Impact of Internal Factors on Firm Value: An Empirical Case Study of Publicly Traded Companies in Nigeria.

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Abstract:

Firm value evaluation has attracted much attention from rational investors, analysts, and researchers/academics. Several countries have also analysed the internal and external factors that affect investors decisions. To carry out the study, I exploit the S&P Capital IQ Global Market Intelligence Database, which contains annual observations on private and public companies. This study investigates the quantitative impacts of firm value on publicly traded companies on the Nigerian Stock Exchange (NSX) using a dataset with 473 observations of 79 publicly listed companies that are part of the 11 industries classifications in Nigeria from 2015-2020. Stata version 2015 is employed as the software tool for the descriptive statistics and regression analysis fixed-effect model and random-effect model to evaluate the factors that influence firm value. The control variables include the firm size, capital structure, sales, profitability, liquidity, and log-lin firm value as the dependent variable. The results show that firm size, capital structure, profitability, and liquidity significantly affect firm value, while revenue does not have any significant impact on firm value. Furthermore, the capital structure seems to have a significant negative effect on firm value. This empirical evidence can be used to predict the movement of stock prices to a great extent in Nigeria.

Keywords: Firm Value, Firm Size, Profitability, Internal Factors, Publicly Traded Companies

1. Introduction:

Investment decisions constitute one of the most vital decisions of a rational investor. Decisions on which signal to look at while making investment because this follows by high prosperity for shareholders. Therefore, the concept of firm value has attracted the interest of investors and the public (Qureshi, 2007). This underlines the importance of revealing companies' performance and rating shows the magnitude of investors a company can have in both the short-run and long-run (Oktarina 2018).

Therefore, understanding what factors influence firm value and how extensive this relationship attracts investors is crucial. A significant number of studies has addressed this question on the stock exchange of different countries (Sukesti et al., 2021). For example, Pangestuti et al. (2020) found that both internal and external factors influence firm value. The internal factors include capital structure, profitability, free cash flow, firm size, liquidity, ownership structure, whereas external factors comprises interest rates, inflation, and other macroeconomic indicators (Adaramola 2006).

This study analyses the different internal factors that impact firm value using five years sample. The empirical study assesses the impact of firm size, capital structure, profitability, liquidity, and revenue on the firm value of all the available traded industries of the Nigerian stock exchange. See Figure 1 for a concise summary of the variables used. The study makes several contributions to the discussion on the relationship between internal factors and the firm value of listed companies. First, this analysis provides an empirical investigation of the internal factors that impacts more on the firm value. The introduction of panel data analysis of fixed and random effects using Stata allows us to include variables that affect companies annually for five (5) years. Also, panel data present more informative data and generate a greater degree of freedom.

Second, this study employs a more significant number of companies, including all the available industries in Nigeria and a more recent data set than previous studies that researches on a few industries. In addition, since publicly traded companies in the NSX remain essential for investment, this study will shed light on the best variable that can attract attention and trust from investors in a company.

The rest of the paper is structured as follows: the next section contains a conceptual and hypotheses review. Section 3 contains the empirical strategy (data collection and methods). The empirical results and discussion on findings are presented in section 4; section 5 concludes the study and implications for further research.

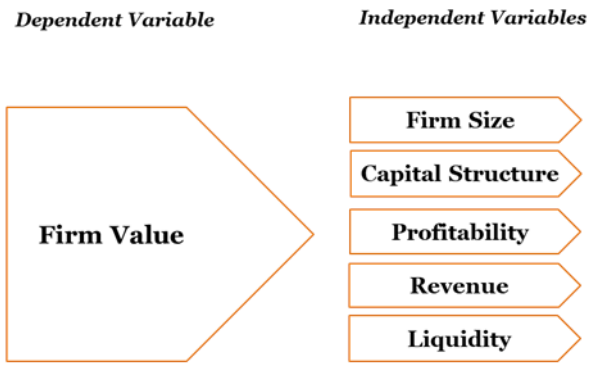

Figure 1: The Internal Factors of Firm Value

2. Theories Concepts and Hypothesis:

2.1: Theories Concepts

In this research, we use the total equity to measure firm value since total equity is a good gauge of a firm's health and indicates companies' performance and ability to pay off its debts and provide

profits. Also, the internal factors of firm value include firm size proxied using total assets, capital structure proxied using total debt/equity ratio, profitability proxied using return on assets, firm sales proxied using total revenue, and liquidity proxied using current ratio.

2.2: Hypothesis

2.1.1: The Effect of firm size on firm value:

Company value is the present value of a series of incoming cash flows that the company will produce in the future (Hirdius 2019). Company size is an assessment of how large or small a company is represented by a company's assets (Benyamin & Endri, 2019).

H_1: Firm size has positive effect on firm value.

2.1.2: The effect of capital structure on firm value:

Capital structure is one of the company's strategies for financing operations and reflects the overall growth and effectiveness in suing debt (Khairina and Yusbardini 2019). This structure is determined by the ratio of total debt and equity. It is calculated as:

$$Debt\ to\ Equity\ Ratio\ (\text{DER}) = \frac{\text{Total Debt}}{\text{Total Equity}}$$

H_2: Capital structure has positive relationship with firm value.

2.1.3: The effect of profitability on firm value:

Profitability is the company's ability to earn profits and is an overview of the company's performance in managing the company (Daeli & Endri, 2018). Profitability of a company is represented using the ROA. ROA is calculated as net income after tax divided by total assets. It is calculated as:

$$Return\ On\ Assets\ (\text{ROA}) = \frac{\text{Net Income After Tax}}{\text{Total Assets}}$$

H_3: Profitability has positive relationship with firm value.

2.1.4: The effect of firm sales on firm value:

Revenue is used to estimate firm sales. Firm sales is the income received by a company from its sales of goods or the provision of services.

H_4: Firm size has positive relationship with firm value.

2.1.5: The effect of liquidity on firm value:

Firms' ability to pay short-term debts obligations determines the company's liquidity position. Liquidity value is the current ratio, calculated as current assets divided by current liabilities. It is calculated as:

$$\text{Liquidity} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

H_5: Liquidity has positive relationship with firm value.

3. Research Methods

3.1: Data

The first step is accessing the Capital IQ Company Screening Report website to define Nigeria publicly traded companies. Based on the criteria for the classification of trading of firms in the stock market in NSX, we choose financial services, services industry, natural recourses, information communication and technology (ICT), construction/real estate, oil & gas, industrial goods, consumer goods, conglomerates, healthcare, and agriculture industries. Next, we collected and synthesized data from the annual financial reports of the listed firms and imported the data into Excel office 365 over the period of 2015–2020.

After collecting the data, we calculated the indicators related to the research, such as firm size, capital structure, firm sales, profitability, and liquidity. Because some observations do not have enough values to calculate these indicators, we removed those observations from the data. As a result, our final data includes 473 observations of 79 publicly traded companies. After finishing the data processing, 473 observations are imported into STATA version 15 for descriptive statistics and regression analysis. Regression analysis fixed-effect model and random-effect model in STATA is realized to choose the most suitable model for research. Simultaneously, we can know the factors that impact firm value through regression analysis's results. Also, a few of the datasets contain some empty or zero values. It is important to note that some companies do not have total debts values in some years, this impacted the analysis and conclusion of this research.

3.2. Empirical Models

In this study, the author 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 (LR) as independent variables, firm value (lnFMV) as a dependent variable.

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

$$\ln FMV = \alpha + \beta 1 \times Size + \beta 2 \times CS + \beta 3 \times ROA + \beta 4 \times Sales + \beta 5 \times LR + \mu$$

Where, α, β1, β2, fdx β3, β4, β5 are coefficients of explanatory variables and μ is error term.

4. Results

To reduce or remove the skewness of the original data, log-linear transformation was used on the dependent/target variable -Firm value (FMV). The independent/predictor variables were left in their ordinary form. This will help ensure that the coefficient can be explained in terms of percentages. Therefore, Firm Value will then be a LOG-LIN model -lnFMV.

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

Variables	**Meaning**	**Determined By**	**Role**	**Model**
lnFMV	Firm Value	Total Equity	Dependent variable	Y
SIZE	Firm Size	Total Assets	Independent variable	X1
CS	Capital structure	Total Debt to Equity ratio	Independent variable	X2
ROA	Profitability	Return on Assets	Independent variable	X3
SALES	Revenue	Total Revenue	Independent variable	X4
LR	Liquidity	Current Ratio	Independent variable	X5

Table 2 shows the correlation and regression results in OLS, FEM and REM models. For the selection of the right model, several tests need to be done, including the Breusch and Pagan Lagrangian multiplier test for random effects and Hausman test.

Table 2: Estimation Results for Firm Value			
Variable	**OLS**	**FEM**	**REM**
SIZE	3.08e-06*** (7.28e-07)	2.09e-06* (1.09e-06)	2.65e-06*** (9.22e-07)
CS	-.1020229*** (.0353361)	-.0433249* (.0233519)	-.0514508** (.0230149)
ROA	6.890144*** (1.18432)	1.843199 (1.126945)	2.853613*** (1.066131)
SALES	1.08e-06 (1.13e-06)	-6.91e-07 (1.72e-06)	4.78e-07 (1.42e-06)
LR	.0517299* (.0294707)	.0225067 (.0193886	.0243742 (.0192312)
Constant	8.427303***	8.806581***	8.644643***

	(.0961844)	(.0891127)	(.1648383)
R-squared	0.3571	0.3390	0.3447
Adj R-squared	0.3502		
F (5,389)		2.74	2.44
Wald chi2(5)			56.25
chibar2(01)			575.59
F (5, 467)	51.87		
N	79	79	79
Hausman test		14.32**	
Breusch and Pagan Lagrangian multiplier test for random effects			575.59**
Notes: Dependent Variable: lnFMV. Values in () indicate standard errors. ***, ** and * indicate significance levels at the 1%, 5% and 10% respectively.			

First, The Breusch and Pagan Lagrangian multiplier test for random effects proves that random effect test is better to pooled OLS result. This means OLS regression will not be relevant in explaining the relationships between dependent and independent variables. The Fixed Effect Model (FEM) controls the effect of time-variant differences between the firms; to ensure that the value of the variables does not change across time and have the same effect across time. The PCSEs test was done because there is heteroscedasticity; meanwhile, the FEM has no statistically significant P-values. Therefore, we will interpret the values of the new panel FEM coefficient; gotten from the PCSEs test. Lastly, the Random Effect Model (REM) assumes that the omitted time-invariant variables are uncorrelated with the included time-varying covariates. The result of the Hausman test shows that the fixed effect model is better because the probability value is less than 0.05. Since hausman test shows that FEM is preferable; we will not need to explain the REM. The OLS, FEM, and REM results show that the R-squared is low; this is because we only have a few time series of 5 years (2015-2020). Therefore, the heterogeneity of cross-section makes R-squared low. Also, for F (5,389), since Prob = 0.0000 < 0.05, we conclude that parameters are jointly statistically significant, and the independent variables are correlated.

Table 3: Time Fixed Effects Test

. testparm _IYears*
(1) _IYears_2016 = 0
(2) _IYears_2017 = 0
(3) _IYears_2018 = 0
(4) _IYears_2019 = 0

(5) _IYears_2020 = 0
H0: there is time fixed effects
F (5, 384) = 2.10 Prob > F = 0.0649

Supposition:

H0: There is no time fixed effects; As we can see, Prob>F = 0.0649 > 0.05. Hence, we failed to reject the null (H0) that the coefficients for all years are jointly equal to zero and conclude that there no time fixed effects are needed in this case.

Table 4: Hausman Fixed Random

. estimates store random
H0: difference in coefficients not systematic
chi2(3) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B) = 14.32 Prob>chi2 = 0.0025

Supposition:

H0: Unique errors (u_i) and independent variables are not correlated; We have: Prob = 0.0025 < 0.05. Hence, we reject H0. In other words, u_i is correlated with independent variables. Therefore, we choose the fixed effect model (FEM).

From Table 4, we can see that the Hausman statistic (p-value = 0.0025) is significant at 5% level, thus, rejecting the random effects theory. This implies that the fixed effects theory, which holds that u_i correlates with independent variables, is consistent with our panel data. Thus, in the context of our panel data, the unobserved firm-specific effects are not only significant determinants of firm value but also correlate with the independent variables in our specified model.

Table 5: Breusch and Pagan Lagrangian multiplier test for random effects

. xttest0
Breusch and Pagan Lagrangian multiplier test for random effects

lnFMV[C_ID,t] = Xb + u[C_ID] + e[C_ID,t]		
H0: Variance across entities is zero (no panel effect)		
Estimated results:		
	Var	**sd = sqrt (Var)**
lnFMV	3.465139	1.861488
E	.6057489	.7782987
U	1.679934	1.296123
Test: Var(u) = 0 chibar2(01) = 575.59 Prob > chibar2 = 0.0000		

Supposition:

H0: Variance across entities is zero (no panel effect); hence, we reject the null and conclude that residuals across entities are correlated. This is, evidence of significant differences across firms, therefore Random Effect is appropriate.

Table 6: Cross Sectional Dependences (CD) Test/ Contemporaneous Correlation

. xtcsd, pesaran abs
H0: residuals across entities are not correlated (there is no CD)
Pesaran's test of cross-sectional independence = 13.944, Pr = 0.0000
Average absolute value of the off-diagonal elements = 0.573

Supposition:

H0: residuals across entities are not correlated (there is no CD); Since Prob>F = 0.0000 < 0.05.; Hence, we reject null and conclude that there is cross-sectional dependence. Datasets of firms in Nigeria are cross-sectional dependent. Cross-sectional dependence will be corrected using Panels Corrected Standard Errors (PCSEs).

Table 7: Heteroscedasticity Test

. xttest3
Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i
chi2 (79) = 3.1e+06 Prob>chi2 = 0.0000

Supposition:

H0: The error variance is constant; 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. This shows there is a heteroscedasticity problem and will be fixed using PCSEs.

Table 8: Serial Correlation Test

. xtserial lnFMV SIZE CS ROA SALES LR
Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
F (1, 78) = 2.475
Prob > F = 0.1197

Supposition:

H0: no first-order autocorrelation; Because the p-value is 0.1197 which is more than 0.05, the fixed effect model has no disability which is there is no first-order autocorrelation.

Table 9: Estimation Results for Firm Value corrected of Heteroscedasticity and Cross-Sectional Dependences		
Variables	**Panel FEM**	**Panel PCSE**
SIZE	2.09e-06* (1.09e-06)	3.08e-06*** (3.99e-07)
CS	-.0433249* (.0233519)	-.1020229** (.0466918)
ROA	1.843199 (1.126945)	6.890144*** (1.398233)
SALES	-6.91e-07 (1.72e-06)	1.08e-06 (7.34e-07)
LR	.0225067 (.0193886	.0517299*** (.0156108)

Constant	8.806581*** (.0891127)	8.427303*** (.0961844)
Wald chi2(5)	-	341.00
Notes: Dependent Variable: lnFMV. Values in () indicate standard errors. ***, ** and * indicate significance levels at the 1%, 5% and 10% respectively.		

As N>T, the PCSEs thus corrects for panel heteroscedasticity and spatial correlation.

The regression result shows that the overall multiple regression is statistically significant as the chi-squared value of 341.0 gives a level of significance of 0%, which is less than 5%. R-squared value shows that only 35.71% of the variation in lnFMV has been explained by the firm-specific independent variables. The result of the Panel PCSE shows that,

a. Effect of SIZE on lnFMV

Based on Table 9, the results of the p-value state that the probability value obtained in the total assets variable represented as the firm size (lnFMV) is 0.000, which is below the 0.05 level of confidence. These results indicate that firm size had a significant positive effect on the value of the publicly listed companies on the Stock Exchange for the period 2015-2020. Meanwhile, the SIZE coefficient is 3.98 x 10-6 (0%), meaning that firm value would increase by 0.00 for every 1 unit increase in the firm size. The results of this hypothesis are in line with the research conducted by Dang et al. (2019), which showed that firm size had a significant positive effect on firm value. There are some evidence that large firms are more likely to adopt risk management than small firms (Liow, 2010).

b. Effect of CS on lnFMV

Based on Table 9, the results of the p-value state that the probability value obtained in the total debt to equity ratio variable represented as the capital structure (CS) is 0.029, which is below the confidence level of 0.05. These results indicate that capital structure had a significant negative effect on firm value. Also, the coefficient of CS is 10%, meaning that firm value would decrease by 0.10 for every 1 unit increase in the capital structure. The results of the first hypothesis are in line with the research conducted by Antwi et al. (2012) and Ater (2017), which showed that capital structure had a significant positive effect on firm value.

c. Effect of ROA on lnFMV

Based on Table 9, the results of the p-value state that the probability value obtained in the profitability variable represented as a return on assets (ROA) is 0.000, which is below the confidence level of 0.05. These results indicate that profitability had a significant positive effect on firm value. Also, the coefficient of ROA is 689%, meaning that firm value would increase by 6.89 for every 1 unit increase in the capital structure. The results of the second hypothesis are in line with the research conducted by Brigham and Houston (2019), who found that profitability had a significant effect on firm value.

d. Effect of Sales on lnFMV

Based on Table 9, the results of the p-value state that the probability value obtained in the total revenue variable represented as a sales is 0.142, which is above the confidence level of 0.05. These results indicate that a company's revenue did not affect its value. Also, the coefficient of SALES is 1.08 x 10-6, meaning that firm value would increase by 0.00 for every 1 unit increase in the firm revenue/sales. The results of the second hypothesis are in line with the research conducted by Zaenal et al. (2021), who found that revenue does not have a significant effect on firm value.

e. Effect of LR on lnFMV

Based on Table 9, the results of the p-value state that the probability value obtained in the current ratio variable represented as liquidity is 0.001, which is below the confidence level of 0.05. These results indicate that profitability had a significant positive effect on firm value. Also, the coefficient of LR is 51%, meaning that firm value would increase by 0.51 for every 1 unit increase in the firm liquidity. The results of this hypothesis are in line with the research conducted by Sondakh (2019), who found that liquidity had a significant effect on firm value. This means that the higher the company's liquidity ratio, the higher the company's liabilities borne by current assets, thus increasing public confidence.

5. Conclusion

Firm value reflects the present value of a company's cash flows in the future, and it will directly affect investment decisions. Hence, researching firm value is necessary. More specifically, the research goal is to identify the impacts of internal factors on firm value. Significantly, the purpose of this study is to find the internal factors that impact the firm value of Nigeria publicly traded corporations in NSX over five years, from 2015 to 2020. The study's empirical findings concluded that firm size, capital structure, profitability, and liquidity had positive effects on firm value in the companies that represented the industries in the period 2015-2020. In contrast, the firm sales had no impact on the value of the listed companies represented from 2015 to 2020. The suggestions here are:

1. First, the research focuses on the trading industries; therefore, this work only determines factors that affect the value of trading firms in Nigeria. Our research cannot explain all companies because each sector has unique characteristics.

2. For further studies, researchers may wish to investigate other variables that affect company value. The coefficient of determination which is only worth 35.71%, proves that there are still around 64.29% of other factors that influence the company's value. Further research with similar topics is expected to find a more detailed description of the various factors that influence the value of companies in the financial sector.

3. Research time should be long to provide a better picture because the results are likely to be different when using different periods.

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