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Does International Financial Reporting Standards Convergence Promote Informational Efficiency?

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ABSTRACT

This study explores a novel extension of the informational efficiency literature. We examine the impact of the convergence of International Financial Reporting Standards (IFRS) on stock price delay in the Malaysian stock market over a study period 2001 to 2016. The study uses Hou and Moskowitz's (2005) model to measure the stock price delay, an inverse indicator of informational efficiency. It is found that stocks have less delay on price adjustment to local and global market-wide information during the convergence of IFRS than before the IFRS was converged. Further, the panel data analysis is applied to test the empirical linkages between the convergence of IFRS and stock price delay. After controlling for trading volume, firm size, market volatility and financial crisis, we find strong evidence that the IFRS plays an essential role in promoting informational efficiency. Specifically, the convergence of IFRS decreases the local and global stock price delay. This is possibly due to the IFRS convergence promotes a more transparent reporting mechanism, reduces asymmetric information among market participants and thereby enhances stock price efficiency in incorporating information. The findings will be of help to policymakers in the effort to increase informational efficiency and those with interest in the subject.

Keywords: Informational Efficiency; Stock Price Delay; International Financial Reporting Standard (IFRS); Emerging Market

INTRODUCTION

International Financial Reporting Standards (IFRS) aim to provide a high quality and globally recognized set of accounting standards. The adoption of IFRS increases financial reporting transparency, improves accounting comparability, decreases information asymmetry, and hence generates higher quality information and greater financial market efficiency (Ball 2006; Cheong, Kim & Zurbruegg 2010; Horton, Serafeim & Seraf 2013). Given the benefits of the IFRS, the purpose of this paper is to examine whether the convergence of IFRS has an impact on informational efficiency in the Malaysian stock market.

Globalization and competitiveness result in the need for Malaysia to adopt IFRS. Beginning on 1 January 2012, Malaysia's accounting and audit practices are converged with the IFRS (IFRS 2017). With the convergence, the financial reporting in Malaysia is expected to become more transparent and credible. The convergence of IFRS may allow local and global market participants to have better understanding of financial statement prepared by the Malaysian companies and make the reporting to be more comparable on an international basis. In addition, multinational companies in Malaysia are anticipated to take advantages of decreased translation risks and compliance costs when consolidating financial statements of various international subsidiaries into a single set of consolidated financial statements.

With the introduction of the IFRS, understanding its implications on the stock market is essential for the development of Malaysia. This paper studies the less explored area of stock market, the Malaysian stock market's informational efficiency. A market is informational efficient if stock prices reflect all available information about the stock's intrinsic value without any delay (Fama 1970). Informational efficiency warrants an examination because informational inefficiency may induce the misallocation of capital resources, which in turn contracts the growth of Malaysian economy.

However, there is no study explores the IFRS effect on the speed of stock price adjustment to market-wide information. Therefore, this study contributes to the informational efficiency literature by examining the relationship between the IFRS convergence and stock price efficiency in the Malaysian stock market over the study period 2001 to 2016. The paper uses the Hou and Moskowitz's (2005) model to measure the stock price delay, an inverse gauge of the informational efficiency. This paper provides an investigation into whether stock price delay reduces after the convergence of IFRS in Malaysia. Further, applying the panel data analysis, we offer evidence on the link between the convergence of IFRS and informational efficiency, after incorporating control variables, namely trading volume, market size, market volatility and financial crisis.

The remaining paper is organized as follows. The next section briefly reviews related literature and presents the hypotheses. The data and methodology are outlined in Section 3. Then, Section 4 discusses the findings. Finally, Section 5 concludes the paper.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The choice of accounting standards plays an important role in affecting the value of a firm (Karamanou & Nishiotis 2009). The authors provide evidence that the adoption of International Accounting Standards (IAS/IFRS) reduces the cost of capital, increases information disclosure, decreases asymmetric information and thus improves minority shareholder protection and develops greater corporate governance.

Cheong et al. (2010) investigate whether the forecast accuracy of financial analysts differs between the pre- and post-adoption of the IFRS for intangibles in the Asia-Pacific countries, namely Australia, Hong Kong and New Zealand. They document evidence that financial analysts' earnings forecast errors decline in the post-IFRS period. Therefore, the IFRS aids analysts in forecasting future earnings of a firm. This implies that the implementation of IFRS offers more value-relevant information in financial statements. Similarly, Glaum, Baetge, Grothe and Oberdorster (2013) find that the introduction of international accounting standards leads to higher firms' disclosure quality and thus improves the accuracy of analysts' forecasts.

Further, Horton et al. (2013) explore the impact of mandatory IFRS adoption on firms' information environment. The accuracy of analyst forecasts is used as a proxy for the information environment. Consistent with Cheong et al. (2010) and Glaum et al. (2013), they find that the quality of information environment enhances significantly for the IFRS adopters. Specifically, consensus forecast errors reduce during the IFRS adoption. Market participants would benefit more from higher quality information and improved accounting comparability thanks to the IFRS adoption.

IFRS is a high quality set of accounting standards (IFRS 2017). In line with the previous studies, we expect the IFRS provides better information quality to investors, decrease the information asymmetry and improve the informational efficiency. As a result, we hypothesize that the speed of price adjustment to local and global market information is faster during the convergence of IFRS than the non-convergence of IFRS.

Prior literature shows that some factors such as trading volume, market size, market volatility and financial crises influence the speed of stock price adjustment to information. For instances, Lin, Singh, Sun and Yu (2014) find that stock prices adjust more slowly to information especially for lower liquidity firms. The findings are consistent with Callen, Khan and Lu (2013) and Chordia and Swaminathan (2000), who find that larger stock price delay is observed in lower trading volume firms which are less traded by market participants.

In addition, past studies identify that firm size is an important determinant of the speed of stock prices in reflecting information (Bae, Ozoguz, Tan & Wirjanto 2012; Chordia, Sarkar & Subrahmanyam 2007; Griffin, Kelly & Nardari 2010; Hou & Moskowitz 2005). Larger

firms have a higher speed of price adjustment compared to smaller firms. This indicates that smaller stocks have poor information environment and therefore incorporating information slower.

Moreover, the findings of Lim, Brooks and Kim (2008) found that the chaotic financial environment during the financial crisis may lead to the overreaction of investors to local information. Similarly, He, Li, Shen and Zhang (2013) suggest that less volatile stock market returns contribute to informativeness of stock prices. Therefore, we control for these variables which are considered as potential determinants of stock price delay. We hypothesize that lower trading volume, smaller firms, and greater market volatility and the occurrence of financial crisis make stock prices less informative and hence greater delay in responding to market-wide information.

DATA AND METHODOLOGY

We collect weekly stock price data (Wednesday to Wednesday) to calculate the stock price delay as the midweek data removes price volatility at the beginning and the end of the trading weeks. Data on stock prices, trading volumes and market capitalizations of the nine sectors in the Malaysian stock market, namely Basic Materials, Consumer Goods, Consumer Services, Financials, Healthcare, Industrials, Oil and Gas, Telecommunications and Utilities are retrieved from the Thomson Reuters Datastream. Given the data on Healthcare sector are available only from 2001 onwards, this study covers the sample period from 2001 to 2016. Technology sector is excluded due to the data ended in 2009. Stock price indices on Bursa Malaysia and MSCI world stock market are sourced from Datastream.

The stock price data are transformed into continuously compounded percentage returns by taking the log price relatives times 100, that is, $R_t = \ln(P_t/P_{t,I}) \times 100$, where P_t is the closing stock price on week t, and $P_{t,I}$ is the closing stock price on the previous week t. The variables of trading volumes and market capitalizations are transformed into natural logarithm.

MEASURING STOCK PRICE DELAY

Stock price delay is an inverse measure of informational efficiency. The stock price delay model is based on Hou and Moskowitz (2005). To estimate how rapidly stock prices reflect local market-wide information, we regress each industry's weekly stock returns on the current and four weeks of lagged returns of the local market returns. Hou and Moskowitz (2005) find that volatility of individual stock returns results in imprecise delay estimation and therefore we use industry-level data to diminish estimation error noise. The unrestricted model is shown as:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \sum_{n=1}^{4} \lambda_i^{-n} R_{m,t-n} + \varepsilon_{i,t}$$
 (1)

Moreover, to estimate how quickly global marketwide information is incorporated into stock prices, each industry's weekly stock returns are regressed on the current and four weeks of lagged returns of the local market returns and global market returns, as shown in the following unrestricted model:

$$R_{i,t} = \alpha_i + \beta_{0i} R_{m,t} + \beta_{1i} R_{g,t} + \sum_{n=1}^4 \lambda_i^{-n} R_{m,t-n} + \sum_{n=1}^4 \delta_i^{-n} R_{g,t-n} + \varepsilon_{i,t}$$
(2)

where $R_{i,t}$ and $R_{m,t}$ are stock returns in industry i in week t and local stock market returns of Bursa Malaysia in week t. $R_{g,t}$ is the global stock market return in week t and is proxied by the return on the MSCI world market index; λ_i^{-n} and δ_i^{-n} are the coefficients of the local stock market returns and global stock market returns at lag n and ε is an error term.

Further, we construct the following restricted regression models:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \tag{3}$$

$$R_{i,t} = \alpha_i + \beta_{0i} R_{m,t} + \beta_{1i} R_{g,t} + \varepsilon_{i,t}$$

$$\tag{4}$$

For every year from 2001 to 2016, we estimate equations (1) through (4) for each industry. The R-squared from the regressions are obtained to calculate the stock price delay for industry i in year t. More specifically, the stock price delay is computed as one minus the ratio of the R-squared values based on the restricted regression to the R-squared values based on the unrestricted regression:

Local Price Delay =
$$1 - \left(\frac{R_{contricted equation 3}^2}{R_{interstricted equation 1}^2}\right)$$
 (5)

Global Price Delay =
$$1 - \left(\frac{R_{restricted equation 4}^2}{R_{investricted equation 2}^2}\right)$$
 (6)

According to Hou and Moskowitz (2005), the higher is the local (global) stock price delay measure, the slower is the stock prices respond to local (global) market information, and hence the lower is the level of informational efficiency.

MODEL SPECIFICATION

To examine the empirical linkages between the convergence of IFRS and stock price delay, the panel regression model is specified as follow:

$$\begin{aligned} \textit{Local Price Delay}_{i,t} &= \alpha_i + \beta_1 \textit{IFRS}_t \textit{Convergence}_t + \beta_2 \textit{Ln} \\ & (\textit{Volume})_{i,t} + \beta_3 \textit{IFRS Convergence} \\ & X \textit{Ln} \left(\textit{Volume}\right)_{i,t} + \beta_4 \textit{Local Market} \\ & \textit{Volatility}_{i,t} + \beta_5 \textit{Financial Crisis}_t + \varepsilon_{i,t} \end{aligned}$$

Global Price Delay_{i,t} = $\alpha_i + \beta_1$ IFRSConvergence_t + β_2 Ln

(Volume)_{i,t} + β_3 IFRS Convergence

X Ln (Volume)_{i,t} + β_4 Global Market

Volatility_{i,t} + β_5 Financial Crisis_t + $\varepsilon_{i,t}$ (8)

where local (global) delay_{i,t} is the local (global) stock price delay of industry i for year t estimated from equations (5) and (6). IFRS is the dummy variable for the convergence of the International Financial Reporting Standards (IFRS) which takes on the value of one when Malaysia converged with the IFRS from 2012 until the end of the sample period, and zero otherwise. Ln(Volume) is the logarithm of trading volumes, a proxy to measure the liquidity. The interaction term between the convergence of IFRS and trading volume (IFRS Convergence x Ln(Volume)) is incorporated to capture whether the impact of extra unit of trading volume on stock price delay is larger during the convergence of IFRS than it is during the non-convergence of IFRS. Local and Global Market Volatility is measured by the standard deviation of weekly stock price returns on Bursa Malaysia and MSCI world stock market over the year t, respectively. The dummy variable for the Financial Crisis equals to one for occurrence of the Global financial crisis from 2008 to 2009, and zero otherwise. α is the intercept, β_{L_5} are the parameters to be estimated and ε is the error term.

We consider the fixed and random effect models. The random effect estimator assumes that the intercept is uncorrelated with the regressors. We perform Hausman test to examine the appropriateness of the fixed effect model and the random effect model. The null hypothesis is that both fixed and random effect models are consistent while the alternative hypothesis is that random effects are inconsistent. We also conduct the Breusch-Pagan Lagrange Multiplier (LM) test to decide between a random effect model and a simple ordinary least squares (OLS) model. In all regressions, the *t*-statistics are controlled for heteroscedasticity and serial correlation in the error terms.

FINDINGS

Tables 1 and 2 present the local and global stock price delay before and during the convergence of IFRS. Before the convergence of IFRS, the overall industry in Malaysia recorded a local stock price delay of 0.0935 and a global stock price delay of 0.1466. Both figures are greater than zero, indicating that the Malaysian stock market is inefficient in reflecting the information due to the slow speed of information incorporation. Interestingly, it is observed that stocks respond faster to local market information than the global market information. These findings support the results of Bae et al. (2012) that there is information asymmetry between local and foreign investors. The Malaysian stock market is dominated by local investors who are more concerned with the local market information than the world market information.

TABLE 1. Local stock price delay before and during the convergence of IFRS

	Before IFRS Convergence	During IFRS Convergence	
Industries:	(2001-2011)	(2012-2016)	
Basic Materials	0.0856	0.0654	
Consumer Goods	0.0630	0.0450	
Consumer Services	0.0294	0.0748	
Financials	0.0128	0.0112	
Healthcare	0.3657	0.0747	
Industrials	0.0375	0.0473	
Oil and Gas	0.0736	0.0591	
Telecommunications	0.1205	0.0668	
Utilities	0.0531	0.0498	
Overall	0.0935	0.0549	

TABLE 2. Global stock price delay before and during the convergence of IFRS

	Before IFRS Convergence	During IFRS Convergence		
Industries:	(2001-2011)	(2012-2016)		
Basic Materials	0.1479	0.1213		
Consumer Goods	0.1028	0.0867		
Consumer Services	0.0648	0.1052		
Financials	0.0250	0.0194		
Healthcare	0.5010	0.2378		
Industrials	0.0644	0.0794		
Oil and Gas	0.1341	0.0920		
Telecommunications	0.1717	0.1142		
Utilities	0.1078	0.0939		
Overall	0.1466	0.1055		

This causes stock prices slowly absorb the global market information compared to the local market information.

As can be seen from Tables 1 and 2, the convergence of IFRS casts its shadow on the Malaysian stock market. During the convergence of IFRS, both local and global stock price delays decrease to 0.0549 and 0.1055, respectively. This indicates that the convergence of the IFRS promotes the reporting transparency. Market participants have better ability in processing market-wide information and therefore accelerate the stock price adjustment to local and global market information.

The descriptive statistics of regression variables are displayed in Table 3. Local price delay is lower than the global price delay due to the slower adjustment of stock prices to the global market information. The global market volatility is greater than the local market volatility, implying that local stock market is exposed to lower uncertainty or risk compared to the global stock market.

Table 4 shows the correlations coefficients of the regression variables. Both the stock price delay measures, namely local and global stock price delay have a very high positive correlation of 0.90. In contrast, the convergence of IFRS is significantly and negatively correlated with the local and global price delay. This suggests that the convergence of IFRS reduces stock price delay in Malaysia. The correlation

between logarithm values of trading volume and market size is 0.92, showing the potential existence of multi-collinearity problem if both variables are included in a regression. Due to the high correlation between trading volume and market capitalization, we include the variable separately in the model specifications (1) and (2) in Tables 5 and 6.

Table 5 presents the panel regression estimates when local stock price delay is used as the dependent variable. We fail to reject the null hypothesis of the Hausman test. This indicates that the random effect model should be used in Table 5 as it is more appropriate than the fixed effect model, thus the random effect estimates are consistent. In addition, the LM test rejects the null and concludes that random effect is a preferred model than simple OLS model. A central question of this study is whether the IFRS convergence contributes to informational efficiency. Models 1 and 2 in Table 5 report that the convergence of IFRS is negative and statistically significant at the 5% level. As a result, this reflects the fact that the convergence of IFRS can subsequently improve the informational efficiency by decreasing the stock price delay to the local information. This is perhaps due to the IFRS convergence stimulates a more transparent reporting mechanism, increases quality information, improves corporate governance and therefore reduces asymmetric information among the investors

TABLE 3. Descriptive statistics of regression variables

	Mean	Standard Deviation	Maximum	Minimum
Local Price Delay	0.0814	0.1078	0.6128	0.0015
Global Price Delay	0.1338	0.1442	0.7771	0.0058
IFRS Convergence	0.3125	0.4651	1.0000	0.0000
Ln(Volume)	4.0167	0.6569	4.9107	1.9795
Ln(Market Size)	4.6721	0.6674	5.6082	1.9738
Local Market Volatility	0.0173	0.0080	0.0385	0.0047
Global Market Volatility	0.0214	0.0092	0.0477	0.0088
Financial Crisis	0.1250	0.3319	1.0000	0.0000

TABLE 4. Correlation coefficients of regression variables

	Local Price Delay	Global Price Delay	IFRS Convergence	Ln (Volume)	Ln (Market Size)	Local Market Volatility	Global Market Volatility	Financial Crisis
Local Price Delay	1.00							
Global Price Delay	0.90**	1.00						
IFRS Convergence	-0.17*	-0.13*	1.00					
Ln(Volume)	-0.59**	-0.61**	0.37**	1.00				
Ln(Market Size)	-0.63**	-0.65**	0.42**	0.92**	1.00			
Local Market Volatility	0.12	0.02	-0.49**	-0.28**	-0.30**	1.00		
Global Market Volatility	80.0	0.02	-0.43**	0.00	-0.10	0.63**	1.00	
Financial Crisis	0.07	0.06	-0.25**	0.06	-0.04	0.21*	0.62**	1.00

^{**} and * denote statistical significance at the 0.01 and 0.05 levels, respectively.

TABLE 5. Regression of the convergence of IFRS and local stock price delay

	Mode	el (1)	Model (2)		
IFRS Convergence	-0.4633	(-2.45)*	-0.5296	(-2.06)*	
Ln(Volume)	-0.0788	(-5.47)**			
IFRS Convergence X Ln(Volume)	0.1075	(2.49)*			
Ln(Market Size)			-0.0886	(-5.86)**	
IFRS Convergence X Ln(Market Size)			0.1073	(2.13)*	
Local Market Volatility	-0.2468	(-0.26)	-0.3659	(-0.39)	
Financial Crisis	0.0369	(1.77)	0.0252	(1.26)	
Constant	0.3951	(6.33)**	0.4934	(6.63)**	
R-Squared	0.3684		0.4194		
Hausman Test	10.8200	[0.06]	8.2300	[0.14]	
LM Test	27.6500	[0.00]**	17.6300	[0.00]**	

t-statistics are in parentheses and adjusted for heteroscedasticity and serial correlation in the error terms. p-values are in square brackets. ** and * denote statistical significance at the 0.01 and 0.05 levels, respectively.

(Cheong et al. 2010; Glaum et al. 2013; Horton et al. 2013; Karamanou & Nishiotis 2009).

As expected, the result shows that the trading volume has negative and significant impact on the local price delay. The finding is in line with the Chordia and Swaminathan (2000) that high trading volume stocks respond more quickly to market-wide information than low trading volume stocks. Further, we replace the trading volume with

market size in Model 2 and find similar results. Consistent with Bae et al. (2012), Chordia et al. (2007) and Griffin et al. (2010), market size is negatively associated with local stock price delay and the finding suggests that larger market size makes stock prices more efficient by reducing the local stock price delay.

The interaction term between trading volume (market size) and the convergence of IFRS confirm that the effect

 $\ensuremath{\mathsf{TABLE}}\xspace\:6.$ Regression of the convergence of IFRS and global stock price delay

	Mod	el (1)	Model (2)		
IFRS Convergence	-0.5995	(-2.54)*	-1.0492	(-2.71)**	
Ln(Volume)	-0.0606	(-3.12)**			
IFRS Convergence X Ln(Volume)	0.1349	(2.52)*			
Ln(Market Size)			-0.0001	(-3.20)**	
IFRS Convergence X Ln(Market Size)			0.2093	(2.68)**	
Global Market Volatility	-0.8593	(-0.74)	-0.7279	(-0.60)	
Financial Crisis	0.0430	(1.44)	0.0298	(0.96)	
Constant	0.3929	(5.28)**	0.2045	(5.13)**	
R-Squared	0.2883		0.1924		
Hausman Test	21.7200	[0.00]**	4.1200	[0.39]	
LM Test	47.1600	[0.00]**	176.4400	[0.00]**	

t-statistics are in parentheses and adjusted for heteroscedasticity and serial correlation in the error terms. p-values are in square brackets. ** and

* denote statistical significance at the 0.01 and 0.05 levels, respectively.

of trading volume (market size) on stock price delay is greater when IFRS is converged than it is when the IFRS is not converged. However, inconsistent with the results of He et al. (2013), we find that the local market volatility and the global financial crisis have insignificant relationship with the local price delay in both models.

Table 6 reports the regression results when using the global stock price delay as the dependent variable. The fixed effect model is used in Model 1 due to the rejection of the null hypothesis of the Hausman test. In Model 2, we fail to reject the null of Hausman test but reject the null of LM test, suggesting that the random effect model is preferred.

The results in Table 6 are in line with the findings in Table 5. We find strong evidence that the convergence of IFRS can improve the informational efficiency by decreasing the stock price delay to the global market information. In addition, higher trading volume and larger market size increase the speed of price adjustment to the global market information. Trading volume and market size have larger impact on stock price delay during the IFRS convergence than it is during the non-convergence of IFRS. The global market volatility and the global financial crisis are insignificantly related to the global stock price delay.

CONCLUSION

IFRS is a high quality set of accounting standards which has been adopted globally. This study investigates the effect of IFRS convergence on the informational efficiency in the Malaysian stock market with a sample time period from 2001 to 2016. We adopt the model of Hou and Moskowitz (2005) to measure the stock price delay, an inverse indicator of informational efficiency.

Our empirical analysis offers useful insight into the literature of informational efficiency in the stock market. We find that the convergence of IFRS is very important

in enhancing the stock price efficiency. The speed of stock price adjustment to local and global market-wide information is quicker following the convergence of IFRS as of January 2012 than before the IFRS convergence.

Additionally, the panel regression model is constructed to examine the relationships between the convergence of IFRS and stock price delay, after controlling for trading volume, market size, market volatility and financial crisis. The results show strong evidence that the convergence of IFRS improves the informational efficiency by decreasing the stock price delay to the local and global information. This is perhaps attributable to the IFRS convergence stimulates reporting transparency, decreases asymmetric information and subsequently increases the speed of stock price adjustment to information. In addition, the finding provides evidence showing that higher trading volume and larger market size reduces the sluggishness of stock price adjustment to the local and global market information. The impact of trading volume and market size on informational efficiency is larger during the convergence of IFRS than it is when the IFRS is not executed.

The findings of this study provide important policy implications. Given that the informational efficiency of Malaysian stock market is impacted positively by the convergence of IFRS, policymakers should focus on enhancing the effectiveness and efficiency of IFRS convergence such that stock prices reflect more quickly to the available information. Moreover, further developments of the Malaysian stock market size and trading volume are needed to improve the informational efficiency.

The paper examines the effect of IFRS convergence on the informational efficiency in an emerging market, that is, Malaysia only. The impact can be different in other developing and developed countries due to country characteristics. The study of whether the IFRS convergence promotes informational efficiency in all countries after controlling country-specific effects might provide

valuable insights to policymakers. We leave this extension of our analysis for future study.

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