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FINANCIAL ECONOMICS | RESEARCH ARTICLE

Institutional environment, ownership structure and firm-specific information: Evidence from a transitional economy

Thi-Kim-Dung Bui^{1,2*}, Anh-Tuan Doan³ and Hyoung-Goo Kang¹

Abstract: This study examines the relationship between ownership structure and stock price informativeness in a transitional economy characterized by an under-developed corporate governance system. Using a sample of 322 publicly listed companies in Vietnam covering a 10-year period from 2009 to 2018, we evaluate how national governance quality affects the impact of ownership type on stock price informativeness. We find the evidence that government-owned firms tend to have higher synchronous (lower informative) stock prices, whereas the opposite is true for the foreign-owned firms. Furthermore, the stock price informativeness of government-owned firms is higher when there is an increase in national governance quality. This study finds no significant difference in governance quality benefits between foreign-controlled and non-foreign firms. These findings suggest that the institutional channel plays an important role in determining the informativeness of

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PUBLIC INTEREST STATEMENT

Better developed institutional environment results in greater availability of reliable firm-specific information. The influence of institutional characteristics on the stock price informativeness can be involved to informed trading and informative pricing, which are determined by the costs and benefits of information collection. An emerging question in the midst of this debate is whether institutional development and transparency regulations are adequate proxies for measuring amounts of firm-specific information in stock prices. This study aimed to examine the relationship between ownership structure and stock price informativeness, considering the role of national governance quality in an emerging country. The study found that higher foreign ownership is associated with higher stock price informativeness, whereas higher government ownership is associated with lower stock price informativeness. In addition, the result suggests that national governance quality plays an important role in improving the informative stock prices of government-owned firms.

the stock prices of government-controlled firms, especially in transitional economies.

Subjects: Environmental Economics; Corporate Finance; Investment & Securities

Keywords: firm-specific information; ownership structure; institutional environment

1. Introduction

Recently, researchers have shown an increased interest in stock price informativeness or stock price synchronicity. Studies indicate that the incorporation of firm-specific information into prices generally varies systematically with the institutional infrastructure of the market. Together, these studies conclude that stock price movements are more synchronous (i.e., less informative) in developing countries, including emerging markets, than in developed markets (He et al., 2013). The nascent literature provides a considerable understanding of the two main causes of higher stock price synchronicity in emerging countries. The first is the weak regulations on information disclosure and poor investor protection in developing markets, which discourages informed trading and limits the incorporation of firm-specific information into stock prices, leading to more synchronous (or less informative) stock prices (Chan & Hameed, 2006; Morck et al., 2000). The second is the corporate ownership structure. Corporate ownership structures in developing markets are well characterized by concentrated ownership and a high control-ownership wedge, which is a major source of firm-level agency problems (Gul et al., 2010). Concentrated control power in excess of ownership rights allows firms to selectively disclose value-relevant, private information to outside minority shareholders. The cost to acquire private information is likely to be higher, which discourages informed trading and leads to less informative stock prices.

One interesting question raised is whether there any difference between foreign ownership and other kinds of ownership in terms of stock price informativeness, and whether the institutional environment could improve the relationship between ownership structure and stock price synchronicity. Many studies investigate the relationship between ownership structure and stock price informativeness. (Boubaker et al., 2014; Brockman & Yan, 2009; Gul et al., 2010; Hasan et al., 2014; Vo, 2017). However, most works tend to focus on developed markets, while stock price movements are more synchronous in developing countries, including emerging countries (He et al., 2013). Moreover, these studies provide mixed results on the nexus between ownership structure and stock price informativeness. In addition, studies on the ownership-stock price informativeness relationship with national governance quality are scarce. In recent papers, Vo (2017) examines the relationship between foreign ownership and stock price informativeness in Vietnam, while Hasan et al. (2014) reveal evidence of a relationship between institutional development and stock price synchronicity in the China market. Hence, further investigation is vital to provide deeper understanding of the relationships among ownership structure, stock price synchronicity, and national governance quality.

This study investigates stock price informativeness in Vietnam, a key emerging country in Asia with a unique institutional that differs from those of other emerging economies. In the mid-1980s, Vietnam began a comprehensive economic reform to transform the centrally oriented economy into a market-oriented economy. This reform yielded significant results in many regards. In recent years, Vietnam's financial markets grew rapidly and become an important channel to raise funds to finance firms' investments. In 2007, Vietnam has become a member of the World Trade Organization. As a result of financial liberalization, there has been an increase in the presence of foreign investors in terms of trading volume and stock ownership (Vo, 2015). Foreign investors, with well-equipped techniques, could mitigate agency problems and promote corporate governance, which in turn improves corporate transparency as well as the reliability of firms' disclosures, and thus improve stock price informativeness. In addition, one important aspect of the economic reform is the privatization of state-owned firms. Although the Vietnamese government made substantial efforts, it still holds a significant percentage of the shares of listed firms. High state ownership might be associated with agency problems and information asymmetry, especially in transitional economies with relatively weak institutional environments (Tran et al., 2018).

Moreover, with the characteristic of dominant government ownership in Vietnamese firms, it is reasonable to expect that an increase in the level of state ownership will result in lower stock price informativeness. Notably, state ownership in transitional economies has financial and political privileges over non-state ownership (Vo, 2018). Thus, national governance quality tends to create an advantageous environment for state ownership. In the context of Vietnam, we expect that national governance quality will moderate the relationship between state ownership and stock price informativeness.

This study aims to investigate the relationship between ownership structure and stock price informativeness in Vietnam. Specifically, we examine whether different firm ownership types can explain the differences in the level of firm-specific information. We also question whether governance quality strengthens or weakens the relationship between ownership structure and firm stock price synchronicity. We make several contributions to the literature. First, different from recent studies that use different types of ownership to test ownership involvement, this study compares the different effects of state ownership and foreign ownership on stock price informativeness in the context of a transitional economy. For example, as discussed above, Vo (2017) examines only the relationship between foreign ownership and stock price informativeness in Vietnam. Ben-Nasr and Cosset (2014) concentrate on the relationship between state ownership and stock price informativeness. Furthermore, other studies examine the relationship between block ownership and synchronicities, such as those by Boubaker et al. (2014) and Brockman and Yan (2009). To the best of our knowledge, no research addresses whether informative stock prices may be different for foreign-owned firms and government-held firms under specific ownership profiles.

Second, this study aims to contribute to the literature about the relationship between national governance quality, ownership structure, and stock price informativeness. We attempt to discover whether national governance quality plays a role in determining the relationship between ownership structure and firm stock price informativeness. The literature establishes a negative relationship between institutional development and stock price synchronicity. For example, Hasan et al. (2014) indicate that improved property rights, better law enforcement, and greater political pluralism are all associated with higher stock price informativeness. However, Hasan et al. (2014)'s study concentrates only on the nexus between institutional development and stock price synchronicity. In line with Hasan's work, Ben-Nasr and Cosset (2014) conclude that the relationship between ownership and stock price informativeness depends on political institutions. However, their study focuses only on state ownership and uses the number of trademark applications, the number of lawyers, and the proportion of non-Communist party members to form variables to measure of legal and political institutions. Different from their studies, our research highlights the effect of national governance quality on different kinds of ownership. Moreover, we use the World Bank's Worldwide Governance Indicators(WGI), the most widely used indicator, to measure national governance quality.

The rest of this paper is organized as follows. Section 2 presents a literature review and Section 3 describes the data and methodology of the research. Section 4 outlines the empirical results, and Section 5 concludes.

2. Literature review

2.1. Stock price informativeness and ownership structure

Stock price informativeness (Roll, 1988) expresses the degree to which firm-specific information incorporate into the stock prices. Roll (1988) argues that the extent to which stock prices move together depends on the relative amounts of firm- and market-level information incorporated into stock prices. The author concludes that a broad market and industry influences explain only a small portion of stock price movements. In particular, R-squared is used as an indicator of stock return synchronicity. A low R-squared indicates that the stock price incorporates more firm-specific

information, leading to higher stock price informativeness. The higher the R-squared, the more the stock synchronicity with market movements. Building on these findings, Morck et al. (2000) document that R-squared is lower in countries that have better investor property rights protection. They reveal that the better property rights protection is, the stronger the incorporation of firm-specific information into prices will be. The paper mentioned above motivated several thorough studies of stock price informativeness in many different aspects—the link between stock price synchronicity and efficient capital allocation, corporate governance, audit quality, and voluntary disclosure (Boubaker et al., 2014), and especially, the relationship between ownership structure and stock price informativeness.

A large and growing body of literature investigates the relationship between ownership structure and stock price informativeness. Most related studies focus on developed markets; however, stock price movements are more synchronous in developing countries, including emerging countries. Moreover, these studies provide mixed results on the nexus between different ownership structures (concentrate ownership, state ownership, and foreign ownership) and stock price informativeness. The literature provides several reasons to conclude that block ownership is associated with the level of firm-specific information incorporated into stock prices. According to Grossman and Stiglitz (1980), stock price efficiency is inversely related to the cost of acquiring firm-specific information. As a group, blockholders tend to have access to more precise firm-specific information at a lower cost than do non-blockholders. This informational advantage of block ownership would then reveal itself in an increase in informed trading and lead to more informative pricing (Piotroski & Roulstone, 2004). Similarly, Brockman and Yan (2009) expand the blockholder literature by analyzing the impact of block ownership on firms' information environment. They conclude that both inside and outside blockholders have an informational advantage over uninformed, diffuse stockholders. This informational advantage reveals itself in the firm-specific component of stock returns. Their empirical findings confirm that blockholders increase the probability of informed trading and idiosyncratic volatility and decrease the firm's stock return synchronicity.

In regard to agency theory, Shleifer and Vishny (1986) suggest that ownership concentration is a significant internal corporate governance mechanism that helps limit agency problems deriving from the separation of ownership and control. Based on the monitoring effects of ownership structure, controlling shareholders have strong incentives to monitor actively and real power to discipline or influence management. This helps mitigate the agency problems, which in turn leads to improved performance (Jensen & Meckling, 1976). In contrast, based on the argument in favor of the expropriation effect of ownership, other studies find negative interactions between ownership and firm performance. According to Filatotchev et al. (2012), concentrated ownership may raise conflicts of interest between controlling shareholders and minority shareholders. The agency problem shifts from the traditional principal-agent conflict to principal-principal conflict (Young et al., 2008) in the presence of high ownership concentration. In summary, concentrated ownership shows two different signs of its impact on firm performance. A question that naturally arises is whether different ownership types have different impacts on stock price informativeness.

There is a large volume of papers on the impact of different types of ownership on stock price informativeness, specifically in terms of foreign ownership and state ownership. On the one hand, most studies report a positive relationship between foreign ownership and stock price informativeness. For example, Gul et al. (2010) investigate the effects of the largest-shareholder ownership concentration, foreign ownership, and audit quality on stock price synchronicity and find a negative association between foreign ownership and synchronicity. He et al.'s (2013) study on the relation between large foreign ownership and the informativeness of stock prices in 40 markets supports this view. The authors conclude that large foreign ownership is positively related to price informativeness, and that the effect of large foreign ownership is higher in developed economies and markets with better investor protection and a transparent information environment. Similarly, Vo (2017) examines the relationship between foreign ownership and stock price informativeness in Vietnam, and finds a positive correlation between foreign ownership and stock price informativeness. A common explanation for this link relies on the characteristic of foreign investors, who

possess better information than local investors do for their trading (Froot & Ramadorai, 2001; Grinblatt & Keloharju, 2000). In addition, since foreign investors could enhance the corporate governance environment and the quality of disclosure of their invested firms (Fan & Wong, 2002; Gul et al., 2010; Jin & Myers, 2006; Morck et al., 2000; Shleifer & Vishny, 1989), more foreign ownership can reduce the firm's stock return volatility and hence lower the volatility in the domestic stock markets of emerging countries (Vo, 2015). This in turn reduces transaction costs, information costs, and risk exposure. The above argument suggests that higher foreign ownership is associated with a transparent environment, which reduces the firm-specific information costs and encourages informed trading, thereby resulting in higher stock price informativeness.

On the other hand, recent empirical studies analyze the link between state ownership and stock price informativeness. For example, one study by Ben-Nasr and Cosset (2014) examines the relationship between state ownership and stock price informativeness of 41 countries between 1980 and 2012. They find an inverse association between state ownership and stock price informativeness and suggest that state ownership is associated with less transparency, which discourages investors from trading based on private information and reduces the incorporation of private firm-specific information into stock prices. In the same vein, Gul et al. (2010) assert that synchronicity is higher when the largest shareholder is government-related. Generally, high state ownership might be associated with agency problems and information asymmetry, especially in transitional economies with relatively weak institutional environments (Tran et al., 2018). In addition, as dominant government ownership is characteristic in Vietnamese firms, it is reasonable to assume that an increase in the level of state ownership will result in lower stock price informativeness. Based on the abovementioned arguments, we propose the first hypothesis:

Hypothesis 1a. *Compared with domestic privately owned enterprises, state-owned enterprises are significantly associated with lower stock price informativeness.*

Hypothesis 1b. *Compared with domestic privately owned enterprises, foreign-owned enterprises are significantly associated with higher stock price informativeness.*

2.2. National governance quality

The institutional environment affects the economy and financial market, as both theoretical and empirical studies prove. According to Aslan and Kumar (2012), national governance quality has strong effects on the principal-agent conflict at the firm level. Good governance reduces transaction costs and uncertainty, and ultimately affects firm performance (Ngobo & Fouda, 2012). Morck et al. (2000) also identify the relationship between stock return synchronicity with measures of institutional development. They argue that measures of property rights do explain the difference between the co-movement of stock prices between poor and rich economies, and strong property rights promote informed arbitrage, which improves the capitalization of firm-specific information. Thus, studies on the relationship between national governance mechanisms, ownership structure, and stock price informativeness are necessary to clarify the moderating role of national governance quality.

Nguyen et al. (2015) examine the relationship between ownership concentration and the financial performance of firms in Vietnam and Singapore, and how national governance quality moderates the relationship. The authors find that ownership concentration has a positive and significant effect on a firm's performance, and this result remains unchanged after controlling for the dynamic nature of the ownership concentration-performance relationship. Moreover, they state that national governance quality plays a significant role in moderating the relationship between ownership and firm performance. In support, Ben-Nasr and Cosset (2014) examine the nexus between state ownership and stock price informativeness of 41 countries worldwide between 1980 and 2012. The authors find that the relationship between state ownership and

stock price informativeness depends on the political institutions. In particular, state ownership is associated with lower stock price informativeness in countries with fewer political rights. Using a sample covering the period 1998–2007 in China, Hasan et al. (2014) reveal that better law enforcement, improved property rights, and greater political pluralism are all correlated with higher stock price informativeness. Moreover, better institutions have a clear effect on stock price informativeness for firms with higher state ownership and lower foreign ownership. Notably, state ownership in transitional economies has financial and political privileges over non-state ownership (Vo, 2018). Thus, national governance quality tends to create an advantageous environment for state ownership. In the context of Vietnam, we expect that national governance quality will moderate the nexus between state ownership and stock price informativeness. We formulate the second hypothesis as follows:

Hypothesis 2a. *National governance quality has a significant influence on the relationship between government ownership and stock price informativeness.*

Hypothesis 2b. *National governance quality has an insignificant influence on the relationship between foreign ownership and stock price informativeness.*

3. Data and methodology

3.1. Data selection

Our sample includes all non-financial firms listed on the Ho Chi Minh Stock Exchange for the period from 2009 to 2018. As our study focuses on non-financial firms, we start by dropping banks, insurance companies, and stock companies due to the different nature of these business. For the firm to be included in our sample, we require it to be listed and remain listed for the study period. We also exclude all stocks with negative market-to-book ratios. To minimize measurement errors, we check and drop observations below the 1st percentile and above the 99th percentile if variables have outliers, which is generally a judgment call. This process left us with an unbalanced dataset consisting of 322 firms and 2,038 observations from the initial 2,580 observations. We capture daily market- and firm-level returns from the Datastream database, one of the most comprehensive and in-depth financial and macroeconomic platform providing world-wide data on equities, stock market indices, currencies, and company fundamentals. For a firm to be included in our sample, we require it to have for at least 200 trading days in a particular year. The dataset for ownership is sourced from the Fiin Group Database (previously StoxPlus), the leading financial data provider in Vietnam. We obtained the national governance indicator, including Government Effectiveness, Political Stability, Absence of Violence, Regulatory Quality, and Rule of Law from the website of the Worldwide Governance Indicators Project.¹

3.2. Measuring stock price informativeness

Following existing research (Morck et al., 2000; Roll, 1988), we estimate stock price informativeness by measuring the regression of the R-squared value of individual stock returns on a market and industry index.

$$\begin{aligned} \text{Return}_{i,d} = & \alpha + \beta_1 \text{Market Return}_{d-1} + \beta_2 \text{Market Return}_d + \beta_3 \text{Industry Return}_{i,d-1} \\ & + \beta_4 \text{Industry Return}_{i,d} + e_{i,d} \end{aligned} \quad (1)$$

where $\text{Return}_{i,d}$ is the stock return for firm i on day d ; Market Return_d is the value-weighted market return for day d ; and $\text{Industry Return}_{i,d}$ is the industry value-weighted return, excluding firm i 's daily return.

Since the R-squared value obtained from the above regression is bounded within $[0,1]$, we follow Morck et al. (2000) and define the firm's stock price informativeness by the logistic transformation of $R_{i,t}^2$, which creates an unbounded continuous variable.

$$SPI_{i,t} = \log\left(\frac{1 - R_{i,t}^2}{R_{i,t}^2}\right) \quad (2)$$

where $R_{i,t}^2$ is the R-squared value from regression (1) for firm i in year t and $SPI_{i,t}$ (SPI) is the stock price informativeness of firm i in year t . The higher values of SPI mean higher firm-specific stock return variation (less stock price synchronicity) with the market and industry movements.

3.3. Basic model

We examine the impact of ownership structure and national governance quality on stock price informativeness by running the following regression model:

$$SPI_{i,t} = \alpha + \beta_1 \text{Ownership Structure}_{i,t} + \beta_2 \text{National Governance Quality}_{i,t} + \beta_3 \text{Firm Control}_{i,t} + \text{Year Dummies}_t + \varepsilon_{i,t} \quad (3)$$

Furthermore, we consider whether the relationship between ownership structure and SPI depends on the national governance quality by setting up the interaction of ownership structure and national governance quality in the model as follows:

$$SPI_{i,t} = \alpha + \beta_1 \text{Ownership Structure}_{i,t} + \beta_2 \text{National Governance Quality}_{i,t} + \beta_3 \text{National Governance}_{i,t} \times \text{Ownership Structure}_{i,t} + \beta_4 \text{Firm Control}_{i,t} + \text{Year Dummies}_t + \varepsilon_{i,t} \quad (4)$$

where $SPI_{i,t}$ is the stock price informativeness of firm i in year t . The *Ownership Structure* variable is a proxy for firm ownership types, concluding government ownership (*GO20*) and foreign ownership (*FO20*). *GO20* is a dummy variable that takes the value of one if the firm is state-owned (using the 20% threshold). *FO20* is a dummy variable that equals one if the firm is foreign owned. We adopt the 20% threshold according to the procedure in La Porta et al. (1999). Following Ngobo and Fouda (2012) and Nguyen et al. (2015), we use the WGI to measure national governance quality (*National Governance Quality*). National governance quality consists of six dimensions: Voice and Accountability; Political Stability and Absence of Violence; Government Effectiveness; Regulatory Quality; Rule of Law; and Control of Corruption (Kaufmann et al., 2011). In a similar approach to Knudsen (2011) and (Van Essen et al., 2013), among the six dimensions, we singled out four indicators—Government Effectiveness (GE), Political Stability and Absence of Violence (PSAV), Regulatory Quality (RQ), and Rule of Law (ROL)—which are conceded to have potential effects on firm's performance. All indicators range from around -2.5 to 2.5 , and higher values correspond to better outcomes.

We also include the vector of the control variable *Firm Control* _{i,t} , which is well-documented in the corporate governance literature (Ben-Nasr & Cosset, 2014; Boubaker et al., 2014; Hasan et al., 2014; Vo, 2017; Xing & Anderson, 2011). First, we control for size using the logarithm of the firm's total assets (*Size*). Second, we control for leverage (*Leverage*), which we define as the ratio of total liabilities divided by total assets. Third, we control for volume (*Volume*), measured by the logarithm of the total assets. Fourth, we control for volatility (*Volatility*), which we calculated as

$$\text{Volatility}_{i,t} = \sqrt{\frac{1}{n-1} \sum_1^n (\text{return}_{i,k} - \text{mean}_{i,t})^2} \quad (5)$$

where $\text{return}_{i,k}$ is the daily return of stock i on day k of year t , $\text{mean}_{i,t}$ is the annual average of all daily stock returns of firm i in year t , and n is the number of trading days in year t . Fifth, we include the market to book variable (*MTB*) as the ratio of market value to book value. Finally, we include the ratio of net income to total assets (*ROA*) to control for firm profitability. We define all the other variables in Table 1.

Table 1. Variable definitions

Variable	Definition	Sources
SPI	Annual firm-specific return variation proxy ($\log(1-R^2/R^2)$) estimated by regressing the firm's daily.	Author's calculation
GO20 (GO50)	A dummy variable GO20 (GO50) equal to one if the state holds more than 20% (50%) of the shares of the privatized firm, and zero otherwise	Author's calculation based on the Fiin Group Database
FO20 (FO50)	FO20 (FO50) is a dummy variable that equals one if the firm is foreign owned (using the 20% (50%) threshold)	Author's calculation based on Fiin Group Database
Political	Political Stability and Absence of Violence	Worldwide Governance Indicators, World Bank
Government	Government Effectiveness	Worldwide Governance Indicators, World Bank
Regulatory	Regulatory Quality	Worldwide Governance Indicators, World Bank
Rule	Rule of Law	Worldwide Governance Indicators, World Bank
Size	The natural logarithm of the firm's total assets (ln)	Datastream
Leverage	Total liabilities to total assets	Datastream
Volume	The logarithm of traded shares (ln)	Datastream
Volatility	The stock return volatility measure	Datastream
ROA	The ratio of net income to total assets	Datastream
MTB	The market to book ratio	Datastream

We apply the system generalized method of moments (GMM) estimator to estimate the stock price informativeness hypotheses, as specified in Equations (3) and (4). This approach is appropriate for controlling the potential endogeneity and the characteristics of the data with a large cross-section and short time series. Holtz-Eakin et al. (1988) and Arellano and Bond (1991) introduced this method, which was then developed in a series of papers by Arellano and Bover (1995) and Blundell and Bond (1998). We apply two-step standard errors with the Windmeijer (2005) finite-sample correction, which is somewhat better than the one-step GMM in reducing bias and standard errors. As Roodman (2009) suggests, we also limit the number of instruments by restricting the lag range used to generate them at three to reduce the instrumental weakness of the specification. We use an AR(2) test to check for the absence of second-order serial correlation and use the Hansen test to test the validity of the entire instrument.

4. Empirical results

4.1. Descriptive statistics

Table 2 shows the summary statistics for stock price informativeness, ownership structure, national governance quality, and the firm- and macro-level control variables. The SPI variable has a significant variability, with a mean value of 0.89, and minimum and maximum values of -0.58 and 3.43, respectively. This mean value is higher than the -2.2730 of SPI reported by (Vo, 2017). The mean of government ownership is higher than that of foreign ownership at both the 20% and 50% thresholds. In detail, the mean of GO20 is 39% compared with the mean of FO20 of

Table 2. Descriptive statistics of the main variables. The sample includes 322 firms with 2,038 observations from 2009 to 2018. All variables are defined in Table 1

	Mean	SD	Median	Min	Max
SPI	0.89	0.65	0.88	-0.58	3.43
GO20	0.39	0.49	0.00	0.00	1.00
FO20	0.25	0.44	0.00	0.00	1.00
GO50	0.24	0.43	0.00	0.00	1.00
FO50	0.01	0.08	0.00	0.00	1.00
Size	27.90	1.26	27.77	25.46	33.29
Leverage	0.48	0.21	0.50	0.00	0.99
Volume	16.09	2.19	16.18	7.44	21.46
Volatility	0.03	0.01	0.03	0.00	0.33
ROA	0.07	0.09	0.05	-1.59	0.78
MTB	0.80	1.14	0.56	0.05	34.58
Political	0.20	0.10	0.25	-0.02	0.31
Government	-0.11	0.13	-0.07	-0.27	0.07
Regulatory	-0.54	0.10	-0.59	-0.67	-0.40
Rule	-0.28	0.28	-0.36	-0.59	0.08

25%; the mean of *GO50* is 24% versus the mean of *FO50* of 1%. This result suggests that state ownership still represents a high percentage of ownership in Vietnamese firms, which is consistent with the study by Vo (2018). We should note that the standard errors of most of the firm-level control are quite high. These results reflect the large difference in the firm sizes in our sample.

Table 3 reports the values of the pair-wise correlations between the main independent variables. The matrix indicates that the correlation between the foreign ownership variable and control variables are all statistically significant. Specifically, foreign ownership (*FO20*) has a positive correlation with the *Size*, *Volume*, *ROA*, and *MTB*, and reveals a negative correlation with *Leverage* and *Volatility*. By contrast, we find a negative association for the correlation between state ownership (*GO20*) and most of the control variables, such as *Size*, *Leverage*, *Volume*, and *Volatility*. Additionally, most components of national governance quality—*Government*, *Regulatory*, and *Rule*—reveal a significantly negative association with state ownership and an insignificantly positive relationship with the foreign ownership variables. The correlations between the remaining variable of national governance quality, *Political*, with both ownership types are insignificant. The components of national governance quality seem to have a high correlation; we thus separate these variables in a different regression to avoid the multicollinearity problem.

4.2. Ownership structure, national governance quality, and SPI

Table 4 reports our baseline results. The first three columns report our baseline results with the differences in SPI across ownership groups. The coefficient of government ownership, *GO20*, in model 1 is negative and significant at the 1% level, indicating that firms with a high level of government ownership tend to have less informative stock prices than comparable domestic private firms do. The effect is quantitatively substantial and implies that the average state-controlled firm has an SPI level that is 0.145 points below that of the average private-controlled firm. In contrast, the result of model 2 shows that foreign-controlled firms tend to have higher efficiency than their privately controlled counterparts do. The result is consistent with Ben-Nasr and Cosset (2014), who suggest that higher state ownership is associated with lower transparency and lower firm-level stock price variation. The finding thus supports Hypotheses 1a and 1b, which is consistent with previous findings that foreign

Table 3. This table provides a matrix of the correlations. All variables are defined in Table 1

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) GO20	1											
(2) FO20	-0.0890***	1										
(3) Size	-0.0959***	0.275***	1									
(4) Leverage	-0.0350	-0.197***	0.314***	1								
(5) Volume	-0.217***	0.117***	0.565***	0.0747***	1							
(6) Volatility	-0.0525*	-0.194***	-0.261***	0.0612**	-0.208***	1						
(7) ROA	0.151***	0.155***	-0.0762***	-0.417***	-0.129***	-0.182***	1					
(8) MTB	0.0309	0.0765***	0.139***	-0.0514*	0.00649	-0.0568**	0.166***	1				
(9) Political	-0.0327	-0.0103	0.0342	-0.0131	0.00937	0.0198	0.0133	0.0844***	1			
(10) Government	-0.0653**	0.0315	0.165***	-0.0327	0.0533**	-0.144***	-0.0292	0.237***	-0.158***	1		
(11) Regulatory	-0.0853***	0.0269	0.172***	-0.0400	0.0649**	-0.144***	-0.00904	0.271***	0.222***	0.899***	1	
(12) Rule	-0.0844***	0.0234	0.177***	-0.0396	0.0743***	-0.116***	-0.0241	0.273***	0.331***	0.814***	0.933***	1

Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively

Table 4. This table reveals the relationships between SPI, ownership, and governance quality. All variables are defined in Table 1

Independent variables	Dependent variable: SPI						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	4.793*** (18.155)	4.621*** (15.151)	4.897*** (18.549)	4.406*** (16.564)	4.178*** (15.648)	5.949*** (22.969)	4.543*** (17.143)
GO20	-0.145*** (-5.577)		-0.104*** (-4.333)	-0.104*** (-4.333)	-0.104*** (-4.333)	-0.104*** (-4.333)	-0.104*** (-4.333)
FO20		0.094*** (3.133)	0.078*** (3.120)	0.078*** (3.120)	0.078*** (3.120)	0.078*** (3.120)	0.078*** (3.120)
Government				0.515*** (9.035)			
Political					2.320*** (34.118)		
Regulatory						2.628*** (25.269)	
Rule							1.176*** (32.667)
Size	0.010 (0.909)	0.010 (0.667)	0.002 (0.167)	0.002 (0.167)	0.002 (0.167)	0.002 (0.167)	0.002 (0.167)
Leverage	0.054 (0.915)	0.079 (1.097)	0.153*** (2.638)	0.153*** (2.638)	0.153*** (2.638)	0.153*** (2.638)	0.153*** (2.638)
Volume	-0.226*** (-28.250)	-0.221*** (-24.556)	-0.225*** (-32.143)	-0.225*** (-32.143)	-0.225*** (-32.143)	-0.225*** (-32.143)	-0.225*** (-32.143)
Volatility	6.685*** (5.107)	8.860*** (6.587)	7.252*** (5.959)	7.252*** (5.959)	7.252*** (5.959)	7.252*** (5.959)	7.252*** (5.959)
ROA	-0.034	-0.154	-0.069	-0.069	-0.069	-0.069	-0.069

(Continued)

Table 4. (Continued)

Independent variables	Dependent variable: SPI						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MTB	(-0.152) -0.061*** (-2.652)	(-0.670) -0.074*** (-2.846)	(-0.383) -0.062*** (-2.952)	(-0.383) -0.062*** (-2.952)	(-0.383) -0.062*** (-2.952)	(-0.383) -0.062*** (-2.952)	(-0.383) -0.062*** (-2.952)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES
AR(2) test	0.744	0.782	0.732	0.732	0.732	0.732	0.732
Hansen test	0.384	0.279	0.580	0.580	0.580	0.580	0.580
Observations	2,038	2,038	2,038	2,038	2,038	2,038	2,038

Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The t-values are reported in parentheses.

investors can improve the information efficiency in equity markets in emerging economies, leading to their positive effects on stock price informativeness (Vo, 2017).

Models 4 to 7 of Table 4 show the basic regression models that include national governance quality, ownership structure, and firm-level control variables for the full sample period. The estimated result of model 4 reveals strong evidence that a higher quality of public services along with higher credibility of the government's commitment to policy formulation and implementation plays a significant role in improving SPI. In other words, the results suggest that firms in countries with high government effectiveness tend to have more firm-specific information integrated into their stock prices. The results of models 5 to 7 also show a strong relation between SPI and political stability, regulatory quality, and rule of law. Specifically, firms operating in a financial system supported by relatively high levels of political stability tend to have higher SPIs. Put differently, all of the coefficient estimates for the *Regulatory* and *Rule* variables describing the government's ability to formulate and implement sound policies and regulations, and the extent to which agents have confidence in and abide by the rules of society also imply a positive and statistically significant association at the 1% level.

The finding of the positive relationship between stock price informativeness and national governance quality is consistent with the results of Ben-Nasr and Cosset (2014), who consider the implications of institutional development. As an alternative explanation, the strong institutional environment not only provides more protection for the investor but also decreases the cost of collecting information. It then increases the level of firm-specific information and reduces the stock price synchronicity. Our finding is also in the line with the results of Hasan et al. (2014), who suggest that strong institutional development may reduce the cost of information collection and enhances investors' incentives to collect private information, resulting in more informative stock prices. In other words, good institutional environment may mitigate connectedness among managers, reducing in levels of business groups and vertical integration, all of which further increase incorporation of firm-specific information into prices.

4.3. The interaction of ownership and national governance quality

We are now interested in whether the influence of ownership structure varies with the institutional characteristics that experienced the most considerable changes in governance quality. In particular, we examine the role of national governance quality in determining the effects of ownership structure. Table 5 presents the estimates of the regressions with the national governance quality variables interacted with a dummy for government ownership and a dummy for foreign ownership. The coefficients of the interaction *Government_GO20*, *Political_GO20*, *Rule_GO20*, and *Regulatory_GO20*, are positive and significant (see models 1, 3, 5, and 7 in Table 5), indicating that firms with high government ownership tend to disclose more firm-specific information in an institutional environment in which the governance quality is more developed. In particular, column 1 of Table 5 shows that compared with domestic private firms, a 1 percentage point increase in government effectiveness is associated with about a 1.098 percentage point higher SPI level for state-controlled firms. The result is also similar to that for the influence of political stability (0.636), regulatory quality (1.862), and rule of law (0.384). The results are consistent with the findings of Hasan et al. (2014) for the regression of institutional development, and support our Hypothesis 2a.

In contrast, when we focus on foreign ownership, we find that the coefficient of the interaction terms *Government_FO20*, *Political_FO20*, *Regulatory_FO20*, and *Rule_FO20* are not statistically significant for all model specifications. The result suggests that national governance quality has only an insignificant influence on the relationship between foreign ownership and stock price informativeness. In other words, there is no difference in national governance benefits in the SPI between foreign-controlled and domestic private firms, thus supporting our Hypothesis 2b.

With respect to the impact of ownership, our finding is partially consistent with Ben-Nasr and Cosset (2014), who document that institutional environment tends to moderate the nexus between state ownership and stock price informativeness. Given that the firms with high

Table 5. This table reports the interaction of ownership and national governance quality. All variables are defined in Table 1

Independent variables	Dependent variable: SPI							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	4.273*** (16.823)	5.596*** (16.267)	4.536*** (18.590)	4.609*** (14.269)	5.728*** (20.604)	7.485*** (20.563)	5.080*** (19.767)	5.931*** (17.811)
GO20	-0.061 (-1.220)		-0.317*** (-5.113)		0.732*** (2.826)		-0.140** (-2.545)	
FO20		0.180*** (3.529)		0.041 (0.707)		0.175 (0.745)		0.196*** (2.970)
Government	-0.157 (-5.414)	0.479*** (19.958)						
Political			1.800*** (15.652)	1.940*** (17.477)				
Regulatory					1.455*** (7.203)	3.582*** (1.023)		
Rule							0.750*** (10.563)	1.566*** (24.857)
Government_GO20	1.098*** (3.307)							
Government_FO20		-0.307 (-1.104)						
Political_GO20			0.636*** (2.753)					
Political_FO20				0.308 (1.283)				
Regulatory_GO20					1.862***			

(Continued)

Table 5. (Continued)

Independent variables	Dependent variable: SPI							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regulatory_FO20					(3.762)			
Rule_GO20						-0.063 (-0.140)		
Rule_FO20							0.384** (2.430)	
Size	-0.011 (-1.100)	-0.047*** (-3.133)	0.001 (0.091)	-0.043*** (-3.308)	-0.004 (-0.333)	-0.046*** (-3.067)	0.002 (0.182)	-0.046*** (-3.067)
Leverage	0.037 (0.607)	0.215*** (2.688)	0.048 (0.750)	0.048 (0.696)	0.047 (0.734)	0.207*** (2.620)	0.011 (0.169)	0.199** (2.584)
Volume	-0.185*** (-16.818)	-0.208*** (-26.000)	-0.224*** (-28.000)	-0.168*** (-15.273)	-0.221*** (-27.625)	-0.208*** (-23.111)	-0.226*** (-32.286)	-0.208*** (-23.111)
Volatility	0.652 (1.339)	1.064* (1.819)	0.779 (1.587)	-0.390 (-0.760)	0.943* (1.849)	1.048* (1.776)	0.802 (1.627)	0.989* (1.688)
ROA	-0.752*** (-3.450)	-1.220*** (-4.296)	-0.655*** (-2.764)	-1.610*** (-6.216)	-0.638*** (-2.913)	-1.243*** (-4.286)	-0.760*** (-3.290)	-1.279*** (-4.441)
MTB	0.003 (0.600)	0.004 (0.500)	0.004 (0.800)	0.006 (0.600)	0.003 (0.600)	0.004 (0.500)	0.004 (0.800)	0.004 (0.571)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
AR(2) test	0.287	0.899	0.738	0.102	0.993	0.923	0.907	0.942
Hansen test	0.485	0.260	0.261	0.327	0.501	0.239	0.378	0.275
Observations	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038

Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The t-values are reported in parentheses.

Table 6. This table reports the result of the robustness test. All variables are defined in Table 1

Independent variables	Dependent variable: SPI							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	4.489*** (16.443)	4.634*** (13.471)	4.240*** (14.570)	3.840*** (14.491)	5.519*** (18.520)	4.682*** (13.730)	4.875*** (17.663)	4.375*** (15.909)
GO50	-0.209*** (-4.098)		-0.335*** (-5.000)		1.106*** (3.435)		-0.147* (-1.750)	
FO50		0.105 (0.094)		0.126 (0.534)		15.236 (1.485)		-0.121 (-0.244)
Government	0.059 (0.444)	0.452*** (4.913)						
Political			1.888*** (14.866)	1.982*** (16.616)				
Regulatory					1.618*** (7.970)	3.705*** (19.097)		
Rule							0.821*** (9.225)	0.998*** (16.361)
Government_GO50	1.191*** (3.193)							
Government_FO50		-86.505 (-0.776)						
Political_GO50			0.588* (1.675)					
Political_FO50				-0.750 (-0.762)				
Regulatory_GO50					2.628***			

(Continued)

Table 6. (Continued)

Independent variables	Dependent variable: SPI							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regulatory_FO50					(4.185)			
Rule_GO50						36.117 (1.550)		
Rule_FO50							0.506* (1.727)	
Size	0.000 (0.000)	0.009 (0.600)	-0.009 (-0.818)	-0.025* (-2.273)	-0.007 (-0.538)	0.009 (0.600)	0.000 (0.000)	-0.027** (-2.455)
Leverage	0.107 (1.507)	-0.177 (-1.416)	0.117* (1.671)	0.097 (1.470)	0.139* (1.904)	-0.173 (-1.384)	0.090 (1.216)	0.116* (1.813)
Volume	-0.215*** (-26.875)	-0.225*** (-22.500)	-0.197*** (-15.154)	-0.168*** (-14.000)	-0.205*** (-22.778)	-0.228*** (-22.800)	-0.216*** (-24.000)	-0.166*** (-13.833)
Volatility	1.400** (2.473)	-0.391 (-0.426)	0.854 (1.475)	0.861 (1.543)	1.633*** (2.758)	-0.371 (-0.404)	1.140* (1.959)	0.993* (1.783)
ROA	-0.357 (-1.235)	-2.138*** (-3.705)	-0.350 (-1.241)	-0.627*** (-2.691)	-0.144 (-0.516)	-2.103*** (-3.696)	-0.412 (-1.426)	-0.518** (-2.323)
MTB	0.002 (0.500)	0.010 (0.435)	0.001 (0.200)	0.001 (0.200)	0.001 (0.250)	0.007 (0.333)	0.001 (0.250)	0.001 (0.250)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
AR(2) test	0.631	0.706	0.759	0.223	0.947	0.527	0.626	0.223
Hansen test	0.189	0.575	0.130	0.146	0.177	0.635	0.165	0.125
Observations	2,038	2,038	2,038	2,038	2,038	2,038	2,038	2,038

Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The t-values are reported in parentheses.

government ownership tend to disclose more firm-specific information in a better institutional environment, our results also complement the finding reported by Vo (2018), who suggests that state ownership in transitional economies has more political privileges over non-state ownership. Combined with the fact that stock price informativeness of government-owned firms is higher when there is an improvement in the institutional environment, our findings provide evidence on the role of ownership structure in explaining the variations in firm's stock returns and thus contributes to better understanding the importance of institutional development in concentrated ownership environments for financial markets.

4.4. Robustness test

To gauge the reliability of the findings, we check the robustness by using an alternative threshold to identify ownership. In line with Doan et al. (2018), we change the dummy variable for ownership at the threshold of 20 percent to 50 percent. As Table 6 shows, the results indicate unchanged relationships between the variables in the model. Therefore, our main findings are robust.

5. Conclusions

This study investigates the relationship between ownership structure and stock price informativeness considering the important role of national governance quality in Vietnam, an emerging country. We explicitly analyze the influence of ownership types by distinguishing between the government, domestic private, and foreign ownership. Using a sample of listed firms on the Ho Chi Minh Stock Exchange over the period from 2009 to 2018, we find evidence that higher foreign ownership is associated with higher stock price informativeness, whereas higher government ownership is associated with lower stock price informativeness. In addition, we find that national governance quality mitigates the negative effects of government ownership on the informativeness of a firm's stock prices. The study takes national governance quality as an institutional factor that influences managerial behavior, limits the expropriation of connected-firm resources for political purposes and improves the incorporation of firm-specific information into government-controlled firms' stock prices in an emerging country in which the governance environment is still weak.

This study has strong policy implications in the context of transitional economies, which usually have weaker investor protection than developed countries do in several ways. First, our study offers additional empirical evidence on the relationship between ownership structure and stock price informativeness in emerging countries. The results clearly suggest that more foreign ownership increases stock price informativeness, and vice versa, with state ownership. Second, we clarify whether national governance quality plays a role in determining the relationship between ownership structure and a firm's stock price informativeness. Finally, a clear understanding of stock price informativeness is important for policymakers in proposing policies to attract foreign investors, promote the privatization process, and upgrade the national institutional environment.

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Note

1. The internet sources include <https://info.worldbank.org/governance/wgi/> and <http://www.fiingroup.vn/>.

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