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Does Eliminating the Form 20-F Reconciliation from IFRS to U.S. GAAP Have Capital Market Consequences?

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Abstract

This paper investigates the capital market consequences of the SEC's decision to eliminate the reconciliation requirement for cross-listed companies following International Financial Reporting Standards (IFRS). We find no evidence that the elimination has a negative impact on firms' market liquidity or probability of informed trading (PIN). We also find no evidence of a significant impact on cost of equity, analyst forecasts, institutional ownership, stock price efficiency and synchronicity. Moreover, IFRS users do not increase disclosure frequency nor supply the reconciliation voluntarily. Our results do not support the argument that eliminating the reconciliation results in information loss or greater information asymmetry.

1. Introduction

On November 15, 2007, the Securities and Exchange Commission (SEC) voted to eliminate the requirement for foreign cross-listed firms to provide reconciliation to U.S. Generally Accepted Accounting Principles (GAAP) if they prepare their financial statements in accordance with International Financial Reporting Standards (IFRS). [1] The SEC's move is welcomed by the International Accounting Standards Board (IASB), foreign IFRS-reporting firms, and major U.S. stock exchanges (Norris, 2007). The rule change has not been without controversy, however. Perhaps the debate can be best illustrated by the different views expressed by two committees of the American Accounting Association (AAA) in their respective comment letters submitted to the SEC.

The AAA's Financial Accounting Standards Committee expresses strong support for the SEC's decision to end the reconciliation requirement (AAA, 2007a). Committee members argue that extant accounting research suggests that both IFRS and U.S. GAAP "meet a minimum quality threshold." Moreover, they argue there is evidence that financial reports prepared under IFRS are of similar quality relative to those under U.S. GAAP (e.g., Leuz, 2003; Bartov et al., 2005), thus the elimination is unlikely to lead to a loss of valuable information.

In contrast, the Financial Reporting Policy Committee of the Financial Accounting and Reporting Section of the AAA considers the elimination of the reconciliation requirement "premature" (AAA, 2007b). Committee members argue that there are substantial differences between U.S. GAAP and IFRS, as reflected in the reconciliation items, and that the reconciliation provides value-relevant information to investors (e.g., Harris and Muller, 1999; Chen and Sami, 2008; Henry et al., 2009; Gordon et al., 2009). Thus, valuable information will

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[1] The SEC expects this change to help promote the use of IFRS and facilitate the move towards a single set of globally accepted accounting standards (SEC, 2007a). In addition, the SEC believes that eliminating the reconciliation will reduce information preparation costs and consequently encourage foreign companies to enter or remain in U.S. capital markets (SEC, 2007a).

be lost as a result of the rule change to end the reconciliation requirement. Moreover, the quality of financial information depends not only on accounting standards, but also on implementation of standards and enforcement mechanisms (e.g., Ball, 2001; Ball et al., 2003). Even if IFRS constitute a set of high-quality standards, the resulting financial reports could be of low quality because of inconsistent implementation and enforcement practices in different countries.

In this paper, we attempt to provide evidence on the capital market impact of eliminating reconciliation to U.S. GAAP for cross-listed foreign companies following IFRS. Specifically, we examine the effects of eliminating reconciliation on stock market liquidity and the probability of informed trading (PIN). If reconciliation information is rarely used by investors, and investors do not perceive cross-listed firms' accounting numbers based on IFRS to be of inferior quality relative to those based on U.S. GAAP, then eliminating the reconciliation is unlikely to have a negative impact on the liquidity and PIN of foreign cross-listed firms. Supportive of this view, some studies suggest that the usefulness of the reconciliation has declined or may even diminish by 2006 due to the increased convergence between IFRS and U.S. GAAP and the improvements of IFRS in recent years (e.g., Plumlee and Plumlee, 2007; Chen and Sami, 2010; Jiang et al. 2010). Many practitioners also consider reconciliation an unnecessary and expensive practice (Edwards, 1993; Dzinkowski, 2007).[2]

If, however, eliminating the reconciliation results in a loss of useful information to investors and increases information asymmetries among investors of foreign issuers' stocks, then we would expect a decrease in market liquidity and an increase in PIN, after companies stop providing the reconciliation. In addition, eliminating reconciliation may reduce the comparability

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[2] According to Dzinkowski (2007), experts attending a SEC roundtable on the Roadmap to IFRS in early 2007 agree that most investors, analysts, and rating agencies do not rely on reconciliation; instead they use IFRS or local accounting standards in their decisions regarding international firms. Similar views can be found in the comment letters submitted to the SEC. For example, Merrill Lynch states that "for issuers preparing financial statements in accordance with IFRS, (the reconciliation) provides no meaningful benefits to investors." Allianz SE argues that the reconciliation "is not relevant to the needs of investors and analysts… Analysts now use locally issued IFRS financial statements to perform their evaluation of foreign private issuers."

of financial statements issued by foreign cross-listed and U.S. domestic companies. This may discourage U.S. investors from trading IFRS-reporting firms' shares cross-listed in the U.S. If so, these firms' market liquidity and PIN would also suffer.

Our sample of IFRS firms consists of 78 foreign firms that are cross-listed in the U.S. and prepare their financial statements using IFRS in years 2006 and 2007, with 2006 (2007) being the pre- (post-) elimination year.[3] Our control sample consists of 162 U.S. cross-listed firms that do not use IFRS. We use a difference-in-differences design by comparing the change of market liquidity and PIN for IFRS firms before and after the elimination, relative to the corresponding changes for control firms. We find no evidence that eliminating reconciliation has a significant impact on liquidity as measured by zero returns, price impact, bid-ask spread, and trading costs. We also find no evidence that IFRS firms experience a significant change in PIN after the elimination. Overall, our evidence does not suggest that eliminating the Form 20-F reconciliation has significant negative capital market consequences. We conduct a battery of sensitivity tests and find that our results are robust.

We next investigate the cross-sectional variation of the effects of eliminating the 20-F reconciliation. We partition the sample based on: (1) the magnitude of the absolute difference between IFRS and U.S. GAAP earnings prior to the elimination, a proxy for the degree of potential information loss resulting from the elimination; and (2) institutional ownership, a proxy for investor sophistication. We continue to find no significant impact of the elimination on liquidity and PIN across different partitions of the sample.

In addition to market liquidity and PIN, we also explore other potential consequences of the elimination of the 20-F reconciliation. We investigate and find no evidence that the

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[3] The SEC's rule of eliminating the 20-F reconciliation applies to financial statements ending after November 15, 2007. For ease of exposition, we refer to the last year prior to the rule change as 2006, and the first year after the rule change as 2007. Note, however, that for a firm with fiscal year ending between July 1 and November 15, 2007, the pre- (post-) elimination year is actually 2007 (2008), but is still referred to as year 2006 (2007) in the paper.

elimination has a significant impact on the cost of equity, analysts' forecast error, bias, and dispersion, institutional ownership, and stock price efficiency and synchronicity.

While our main analysis focuses on how the *users* of the reconciliation (i.e., investors) respond to the elimination, we also investigate whether the *preparers* of the reconciliation (i.e., cross-listed IFRS users) respond to the elimination by changing their voluntary disclosures. We find that none of the IFRS firms continue to provide the reconciliation in Form 20-Fs after the elimination. In addition, we examine these firms' press releases, and find that they do not change the frequency of voluntary disclosures after the elimination. Our findings are consistent with firms not perceiving the elimination of the reconciliation to have a detrimental impact, and consequently not taking actions to change their voluntary disclosure strategies. The findings also provide support that our primary result (i.e., no change in liquidity and PIN after the elimination) is not driven by firms' increasing other disclosures to substitute for potential information loss from not disclosing the 20-F reconciliation.

Our results are consistent with Leuz (2003) that finds no significant difference in bid-ask spread and share turnover between IFRS and U.S. GAAP reporting firms trading in Germany's New Market. On the other hand, our results do not lend support to the information loss argument. Harris and Muller (1999) show that the IFRS to U.S. GAAP reconciliation is value-relevant; Henry et al. (2009) and Gordon et al. (2009) find similar evidence in 2005 and 2006, implying that eliminating the reconciliation requirement may lead to information loss (AAA, 2007b). However, while these studies find an association between 20-F reconciliation and stock returns, they do not provide direct evidence on whether investors *use* the reconciliation information (Kothari, 2001; Holthausen and Watts, 2001). Trading-volume studies provide more direct evidence. Chen and Sami (2008) find significant abnormal volume reactions to the reconciliation from 1995-2004, and Chen and Sami (2010) continue to find evidence in 2005-2006. In contrast, Plumlee and Plumlee (2007) find no evidence of abnormal volume reactions to 20-F filings from 2002 to 2006. Jiang et al. (2010) also finds no evidence of volume

reactions in 2005-2006. Unlike prior studies, we investigate the effect of eliminating the reconciliation on the information environment of cross-listed firms, utilizing a unique regulatory event. Our study provides new insight on the usefulness of the reconciliation to U.S. investors.

Our finding is consistent with two possible interpretations. If information quality is mainly determined by accounting standards, then our finding implies that U.S. investors consider the two sets of standards – IFRS and U.S. GAAP – to have similar quality. Our evidence is also consistent with the view that the key drivers of accounting quality are firms' reporting incentives shaped by economic forces and institutional factors, rather than by accounting standards (Ball, 2001; Ball et al., 2000; Ball et al., 2003; Leuz et al., 2003; Burgstahler et al., 2006). Under this view, our finding suggests that, holding reporting firms and market forces constant, U.S. investors perceive accounting numbers based on IFRS and U.S. GAAP to have similar quality even if there are differences between the two sets of standards.[4]

Our paper makes several contributions to the literature. Our study is one of the first to investigate the economic consequences of the SEC's decision to end the reconciliation requirement for foreign cross-listed companies using IFRS. As discussed above, there is a debate on whether the SEC's rule change is premature. Our evidence does not suggest that the SEC's decision to end the reconciliation requirement leads to increased information asymmetry in the equity market.

Second, the decision to eliminate the IFRS to U.S. GAAP reconciliation is an important development and signals a major step towards the ultimate adoption of IFRS in the U.S. We provide timely empirical evidence on how U.S. investors perceive accounting information based on IFRS without reconciliation to U.S. GAAP. Our results suggest U.S. investors do not consider cross-listed firms' financial information based on IFRS to be of inferior quality relative to that

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[4] We effectively control for firms' reporting incentives because we compare accounting information based on IFRS and U.S. GAAP for the same reporting firm, thus using the same firm as its own control.

based on U.S. GAAP, either because they view the two sets of standards to have similar quality, or because they believe that, holding firms' reporting incentives constant, differences between IFRS and U.S. GAAP have a minimal impact on the quality of accounting information. The evidence of our paper will be of interest to accounting and security regulators.

Third, our paper adds to the literature on the economic consequences of disclosures. Most, if not all, prior research on disclosures investigates the impact of *increased* disclosures and generally finds that increased disclosures lead to improved market liquidity and a lower cost of capital (e.g., Botosan, 1997; Leuz and Verrecchia, 2000). In contrast, we examine the impact of *decreased* disclosures. Our results suggest that for cross-listed firms that follow IFRS, "more" is not always better.

Finally, our findings will be of interest to current cross-listed firms as well as firms that might decide to pursue U.S. cross-listing in the future. Prior research suggests increased disclosures as an important source of benefits from a U.S. cross-listing (e.g., Doidge et al., 2004, 2009; Hail and Leuz, 2009). The reconciliation requirement is a key element of the U.S. disclosure standards for cross-listed firms (Edwards, 1993; Fanto and Karmel, 1997). Removing the reconciliation will reduce the information preparation costs, but may also reduce the benefits from cross-listing. We shed light on this issue by examining the impact of the elimination on the benefits of cross-listing as reflected in liquidity and information asymmetry, and find no evidence of a negative impact.

We discuss background information and prior research in Section 2. Section 3 discusses the research design. Section 4 describes the sample and descriptive statistics. Empirical results are reported in Section 5. We present additional analyses in Sections 6 and 7, and sensitivity tests in Section 8. We conclude in Section 9.

2. Background on Form 20-F reconciliation and prior research

As reviewed in Karolyi (1998, 2006), U.S. cross-listings offer many benefits, including improved access to external financing, greater liquidity, and lower cost of capital. Cross-listings entail costs as well, and one of the most significant costs is the reconciliation of financial statements from home country accounting standards to U.S. GAAP. [5] The SEC initiated this requirement in 1982 and requires cross-listed firms to provide the reconciliation in Form 20-F, which must be filed with the SEC within six months after fiscal year-end. The SEC considers the reconciliation requirement a balanced approach to meet U.S. investors' needs for information and for opportunities to invest in foreign securities (SEC, 2005). However, many perceive this requirement to be a hindrance for foreign firms entering U.S. markets, and in the early 1990s, major U.S. stock exchanges begin to lobby the SEC to drop the reconciliation requirement (Edwards, 1993).

In 2005, following the widespread acceptance and adoption of IFRS around the world, the then-SEC chief accountant presents a roadmap for eliminating the IFRS to U.S. GAAP reconciliation requirement (SEC, 2005). In July 2007, the SEC issues a proposal to accept foreign private issuers' financial statements prepared under IFRS without reconciliation to U.S. GAAP. The SEC approves the rule unanimously on November 15, 2007. A bigger question following the SEC's elimination decision is whether U.S. companies should be allowed or be required to use IFRS. The SEC issues a concept release in August 2007 to discuss the possibility of allowing U.S. firms to choose between IFRS and U.S. GAAP for preparing financial statements (SEC, 2007b). In August 2008, the SEC introduces a roadmap that could lead to the required use of IFRS by U.S. companies in 2014 (SEC, 2008).

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[5] Fanto and Karmel (1997), for example, report that reconciliation is one of the top three challenges faced by firms cross-listed in the U.S., and is the number one reason that deters companies from a U.S. listing, based on a survey of foreign companies.

Harris and Muller (1999) examine the IFRS-to-U.S.-GAAP reconciliation over the 1992 to 1996 period for a group of 31 foreign firms listed in the U.S. that prepare their financial statements using IFRS.[6] They find that the reconciliation from IFRS to U.S. GAAP is incrementally value-relevant in explaining market value after controlling for IFRS numbers, although the results are sensitive to the models used in their empirical tests. Gordon et al. (2009) and Henry et al. (2009) examine the IFRS to U.S. GAAP reconciliation over the more recent period of 2004-2006 and find similar results, although the results in Henry et al. (2009) are again not robust across different regression models.

Alternatively, a number of studies investigate the trading volume response to the release of reconciliation information. Chen and Sami (2008) examine the trading volume response to disclosures of 20-F reconciliation for a sample of 48 U.S.-listed, IFRS-reporting foreign firms from 1995 to 2004. They find a significant, positive relation between earnings reconciliation and abnormal trading volume around 20-F filing dates, suggesting that the reconciliation provides useful information to investors. Chen and Sami (2010) replicate their trading volume tests for an update sample from 2005 to 2006, and continue to find significant abnormal volume reactions, although the reactions are weaker for pure IFRS users and are insignificant for continuous IFRS users (i.e., the results are mainly driven by first-time IFRS users). On the other hand, Plumlee and Plumlee (2007) find that, for a sample of U.S.-listed IFRS reporting firms from 2002 to 2006, there is no abnormal trading volume reaction to 20-F filings, suggesting that the market does not view the reconciliation as informative.[7] Most recently, Jiang et al. (2010) find that the reconciliation issued by IFRS users in 2005 and 2006 is not significantly associated with

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[6] We use IFRS to refer to both the International Accounting Standards (IAS) and IFRS. IAS are issued by the International Accounting Standards Committee (IASC). In 2001, the IASB replaces the IASC and issues accounting standards called IFRS.

[7] They argue that one potential reason is that 20-Fs for most firms are filed well after the fiscal year-end and thus lose their usefulness to investors.

abnormal trading volume, return volatility, and changes in spread around the release of the reconciliation information. In sum, these studies provide more direct but inconclusive evidence on the usefulness of reconciliation information. Thus, more evidence is needed and the elimination of the 20-F reconciliation provides a unique setting that allows us to provide new insight on the usefulness of the reconciliation to U.S. investors at the time of the rule change.

Related to our study, a concurrent working paper by Jiang et al. (2010) compares short-window market reactions to the release of 20-Fs in the pre- and post-elimination periods, and finds no evidence that eliminating the reconciliation changes market reactions to the release of 20-Fs in 2007. Our study differs from Jiang et al. (2010) because we focus on whether the elimination results in any systematic changes in information environment for cross-listed IFRS firms. We thus have a different set of dependent variables that capture the level of information asymmetry (i.e., liquidity and PIN), and adopt a longer event window (i.e., 90 days starting one day prior to the 20-F filing dates; we also find consistent results using a one-year window), as the capital market consequences might not be fully captured by a three-day window. While Jiang et al. (2010) use only the IFRS-reporting firms in their analysis, we utilize a sample of non-IFRS-reporting cross-listed firms as the control sample, thus we are able to control for contemporaneous changes in capital markets that may coincide with the SEC's decision to end the reconciliation requirement.[8]

Another group of studies compares the quality of financial statements based on IFRS versus the quality of those based on U.S. GAAP. Leuz (2003) examines a group of firms trading in Germany's New Market from 1999 to 2000 when firms must choose between IFRS and U.S. GAAP. Leuz finds no significant difference in bid-ask spread, share turnover, analyst forecast

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[8] Our research design and choice of dependent variables are consistent with prior studies that examine the effects of regulatory changes on capital markets (see Leuz and Wysocki (2008) for a review of this literature).

dispersion, and initial public offering underpricing between IFRS and U.S. GAAP firms, and thus concludes that U.S. GAAP does not provide financial statements that are of superior informational quality relative to IFRS. Bartov et al. (2005) use a similar sample of German companies and find no significant difference in value relevance between IFRS and U.S. GAAP numbers, suggesting that IFRS and U.S. GAAP are comparable in their ability to explain stock returns.

Barth et al. (2010) examine the comparability of accounting information between non-U.S. firms applying IFRS and U.S. firms applying U.S. GAAP. They find that U.S. GAAP numbers provided by U.S. firms have greater value relevance. They also find that the value relevance of IFRS numbers and the earnings comparability between non-U.S. IFRS users and U.S. firms increase after the widespread application of IFRS by non-U.S. firms. Ashbaugh and Olsson (2002) find that IFRS and U.S. GAAP numbers have different implications for equity valuation.

If investors perceive IFRS and U.S. GAAP numbers to be of comparable quality, as shown in Leuz (2003) and Bartov et al. (2005), eliminating the reconciliation is not likely to have adverse capital market consequences for cross-listed firms following IFRS. These studies, however, examine IFRS-reporting firms that are traded in non-U.S. stock markets. Our study makes an important contribution by providing evidence on how *U.S. investors* perceive the quality of IFRS versus U.S. GAAP.

3. Research design

To investigate the capital market consequences of eliminating the 20-F reconciliation, we examine the change of market liquidity and PIN around the elimination. We employ a

difference-in-differences design by comparing changes of market liquidity and PIN for cross-listed firms that use IFRS before and after the elimination (i.e., 2006 versus 2007), relative to the corresponding changes for a control group of cross-listed firms that do not follow IFRS. Including non-IFRS cross-listed firms ensures a proper control for possible confounding factors that change around this period. Moreover, comparing changes before and after the elimination helps mitigate potential bias related to heterogeneous characteristics across the IFRS and non-IFRS users if unobserved differences between these two groups are time invariant.

3.1. Market liquidity

To capture the elimination effect on market liquidity, we estimate liquidity using a 90-day window starting from one trading day before the date when the reconciliation information is first available to the market, typically the 20-F filing date.[9] However, some cross-listed firms disclose their reconciliation in Form 6-K, which is typically filed earlier than Form 20-F (Chen and Sami, 2008). We examine the 6-Ks for our sample firms and find that 18 IFRS users release their reconciliation in 6-Ks, and 5 (4) non-IFRS users release their reconciliation in 6-Ks in 2006 (2007). For these firms, we use their 6-K filing dates in our analysis. In other words, we use either the 20-F dates or the 6-K dates, whichever report the reconciliation earlier.[10] Because IFRS firms no longer have to issue a reconciliation in 2007, we use the 20-F (6-K) date if the firm reports its 2006 reconciliation in 20-F (6-K).

Following prior literature (e.g., Leuz, 2003; Daske et al., 2008), we use four measures to capture market liquidity. *Zero Returns* is the proportion of trading days with zero daily stock

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[9] The measurement window should be long enough to adequately capture the effect of the elimination, but not too long to avoid too much noise in the variables. We also consider a one-year window in the sensitivity test and find qualitatively similar results.

[10] For ease of exposition, we refer to our event date as the 20-F filing date in the remainder of the paper, when in fact we use the 6-K dates for companies that first disclose their reconciliation in 6-Ks.

returns out of all trading days in our measurement window. Zero-return days usually occur when transaction costs of trading exceed the value of new information not yet reflected in prices, and investors therefore choose not to trade (Lesmond et al., 1999). *Price Impact* is the median of the Amihud (2002) illiquidity measure over the measurement window, where illiquidity is calculated as the daily absolute stock return divided by US$ trading volume. Price impact captures an investor's ability to trade a stock without influencing its price. *Spread* is the median of daily quoted bid-ask spreads over the measurement window. We use spread quoted throughout the day in the calculation, where spread is the difference between the bid and ask price divided by the mid-point. *Trading Costs* is the estimated total round trip transaction costs in our measurement window implied by the series of daily security and market returns, as in Lesmond et al. (1999).[11] Lower values of *Zero Returns*, *Price Impact*, *Spread*, and *Trading Costs* indicate greater market liquidity.

Our independent variables of interest include three indicators. The first indicator captures whether the cross-listed firm prepares its financial statements under IFRS and is coded one when it follows IFRS, and zero otherwise. We collect accounting standards information by reading firms' Form 20-Fs.[12] A second indicator variable captures whether the firm-year observation falls in the post-elimination period and is coded one if the firm-year falls in year 2007, and zero if in 2006. A third indicator variable is the interaction of the first two indicators; it is our main

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[11] Transaction costs are estimated based on the assumption that informed investors do not trade when the transaction costs exceed the value of new information, which causes firms' true returns to deviate from the measured returns. The relation between measured returns and true returns is described by the following system of equations: $R_{jt} = R_{jt}^* - \alpha_{1j}$, if $R_{jt}^* < \alpha_{1j}$; $R_{jt} = 0$, if $\alpha_{1j} < R_{jt}^* < \alpha_{2j}$; $R_{jt} = R_{jt}^* - \alpha_{2j}$, if $R_{jt}^* > \alpha_{2j}$, where R_{jt} is measured return and R_{jt}^* is true return for firm j, α_{1j} is the transaction cost threshold for selling stocks, and α_{2j} is the transaction cost threshold for buying stocks. The round trip transaction costs is $\alpha_{2j} - \alpha_{1j}$, estimated based on a firm-specific log-likelihood model. For a detailed description of the estimation of trading costs, see Lesmond et al. (1999) and Daske et al. (2008).

[12] We find many data errors and missing information regarding ADR firms' accounting standards in Compustat North America and Compustat Global. Out of 480 firm-year observations in our sample, for example, 54 have missing information on accounting standards in Compustat Global; 45 (59) have incorrect information on accounting standards in Compustat North America (Compustat Global). We therefore rely on firms' 20-Fs for accounting standards information.

variable of interest, because it captures the change in market liquidity after the elimination of the 20-F reconciliation for cross-listed firms using IFRS, relative to the change in market liquidity for the control group of cross-listed firms not using IFRS.

Following prior literature, our multivariate regression model includes several control variables that are expected to affect market liquidity (e.g., Leuz and Verrecchia, 2000; Leuz, 2003; Daske et al., 2008). Specifically, we include: (1) lagged return volatility, to capture the higher holding costs and lower liquidity associated with more volatile stocks (Stoll, 1978; Jegadeesh and Subrahmanyam, 1993); (2) stock price, to control for its mechanical relation with liquidity (bid-ask spread) (Jegadeesh and Subrahmanyam, 1993; Welker, 1995); (3) a dummy variable indicating whether the firm is cross-listed on NASDAQ, to capture the difference in liquidity across different markets (Bessembinder and Kaufman, 1997); (4) lagged liquidity, because changes in liquidity may depend on the existing level of liquidity; (5) firm size at the beginning of the year, to capture the amount of information available about the firm (Atiase, 1985); and (6) industry and country fixed effects.

Consistent with prior literature (e.g., Stoll, 1978; Roulstone, 2003; Daske et al., 2008), we use a log-linear specification for our regression model, i.e., we use the natural logarithm of the continuous variables. The formal regression model is as follows:

$$
\begin{aligned}
Liquidity_t = {} & \beta_0 + \beta_1(IFRS\ users) + \beta_2(Year\ 2007) + \beta_3(IFRS\ Users*Year\ 2007) \\
& + \beta_4(Log(Return\ Volatility_{t-1})) + \beta_5(Log(Price_t)) \\
& + \beta_6(Stock\ Exchange_t) + \beta_7(Liquity_{t-1}) \\
& + \beta_8(Log(Total\ Assets_{t-1})) + \beta_m(DIndustry) + \beta_n(DCountry) + \varepsilon \quad (1)
\end{aligned}
$$

where:
Liquidity_t: Four measures of market liquidity, namely, *Zero Returns*, *Price Impact*, *Spread*, and *Trading Costs*.
IFRS Users: An indicator variable equal to one if the cross-listed firm prepares its financial statements under IFRS, and zero otherwise.

Year 2007: An indicator variable equal to one if the firm-year observation is in year 2007, and zero if in 2006.

Log(*Return Volatility$_{t-1}$*): The natural logarithm of the standard deviation of daily stock returns in year t-1.

Log(*Price$_t$*): The natural logarithm of the median of daily closing price in US$ in year t.

Stock Exchange$_t$: An indicator variable equal to one if the firm is cross-listed on the NASDAQ in year t, and zero otherwise.

Log(*Total Assets$_{t-1}$*): The natural logarithm of total assets in US$ million at the end of year t-1.

DIndustry: Dummy variables indicating industry membership based on Campbell (1996).

DCountry: Dummy variables for countries.

If eliminating the reconciliation results in a loss of useful information and increases information asymmetry in the market, we expect the coefficient *β₃* on the interaction term, *IFRS Users*Year 2007*, to be positive for *Zero Returns*, *Price Impact*, *Spread*, and *Trading Costs*.

3.2. Probability of informed trading (PIN)

PIN is a measure of information asymmetry derived from a trade microstructure model (e.g., Easley et al., 1996; Easley et al., 1997). Prior literature interprets PIN as the information asymmetry aspect of liquidity (Easley et al., 1996; Easley et al., 2002; Brown et al., 2004; Easley and O'Hara, 2004; LaFond and Watts, 2008; Khan and Watts, 2009).[13] Information asymmetry exists when investors are differentially informed about a firm's value, which enables investors with superior information to trade profitably at the expense of uninformed investors. While it is not possible to identify which trades are based on private information, the presence of privately informed traders in the market can be inferred from large imbalances between the number of buy and sell orders (Easley et al., 1997). If eliminating the reconciliation results in a loss of useful information and increases information asymmetry in the market, we expect the risk associated

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[13] Easley et al. (1996), for example, show that PIN is positively associated with bid-ask spread and is a better predictor of spread than is trading volume. Easley et al. (2002) show that PIN is positively associated with cost of capital, and Brown et al. (2004) show that voluntary disclosures, such as conference calls, are negatively associated with PIN.

with less informed investors trading with better informed investors to increase, i.e., a greater probability of informed trading (PIN).

Following prior literature, we estimate PIN based on trade-order data from the TAQ database. We also examine parameters in the PIN estimation: α, the probability of private information event; and $Log(\mu/\varepsilon)$, the level of informed trades relative to uninformed trades, following Brown et al. (2004).[14] In Appendix A, we provide a detailed description of the estimation of PIN and the PIN parameters.

In our regression analysis, we regress PIN, as well as α and $Log(\mu/\varepsilon)$, on an indicator variable for IFRS users, an indicator variable for year 2007, and an interaction term of the two indicator variables. In addition, to isolate the effect of eliminating the 20-F reconciliation on informed trading, we include variables to control for firms' information environment that are likely to be associated with PIN and that may change after the elimination. Following Aslan et al. (2008) and Brown et al. (2004), we include the natural logarithm of the market value of equity, the percentage sales growth, the natural logarithm of firm's age, the natural logarithm of one plus the number of analysts following the firm, the natural logarithm of share turnover, the percentage of institutional ownership, the absolute value of abnormal accruals, return on assets, Tobin's Q, and industry and country fixed effects. All continuous variables are winsorized at the top and bottom 1% of their distributions. The regression model is specified as follows:

PIN_t (or α_t or $Log(\mu_t/\varepsilon_t)$)

$\quad = \beta_0 + \beta_1(IFRS\ users) + \beta_2(Year\ 2007) + \beta_3(IFRS\ Users*Year\ 2007)$

$\qquad + \beta_4(Log(Size_t)) + \beta_5(Growth_t) + \beta_6(Log(Age_t)) + \beta_7(Log(Analyst_t))$

$\qquad + \beta_8(Log(Turnover_t)) + \beta_9(Institutional\ ownership_t)$

$\qquad + \beta_{10}(Abs(Abnormal\ accruals_t)) + \beta_{11}(ROA_t) + \beta_{12}(Tobin_t)$

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[14] μ is the arrival rate of informed trades and ε is the sum of the arrival rate of uninformed buys, ε_b, and uninformed sells, ε_s.

$$+ \beta_m(DIndustry) + \beta_n(DCountry) + \varepsilon \qquad (2)$$

where:

PIN_t: The probability of informed trading over the measurement window, i.e., a 90-day window starting from one trading day before the 20-F filing date.

α_t: The probability of a private information event.

$Log(\mu_t/\varepsilon_t)$: The natural logarithm of the ratio of the daily rate of informed trades on information event days to the daily rate of uninformed trades.

$Log(Size_t)$: The natural logarithm of the market value of equity at the fiscal year-end.

$Growth_t$: The percentage increase in sales from year t-1 to year t.

$Log(Age_t)$: The natural logarithm of one plus the number of years since the stock first appears in the Center for Research in Securities Prices (CRSP).

$Log(Analyst_t)$: The natural logarithm of one plus the number of analysts who provide one-year-ahead forecast at the end of the measurement window.

$Log(Turnover_t)$: The natural logarithm of the median of daily US\$ trading volume divided by the end-of-the-day market value of outstanding equity over the measurement window.

Institutional ownership_t: The number of shares owned by institutional investors at the end of the measurement window divided by number of shares outstanding.

Abs(Abnormal Accruals_t): The absolute value of the abnormal accruals based on the Jones (1991) model in year t.

ROA_t: Net income divided by total assets in year t.

$Tobin_t$: The market value of assets divided by the book value of assets at the fiscal year-end, where the market value of assets equals the sum of book value of assets and the market value of common equity less the book value of common equity and deferred taxes in year t.

Other variables are as defined in equation (1).

Our main variable of interest is again the coefficient β_3 on the interaction term, *IFRS Users*Year 2007*. If eliminating the 20-F reconciliation results in a loss of useful information and increases information asymmetry in the market, we expect β_3 to be positive.

4. Sample selection and descriptive statistics

We obtain the initial sample of 419 Levels II and III American Depository Receipt (ADR) firms from JP Morgan ADR Analytics and the Bank of New York.[15] Matching the sample with Compustat North America and (CRSP) reduces the sample to 342 firms with 88 IFRS users in

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[15] We exclude Level I ADRs from our analysis, because they are traded on the over the counter (OTC) Bulletin Board or as pink sheet issues and are exempt from Form 20-F reconciliation by Rule 12g3-2(b). We also exclude ordinary-listing (or direct-listing) firms, because they face different financial accounting and reporting rules than other cross-listed firms. Ordinary listings require an exact replication of the settlement facilities required for U.S. securities, and are subject to more disclosure requirements than Level II and III ADRs (Bailey et al., 2006). There are 350 ordinary cross-listed firms in our sample period, of which only 6 firms are IFRS users.

2006. We further restrict sample firms to have data available for both 2006 and 2007, the year before and after the elimination. To be included in the sample, each firm must also have the necessary data to calculate all four liquidity measures and control variables for our regression analysis. We collect financial statement data from Compustat North America, stock return and trading volume data from the CRSP, and bid-ask spread data from the TAQ. Our final sample consists of 480 firm-year observations representing 240 distinct firms from 37 countries, of which 78 firms are IFRS users.[16]

Table 1 provides the sample distribution. Panel A indicates that the number of unique firms vary across the sample countries. The United Kingdom (UK), for example, has the largest number of firms (22), while 10 countries, including Bermuda, Belgium, Finland, Hungary, New Zealand, Peru, Philippines, Portugal, Singapore, and Turkey, have the lowest (one).[17] Out of 240 sample firms, 78 are IFRS users and 162 are non-IFRS users.[18] Most IFRS users are from the EU, consistent with its mandatory switch of all public companies to IFRS in 2005.[19] Panel B of Table 1 presents the sample composition by industry based on the classification in Campbell (1996). There is considerable industry-level variation in our sample. Utilities has the largest number of firms (48), for example, while Other Industries has the smallest (one). We include country and

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[16] The sample used for the PIN analysis is smaller (342 firm-year observations) because of additional data restrictions. For example, we require trade-orders data to compute PIN, data from the I/B/E/S to compute analyst following, and accounting data to compute abnormal accruals.

[17] In defining the countries of our sample firms, we use the country of incorporation (FIC code in Compustat) rather than the country of headquarter (LOC code in Compustat). For example, Silicon Motion Technology Corporation is incorporated in the Cayman Islands, but is headquartered in Taiwan. This explains the large percentage of Cayman Islands firms in our sample.

[18] Among the 162 non-IFRS users, 95 follow U.S. GAAP and 67 follow local standards.

[19] The only two EU companies in our sample that follow local standards instead of IFRS or U.S. GAAP are Natuzzi SPA from Italy and Banco Santander SA from Spain. Natuzzi's Form 20-F indicates that their securities are traded only on the NYSE and not in Italy, thus it is not subject to the mandatory IFRS adoption in the EU. Banco Santander SA prepares their 2006 and 2007 financial statements based on EU-IFRS under the Bank of Spain's Circular 4/2004, which are considered significantly different from IFRS issued by the IASB. The company therefore still reports reconciliation in 20-F for fiscal year 2007. In sensitivity tests, we find consistent results for all of our analyses after removing this company from our sample.

industry indicators in all multivariate regressions to control for country- and industry-level variations in our sample.

Panel C of Table 1 presents the descriptive statistics on firm characteristics for the full sample firms as well as for IFRS users and non-IFRS users separately. It shows that sample firms are relatively large in size, with mean (median) total assets of 99.8 billion US$ (7.9 billion US$), consistent with large companies being more likely to cross-list in U.S. markets (e.g., Doidge et al., 2004). IFRS users are significantly larger and have lower return volatility than non-IFRS users. For our sample firms, on average, *ROA* is 4.8%, sales growth is 24.1%, and return volatility is 3%.

Table 2 provides correlations among the four liquidity variables, PIN and firm characteristics. As expected, our four liquidity measures are strongly correlated with each other with Pearson correlation coefficients ranging from 0.31 (between *Spread* and *Trading Costs*) to 0.65 (between *Zero Returns and Trading Costs*), all significant at less than one percent level. The four liquidity measures are also positively correlated with PIN, consistent with all five measures capturing some degree of information asymmetry. Both liquidity and PIN are negatively related to total assets, ROA, and sales growth and positively related to return volatility.

5. Results

5.1. Market liquidity and PIN effect of eliminating the 20-F reconciliation

Table 3 provides univariate tests of changes in liquidity and PIN for IFRS firms relative to the control sample of non-IFRS firms.[20] We only report results based on mean values of liquidity for brevity, but results based on median values are qualitatively the same. Cross-listed

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[20] Our liquidity measures have values comparable to those reported in prior studies (e.g., Chan et al. (2008) for the ADR sample; Hasbrouck (2009) and Goyenko et al. (2009) for U.S. firms). The values of PIN and the parameters are also comparable to those in Brown et al. (2004) for U.S. firms.

firms that use IFRS experience no significant changes in *Zero Returns*, *Price Impact*, *Spread*, and *Trading Costs*. Cross-listed firms that do not follow IFRS, in contrast, experience a significant increase in all four liquidity measures from 2006 to 2007. Comparing IFRS with non-IFRS users, we find that the differences of the change in all four liquidity measures between the two groups are not significant. Table 3 also reports univariate tests for PIN and PIN parameters. Neither IFRS nor non-IFRS users experience a significant change in PIN or the parameters from 2006 to 2007 with the exception that the decrease in α is significant for non-IFRS uses. None of the differences in the change in PIN or the parameters between IFRS and non-FIRS users are significant. Thus, we find no evidence that IFRS users experience a significant change in liquidity or PIN, relative to the control firms that are not affected by the rule of eliminating the 20-F reconciliation. The univariate analysis, however, does not control for factors that influence market liquidity or PIN and may also be affected by the elimination of the reconciliation requirement.

We next conduct a multivariate regression analysis and report the results in Table 4. All t-statistics are adjusted for firm clusters. Panel A reports results from the liquidity regressions. Since the regressions are in the log-linear specification, the coefficients represent percentage change in the dependent variable given percentage change in the independent variable (Roulstone, 2003). The coefficient on our variable of interest, *IFRS users*Year 2007*, is insignificant across all regressions of the four liquidity measures. Among the control variables, stock price is negatively associated with all four liquidity measures, consistent with findings in McInish and Wood (1992) and Jegadeesh and Subrahmanyam (1993). Lagged liquidity is positively related to current liquidity for *Zero Returns* and *Price Impact*, and negatively related to current liquidity for *Trading Costs*. Finally, lagged total assets are negatively related to all

four liquidity measures, consistent with larger firms having higher market liquidity (Atiase, 1985).

We report the regression analysis for PIN in Table 4 Panel B. We find an insignificant coefficient on *IFRS users*Year* 2007 for PIN as well as the PIN parameters. Among the control variables, we find that firm size (*Log(size)*), turnover (*Log(Turnover)*), and *ROA* are negatively associated with PIN, consistent with prior studies (e.g., Aslan et al., 2008).

In summary, the multivariate regressions in Table 4 provide no evidence that eliminating the reconciliation requirement has a detrimental impact on market liquidity or PIN for U.S. cross-listed firms that follow IFRS in the first year of implementing this rule.

5.2. Cross-sectional variations in market liquidity and PIN effects

To provide further evidence on the impact of eliminating the 20-F reconciliation, we investigate cross-sectional variations in the liquidity and PIN effects around the elimination. Specifically, we re-perform our multivariate regression analysis above after partitioning the sample based on two factors. We first partition our sample based on the magnitude of the absolute difference between IFRS and U.S. GAAP earnings provided by *IFRS users* in 2006, deflated by shareholders' equity under IFRS. If the elimination results in a loss of value-relevant information, then the magnitude of the absolute difference between IFRS and U.S. GAAP earnings may indicate the amount of information in the reconciliation that would be lost after the elimination. The larger the difference, the greater the potential information loss to U.S. investors is after the elimination.[21]

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[21] For the partitioning analysis in Panel A of Table 5, we partition only IFRS users and include the same set of control firms in each partition because some non-IFRS users (i.e., U.S. GAAP users) do not reconcile. This explains why the total number of observations across the two partitions is larger than the number of sample observations. We find qualitatively similar results when we include only non-IFRS users who report reconciliation (i.e., local GAAP

The second partitioning factor is the level of investor sophistication, proxied by the percentage of institutional ownership at the beginning of the measurement window. Higher institutional ownership indicates greater investor sophistication (e.g., Lang and Lundholm, 1996; Piotroski and Roulstone, 2004). If, relative to sophisticated investors, unsophisticated investors rely more on the reconciled U.S. GAAP numbers as they are less familiar with IFRS, they will be more adversely affected by the elimination of the reconciliation. On the other hand, if unsophisticated investors are less likely to use information contained in the footnotes to financial statements (such as reconciliation), they will be less adversely affected by the elimination.

We partition the sample based on the median values of the two factors described above and perform the regression analysis separately for each partition. We then compare the coefficients on *IFRS users*Year 2007*, which capture the change in liquidity or PIN for IFRS users relative to non-IFRS users, across the two partitions, using a seemingly unrelated regression model (e.g., Greene, 2002).

We report results from the partitioning analysis in Table 5. For ease of exposition, we report only the coefficients on the interaction term, *IFRS users*Year 2007*. Panel A presents the results when the sample is partitioned based on the magnitude of the absolute difference between IFRS and U.S. GAAP earnings.[22] We find no significant change in all four liquidity measures, PIN, and PIN parameters after the elimination for IFRS users relative to non-IFRS users across sub-samples with either high or low absolute difference between IFRS and U.S. GAAP earnings. In Panel B of Table 5, we report the results when the sample is partitioned based on institutional

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users) in the control group and partition both IFRS users and non-IFRS users based on the magnitude of the earnings reconciliation amount.

[22] For IFRS users in 2006, the mean difference (absolute difference) between IFRS and U.S. GAAP earnings scaled by IFRS shareholders' equity is 0.026 (0.035), and the mean difference (absolute difference) in shareholders' equity scaled by IFRS shareholders' equity is -0.267 (0.381). For local GAAP users in 2006 and 2007, the mean difference (absolute difference) between local GAAP and U.S. GAAP earnings scaled by local GAAP shareholders' equity is -0.035 (0.080), and the mean difference (absolute difference) in shareholders' equity scaled by local shareholders' equity is -0.189 (0.404).

ownership. We again find no significant differences for all four liquidity measures, PIN, and PIN parameters across the partitions.

Taken together, the results in Table 5 are inconsistent with the argument that eliminating the reconciliation leads to a loss of information to U.S. investors. The information loss argument would predict (1) a decrease (increase) in liquidity (PIN), and (2) a greater decrease (increase) in liquidity (PIN) for firms with a larger absolute difference between IFRS and U.S. GAAP earnings prior to the elimination (to the extent that a larger absolute difference indicates a greater information loss). The information loss argument also predicts a differential effect of the elimination on unsophisticated investors relative to sophisticated investors. Our results do not support either prediction.

5.3. Power of tests

One potential concern of our results is whether our tests have sufficient statistical power given the relatively small sample size. Our sample size is comparable to those of prior studies that examine cross-listed IFRS-reporting firms. For example, Henry et al. (2009) examine 75 firms, Chen and Sami (2008) examine 48 firms, Harris and Muller (1999) examine 31 firms, and all three papers find some significant results. In addition, our regressions show high explanatory power and statistically significant coefficients on many control variables. Nevertheless, to alleviate this concern, we conduct the retrospective power analysis by estimating the power of our tests, defined as (1 – type II error).[23] Type II error is the probability that the test will not reject the null hypothesis when the alternative hypothesis is true, and thus the power of tests is the probability that the test will reject the null hypothesis when the alternative hypothesis is

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[23] Retrospective power analysis is performed after tests are conducted to determine the appropriateness of sample size. This analysis is often used for meta-analysis, i.e., making comparison of different studies. It is also used to evaluate the power of tests for accepting null hypothesis (e.g., Hogarty and Kromrey, 2003).

true.[24] We find that six out of seven regressions in Table 4 (with the α regression being the exception) have power greater than 80%, the threshold suggested by Cohen (1988). Thus, the power analysis shows that our regressions do not suffer from significant Type II errors. We note, however, that the results of the retrospective power analysis should be interpreted with caution due to the limitation of this analysis.[25]

6. Additional analysis of other capital market consequences

Our primary analysis relies on trading-based measures (i.e., Liquidity and PIN) to examine the capital market consequences of eliminating the 20-F reconciliation. We next explore other potential consequences of the elimination. Specifically, we investigate whether the elimination affects cost of equity, analyst forecasts, institutional ownership, and stock price efficiency and synchronicity.

6.1. Cost of equity capital

Following prior studies (Hail and Leuz, 2006, 2009; Daske et al., 2008; Li, 2010), we use four different *ex ante* cost-of-equity estimates implied in current stock prices and analysts' forecasts of future earrings. These cost-of-equity estimates rely on accounting-based valuation models, as in Claus and Thomas (2001), Gebhardt et al. (2001), Gode and Mohanram (2003), and Easton (2004). For each model, we substitute firm value and expected future earnings with market price and analyst earnings forecasts from the Institutional Brokers Estimate System

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[24] To implement this analysis, we use the Power procedure in SAS with inputs including the number of total predictors in the model, the number of test predictors (there are three in our regressions: IFRS users indicator, Year 2007 indicator, and the interaction of these two indicator variables), R-squares with and without test predictors, and the number of sample observations.

[25] Some studies suggest that the retrospective power analysis is appropriate when taking into account the size of the effect that is known or pre-specified to be economically significant (Thomas, 1997).

(I/B/E/S), and estimate the cost of equity as the internal rate of return that equates current stock price and the expected future sequence of residual incomes. Consistent with the measurement window for market liquidity and PIN, we use stock prices as of 90 days after the 20-F filing dates and the most recent analyst forecasts prior to the measurement date for stock prices. We use financial data based on the original accounting standards rather than the reconciled U.S. GAAP data, because analyst forecasts in I/B/E/S are based on local or IFRS standards.[26] In Appendix B we provide a detailed description of the estimation of the four cost-of-equity measures.

We present results on the cost of capital analysis in Tables 6, Panel A.[27] In addition to the four individual cost-of-equity measures, we calculate average cost of equity across the four measures. While IFRS users and non-IFRS users experience significant increases in some cost-of-equity measures in 2007 relative to 2006, none of the differences in the change in cost of equity across the two groups are statistically significant. We find similar results when comparing the median values of cost of equity, and from regression analysis that controls for firm characteristics known to affect cost of equity (untabulated). Our findings suggest no significant cost of equity effect around the elimination of the 20-F reconciliation. To evaluate the construct validity of our cost-of-equity measures, we estimate regressions of future realized returns on the cost-of-equity estimates after controlling for future cash flows and discount rate shocks, following the method in Easton and Monahan (2005). We find that our cost-of-equity measures

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[26] Another reason for not using the reconciled U.S. GAAP numbers is that in 2007 IFRS firms are not required to provide reconciliation to U.S. GAAP earnings and stockholders' equity.
[27] The cost of equity sample is smaller compared to the liquidity sample due to additional data restrictions when estimating cost of equity, such as requiring I/B/E/S analyst forecasts of one-year-ahead and two-year-ahead EPS forecasts and long-term earnings growth, and deleting firms with negative net income.

have low construct validity. Hence, results from the cost of capital analyses should be interpreted with caution.[28]

6.2. Analyst forecasts

We next examine whether the elimination of 20-F reconciliation has any impact on analysts' earnings forecasts. Most equity analysts issue forecasts for IFRS or local GAAP earnings rather than the reconciled U.S. GAAP earnings for cross-listed firms.[29] If analysts do not utilize the reconciliation when forecasting future earnings, eliminating the reconciliation should not affect the properties of their forecasts. However, the reconciliation information can still be useful for forecasting future IFRS or local GAAP earnings; if so, the absence of such information may lead to greater forecast errors, bias, and dispersion. We obtain analyst forecast data from I/B/E/S. Forecast error (bias) is measured as the absolute (signed) value of the difference between actual earnings per share and the latest mean analyst forecasts of one-year-ahead earnings per share issued within our 90-day measurement window deflated by stock price at the end of last fiscal year. Forecast dispersion is the standard deviation of analysts' latest one-year-ahead earnings per share forecasts issued within our 90-day measurement window. Results from the analysis of analyst forecasts are reported in Table 6, Panel B. For both IFRS users and

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[28] While cost of equity is a common variable used in prior studies to examine the impact of IFRS adoption (e.g., Daske et al., 2008; Li, 2010), it is well recognized that cost of equity is a difficult concept to measure. In addition to the measurement problems discussed in Easton and Monahan (2005) and Ogneva et al. (2007), cost of equity may suffer from two additional measurement errors in our setting. First, before eliminating the reconciliation, stock prices may reflect investor expectations of future earnings based on IFRS, U.S. GAAP, or a combination of both. The only analysts' earnings forecasts available to researchers, however, are IFRS earnings. Without a proper proxy for market expectation of future earnings, the estimated cost of equity implied in current stock prices and expected future earnings will be biased. Second, there is considerable uncertainty about the timing of the elimination's cost of capital effect. Changes in cost of capital may occur before the implementation of the new rule because cost of capital reflects investors' expectation about the future (Daske et al., 2008).

[29] We only find analysts' forecasts of IFRS or local GAAP earnings, but not the reconciled U.S. GAAP earnings, in I/B/E/S. It's possible that some analysts issue forecasts based on U.S. GAAP earnings that are not collected by I/B/E/S. These analysts, however, would most likely discontinue U.S. GAAP earnings forecasts after the elimination of the reconciliation requirement. Even if they continue to issue U.S. GAAP earnings forecasts, there are no actual earnings to compute forecast accuracy.

non-IFRS users, forecast errors, bias, and dispersion increase from 2006 to 2007; however, none of the differences in the change in forecast error, bias, and dispersion between the two groups are statistically significant. Thus, we find no evidence that the absence of reconciliation has a significant impact on analysts' information environment.

6.3. Institutional ownership

Our next test of the economic consequences of eliminating the 20-F reconciliation focuses on institutional ownership. Bushee and Noe (2000) show that institutional investors prefer companies with better disclosures, and Healy et al. (1999) show that improved disclosures lead to higher levels of institutional ownership. We investigate whether decreased disclosures (resulting from the elimination of the 20-F reconciliation) lead to lower levels of institutional ownership. If institutional investors perceive the absence of the reconciliation a significant information loss, they might reduce their holdings in cross-listed IFRS users. We obtain institutional holding information at the end of our 90-day measurement window from Thomson Reuters Institutional Holdings database, and compare changes in institutional holding after the elimination between IFRS users and non-IFRS users. Results are reported in Table 6, Panel C. Neither IFRS users nor non-IFRS users experience a change in institutional ownership in 2007 from 2006, and the change is not significantly different between the two groups. Thus, we find no evidence that discontinuing the reconciliation disclosures has a significant impact on the attractiveness of cross-listed firms perceived by institutional investors.

6.4. Stock price efficiency and synchronicity

Finally, we turn to stock price efficiency and synchronicity to provide additional evidence of potential capital market impact of the elimination of 20-F reconciliation. Following Hou and Moskowitz (2005), we measure price efficiency as the average delay with which stock price responds to information, where information is proxied by market returns.[30] Hou and Moskowitz (2005) argue that their price delay measures capture the impact of various market frictions, such as limited stock market participation, transaction costs, information capacity constraints, and lack of liquidity, on the pricing process of a stock. If the elimination of reconciliation reduces investors' interest in cross-listed firms' stocks, it can delay the process of incorporating information into stock prices.[31] Price synchronicity refers to the extent to which stocks move together, and we measure price synchronicity following Morck et al. (2000).[32] The level of synchronicity depends on the relative amounts of firm-specific and market-wide information incorporated into stock prices (Roll, 1988). If the elimination of reconciliation reduces firm-specific information, price synchronicity may rise.

As reported in Table 6, Panel D, all three measures of price delay remain unchanged for IFRS users after the elimination, but increase from 2006 to 2007 for non-IFRS users. However, the differences in the change in price delay between IFRS users and non-IFRS users are not statistically significant. In addition, neither IFRS users nor non-IFRS users experience a

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[30] Specifically, we estimate a regression of weekly stock returns on the contemporaneous returns of the market index and four lags of the market index. We then re-estimate this regression after restricting the coefficients of lagged market returns to be zero. The first delay measure (D1) compares the difference in R-squares from these two regressions. The other two delay measures, D2 and D3, take into account the precision or magnitude of lagged market return coefficients. Higher values of D1-D3 indicate a longer delay of a stock in responding to new market information. For details of estimating these delay measures, see Hou and Moskowitz (2005).

[31] While this argument applies to both firm-specific and market-wide information, our price delay measures only capture the delay in price responses to market-wide information. On the other hand, our synchronicity measure captures the effect of the decrease in firm-specific information on stock price movements.

[32] Price synchronicity is estimated as $\log(R^2/(1-R^2))$, where R^2 is the R-square from the regression of weekly stock returns on market returns over the measurement window.

significant change of price synchronicity from 2006 to 2007, and the change is not significantly different between the IFRS and non-IFRS users. Thus, we find no evidence that discontinuing the reconciliation disclosures has a significant impact on the speed with which market-level information is incorporated into stock prices or the extent to which stocks move together.

7. Does eliminating the 20-F reconciliation affect firms' voluntary disclosures?

One of the reasons non-U.S. firms may choose to cross-list in the U.S. is the desire to commit themselves to a higher level of disclosures, which in turn helps the firms attract investors due to improved investor protection for minority shareholders (e.g., Coffee, 1999, 2002; Stulz, 1999; Reese and Weisbach, 2002; Doidge et al., 2004, 2009). If eliminating the 20-F reconciliation leads to a loss of valuable information, would the cross-listed firms substitute for the information loss by increasing their voluntary disclosures? If firms adopt alternative disclosure strategies to compensate for the discontinuation of 20-F reconciliation, the overall information environment might not change, which could explain our findings that these firms experience no changes in liquidity and PIN. We next investigate this issue.

We first examine whether IFRS-reporting firms continue to issue the IFRS to U.S. GAAP reconciliation in 2007 on a voluntary basis. If these firms perceive their 20-F reconciliations to be informative so that not disclosing the reconciliation would worsen their information environment, they can continue to supply such information to investors voluntarily. We examine Form 20-Fs issued by all IFRS-reporting cross-listed firms in 2007, and find that none of the firms provide the reconciliation information. Thus, the IFRS firms do not appear to view it cost effective to provide the 20-F reconciliation when such disclosure becomes voluntary.

While firms do not continue to supply the reconciliation on a voluntary basis, they could choose to increase other types of disclosures (that are potentially less costly) to compensate for potential information loss. We next examine whether firms increase their disclosure activities after the elimination of the reconciliation requirement. We search for firms' press releases in Business Wire and PR Newswire using Factiva. We then count the number of non-duplicate press releases within 90 days after the 20-F filing dates, the same measurement window for market liquidity and PIN. In addition to the number of total press releases, we also identify press releases that contain forecasts of earnings or revenues through the use of a key word search.[33] We report the results in Table 7. IFRS-reporting firms on average issue 17 and 15 press releases in 2006 and 2007, respectively, and the difference between the two years is not statistically significant. For non-IFRS reporting firms, the number is eight in both years. The change in the number of press releases from 2006 to 2007 is not significantly different between the IFRS and non-IFRS firms. We find similar results when restricting our search for press releases related to forecasts of earnings or revenues. IFRS firms have two press releases in both years; non-IFRS firms have one in both years; and the change from 2006 to 2007 is not significantly different between the two groups of firms.

Overall, results in Table 7 suggest that firms do not change their disclosure frequency after the elimination of 20-F reconciliation. This finding provides support that our primary result (i.e., no change in liquidity and PIN after the elimination) is not driven by firms increasing other disclosures to compensate for potential loss of information. In fact, results in Table 7, combined with the fact that none of the firms continue to provide the reconciliation in 2007, are consistent with the notion that firms do not perceive the elimination of the reconciliation to have a

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[33] The phrases used include two sets of keywords: (1) see(s), expect(s), forecast(s), project(s), estimate(s), higher, and lower; and (2) net, earnings, income, results, loss, gain, profit(s), improvement, better, performance, revenue(s), and sales. All keywords, except revenue(s) and sales, are used in Bamber and Cheon (1998).

detrimental impact, and consequently do not take actions to change their voluntary disclosure strategies.[34]

8. Sensitivity tests

In this section we report a series of sensitivity tests. We first examine whether our results are robust to alternative control samples. We replicate our analyses based on four alternative control samples: (1) cross-listed firms that follow U.S. GAAP; (2) cross-listed firms that follow local GAAP; (3) a matched sample of U.S. firms based on fiscal year, industry, and firm size; and (4) a combination of the above three samples. The control sample in our main analysis consists of both (1) and (2). We now separate them into two control samples to account for any systematic differences between the two groups. We also use a matched sample of U.S. firms because U.S. investors are likely to consider both cross-listed firms and U.S. domestic firms in their investment portfolio. Finally, combining the three groups into an overall control sample increases the sample size and hence the power of tests. We find that results based on these four alternative control samples (untabulated) are qualitatively similar to those based on the original control sample.

We also examine whether our results are robust to alternative measurement windows. In our main analysis, we use a 90-day window following the 20-F filing dates to measure liquidity and PIN. We re-measure liquidity and PIN based on a one-year window from October 2007 to September 2008 for fiscal year 2007 and from October 2006 to September 2007 for 2006. This one-year window captures capital market effects from one month prior to the rule change and up

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[34] The First Call database is another source that provides management forecast data. We find that the First Call coverage of management forecasts by IFRS-reporting cross-listed firms is quite thin. We identify only two IFRS users in either 2006 or 2007: one firm issues one management forecast over the 90-day window in both 2006 and 2007, and the other issues one management forecast in 2006 but no forecast in 2007. The sample size, therefore, is too small to draw any statistical inference.

to 10 months after the first eligible fiscal year-end, and since it is a fixed window, market-wide factors are held constant in the years prior to and after the rule changes. We find similar results based on this alternative measurement window (untabulated).

We assess the sensitivity of our liquidity and PIN results in Tables 4 and 5 to alternative regression specifications. For the liquidity regressions, we replace the control variables, $Liquidity_{-1}$ and $Log(Total\ Assets_{t-1})$, with lagged trading volume ($Log(Volume_{t-1})$) in all four regressions and find qualitatively similar results. For the PIN regressions, we remove $log(Turnover)$ from the regressions and find similar results.

In Table 5, the partition of institutional ownership is based on the sample (including both IFRS users and non-IFRS users) median value, while the partition of difference between IFRS and U.S. GAAP earnings is based on the median value among IFRS users. We repeat our analysis in Table 5 after defining the partition of percentage institutional ownership based on the median value among the IFRS users and find qualitatively similar results. We measure the first partitioning variable using the absolute difference between IFRS and U.S. GAAP earnings divided by IFRS shareholders' equity in 2006. We re-measure this partitioning variable using 2005 data and find qualitatively similar results.

The country-level sample distribution in Panel A of Table 1 suggests that UK has the largest number of firms in our sample (22). While we include country dummies to control for country fixed effects, we explore whether firms from UK drive our results. We repeat our analysis after excluding all observations from UK and find that the results are qualitatively similar.

9. Summary and conclusions

This study examines the capital market effects of the SEC's recent rule change to eliminate the 20-F reconciliation requirement for U.S. cross-listed firms following IFRS. Specifically, we investigate effects of the elimination on stock market liquidity and the probability of informed trading (PIN). We find no evidence that IFRS-reporting firms experience a significant change in market liquidity (as measured by zero returns, price impact, bid-ask spread, and trading costs) and PIN in the year after the elimination, relative to a control group of cross-listed firms that do not use IFRS. We explore other potential consequences of eliminating the 20-F reconciliation and find no evidence that the elimination has a significant impact on cost of equity, analysts' forecast error, bias and dispersion, institutional ownership, and stock price efficiency and synchronicity.

While our main analysis focuses on the capital market consequences of eliminating the reconciliation requirement, we also provide evidence on firms' responses to the elimination. We find that none of the IFRS users continue to provide the reconciliation in Form 20-Fs voluntarily after the elimination. Moreover, we compare the number of press releases before and after the elimination and find that IFRS firms do not increase their disclosure frequency after the elimination.

To address the concern on whether our tests have sufficient statistical power given the relatively small sample size, we conduct power analysis and find that our regressions do not suffer from significant Type II errors. In addition, finding results that are consistent across different measures and robust to different model specifications increases the confidence that our results are not caused by variable mis-measurement or model mis-specifiatoin. Specifically, we find consistent results across four different measures of liquidity and PIN along with PIN

parameters. Additional analyses of more than 10 measures of other capital market consequences also yield consistent results. To ensure a correct model specification, we employ a difference-in-differences design, using cross-listed non-IFRS-reporting firms to control for contemporaneous changes in capital markets that may coincide with the SEC's decision to end the reconciliation requirement. Our results are robust to alternative control samples. We also include an extensive list of control variables in our regression models to mitigate the concern of the correlated omitted variables problem.

Taken together, we find no evidence that eliminating the IFRS to U.S. GAAP reconciliation has a negative capital market impact on IFRS-reporting cross-listed firms. The findings of our paper will be of interest to accounting and security regulators. Our results are *inconsistent* with the argument that the SEC's decision to end the reconciliation requirement results in information loss or greater information asymmetry. Our results suggest that U.S. investors do not perceive cross-listed firms' accounting information based on IFRS to be of inferior quality relative to that based on U.S. GAAP, either because they view the two sets of standards to have similar quality, or because they believe that, holding firms' reporting incentives constant, differences between IFRS and U.S. GAAP have a minimal impact on the quality of accounting information. Current and potential U.S. cross-listed firms will also find our evidence useful in their analysis of the costs and benefits of listing their securities in the U.S. capital markets.

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Appendix A

Probability of Informed Trading (PIN)

We estimate the probability of informed trading (PIN) based on the EKO model of information asymmetry (Easley et al., 1997). Specifically, the EKO model is a learning model in which the market maker draws inferences about private information based on the observed order flow. The basic intuition behind the EKO model is as follows. First, the nature chooses whether there is private information acquisition for informed investors at the beginning of each day, with private information events occurring with a probability of α. When private information events occur, they contain either "good" news with a probability of $(1-\delta)$ or "bad" news with a probability of δ, where good (bad) news indicates the asset is currently undervalued (overvalued). Trading day i then begins with trade orders arriving sequentially to the market according to Poisson processes. Orders from informed traders arrive at rate μ, and orders from uninformed buyers (sellers) arrive randomly at rate ε_b (ε_s). Informed traders buy if they see good news and sell if they see bad news. The market maker sets prices to buy and sell at each point in time based on her current information set and executes orders as they randomly arrive.

As a result of the trading process described above, there are three general patterns of trade orders. On a no-news day, there will be a roughly equal number of buyer- and sell-initiated trade orders. On a good (bad) news day, there will be a large imbalance in order flow, with dominating buyer-initiated (seller-initiated) trades. The market maker then uses the observed number of buys and sells to update her beliefs throughout the trading day according to the Bayes Rule. Therefore, given the history of trades, the probability of an informed trade at the beginning of each day can be estimated by the following form:

$$PIN = \frac{\alpha\mu}{\alpha\mu + \varepsilon_b + \varepsilon_s}$$

The PIN measure represents the expected fraction of trades that are information-based, and is increasing when there are more frequent private information events (α); more informed trading (μ); and is decreasing in the willingness of uninformed investors to trade in the stock (ε_b and ε_s). Based on the process described above, the likelihood function induced by the EKO model for a single trading day is as follows:

$$L(\theta|B,S) = (1-\alpha)e^{-\varepsilon_b}\frac{\varepsilon_b^B}{B!}e^{-\varepsilon_s}\frac{\varepsilon_s^S}{S!} + \alpha\delta e^{-\varepsilon_b}\frac{\varepsilon_b^B}{B!}e^{-(\mu+\varepsilon_s)}\frac{(\mu+\varepsilon_s)^S}{S!} + \alpha(1-\delta)e^{-(\mu+\varepsilon_b)}\frac{(\mu+\varepsilon_b)^B}{B!}e^{-\varepsilon_s}\frac{\varepsilon_s^S}{S!}$$

Where B and S represent total buy and sell trades for the day, and $\theta = (\alpha, \mu, \varepsilon_b, \varepsilon_s, \delta)$ is the parameter vector. This likelihood function is determined by a mixture of three possible trade outcomes (i.e., no news, good news, and bad news), weighted by their corresponding probabilities.

To empirically estimate the PIN measure, we use the trade-order data from the TAQ database. We classify each trade as a buy or sell using the standard Lee-Ready algorithm (Lee and Ready, 1991). That is, trades at prices above the midpoint of the bid-ask intervals are classified as buys, and trades below the midpoint are classified as sells. Trades taking place at the midpoint are classified using the tick test, which compares the price with the most recent transaction price to determine the trade direction. We then estimate the parameters of the model and the PIN measure based on the likelihood procedure described above.

Appendix B

Estimates of Implied Cost of Equity Capital

1. Gebhardt, Lee and Swaminathan (2001): r_{GLS}

$$P_t = BV_t + \sum_{\tau=1}^{11} \frac{FROE_{t+\tau} - r_{GLS}}{(1+r_{GLS})^{\tau}} BV_t + \frac{FROE_{t+12} - r_{GLS}}{r_{GLS}(1+r_{GLS})^{11}} BV_{t+11}$$

For the first three years, future ROE is estimated as $FROE_t = FEPS_t/BV_{t-1}$. For years 4 through 12, future ROE is computed by linear interpolation to the sector-specific (industrial, service, and financial sectors) median ROE. Negative ROEs are replaced by the historic three-year average in a given country and year. Beyond year 12, abnormal earnings are assumed to be constant.

2. Claus and Thomas (2001): r_{CT}

$$P_t = BV_t + \sum_{\tau=1}^{5} \frac{FROE_{t+\tau} - r_{CT}}{(1+r_{CT})^{\tau}} BV_t + \frac{(FROE_{t+5} - r_{GLS} BV_{t+4})(1+g)}{(r_{CT} - g)(1+r_{CT})^{5}}$$

For the first five years, future ROE is estimated as $FROE_t = FEPS_t/BV_{t-1}$. Beyond year 5, the abnormal earnings growth rate g is equal to the expected inflation rate. We use the annual median of country-specific, one-year-ahead realized monthly inflation rates.

3. Gode and Mohanram (2003): r_{GM}

$$P_t = \frac{FEPS_{t+1}}{r_{GM}} + \frac{(FEPS_{t+2} - FEPS_{t+1} - r_{GM}(FEPS_{t+1} - k * FEPS_{t+1}))}{r_{GM}(r_{GM} - g)}$$

so, $r_{GM} = A + \sqrt{A^2 + \frac{FEPS_1}{P_0}(g_2 - (\gamma - 1))}$

where, $A \equiv \frac{1}{2}\left((\gamma - 1) + \frac{k * FEPS_1}{P_0}\right)$; $g_2 = \frac{(FEPS_2 - FEPS_1)}{FEPS_1}$.

The long-term growth rate, γ, is estimated as the annual, country-specific median of one-year-ahead realized monthly inflation rates. The model requires positive earnings forecasts.

4. Modified PEG ratio by Easton (2004): r_{MPEG}

$$P_t = \frac{FEPS_{t+2} + r_{MPEG} * d_{t+2} - FEPS_{t+1}}{r_{MPEG}^2}$$

This model assumes that abnormal earnings persist in perpetuity. The model requires positive earnings forecasts.

P_t: stock price at year t.
BV_t: book value of equity per share at the beginning of year t.
$BV_{t+\tau}$:   expected future book value of equity per share at the beginning of year $t+\tau$, where $BV_{t+\tau} = BV_{t+\tau-1} + FEPS_{t+\tau} - k * FEPS_{t+\tau}$.
$FEPS_{t+\tau}$:   expected future earnings per share at year $t+\tau$.
$FROE_{t+\tau}$:   expected future return on equity at year $t+\tau$.
k: dividend payout ratio estimated as the firm's historic three-year average.

Table 1
Sample distribution and descriptive statistics

Panel A: Country-level sample distribution

Country	Firm-years	Unique firms	IFRS users	Non-IFRS users
Argentina	24	12	4	8
Australia	8	4	0	4
Bermuda	2	1	1	0
Belgium	2	1	1	0
Brazil	18	9	0	9
Cayman Islands	38	19	0	19
Chile	28	14	0	14
China	22	11	8	3
Denmark	4	2	2	0
Finland	2	1	1	0
France	22	11	7	4
Germany	16	8	4	4
Greece	4	2	0	2
Hong Kong	8	4	0	4
Hungary	2	1	1	0
India	20	10	0	10
Indonesia	4	2	0	2
Ireland	16	8	5	3
Israel	12	6	0	6
Italy	10	5	2	3
Japan	40	20	0	20
Korea	20	10	0	10
Luxembourg	6	3	2	1
Mexico	28	14	1	13
Netherlands	22	11	5	6
New Zealand	2	1	1	0
Peru	2	1	0	1
Philippines	2	1	0	1
Portugal	2	1	1	0
Russia	10	5	1	4
Singapore	2	1	0	1
South Africa	8	4	2	2
Spain	8	4	3	1
Switzerland	8	4	3	1
Taiwan	12	6	0	6
Turkey	2	1	1	0
United Kingdom	44	22	22	0
Total	*480*	*240*	*78*	*162*

Table 1 (continued)

Panel B: Industry distribution

Industry as in Campbell (1996)	Firm-years	Unique firms	IFRS users	Non-IFRS users
Petroleum	24	12	7	5
Finance and Real estate	72	36	15	21
Consumer durables	66	33	2	31
Basic industry	76	38	20	18
Food and tobacco	32	16	4	12
Construction	10	5	1	4
Capital goods	26	13	2	11
Transportation	16	8	5	3
Utilities	96	48	17	31
Textiles and trade	6	3	1	2
Services	50	25	1	24
Leisure	4	2	2	0
Other	2	1	1	0
Total	*480*	*240*	*78*	*162*

Panel C: Descriptive statistics of firm-level characteristics

Variables		N	Mean	P25	Median	P75	T-test p-value	Wilcoxon Test p-value
Total Assets	All	480	99,779	1,618	7,865	36,274		
	IFRS users	156	222,523	6,227	30,918	144,577	*<.0001*	*<.0001*
	non-IFRS	324	40,680	961	4,089	17,533		
ROA	All	480	0.048	0.014	0.056	0.101		
	IFRS users	156	0.059	0.009	0.058	0.108	*0.141*	*0.789*
	non-IFRS	324	0.043	0.017	0.055	0.099		
Sales Growth	All	480	0.241	0.088	0.186	0.336		
	IFRS users	156	0.223	0.093	0.153	0.300	*0.360*	*0.439*
	non-IFRS	324	0.249	0.086	0.191	0.344		
Return Volatility	All	480	0.030	0.019	0.026	0.034		
	IFRS users	156	0.027	0.016	0.021	0.031	*0.002*	*<.0001*
	non-IFRS	324	0.032	0.021	0.028	0.035		

Variable definitions:

IFRS users: Companies that prepare their financial statements based on IFRS in the sample period (i.e., 2006 and 2007).

Non-IFRS users: Companies that do not prepare their financial statements based on IFRS in the sample period.

Total Assets: Total assets in US$ million.

ROA: Net income divided by total assets.

Sales Growth: The percentage increase in sales from year t-1 to year t.

Return Volatility: The standard deviation of daily stock returns over 90 days starting one trading day before the 20-F filing dates.

Table 2
Pearson correlation[a]

Variables		1	2	3	4	5	6	7	8
1. Zero returns									
	N=480								
2. Log(Price impact)		0.524							
	N=480	*<.0001*							
3. Log(Spread)		0.531	0.609						
	N=480	*<.0001*	*<.0001*						
4. Log(Trading costs)		0.653	0.352	0.308					
	N=480	*<.0001*	*<.0001*	*<.0001*					
5. PIN		0.346	0.717	0.392	0.240				
	N=342	*<.0001*	*<.0001*	*<.0001*	*<.0001*				
6. Log(Total assets $_{t-1}$)		-0.377	-0.582	-0.422	-0.289	-0.449			
	N=480	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*			
7. ROA		-0.371	-0.466	-0.411	-0.279	-0.343	0.232		
	N=480	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*	*<.0001*		
8. Sales growth		-0.208	-0.195	-0.170	-0.142	-0.159	-0.116	0.104	
	N=480	*<.0001*	*<.0001*	*0.0002*	*0.0019*	*0.0032*	*0.0111*	*0.0225*	
9. Log(Return volatility $_{t-1}$)		0.323	0.417	0.397	0.169	0.195	-0.543	-0.296	0.138
	N=480	*<.0001*	*<.0001*	*<.0001*	*0.0002*	*0.0003*	*<.0001*	*<.0001*	*0.0025*

[a] Two-tailed p-values are in italics.

Variable definitions:
Zero Returns: The proportion of trading days with zero daily stock returns out of all trading days over 90 days starting one trading day before the 20-F filing dates.
Price Impact: The median of the daily Amihud (2002) illiquidity measure (i.e., the daily absolute stock return divided by US$ trading volume) over 90 days starting one trading day before the 20-F filing dates.
Spread: The median of daily median intra-day quoted spread (i.e., the difference between the bid and ask price divided by the mid-point) over 90 days starting one trading day before the 20-F filing dates.
Trading Costs: The estimated total round trip transaction costs implied by the series of daily security and market returns (as in Lesmond et al. (1999)) over 90 days starting one trading day before the 20-F filing dates.
PIN: The probability of informed trading over 90 days starting one trading day before the 20-F filing dates. (See Appendix A for a detailed description on the estimation of the PIN measure).
All other variables are defined as in Table 1.

Table 3
Univariate analysis of the liquidity and PIN effects around the elimination of the 20-F reconciliation

	Year	N	Zero Returns	Price Impact	Spread	Trading Costs	N	PIN	α	Log(μ/ε)
IFRS users (a)	2006	78	0.009	0.136	0.026	0.001	54	0.119	0.300	-0.145
	2007	78	0.013	0.499	0.031	0.002	54	0.107	0.307	-0.284
	Diff.		0.004	0.362	0.006	0.001		-0.013	0.007	-0.139
	p-value		*0.330*	*0.294*	*0.624*	*0.152*		*0.230*	*0.775*	*0.268*
Non-IFRS users (b)	2006	162	0.014	0.204	0.027	0.001	117	0.158	0.316	0.147
	2007	162	0.023	0.652	0.055	0.003	117	0.148	0.287	0.142
	Diff.		0.009	0.448	0.028	0.001		-0.010	-0.030	-0.005
	p-value		*0.011*	*0.081*	*0.013*	*0.017*		*0.329*	*0.056*	*0.955*
a vs. b	Diff-in-diff		-0.005	-0.085	-0.022	0.000		-0.003	0.037	-0.134
	p-value		*0.396*	*0.846*	*0.220*	*0.694*		*0.859*	*0.195*	*0.385*

Variable definitions:

α: The probability of a private information event.

$Log(\mu/\varepsilon)$: The natural logarithm of the ratio of the daily rate of informed trades on information event days to the daily rate of uninformed trades. All other variables are defined as in Tables 1 and 2.

Table 4
Regression analysis of the liquidity and PIN effects around the elimination of the 20-F reconciliation

Panel A: Liquidity

	Zero Returns			log(Price Impact)			log(Spread)			log(Trading Costs)		
	Coeff.	t –stat[a]	Pr > |t|	Coeff.	t –stat[a]	Pr > |t|	Coeff.	t –stat[a]	Pr > |t|	Coeff.	t –stat[a]	Pr > |t|
Intercept	0.104	3.07	*0.002*	1.989	2.56	*0.011*	-0.349	-1.73	*0.085*	-7.601	-1.42	*0.157*
IFRS users	0.009	1.84	*0.068*	0.321	1.68	*0.095*	0.093	2.16	*0.032*	-0.485	-0.47	*0.639*
Year 2007	0.007	2.42	*0.016*	0.939	11.42	*<.0001*	0.063	2.35	*0.020*	0.034	0.06	*0.956*
IFRS users*Year 2007	**-0.005**	**-1.11**	***0.266***	**-0.235**	**-1.62**	***0.107***	**-0.036**	**-1.24**	***0.215***	**0.407**	**0.4**	***0.691***
Log(Return Volatility$_{t-1}$)	0.005	0.96	*0.338*	0.055	0.35	*0.725*	0.087	1.91	*0.057*	-1.363	-1.59	*0.113*
Log(Price$_t$)	-0.013	-6.58	*<.0001*	-0.522	-8.35	*<.0001*	-0.071	-4.61	*<.0001*	-3.146	-8.48	*<.0001*
Stock Exchange$_t$	-0.007	-1.36	*0.174*	0.053	0.3	*0.766*	0.062	1.12	*0.263*	0.015	0.02	*0.986*
Liquidity$_{t-1}$	0.171	2.13	*0.034*	0.881	26.9	*<.0001*	0.007	0.1	*0.918*	-0.126	-2.46	*0.015*
Log(Total Assets$_{t-1}$)	-0.002	-2.21	*0.028*	-0.089	-2.22	*0.028*	-0.038	-4.09	*<.0001*	-0.522	-2.42	*0.016*
Industry indicators	Included			Included			Included			Included		
Country indicators	Included			Included			Included			Included		
N	480			480			480			480		
Adj R^2	0.395			0.924			0.430			0.321		

[a] Robust t-statistics adjusted for firm clusters.

Table 4 (continued)

Panel B: PIN and PIN parameters

	PIN			α			Log(μ/ε)		
	Coeff.	t -stat[a]	Pr > |t|	Coeff.	t -stat[a]	Pr > |t|	Coeff.	t -stat[a]	Pr > |t|
Intercept	0.241	5.93	*<.0001*	0.424	4.73	*<.0001*	0.096	0.38	*0.706*
IFRS users	-0.021	-1.47	*0.144*	-0.055	-1.68	*0.095*	0.023	0.22	*0.827*
Year 2007	-0.011	-1.35	*0.179*	-0.027	-1.71	*0.089*	-0.039	-0.79	*0.431*
IFRS users*Year 2007	**0.005**	**0.49**	***0.623***	**0.033**	**1.13**	***0.259***	**-0.015**	**-0.16**	***0.875***
Log(Size)	-0.020	-7.62	*<.0001*	0.013	2.12	*0.035*	-0.232	-12.09	*<.0001*
Growth	0.005	0.46	*0.648*	0.027	1.05	*0.294*	0.062	0.74	*0.460*
Log(Age)	0.000	0.03	*0.979*	0.001	0.11	*0.916*	0.060	1.12	*0.266*
Log(Analyst)	-0.002	-0.31	*0.757*	0.029	2.01	*0.046*	-0.075	-2.02	*0.045*
Log(Turnover)	-0.014	-3.08	*0.002*	0.014	1.52	*0.130*	-0.200	-8.37	*<.0001*
Institutional Ownership	-0.005	-0.78	*0.437*	-0.019	-1.75	*0.082*	0.025	0.44	*0.663*
Abs(Abnormal Accruals)	-0.002	-0.48	*0.630*	0.002	0.15	*0.880*	0.022	0.69	*0.492*
ROA	-0.054	-1.81	*0.073*	-0.050	-0.64	*0.526*	-0.420	-1.85	*0.067*
Tobin	0.002	0.23	*0.815*	-0.006	-0.29	*0.773*	0.020	0.38	*0.703*
Industry dummies	Included			Included			Included		
Country dummies	Included			Included			Included		
N	342			342			342		
Adj R[2]	0.501			0.094			0.698		

[a] Robust t-statistics adjusted for firm clusters.

Table 4 (continued)

Variable definitions:

Year2007: A dummy variable equal to one if a firm-year falls in 2007 and zero if it falls in 2006.

Price: The median of daily closing price in US$ over 90 days starting one trading day before the 20-F filing dates.

Stock Exchange: A dummy variable equal to one if a firm is cross-listed on the NASDAQ and zero if otherwise.

Log(Size): The natural logarithm of the market value of equity at the fiscal year-end.

Log(Age): The natural logarithm of one plus the number of years since the stock first appears in the CRSP.

Log(Analyst): The natural logarithm of one plus the number of analysts who provide one-year-ahead forecasts at the end of the measurement window.

Log(Turnover): The natural logarithm of the median of daily US$ trading volume divided by the end-of-the-day market value of outstanding equity over the measurement window.

Institutional Ownership: The number of shares owned by institutional investors divided by shares outstanding at the end of the measurement window.

Abs(Abnormal Accruals): The absolute value of the abnormal accruals based on the Jones (1991) model.

Tobin: The market value of assets divided by the book value of assets at the fiscal year-end, where the market value of assets equals the sum of book value of assets and the market value of common equity less the book value of common equity and deferred taxes.

Industry indicators: Dummy variables indicating industry membership as classified in Campbell (1996).

Country indicators: Dummy variables indicating a firm's country.

All other variables are defined as in Tables 1 through 3.

Table 5

Partitioning analysis of the liquidity and PIN effects around the elimination of the 20-F reconciliation

Panel A: Coefficients on IFRS users*Year 2007 when the sample is partitioned based on the magnitude of the difference between NI_{IFRS} and $NI_{U.S. GAAP}$

Dependent variables	Large Difference b/w NI_{IFRS} and $NI_{U.S. GAAP}$	Small Difference b/w NI_{IFRS} and $NI_{U.S. GAAP}$	Diff.
Zero Returns	-0.007	-0.003	-0.004
p-value	*0.243*	*0.586*	*0.272*
Log(Price Impact)	-0.301	-0.167	-0.133
p-value	*0.049*	*0.437*	*0.109*
Log(Spread)	0.008	-0.080	0.088
p-value	*0.829*	*0.043*	*0.234*
Log(Trading Costs)	0.413	0.388	0.025
p-value	*0.754*	*0.775*	*0.702*
N	402	402	
PIN	0.010	0.000	0.010
p-value	*0.458*	*0.998*	*0.637*
Alpha	0.043	0.024	0.019
p-value	*0.300*	*0.497*	*0.258*
Ln(Mu/Epsilon)	0.022	-0.049	0.071
p-value	*0.850*	*0.717*	*0.890*
N	288	288	
Other firm-level control variables	Included	Included	
Industry and country indicators	Included	Included	

Table 5 (continued)

Panel B: Coefficients on IFRS users*Year 2007 when the sample is partitioned based on institutional ownership

Dependent variables	High Institutional Ownership	Low Institutional Ownership	Diff.
Zero Returns	-0.007	-0.001	-0.006
p-value	*0.215*	*0.863*	*0.354*
Log(Price Impact)	-0.113	-0.373	0.259
p-value	*0.595*	*0.114*	*0.125*
Log(Spread)	-0.070	-0.013	-0.057
p-value	*0.022*	*0.773*	*0.125*
Log(Trading Costs)	-1.853	2.228	-4.081
p-value	*0.224*	*0.151*	*0.862*
N	234	232	
PIN	0.006	-0.002	0.008
p-value	*0.703*	*0.916*	*0.851*
Alpha	0.055	0.017	0.038
p-value	*0.223*	*0.684*	*0.241*
Ln(Mu/Epsilon)	-0.197	0.051	-0.249
p-value	*0.105*	*0.739*	*0.454*
N	166	168	
Other firm-level control variables	Included	Included	
Industry and country indicators	Included	Included	

In Panel A, an IFRS-reporting firm is classified into the large (small) difference between NI_{IFRS} and $NI_{U.S.\ GAAP}$ subgroup if the difference between IFRS and U.S. GAAP net income in 2006 is greater than or equal to (smaller than) the median value among the IFRS users.

In Panel B, a firm is classified into the high (low) institutional ownership subgroup if the institutional ownership at the beginning of the measurement window is greater than or equal to (smaller than) the sample median.

Variable definitions:
Difference between NI_{IFRS} and $NI_{U.S.\ GAAP}$: The absolute difference between IFRS and U.S. GAAP earnings, divided by shareholders' equity under IFRS.
All other variables are defined as in Tables 1 through 4.

Table 6
Additional analysis of capital market effects around the elimination of the 20-F reconciliation

Panel A: Cost of equity capital

	Year	N	r_gm	N	r_mpeg	N	r_ct	N	r_gls	N	coc
	2006	39	0.106	44	0.095	50	0.100	46	0.095	32	0.096
IFRS users (a)	2007	39	0.132	44	0.119	50	0.136	46	0.131	32	0.126
	Diff.		0.026		0.024		0.035		0.036		0.029
	p-value		*0.005*		*0.002*		*<.0001*		*<.0001*		*<.0001*
	2006	84	0.130	93	0.113	87	0.103	89	0.100	65	0.110
Non-IFRS users (b)	2007	84	0.149	93	0.130	87	0.143	89	0.121	65	0.137
	Diff.		0.019		0.017		0.040		0.021		0.027
	p-value		*0.122*		*0.117*		*<.0001*		*0.004*		*0.014*
a vs. b	Diff-in-diff		0.007		0.007		-0.004		0.015		0.002
	p-value		*0.703*		*0.665*		*0.692*		*0.172*		*0.903*

Table 6 (continued)

Panel B: Analyst forecast properties

	Year	N	Error	N	Bias	N	Dispersion
	2006	62	0.014	62	-0.002	34	0.233
IFRS users (a)	2007	62	0.037	62	-0.032	34	0.400
	Diff.		0.023		-0.030		0.167
	p-value		*0.001*		*<.0001*		*0.066*
	2006	116	0.017	116	0.000	73	0.155
Non-IFRS users (b)	2007	116	0.038	116	-0.029	73	0.229
	Diff.		0.021		-0.029		0.073
	p-value		*<.0001*		*<.0001*		*0.081*
a vs. b	Diff-in-diff		0.002		-0.002		0.094
	p-value		*0.774*		*0.864*		*0.276*

Panel C: Institutional ownership

	Year	N	Intuitional ownership
	2006	76	0.053
IFRS users (a)	2007	76	0.052
	Diff.		-0.001
	p-value		*0.956*
	2006	158	0.176
Non-IFRS users (b)	2007	158	0.173
	Diff.		-0.003
	p-value		*0.949*
a vs. b	Diff-in-diff		0.002
	p-value		*0.975*

Table 6 (continued)

Panel D: Price efficiency and synchronicity

	Year	N	D1	D2	D3	SYNC
IFRS users (a)	2006	77	0.461	0.633	0.617	-0.909
	2007	77	0.496	0.652	0.647	-1.199
	Diff.		0.034	0.019	0.030	-0.290
	p-value		*0.474*	*0.477*	*0.268*	*0.345*
Non-IFRS users (b)	2006	162	0.533	0.675	0.661	-1.495
	2007	162	0.618	0.708	0.701	-1.827
	Diff.		0.085	0.033	0.040	-0.332
	p-value		*0.007*	*0.073*	*0.033*	*0.120*
a vs. b	Diff-in-diff		-0.051	-0.014	-0.010	0.042
	p-value		*0.365*	*0.655*	*0.751*	*0.910*

Variable definitions:

r_gm: Cost of capital computed based on Gode and Mohanram (2003).

r_mpeg: Cost of capital computed based on Easton (2004).

r_ct: Cost of capital computed based on Claus and Thomas (2001).

r_gls: Cost of capital computed based on Gebhart et al. (2001).

coc: Cost of capital computed as the average of r_gm, r_mpeg, r_ct, and r_gls, when all four measures are available.

Error: Absolute difference between actual earnings per share and the latest mean analyst forecast of one-year-ahead earnings per share issued within a 90-day window starting one trading day before the 20-F filing dates, deflated by price at the end of last year.

Bias: Difference between actual earnings per share and the latest mean analyst forecast of one-year-ahead earnings per share issued within a 90-day window starting one trading day before the 20-F filing dates, deflated by price at the end of last year.

Dispersion: Standard deviation of analysts' latest one-year-ahead earnings per share forecasts issued within a 90-day window starting one trading day before the 20-F filing dates.

Institutional ownership: The number of shares owned by institutional investors divided by shares outstanding at the end of the 90-day window starting one trading day before the 20-F filing dates.

D1-D3: Price delay measures as in Hou and Moskowitz (2005).

SYNC: Stock return synchronicity measure as in Morck et al. (2000).

Table 7
Analysis of press releases around the elimination of the 20-F reconciliation

	Year	N	# of Press releases	# of Press releases related to forecasts of earnings or revenues
IFRS users (a)	2006	78	17.36	2.42
	2007	78	15.10	1.85
	Diff.		-2.26	-0.58
	p-value		*0.539*	*0.333*
Non-IFRS users (b)	2006	162	8.28	1.31
	2007	162	8.07	1.19
	Diff.		-0.20	-0.12
	p-value		*0.923*	*0.666*
a vs. b	Diff-in-diff		-2.05	-0.46
	p-value		*0.606*	*0.419*

Variable definitions:

Number of press releases: The number of press releases issued by the company over 90 days starting one trading day before the 20-F filing dates.

Number of press releases related to forecasts of earnings or revenues: The number of press releases related to forecasts of earnings or revenue forecasts issued by the company over 90 days starting one trading day before the 20-F filing dates.