

EARNINGS QUALITY, STOCK PRICE SYNCHRONICITY AND FOREIGN OWNERSHIP: EVIDENCE OF ASX200 FIRMS

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Abstract

This study examines the impact of firms' earnings quality on stock price synchronicity, considering the foreign equity ownership to moderate such a relationship. This study argues that firms' earnings quality is firm-specific information that can enhance the stock price synchronicity in the market. The sample used is ASX200 firms in 2017-2019 period, excluding firms in Finance and Utility sectors. The data is collected from the databases Factset and Morningstar. Using pooled regression analysis, this study shows that out of three market-based earnings quality attributes, timeliness significantly reduces information asymmetry, enhances transparency by impounding more firm-specific information in prices, and ultimately mitigates pricing errors in trading, hence lower stock price synchronicity. It supports prior studies showing that market impound the loss quickly. Meanwhile, conservatism and relevance show insignificant results, emphasizing the superiority of timeliness over other market-based earnings quality in the developed capital market. We discover that foreign equity ownership is not regarded as firm-specific information that reduce the stock price synchronicity. As a moderating variable, the foreign ownership level decreases the impact of timeliness on stock price synchronicity.

Keywords: ASX; Earnings quality; Foreign ownership; Stock price synchronicity; Timeliness

1. INTRODUCTION

Share price is constantly re-altered following new information that can be extracted from various networks of sources. Price synchronicity captures the degree to which market and industry returns explain a firm's stock returns (Morck et al., 2000). By definition, greater systematic volatility (more reliance on industry- and market-wide information) implies greater synchronicity, which can signal conditions such as diminished confidence in firm-specific accounting data, an opaque firm environment, and less transparency (Bissessur & Hodgson, 2012). In contrast, lower synchronicity (a richer availability of firm-specific information) would enable better-improved predictions for investors in doing investment decision-making (Dasgupta et al., 2010). Farooq and Aktaruzzaman (2016) assert that stock price synchronicity is a significantly better mechanism compared with traditional governance mechanisms (e.g., analyst following, dividend payout) in helping investors for valuation purposes. Price

synchronicity is built upon the market's reaction as it is measured by the R^2 of stock return regressions (Piotroski & Roulstone, 2004) and encompasses a wider range of factors, whereas the traditional governance mechanisms might be biased as they are governed by analysts and management.

Studies about stock price synchronicity have been ubiquitous in emerging markets (e.g., Qiu et al, 2020; Nguyen et al., 2020; Vo & Chu, 2019; Farooq & Aktaruzzaman, 2016). Qiu et al (2020) find that information from trustable Chinese firms is positively related to stock price synchronicity. Nguyen et al (2020) show that the overall corporate governance of Vietnamese firms increases stock price synchronicity, however, managerial ownership decreases it, implying that firm-specific information could be interpreted differently by the market. Price synchronicity studies are also found in developed markets but mostly are in the US market (e.g., Tiron-Tudor & Achim, 2019, Kan & Gong, 2018; Gul et al., 2011). Tiron-Tudor & Achim (2019) propose and provide evidence that among developed countries, accounting information quality varies depending upon the financial reporting environment, that in turn affects stock price synchronicity.

This study focuses on Australian firms' stock price synchronicity. To the authors' knowledge, price synchronicity studies on Australian firms are very scarce. Among them is Bissessur & Hodgson (2012) who investigate the impact of IFRS (International Financial Reporting Standards) adoption on price synchronicity. The study finds that the IFRS implementation increases financial reporting quality in general that is negatively related to price synchronicity. This study considers earnings quality impact, particularly, on stock price synchronicity. Considering the multifaceted nature of earnings quality, this study focuses on three market-based earnings quality attributes: timeliness, conservatism, and value relevance (Francis et al., 2004). The rationale is to achieve comparability with stock price synchronicity based on market-driven data (i.e., stock returns).

This study also considers the role of foreign ownerships in Australian firms. There has been an increasing foreign equity portfolio investment in Australian firms since 1997. The value was tenfold within ten years (Australian Bureau of Statistics, 2020). Mishra (2013) argues that the foreign shareholding has the role of a monitoring tool to minimize the risk of earnings management by limiting agency problems. On the other hand, high quality accounting earnings, firms' transparency, high quality of firm information disclosure are required to create a conducive environment to attract foreign investors. Therefore, this study also analyzes the impact of foreign ownership on the relationship between earnings quality and price synchronicity in Australia market.

Thus, following Tiron-Tudor & Achim (2019), this study argues that as a proxy of accounting information quality, firms' earnings quality, namely, timeliness, conservatism, and relevance, influence stock price synchronicity in the market. Hence, the first study objective is to examine the effect of Australian firms' earnings quality on stock price synchronicity. Take a stand of foreign investors could play an important role to demand high quality of earning information (Mishra, 2019), this study also analyzes, further, the role of foreign investor, as a moderating variable, on the relationship between Australian firms' earnings quality and stock price synchronicity.

This study finds an inverse relationship between timeliness and price synchronicity; however, two other EQ attributes (i.e., conservatism and relevance) appear to have no impact on price synchronicity. This finding implies that, for ASX200 firms, loss is regarded as important company information. Therefore, the timelier the company earnings, the less price synchronization is required in the market. Surprisingly, despite the positive trend of foreign ownership in Australian firms, foreign ownership appears to be insignificant, but weakens the relationship between earnings timeliness and price synchronicity. This result implies that rather than as a monitoring mechanism tool, the foreign ownership existence in the ASX200 is not seen as relevant company information to influence price synchronization in the market.

The paper is organized as follows. The next section provides the theoretical understanding proposed hypothesis. This is followed by the explanation of the methodology used in the study, namely the study sample, measurement of variables, and empirical models employed in this paper. Finally, data analysis and empirical results are reported, followed by a discussion of the study's findings and conclusion.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1 Price synchronicity

The Efficient Market Hypothesis (EMH) theory states that the capital market reacts to current information and impounds it into stock prices. The type of information and the time length of new information is reflected in information define the market efficiency strength. Regarding the price synchronicity, EMH theory assumes that a market is on the weak or moderate market efficiency.

Two contrasting forces (i.e., firm-specific information and noise in trading) that can affect how price synchronicity is affected. The informational perspective views that greater firm-specific information implies lesser synchronicity, a condition that is associated with a good information environment (Wurgler, 2000); advanced governance mechanisms such as stricter regulatory enforcement (Gul et al., 2010); improved transparency (Gul et al., 2011), and enhanced disclosure (Kim & Shi, 2012). Additionally, a recent study confirms that the relationship between stock price synchronicity and stock price informativeness is certainly inverse and thus, referring to the meaning of low-price synchronicity as more informative stock price (Li, Liu, Peng, & Zhang, 2020).

The noise perspective argues that lower synchronicity results from noise in the trading process – pricing errors – rather than more firm-specific information being impounded into price (e.g., Dasgupta, Gan, & Gao, 2010; Kelly, 2014; Chan & Chan, 2014). On the contrary, the latter posits that the information environment is associated with higher synchronicity. The former is more linked towards developed markets, whereas the latter leans more towards emerging markets. Australia is a developed country, and accordingly, this study takes the stance that stock price synchronicity is a measure of price informativeness or informational perspective.

2.2 Earnings quality and stock price synchronicity

Despite being considered a multidimensional concept that users may interpret differently, high-quality earnings can be comprehensively defined if they are informative in reflecting the true picture of a firm's financial performance and assist with a specific decision-making by specific users (Dechow et al., 2010). Bhattacharya et al. (2013), for example, find that information asymmetry is higher for firms with low EQ as affected by both innate factors and managerial discretion factors. Most recently, Eliwa, Haslam, and Abraham (2021) find that the accuracy of analyst forecasts is higher for firms with high earnings quality. Thus, EQ lessens the information asymmetry and increases the projection.

Past studies on the effect of EQ on stock price synchronicity remain scarce with mixed findings. The underlying reasons for these are the multifaceted nature of earnings quality as well as different interpretations of stock price synchronicity. For instance, Teoh et al. (2009) and Peterson et al. (2015) find that greater synchronicity is associated with good accrual quality and a high level of earnings persistence, respectively. In contrast, Neifar and Ajili (2019), find that less earnings opacity (thus, better earnings quality) is associated with lower synchronicity. Meanwhile, Gul et al. (2011) apparently finds an insignificant effect of EQ on price synchronicity.

To address such shortcomings, this study considers multiple rather than singular measures of earnings quality and employs the market-based attributes of timeliness, conservatism, and value relevance (Francis et al., 2004). The aim is to pursue comparability with stock price synchronicity which is based on market-driven data as well.

Another stream of EQ studies state that EQ mitigates risk (Bhattacharya et al., 2013). Lin et al. (2015) finds that high-quality accounting earnings reduce information asymmetry, which ultimately will mitigate risk such as pricing errors in trading. Bissessur & Hodgson (2012) find that a decrease in Australian firms' stock price synchronicity following IFRS implementation, eventually increase the earnings quality (Jaweher & Mounira, 2014).

Linking accounting and stock price informativeness, we posit that firm-specific information, such as accounting (earnings) quality leads to informed stock pricing. Studying price synchronicity in this setting can provide evidence that earnings quality is indeed a measure of informativeness rather than noise/risk. The managers' decision determines firm's earnings quality. Better earnings quality implies higher accounting informativeness, hence, reduces the information asymmetry, as well as, mitigates the investors' risk in their pricing decision. This leads to lower stock price synchronicity required.

Therefore, this study posits,



H1: *Firms with better earnings quality attributes have lower stock price synchronicity.*

2.3 Foreign ownership

Foreign ownership incorporates all forms of foreign private investment in a country that confers control and ownership over a package of resources. Capital market globalization makes developing countries more open to foreign investment, increasing the proportion of domestic companies owned by foreign investors. Claessens et al. (2000) find that foreign investors contribute not only to economic development but also help shape the corporate governance systems. Abor and Biekpe (2007) suggest that foreign investors favor big and profitable companies with high growth potential. A study by Choi et al., 2012 noted that foreign owner-manager has better worldwide exposure and skills in modern management practices and control systems, resulting in lower agency cost. Foreign ownership allows for technological advancement, increased efficiency, lower business risk, better resource access, access to capital markets, and stronger management skills.

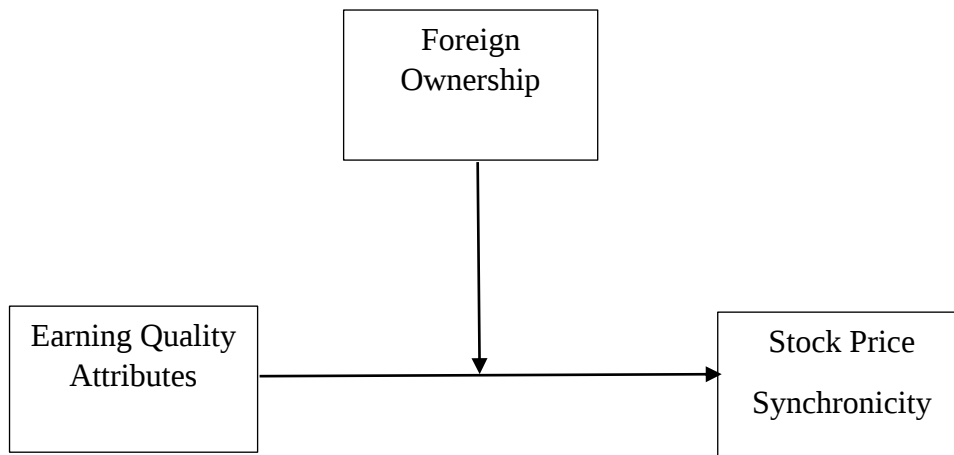
Particularly, from the corporate governance perspective, external ownership (as opposed to managerial ownership) is often regarded as one of the monitoring mechanism tools.

Regardless of the difference in how stock price synchronicity may be interpreted, numerous studies about the impact of foreign shareholding on stock price synchronicity show a congruent result; that is, a better off information environment. For instance, holding on to the informational perspective, Gul et al. (2010), He et al. (2013) and Zou et al. (2017) find lower synchronicity (thus, a good information environment) for stocks invested in by foreign investors. On the other hand, perceiving the noise perspective, He et al. (2019) and Nguyen et al. (2020) find that foreign ownership induces higher synchronicity (that signifies more transparency and stronger information environment).

Considering the role of foreign ownership as a monitoring agent in corporate governance mechanism, higher foreign ownership in a firm leads to an improvement in firms' information environment; therefore, this study posits a negative relationship between foreign ownership and stock price synchronicity. Additionally, higher foreign ownership assures the EQ and strengthens the relationship between EQ and price synchronicity.



H2: *Firms with higher foreign ownership lower stock price synchronicity.*



H3: *Firms with higher foreign ownership have a stronger earnings quality-stock price synchronicity relationship.*

3. DATA AND EMPIRICAL MODEL

3.1. Research sample

This study investigates the Australian firms S&P/ASX200 listed on the Australian Stock Exchange to examine stock price synchronicity—a total of 376 firm-year observations over the 2017 to 2019 period. The initial sample is June 2021's S&P/ASX200 constituents, further screened through purposive sampling. Following Zhou (2007), firms from the financial sector (ASX sector code: XFJ) and utilities sector (ASX sector code: XUJ) are excluded due to their accounting rules and disclosure requirements that differ significantly from other sectors. Other criteria include: (1) Must have been listed since 2012 due to earnings quality five-year rolling windows regression, (2) Must have all the variables needed for the data during the observation period, (3) Are still operating in 2021. A total of 376 firm years is the final sample. The final sample derivation is presented in (Table 1).

-Table 1 is here-

The distribution of sample firms by industry sector is presented in figure 1 below. The sample represents the population of ASX listed firms, that are dominated by the Materials sector firms, and the least number of firms are from Consumer Staple and Communication Services sectors.

-Figure 1 is here-

3.2. Variables measurements

Secondary databases (FactSet and Morningstar) are the main sources of data for every variable measurement in this study.

The estimation of stock price synchronicity (SYNCH) follows Piotroski & Roulstone (2004) as shown in eq 1, and SYNCH is defined as $\ln \left(\frac{R_{i,t}^2}{1-R_{i,t}^2} \right)$. The $R_{i,t}^2$ is derived from the eq (1) below.

$$RET_{j,w} = \alpha_0 + \beta_1 MRET_w + \beta_2 MRET_{w-1} + \beta_3 SECRET_{j,w} + \beta_4 SECRET_{j,w-1} + \varepsilon \quad (1)$$

where $MRET_w$ ($MRET_{w-1}$) is S&P/ASX200 (XJO) index for week w ($w-1$), and $SECRET_{j,w}$ ($SECRET_{j,w-1}$) is the return of all firms in a sector in which firm j operates in week w ($w-1$). The Sector classification uses the Global Industry Classification Standard (GICS).

By construction, higher $R_{i,t}^2$ leads to higher SYNCH. This implies more market information than specific firm information and requires more price synchronization that is deemed as unfavourable.

This study employs three market-based EQ attributes. Since this study focuses on the relationship between EQ and market price synchronization (PS), it is arguable that the market-based EQ attributes is relevant. The market-based EQ attributes used are Timeliness (TIME), Conservatism (CONS), and Relevance (RELEV). The measurements of mentioned attributes follow Francis et al. (2004).

The proxies of TIME and CONS is estimated using the reverse return -earnings regression model in equation 2 with five-year rolling windows following Hutagaol-Martowidjojo et al. (2019).

$$EARN_{j,t} = \alpha_{0,j} + \alpha_{1,j} NEG_{j,t} + \beta_{1,j} RET_{j,t} + \beta_{2,j} NEG_{j,t} \cdot RET_{j,t} + \varepsilon \quad (2)$$

$RET_{j,t}$ is calculated at the beginning of fiscal year and ending six months post the reporting date $EARN_{j,t}$ figures are net income before extraordinary items, inclusive of dividends and scaled by market value at the beginning of year t , and $NEG_{j,t}$ is a dummy variable that takes the value of 1 if $RET_{j,t} < 0$ and 0 otherwise (Francis et al., 2004).

By construct, TIME is estimated by the negative form of the R-squared of the eq. 2, while CONSV is measured by $-(\beta_{1,j} + \beta_{2,j})/\beta_{1,j}$. The larger TIME and CONSV imply less timely earnings and less conservative earnings, respectively.

The third EQ attribute examined in this study, RELEV is estimated by the returns-earnings regression model in equation 3.

$$RET_{j,t} = \alpha_{0,i} + \alpha_{1,i} EARN_{j,t} + \alpha_{2,i} \Delta EARN_{j,t} + \varepsilon \quad (3)$$

RELEV is proxied by the negative form of R-squared of eq. 3. The larger RELEV implies that earnings is relevant to the stock pricing decision in the market.

Next is foreign ownership (FOWN). The measurement of FOWN follows Tsafack & Guo (2021) in as percentage of shares owned by non-Australians and residents over the whole outstanding shares, presented in the following equation:

$$FOWN_{j,t} = \frac{\text{Shares owned by foreign investors}_{j,t}}{\text{Total outstanding shares}_{j,t}} \quad (4)$$

3.3. Empirical research model

The first study objective is to examine the effect of Australian firms' EQ on stocks PS. The data is pooled data; therefore, we use the pooled regression model. Following Bissessur & Hodgson (2012), the model includes three control variables: firm size (SIZE), volatility (VOLT), and business diversification (DIVER). Thus, the empirical testing model is as equation (5) below:

$$\begin{aligned} SYNCH_{j,t} = & \beta_0 + \beta_1 EQ_{(1,2,3)j,t} + \beta_2 SIZE_{j,t} + \beta_3 VOLT_{j,t} + \beta_4 DIVER_{j,t} + \sum_{\beta=5}^{12} Sector_dummy \\ & + \sum_{\beta=13}^{15} Year_dummy \quad (5) \end{aligned}$$

Furthermore, the second objective is to test foreign ownership role in moderating the relationship between $EQ_{(1,2,3)}$ and PS. Thus, equation (5) is extended by including FOWN and the interactive term $EQ_{(1,2,3)}*FOWN$. The testing model uses the equation (6)

$$\begin{aligned} SYNCH_{j,t} = & \beta_0 + \beta_1 EQ_{(1,2,3)j,t} + \beta_2 FOWN_{j,t} + \beta_3 EQ_{(1,2,3)j,t} * FOWN_{j,t} + \beta_4 SIZE_{j,t} + \beta_5 VOLT_{j,t} \\ & + \beta_6 DIVER_{j,t} + \sum_{\beta=7}^{14} Sector_dummy + \sum_{\beta=15}^{17} Year_dummy \quad (6) \end{aligned}$$

Where, SYNCH= the natural logarithm transformation of R^2 of equation (1); $EQ_{(1,2,3)}$ is earnings timeliness ($EQ1 = TIME$) and conservatism ($EQ2 = CONSV$) that are estimated from the regression model shown on equation (2), $EQ3$ is relevance (RELEV) is the R^2 of equation (3); FOWN is measured as equation (4), $TIME*FOWN$, $CONSV*FOWN$, $RELEV*FOWN$ are the interactive terms of TIME, CONSV, RELEV, respectively and foreign ownership, SIZE is measured by the natural logarithm of market capitalization; DIVER is the number of business segments based on sales; VOLT is the standard deviation of quarterly ROA.

We use Stata ver. 15.1 to conduct the statistical analysis required.

4. RESULTS

4.1 Summary statistics

On the initial phase, some outliers are found in variables SYNCH, EQ@, and VOLT. The distribution of SYNCH data is negatively skewed, while EQ2 and VOLT are positive. We also use another checkpoint to identify the extreme values (outliers) that are based on mean $\pm$ 3 times standard deviation for each variable. Since the number of observations are limited, winsorization is chosen as the outlier treatment method, thus the degree of freedom in further statistical analyses can be maintained. The outliers are winsorized 1% top and bottom of the data distribution. The winsorized summary statistics of main variables including mean and median values of key variables in table 2.

The SYNCH shows a negative mean, suggesting that mostly the sample stocks return is explained by non-market or non-sector returns. It indicates more company information explains the variation of the stock returns. The result has the same sign of the former Australian price synchronization study (Bissessur & Hodgson, 2012).

-Table 2 is here-

TIME shows that stock returns and negative returns dummy explain, on average, 71.38% of reported earnings (net income), higher than earnings timeliness of Australian firms reported by Brown et al (2011). It indicates that over time, Australian firms are timelier regarding loss reporting, confirming better earnings quality. By construct, timeliness also affects conservatism, therefore, the average of CONSV of this study sample also indicates that ASX200 firms are more conservative compared the previous study, hence better earnings quality. RELEV shows an average of 62.82% of returns variations depends on firm's reported earnings variations that implies reported earnings (net income) is among the most used accounting figure in stock pricing of Australian firms.

The FOWN shows that the sample firms include firms with no foreign investors and firms that are highly owned (around 80% in total) by foreign investors, although they are not the majority shareholder. Regarding diversification of the sample firms, have on average three business segments (the median is also three). Some firms have as many as nine business segments. The sample firms' profitability is not much over the four-semester window. The average is about 3.4%.

Pearson correlation analysis is presented in Table 3. The result shows that multicollinearity does not exist in the data. All market-based EQ attributes (TIME, CONSV, RELEV) appear to have insignificant correlations with SYNCH. While TIME and RELEV are negatively correlated with SYNCH, CONSV shows a positive correlation with SYNCH. As this study stands on the informational perspective of stock price synchronicity, it is expected to be a positive correlation coefficient of EQ attributes and SYNCH since the larger the value of EQ (thus, better earnings quality), the lower the price synchronicity would be (thus, more informative stock prices), and vice versa. The significant positive correlation between FOWN and SYNCH indicates that the tighter monitoring mechanism from foreign investors, the higher the price synchronicity. The result is not as expected. Nevertheless, as stressed by Cheng et al. (2012), synchronicity may be affected by factors other than information, i.e., risks, therefore, conclusions should be drawn from multivariate analyses that consider controlling variables.

Meanwhile, the control variables correlation coefficients of SIZE, DIVER, and VOLT are significant with the expected signs.

-Table 3-

4.2 Pooled Regression analysis results

Table 4 shows the regression analysis results of equation (5). Model 1 to 3 show the coefficient estimates and p-value in brackets, of each of the three market-based earnings attributes. Each model uses one EQ attribute (TIME, CONSV, and RELE, respectively). The coefficient of TIME in model 1 is positive and significant at the $\alpha = 10\%$ level. Based on Basu (1997)'s model, negative market returns (bad news) are recognized earlier by earnings, showing the importance of bad news is higher than good news, hence losses are recorded in a timelier fashion than gain is.

-Table 4 is here-

We expect that CONSV will have a consistent result with TIME. However, the CONSV coefficient appears to be insignificant, although the sign of the coefficient is as expected. The RELEV coefficient appears to be of expected sign, however, is insignificant. The result is not in line with Zhou (2007). RELEV is a straightforward measure of earnings informativeness in market. This study argues that since the sample is from ASX200 (consists of big companies), the significance of RELEV is offset by other variables, such as the control variable SIZE. SIZE is the only control variable that shows are significantly related to SYNCH, consistently. Regardless the sample is drawn from big companies in Australian market, the variation in firm's market capitalization does make a difference regarding the firm-specific information.

Next is the result of pooled regression analysis by extending the FOWN variable, as presented in table 4. Across models (4) to (7) of Table 5, it is found that FOWN has a mixed relationship with SYNCH for ASX200 firms both in terms of direction and in terms of statistical significance. The result in model (4) shows that on its own FOWN is not significantly related to SYNCH. However, when it interacts with TIME, the finding shows negative relationship between FOWN and SYNCH and between the interactive term and SYNCH (see model (5)).

-Table 5 is here-

We found that the inclusion of FOWN does not change the significance of CONSV and RELEV. FOWN coefficients appear to be insignificant in models (6) and (7) and the interactive terms, as well. Similar to the previous results, only SIZE is a significant control variable. The inclusion of FOWN to the testing model improves the explanatory power trivially. The full testing model (not reported in this paper) that includes all three EQ attributes, FOWN, and control variables comes with the same results, in which only TIME is positively related to SYNCH; FOWN and the interactive term have inverse relationship with SYNC, and SIZE is positively related to SYNCH.

5. DISCUSSION

This study examines the impact of three EQ attributes on share price synchronicity. The result shows only timeliness (TIME) shows the expected result, confirming that the loss reporting reduces information (Lin et al., 2015), enhances transparency by impounding more firm-

specific information in prices, and ultimately mitigates pricing errors in trading (Bhattacharya et al., 2013) of ASX2000 firms in Australia market. The higher the information speed of a firm's loss that is regarded as firm-specific information, the less price synchronization is needed. This result is consistent with the conjecture that high quality earnings (i.e., timeliness) increases firm-specific informativeness.

On the other hand, the insignificant conservatism (CONSV) puts the transparency of ASX200 firms in question. According to Francis et al. (2004) CONSV has the most insubstantial influence in reducing information risk among other market-based earnings quality, since conservatism is only related to bad economic events. While information risk considers both good and bad economic events in determining the degree of stock price synchronicity. Another explanation of the insignificance of CONSV is that firm size influences the incremental timeliness of bad news relative to that of good news (i.e., conservatism) in a way that it is expected to be less for larger firms whose information is more frequent (Givoly, 2021). The sample in this study consists of relatively large firms, constituents of S&P/ASX200 index. Accordingly, the result of regressing conservatism and price synchronicity SYNCH on CONSV might be distorted and shows no statistical significance. Next, as CONSV is measured at the firm-year level and bad news is recorded earlier than good news, there is a possibility that good news is recorded in the next period. Consequently, the CONSV may contain some flaws due to different recording period (Licerán-Gutiérrez & Cano-Rodríguez, 2019). Finally, the presence of outliers in CONSV dataset as explained beforehand may or may not affect the statistical significance.

Value Relevance (RELEV) shows a positive relationship towards SYNCH, a direction that is as expected in this study. A size effect may be associated in this study's sample selection methodology—that is, the sample firms being studied are selected from the top 200 largest companies. In other words, the sample firms are market-leading companies in their own respective sectors. The importance or effect of relevance to price synchronicity therefore appears to be less important than the control variables.

The overall results of EQ and PS is similar to Zhou (2007), a US-based study. The empirical results of this study also suggest that timeliness has the largest coefficient and also significant among the market-based attributes. That is especially true for the R-squared in model 1 shows the biggest explanatory power among other model 2 and 3. The coefficients on conservatism (model 2) and value relevance (model 3) are not statistically significant, but the signs are as expected.

In sum, the H1 testing comes with mixed results. Not all EQ attributes, as firm-specific information, reduce information asymmetry, on time. Thus, only on-time EQ attribute (TIME) enhances the transparency and help investors to estimate risk better, hence lower stock PS is required.

The result of FOWN is not in line with the a-priori expectation that foreign investors prompt stock price informational efficiency via enhanced transparency and better managerial expertise (He et al., 2019; Vo, 2017). The result is opposed past study in Vietnam (Phan Trong & Vu Thi Thuy, 2021) finding that foreign investors increase price informativeness by bringing advantages in collecting firm-specific information; opposed to the finding of studies in China (Gul et al., 2010) where stock price synchronicity is lowered in the presence of foreign shareholding.

In Australian market context, the imputation tax system does not encourage foreign investors to trade frequently, as they are better off if they buy and hold the shares rather than trading them. This may explain the insignificance of the FOWN on price synchronicity (Bradrania et al, 2022). Therefore, the higher foreign ownership in Australian firms does not reflect the firm-level informativeness, neither on the market or sector level, as they do not trade stocks frequently.

The interactive term (TIME*FOWN) is negatively and significantly related to SYNC. Although TIME still positively affects stock PS, however the higher foreign ownership in ASX200 firms, the EQ-PS relationship decreases. Chen et al (2022) argue that foreign ownership role as a monitoring tool is found stronger in weak governed and low information transparency firms. As our sample are firms in Australian market (developed market), it can be assumed that they have strong governance and some degree of information transparency in place.

In sum, H2 testing shows that the existence of foreign investors in ASX200 firms does not add new firm-specific information, hence it does not affect the stock PS. Furthermore, due to the Australian imputed tax system, foreign investors have less incentive to trade their stocks. This leads to low impact as monitoring tool to enhance the existing firm-specific information.

The control variables show that only SIZE is consistently related to stock PS. Although the sample is of ASX200 that consists of big firms, SIZE still matters when it comes to synchronizing the stock price and firm-specific information. Positive coefficients of SIZE show that the bigger the firms, the lower stock PS required, as big firms disclose information more frequently.

6. RESEARCH IMPLICATION

The results have several theoretical and practical implications. Regarding earnings quality, the result implies that earnings timeliness matters for investors in synchronizing the stock pricing process. Although other earnings qualities in this study appear insignificant to the stock price synchronization, it does not suggest that firms care less about their reported earnings quality as a whole. Theoretically, this study results suggests that although ASX is regarded as developed country, there are still discrepancies between this study and another result from a developed market (Hong, 2007). Therefore, it implies that specific market information may be the key to the different results.

As for foreign ownership, the results imply that foreign investors may encourage the controlling shareholders to voluntarily disclose more and better firm-specific information for the benefit of minority shareholders. This improved cost-benefit tradeoff facilitates more informed trading, which, in turn, leads to more information being impounded into stock prices.

7. CONCLUSION

In this paper, we conclude that not all earnings quality attributes could reduce information asymmetry and help investors to lessen their risk estimation error, on time. The result shows only earning timeliness that reduces the stock price synchronicity meaning that the timelier the

loss reporting is, the more informative the stock price will be. Accordingly, this suggests that the speed at which bad news is incorporated into accounting figures, i.e., earnings, matters for investors in their pricing decision process. The other two earnings quality attributes, i.e., conservatism and value relevance, show a positive coefficient which is as expected although being statistically insignificant. While earnings timeliness is a short-term measure of earnings quality, conservatism is more on the long-term measure. Therefore, the impact of conservatism on stock price synchronicity should be examined in longer time period. This study also argues that the statistical insignificance of conservatism is due to outliers in the variable dataset (i.e., most sample firms rarely reported loss over the sample period), and furthermore, conservatism has the least effect in reducing information risk relative to other market-based earnings quality (Francis et al., 2004).

Whereas the statistical insignificance of value relevance may have the same feature as conservatism, as a long-term measure of earnings quality. Thus, it may have a significant influence on stock price synchronicity in future periods. Moreover, the effect of relevance appears to be diminished as the other firm-specific information, such as firm size is embodied in the market and sector information.

Looking at the effect of one prominent market participant in Australian market, foreign investors, the study highlights several points as followed. Unlike the predicted relationship (e.g., Gul et al., 2010; T. T. He et al., 2019; Zou et al., 2017), foreign equity ownership does not show an inverse relationship with stock price synchronicity of ASX200 listed firms. This is explained by the implication of the imputed tax system in Australia that has no effect on the foreign investors. Consequently, the foreign ownership in Australian market, with strong governance and high transparency, do not add its impact as a corporate governance mechanism of firm's monitoring. The negative effect of foreign ownership on the timeliness-price synchronicity relationship shows that the higher foreign ownership weakens the effect of timeliness on stock price synchronicity in ASX200 firms.

For future study, it is suggested to include all ASX listed firms (profiting and losing firms during the observed period) to minimize the outliers of EQ attribute of conservatism. Extending the sample to include several jurisdictions that have different level of capital market developments is also advised in order to establish the earnings quality and price synchronization. The examination using lagged model is also merit to research, to examine the effect of conservatism and relevance in longer term periods. This study also opens another avenue is to examine the effect of imputation tax system in Australia on the foreign investors' motivation to invests in Australian firms.

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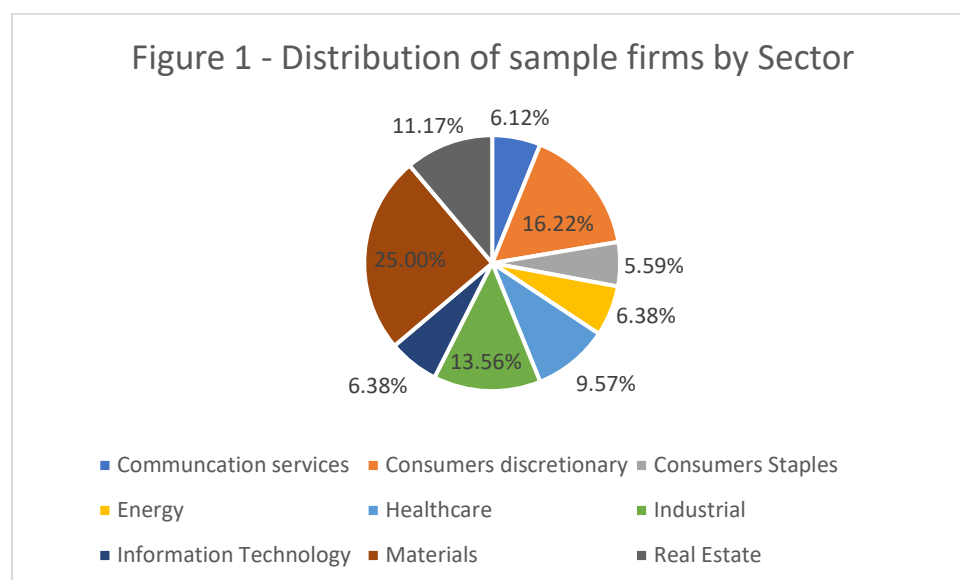
APPENDIX

A.1

Table 1. Sample selection and distribution per year

	FY 2017	FY 2018	FY 2019	
Initial sample: S&P/ASX200 (XJO)'s 2021 constituents	200	200	200	
Financial sector firms	(29)	(29)	(29)	
Utility sector firms	(5)	(5)	(5)	
Missing data	(39)	(41)	(44)	
Total final sample	127	125	124	376
% of total	33.78%	33.24%	32.98%	100%

A2.



A.3

Table 2. Summary statistics

Variable	Mean	Stdev.	Min	Q1	Median	Q3	Max
SYNCH	-0.842	1.066	-3.340	-1.536	-0.861	-0.197	1.923
TIME	-0.714	0.280	-1.000	-0.964	-0.805	-0.522	-0.006
CONSV	-0.622	22.265	-78.61	-1.000	-1.000	-0.574	13.020
RELEV	-0.628	0.287	-0.999	-0.884	-0.682	-0.438	-0.016
FOWN	0.235	0.164	0.000	0.122	0.199	0.319	0.799
TIME*FOWN	-0.170	0.144	-0.778	-0.240	-0.133	-0.063	0.000
CONSV*FOWN	0.278	5.755	-22.483	-0.387	-0.169	-0.026	53.653
RELEV*FOWN	-0.149	0.125	-0.631	-0.214	-0.127	-0.046	0.000
SIZE	22.076	1.259	18.588	21.278	22.001	22.937	26.062
DIVER	3.311	1.645	0.000	2.000	3.000	4.000	9.000
VOLT	0.034	0.055	0.001	0.008	0.017	0.035	0.353

This table presents the summary statistics that has been winsorized 1% top and bottom. The following describes how each variable is computed. SYNCH= the natural logarithm transformation of R^2 of Equation (1), defined as $\text{Ln}(R^2/1-R^2)$; TIME and CONSV Conservatism are estimated from the same regression model shown on Equation (4), where TIME = the negative form of the R^2 , and CONSV = the negative form of the coefficient on negative returns to positive returns; RELEV = the negative form of the R^2 of Equation (3); FOWN is measured by the percentage of firms shares owned by foreign investors to the total outstanding shares, TIME*FOWN, CONSV*FOWN, RELEV*FOWN are the interactive terms of timeliness, conservatism, value relevance, respectively and foreign ownership, SIZE= the natural logarithm of market capitalization; DIVER= number of business segments based on sales; VOLT= standard deviation of quarterly ROA.

A.4

Table 3. Pearson correlation

	SYNCH	TIME	CONSV	RELEV	FOWN	TIME* FOWN	CONSV *FOWN	RELEV* FOWN	SIZE	DIVER	VOLT
SYNCH	1.000										
TIME	-0.006 (0.904)	1.000									
CONSV	0.005 (0.917)	0.060 (0.244)	1.0000								
RELEV	-0.035 (0.497)	0.334*** (0.000)	-0.0108 (0.834)	1.000							
FOWN	0.128** (0.013)	-0.041 (0.427)	0.0362 (0.484)	-0.021 (0.691)	1.000						
TIME*FOWN	-0.134*** (0.001)	0.461*** (0.000)	-0.0080 (0.877)	0.145*** (0.005)	-0.852*** (0.000)	1.000					
CONSV*FOWN	-0.010 (0.845)	0.042 (0.419)	0.8709** * (0.000)	-0.011 (0.829)	0.057 (0.275)	-0.021 (0.686)	1.000				
RELEV*FOWN	-0.096* (0.064)	0.187*** (0.000)	-0.0364 (0.482)	0.533*** (0.000)	-0.772*** (0.000)	0.744*** (0.000)	-0.052 (0.316)	1.000			
SIZE	0.578*** (0.000)	-0.1497*** (0.004)	-0.0639 (0.217)	-0.089* (0.085)	0.147*** (0.004)	-0.183*** (0.000)	-0.057 (0.267)	-0.150*** (0.004)	1.000		
DIVER	0.119** (0.021)	-0.0958* (0.064)	-0.0901* (0.081)	0.066 (0.192)	0.061 (0.2353)	-0.108** (0.037)	-0.088* (0.089)	-0.020 (0.700)	0.317*** (0.000)	1.000	
VOLT	-0.179*** (0.001)	0.1629*** (0.002)	-0.0204 (0.694)	0.076 (0.143)	0.035 (0.5053)	0.081 (0.116)	-0.016 (0.751)	-0.035 (0.494)	-0.292*** (0.000)	-0.174*** (0.001)	1.000

This table presents the correlation coefficients and the corresponding p-value for 376 firm-year observations of S&P/ASX200 firms per June 2021, from financial year 2017 to 2019. The following describes how each variable is computed. SYNCH= the natural logarithm transformation of R^2 of Equation (1), defined as $\ln(R^2/1-R^2)$; TIME Timeliness and CONSV Conservatism are stemmed from the same regression model shown on Equation (4), where TIME Timeliness= the negative form of the R^2 , and CONSV Conservatism= the negative form of the coefficient on negative returns to positive returns; RELEV Value Relevance= the negative form of the R^2 of Equation (3); FOWN is measured by the percentage of firms shares owned by foreign investors to the total outstanding shares, TIME*FOWN, CONSV*FOWN, RELEV*FOWN are the interactive terms of timeliness, conservatism, value relevance, respectively and foreign ownership, SIZE= the natural logarithm of market capitalization; DIVER= number of business segments based on sales; VOLT= standard deviation of quarterly ROA. *, **, *** represents significant level $\alpha = 10\%$, 5% , 1% , respectively. The sector effects are controlled. The results are not reported here.

A.5

Table 4. Pooled regression result of EQ and SYNCH

Variables	Model 1	Model 2	Model 3
	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Constant	-11.0540*** (0.00)	-11.1834*** (0.00)	-11.1000*** (0.00)
TIME	0.2677* (0.0600)	-	-
CONSV	-	0.0015 (0.3340)	-
RELEV	-	-	0.1570 (0.2490)
SIZE	0.5231*** (0.00)	0.5205*** (0.00)	0.5221*** (0.00)
DIVER	-0.0438 (0.1190)	-0.0440 (0.1210)	-0.0491* (0.0810)
VOLT	0.4567 (0.4890)	0.7172 (0.2860)	0.5805 (0.3890)
Industry effect	Yes	Yes	Yes
Year effect	Yes	Yes	Yes
Adj. R-Squared	0.4981	0.4944	0.4951
F-stat	22.43***	21.84***	23.40***

This table presents the pooled OLS regression of equation (5) for 376 firm-year observations of S&P/ASX200 firms per June 2021, from financial year 2017 to 2019. Models 1, 2, 3, include EQ attribute TIME, CONSV, and RELEV, respectively. The following describes how each variable is computed. SYNCH= the natural logarithm transformation of R^2 of Equation (1), defined as $\ln(R^2/1-R^2)$; TIME Timeliness and CONSV Conservatism are stemmed from the same regression model shown on Equation (4), where TIME Timeliness= the negative form of the R^2 , and CONSV Conservatism= the negative form of the coefficient on negative returns to positive returns; RELEV Value Relevance= the negative form of the R^2 of Equation (3); SIZE= the natural logarithm of market capitalization; DIVER= number of business segments based on sales; VOLT= standard deviation of quarterly ROA. *, **, *** represents significant level $\alpha = 10\%$, 5% , 1% , respectively. The sector effects are controlled. The results are not reported here.

A.6

Table 5. Pooled regression result of EQ, FOWN and SYNCH

	(Model 4)	(Model 5)	(Model 6)	(Model 7)
Variables	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)	Coefficient (p-value)
Constant	-11.1391***	-10.9012***	-11.1797***	-11.1631****
TIME: Timeliness	-	0.5938**	-	-
CONSV: Conservatism	-	-	0.0038	-
RELEV: Relevance	-	-	-	0.0375
FOWN	0.0070	-1.0878*	0.0156	0.3006
TIME*FOWN	-	-1.4992*	-	-
CONSV*FOWN	-	-	-0.0100	-
RELEV*FOWN	-	-	-	0.5376
SIZE	0.5187***	0.5264***	0.5202***	0.5217***
DIVER	-0.0455	-0.0446	-0.0447	-0.0486*
VOLT	0.6705	0.6497	0.7235	0.6239
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
R-Squared	0.4934	0.5017	0.4951	0.4956
F-stat	22.19***	20.40***	19.27***	20.61***

This table presents the pooled OLS regression of equation (6) for 376 firm-year observations of S&P/ASX200 firms per June 2021, from financial year 2017 to 2019. Model 4 includes FOWN, while models 5, 6, 7, include EQ attributes TIME, CONSV, RELEV, and their interactive terms with FOWN, respectively. The following describes how each variable is computed. SYNCH= the natural logarithm transformation of R^2 of Equation (1), defined as $\ln(R^2/1-R^2)$; TIME Timeliness and CONSV Conservatism are stemmed from the same regression model shown on Equation (4), where TIME Timeliness= the negative form of the R^2 , and CONSV Conservatism= the negative form of the coefficient on negative returns to positive returns; RELEV Value Relevance= the negative form of the R^2 of Equation (3); FOWN is measured by the percentage of firms shares owned by foreign investors to the total outstanding shares, TIME*FOWN, CONSV*FOWN, RELEV*FOWN are the interactive terms of timeliness, conservatism, value relevance, respectively and foreign ownership, SIZE= the natural logarithm of market capitalization; DIVER= number of business segments based on sales; VOLT= standard deviation of quarterly ROA. *, **, *** represents significant level $\alpha = 10\%$, 5% , 1% , respectively. The sector effects are controlled. The results are not reported here.