Original Article

The Relation between Information Asymmetry and Firm Value: Empirical Evidence from Vietnamese Listed Firms

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Abstract: Managers normally have an advantage over the market in predicting firm-specific events. This creates information asymmetry between managers of the firm and the market. The purpose of this paper is to investigate the relationship between firm value and information asymmetry in Vietnam. Our data include 202 non-financial companies with 606 firm-year observations collected from the two main stock exchange markets in Vietnam including Hanoi Stock Exchange and Ho Chi Minh Stock Exchange, covering 3 years from 2017-2019. The finding of this study indicates that two variables measuring information asymmetry (ASYDISP, ASYDUM) negatively impact firm value. Besides, control variables such as return on assets, leverage, firm size, and intangible assets are found to have significant effects on firm value.

Keywords: Information asymmetry, firm value, Vietnamese listed firms.

1. Introduction

To investigate the influent factors affecting firm value, several studies were conducted in terms of corporate governance characteristics [1], capital structure [2], liquidity [3] and dividend policy [4], but so far appropriate proxies to measure the relationship between firm value and information asymmetry have not been found yet. According to principal-agency problems, insiders (i.e.: managers, employees)

usually possess more information about a company's performance and strategy than outsiders (i.e. investors, stockholders). This indicates the information held by insiders and outsiders of a company is asymmetric. Based on the research of Beyers et al. [5] managers are constantly in a trade-off about what information will be disclosed by the company. As a result, conflicts between managers and shareholders have a significant impact on the company's investment decisions and capital cost and

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negatively affect firm value. Under those circumstances, information asymmetry has received much attention in modern literature, and this paper aims to investigate the relationship between information asymmetry and firm value in the context of Vietnamese listed firms.

The role of information asymmetry has become one of the basic tenets of firm value. Managers normally have an advantage over the market in predicting firm specific events, which creates information asymmetry between the firm management and the market. Ross [6], Myers and Majluf [7] introduced information asymmetry models that predict firm value based on the changes in capital structure. In particular, assuming that all other things are equal, the announcement of a new equity issue releasing negative information about the firm will create a drop in the market value of the firm. There is some empirical evidence that supports theories of information asymmetry; for example, the study of Sadok et al. [8] indicated that stock price decreases approximately 3 percent after the announcement of a new equity issue. In addition, several studies investigated the influence factors affecting the drop in firm value and have found that the value of the firm depends on the financing decision as to whether to issue more equity capital or to highly rely on debt financing [9].

In Vietnam, although there are several solutions which have been proposed to enhance information transparency, their effectiveness is still relatively low [10]. The main reason is that businesses have not been motivated to disclose information. The study of Nguyen [11] was conducted to investigate whether more information disclosure helps listed companies in Vietnam reduce the cost of equity capital and increase stock value which may create an incentive for firms to disclose information transparently. In this vein, Nguyen and Le [12] also examine the level of asymmetric information in the market to propose solutions that limit the level of asymmetry. In general,

most of studies in Vietnam focus on the association between information asymmetry and stock value.

Obviously, there are several studies abroad that investigate the effects of asymmetric information on firm value. However, few studies have focused on this issue in the Vietnamese context. This paper aims to test the relationship between information asymmetry and firm value in Vietnam. Our data include 202 non-financial companies with 606 firm-year observations covering 3 years from 2017-2019 collected from Hanoi Stock Exchange and Ho Chi Minh Stock Exchange. Least squares based on Pooled Ordinary Least Square (Pooled OLS), Fixed-Effect Model (FEM), Random-Effect Model (REM), as well as robustness tests are employed to analyze data. The finding of this study indicates that information asymmetry adversely influences firm value. Besides that, as for firm value control variables, return on assets, leverage, firm size, and tangible assets are found to have significant effects on firm value.

Our study is part of a growing body of literature emphasizing the role of information asymmetry in corporate finance research. We contribute to the finance literature in three main ways. Firstly, this paper provides evidence of the association between firm value and information asymmetry which facilitates (investors') awareness, attention, risk-shifting behavior, and monitoring lapses. Secondly, we prove that leverage has an adverse effect on firm value and that this effect is also moderated by asymmetric information. Finally, the paper provides evidence of the sensitivity of the firm value and information asymmetry relationship to growth opportunities.

The remainder of this paper is organized as follows. In section 2, we review relevant literature and develop hypotheses. Section 3 presents the method used in this research. The conclusion is provided in section 4, followed by results and discussion. The conclusion is given in the last sections.

2. Literature review

Information asymmetry was initially analyzed by Akerlof [13]. According to the research of Akerlof, buyers possess different information than sellers do, and high- and low-quality goods and services can coexist in the marketplace. Likewise, Leland and Pyle [14] state that markets are characterized by different levels of information, and some users exhibit a higher level of information than others. Because of information asymmetry, "prices do not accurately convey all information necessary to coordinate economic decisions" [15]. As a result, an increase in the release of relevant information should benefit average users without access to private information [14]. More specially, scholars discriminate between two types of information asymmetry: moral hazard and adverse selection.

Besides that, there are some other theories relating to information asymmetry that have been developed such as Signaling Theory, and Peaking Order Theory (POT). According to the signaling theory, managers often more exactly understand the quality of their firms than others. Investors are unable to assess the true value of firms due to information asymmetry. In such circumstances, high-value firms usually decide to undervalue their new capital issuing to signal their true value. The real value of the firms will be revealed before the firm undertakes actions that trigger a fresh valuation after the issuance event. Likewise, POT suggests that the managers of a company know more about the actual value of their firms than outsiders. As such, the cost of adverse selection arising from information asymmetry leads to the priority of debt financing rather than equity financing [7]. According to POT theory, information asymmetry plays an important role in many corporate finance decisions. As information asymmetry occurs, insiders possess more information about firm future performance, and outside investors are unable to accurately assess firm fundamental quality. To compensate for the higher risk of information asymmetry, investors usually require a higher rate of return, therefore firms that need external financing will face the higher cost of equity which may adversely affect their firm value.

Hutton et al. [16] indicated that managers tend to conceal 'bad news' because of career concerns, job promotion, and option exercise. When negative news accumulates to a limit that cannot be concealed, it will erupt in the external market, and the company's share price will be hit. Similarly, previous studies have shown that the main reason for the risk of a stock price crash was that managers hide bad news from investors and markets to realize their interests [17, 18]. Likewise, many scholars have provided theoretical arguments and empirical evidence to support POT. For example, the research of Botosan et al. [19] evaluates the cost of equity and finds it have a strong connection with firm value. A study by Ryen, Vasconcellos, and Kish [20] is considered as the further development of information asymmetry and its relationship related to investment decisions as well as firm valuation.

Therefore, our research suggests that there is a positive association between information asymmetry and firm value.

H_0: There is no relationship between firm value and information asymmetry.

H_1: There is a significant relationship between firm value and information asymmetry.

3. Data and research methodology

3.1. Data selection

All data in this paper refer to firms traded on the Hanoi Stock Exchange and Ho Chi Minh Stock Exchange between 2017 and 2019. We obtain specific data from each of the firm's annual report. For assurance of data validation, we apply the following data requirements informing our samples to exclude abnormal cases. First, we exclude firms in the utility and financial industry as their financing policies are affected by government regulations. Second, we exclude all firms listed after December 31, 2017, and firms that are unable to collect necessary

data. Consequently, for the period 2017 to 2019, our selection procedure results in a sample of 606 firm-year observations, which represent 202 listed companies.

3.2. Variables

3.2.1. Asymmetric information measurements

By referring to the work by Krishnaswami and Subramaniam [21], Fosu et al. [22], and Huynh et al. [23], this paper uses the dispersion of analysts' forecasts (ASYDISP) and analysts' forecast error (ASYER) as the leading measures of information asymmetry to examine its relationship with firm value.

To compute the dispersion of analysts' forecasts, we use 1-year consensus forecasts of the earnings per share (ASY*DISP*). More specially, ASYDISP is the standard deviation of analysts' forecast about earnings per share (EPS) of the fiscal year. As our dependent variable (the firm value) is related to the market value of the firm, we scale by the median forecast rather than the stock price to avoid an indigeneity problem. By adding one and taking the natural logarithm, our measure converges to a normal distribution. Therefore, our main proxy for information asymmetry, denoted as ASYDISP, is:

$$ASYDISP = \ln(1 + \frac{Standard\ Deviation\ of\ Analysts'Forecasts}{|Median\ Forecast|})$$

The second measurement of information asymmetry in this study is the error of analysts' forecasts (ASYER). It is calculated by taking

into account the differences between the forecast of analysts' earnings per share and the actual earnings per share for each fiscal year [21-23].

$$ASYERR = \ln(1 + \frac{|EPS_{forecast} - EPS_{actual}|}{|Median\ EPS|})$$

The last measurement of information asymmetry uses a dummy variable. It is called ASYDUM. If the dispersion of analysts is larger than the median forecast, then the value equals 1 and 0 otherwise. According to Fosue et al. [23], this measurement enables the comparison of information asymmetry levels between one company and its peers in the same industry.

3.2.2. Control variables

In this study, we limit our research to a concise set of control variables that are correlated with firm value: size, profitability, leverage, and tangible assets.

Size is measured as the log of the firm's total assets. According to the study of Rajan and Zingales [24], large firms disclose more information than small firms and they have lower information asymmetry. Hence, larger firms tend to finance by issuing capital and reduce the cost of debt and enhance firm value.

We use profitability (ROA), measured as the ratio of earnings before interest and taxes (EBIT) to total assets, to control the influence of

profitability on firm value. The increase in profits could cease the predictability of future returns and reduce the impact of information asymmetry on firm value [23]. Hence, we add profits to our regression model as a control variable.

Leverage is another key control variable of our study. Leverage, in this case, is calculated by taking the book value of debts divided by the book value of assets. The adoption of book value is to reduce the potential reverse causation from firm value to leverage [22, 25].

Similar to Margaritis and Psillaki [26], the tangibility ratio (TANAS) is measured as the ratio of fixed assets to total assets. Firms with more tangible assets should exhibit a higher value for two reasons: Collaterals retain more of their value to debtors in case of liquidation, and agency cost of debt, such as risk shifting, can be reduced.

3.3. Research methodology

In this section, we discuss some main methods of data analysis that can potentially be applied to addressing our research questions and

testing our hypotheses. In this study, Least squares based on Pooled Ordinary Least Square (Pooled OLS), Fixed-Effect Model (FEM), Random-Effect Model (REM), as well as a robustness test are employed to analyze data. To test the relationship between information asymmetry and firm value, we used the following model:

$$TOBINQ = \alpha_0 + \beta_1\,ASYDISP + \beta_2\,ASYER + \beta_3 ASYDUM + \beta_4 SIZE + \beta_5 ROA + \beta_6 TD + \beta_7 TANAS$$

Table 1: Summary of research variables

Variable		Measurement
TOBINQ	Firm value	Market value/Book value of total assets
ASYDISP	The dispersion of analysts' forecasts	Logarithm of 1 plus standard deviation of analysts forecast about EPS divided by median EPS forecast
ASYER	The error of analysts' forecast	Logarithm of 1 plus net EPS divided by median EPS
ASYDU	Degree information asymmetry	Dummy variable: 1 representing if the dispersion of analysts is larger than the median forecast in the industry; 0 otherwise.
SIZE	FIRM SIZE	Logarithm Total Asset
ROA	PROFITABILITY	Operating Profit/Total Asset
LEV	LEVERAGE	Total Debt/Total Asset
TANAS	TANGIBLE ASSET	Total Property, Plant, and Equipment/Total Asset

Source: Data analysis from STATA software.

4. Results and discussion

4.1. Descriptive statistic

Table 2: Descriptive statistic

Variable	Obs	Mean	Std. Dev.	Min	Max
TOBINQ	606	0.7728327	0.4971734	0.0482826	1.779975
ASYDISP	606	0.2458705	0.1905603	0.0235354	0.6492493
ASYER	606	0.3548268	0.3406656	0	1.063167
ASYDUM	606	0.4455446	0.4974364	0	1
ROA	606	0.060725	0.063349	-0.1454976	0.1993936
TD	606	0.2088736	0.1776589	0	0.6073261
SIZE	606	28.59488	1.530801	25.75548	32.11459
TANAS	606	0.1972804	0.1987335	0.0001742	0.6804103

Source: Data analysis from STATA software.

Table 2 presents summary statistics for the key variables used in this study over the period 2017-2019. There is a wide variation in firm value and information asymmetry measures across the sample companies. The average Tobin's Q is 77.28%. ASYDISP, ASYER meet,

on average, 24.58% and 35.48%, respectively. The average total assets (size) of the sample firms are 28.59% while ROA is 6.07%. The mean ratio of total debt is 0.2089, and the standard deviation is 0.1777. For the intangible assets held by listed firms, the mean value of the intangible asset is 0.1973 with a standard deviation of 0.1987.

4.2. Empirical results

4.2.1. Pearson correlation matrix

Table 3 shows the pair-wise Pearson correlation matrix for the variables reported in this study. According to Table 3, none of the correlations between explanatory variables has correlation coefficients above 0.602; this indicates that there are no serious multi-collinearity problems in this model. Furthermore, the Variance Inflation Factors (VIF) for our variables are also far below the threshold value of 10 [27], suggesting that the issue of multi-collinearity in models is not a concern in this particular study.

Table 3: Pearson correlation matrix

	TOBINQ	ASYDISP	ASYER	ASYDUM	ROA	TD	FIRMSIZE	TANAS	VIF	1/VIF
TOBINQ	1									
ASYDISP	-0.285***	1							5.91	0.17
ASYER	-0.240***	0.593***	1						3.31	0.30
ASYDUM	0.0144	0.485***	0.234***	1					2.52	0.40
ROA	0.602***	-0.411***	-0.344***	-0.0158	1				2.64	0.38
TD	0.0566	0.0696	0.00929	0.0182	-0.234***	1			3.04	0.33
SIZE	0.203***	-0.0257	-0.112**	-0.00476	-0.0158	0.419***	1		8.66	0.12
TANAS	0.113**	0.0684	-0.0549	-0.0376	-0.0611	0.349***	0.145***	1	2.32	0.43
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$									4.06	

Notes: TOBINQ: Tobin's Q; ASYDISP: Asymmetry Dispersion; ASEYER: Asymmetry Error; ASYDUM: Asymmetry Dummy; ROA: Return on Asset; TD: Debt Ratio; SIZE: Firm Size; TANAS: Tangible Asset.
Source: Data analysis from STATA software.

Table 4: The results of penal data analysis

Variable	Variable definitions	Tobin's Q			
		Model 1		Model 2	
		β	S.E	β	S.E
ASYDISP	Asymmetry Dispersion			-0.201*	0.105
ASYER	Asymmetry Error			0.0188	0.0385
ASYDUM	Asymmetry Dummy			-0.0488*	0.0266
ROA	Return on Asset	1.757***	0.346	1.740***	0.346
TD	Total Debt	0.860***	0.188	0.842***	0.189
FIRMSIZE	Firm Size	-0.266***	0.0496	-0.257***	0.0506
TANAS	Tangible Assets	0.179	0.221	0.174	0.223
	Constant	8.063***	1.408	7.817***	1.441

Observations	606	606
Number of Code	202	202
R-squared	0.14	0.148

***p < 0.01, **p < 0.05, *p < 0.1

Source: Data analysis from STATA software.

4.2.2. Regression results

Our dataset includes a panel data set. The specification test proposed by Hausman is the most accepted procedure to select which test to employ in panel data analysis [28]. It compares fixed effect and random effect regressions. The Hausman specification test confirmed the superiority of the fixed-effect model over the random effect model for Tobin's Q (χ^2 = 88.81; p < 0.001).

Table 4 presents the fixed effect regression models predicting the influence of the information asymmetry on firm value. Besides that, Pooled Ordinary Least Square and Random Effect Models are also displayed in Table 5.

Table 5: Regression results in term of different model

Variables	(1) OLS	(2) FEM	(3) REM
ASYDISP	-0.255**	-0.201*	-0.319***
	(0.119)	(0.105)	(0.0986)
ASYER	0.0492	0.0188	0.0411
	(0.0571)	(0.0385)	(0.0388)
ASYDUM	-0.0661*	-0.0488*	-0.0832***
	(0.0363)	(0.0266)	(0.0256)
ROA	4.767***	1.740***	3.271***
	(0.283)	(0.346)	(0.286)
TD	-0.287***	-0.842***	-0.371***
	(0.103)	(0.189)	(0.129)
FIRMSIZE	0.0508***	-0.257***	0.0266
	(0.0111)	(0.0506)	(0.0168)
TANAS	0.256***	0.174	0.229**
	(0.08310	(0.223)	(0.116)
Constant	-1.065***	7.817***	-0.283
	(0.312)	(1.441)	(0.472)
Firm	-	202	202
Observations	606	606	606
R-squared	0.436	0.148	0.079
Note: Standard errors in parentheses			
***p < 0.01, **p < 0.05, *p < 0.1			

Source: Data analysis from STATA software.

As shown in Table 4, two models are estimated for each dependent variable. As the first step, all three sets of control variables are entered (Model 1). The effects of the

hypothesized variables are then tested in Model 2 where all independent variables along with control variables are tested, as shown in Table 5.

According to Table 5, two variables measuring information asymmetry (including ASYDISP, ASYDUM) negatively affect firm value. This means that a high level of information asymmetry adversely impacts firm value ($p < 0.001$). These findings are consistent with the previous studies by Fosu et al. [22] and Huynh et al. [23].

As for firm control variables, ROA, TD, SIZE, and TANAS are found to have significant effects on firm value.

According to the result presented in Table 5, ROA is found to have a positive and significant effect on firm value ($p < 0.001$). In fact, ROA is used to control for the influence of profitability on firm value. The increase in profits could cease the predictability of future returns and reduce the impact of information asymmetry on firm value.

TD is noted to have a negative and significant impact on firm value ($p < 0.01$). According to the study of Sadok et al. [8], firm performance is adversely affected by leverage.

In other words, firm value is improved when that company finances its fund by debt because of cash flow effects, whereby the higher leverage firms enable more free cash for more commitments and covenants.

SIZE is found to have a negative and significant effect on firm value ($p < 0.001$). In other words, smaller firms indicate better market performance and enhance firm values. Previous studies have indicated larger firms often face communication problems; therefore, they are unable to decide in a timely manner. Smaller firms are also better equipped to circumnavigate the law in settings where institutional coverage is incomplete.

Tangible assets (TANAS) are found to have a positive and significant effect on firm value ($p < 0.001$). Obviously, firms with considerable tangible assets tend to be able to compensate for the loss of tangible assets. As a result, the value of a firm will be improved if it holds a high level of tangible assets.

4.3. Robustness test

Table 6: Robustness test

Variable	Variable definitions	Tobin Q	
		β	S.E
ASYDISP	Asymmetry Dispersion	-0.201*	0.0876
ASYER	Asymmetry Error	0.0192	0.0349
ASYDUM	Asymmetry Dummy	-0.0494	0.0256
ROA	Return on Asset	1.743***	0.346
TD	Total Debt	0.829***	0.24
FIRMSIZE	Firm Size	-0.256***	0.0668
TANAS	Tangible Assets	0.169	0.29
	Constant	7.803***	1.905
	Observations	606	
	Number of Code	202	
	R-squared	0.148	

Note: Robust standard errors in parentheses
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Source: Data analysis from STATA software.

Although the results presented are robust across different model specifications, we carry out some further tests of the robustness of our results. First, all the continuous variables are winsorized using a 1% level at both tails to eliminate potential outliers and all models are re-estimated. However, the results do not change qualitatively. Furthermore, to control for any endogeneity problem, following several studies [29, 30], values of all independent variables are replaced with their lagged values treating them as a potential cause of endogeneity. However, again, results remain largely unaltered. Since the correlation between these variables and VIF are within the acceptable range, we decided to report them in one model, shown in Table 6.

5. Conclusion

The role of information asymmetry has become one of the basic tenets of firm value. Managers normally have an advantage over the market in predicting firm-specific events. This creates information asymmetry between managers of the firm and the market. Previous studies indicate that many reasons explain why managers tend to conceal unfavorable news. For example, they may be concerned about their future career, compensation, and personal interest (option exercise). Unfortunately, managers only conceal the negative news up to a limit; when the information is publicly available the firm value will be affected. This study aims to investigate the relationship between firm value and information asymmetry in Vietnamese listed firms.

Our data include 202 non-financial companies with 606 firm-year observations covering 3 years from 2017-2019, collecting from two stock exchange markets in Vietnam including Hanoi Stock Exchange and Ho Chi Minh Stock Exchange. After considering several criteria, our selection procedure results in a sample of 606 firm-year observations, which represent 202 listed companies. Besides that, Pooled Ordinary Least Square (Pooled OLS), Fixed-Effect Model (FEM), Random-Effect

Model (REM), as well as robustness tests are employed to analyze data.

The findings of this study indicate that two variables measuring information asymmetry (including ASYDISP, ASYDUM) have a negative effect on firm value. This result indicates that a higher level of dispersion and a higher level of error forecast suggest a higher level of information asymmetry. Besides that, as for specific control variables of firm value including ROA, TD, SIZE and TANAS, are found to have significant effects on firm value.

This study contributes to the literature by providing more evidence to support the influent factors affect firm value, especially in the context of Vietnam. A considerable majority of studies examine the relationship between corporate governance and firm value. However, our study focuses on another determinant of firm value - we investigate the association between information asymmetry and firm value. We are aware, however, of some limitations in our research paradigm, such as we only use data of 202 listed companies for the period from 2017 to 2019. Future research may focus on expanding the sample to include firms not covered by these databases.

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