

# Managerial Ownership, Board Characteristics and Stock Price Informativeness in Indonesia Stock Market: Examination of the Pre-IFRS and Post-IFRS Adoption Periods

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## ABSTRACT

Publicly available information is mainly determined by *firm-specific* and *market-wide* information. When stock price changes are influenced more by firm-specific, the stock price synchronicity (SYNCH) is expected to be lower and vice versa. Financial reporting under the IFRS Standards is considered to have a higher quality than financial statements prepared under national accounting standards (GAAP). One of the pillars of good corporate governance is the existence of an effective internal mechanism such as board characteristics. This study examined the relationship between SYNCH and managerial ownership and board characteristics which included board size and board independence during the most comprehensive period of IFRS adoption in Indonesia covering the periods of pre-IFRS, transition and post-IFRS adoption. Using firms listed in the Indonesia Stock Exchange from 2007-2019, panel data regression analysis showed significant decrease in SYNCH after the adoption of IFRS. Other findings suggest that management and supervisory functions of the boards can be disrupted if there is larger board, and the presence of an independent board is seen as ineffective in increasing informativeness of stock price.

**Keywords:** Stock Price Synchronicity, Managerial Ownership, Board Characteristics, IFRS Adoption

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## INTRODUCTION

In the last five years, the Indonesian capital market was experiencing significant developments. The number of listed entities in the Indonesia Stock Exchange (IDX) annually increased to 713 firms at the end of 2020 or increased by 32,8% from 2016. Market capitalization has also experienced a consistent increase since 2016 reaching Rp. 7.265 trillion at the end of 2019, despite a slight decline in 2020 to Rp. 6.970 trillion due to the impact of the COVID-19 pandemic (IDX, Annual Statistics 2016-2020). In addition, in the period between 2016 to 2020, the Composite Stock Price Index (JCI Index) on the Indonesia Stock Exchange had increased in the range between 12,9% to 20,0%.

The main determinants of the volatility of stock market returns in the JCI are the exchange rate, economic growth, gross domestic product (GDP), inflation rate, interest rates and world oil prices (Pradhya et al., 2018). This suggests that the market index movements have been driven by macroeconomic factors rather than firm fundamental values. The next question that arises is why is information such as *firm-specific* information neglected by the stock market? Has the market lost confidence in the credibility of financial reports that inform a firm's fundamental value?

Roll (1998) is the first scholar to argue that investors might use two types of information in making investment decisions; those are *firm-specific* and *market-wide* information. Macroeconomic, government policies and regulations are examples of market-wide information that are closely related to market condition, while firm-specific information is directly related to companies. Further, if a company's stock price returns is explained more by market information, then that stock price returns shows *more synchronicity* with market returns. Conversely, if changes in the company's stock prices are explained more by the *firm-specific* information, then it shows *less synchronicity* with market-related information (Morck et al., 2000).

Accordingly, the literature relating to stock price synchronicity uses interchangeably the terms higher firm-specific information or lower stock price synchronicity. The sufficient disclosures of firm-specific information become critical inputs to determine the quality of information of financial reports. Therefore, it can be argued that the quality of information in financial

reports will be driven by the quality of accounting standards that is used (Barth et al., 2008). Several studies have observed the consequences of adopting International Financial Reporting Standards (IFRS Standards) and they conclude that financial reporting under the IFRS Standards are of a higher quality than financial statements prepared under national accounting standards (GAAP) in various countries (Patro & K. Gupta, 2016)<sup>1</sup>. Thus, it is interesting to examine whether the adoption of the IFRS Standards in Indonesia increases informativeness of stock price as measured by stock price synchronicity in the pre-IFRS compared to the post-IFRS period.

Morck et al. (2000) argued that stock price synchronicity is higher in emerging capital markets, meanwhile analytic research of Jin & Myers (2004) Yeung and Yu (MY, 2000) concluded that lower stock price synchronicity reflects more transparency. Although previous studies have shown that stock price synchronicity is a function of the quality of accounting information, but unreliable financial reports are likely to be produced by firms with a poor informational environment. Therefore, the presence of corporate governance mechanism is crucial for a firm to promote a favorable informational environment.

The early development of corporate governance is supported by the Agency Theory (AT) and the separation of ownership and control (Jensen & Meckling 1976). In general, the view of corporate governance mechanisms is categorized into two groups in the previous literature, namely internal and external mechanisms (Omar & Arshad, 2016). Ownership structure and board governance are primarily elements of internal mechanisms, while the regulatory and legal environment, institutional development, leverage and the takeover markets are external mechanisms (Claessens et al., 2002). Managerial ownership, a type of ownership structure, is considered an important element of a firm's corporate governance internal mechanism.

A recent study in Malaysia by Alhadi et al. (2020) examined whether managerial ownership promotes higher earnings quality after the implementation of the IFRS Standards and found that it is vital for increasing earnings quality in both periods of pre- and post-IFRS adoption.

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<sup>1</sup> The main focus of Patro & K. Gupta (2016) study is to determine the effects of mandatory IFRS adoption and stock price synchronicity in China, Hong Kong, Israel, and the Philippines, because IFRS are yet to be mandated in other Asian markets at that time.

A similar study in Saudi Arabia by Fallatah et al. (2021) supported Alhadi et al. (2020)'s findings that high quality accounting standards, such as the IFRS Standards, is welcome by managers and owners whose interests are linked, but it should be noted that the preparation of financial statements in compliance with the IFRS Standards is still the primary responsibility of managers.

Previous studies, as described in the paragraphs above, show a significant relationship between the increase in earnings quality and or the quality of financial reports (after the adoption of IFRS Standards) with board governance and managerial ownership (which are firm's corporate governance internal mechanisms). However, to the best of our knowledge, its effect on stock price informativeness as measured by the level of stock price synchronicity has not been much elaborated, especially in the Indonesian context. Hence, the purpose of this study was to examine whether managerial ownership and board characteristics improve the credibility of financial reporting through its effects on stock price synchronicity of post-IFRS adoption in Indonesia in comparison to the pre-IFRS adoption period. The output derived from this study is significant for all stakeholders of financial reporting so that issues related to the impact of managerial ownership, board characteristics, IFRS adoption and stock price synchronicity can be further understood.

The following section is a literature review which is then followed by hypotheses development in Section 3. Section 4 describes the data collection and methodology used to analyze the data including the regression model. The next section discusses the empirical results while the last section is a conclusion of the main ideas which refers to the implications including limitations and suggestions for future research.

## **LITERATURE REVIEW**

### **Stock Price Synchronicity**

The concept of stock price synchronicity was first introduced by Roll (1988) in his research relating to firm-specific information capitalized into stock prices. Using the traditional capital asset pricing model (CAPM), he

argued that low ability of market returns in explaining changes in individual firm's stock returns is indicated by a low level of R-square ( $R^2$ , the coefficient of determination). Roll (1988) then argued that the amount of firm-level and market-level information incorporated into stock prices determined the stock price's co-movements. When the quality of firm-specific information is in doubt, other alternative information, namely market-information that is more widely and less costly available than firm-specific information will be sought by investors. After the publication of Roll's work, R-square has been widely used as the direct measure for stock price synchronicity.

Previous researchers have attempted to find the determinants of stock price synchronicity. Morck et al. (2000) reported that stock returns in emerging markets are more synchronous than in developed markets, indicating a higher level of stock price synchronicity. Chan & Hameed, (2004) and (Kim & Shi, 2012) provided evidence that analyst coverage had a positive influence on stock price synchronicity. Gul et al. (2010) and Shan et al. (2019) argued that foreign ownership and auditor quality are negatively related to stock price synchronicity. Other factors such as earnings informativeness, corporate transparency, voluntary disclosures, earnings management, adoption of IFRS and ownership structures have also been investigated as contributing factors to stock price synchronicity (Boubaker et al., 2014; Kim & Shi, 2012; Song, 2015; Suk, 2008).

A major strand of research also relates the stock price synchronicity with the ownership structure which shows mixed results. Block ownership and stock price synchronicity shows a negative relationship, which suggests that the likelihood of information is increased by block-holder ownerships (Doriye, 2012). In addition, Hasan et al. (2013) found in Chinese firms with higher government ownership have less stock price synchronicity which are related with lower foreign ownership and greater political connections. Boubaker et al. (2014) found that French firms with highly concentrated ownership tended to disclose less firm-specific information to hide opportunistic practices. Further, in the Chinese's stock market, Feng et al. (2016) found a contrasting evidence where ownership concentration made the firms more transparent however less firm-specific information is disclosed to the market. More recent studies have found that foreign ownership has a significant influence in stock price informativeness of Vietnamese firms (Vo, 2017), however a contrasting result was found by

another study which argued that larger ownership of foreign investors in Vietnamese firms made their stock prices moved more synchronously with the market (Nguyen et al., 2020). This paper adds to the literature by answering an important, unexplored question about whether managerial ownership, a type of ownership structure, and board characteristics explain the synchronicity of stock price in Indonesia.

## Managerial Ownership

The AT suggests that managerial ownership can be used as a mechanism to improve the alignment between managerial interests and shareholder interests (Jensen & Meckling, 1976). The alignment of interests between managers and shareholders is explained by *the convergence-of-interests hypothesis*. By contrast, the entrenchment region of management ownership as it is explained by *the management entrenchment hypothesis* is a situation when managerial ownership is at levels where the interests of management are not aligned with those of the shareholders. However the thing that needs to be highlighted is, higher managerial ownership facilitates deeper entrenchment that can trail to managerial decisions which augment management's own wealth through the expropriation of minority shareholders (Morck et al., 1988; Lee & Ryu, 2003).

Previous studies have found that a non-linear relationship of managerial ownership and company value existed which led to the conflicting incentive effects of the convergence-of-interests and entrenchment hypotheses (Morck et al., 1988; Short & Keasey, 1999). For example, Morck et al. (1988) found an inverse U-shaped relationship between management ownership and company value. This was indicated by the level of managerial ownership below 5% and at the level of managerial ownership above 25%. Meanwhile, manager shareholding was inversely associated with performance at approximately level of managerial ownership between 5 and 25%, the entrenchment region of managerial ownership (Morck et al., 1988). In addition, a more recent empirical study using an Australian sample by Shan et al. (2019) found two possible entrenchment regions in the range of approximately 20–50% and 20–55% of managerial ownership and argued that areas below approximately 20% and above the range of 50–55% of managerial ownership represent areas of convergence of interests.

## **Board Characteristics**

The AT describes the relationships between principal (shareholders) as providers of capital and agent (managers) who have been given the authority to run a company. The relationship is described as a contract that requires managers to act in the best interests of shareholders (Jensen and Meckling, 1976). Nonetheless, managers' objectives sometimes conflict with shareholders' goals and often go in the opposite direction which may result in adverse situation. To avoid such situations, monitoring mechanisms need to be established to prevent opportunistic behavior of managers while promoting the alignment of interests between conflicting parties.

Corporate governance is a system of relationships, defined by structures and processes, between shareholders (as the providers of capital), company management, and stakeholders in maximizing shareholders' return on investment (International Finance Corporation et al., 2018). The certain relationships exist between company management and firm's shareholders. As such, the Board of Directors is held responsible to the Board of Commissioners, which in turn must be accountable to all shareholders through the General Meeting of Shareholders. In this regard, the role of the Board of Directors and the Board of Commissioners in increasing earnings informativeness are very crucial (Klein, 2002; Chiyachantana et al., 2021).

The purpose of this study was to examine the role of the Board of Directors (BoD) and the Board of Commissioners (BoC) in promoting high quality financial reports through its effects on stock price synchronicity. If they improve the credibility of financial reports, then stock price synchronicity is expected to decrease. In this study, Board characteristics comprised of BoD size, BoC size, and Board Independence (the proportion of Independent Commissioners size to BoC size).

## **HYPOTHESIS DEVELOPMENT**

### **Stock Price Synchronicity and IFRS Adoption**

The adoption of IFRS demands more disclosure of relevant information to investors because IFRS allows management discretion

over accounting policies such as fair value accounting (Barth et al., 2008). Previous researchers have investigated whether earnings quality improves, transparency of accounting information increases (Beuselinck et al., 2009) we examine whether mandatory adoption of IFRS reduces firm opacity and contributes to stock price informativeness. Using data from EU countries, we document a V-shaped pattern in stock return synchronicity around IFRS adoption which is consistent with IFRS disclosures revealing new firm-specific information in the adoption period (i.e., a reduction of synchronicity and earnings smoothing decreases (Houqe & Easton, 2013) the European Union (EU after IFRS adoption. To sum up, the previous findings have indicated that earnings quality in terms of firm-specific information is improved after IFRS adoption (Beuselinck et al., 2009; Kim & Shi, 2012; Pratiwi et al., 2021)we examine whether mandatory adoption of IFRS reduces firm opacity and contributes to stock price informativeness. Using data from EU countries, we document a V-shaped pattern in stock return synchronicity around IFRS adoption which is consistent with IFRS disclosures revealing new firm-specific information in the adoption period (i.e., a reduction of synchronicity).

Furthermore, previous research have shown that an increase in firm-specific information is associated with decreased stock price synchronicity (Beuselinck et al., 2009; Kim & Shi, 2012; Patro & K. Gupta, 2016; Shin, 2019)we examine whether mandatory adoption of IFRS reduces firm opacity and contributes to stock price informativeness. Using data from EU countries, we document a V-shaped pattern in stock return synchronicity around IFRS adoption which is consistent with IFRS disclosures revealing new firm-specific information in the adoption period (i.e., a reduction of synchronicity. Previous literature has claimed that IFRS adoption is also favorable in emerging markets due to firm's incentive reasons. Using Korean data, Shin & Choi (2013) also found a decrease in synchronicity after IFRS adoption, and this decrease is more pronounced for firms with low synchronicity before the adoption. Patro & K. Gupta (2016) found that mandatory adoption of IFRS in 2009 reduced stock price synchronicity in four Asian markets (i.e., China, Hong Kong, Israel, and the Philippines). In addition, a recent research in Brazil found that after IFRS adoption, stock prices moved more according to firm-specific shocks so that they become more informative and useful for investment decision-making (Castro & Santana, 2018).



On the other hand, Bissessur & Hodgson (2012) provided another view on changes in stock price synchronicity after IFRS adoption. They argued that synchronicity increased instead of decreased due to enhanced comparability after IFRS adoption. Using Australian firms, they found that the market experienced an instant decline in the year of IFRS adoption and increased in stock price synchronicity thereafter. They implied that the different levels of stock price synchronicity before and after the adoption of IFRS were caused by differences in industry characteristics.

The decision to adopt IFRS in Indonesia, a commitment as one member of the Group of Twenty (G-20), was announced in December 2008 by the Institute of Indonesia Chartered Accountants (IAI) to be implemented in 2012 starting in 2009. Empirical studies on IFRS adoption in Indonesia have been conducted since 2010 and in general the results showed that IFRS adoption in Indonesia had a positive impact on the quality of financial statements, as evidenced by the increased relevance of value, the quality of accounting information, the quality of earnings, as well as the decreasing earnings management practices. Thus, we hypothesized that:

**H<sub>1</sub>:** IFRS adoption in Indonesia resulted in a significant decrease in stock price synchronicity

## **Managerial Ownership and Stock Price Synchronicity**

Management entrenchment can be explained as the extent to which managers fail to experience discipline from the full range of corporate governance and control mechanisms. Within the entrenchment region of management ownership, managers have stronger bargaining capacity which can enable them to chase private benefits at the expense of other shareholders, perhaps directing to maximizing non-value decisions and opportunistic behavior. However, under conditions when managerial ownership is at levels where the interests of management are aligned with those of the shareholders, defined as the convergence-of-interests region of management ownership, managers are likely to engage in activities that maximize firm performance (Morck, Shleifer, & Vishny, 1988). A recent study by Nguyen et al. (2020), in the context of the Vietnamese market, showed that managerial ownership was negatively related to stock price synchronicity which means that a larger amount of managerial ownership

leads to more stock price informativeness. Thus, we hypothesized the following:

- H<sub>2</sub>:** Managerial ownership by the Board of Directors is negatively associated with stock price synchronicity.
- H<sub>3</sub>:** Managerial ownership by the Board of Commissioners is negatively associated with stock price synchronicity.

### **Board Size and Stock Price Synchronicity**

Unlike most Anglo-American systems, Indonesia adopted two-tier boards, leaving no room for board duality issues. The executives belong to the Board of Directors, meanwhile the Board of Commissioners (supervisory board) is responsible for overseeing the work of directors and managers.

The optimal size of the board is arguable; however, previous studies agree that the size and composition of the Board are important governance mechanisms for making certain not only the role of management but also the resources that companies need. Prior literature argues that firm values can be harmful by bigger board size (Mak & Kusnadi, 2005) while other research found no evidence of such a result (Vafeas, 2000). A recent research using a sample of 135 Indonesian firms covering the period from 2003 to 2013 by Tanjung (2020) argued that the five to nine board sizes as the most efficient.

This study supported the opinion on the relationship of larger boards with better corporate governance because they tend to have no one to dominate and, thus, have well-distributed and updated information, protecting the interests of shareholders, thereby negatively related to stock price synchronicity. Thus, we hypothesized the following:

- H<sub>4</sub>:** The size of the Board of Directors is negatively associated with stock price synchronicity.
- H<sub>5</sub>:** The size of the Board of Commissioners is negatively associated with stock price synchronicity.

## Board Independence and Stock Price Synchronicity

Board composition and board independence have been used interchangeably. Studies using board composition refer to it as the proportion of independent, outside directors of the board. This independent board will ensure that the possible effects predicted by the AT of corporate governance do not emerge. Banerji (2017) argued that in emerging markets, the firm's independent boards whose functions are mandated and protected by laws and regulations have performed an important role in a firm's mechanism. Previous studies have found that firms that have a relatively higher market valuation had a certain minimum number of independent boards (Ammann et al., 2011). In brief, it can be proposed that the quality and reliability of firm disclosure is improved by independent boards who are more likely to monitor a firm effectively, resulting in a better information environment.

Ferreira et al. (2011) found that stock price informativeness had a negative relationship with board independence in US firms. Furthermore, Doriye (2012) investigated the effect of a firm's information environment on corporate governance in a cross-country context using stock price synchronicity as a measure. The main result of that study was that better governance reduced information asymmetry that occurred from managerial acts and a higher proportion of independent boards increased the incorporation of firm-specific information. In addition, Ntow-Gyamfi et al. (2015) supported that a firm's financial accounting process is more effectively monitored by independent boards. Therefore, we argue that the proportion of board independence is negatively related to stock price synchronicity. Thus, we hypothesized that:

**H<sub>6</sub>:** The proportion of Independent Commissioners in the Board of Commissioners (Board independence) is negatively associated with stock price synchronicity.

## DATA AND METHODOLOGY

### Sample

This study contains listed firms in the Indonesia Stock Exchange (IDX) at 31<sup>st</sup> December of 2007 and those firms are still listed until 2019. The selection of the period between year 2007 to 2019 was intended to cover all periods of IFRS adoption in Indonesia which included the Pre-IFRS adoption period, the first and the second phase of convergence periods of Standar Akuntansi Keuangan or “SAK” (Indonesian GAAP) to the IFRS Standards. The decision to adopt the IFRS Standards in Indonesia was announced in the end of December 2008. In 2012, the Indonesian Financial Accounting Standard Board (“DSAK”) had issued most of the accounting standards that reflected the IFRS standards issued in 2009 by the IASB (so that the period of 2009 to 2012 was marked in Indonesia as the first phase of IFRS adoption). Indonesia’s convergence model created a 3-year gap between SAK and IFRS Standards. This gap was reduced to only 1-year starting in 2015 which was marked as the beginning of the second phase of IFRS Standards adoption. Thus, this study consisted of thirteen years that covered three periods, those are the Pre-IFRS adoption (2007 to 2011); the transition period (2012 to 2014); and the Post-IFRS adoption (2015 to 2019).

Listed firms from the banking and financial services sectors and firms with incomplete data were excluded from the sample. Thus, balanced panel data sets of 3120 firm-year observations were obtained from the same 240 selected firms for each year for a period of thirteen years. The sample selection procedure is given in Table 1. The sample covered firms’ daily stock prices and daily market index level (the Jakarta Composite Index or JCI) which was taken from Bloomberg database. Ownership and accounting data were manually collected from firms’ annual reports and the IDX’s website [www.idx.co.id](http://www.idx.co.id).

**Table 1: Sample Selection Procedure**

Criterion	Number of Firms
Listed firms in the IDX in 2007 and are still listed until 2019	337
Minus banking and financial services firms	(53)
Minus firms with missing data	(44)
Final sample	240

## Stock Price Synchronicity Computation

Stock price synchronicity (SYNCH) was initially generated by Roll (1988) and developed by Morck et al. (2000) as a proxy for firm-specific information incorporated into stock prices. In the literature, stock price synchronicity is calculated by the regression's R-squared value of individual stock returns on market index and industry indexes. However, Chan & Hameed (2004) supported the idea that adding industry returns into regression models tended to be problematic in emerging markets because it is difficult to separate industry effect from the market effects in an economy where several industries dominate. The JCI consists of around 700 firms categorized into nine industry or sector indexes with several dominant sectors, such as the manufacturing sector which has a weight of 63%, meanwhile there are sectors that only contain less than five firms. This can be problematic so that industry returns were not included in the calculation of SYNCH in this study. This study defined SYNCH consistent with the literature as Morck et al. (2000) and Gul et al. (2010).

$$RET_{i,t} = \pi_0 + \pi_1 MRKTRET_t + \pi_2 MRKTRET_{t-1} + \varepsilon_{i,t} \quad (\text{Eq1})^2$$

$$RET_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \quad (\text{Eq 2})$$

$$MRKTRET_t = \frac{P_{m,t} - P_{m,t-1}}{P_{m,t-1}} \quad (\text{Eq 3})$$

Where, for firm  $i$  and day  $t$ ,  $RET$  denoted the daily return on firm shares traded on  $IDX$ ; and  $MRKTRET$  refers to the value-weighted market return ( $JCI$  index); and  $\varepsilon$  represents unspecified random factors.

<sup>2</sup> Previous researches on stock price synchronicity ( $SYNCH$ ) in Indonesia used different measurements resulting in various results. Butar Butar (2019) used weekly market returns and measured them as:  $RET_{it} = \beta_0 + \beta_1 MKTRET_{it-2} + \beta_2 MKTRET_{it-1} + \beta_3 MKTRET_{it} + \beta_4 MKTRET_{it+1} + \beta_5 MKTRET_{it+2} + e^{it}$ ; where:  $RET_{it}$  = Stock return for firm  $i$  and week  $t$  and  $MKTRET$  = weekly market return. Butar Butar (2019) found  $SYNCH$ 's figures of mean and median of 0.61 and 0.62 respectively. Meanwhile, Pratiwi et al. (2021) used weekly market return and industry returns in their measurement as follows:  $r_{i,t} = \delta_0 + \delta_1 r_{mkt,i,t} + \delta_2 r_{mkt,i,t-1} + \delta_3 r_{ind,i,t} + \delta_4 r_{ind,i,t-1} + \varepsilon$ ; where:  $r_{i,t}$  = company return;  $r_{mkt,i,t}$  = market returns;  $r_{ind,i,t}$  = industry return (manufacture). Pratiwi et al. (2021) indicated  $SYNCH$ 's figures of mean and median of -0.0217 and 1.2749, respectively.

SYNCH was defined as the ratio of common return variation to total return variation, which is equivalent to R-square ( $R^2$ ) of market model used. SYNCH is often measured by regressing R-squared value of individual stock returns on market returns. The larger R-squared an individual firm has, the more its stock prices are synchronous with market returns. A growing number of empirical evidence supports the informational interpretation of this proxy (Boubaker et al., 2014). The R-squared result of regression is bounded within unit interval of [0,1]. Then SYNCH was calculated using a logistic transformation of R-square as follows:

$$SYNCH_{i,t} = \log \frac{R^2}{(1 - R^2)} \quad (\text{Eq 4})$$

Where  $SYNCH_{i,t}$  is the empirical measure of firm  $i$ 's stock price synchronicity on year  $t$ .

A significant market reaction was expected in the period before and after the financial statements were published. This study used the date of publication of financial reports, namely the date of submission of audited financial statements to the IDX or the date of advertisement for audited financial statements in newspapers, whichever was earlier. Moreover, this study used a window period of a few days before and after the publication date of the audited financial statements in order to have sufficient time to obtain market reactions to the information derived from the listed firms' published audited financial statements. Leo (2007) used a window period of [-20, +20] days and found that price reactions to audit opinion occurred within that window period after the audit opinion was announced. Meanwhile, Prasetyo & Rini (2014) using a window period of [-7, +7] days found no difference in market reaction before and after the announcement of the audit opinion and suggested that this might be due to the window period being too short. Therefore, in estimating Equation 1 to 4, we used daily stock and market return data using a window period of 15 days [-15, +15] before and after each publication date of the firms' audited financial statements.

## Model Specifications

The following regression model was estimated to test the hypotheses:

$$SYNCH_{i,t} = \beta_0 + \beta_1 BODSz_{i,t} + \beta_2 BOCSz_{i,t} + \beta_3 INBOCBCOC_{i,t} + \beta_4 OWNBOD_{i,t} + \beta_5 OWNBOC_{i,t} + \beta_6 DTRANS_{i,t} + \beta_7 DPOSTIFRS_{i,t} + \beta_8 CONTROL_{i,t} + \varepsilon_{i,t}$$

Where,

SYNCH	=	Stock Price Synchronicity
BODSz	=	Size of Board of Directors
BOCSz	=	Size of Board of Commissioners
INBOCBCOC	=	The proportion of Independent Commissioners in the BoC (BoC composition)
OWNBOD	=	Managerial ownership by Board of Directors
OWNBOC	=	Managerial ownership by Board of Commissioners
dTRANS	=	Transition period of IFRS adoption (dummy variable, value of "1" if year 2012-2014 and "0" otherwise)
dPOSTIFRS	=	Post-IFRS adoption period (dummy variable, value of "1" if year 2015-2019 and "0" otherwise)
CONTROL	=	Control variables, those are:
	"LNASSET"	(natural logarithm of total assets);
	"LARGEST"	(total ownership by five largest shareholders);
	"MBV"	(market to book value ratio);
	"LEV"	(leverage = total liabilities divided by total assets);
	"LNFORSALES"	(natural logarithm of foreign sales or export);
	"STD5YROA"	(standard deviation of ROA-return on assets = volatility of firm's earnings over the preceding five-year period including the current year).

## Panel Data Regression

This study used panel data regression to empirically examine the relationship between dependent variable of SYNCH and various independent variables. Panel data is a combination of cross section data and time series data, where the same cross section unit is measured at different times. Panel data regression analysis is used to observe the relationship between one dependent variable and one or more independent variables. There are three methods in estimating panel data regression models, namely the

Ordinary Least Square (Pooled Least Square), Fixed Effect Model (FEM), and Random Effect Model (REM) (Gujarati, 2004). The best model from the three estimation models will be selected by the Chow test, The Hausman test and Lagrange multiplier (LM) test.

## EMPIRICAL RESULTS AND DISCUSSION

### Descriptive Statistics

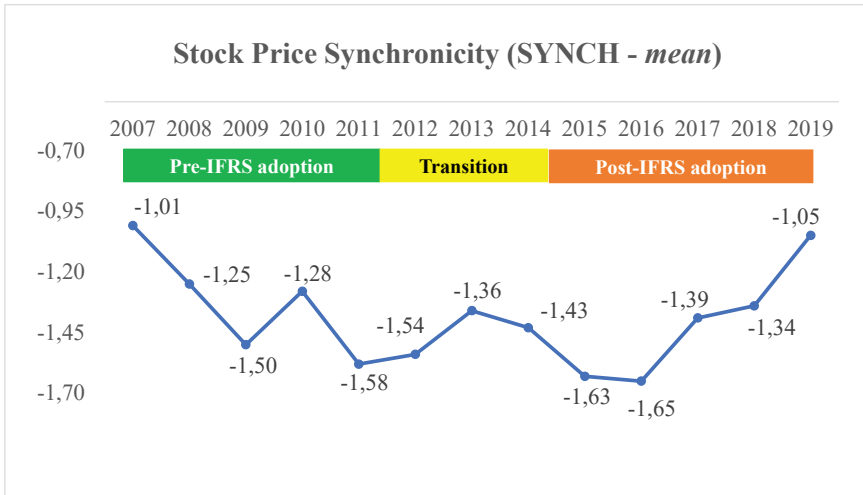
Table 2 summarizes the statistics for the sample over the period observed from 2007 to 2019, including maximum, minimum, mean, and standard deviation values of all dependent, independent, and control variables. Figure 1 shows the results of the dependent variable, that is stock price synchronicity, for all periods covered (2007 to 2019) i.e., Pre-IFRS, Transition, and Post-IFRS adoption periods.

Previous studies outside Indonesia found the mean and median of SYNCH statistics of 0.433 and 0.439 as reported by Gul et al. (2010) in China. Piotroski & Roulstone (2004) reported a mean and median of stock price synchronicity measures for USA firms are -1.742 and -1.754 respectively. A more recent study in Indian firms by Das et al. (2013) indicated the mean and median of stock price synchronicity at -1.01 and -0.80 respectively. Meanwhile, empirical evidence from the Vietnam stock market showed the mean and median of stock price synchronicity of -1.426 and -0.9385 respectively (Nguyen et al., 2020). It is worthwhile to discuss the implication of negative synchronicity as compared to positive synchronicity. Negative synchronicity indicates that market-wide information has a lesser impact on stock return or more firm-specific information is incorporated into stock prices.



**Table 2: Descriptive Statistics (number of observations = 3,120)**

	Mean	Std. Dev	Minimum	Maximum
SYNCH	-1.39	1.09	-8.10	0.61
BODSz	4.68	1.98	2.00	16.00
BOCSz	4.29	1.82	1.00	13.00
INBOCBOC (%)	40.11	10.55	0.00	100.00
OWNBOD (%)	1.54	7.21	0.00	70.00
OWNBOC (%)	1.38	5.38	0.00	73.20
dTRANS	0.23	0.42	0.00	1.00
dPOSTIFRS	0.38	0.49	0.00	1.00
LNASSET	12.32	0.77	9.49	15.13
LARGEST (%)	68.99	19.03	5.05	99.80
MBV (%)	5.16	1,009.48	-33,618.13	31,617.01
LEV (%)	86.96	1,743.67	0.06	97,340.65
LNFORSALE (%)	4.73	5.64	0.00	13.55
STD5YROA (%)	5.93	19.41	0.01	442.52



**Figure 1: The Mean Figures of Stock Price Synchronicity (SYNCH)**

It is also interesting to note that this study indicated similar evidence as that of a previous study by Beuselinck et al. (2009) we examine whether mandatory adoption of IFRS reduces firm opacity and contributes to stock price informativeness. Using data from EU countries, we document a

V-shaped pattern in stock return synchronicity around IFRS adoption which is consistent with IFRS disclosures revealing new firm-specific information in the adoption period (i.e., a reduction of synchronicity which covered pre- and post-IFRS adoption in Europe and found that the stock price synchronicity decreased in the year of mandatory IFRS adoption (2005 in the EU) but subsequently increased in the post-IFRS years to level higher than pre-IFRS period or a V-shaped pattern<sup>3</sup>. As shown in Figure 1, the level of SYNCH increased in the post-IFRS adoption after reaching its lowest level. This is consistent with the theoretical prediction that mandatory adoption of IFRS at first is likely to increase firm-specific information flow entering into the stock price formation process and to reduce subsequently the surprise effects of future firm information releases.

As shown in Table 2, the proxy variables for managerial ownership by the Board of Directors (OWNBOD) and by the Board of Commissioners (OWNBOC) were in the range between 0% to 70% and 0% to 73.2%, respectively and the average value (mean) of 1.54 % and 1.38%, respectively. Accordingly, while some directors and commissioners did not own shares in their firms, some in other firms held a relatively high share proportion. This level of managerial ownership was relatively lower compared to Spanish firms which were in the range between 0% to 83.6% and a mean value of 7.05% (Granado-Peiró & López-Gracia, 2017) or to Vietnamese firms which had the mean, minimum and maximum values of managerial ownership of 15.7%, 0%, 73.1%, respectively (Nguyen et al., 2020) or to Malaysian firms which had the mean, minimum and maximum values of managerial ownership of 28.1%, 24.1%, 87.4%, respectively (Mohammed et al., 2017). This indicated a relatively lower level of managerial ownership of listed firms in Indonesia compared to other countries.

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3 *Using a sample of 1,904 mandatory IFRS adopters in 14 EU countries for the period 2003-2007, Beuselinck et al., (2009) we examine whether mandatory adoption of IFRS reduces firm opacity and contributes to stock price informativeness. Using data from EU countries, we document a V-shaped pattern in stock return synchronicity around IFRS adoption which is consistent with IFRS disclosures revealing new firm-specific information in the adoption period (i.e., a reduction of synchronicity find a V-shaped pattern in synchronicity around IFRS adoption, which is consistent with IFRS disclosures revealing new firm-specific information in the adoption period (i.e., a reduction of SYNCH) and subsequently lowering the surprise of future disclosures (i.e., an increase in SYNCH). Out of 14 EU countries, only Denmark and Ireland showed concave shape (inverted from V-shaped). For example, V-shaped of the mean of SYNCH's figures for Austria, Finland and Greece are as follows: for Austria: -2.256, -2.345, -1.429 (for periods of pre-IFRS, IFRS and post-IFRS, respectively); for Finland: -1.969, -1.976, -1.411; and for Greece: -0.906, -1.268, -0.917.*

Meanwhile, as presented in Table 2, the control variable which represented ownership by the five largest shareholders (LARGEST) showed a mean value of 69% with a maximum value of 99.8% (almost 100%). This supports a phenomenon that has not changed for nearly 20 years in Indonesia. Using comparative data between previous studies by Claessens et al. (2000) and the latest data from the OECD report in 2017, the data still showed that firms in Indonesia displayed a highly concentrated ownership with around 67% of total ownership held by the three largest shareholders (OECD-Capital Market Series, 2018). This large, concentrated ownership by the majority shareholders may have contribute to the lower level of managerial ownership in Indonesia.

The methodology applied for estimation of the Board of Commissioners' size (BOCSz) was similar to that of the Board of Directors' size (BODSz). Data of BODSz and BOCSz statistically showed a similar average value of four to five members in the Boards. This result is similar to recent research using a sample of 135 Indonesian firms covering the period from 2003 to 2013 by Tanjung (2020) who argued that Board of Directors sizes of five to nine and Board of Commissioners sizes four to eight are the most efficient size. As a comparison, the board size of non-financial firms listed in Vietnam ranged from three to eleven members, and on average, there were nearly six board members. Our result was lower than the average of ten corporate board members in Spain, and nine members in the US (Granado-Peiró & López-Gracia, 2017; Kieschnick & Moussawi, 2018).

The proxy variable for Board Independence (INBOCBOC) was in the range between 0% and 100% with an average value of 40%. This meant that there were firms that had the percentage of Independent Commissioners below 30% which is the minimum level required by the regulator (OJK). This may be because the strengthening of OJK regulations related to Independent Commissioners had only been effective since 2014 (Otoritas Jasa Keuangan, 2014) while this study covered the earlier period.

Table 3: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.SYNCH	1.000													
2.BODSz	0.113	1.000												
3. BOCsz	0.123	0.540	1.000											
4. INBOCBOC	-0.011	-0.007	-0.101	1.000										
5.OWNBOD	-0.046	-0.123	-0.129	-0.032	1.000									
6.OWNBOC	-0.006	-0.118	-0.066	-0.066	0.101	1.000								
7. dTRANS	-0.028	0.023	0.021	0.021	-0.031	-0.020	1.000							
8. dPOSTIFRS	-0.019	0.022	-0.023	-0.023	0.053	0.700	-0.433	1.000						
9. LNASSET	0.146	0.550	0.575	0.575	-0.122	-0.150	0.029	0.180	1.000					
10. LARGEST	-0.173	-0.031	-0.071	-0.071	0.001	0.023	-0.270	0.010	-0.188	1.000				
11.MBV	-0.007	0.003	0.008	0.008	-0.008	-0.008	-0.001	-0.017	-0.023	0.013	1.000			
12.LEV	0.024	0.011	-0.014	-0.014	-0.006	-0.004	-0.011	0.025	-0.050	-0.027	-0.000	1.000		
13. LNFORSALE	-0.059	0.244	0.152	0.152	0.018	-0.028	-0.001	0.032	0.162	0.055	-0.002	-0.015	1.000	
14. STD5YROA	0.038	-0.037	-0.012	-0.012	-0.014	-0.011	0.021	0.016	-0.079	-0.067	-0.014	0.071	-0.047	1.000

Next, the correlation of coefficients was computed for all variables included in the model as shown in Table 3. The correlation coefficient between all independent variables showed a value of  $r^2$  below 0.75 which indicated that none of the explanatory variables was found to be highly correlated (Gujarati, 2004). SYNCH was negatively correlated with variables of INBOCBOC, OWNBOD, OWNBOC, dTRANS, dPOSTIFRS, LARGEST, MBV and LNFORSALE, whereas it was positively correlated with variables BODSz, BOCSz, LNASSET, LEV and STD5YROA.

### **Fixed Effect Panel Data Regression**

Panel data was used to observe the relationship between SYNCH and all independent and control variables. The three methods in estimating panel data regression models, namely Pooled Least Square (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM) were applied using the STATA software. After determining the best model, the classical assumption was then tested to ensure that basic assumptions were fulfilled and the model was free from multicollinearity, heteroskedasticity and autocorrelation. The Chow and Hausman tests showed that the FEM was the best model that matched the statistical test result, and the robust FEM model was used to eliminate the heteroskedasticity problem. There were no multicollinearity problems between all the independent and control variables which was indicated by a VIF value less than 10. The occurrence of autocorrelation problem was corrected using panel corrected standard errors in the STATA software.

Table 4 shows the outcomes for all regression models. In general, according to the result revealed by final panel data model, only six variables showed significant results, namely managerial ownership by Board of Directors (OWNBOD), size of BOD (BODSz), size of BOC (BOCSz), firm ownership by largest shareholders (LARGEST), firm foreign sales (LNFORSALE) and firm earnings volatility (STD5YROA). An explanation is presented in the following paragraph.

As shown in Table 4, variables related to all periods of IFRS adoption, i.e., Pre-IFRS, Transition, and Post-IFRS adoption (dTRANS and dPOSTIFRS variables) showed significantly negative coefficients using all the regression models (PLS, FEM, REM, and Robust FEM) except for the

panel corrected standard error model. The negative coefficients are shown by both dTRANS (transition period of IFRS adoption) and dPOSTIFRS (Post-IFRS adoption) variables which indicated that SYNCH decreased significantly not only when the adoption period of IFRS Standard is effective, but since the transition period when companies are given preparation time for the transition from SAK (national GAAP) to IFRS reporting. SYNCH which showed significant negative coefficients since the transition period of IFRS adoption may have indicated investors acknowledgement of higher quality IFRS-based financial reporting, so that more firm-specific information is capitalized into stock prices, ever since the transition periods and peaked at IFRS Standards was effective. Therefore, the regression results enhance previous findings which supports our Hypothesis 1 that IFRS adoption in Indonesia resulted in a significant decrease in stock price synchronicity (SYNCH).

The variable of managerial ownership was proxied through shares owned separately by member(s) of the BoD (OWNBOD) and BoC (OWNBOC). The H2 and H3 in our study predicted that those ownerships have a negative effect on SYNCH. The final model's regression results as shown in Table 4 showed that OWNBOD was significantly negatively related to SYNCH with the coefficient of -0.0039 and p-value < 0.10. However, the negative coefficient showed a low value with a probability error of 10% which was relatively high. On the other hand, OWNBOC showed an insignificant positive relationship with SYNCH. With this result, we concluded that the managerial ownership by those two Boards were insignificantly related with SYNCH so that we could not confirm H2 and H3.

**Table 4: Model Panel Regression Results**

Variable predicted sign	PLS		FEM		REM		VIF		Robust FEM		Estimation of Panel Corrected Standard Error	
	Coef. (t-stat)	P >  t	Coef. (t-stat)	P >  t	Coef. (z-stat)	P >  z	VIF	Coef. (t-stat)	P >  t	Coef. (z-stat)	P >  z	
Constant	-2.537		2.477		-2.153			-0.426		-0.967		
OWNBOD	neg. (-)	-0.033 (-1.24)	0.215	0.308	-0.002 (-0.71)	0.475	1.07	0.005 (1.27)	0.205	-0.004 (1.91)*	0.056	
OWNBOC	neg. (-)	0.005 (1.37)	0.172	0.777	0.003 (0.84)	0.398	1.09	0.001 (0.24)	0.807	0.003 (0.73)	0.464	
BODSz	neg. (-)	0.331 (2.65)**	0.008	-0.008 (-0.36)	0.030 (2.02)**	0.044	9.82	-0.015 (-0.63)	0.531	0.049 (4.33)**	0.000	
BOCSz	neg. (-)	0.020 (1.45)	0.146	-0.02 (-0.68)	0.019 (1.20)	0.229	8.73	-0.023 (-1.01)	0.315	0.044 (3.41)**	0.001	
INBOCBOC	neg. (-)	-0.002 (-1.24)	0.217	-0.004 (-1.80)*	-0.003 (-1.28)	0.200	9.14	-0.004 (-1.66)*	0.099	-0.002 (-0.89)	0.372	
dTRANS	neg. (-)	-0.170 (-3.35)**	0.001	-0.070 (-1.33)	-0.162 (-3.28)**	0.001	1.56	-0.125 (-2.56)**	0.011	-0.140 (-1.01)	0.314	
dPOSTIFRS	neg. (-)	-0.143 (-3.13)**	0.002	-0.002 (-0.04)	-0.131 (-2.90)**	0.004	1.97	-0.092 (-2.04)**	0.043	-0.089 (-0.72)	0.469	
LARGEST	pos. (+)	-0.008 (-8.07)**	0.000	-0.009 (-4.28)**	-0.008 (-6.81)**	0.000	9.01	-0.008 (-4.04)**	0.000	-0.009 (-7.11)**	0.000	
MBV	neg. (-)	-4.60e-06 (-0.24)	0.807	-6.05e-06 (-0.33)	-4.05e-06 (-0.22)	0.826	1.00	-3.67e-06 (-0.37)	0.715	-6.97e-06 (-0.35)	0.725	
LEV	pos. (+)	0.000 (1.24)	0.214	-8.43e-07 (-0.08)	0.000 (1.05)	0.294	1.01	5.57e-06 (1.27)	0.000	0.000 (1.27)	0.204	
LNFORSALE	neg. (-)	-0.016 (-4.63)**	0.000	-0.007 (-1.08)	-0.014 (-3.41)**	0.001	1.83	-0.007 (-1.19)	0.234	-0.016 (-4.17)**	0.000	
STD5YROA	neg. (-)	0.002 (2.04)**	0.042	0.001 (0.88)	0.002 (1.81)*	0.071	1.10	0.002 (1.18)	0.237	0.002 (1.72)*	0.085	
Observations		3,120	3,120	3,120	3,120	3,120	3,120	3,120	3,120	3,120	3,120	
R-square		0.061	0.014	0.061	0.061	0.061	0.014	0.014	0.014	0.057	0.057	

Note : t-statistic are in parentheses; \*\*, \* show the value significant at 1%, 5% and 10%, respectively

Although a high level of managerial ownership is one of the typical characteristics of corporate governance in an emerging market such as in Vietnam (Nguyen et al., 2020) and in Malaysia (Mohammed et al., 2017), this is not the case in Indonesia. As explained above, OWNBOD and OWNBOC showed a relatively low average value of only 1.54% and 1.38%, respectively. According to previous research by Morck et al., (1988) and Shan et al. (2019), these low values lie on the convergence-of-interests region of managerial ownership where the interests of managers and owners are aligned with a firm's objectives. Other than that, this results also suggested that firm ownership in Indonesia is dominated by other types of ownership structures, namely ownership by institutions (local or foreign firms) and by the government.

Our fourth and fifth hypotheses predicted that the size of the Board, referring to BODSz and BOCSz, had an inverse relationship with SYNCH. As shown in the final model regression results in Table 4, BODSz and BOCS were significantly positively related to SYNCH with coefficients of 0.0493 and 0.0436 and p-value < 0.01. These results indicated that the larger the size of the Boards, the higher the synchronicity of stock prices or the higher chance that stock return will co-move with the market's return. Thus, H4 and H5 were not supported statistically. Nonetheless, this result is consistent with the previous research by Ferreira et al. (2011) and Vafeas, (2000). They argued that management and supervisory functions of the Boards can be disrupted if there are too many members which could also lead to poor monitoring. The relatively lower level of board size in Indonesia is similar to the situation in Vietnamese firms whose ownership is dominated by government and large owners (Nguyen et al., 2020). This phenomenon could be related to Indonesian firms which are strongly characterized by the controlling role of large owners in those entities. Therefore, Indonesian firms, which are controlled by large owners, tend to have fewer members in the Boards, and tend not to disclose more firm-specific information as indicated by a higher level of SYNCH.

Contrary to prior expectation that the existence of board independence would have a significant relationship with transparency or more stock price informativeness, we found no evidence to support the significant negative relationship between Independent Commissioners in the Board of Commissioners (INBOCBC) with SYNCH. So that H6 was not supported.



Recent studies have documented a significant positive relationship between board independence and factors contributing to financial reporting credibility which will further increase the stock price informativeness (Butar Butar, 2019; Nguyen et al., 2020). In addition, previous research on stock price informativeness from 2008 to 2016 in Chinese firms have shown that it is not merely independent boards but independent boards with foreign experience which have a positive and significant impact (Ullah et al., 2021). Meanwhile, a previous study in Bangladesh argued that the negative relationship between independent directors and firm performance is the result of lack of inside information and formal authority to perform their tasks even though they have unique experience and knowledge that they gain from other firms (Rashid, 2018). Those factors may contribute to our result which indicated that the important role of independent commissioners (on firm performance and on investor protection) has not been fully realized by market participants, so the existence of independent commissioners is ineffective in increasing stock price informativeness.

As for control variables, the regression results showed only three variables, namely LARGEST, LNFORSALE and STD5YROA which were significantly related to SYNCH, but the results were in the opposite direction. A phenomenon that has not changed for nearly 20 years in Indonesia shows concentrated ownership which is dominated by family-owned firms. This phenomenon might explain the significant negative relationship between LARGEST and SYNCH which is in favor of more firm-specific information being incorporated into stock prices as shareholdings of the largest owners increases. This is an interesting factor, relevant to the emerging markets, which could be explored in future studies.

## CONCLUSION

Based on the theory, the amount of information available in the market, namely *market-wide* information, and firm-specific information, affects changes in stock prices. When stock price changes are influenced more by firm-specific information than by *market-wide* information, the stock price synchronicity (SYNCH) is expected to be lower and vice versa. The quality of information affects investors' decision-making, thereby financial reports must contain high quality firm-specific information. The quality

of the accounting standards used will improve the quality of accounting information. Several studies have looked at the consequences of adopting the IFRS Standards and have conclude that financial reporting under the IFRS Standards is of a higher quality than financial statements prepared under national accounting standards (GAAP) in many jurisdictions.

To our knowledge, this is the first study which covered the most comprehensive period of IFRS adoption in Indonesia covering the pre-IFRS, transition and post-IFRS periods from 2007 to 2019. This study also showed that the mean value of SYNCH every year was negative for thirteen years with the lowest SYNCH value being in the post-IFRS period. Although SYNCH in the pre-IFRS period had already shown a negative value, SYNCH showed an even lower negative value in the post-IFRS period. This implies that IFRS adoption had increased stock price informativeness in Indonesia and at the same time reduced skepticism in the Asian context because it contradicts the previous arguments that IFRS adoption is more beneficial in countries with more developed capital markets than in emerging markets.

Additionally, the study revealed the low value of managerial ownership in Indonesia which contradicts the typical characteristics of corporate governance in emerging markets with relatively high levels of managerial ownership. This low value suggests that firm ownership may be dominated by other types of ownership structures. If we relate previous studies on concentrated ownership in Indonesia which have shown the dominance of family ownership (Lukviarman, 2004; Rusmin et al., 2011; Tabalujan, 2002), this phenomenon may explain the low level of managerial ownership which is interesting to be studied in the future. Furthermore, the insignificant results of independent directors indicated that the important role of Independent Commissioners on firm performance and as a tool to improve investor protection does not seem to be understood by market participants, thereby, their existence is seen as ineffective in increasing stock price informativeness.

Our research contributes to the literature, investors and regulators providing further evidence on the relationship between corporate governance structure and firm-specific information disclosure as measured by stock price synchronicity. Firms with better corporate governance structures tend to have more stock price informativeness. The board composition variable in this

study was limited only to the size of the board and the independence of the board. Future research can include other variables, such as board activity, educational background and work experience of the board and can also consider the role of the audit committee in reducing SYNCH. This study can be expanded by examining the effect of other ownership structures including family ownership and firms' information environment.

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