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Determinants of Firm Value: An Empirical Study of Listed Trading Companies in Vietnam

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Abstract

This study aims to investigate the importance of firm value and the factors that affect the firm value of trading companies listed on the Vietnamese stock exchange, thereby enhancing the current literature related to this topic in our country. The factors that affect firm value include firm size, capital structure, profitability, sales, and liquidity whereas firm value is represented by the value of equity. This work employed a data set with 925 observations, which are trading firms listed on the Vietnam Stock Exchange over a nine-year period from 2011 to 2019 with the support of STATA version 2016. Applying the quantitative method, we first find that firm size is of the greatest importance to firm value. It refers that the value of a large company is of a higher rank than a small company. On the other hand, capital structure is found to have a negative impact on firm value. Furthermore, we find that the other independent variables (profitability, sales, and liquidity) are statistically insignificant in the regression model. This means that those mentioned factors do not affect firm value. More importantly, the research also suggests that both firm size and capital structure are crucial for firm value in the trading industry in Vietnam.

Keywords: Firm Value, Profitability, Capital Structure, Firm Size, Listed Trading Firms

JEL Classification Code: G29, G39, L25

1. Introduction

Firm value has attracted great attention of prior and current researchers in the world (Endri & Fathony, 2020; Nguyen & Bui, 2020; Aggarwal & Padhan, 2017; Burgstahler & Dichev, 1997) as it can tell a lot about the effectiveness of an organization and reflect the growth of that organization in the long-term (Sampurna & Romawati, 2020; Shah & Khalidi, 2020). Rational investors look at this indicator as a signal for making investment decisions because of the significant correlation between firm value and earnings (Collins et al., 1997; Burgstahler & Dichev, 1997).

Therefore, understanding what factors influence firm value and to what extent is this relationship is a crucial question.

To date, there has been a great number of studies addressing these questions (Endri & Fathony, 2020; Nguyen & Bui, 2020; Aggarwal & Padhan, 2017; Adenugba et al., 2016; Chen & Chen, 2011; Dang et al., 2019; Sudiyatno et al., 2020; Burgstahler & Dichev, 1997). For example, Sudiyatno et al. (2020) found that there are both internal and external factors influencing firm value. The internal factors include capital structure, profitability, free cash flow, firm size, liquidity, ownership structure whereas external factors comprise interest rates, inflation, and other macro-indicators. However, several arguments have been arising due to the different research findings on the correlation between those variables. For example, Aggarwal and Padhan (2017) and Dang et al. (2019) showed that firm size significantly influences firm value while several authors suggest a reverse pattern (Endri & Fathony, 2020). Chen and Chen (2011) believed that capital structure is negatively associated with firm value whereas Adenugba et al. (2016) witness a positivity. To address this argument, this study will provide more evidence on the determinants of firm value in Vietnam.

In this study, we analyze the correlation between five independent variables and firm value, which is measured

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by the book value of equity. These independent variables are firm size (Saona & Martín, 2016; Aggarwal & Padhan, 2017; Dang et al., 2019; Hirdinis, 2019), profitability (Endri & Fathony, 2020; Rizqia & Sumiati, 2013; Dang et al., 2019; Muhammad et al., 2015), liquidity (Nguyen & Bui, 2020; Anton, 2016; Aggarwal & Padhan, 2017), firm sales (Himmelberg et al., 1999; Mule et al., 2015), and capital structure (Rizqia & Sumiati, 2013; Hirdinis, 2019; Jong et al., 2011; Pérez-González & Yun, 2013). Subsequently, we measured to what extent these variables can affect the value of listed trading firms in Vietnam. We find that firm size is positively related to firm value while capital structure witnesses a reverse pattern. The other independent variables, including profitability, liquidity, and sales are not statistically significant. Based on the results, it can be said that to increase firm value, the organization should expand the business by increasing firm size while lowering the leverage ratio.

Our study is organized as follows. Section 2 presents a brief review of literature related to the research questions. Section 3 develops hypotheses, describes variables that are used in the empirical model, and describes our data collection process. The results are presented in Section 4, while Section 5 concludes the study and gives some implications on further research.

2. Literature Review and Hypotheses

2.1. Previous Studies

There are several arguments about how firm value can be measured. Firm value is reflected in stock price (Endri & Fathony, 2020; Shah & Khalidi, 2020), in the market value of equity (Surjandari et al., 2019; Nguyen & Bui, 2020), or book market of equity (Saona & Martín, 2016). In this research, we use the book value of equity to measure firm value since this value usually remains constant over time while market value or stock price fluctuates significantly.

Book value of equity or equity value is one of the most important indicators for investors assessing the market value of a company to make investment decisions. This is because the firm value is a signal of growing opportunities in the future (Sampurna & Romawati, 2020; Shah & Khalidi, 2020) and could reflect the organizational effectiveness. However, several criticisms have been arising because academics and practitioners have been being concerned about the profit manipulation and diminishing value relevance of accounting information (Dechow et al., 1995; Filip & Raffournier, 2010). Particularly, empirical evidence shows that the criticisms about the relevance of earnings have some elements of truths, but academics and practitioners sometimes exaggerate the problems as firm value is positively correlated with earnings (Basu, 1997; Amir & Lev, 1996; Elliott & Hanna, 1996).

Collin et al. (1997) suggested that the value relevance of earnings has declined over time while that of book value has constantly increased.

About the determinants of firm value, Anton (2016), Aggarwal and Padhan (2017), Dang et al. (2019), and Sampurna and Romawati (2020) demonstrated that firm size strongly and positively impacts firm value, whereas some other authors have rejected that finding (Mule et al., 2015; Endri & Fathony, 2020). Besides the company's size, the capital structure also directly and significantly influences firm value, however, they are negatively correlated (Dang et al., 2019; Sampurna & Romawati, 2020; Shah & Khalidi, 2020). Furthermore, profitability is also considered as the factor that significantly impacts firm value, such as the research of Aggarwal and Padhan (2017) and Rizqia and Sumiati (2013). In contrast, Hirdinis (2019) and Anton (2016) believed that profitability is not correlated with firm value. Moreover, the sale is demonstrated to positively impact firm value (Niresh & Velampy, 2014; Nguyen & Bui, 2020; Mule et al., 2015). Similarly, liquidity is closely correlated with firm value, as cited by Nguyen and Bui (2020).

In conclusion, this study will identify the impact of five factors on firm value, comprising firm size, capital structure, firm sales, profitability, and liquidity (Figure 1).

2.2. Hypotheses

We use the natural logarithm of total assets to measure the firm size, based on the studies of Saona and Martín (2016), and Aggarwal and Padhan (2017). Some studies recently have shown that size and the value of a company are significantly and positively correlated (Dang et al., 2019; Aggarwal & Padhan, 2017; Sampurna & Romawati, 2020; Anton, 2016). To support this opinion, Hirdinis (2019) stated that the bigger the company's size will indirectly lead to an increase in firm value. However, the studies of Obradovich and Gill (2013), Saona and Martín (2016), and Shah and Khalidi (2020) have argued that firm size has a negative influence on firm value. In contrast, research by Mule et al. (2015) and Endri and Fathony (2019) indicated that the

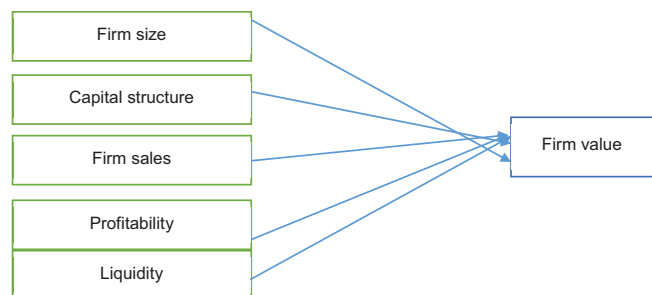


Figure 1: The Determinants of Firm Value

company's size does not have a significant impact on firm value. The hypothesis is as below:

H1: *Firm size is positively correlated with firm value.*

Capital structure is one of the most predominant tools that reflects an organization's effectiveness in using debt (Endri & Fathony, 2020). This structure is determined by the ratio between the book value of total debt and equity. Many authors have previously researched the connection between capital structure and a company's value; however, those authors' results are contradictory. On one side, it is shown that capital structure has a beneficial effect on firm value (Rizqia & Sumiati, 2013; Hirdinis, 2019; Jong et al., 2011; Pérez-González & Yun, 2013), others conclude that this relationship has a negative correlation (Dang et al., 2019; Shah & Khalidi, 2020; Sampurna & Romawati, 2020). However, according to trade-off theory, once the debt is utilized appropriately, the higher amount of debt will lead to a higher firm value (Hirdinis, 2019; Myers, 1977). As stated by Durand (1952), the company is likely to use more debt to gain firm value. The hypothesis is as below:

H2: *Capital structure is positively correlated with firm value.*

Profitability is calculated as net profit divided by total assets (Anton, 2016; Rizqia & Sumiati, 2013; Endri & Fathony, 2020). The previous papers identified that a higher level of profitability results in greater firm value (Aggarwal & Padhan, 2017; Rizqia & Sumiati, 2013; Dang et al., 2019). According to Endri and Fathony (2020), when the firm has high profitability, which reflects its business status as good, investors will be more interested in the firm's share to increase firm value. However, Hirdinis (2019) and Anton (2016) have pointed out that profitability does not affect firm value. The hypothesis is as below:

H3: *Profitability is positively correlated with firm value.*

Firm sales' value is measured as the natural logarithm of total sales revenue (Himmelberg et al., 1999; Mule et al., 2015; Nguyen & Nguyen, 2020). Many prior authors point that besides total assets, total sales are also the indicator of the firm size (Niresh & Velnampy, 2014; Nguyen & Bui, 2020; Mule et al., 2015). The hypothesis is as below:

H4: *Firm sales are positively correlated with firm value.*

According to Nguyen and Bui (2020), liquidity is defined as the firm's ability to pay short-term debts. To calculate liquidity value, divide current assets by current liabilities

(Anton, 2016; Machmuddah et al., 2020). Previous studies have adverse conclusions about the relationship between firm value and liquidity. While Anton (2016) indicated that liquidity has no significant impact on firm value. Aggarwal and Padhan (2017) showed that liquidity positively affects firm value. It can be argued a higher current ratio correlates with the firm's ability to pay debts quicker and increases the firm's value (Nguyen & Bui, 2020). Therefore, the hypothesis is as below:

H5: *Liquidity is positively correlated with firm value.*

3. Research Methods

3.1. Data

To collect data, the first step was accessing the Vietstock finance website to define Vietnamese listed companies. Based on the criteria for the classification of trading of firms in the stock market in HOSE, we choose financials, consumer staples, real estate, industrials, materials, consumer discretionary, utilities, energy, health care, and information technology. Next, we collected and synthesized data from the financial annual reports of those listed firms and imported the data into Excel 2016. However, to ensure the accuracy of data, we compared those data with data that was announced on HNX and HOSE, over the period 2011–2019.

After the data was collected, we calculated the indicators that are related to research, such as firm size, capital structure, firm sales, profitability, and liquidity. Because some observations do not have enough values to calculate those indicators, we removed those observations from the data. As a result, our final data included 925 observations of 239 listed companies.

After finishing data processing, 925 observations are imported into STATA version 16 for descriptive statistics and regression analysis. More specifically, through descriptive statistics, we can know the max value, min value, and medium value. Besides, regression analysis fixed-effect model and random-effect model in STATA is realized to choose the model that is the most suitable for research. Simultaneously, through regression analysis's result, we can know the factors that impact firm value.

3.2. Empirical Models

In this study, the authors will follow the method of quantitative research (with the assistance of STATA version 2015): Firm size (SIZE), capital structure (CS), profitability (ROA), revenue (SALES), and liquidity (LIQUID) as independent variables, firm value (VAL) as a dependent variable.

To test the hypotheses mentioned in Section 2, the regression model can be built as below:

$$\text{VAL} = \alpha + \beta_1 \times \text{Size} + \beta_2 \times \text{CS} + \beta_3 \times \text{ROA} + \beta_4 \times \text{Sales} + \beta_5 \times \text{Liquid} + \mu$$

Where, α , β_1 , β_2 , β_3 , β_4 , β_5 are coefficients and μ is random error.

Table 1 illustrates the meaning and the role of different variables.

4. Results

In Table 2, we can see that the value of R -square is 0.3784, indicating that 37.84 of the change in firm value is

explained by firm size, capital structure, profitability, sales, and liquidity in the random-effect model. The value of prob is 0.000, which indicates that the model has a statistical significance.

Considering the coefficient's values, we can find the relation between independent variables and dependent variables. More specifically, these coefficient values show that SIZE, ROA, and Liquidity have a positive effect on equity, while CS and SALE have a negative effect on equity. Next, with a reliability of 95%, there are only two variables that are statistically significant in the random-effect model, SIZE, and CS, as their p -values are less than 0.05. In contrast, ROA, SALE, and Liquidity have no statistical significance since their p -values are 0.751, 0.546, and 0.985 respectively, which are all more than 0.05.

Table 1: List of Dependent and Independent Variables of the Regression Models

Variables	Meaning	Determined By	Role	Model
VAL	Firm value	Book value of equity	Dependent variable	Y
SIZE	Firm size	Ln (Total assets)	Independent variable	X1
CS	Capital structure	Debt to equity ratio	Independent variable	X2
ROA	Profitability	Net profit/Total assets	Independent variable	X3
SALES	Revenue	Ln (Revenue)	Independent variable	X4
Liquid	Liquidity	Current assets/Current liabilities	Independent variable	X5

Table 2: REM Result

```
. xtreg Equity SIZE CS ROA SALE Liquid, re
Random-effects GLS regression
Group variable: STT
R-sq:
    Within   = 0.0534
    Between = 0.3860
    Overall  = 0.3784
```

```
Number of obs   = 925
Number of groups = 239
Obs per group:
    min = 1
    avg = 3.9
    max = 4
Wald  $\chi^2$  (5)    = 110.37
Prob >  $\chi^2$       = 0.000
```

```
corr (u_i, x)   = 0 (assumed)
```

Equity	Coef.	Std. Err.	z	P > z	[95% Conf. Interval]	
SIZE	388613.6	41100.43	9.46	0.000	308058.3	496169
CS	-5014.927	1909.088	-2.63	0.009	-8756.671	-1273.183
ROA	47558.41	149685.8	0.32	0.751	-245820.4	34937.2
SALE	-14583.67	24169.04	-0.6	0.546	-61954.13	32786.78
Liquid	4.588347	236.2718	0.02	0.985	-458.496	467.6727
_cons	-4050767	489252.6	-8.28	0.000	-5009685	-3091850
sigma_u	1898626.3	(Fraction of variance due to u_i)				
sigma_e	353214.22					
rho	0.96654809					

Table 3: FEM Result

. xtreg Equity SIZE CS ROA SALE Liquid, fe

Fixed – effects (within) regression

Group variable: STT

R-sq:

Within = 0.0539

Between = 0.3860

Overall = 0.3778

Number of obs = 925

Number of groups = 239

Obs per group:

min = 1

avg = 3.9

max = 4

F(5, 681) = 7.76

Prob > F = 0.0000

corr (u_i, Xb) = 0.5151

Equity	Coef.	Std.Err.	t	P > t	[95% Conf. Interval]	
SIZE	246142	42852.09	5.74	0.000	162003.9	330280.1
CS	-2891.626	1851.504	-1.56	0.119	-6526.969	743.7168
ROA	103290.7	144979.6	0.71	0.476	-181370	387951.4
SALE	-15339.85	23861.29	-0.64	0.521	-62190.38	31510.68
Liquid	15.08722	227.5992	0.07	0.947	-431.7993	461.9677
_cons	2193866	506631.8	-4.33	0.000	-3188614	-1199118
sigma_u	2249656.2	(fraction of variance due to u_i)				
sigma_e	353214.22					
rho	0.97594154					

F test that all u_i = 0: F(238,681) = 116.52

Prob > F = 0.000

In Table 3, it can be seen that the value of *R*-square is 0.3778, which indicates that independent variables (SIZE, CS, ROA, SALE, Liquid) in the fixed-effect model explain 37.78 percent of the change in the EQUITY variable. Besides, the value of prob is 0.000 > *F*, meaning that the model has a statistical significance.

Considering the coefficient's values, we can find the relation between independent variables and dependent variable. In detail, the coefficient values indicate that SIZE, ROA, and Liquid positively affect EQUITY; however, CS (Capital structure) and SALE are negatively associated with EQUITY. More importantly, with a reliability of 95%, only SIZE is statistically significant in the model because its *P*-value is less than 0.05. On the other hand, CS, ROA, SALE, and Liquidity have no statistical significance as their *p*-values are 0.119, 0.476, 0.521, 0.947 respectively, which are all higher than 0.05 (Table 4).

From the Heteroskedasticity test (Table 5) and autocorrelation test (Table 6), it is clear that the fixed effect model has two disabilities, which are, error variance is non-constant and first-order autocorrelation, therefore we use adjusted fixed model (FEM*)

From Table 7, it can be seen that the value of *R*-square is 0.3778, indicating that all of the independent variables in the fixed-effect model explain 37.78 percent of the change in the dependent variable EQUITY. Also, the value of prob

is 0.0001, which means that the model has a statistical significance.

The coefficient values reflect the relation between five independent variables and dependent variables. As can be seen from the table above, SIZE, ROA, and Liquidity are the independent variables that have a positive impact on EQUITY. The variables CS and SALE are negatively correlated with equity. More importantly, with a reliability of 95%, only SIZE is statistically significant in this model because its *p*-values is less than 0.05. On the other hand, CS, ROA, SALE, and Liquidity have no statistical significance because their *p*-values are more than 0.05.

Table 8 shows the correlation and regression results in REM, FEM, and FEM* models. First, the regression result in REM has shown that firm's size and capital structure significantly impact firm value at the reliability of 99%, while other variables like ROA, SALE and Liquidity are not statistically significant in the REM model. Especially, SIZE has a positive correlation with firm value. This finding is consistent with a few previous studies such as Dang et al. (2019), Aggarwal and Padhan (2017), Sampurna and Romawati (2020), and Anton (2016). On the other hand, capital structure and firm value are negatively correlated. This finding is consistent with a few previous studies such as Dang et al. (2019), Shah and Khalidi (2020), and Sampurna and Romawati (2020).

Table 4: Hausman Test

. Hausman FEM REM				
	Coefficients		$(b - B)$	sqrt (diag($V_b - V_B$))
	(b)	(B)		
	FEM	REM	Difference	S.E.
SIZE	246142	388613.6	-142471.7	12126.68
CS	-2891.626	-5014.927	2123.301	–
ROA	1003290.7	47558.41	55732.33	–
SALE	-15339.85	-14583.67	-756.1771	–
Liquid	15.08722	4.588347	10.49887	–
b = consistent under H_0 and H_a ; obtained from xtreg.				
B = inconsistent under H_a , efficient under H_0 ; obtained from xtreg.				
Test: H_0 : difference in coefficients not systematic.				
$\chi^2(5) = (b - B)'[(V_b - V_B)^{-1}(b - B)$ $= 97.55$ Prob > $\chi = 0.0000$ ($V_b - V_B$ is not positive definite).				

Supposition:

H_0 : ε_i and independent variables are not correlated; H_1 : ε_i and independent variables are correlated; We have: Prob = 0.0000 < 0.05.

Hence, we reject H_0 and accept H_1 . In other words, ε_i is correlated with independent variables. Therefore, we choose the fixed effect model (FEM).

Table 5: Heteroskedasticity Test

. xttest3
Modified Wald test for groupwise heteroskedasticity In fixed effect regression model
H0: sigma (i)^2 = sigma^2 for all i
$\chi^2(239) = 2.9e+10$ Prob > $\chi^2 = 0.0000$

Supposition:

H_0 : The error variance is constant; H_1 : The error variance is nonconstant; As we can see, p -value = 0.0000 < 0.05.

Hence, the fixed effect model has a disability, which is, the error variance is non-constant.

Table 6: Autocorrelation Test

. xtserial Equity Size CS ROA Sale Liquid
Wooldridge test for autocorrelation in panel data
H_0 : no first-order autocorrelation
$F(1,225) = 22.800$
Prob > $F = 0.0000$

Supposition:

H_0 : no first-order autocorrelation; H_1 : first-order autocorrelation.

Because the p -value is 0.0000 which is less than 0.05, the fixed effect model has a disability which is the first-order autocorrelation.

Second, with the FEM model, we have only one factor that has an effect on the company's value, which is SIZE. With the correlation of 246,142, SIZE strongly and positively affects firm value at the reliability of 99%. However, when considering the adjusted fixed-effects model (FEM*), besides the SIZE variable, the capital structure also has an effect on company value. Similarly, the results of the REM and FEM models show that firm size has a strong and positive effect on the firm's value. Simultaneously, the relationship between capital structure and firm value is negative at the reliability of 90%. Other variables comprising profitability, sales, and liquidity are not statistically significant in the FEM* model.

5. Conclusion and Limitations

Firm value reflects the present value of the cash flows of a company in the future, and it will directly affect investment decisions. Hence, researching firm value is important and necessary. More specifically, the goal of the research is to identify the determinants of firm value. Especially, the purpose of this study is to find the factors that impact the firm value of Vietnamese listed corporations in HNX and HOSE over 9 years, from 2011 to 2019. Basically, the study's result contributed to resolving all hypotheses and research questions. However, the regression analysis's result has shown that the impact of factors is different compared to expectation in hypotheses. A piece of evidence for this

Table 7: FEM Cluster Result

. xtreg Equity Size CS ROA Sale Liquid, fe cluster (STT)

Fixed – effects (within) regression

Group variable: STT

R-sq:

Within = 0.0539

Between = 0.3860

Overall = 0.3778

Number of obs = 925

Number of groups = 239

Obs per group:

min = 1

avg = 3.9

max = 4

F (5,238) = 5.72

Prob > F = 0.0001

(Std. Err. adjusted for 239 clusters in STT)

corr (u_i, Xb) = 0.5151

Equity	Coef.	Robust Std. Err.	t	P > t	[95% Conf. Interval]	
SIZE	246142	68162.01	3.61	0.000	111864.1	380419.9
CS	-2891.626	1637.568	-1.77	0.079	-6117.605	334.3533
ROA	103290.7	84917.02	1.22	0.225	-63994.23	270575.7
SALE	-15339.85	11335	-1.35	0.117	-37669.6	6898.897
Liquid	15.08722	26.74268	0.56	0.573	-37595.36	67.7698
_cons	-2193866	885560.3	-2.48	0.014	-3938404	-449328.7
sigma_u	2249656.2	(fraction of variance due to u_i)				
sigma_e	353214.22					
rho	0.97594154					

Table 8: Regression Result

Variables	(1)	(2)	(3)
	REM	FEM	FEM*
SIZE	388.614*** (41.100)	246.142*** (42.852)	246.142*** (68.162)
CS	-5.015*** (1.909)	-2.892 (1.852)	-2.892* (1.638)
ROA	47.558 (149.686)	103.291 (144.980)	103.291 (84.917)
SALE	-14.584 (24.169)	-15.340 (23.861)	-15.340 (11.335)
Liquid	4.588 (236.3)	15.09 (227.6)	15.09 (26.74)
Constant	-4.051e+06*** (489.253)	-2.194e+06*** (506.632)	-2.194e+06** (885.560)
Observations	925	925	925
Number of STT	239	239	239
		0.054	0.054

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

difference is capital structure is negatively correlated with firm value, whereas we expected the impact to be positive. In contrast, firm size has a positive and significant impact on firm value as expected. Besides, through this study, we identify that profitability, firm sales, and liquidity are not statistically significant in the regression model. In other

words, the factors comprising profitability, sales, and liquidity do not impact firm value. Although this is not the same as the expectation in hypotheses, previous papers also have similar results.

Based on the results of this study, we give some recommendations for trading firms listed on the Vietnam

stock exchange from 2011 to 2020. Those firms should expand their size by having more assets. Moreover, they should use their equity to buy assets instead of using debt. In other words, the companies can make some suggestions so that their shareholders should invest more in the firms instead of taking out loans from banks or any other financial institutions. Instead of making efforts to improve profitability, sales, and liquidity, trading companies in Vietnam should attempt to increase their owners' equity and stop raising more loans. These recommendations are better tools for improving the firm value of listed trading companies in our country.

Even though this study makes some contributions to the current literature, it has the following limitations. First, this research focuses on the trading industry; therefore, this work only determines factors that affect the value of trading firms in Vietnam. Our research cannot explain all companies because each industry has unique characteristics. Second, we used a data set from 2011 to 2019, and this means that data is not updated until 2020. Consequently, the findings of the research may not reflect the current situation of listed trading firms in Vietnam. Nonetheless, these limitations may be overcome in the future. For instance, the latest data for all listed firms in Vietnam may be collected in subsequent research studies.

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