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Impact of International Financial Reporting Standards on Stock Price Synchronicity for Asian Markets

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ABSTRACT

Stock price synchronicity since the adoption of International Financial Reporting Standards (IFRS) has been significant due to its strong relationship with the economic development and capital market stability of a country. Using data from 2006–2011, the study examines whether the mandatory adoption of IFRS reduces stock price synchronicity in the Asian context. The study utilizes a sample of 1,800 firm-year observations for firms in four Asian markets—China, Hong Kong, Israel, and the Philippines—where IFRS have been mandatory since 2009. The empirical model, relating to stock price synchronicity with the adoption of IFRS, and other firm-specific control variables were analysed using both univariate and multivariate techniques. Different types of panel data estimates were used and compared so as to interpret the results with the best-suited parameters for different data sets for different markets. The empirical results support the argument that, for all four markets considered, IFRS adoption improves the information environment through the capitalization of firm-specific information into stock prices, thereby reducing the stock price synchronicity. Along with IFRS adoption, other firm-specific control variables are found to have significant influence on stock price synchronicity, such as cross-listings in foreign stock exchanges in China and Philippines, the Herfindahl index in Hong Kong, and the percentage of foreign sales in Israel.

Keywords: International Financial Reporting Standards, Stock Price Synchronicity, Information Environment, Mandatory Adoption of IFRS, Asian Markets

INTRODUCTION

The International Accounting Standards Board (IASB) issued the International Financial Reporting Standards (IFRS) in 2001. IFRS are principle-based standards, interpretations, and frameworks. The IASB has introduced a total of 13 IFRS as of 2012. Most European countries adopted IFRS on or after 1 January 2005, but in Asia, which drives the global economy, the adoption of IFRS will take a long time. Some markets in Asia, such as China, Hong Kong, Israel, and the Philippines, have made an early start by making IFRS adoption mandatory. China mandated a change in financial reporting from Chinese Generally Accepted Accounting Principles (GAAP) to IFRS as of 1 January 2007 (McGregor, 2006). Hong Kong Financial Reporting Standards (HKFRS) were fully converged with IFRS on 1 January 2005 (HKICPA, 2006). The Philippines have adopted all IFRS from 2005 without modification (Word Bank Group, 2006). Israel fully adopted IFRS in January 2008 and is currently in the final or fourth stage of adopting IFRS (CPA Israel, 2006). Other major Asian countries have recently started the transition or are in the process of making it mandatory in the near future.

Several authors have observed the consequences of adopting IFRS; they concur that reports under IFRS are of higher quality than reports prepared under national GAAP in different countries. These studies provide evidence that market liquidity and trading volume increase after adopting IFRS (Leuz & Verrecchia, 2000). Accounting quality also increases as there is a lower chance of earning management in the financial statements (Bartov, Goldberg, & Kim, 2005), more foreign mutual funds investments are attracted (Covrig, Defond, & Hung, 2007), efficiency increases in the form of debt contracting (Kim & Shi, 2012), and forecasting errors are reduced by the financial analysis (Ashbaugh & Pincus, 2001). The cost of equity capital decreased for Asian countries after adopting IFRS (Patro & Gupta, 2014). The present paper contributes to this stream of literature by focussing on the impact of IFRS adoption on stock price synchronicity[1] in China, Hong Kong, Israel, and the Philippines (hereafter, "the selected Asian markets"). In part, the present study is motivated by literature that emphasizes the role of stock price synchronicity in the capital market. Stock market synchronicity is an emerging area of research for finance literature. Studying stock price synchronicity is crucial due to its strong association with capital market stability. Corporate governance mechanisms are more effective when stock price synchronicity is lower (Morck, Yeung & Yu, 2000). It can drive the value of a stock from its original value, which can have a negative impact on the capital market (Roll, 1988). Investors are exposed to greater risk as stock price synchronicity increases (Campbell, Shrives, &

[1] Stock price synchronicity: Stocks in a share market moving in the same direction. The movement can be upward or downward, depending on the trend.

Bohmbach-Saager, 2001), making stock synchronicity important for a range of players in the capital market. Evidence in the literature suggests that a synchronous stock market has a greater market-wide risk of individual assets pricing. Thus, stock synchronicity is important for arbitrage traders, analysts, and noise traders.IFRS proponents say that, after adopting IFRS in financial reporting, corporate disclosures increase, which helps investors collect and trade on firm-specific information. Consequently, stock price now becomes more informative. With this assumption, we expect IFRS adoption to lead to a decrease in stock price synchronicity. Most of the available literature relating to IFRS and stock price synchronicity has findings and implications with reference to European countries, as European countries adopted IFRS by 2005. But Asian countries started adopting IFRS only after 2005. In fact, stock price synchronicity is an important issue to study for the emerging market. The study seeks to ascertain whether IFRS adoption by a country in Asia improves the information environment and encourages the capitalization of firm-specific true information into stock prices, thereby reducing synchronicity. Although earlier research on "voluntary" adopters has provided valuable insights on the impact of IFRS disclosure, these results cannot be generalized in a mandatory setting (Horton, Serafeim, & Serafeim, 2013). We expect effects from mandatory IFRS adoption to be different from those documented for voluntary IFRS adopters as the former group is essentially forced to adopt IFRS. The effects of voluntary IFRS adoption are likely to reflect differences in the incentives for credible reporting, the circumstances that led to the adoption of IFRS in the first place, and the entire commitment strategy to transparency. Along with voluntary IFRS adoption, firms may also be seeking to cross-list in a stricter regime, improve corporate governance, change ownership structures, or raise additional capital. Thus, the effects of voluntary IFRS adoption are likely to be larger, but cannot be attributed to IFRS alone (Leuz & Verrecchia, 2000). The main focus of our study is to determine the effects of mandatory IFRS adoption in specific Asian markets. The mandatory adopters under study are from China, Hong Kong, Israel, and the Philippines, because IFRS are yet to be mandated in other Asian markets. Although IFRS have been driven by the global integration of markets, they still may not produce high quality financial reports in practice due to various political and legal barriers to successful implementation at the country level (Ball, 2006). Our findings supplement this research because we examine the impact of IFRS adoption on four Asian markets (i.e., China, Hong Kong, Israel, and the Philippines), which differ in terms of legal systems and other regulatory characteristics. Given the scarcity of empirical evidence on the issue, especially in Asian countries, the results of the study will provide useful insights to the regulators for improving the information environment. Based on the findings of this study, other Asian

countries that have yet to adopt IFRS may be motivated to switch from their national standard to IFRS, which may in turn lead to more convergence of accounting standards throughout the world and benefit investors interested in cross-border listings in capital markets throughout the world.

LITERATURE REVIEW

IFRS and Stock Price Synchronicity

Empirical evidence from the literature indicates positive consequences associated with the mandatory adoption of IFRS. Dasgupta, Gan, and Gao (2010) provided evidence that share price involves more firm-related true information after IFRS adoption. Beuselinck, Joos, Khurana, and Vander Meulen (2010) examined the impact of mandatory IFRS adoption on stock price informativeness across 14 EU countries and provided evidence of the decrease in stock price synchronicity regarding IFRS adoption as well as subsequent increase in stock price synchronicity following IFRS adoption. They interpreted their results to suggest that IFRS disclosures reveal new firm-specific information during the adoption period but, subsequently, surprise for future disclosures diminishes. The same concept has been proved by Bissessur and Hodgson (2012) in their study on a selected sample of firms in Australia. The firms cross-listed in other countries, such as on the U.S. stock exchanges, show an improvement in their informativeness due to the additional disclosures and scrutiny requirements for cross-listings (Fernandes & Ferreira, 2009). Kim and Shi (2012) examined the consequences of voluntary IFRS adoption for firms in 34 countries and documented that stock price synchronicity decreases following voluntary IFRS adoption. Furthermore, their study provided evidence that synchronicity is lower for IFRS adopters when compared to non-adopters; a decrease in synchronicity due to IFRS is found only for firms that have a higher analyst following. These authors considered in their sample only those firms that adopted IFRS voluntarily. They also mentioned that the process of IFRS adoption might not be the same in all countries; a more pronounced synchronicity-reducing effect is found in countries with a weaker institutional environment. Findings from other studies (Gul, Kim, & Qiu, 2010; Jin & Myers, 2006) support the fact that countries with poor investor protection, low corporate governance, and a less-developed financial system have higher synchronicity compared to countries with strong institutional environments. Going further, Loureiro and Taboada (2012) suggested that the improvement of stock price informativeness is more significant for voluntary IFRS adopters than for mandatory IFRS adopters. The impact of IFRS adoption also depends on the level of the enforcement of laws in a country (Landsman, Maydew, & Thornock, 2012). Relating to sample emerging markets, prior research by Morck et al. (2000) provided

empirical evidence that stock returns are more synchronous in emerging economies than in developed economies, although the causes remain unclear. Moreover, Fernandes and Ferreira (2009) found that the enforcement of trading laws improves stock price informativeness, but only in developed markets.

Complementary to the studies discussed thus far, some studies have failed to find strong evidence that IFRS improve the information set of investors and have found limited or no capital market benefits for mandatory adopters. In 1995, using cross-sectional data from 37 countries, Morck et al. (2000) argued that taking accounting standards as a parameter does not explain stock price co-movements. Daske, Hail, Leuz, and Verdi (2008) demonstrated that capital market benefits related to the mandatory adoption of IFRS are unlikely to exist primarily because of IFRS adoption. However, contrary to conventional beliefs, Dasgupta et al. (2010) argued that, in efficient and transparent markets, firm-specific information becomes available and less expensive to obtain, which means market participants would be able to anticipate future firm-specific events. Thus, when the event—in this case, IFRS adoption—actually happens in the future in such markets, the markets will not react as expected, which could in turn make the return synchronicity even higher. Wang and Yu (2009) conducted a 10-year study in 44 countries and found no evidence of any significant relationship between IFRS adoption and stock price synchronicity, suggesting that the adoption of high quality accounting standards (e.g., IFRS and U.S. GAAP) is not related to the information content of stock prices; rather, the adoption of such accounting standards is helpful only in countries with proper reporting incentives. To sum up, the evidence from literature on synchronicity and IFRS adoption gives mixed results, which motivates us to test this relationship in an Asian context, where studies are limited.

Measuring Stock Price Synchronicity

Morck et al. (2000) proposed two measures for calculating stock price synchronicity: classical synchronicity measure and R-square measure. In addition, Skaife, Gassen, and LaFond (2006) proposed using the zero-return day measure. The R-square measure is the most widely accepted measure in the literature for calculating synchronicity. This measure is able to calculate the individual firm-level synchronicity; if a country-level synchronicity value is required, the individual firm-level synchronicity values are simply averaged. This model measures the synchronicity by correlating the firm-level weekly stock return data with market return data. A higher R-square value reflects higher synchronicity. Exhibit 1 illustrates the control variables expected to affect synchronicity and the measurement models used by various researchers in calculating stock price synchronicity. As evident from the literature, the

most popular measure for synchronicity is the R-square measure; hence, we adopted the same in the present study. In addition, stock price synchronicity depends on several factors as identified by various authors in their research. The principal factor behind high trading time variance is private information (Roll, 1988). A greater volatility of stock returns was found during trading hours, and variations in stock prices are reflected by firm-related information (Roll, 1988). Stock price synchronicity has been found to be negatively influenced by a country's geographical size, whereas it is positively related to GDP (Morck et al., 2000). Countries with small geographical size are mostly unstructured in terms of their financial markets, which leads to low growth (Levine & Zervos, 1998). Countries with fewer firms listed on the stock market are seen as having high volatility and high stock price synchronicity (Morck et al., 2000)

RESEARCH METHODOLOGY

Hypothesis Development

The objective of our study is to determine the impact of IFRS on stock price synchronicity in Asian markets. To meet this objective, the following research question has been framed:

Does IFRS adoption improve the incorporation of firm-specific information into stock prices for listed firms in Asia?

To answer the research question, the following hypotheses are tested:

H1: IFRS adopters in Asian markets experienced a significant decrease in stock price synchronicity after adopting IFRS compared to the period before IFRS adoption.

H1A: IFRS adopters in Asian markets experienced a significant increase in stock price synchronicity after adopting IFRS compared to the period before IFRS adoption.

Table 1 Summary of Literature on Stock Synchronicity Measures and Explanatory Variables

Literature	Control variables used	Measure
Morck et al., 2000	Number of stock listed in the market, property rights, good governance index, GDP, GDP growth variance, and geographical size.	R-square and Classical
Durnev, Morck, & Yeung (2004)	Size, liquidity, leverage, advertising expenses, R&D expenses, firm-specific stock returns.	R-square
Chan & Hameed, 2006	Synchronicity, analyst coverage, size, trading volume, firm capitalisation.	R-square
Skaife, Gassen, & LaFond, 2006	R&D expenses, ROA, analyst forecast earnings.	R-square and Zero-return
Sarod, 2008	Rule of law, inflation, corruption and geographical size synchronicity, industry fixed effects, number of analyst revision.	R-square, Zero-return and Classical
Beuselinck et al., 2010	Synchronicity, industry fixed effects, number of analyst revision, institution holding, market value of equity, Herfindahl index, inflation-adjusted GDP.	R-square
Li, 2010	Trade openness, capital openness, good governance, Asian crisis dummy, real crisis dummy.	R-square
Kim & Shi, 2012	Synchronicity, size, leverage, growth, sale, Big 4 audit, ROA, GDP.	R-square
Bissessur & Hodgson, 2012	Size, Herfindahl index, stock volatility.	R-square
Horton, Serafeim, & Serafeim, 2013	Firm size, loss, ADR, analyst coverage, absolute accruals, experience, CF forecasts.	R –square

Sample Selection

The sample consists of four Asian markets—China, Hong Kong, Israel, and the Philippines—where IFRS have been mandatory since 2007, 2008, 2007, and 2005, respectively. Other major Asian countries such as India, Japan, Malaysia, Singapore, and South Korea are not included because they have yet to make IFRS mandatory; future studies can include these countries after they make IFRS mandatory. Only firms that satisfy the criteria for complete availability of financial data are sampled. We require each firm to have at least 45 weekly returns available for synchronicity calculations (Piotroski & Roulstone, 2004). We also excluded firms in regulated

industries (e.g., financial firms), as they similarly respond to external changes. The study is restricted to a comparative analysis for three years before and after adoption of IFRS until 2011. The year 2009 was chosen because it covered the adoption of IFRS in the four Asian markets; it also maximized the availability of financial data and provided the advantage of not being influenced by the global financial crisis of 2008. Finally, the sample size of the study includes 300 firms, with 1,800 firm-year observations over a six-year period. Data for the study have been collected from the DataStream and Worldscope databases. All financial statement data, including a firm's adoption of particular accounting standards, were extracted from Worldscope. It has a data field (07536) that describes accounting standards followed by a specific firm. Worldscope identifies 23 different accounting standards adopted by firms, including local standards (07536 = 01), International Accounting Standards (IAS: 07536 = 02), IFRS (07536 =23), and other hybrid accounting standards that partially adopt international standards (07536 = 06, 08, 12, 16, 18, and 19). The present study sample includes only those companies with code 07536 = 23 (i.e., full IFRS adopters). All stock return data were obtained from Datastream. When certain financial statement data were missing in Worldscope, they were taken from Mergent online. Firms that voluntarily adopted IFRS were deleted to focus on the effect of mandatory adoption. Mandatory IFRS includes firms that adopted IFRS when their country mandated IFRS reporting.

Data Measurement

To examine the relationship between stock price co-movement and the adoption of IFRS, we estimated the following model, taking the reference from Piotroski and Roulstone's (2004) study, as represented by equation (1):

$$SYNCH_{i,t} = \alpha_0 + \beta_0 ADIFRS + \Upsilon_j IND_j + \beta_1 Log(MCAP)_{i,t} + \beta_2 LEVG + \beta_3 FSALE + \beta_4 CL + \beta_5 HERF_{i,t} + \epsilon_{i,t} \quad (1)$$

where,

SYNCH = Synchronicity of firm-level stock returns with market-wide and industry-level returns.

ADIFRS = Adoption of IFRS; dummy variable equal to 1 if a firm adopts IFRS, and 0 otherwise.

IND = Type of industry to which the firm belongs.

MCAP = Market capitalisation—the market value of equity of the firm at the beginning of the calendar year.

LEVG = Leverage—the ratio of the long-term and short-term debts to total assets.

FSALE = Percentage of foreign sales.

CL = A dummy variable for a firm's exposure to foreign capital markets.

HERF = A revenue-based Herfindahl index of industry-level concentration.

Dependent Variable

The dependent variable stock price synchronicity (SYNCH) was calculated as described in the following steps of equations:

$$SYNCH=Log\ (R^2_{i,w}/1-R^2_{i,w}) \quad (2)$$

Higher values of this variable reflect higher stock return synchronicity and lower firm-specific informativeness of stock prices. The value of $R_{i,w}$, which is taken as the input for the synchronicity calculation in equation (2), is calculated from the following equation:

$$R_{i,w}=a+b_1MR_{iw-1}+b_2MR_{i,w}+b_3\ IR_{i,w-1}+b_4IR_{i,w}+€_{i.w} \quad (3)$$

where,

$R_{i,w}$ = Firm-level weekly return

$MR_{i,w}$ =Current market-wide return

MR_{iw-1} = Prior week's market-wide return

$IR_{i,w}$, $IR_{i,w-1}$ = Current and prior weeks' equally weighted industry-level return

Industry returns (IR)[2] are calculated from the following formula:

$$IR_{iw;t}=\frac{\sum k_{\frac{n}{n}}(r_{kw,t}-r_{jw;t})}{j_i-1} \quad (4)$$

where $r_{kw,t}$ is the return of firm *k* in industry *i* in week *w* and J_i is the number of firms in industry *i* in the same week. We required a minimum of 45 weekly observations per year for each firm.

Independent and Control Variables

Variables such as market capitalization (MCAP), type of industry (IND), leverage (LEV), percentage of foreign sales (FSALE), firm's exposure to foreign capital market (CL), and the Herfindahl index (HERF) are used as control variables in the model. These are expected to impact stock price synchronicity. MCAP was used because firm size could negatively influence stock price synchronicity. Occasional investors do not like to obtain information for small firms, as it may be very costly (Kelly, 2015). Hence, the sign prediction for MCAP with synchronicity is conflicting in the regression model.

[2] Chan and Hameed (2006) did not include industry returns in the market model as an additional factor. They argued that, in some markets, the economy is dominated by a few industries, and it is difficult to disentangle the industry effect from the market effect. We considered this argument and used the Worldscope general industry classification to calculate the value-weighted industry return.

We predicted a positive relationship between HERF and SYNCH as firms in a more concentrated industry are more interdependent on each other and, hence, react equally to the external news (Piotroski & Roulstone, 2004). Mandatory IFRS (ADIFRS) is an indicator variable that takes the value of 1 for firms that adopted IFRS after IFRS were mandated (2009–2011) and 0 otherwise. The reasons for considering other control variables are presented in Table 2.

Table 2 Variable Explanations for Models on the Impact of IFRS on Stock Price Synchronicity

Variables	Literature	Justification
Stock Price Synchronicity (SYNCH)	Durnev et al., 2004; Kim & Shi, 2012; Li, 2010; Morck et al., 2000; Piotroski & Roulstone, 2004.	Calculated by R-square measure.
Adoption of IFRS (ADIFRS)	Durnev et al., 2004; Kim & Shi, 2012; Li, 2010; Morck et al., 2000; Piotroski & Roulstone, 2004.	Independent or Testing variable.
Type of Industry (IND)	Piotroski & Roulstone, 2004.	The type of industry a firm belongs to may have a different impact on synchronicity.
Market Capitalisation (MCAP)	Dasgupta et al., 2010; Fernandes & Ferreira, 2009; Kelly, 2015.	Firm size is poPsitively associated with a firm's information environment. Returns on large stocks are more synchronized with the market relative to returns on small stocks.
Leverage (LEVG)	Gordon & Shapiro, 1956; Li, 2010.	Firms with higher leverage level are associated with lower stock price synchronicity.
Percentage of Foreign Sales (FSALE)	Gul, et al., 2010; Kim & Shi, 2012.	Increase in sales outside home country leads to less stock price synchronicity.
Cross-Listed (CL)	Gul et al., 2010; Kim & Shi, 2012.	Firms that are cross-listed on foreign stock exchanges have to prepare financial reports in accordance with their regulations and are required to follow other more stringent governance rules, such as the rules on board structure and executive compensation, resulting in a decrease in synchronicity.
Herfindahl Index (+) (HERF)	Piotroski & Roulstone, 2004.	The more concentrated an industry is, the more synchronicity.

RESULTS AND ANALYSIS

To determine the impact of IFRS adoption on firms in Asia, the hypotheses as proposed in this study were tested by various statistical tools, such as box-plot showing the pictorial representation, descriptive statistics, correlation, and panel data regression. These tools are described in detail in the following subsections.

Box-Plot

Box-Whisker plots of the synchronicity measure (Figure 1 in Appendix) highlight the evolution in synchronicity for the sample companies in China over two distinct time periods. Period 0 refers to the pre-adoption period of IFRS from 2006–2008. Period 1 refers to the 2009–2011 period, when IFRS adoption was mandatory. The dependent variable in model (1), SYNCH, exhibited a sudden decreasing pattern in 2009–2011 to a value of 0.2421615 when mandatory IFRS adoption became effective, compared with a value of 0.730303 in 2006–2008, when national GAAP was in effect in China. A similar decrease in synchronicity was observed in Israel, Hong Kong, and the Philippines in the box-plot (Figures 2–4 in Appendix).

Descriptive Statistics

Descriptive statistics are presented in Tables 1–4 (Appendix). The mean and median of the stock price synchronicity for Asia (China: 0.48623, 0.49157; Hong Kong: 0.09319, 0.124974; Israel: 0.1775, 0.2397; Philippines: 0.1578, 0.18061) are much higher than those for American firms. For example, Piotroski and Roulstone (2004), who measured the synchronicity for American firms in the same way, reported a mean and median synchronicity of -1.742 and -1.754, respectively. This finding suggests that firms listed on the American market incorporate more firm-specific information into stock prices than those in Asia. The dependent variable synchronicity exhibited a sudden decreasing pattern in 2009–2011, with mean values of 0.2421615 for China, -0.13616 for Hong Kong, 0.0452 for Israel, and -0.173 for the Philippines, when mandatory IFRS adoption went into effect, compared with values of 0.730303 for China, 0.32254 for Hong Kong, 0.3099 for Israel, and 0.4882 for the Philippines in 2006–2008, when firms in Asia were reporting under national GAAP. It is worth noting that, in addition to SYNCH, other variables like MCAP, percentage of foreign sales, total debt to total assets, and HERF also displayed orderly patterns over time. Thus, it is important to control these variables from alternative explanations for the observations. The results from the univariate analysis indicated that stock price synchronicity reduced in the year when IFRS were made mandatory.

Correlations

Several key relationships became evident for different markets and are presented in Tables 5–8 (Appendix). For all of the Asian markets, the correlation between the dependent variable SYNCH and ADIFRS was negative, as expected, and statistically significant at the 0.05 level, with a *p*-value of 0.000, implying lower stock price synchronicity (i.e., there is more firm-specific information in stock prices) after adopting IFRS, which supports our null hypothesis. The correlation between the control variables, CL and MCAP, for China was 0.4883, indicating that large firms in China have more than one cross-listing. This was also the case with firms in Hong Kong and the Philippines. However, for Israel the relationship was negative, which implies that small firms mainly go for cross-listings. Moreover, the correlations of SYNCH with leverage, CL, and HERF were negative for China, suggesting that firms with more leverage, cross-listings, and presence in a competitive market are less likely to follow a synchronized behaviour in terms of stock price. All other correlations among the control variables fell below 0.10. On the contrary, SYNCH and FSALE were positively correlated for China, implying more stock price synchronicity for firms exposed to foreign sales. Moreover, ADIFRS showed positive and statistically significant correlations with MCAP (*p*-value = 0.0077), which is consistent with evidence reported in Piotroski and Roulstone (2004), Fernandes and Ferreira (2009), and Ferreira and Laux (2007). The positive coefficient on MCAP suggests that returns on large stocks are more synchronized with the market, relative to returns on small stocks. In addition, a significant correlation existed between MCAP with leverage and CL, which indicates that mainly large firms in China go for reporting under IFRS, as they are mostly listed in foreign exchanges and also less leveraged than small firms.

For firms in Hong Kong, the correlations of SYNCH with leverage, CL and, FSALE were negative, suggesting that firms with more leverage, listings in foreign exchanges, and a high percentage of foreign sales are less likely to follow a synchronized behaviour in terms of stock price. SYNCH and HERF showed a positive correlation, implying more stock price synchronicity in a concentrated industry. Similar relationships were evident for firms in Israel. ADIFRS also had positive and statistically significant correlations with MCAP (*p*-value = 0.0005). Thus, mainly large firms in Hong Kong go for reporting under IFRS, as they are mostly listed in foreign exchanges and also less leveraged than small firms, which can be seen from the significant correlation between MCAP with leverage and CL. For firms in the Philippines, the synchronicity value was also significantly and positively related to CL (firms listed in foreign exchanges). We then performed a panel data analysis to isolate the effect of IFRS adoption on the synchronicity from the effect of other variables.

Panel Data Analysis

Considering the cross-sectional time series effects of the dataset, panel data are a more appropriate method than pooled ordinary least squares (OLS). We employed a panel data analysis because the pooled OLS regression treats observations as being serially uncorrelated for a given firm, with homoscedastic errors across firms and time periods. Consequently, both panel data analysis and pooled OLS regression analysis results are reported, providing the opportunity to compare the differences under both methods for all markets. Table 10 (Appendix) presents the panel data analysis by firm-specific factors for China.3 The results for panel data analysis for the four markets are reported in Table 9 (Appendix).

The pooled OLS model fits the data well at the .05 significance level (F = 10.42, R2 = 0.405 for China; F = 4.08, R2 = 0.3228 for Hong Kong; F = 2.79, R2 = 0.1385 for Israel; F = 10.05, R2 = 0.435 for the Philippines; p < .0000). Although this model fits the data well, we suspect that each firm in Asia has different stock price synchronicity values depending on the time period (year). In other words, each firm may have its own synchronicity value (i.e., its y-intercept) that is significantly different from those of other Asian companies. Hence, we opted for a random effect model analysis. To confirm the selection of the random effect model over fixed effect, we conducted a Hausman specification test, with the results indicating the following: China: Chi2 = 7.41, P = 0.1919; Hong Kong: Chi2 = 15.4, P = 0.1088; Israel: Chi2 = 4.04, P = 0.2569; Philippines: Chi2 = 10.4, P = 0.0646). The statistically insignificant p-value (p > 0) confirmed the selection of the random effects model. We also performed the Breusch-Pagan Lagrange multiplier (LM) test to examine if any random effect existed. With the chi-squared values for Asia (China: Chi2 = 6.10, P = 0.0067; Hong Kong: Chi2 = 20.56, P = 0.00; Israel: Chi2 = 0.05, P = 0.0117; Philippines: Chi2 = 40.15, P = 0.0006) and the significant value of p <.0000, we rejected the null hypothesis in favour of the random group effect model. Based on these confirmatory tests, we proceeded to the analysis with a random effect model only. The random effect model fitted the data well at the .05 significance level (F = 86.82, R2 = 0.5532 for China; F = 4.08, R^2 = 0.4154 for Hong Kong; F = 34.1, R^2 = 0.1385 for Israel; F = 140.48, R^2 = 0.4271 for the Philippines; *p* < .0000). An R^2 of 0.5532 indicates that this model accounts for 55% of the total variance in the stock price synchronicity values for Chinese companies. The *p*-values in parentheses below each coefficient variable are the results of *t*-tests for individual parameters.

[3] The detailed panel data analysis with all pooled regression, fixed effect and random effect models for other markets are available upon request. As we ultimately analysed the data using the random effect model, we compiled only these results for all markets in Table 9.

From the results of the analysis, it is evident that when the Asian firms adopted IFRS in 2009–2011, holding all other variables constant, the synchronicity values decreased with a significant *p*-value less than 0.05 ($p < .0000$). If we analyse the firm-specific control variables other than the adoption of IFRS, CL (-0.2991; $p = 0.0480$) also had a significant impact on stock synchronicity in China. HERF (0.0003; $p = 0.0013$) was significant for Hong Kong. MCAP (0.2729; $p = 0.0013$) and FSALE (0.0067; $p = 0.0312$) were significant for Israel. CL (0.9294; $p = 0.0192$) was significant for the Philippines. We interpreted these results as follows. First, the results of these tests are consistent with the hypothesis that the adoption of IFRS improves stock price informativeness, thereby reducing stock synchronicity for all Asian markets in our sample. The benefit was greater among firms with a greater reliance on external capital, as they had to provide more information disclosure to meet the information demand of foreign investors.

Robustness Test

A financial tsunami hit the market hard during the late 2008–2009 period. This stock market crash might have affected the calculation of synchronicity in the four markets examined herein. Additional robustness checks were done to isolate the effect of the Asian financial crisis of 2008–2009 from our findings on the impact of IFRS on stock synchronicity. Table 11 (Appendix) provides the results of the robustness test after excluding the 2008 and 2009 periods to determine if the earlier results were unduly influenced by the Asian financial crisis. The new results were qualitatively similar to those reported in Table 3, suggesting that our main regression results were unlikely to be driven by any external shock caused by the crisis.

DISCUSSION AND CONCLUSION

The present paper examined the role of IFRS in improving stock price informativeness. A six-year time frame (i.e., 2006–2012) was considered, and a sample was taken of 300 IFRS-adopting firms in four Asian markets (i.e., China, Hong Kong, Israel, and the Philippines) where IFRS were mandatory until 2009. The data indicate that stock price synchronicity was reduced: Since the adoption of IFRS, true firm-related information is being incorporated into the stock price instead of following market-wide information, compared to the period when national GAAP was used in the financial statements for reporting. This supports the null hypothesis, and this empirical evidence was found in all firms in the four sample markets. Along with IFRS adoption, which was found to have significant influence on stock price synchronicity, other control variables were found to be significant, such as cross-listings in foreign stock exchanges in China, the Herfindahl index in Hong Kong, the percentage of foreign sales

in Israel ,and cross-listings in foreign stock exchanges in the Philippines. The researchers anticipated that scrutiny of foreign investors would encourage Chinese and Israeli companies to provide more accurate disclosures. Before IFRS, China operated a largely rules-based accounting regime. As a set of principles-based accounting standards, IFRS provide Chinese firms with the opportunity to produce more informative financial statements with the potential to give better information to external investors. Israel is a highly industrialized country with a vibrant public company presence in the high-tech, biomedical and health care, pharmaceutical, and defence technology industries. Israeli firms are noted for their innovation in computers, security, communications, biotechnology, and green technologies. Furthermore, government policies in the past ten years have made it highly appealing for venture capital and foreign investment. Thus, one can understand the motivation to prepare financial statements in conformity with standards that would attract more foreign capital. Foreign sales play an important role in the economic development of the Philippines by supplying both capital and expertise. Foreign investors have an information disadvantage compared to local investors and therefore have a higher demand for transparency. Hong Kong is a regional capital hub and financial centre; hence the shift to IFRS has a wider significance. The concentration of industry is found to be significant in Hong Kong, where there is tough competition among firms to attract investors, thereby reducing synchronicity. A significant negative relationship was found between the test variable (i.e., ADIFRS) and synchronicity, implying the significant role of adopting a new standard on stock price informativeness in the Asian equity market. Moreover, the correlations of SYNCH with leverage, CL, and HERF are negative, suggesting that firms in Asia that are less leveraged, listed in foreign exchanges, and belonging to a competitive industry are less likely to follow the synchronized behaviour with the market. The study also found that high market capitalization firms more promptly go for reporting under IFRS compared to smaller firms. In conclusion, it is evident from the results that IFRS adoption significantly influenced stock price synchronicity for the selected Asian markets.

Published literature examining the impact of IFRS on stock price synchronicity is very limited. The present paper has attempted to contribute to the literature by focusing on Asian equity markets. These findings have important implications that apply not only to China, Hong Kong, Israel, and the Philippines, but also to other emerging and transitional economies where IFRS have yet to be mandated. The most crucial function of a capital market is to allocate financial resources efficiently. It is necessary to achieve this informational efficiency. The findings of our study—where stock synchronicity is reduced after adopting IFRS, thereby increasing stock informativeness for Asian

stocks—will help investors predict the future prospect of firms and value securities before they invest their capital. Previous literature on the impact of IFRS has claimed that IFRS adoption is more beneficial in countries with more developed stock markets than in emerging countries due to companies' internal incentive motives. However, our findings in the emerging markets are significantly different. These markets benefit from reduced synchronicity. The overall effect of IFRS adoption may tend to average out the reactions of Asian companies with good incentives and the firms with poor incentives. As such, the current study adds to the value relevance debate and provides evidence as to whether the nature of the accounting system employed really matters in terms of sharing price determination in the context of the adoption of IFRS. Second, it motivates the standard-setting bodies in countries where the adoption of IFRS is not compulsory to consider the adoption of IFRS, which will lead to more convergence of accounting standards around the world and more benefits to all participants in capital markets. Moreover, it will help regulators, academicians, and practitioners to assess the informational benefit of adopting IFRS. The present study covers only four markets in Asia where IFRS have been mandated. Future studies should include other countries, such as Japan, Singapore, and India, after IFRS is made mandatory in those countries to generalize the findings for all Asian countries.

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APPENDIX

Figure 1 Box-Plot for Impact of Adopting IFRS on Stock Price Synchronicity – China

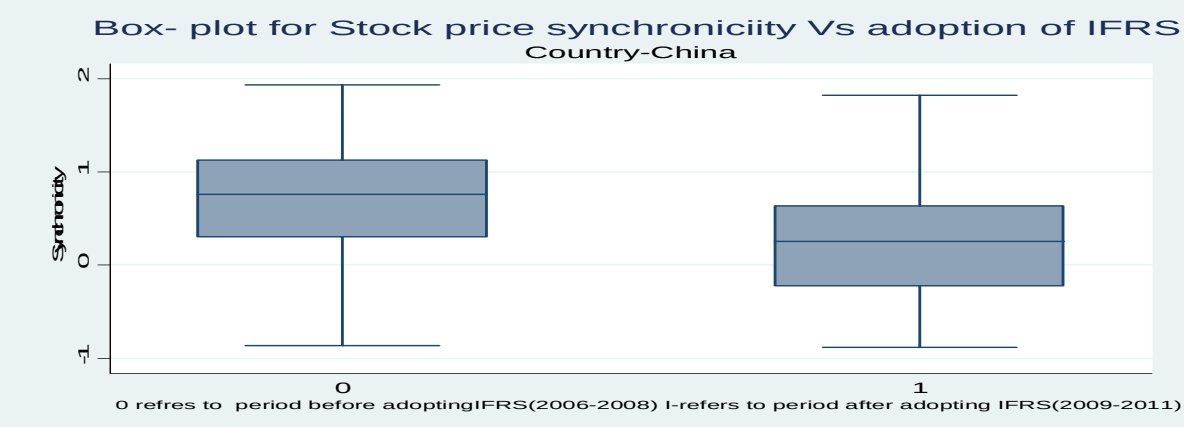

Figure 2 Box-Plot for Impact of Adopting IFRS on Stock Price Synchronicity – Hong Kong

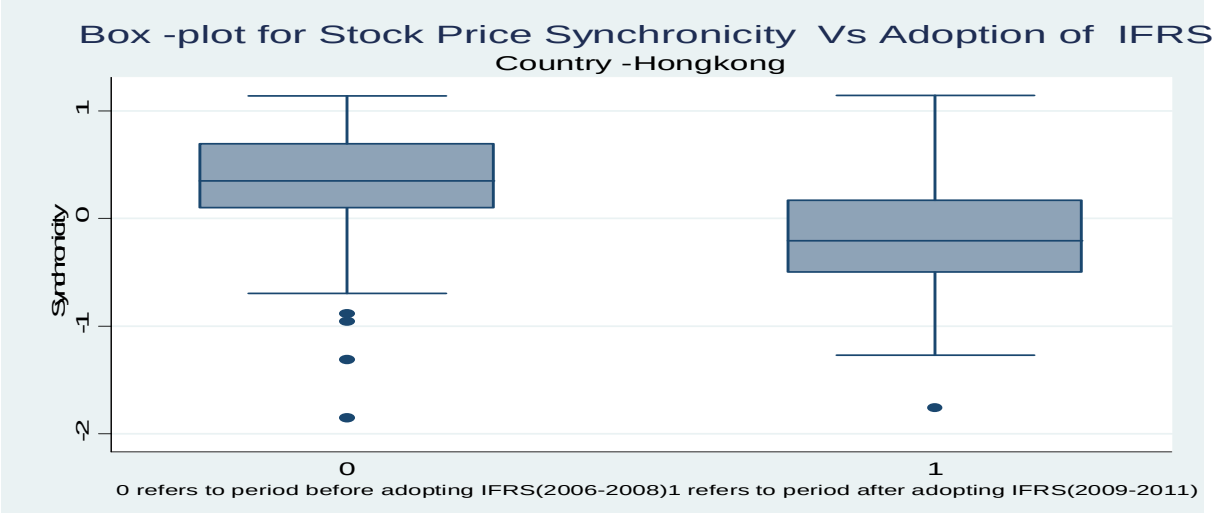

Figure 3 Box-Plot for Impact of Adopting IFRS on Stock Price Synchronicity – Israel

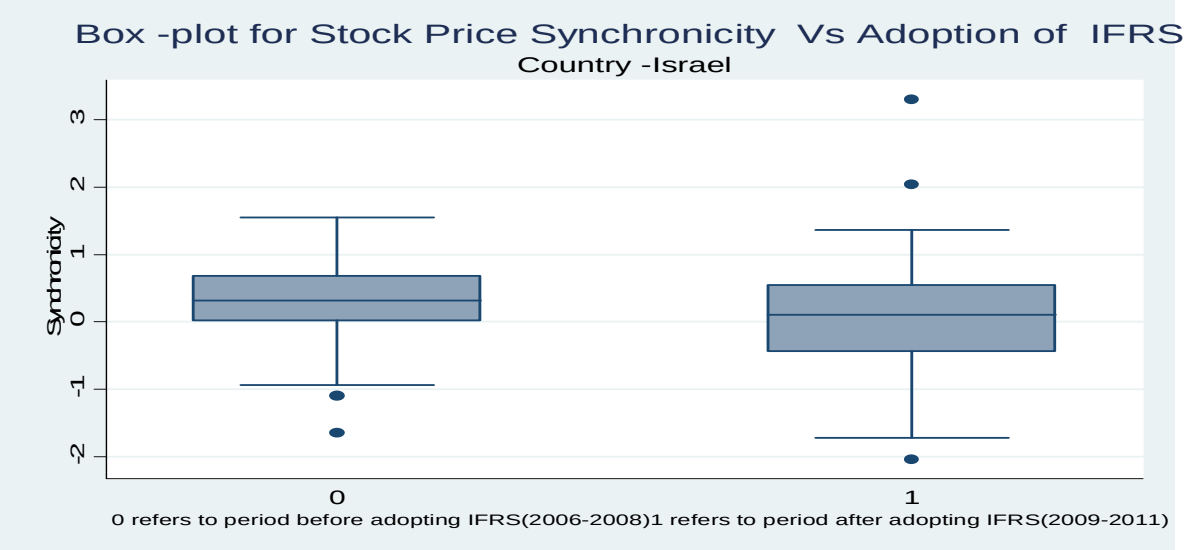

Figure 4 Box-Plot for Impact of Adopting IFRS on Stock Price Synchronicity – Philippines

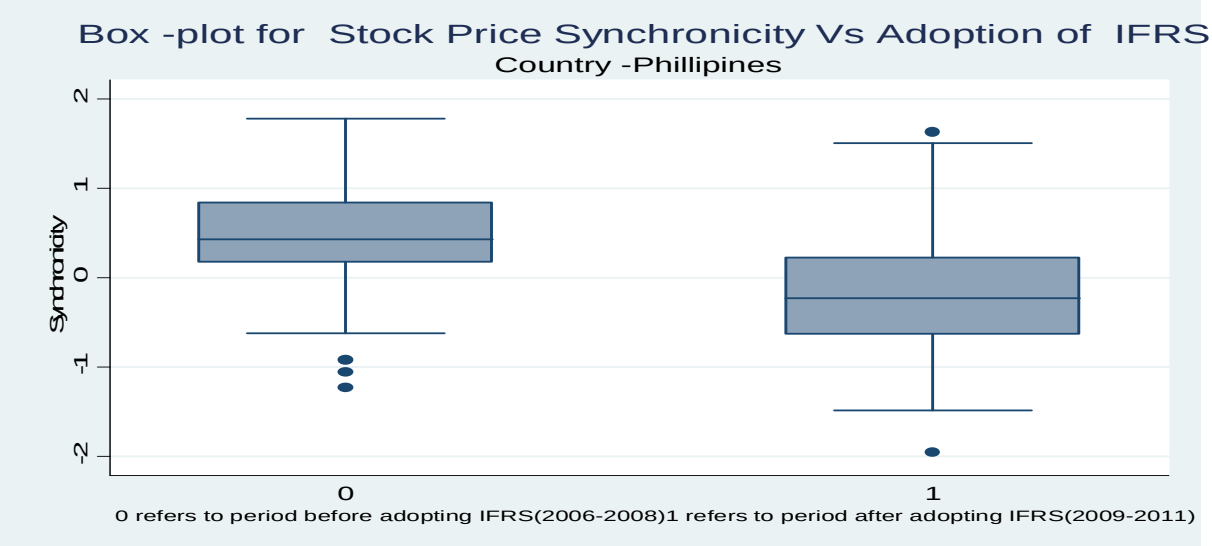

Table 1 Descriptive Statistics
IFRS and Stock Price Synchronicity – China

	Total Sample (2006–2011)			Before IFRS (2006–2008)			After IFRS (2009–2011)		
Variables	**Mean**	**Median**	**Stand.dev.**	**Mean**	**Median**	**Stand.dev.**	**Mean**	**Median**	**Stand.dev.**
SYNCH	0.48623	0.49157	0.57965	0.7303	0.75814	0.50857	0.24216	0.25253	0.54407
MCAP	5.98109	5.78717	0.88922	5.82877	5.64201	0.89666	6.13341	5.95979	0.85866
LEV	27.2683	23.535	21.9384	28.5901	25.45	22.6792	25.9464	20.955	21.1839
FSALE	6.69988	-	18.5799	6.91483	-	18.5028	6.48492	-	18.7317
CL	0.275	-	0.44745	0.275	-	0.44839	0.275	-	0.44839
HERF	5694.33	4973.65	2114.16	5713.76	5255.06	2096.61	5674.9	4945.02	2140.18

Table 2 Descriptive Statistics
IFRS and Stock Price Synchronicity – Hong Kong

	Total Sample (2006–2011)			Before IFRS (2006–2008)			After IFRS (2009–2011)		
Variables	**Mean**	**Median**	**Stand.dev.**	**Mean**	**Median**	**Stand.dev.**	**Mean**	**Median**	**Stand.dev.**
SYNCH	0.09319	0.12497	0.60061	0.32254	0.35221	0.52566	-0.1362	-0.2079	0.58488
MCAP	5.82558	5.92046	0.98529	5.60667	5.71707	0.95183	6.04449	6.16977	0.97321
LEV	19.0058	17.28	16.7049	21.8176	20.14	17.6943	16.194	10.78	15.2124
FSALE	25.099	-	40.335	23.263	-	39.0032	26.935	-	41.7066
CL	0.2	-	0.40084	0.2	-	0.40168	0.2	-	0.40168
HERF	3603.75	3306.92	2117	3590.52	3262.29	2171.52	3616.98	3331.97	2070.06

Table 3 Descriptive Statistics
IFRS and Stock Price Synchronicity – Israel

	Total Sample (2006–2011)			Before IFRS (2006–2008)			After IFRS (2009–2011)		
Variable	**Mean**	**Median**	**Stand.dev.**	**Mean**	**Median**	**Stand.dev.**	**Mean**	**Median**	**Stand.dev.**
SYNCH	0.1775	0.2397	0.7046	0.3099	0.3123	0.5698	0.0452	0.1012	0.7982
MCAP	4.4074	4.4545	0.6266	4.4185	4.4484	0.6174	4.3963	4.4597	0.6381
LEV	612.85	31.905	4878	977.2	31.29	6746.6	248.5	32.1	1416.4
FSALE	4.5617	-	17.507	3.304	-	15.085	5.8193	-	19.617
CL	0.075	-	0.2639	0.075	-	0.2645	0.075	-	0.2645
HERF	20807	2374.4	49526	22127	2220.2	52315	19487	2477.3	46753

Table 4 Descriptive Statistics
IFRS and Stock Price Synchronicity – Philippines

	Total Sample (2006–2011)			Before IFRS (2006–2008)			After IFRS (2009–2011)		
Variable	**Mean**	**Median**	**Stand.dev.**	**Mean**	**Median**	**Stand.dev.**	**Mean**	**Median**	**Stand.dev.**
SYNCH	0.1578	0.18061	0.69672	0.4882	0.42876	0.5692	-0.173	-0.2286	0.65629
MCAP	6.3866	6.41183	0.78152	6.2365	6.31785	0.7599	6.5368	6.51738	0.77704
LEV	22.382	14.245	23.9274	21.518	12.225	24.568	23.245	15.475	23.3405
FSALE	3.7581	-	12.0639	2.5519	-	8.2357	4.9643	-	14.8841
CL	0.025	-	0.15645	0.025	-	0.1568	0.025	-	0.15678
HERF	2994.3	2621.12	1121.58	2849.1	2355.72	1085.6	3139.5	2637.78	1142.53

Table 5 Pearson Correlation Matrix for IFRS and Stock Price Synchronicity – China

	SYNCH	***ADIFRS***	***LOG(MCAP)***	***LEV***	***F SALE***	***HERF***	***CL***
SYNCH	1						
ADIFRS	-0.4219** (0.0000)	1					
MCAP	0.013 (0.8413)	0.1717** (0.0077)	1				
LEV	-0.0007 (0.9920)	-0.0604 (0.3517)	-0.1488** (0.0210)	1			
F SALE	0.0946 (0.1441)	-0.0116 (0.8582)	-0.0279 (0.6660)	-0.0218 (0.7360)	1		
HERF	-0.1544** (0.0167)	-0.0092 (0.8871)	0.0946 (0.1430)	-0.2484** (0.0001)	-0.0571 (0.3783)	1	
CL	-0.0448 (.4894)	-	0.4883** (0.0000)	-0.0745 (0.2500)	-0.1396** (0.0306)	0.1173 (0.0690)	1

Note: ** = Coefficients with a p-value of .05 or lower. P-values are provided in parentheses.

Table 6 Pearson Correlation Matrix for IFRS and Stock Price Synchronicity – Hong Kong

	SYNCH	***ADIFRS***	***LOG(MCAP)***	***LEV***	***FSALE***	***HERF***	***CL***
SYNCH	1						
ADIFRS	-0.3827** (0.0000)	1					
M CAP	-0.0889 (0.1696)	0.2226** (0.0005)	1				
LEV	-0.0051 (0.9371)	-0.1687** (0.0088)	0.4064** (0.000)	1			
F SALE	-0.0917 (0.1566)	0.0456 (0.4819)	-0.0992 (0.1252)	0.0681 (0.2931)	1		
HERF	0.0614 (0.3436)	0.0063 (0.9231)	0.1869** (0.0037)	-0.0482 (0.4573)	-.2654** (0.000)	1	
CL	-0.0815 (0.2085)	-	0.1458** (0.0239)	-0.0591 (0.3617)	0.2769** (0.000)	-0.0098 (0.8798)	1

Note: ** = Coefficients with a p-value of .05 or lower. P-values are provided in parentheses.

Table 7 Pearson Correlation Matrix for IFRS and Stock Price Synchronicity – Israel

	SYNCH	***ADIFRS***	***LOG(MCAP)***	***LEV***	***F SALE***	***HERF***	***CL***
SYNCH	1						
ADIFRS	-0.1883** (0.0034)	1					
MCAP	0.1196 (0.0644)	-0.0178 (0.7841)	1				
LEV	0.0409 (0.5284)	-0.0748 (0.248)	0.1370** (0.0339)	1			
FSALE	0.1248 (0.0535)	0.072 (0.2666)	-0.3900** (0.000)	-0.031 (0.6324)	1		
HERF	0.1521** (0.0184)	-0.0267 (0.6806)	-0.2953** (0.000)	-0.0459 (0.4794)	0.2881** (0.000)	1	
CL	0.0337 (0.6035)	-	-0.3702** (0.000)	-0.0345 (0.5947)	0.4214** (0.000)	0.1768** (0.006)	1

Note: ** = Coefficients with a p-value of .05 or lower. P-values are provided in parentheses.

Table 8 Pearson Correlation Matrix for IFRS and Stock Price Synchronicity – Philippines

	SYNCH	***ADIFRS***	***LOG(MCAP)***	***LEV***	***FSALE***	***HERF***	***CL***
SYNCH	1						
ADIFRS	-0.4753** (0.000)	1					
MCAP	0.1291** (0.0458)	0.1926** (0.0027)	1				
LEV	0.0542 (0.4035)	0.0362 (0.5771)	0.0949 (0.1426)	1			
FSALE	0.0408 (0.5291)	0.1002 (0.1216)	0.1252 (0.0527)	0.0152 (0.8144)	1		
HERF	-0.0019 (0.9771)	0.1297** (0.0447)	0.0827 (0.2017)	-0.2500** (0.0001)	0.1928** (0.0027)	1	
CL	0.2067** (0.0013)	-	0.2226** (0.0005)	0.0121 (0.8526)	-0.05 (0.4408)	-0.055 (0.3961)	1

Note: ** = Coefficients with a p-value of .05 or lower. P-values are provided in parentheses.

Table 9 Impact of IFRS on Stock Price Synchronicity for Asian Markets: Panel Data Evidence on The Firm Specific Factors

	CHINA	***HONG KONG***	***ISRAEL***	***PHILIPPINES***
CONSTANT	-0.1478	-1.0310	-1.1036	0.0773
	(0.8130)	(0.0900)	(0.0140)	(0.8776)
ADIFRS	-0.5287**	-0.4808**	-0.2631**	-0.6864**
	(0.0000)	(0.000)	(0.003)	(0.000)
MCAP	0.1219	0.0270	0.2729**	0.0304
	(0.1090)	(0.6881)	(0.0024)	(0.6550)
LEV	-0.0029	0.0010	-0.0302	0.0492
	(0.2320)	(0.7630)	(0.7558)	(0.8210)
FSALE	0.0036	0.0021	0.0067**	0.0036
	(0.1810)	(0.2340)	(0.0312)	(0.3442)
HERF	0.0006	0.0003**	0.0559	0.0237
	(0.2980)	(0.0013)	(0.162)	(0.8266)
CL	-0.2991**	-0.2594	0.1168	0.9294**
	(0.0480)	(0.237)	(0.587)	(0.0192)
F-Test	86.82	54.08	74.17	87.48
	(0.000)	(0.000)	(0.0012)	(0.000)
R-Square	0.5532	0.6154	0.4385	0.5271
Sigma_u	0.1894	0.2642	0.0892	0.2797
θ	0.1355	0.2317	0.1761	0.2503
Hausman Test	7.41	15.4	4.04	10.4
	(0.1919)	(0.1088)	(0.2569)	(0.0646)
Breusch and Pagan Lagrangian Multiplier Test	6.1 (0.0067)	20.56 (0.0022)	0.05 (0.0117)	40.15 (0.004)
Industry Dummies	Included	Included	Included	Included
Year Dummies	Included	Included	Included	Included
N	1800	1800	1800	1800

Note: ** = Coefficients with a p-value of .05 or lower. P-values are provided in parentheses.

Table 10 Impact of IFRS on Stock Price Synchronicity in China: Panel Data Evidence

VARIABLES	***POOLED OLS***	***FIXED***	***RANDOM EFFECT***
	-0.0686	-0.0973	-0.1478
CONSTANT	(0.9000)	(0.9140)	(0.8130)
		-0.5135**	-0.5287**
ADIFRS	(0.0000)	(0.0000)	(0.0000)
		0.0737	0.1219
MCAP	(0.0270)	(0.5800)	(0.1090)
		-0.004	-0.0029
LEV	(0.2000)	(0.3120)	(0.2320)
		0.0108**	0.0036
FSALE	(0.4050)	(0.0140)	(0.1810)
	0.0006	0.0007	0.0006
HERF	(0.3340)	(0.2420)	(0.2980)
	-0.3053**		-0.2991
CL	(0.0080)	-	(0.0480)
F-Test	10.42	14.07	86.82
	(0.000)	(0.000)	(0.000)
R-Square	0.4051	0.3736	0.5532
Sigma_u			0.1894766
θ			0.13550569
Hausman Test			7.41
Breusch and Pagan Lagrangian Multiplier Test			6.1
Industry Dummies			Included
Year Dummies			Included
N	1800	1800	1800

Note: ** = Coefficients with a p-value of .05 or lower. P-values are provided in parentheses.

Table 11 The Results of Robustness Checks for Financial Crisis Excluding The Data for 2008 & 2009

	CHINA	***HONGKONG***	***ISRAEL***	***PHILIPPINES***
CONSTANT	-0.0054	-0.891	-0.0872	0.00432
	(0.2742)	(0.8704)	(0.0034)	(0.2312)
ADIFRS	-0.7821**	-1.142**	-0.9812**	-0.152**
	(0.0051)	(0.001)	(0.0462)	(0.0000)
MCAP	0.359	0.2521	0.2672**	0.0612
	(0.7215)	(0.2831)	(0.0428)	(0.0833)
LEV	-0.0052	0.0359	-0.3597	0.3681
	(0.1359)	(0.7320)	(0.4533)	(0.7352)
FSALE	0.011	0.0016	0.0022	0.0541
	(0.0951)	(0.2973)	(0.0813)	(0.2761)
HERF	0.1178	0.0043**	0.2232	0.0404
	(0.5021)	(0.0241)	(0.3520)	(0.4791)
CL	-0.3314**	-0.5729	0.2674	0.2739**
	(0.0021)	(0.8821)	(0.302)	(0.0013)
F-test	72.71	34.89	65.38	67.9
	(0.000)	(0.000)	(0.0034)	(0.000)
R-Square	0.4567	0.7234	0.3515	0.349
Hausman Test	4.58	12.7	5.34	14.23
	(0.3975)	(0.2371)	(0.2391)	(0.7324)
Breusch and Pagan Lagrangian multiplier test	8.1	17.45	0.23	23.24
	(0.0032)	(0.001)	(0.003)	(0.002)
Industry Dummies	Included	Included	Included	Included
Year Dummies	Included	Included	Included	Included
N	1200	1200	1200	1200

Note: ** = Coefficients with a p-value of .05 or lower. P-values are provided in parentheses.