Ln(Return\,Volatility)$	0.518*** (7.47)	0.472*** (6.51)	0.493*** (7.43)	0.517*** (7.55)	0.542*** (6.78)	0.566*** (5.84)
$IFRS_{EU-ENF}$ χ^2-tests:						
$Q90 = Q10$		**439.35*** <0.001**				
$Q75 = Q25$		**388.70*** <0.001**				
$IFRS_{nonENF}$ χ^2-tests:						
$Q90 = Q10$		**5.37** 0.021**				
$Q75 = Q25$		**5.35** 0.021**				
$IFRS_{non-EU}$ χ^2-tests:						
$Q90 = Q10$		**0.91 0.340**				
$Q75 = Q25$		**0.91 0.340**				
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	95,543	95,543	95,543	95,543	95,543	95,543
Within Adj. R^2	0.44	#N/A	#N/A	#N/A	#N/A	#N/A

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1) $Ln(Liq)_{All}$	(2) $Ln(Liq)_{Q10}$	(3) $Ln(Liq)_{Q25}$	(4) $Ln(Liq)_{Q50}$	(5) $Ln(Liq)_{Q75}$	(6) $Ln(Liq)_{Q90}$
$IFRS_{EU-ENF}$	**-0.201*** (-4.10)**	**-0.096*** (-3.73)**	**-0.132*** (-3.96)**	**-0.185*** (-4.13)**	**-0.261*** (-4.23)**	**-0.350*** (-4.15)**

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1) $Ln(Liq)_{All}$	(2) $Ln(Liq)_{Q10}$	(3) $Ln(Liq)_{Q25}$	(4) $Ln(Liq)_{Q50}$	(5) $Ln(Liq)_{Q75}$	(6) $Ln(Liq)_{Q90}$
$IFRS_{EUnonENF}$	**-0.113*** (-2.92)**	**-0.038 (-1.22)**	**-0.064* (-1.93)**	**-0.102*** (-2.75)**	**-0.156*** (-3.51)**	**-0.219*** (-3.95)**
$IFRS_{non-EU}$	**0.013 (0.29)**	**-0.041 (-0.64)**	**-0.022 (-0.39)**	**0.005 (0.11)**	**0.044 (1.20)**	**0.090*** (3.09)**
$Ln(Market\,Value)$	-0.103*** (-8.38)	-0.087*** (-18.62)	-0.092*** (-15.13)	-0.101*** (-9.45)	-0.112*** (-6.11)	-0.126*** (-4.61)
$Ln(Turnover)$	-0.115*** (-12.83)	-0.070*** (-11.30)	-0.085*** (-13.14)	-0.108*** (-13.22)	-0.140*** (-11.05)	-0.178*** (-9.59)
$Ln(Return\,Volatility)$	0.114*** (8.80)	0.061*** (5.35)	0.079*** (9.08)	0.106*** (9.12)	0.144*** (6.48)	0.188*** (5.23)
$IFRS_{EU-ENF}$ χ^2-tests:						
$Q90 = Q10$		**16.93*** <0.001**				
$Q75 = Q25$		**18.59*** <0.001**				
$IFRS_{nonENF}$ χ^2-tests:						
$Q90 = Q10$		**19.64*** <0.001**				
$Q75 = Q25$		**20.29*** <0.001**				
$IFRS_{non-EU}$ χ^2-tests:						
$Q90 = Q10$		**6.60** 0.010**				
$Q75 = Q25$		**6.63*** 0.010**				
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	77,618	77,618	77,618	77,618	77,618	77,618
Within Adj. R^2	0.43	#N/A	#N/A	#N/A	#N/A	#N/A

Table 5 reports the results from estimating the differential IFRS adoption effect on firms' liquidity across countries that did and did not have changes in securities enforcement at the time of IFRS adoption using a sample of firm-quarter observations from Q2 2005 to Q3 2006. Panel A presents results using $Ln(LOT)$ as the dependent variable. Panel B presents results using $Ln(Liq)$ as the dependent variable. $Ln(LOT)$ is the natural logarithm of the quarterly estimate of total round-trip transaction costs inferred from the time-series of daily security and aggregate market returns following the approach of Lesmond et al. (1999), as modified later by Goyenko et al. 2009. $Ln(Liq)$ is the natural logarithm of one plus the liquidity factor from factor analysis applied to the proportion of trading days with zero daily stock returns, the Amihud (2002) illiquidity measure, total trading costs, and bid-ask spreads following the approach in Daske et al. (2008) and Christensen et al. (2013). The regressors are defined consistent with Christensen et al. (2013). $IFRS_{EU-ENF}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in an EU country that had changes in securities enforcement with the adoption of IFRS and zero otherwise. $IFRS_{EUnonENF}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in an EU country that did not had changes in securities enforcement with the adoption of IFRS and zero otherwise. $IFRS_{non-EU}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in a non-EU country and zero otherwise. $MarketValue$ is stock price times the number of shares outstanding (in US$ million) measured at the end of the quarter. $Turnover$ 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). $Return\,Volatility$ is the standard deviation of daily stock returns in a given quarter. All continuous variables are winsorized at their 1st and 99th percentile values. Standard

errors are clustered at the country level. The symbols ***, **, and * denote significance at the 0.01, 0.025, and 0.05 levels, respectively.

TABLE 6
Liquidity changes for high versus low regulatory quality adopters: The importance of liquidity differences

Panel A: $Ln(LOT)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1) $Ln(LOT)_{All}$	(2) $Ln(LOT)_{Q10}$	(3) $Ln(LOT)_{Q25}$	(4) $Ln(LOT)_{Q50}$	(5) $Ln(LOT)_{Q75}$	(6) $Ln(LOT)_{Q90}$
$IFRS_{high}$	**-0.371*** **	**-0.206** **	**-0.281*** **	**-0.368*** **	**-0.457*** **	**-0.540*** **
	(-2.99)	**(-2.04)**	**(-2.62)**	**(-3.02)**	**(-3.19)**	**(-3.24)**
$IFRS_{low}$	**-0.059**	**-0.017**	**-0.037**	**-0.058**	**-0.081**	**-0.102**
	(-1.15)	**(-0.32)**	**(-0.79)**	**(-1.16)**	**(-1.19)**	**(-1.13)**
$Ln(Market\ Value)$	-0.298***	-0.279***	-0.287***	-0.297***	-0.307***	-0.317***
	(-12.17)	(-14.12)	(-13.56)	(-12.30)	(-10.88)	(-9.65)
$Ln(Turnover)$	-0.246***	-0.186***	-0.213***	-0.245***	-0.277***	-0.308***
	(-13.20)	(-10.16)	(-12.41)	(-13.21)	(-12.30)	(-10.93)
$Ln(Return\ Volatility)$	0.518***	0.472***	0.493***	0.518***	0.543***	0.566***
	(7.49)	(6.51)	(7.43)	(7.56)	(6.79)	(5.85)
$IFRS_{high}$ χ^2-tests:						
$Q90 = Q10$		**7.52*** **				
		0.006				
$Q75 = Q25$		**7.40*** **				
		0.007				
$IFRS_{low}$ χ^2-tests:						
$Q90 = Q10$		**0.61**				
		0.434				
$Q75 = Q25$		**0.61**				
		0.434				
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	95,543	95,543	95,543	95,543	95,543	95,543
Within Adj. R^2	0.44	#N/A	#N/A	#N/A	#N/A	#N/A

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1) $Ln(Liq)_{All}$	(2) $Ln(Liq)_{Q10}$	(3) $Ln(Liq)_{Q25}$	(4) $Ln(Liq)_{Q50}$	(5) $Ln(Liq)_{Q75}$	(6) $Ln(Liq)_{Q90}$
$IFRS_{high}$	**-0.139** **	**-0.074** **	**-0.097** **	**-0.129** **	**-0.177*** **	**-0.233*** **
	(-2.53)	**(-2.09)**	**(-2.34)**	**(-2.53)**	**(-2.64)**	**(-2.67)**
$IFRS_{low}$	**-0.052***	**-0.035**	**-0.041*** **	**-0.050** **	**-0.062**	**-0.077**
	(-1.94)	**(-1.55)**	**(-3.50)**	**(-2.41)**	**(-1.23)**	**(-0.88)**
$Ln(Market\ Value)$	-0.103***	-0.087***	-0.092***	-0.101***	-0.112***	-0.126***
	(-8.38)	(-18.68)	(-15.15)	(-9.46)	(-6.11)	(-4.60)
$Ln(Turnover)$	-0.115***	-0.070***	-0.085***	-0.108***	-0.140***	-0.178***

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(Liq)_{All}$	$Ln(Liq)_{Q10}$	$Ln(Liq)_{Q25}$	$Ln(Liq)_{Q50}$	$Ln(Liq)_{Q75}$	$Ln(Liq)_{Q90}$
	(-12.82)	(-11.33)	(-13.16)	(-13.23)	(-11.03)	(-9.57)
$Ln(Return\ Volatility)$	0.114***	0.061***	0.079***	0.106***	0.144***	0.188***
	(8.79)	(5.38)	(9.11)	(9.12)	(6.47)	(5.22)
$IFRS_{high}$ χ^2-tests:						
$Q90 = Q10$		**6.83*** **				
		0.009				
$Q75 = Q25$		**6.91*** **				
		0.009				
$IFRS_{low}$ χ^2-tests:						
$Q90 = Q10$		**0.16**				
		0.690				
$Q75 = Q25$		**0.16**				
		0.690				
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	77,618	77,618	77,618	77,618	77,618	77,618
Within Adj. R^2	0.43	#N/A	#N/A	#N/A	#N/A	#N/A

Table 6 reports the results from estimating the differential IFRS adoption effect on firms' liquidity across firms' home country pre-adoption level of securities regulatory quality using a sample of firm-quarter observations from Q2 2005 to Q3 2006. Panel A presents results using $Ln(LOT)$ as the dependent variable. Panel B presents results using $Ln(Liq)$ as the dependent variable. $Ln(LOT)$ is the natural logarithm of the quarterly estimate of total round-trip transaction costs inferred from the time-series of daily security and aggregate market returns following the approach of Lesmond et al. (1999), as modified later by Goyenko et al. 2009. $Ln(Liq)$ is the natural logarithm of one plus the liquidity factor from factor analysis applied to the proportion of trading days with zero daily stock returns, the Amihud (2002) illiquidity measure, total trading costs, and bid-ask spreads following the approach in Daske et al. (2008) and Christensen et al. (2013). The regressors are defined consistent with Christensen et al. (2013). $IFRS_{high}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are domiciled in countries that had above-median pre-adoption regulatory quality based on Kaufmann et al. (2009)and zero otherwise. $IFRS_{low}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are domiciled in countries that had below-median pre-adoption regulatory quality based on Kaufmann et al. (2009)and zero otherwise. $MarketValue$ is stock price times the number of shares outstanding (in US$ million) measured at the end of the quarter. $Turnover$ 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). $Return\ Volatility$ is the standard deviation of daily stock returns in a given quarter. All continuous variables are winsorized at their 1st and 99th percentile values. Standard errors are clustered at the country level. The symbols ***, **, and * denote significance at the 0.01, 0.025, and 0.05 levels, respectively.

TABLE 7
Liquidity changes for EU bundled adopters versus non-bundled and non-EU adopters across regulatory quality: The importance of liquidity differences

Panel A: $Ln(LOT)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(LOT)_{All}$	$Ln(LOT)_{Q10}$	$Ln(LOT)_{Q25}$	$Ln(LOT)_{Q50}$	$Ln(LOT)_{Q75}$	$Ln(LOT)_{Q90}$
$IFRS_{EU-ENF}$	**-0.531*** **	**-0.264** **	**-0.387*** **	**-0.527*** **	**-0.670*** **	**-0.806*** **
	(-4.63)	**(-2.29)**	**(-3.39)**	**(-4.66)**	**(-5.94)**	**(-7.05)**
$IFRS_{EUnonENF,high}$	**-0.461** **	**-0.392*** **	**-0.424*** **	**-0.460** **	**-0.497** **	**-0.532** **
	(-2.49)	**(-2.70)**	**(-2.71)**	**(-2.52)**	**(-2.28)**	**(-2.08)**
$IFRS_{EUnonENF,low}$	**-0.091***	**0.031**	**-0.025**	**-0.089***	**-0.155*** **	**-0.217*** **
	(-1.81)	**(0.31)**	**(-0.33)**	**(-1.78)**	**(-4.32)**	**(-4.89)**
$IFRS_{non-EU,high}$	**0.040**	**0.006**	**0.021**	**0.039**	**0.057**	**0.075***
	(0.38)	**(0.03)**	**(0.15)**	**(0.37)**	**(0.88)**	**(1.87)**
$IFRS_{non-EU,low}$	**0.001**	**-0.094*** **	**-0.050*** **	**-0.001**	**0.050***	**0.098*** **
	(0.03)	**(-7.48)**	**(-3.24)**	**(-0.04)**	**(1.71)**	**(2.69)**
$Ln(Market\ Value)$	-0.297***	-0.279***	-0.287***	-0.297***	-0.307***	-0.317***
	(-12.16)	(-14.08)	(-13.55)	(-12.30)	(-10.88)	(-9.65)
$Ln(Turnover)$	-0.246***	-0.186***	-0.213***	-0.245***	-0.277***	-0.308***
	(-13.19)	(-10.15)	(-12.40)	(-13.21)	(-12.30)	(-10.92)
$Ln(Return\ Volatility)$	0.518***	0.472***	0.493***	0.517***	0.542***	0.566***
	(7.47)	(6.50)	(7.42)	(7.55)	(6.78)	(5.84)
$IFRS_{EU-ENF}$ χ^2-tests:						
$Q90 = Q10$		**439.91*** **				
		<0.001				
$Q75 = Q25$		**388.47*** **				
		<0.001				
$IFRS_{nonENF,high}$ χ^2-tests:						
$Q90 = Q10$		**0.52**				
		0.469				
$Q75 = Q25$		**0.52**				
		0.469				
$IFRS_{nonENF,low}$ χ^2-tests:						
$Q90 = Q10$		**4.21** **				
		0.040				
$Q75 = Q25$		**4.19** **				
		0.041				
$IFRS_{non-EU,high}$ χ^2-tests:						
$Q90 = Q10$		**0.16**				
		0.686				
$Q75 = Q25$		**0.16**				
		0.686				
$IFRS_{non-EU,low}$ χ^2-tests:						
$Q90 = Q10$		**36.99*** **				
		<0.001				
$Q75 = Q25$		**37.68*** **				
		<0.001				

Panel A: $Ln(LOT)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(LOT)_{All}$	$Ln(LOT)_{Q10}$	$Ln(LOT)_{Q25}$	$Ln(LOT)_{Q50}$	$Ln(LOT)_{Q75}$	$Ln(LOT)_{Q90}$
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	95,543	95,543	95,543	95,543	95,543	95,543
Within Adj. R^2	0.44	#N/A	#N/A	#N/A	#N/A	#N/A

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(Liq)_{All}$	$Ln(Liq)_{Q10}$	$Ln(Liq)_{Q25}$	$Ln(Liq)_{Q50}$	$Ln(Liq)_{Q75}$	$Ln(Liq)_{Q90}$
$IFRS_{EU-ENF}$	**-0.201*** **	**-0.096*** **	**-0.132*** **	**-0.185*** **	**-0.261*** **	**-0.350*** **
	(-4.10)	**(-3.73)**	**(-3.96)**	**(-4.13)**	**(-4.23)**	**(-4.15)**
$IFRS_{EUnonENF,high}$	**-0.180***	**-0.129***	**-0.146***	**-0.172***	**-0.209** **	**-0.253** **
	(-1.94)	**(-1.86)**	**(-1.92)**	**(-1.96)**	**(-1.98)**	**(-1.97)**
$IFRS_{EUnonENF,low}$	**-0.082*** **	**-0.006**	**-0.032*** **	**-0.071*** **	**-0.126*** **	**-0.190*** **
	(-5.55)	**(-0.78)**	**(-3.44)**	**(-5.36)**	**(-6.54)**	**(-6.60)**
$IFRS_{non-EU,high}$	**0.019**	**-0.017**	**-0.005**	**0.014**	**0.041**	**0.072**
	(0.28)	**(-0.20)**	**(-0.06)**	**(0.20)**	**(0.67)**	**(1.38)**
$IFRS_{non-EU,low}$	**0.003**	**-0.080*** **	**-0.051** **	**-0.009**	**0.051*** **	**0.121*** **
	(0.15)	**(-2.94)**	**(-2.11)**	**(-0.46)**	**(3.18)**	**(9.58)**
$Ln(Market\ Value)$	-0.103***	-0.087***	-0.092***	-0.101***	-0.112***	-0.126***
	(-8.38)	(-18.62)	(-15.14)	(-9.46)	(-6.11)	(-4.61)
$Ln(Turnover)$	-0.115***	-0.070***	-0.085***	-0.108***	-0.140***	-0.178***
	(-12.83)	(-11.31)	(-13.15)	(-13.22)	(-11.05)	(-9.59)
$Ln(Return\ Volatility)$	0.114***	0.061***	0.079***	0.106***	0.144***	0.188***
	(8.80)	(5.35)	(9.08)	(9.12)	(6.47)	(5.23)
$IFRS_{EU-ENF}$ χ^2-tests:						
$Q90 = Q10$		**16.91*** **				
		<0.001				
$Q75 = Q25$		**18.59*** **				
		<0.001				
$IFRS_{nonENF,high}$ χ^2-tests:						
$Q90 = Q10$		**3.12***				
		0.077				
$Q75 = Q25$		**3.13***				
		0.077				
$IFRS_{nonENF,low}$ χ^2-tests:						
$Q90 = Q10$		**48.80*** **				
		<0.001				
$Q75 = Q25$		**54.67*** **				
		<0.001				
$IFRS_{non-EU,high}$ χ^2-tests:						
$Q90 = Q10$		**2.60**				
		0.107				
$Q75 = Q25$		**2.60**				
		0.107				

Panel B: $Ln(Liq)$ **Dependent Variable**

	Global IFRS	**Global IFRS by Percentile using Method of Moments-Quantile Regression**				
	(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(Liq)_{All}$	$Ln(Liq)_{Q10}$	$Ln(Liq)_{Q25}$	$Ln(Liq)_{Q50}$	$Ln(Liq)_{Q75}$	$Ln(Liq)_{Q90}$
$IFRS_{non-EU,low}$ χ^2-tests:						
$Q90 = Q10$		**77.00*** **				
		<0.001				
$Q75 = Q25$		**74.378*** **				
		<0.001				
Country x Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	77,618	77,618	77,618	77,618	77,618	77,618
Within Adj. R^2	0.43	#N/A	#N/A	#N/A	#N/A	#N/A

Table 7 reports the results from estimating the differential IFRS adoption effect on firms' liquidity across countries that did and did not have changes in securities enforcement, as well as home country pre-adoption regulatory quality, at the time of IFRS adoption using a sample of firm-quarter observations from Q2 2005 to Q3 2006. Panel A presents results using $Ln(LOT)$ as the dependent variable. Panel B presents results using $Ln(Liq)$ as the dependent variable. $Ln(LOT)$ is the natural logarithm of the quarterly estimate of total round-trip transaction costs inferred from the time-series of daily security and aggregate market returns following the approach of Lesmond et al. (1999), as modified later by Goyenko et al. 2009. $Ln(Liq)$ is the natural logarithm of one plus the liquidity factor from factor analysis applied to the proportion of trading days with zero daily stock returns, the Amihud (2002) illiquidity measure, total trading costs, and bid-ask spreads following the approach in Daske et al. (2008) and Christensen et al. (2013). The regressors are defined consistent with Christensen et al. (2013). $IFRS_{EU-ENF}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in an EU country that had changes in securities enforcement with the adoption of IFRS and zero otherwise. $IFRS_{EUnonENF,high}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in an EU country that did not have changes in securities enforcement with the adoption of IFRS and had above-median pre-adoption regulatory quality based on Kaufmann et al. (2009), and zero otherwise. $IFRS_{EUnonENF,low}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in an EU country that did not have changes in securities enforcement with the adoption of IFRS and had below-median pre-adoption regulatory quality based on Kaufmann et al. (2009), and zero otherwise. $IFRS_{non-EU,high}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in a non-EU country and had above-median pre-adoption regulatory quality based on Kaufmann et al. (2009), and zero otherwise. $IFRS_{non-EU,low}$ is an indicator variable that is equal to one for quarters following IFRS adoption for treatment firms that are headquartered in a non-EU country and had below-median pre-adoption regulatory quality based on Kaufmann et al. (2009), and zero otherwise. $MarketValue$ is stock price times the number of shares outstanding (in US$ million) measured at the end of the quarter. $Turnover$ 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). $Return\ Volatility$ is the standard deviation of daily stock returns in a given quarter. All continuous variables are winsorized at their 1st and 99th percentile values. Standard errors are clustered at the country level. The symbols ***, **, and * denote significance at the 0.01, 0.025, and 0.05 levels, respectively.