

Firm Size and Equity Return of Quoted Consumer Goods Manufacturing Firms in Nigeria

Lawal Quadri Adebayo

Abstract— The study was conducted to determine the capability of firm size in determining the equity return of quoted Consumer goods Manufacturing firms in Nigeria capital market.

The study used the ex-post facto research design and content analysis. The choice of design was based on the fact that the dependent variable (return on equity) already exists. The research nature was longitudinal in nature because the subjects were not randomly assigned, that is, they were grouped based on a particular characteristic or trait such as listed on Nigerian Stock Exchange. Data were sourced from the secondary means such as financial statements.

The result of the study showed that there is a negative and insignificant relationship between the firm size and equity return of the quoted consumer goods manufacturing firms in Nigeria.

The study concluded that the size effect lacks capability in predicting the equity return of the firms and the higher the size the lower the equity return of the firm. Therefore, it supports the hypothesis that smaller firms outperform larger firms in the Quoted Consumer Goods Manufacturing Firms in Nigeria.

Index Terms— Consumer goods, Manufacturing Firms .

I. INTRODUCTION

Despite the assertion and theories that information available to the market is random and unpredictable, thereby making it impossible for investors to predict the price of a security or beat the market and make a riskless profit. The capital market has been proving that the theory of Efficient Market Hypothesis is correct. However, one of the notable exemptions identified in the theory is the size effect. This has been the basis for a debatable conclusion in the field of finance that larger firms underperform smaller firms. Financial analysts have been using the term that “small cap outperforms larger cap consistently”. This claim is supporting the life cycle theory. According to the life cycle theory, Firms at the introductory stage and growth phase which is usually smaller in nature, enjoy growth in revenue which economists refer to as an abnormal profit, that it is viable and advisable to reinvest the proceeds back into the business whereas the firms in the maturity stage have their earnings reduced by the entrance of the competitors into the market which leads to the usual advice to reduce investment in the line of the business. Academics and other practitioners in the field of finance have been searching for the determinants of share price and the return on investment. The factors that can determine the share price of a firm are broadly classified into internal and external factors. The internal factors are referred to as firms’

characteristics. Firms have been classified using different categories in financial management. The concept of “firm characteristics” has been proxied using different variables by different researchers. These typically include firm size, growth, liquidity and interest coverage ratio, investment opportunity, profitability, risk and tangibility (Suhaila, Kila, Mahamood & Monsur, 2008). Others include firm age and firm size, cash flow, dividend, leverage, operating expenses and internal governance mechanisms (Hassan & Bello, 2013; Abdullahi, 2016).

Firm size has been used in various areas in business management decisions, particularly in corporate finance to determine firm profitability and value (Surajit & Saxena 2009; La Rocca, La Rocca & Cariola, 2009; Akdal, 2011). Thus, firm size is among the most important and significant variables in the study of firms. However, the focus of this study is to determine how firm size affects firm profitability, especially stock returns in the consumer goods manufacturing firms in Nigeria.

Sindhuja (2017) states that firm size is one of the decisive factors in the achievement of efficiency in the operations of a business enterprise. The study states that large-scale production is considered to bring the most economic results by way of lower costs and higher returns. Therefore, there has been a tendency towards an increase in the size of firms in order to engage in mass production and bulk sales in diversified markets.

The study upon completion will be of great importance to stakeholders of the manufacturing industry in Nigeria. These stakeholders include the manufacturing firm’s management board, lending institutions, investors in the sector as well as academic researchers.

II. LITERATURE REVIEW

A. Theoretical Review

Efficient Market Hypothesis

This theory was propounded by Eugene Fama in 1965. He relates market efficiency as a concept that explains the relationship that exists between information and share values in the capital market literature. It is generally believed that the securities market possesses high efficiency in announcing information on different securities and on the capital market at large. The agreed opinion that available new information spreads rapidly and the value of stocks absorbs it without any hesitancy.

The efficient market hypothesis is associated with the belief of a random walk. It is a terminology frivolously used to describe price trend in literature related to finance where future price variations show random exit from recently past

prices. The random walk idea is a belief that if information movements are unhindered and facts are instantly shown in share prices, then the succeeding day's variation will show only succeeding day's information and this will not be influenced by today's price fluctuation. Information is however uncertain and the resulting price variation must be random and unpredictable. Consequentially, share prices reflect all available relevant information and uninformed investors demanding a spread portfolio at the different prices provided by the market will achieve a quality response as good as that attained by the expert.

Fama (1965) divides market effectiveness into three namely: strong-form, weak form and semi-strong form. The Efficient Market Hypothesis (EMH) is therefore a proponent of informational effectiveness and it is referred to as market's ability to turn available market information into prices. The Efficient Market Hypothesis belief became known at the early of the twentieth century in the literature impact of Louis Bachelier, a French Mathematician in nineteen hundred. Samuelson's assertions including empirical outcomes that he issued in his widespread paper proof that properly anticipated prices fluctuate randomly, resulted to Efficient Market Hypothesis theory. The theory which has an extension to the theory of Random Walk, simply points out that share prices reflect fully information that is readily available about the value of the organization and it is practically impossible to have excessive profits (in excess of that which prevails in the market) by utilizing such information. In accordance to the hypothesis, price variation in a well-informed market should essentially be unpredictable. The information released will be randomly responded to. Hence, the theory asserts that to take advantage of available information, it is impossible to forecast subsequent fluctuation in price. However, the exemption of the hypothesis stands as a motivation for this study which is hinged on whether the size of a firm is a good predictor of its performance hence share value.

III. METHODOLOGY

A. Research Design

The study used the ex-post facto research design and content analysis. The choice of design is based on the fact that the dependent variable (return on equity) already exists. The research nature is longitudinal in nature because the subjects are not randomly assigned, that is, they are grouped based on a particular characteristic or trait such as listed on Nigerian Stock Exchange. This entails the collection of secondary data to study the phenomenon of interest since the event that has occurred previously and the researcher is capable of collecting the data in retrospection.

B. Population, Sample Size, and Sampling Techniques

The population of the study consists of consumer goods manufacturing firms listed on the Nigeria Stock Exchange (2021). The sample size of the study was 18 firms purposively selected based on the availability of data.

C. Sources of Data

The data for this study were collected basically from the secondary source. Specifically, the data were sourced from the Audited Annual Reports and Statement of Accounts of the selected firms. Also, sources such as websites of the sample firms were used to gather relevant information for the study and Refinitiv Workspace was very helpful in generating the required data.

D. Model Specification

To conform to previous moderation studies, this study adopted the model used by Abubakar (2021) with some modifications. The study used panel data estimation which has the characteristics of both cross-sectional and time-series to study the effect of leverage on equity returns of quoted consumer goods manufacturing firms in Nigeria.

The regression model as modified below was adapted to achieve the objective of this study:

$$ROE_{it} = \beta_0 + \beta_1 FS_{it} + \beta_2 AGE_{it} + \beta_3 LIQ_{it} + \beta_4 PROF_{it} + \beta_5 SALES_GR_{it} + \mu_{it} \dots(1)$$

E. Measurement of Variables and Description

The variables used in this study are measured as stated in

Table 1

Acronyms	Name	Formula	Definition
ROE	Return on Equity	Profit after tax/ Total Equity	This is the return generated on the equity investment in the company.
FS	Firm Size	log of Total Asset	The measure of the size of an entity measured as the logarithmic function of the total assets.
LIQ	Liquidity	Current Assets/Current Liability	A measure of how a company can conveniently finance its short obligations without using its long term capital.
SALES_GR	Sales Growth	Sales _t /Sales _{t-1}	The growth in sales or revenue of a firm when compared to the sales of the previous year.
AGE	Age	number of years since listed	Age of the company is computed as how many years the company has actively being in operation since it got listed.
PROF	Profitability	Net Income/Sales	A measure of the profit generated by a firm from the sales

Source; Author's Compilation (2021)

F. Methods of Analysis

The data obtained were analyzed using both descriptive and inferential statistical technique and the objective was achieved using the Pooled OLS, Fixed and Random Effect model

IV. RESULTS & FINDINGS

A. Descriptive Statistics Analysis

Descriptive Statistics provided information about sample statistics. Mean, Median, Maximum and Minimum and the distribution of the sample measured by the skewness, Kurtosis, and Jarque-Bera statistics for 18 companies give 288 observations. The mean is a measure of central tendency that was used to determine the average of the data for each variable. The maximum and the minimum values helped in Table 2: Descriptive Statistics

determining the peak and the least figures for the variables while the standard deviation is used to measure the degree of dispersion from the centre of the variables.

As presented in Table 2, the dependent variable Return on Equity that is (ROE) has a minimum value of -121.30 and a maximum of 3.03 having a mean value of -0.218438. It can be inferred that equity investment in consumer goods manufacturing firms in Nigeria produces a negative return on equity averaging 21.84% per annum.

Firm size (FS) has a maximum log value of 11.77 and a minimum of 0.0000 as presented in Table 2 The average of 10.6450 in log form which the anti-log value will provide 44,157 million in absolute value based on market capitalization. This implies that a listed consumer goods manufacturing firm in Nigeria is on average valued at 44 billion nairas.

	ROE	FS	AGE	LIQ	PROF	SALES_GR
Mean	-0.218438	9.865694	18.30903	1.100903	0.074306	0.115868
Median	0.165000	10.64500	18.00000	1.055000	0.070000	0.090000
Maximum	3.030000	11.77000	47.00000	3.250000	1.380000	1.640000
Minimum	-121.3000	0.000000	0.000000	0.000000	-1.020000	-1.000000
Std. Dev.	7.169616	2.771151	9.107468	0.624173	0.210051	0.253939
Skewness	-16.81138	-3.098853	0.570698	0.600563	-0.246561	1.051198
Kurtosis	284.4184	11.26122	3.693200	3.954223	18.56340	12.38008
Jarque-Bera	963921.6	1279.912	21.39974	28.23895	2909.550	1108.872
Probability	0.000000	0.000000	0.000023	0.000001	0.000000	0.000000
Sum	-62.91000	2841.320	5273.000	317.0600	21.40000	33.37000
Sum Sq. Dev.	14752.77	2203.952	23805.50	111.8128	12.66286	18.50718
Observations	288	288	288	288	288	288

Source: Author’s computation, 2022

Age (AGE) as presented in Table 2 has a mean value of 18.3090 with a maximum value of 47.000 and a minimum value of 0.0000. It could be inferred from this information that the average age of a listed consumer goods manufacturing firm in Nigeria is 18 years.

It could be inferred from the information in Table 2 about liquidity (LIQ) which shows an average of 1.1009, a minimum of 0.0000, and a maximum of 3.2500, which means that the average listed consumer goods manufacturing firms in Nigeria is liquid enough and can cover their obligations as

at when due.

As presented in Table 2, Profitability (PROF) has a mean of 0.07431 which shows that on average, listed consumer goods manufacturing firms in Nigeria cangenerate a margin level of 8.4% per annum with a minimum margin rate of -102% and a maximum rate of 138%.It could be inferred from this information that average consumer goods manufacturing firms in Nigeria are generating a profit margin of 8.40% per annum.

Sales growth (SALES_GR) has a mean value of 0.115868

and a minimum value of -1.0000 and a maximum of 1.6400 has presented in Table 2. This means that on average, the sales level of listed consumer goods manufacturing firms in Nigeria grows at a rate of 11.6% per annum.

B. Multicollinearity Test

A basic assumption of the ordinary least square (OLS) method of estimation is that the explanatory variables must be independent of each other. Before proceeding to the multiple regression techniques, a multicollinearity test was conducted on the explanatory variables of the equation model. This is to ensure that none of the variables was collinear and to a large extent, to understand the relationship of one variable to the others. The pairwise correlation method was employed and the results were presented in Table 3 with a commonly used

rule of thumb that a correlation coefficient greater than 0.8 in absolute value indicates a strong linear association and potentially harmful collinear relationship.

The data in the Table 3 showed the results of all possible bivariate combinations of the variables, namely FS, AGE, LIQ, PROF and SALES_GR. The results showed that all variables had very low correlation coefficients, less than 0.8 both positive and negative. This showed that all variables influencing the return on equity were independent of one another. This is therefore implied that all five (5) variables can be included in the regression analysis as independent variables using the OLS method of estimation without obtaining spurious results.

Table 3: Correlation Table

	FS	AGE	LIQ	PROF	SALES_GR
FS	1.000000				
AGE	0.055598	1.000000			
LIQ	0.456305	-0.120265	1.000000		
PROF	0.196455	-0.120179	0.292420	1.000000	
SALES_GR	0.110788	-0.183715	0.090221	0.184597	1.000000

Source: Author’s computation, 2022

C. Variance Inflation Factor Test

In addition to a pairwise correlation which is generally regarded as a rule of thumb that there is the absence of multicollinearity if the correlation among independent variables is low. In Table 4. the highest correlation is 0.456305 which led to the conclusion that there is no multicollinearity issue. The Variance Inflation Factor, a method of measuring the level of collinearity between the regressors in an equation was also tested to confirm the

presence or otherwise of multicollinearity. VIFs show how much of the variance of a coefficient estimate of a regressor has been inflated due to collinearity with the other regressors. Table 4.3 showed the result of the analyses. It is shown that none of the independent variables has VIF greater than 10 or a tolerance value less than 10%. Therefore, it can be inferred that there is no multicollinearity and the result of the regression is not spurious.

Table 4: Variance Inflation Factor.

	Collinearity Statistics	
	Tolerance	VIF
FS	0.300397	1.303447
AGE	0.2102318	1.073586
LIQ	0.625784	1.361356
PROF	4.605926	1.134762
SALES_GR	2.982588	1.073963

Source: Author’s Computation (2022)

D. Panel Unit Root Test

The variables used in the regression were subjected to unit root test using ADF-Fischer Chi-Square and PP-Fisher Chi-Square test. This was to reinforce and ensure robustness in the reliability of the results. Unit root tests were carried out to determine whether the data series for all the variables were stationary or non-stationary. The unit root test, therefore, helped to ensure that the estimate of the parameters obtained

from regression models, using ordinary least squares are reliable, efficient and consistent.

The tested null hypothesis for the unit root test was the presence of a unit root and the result of the test for return on equity was presented in Table 5. The data in the Table showed that all the independent variables that determine Return on Equity were stationary at level.

Table 5: Panel Unit Root Test

Variables	ADF- Fisher Chi-Square		PP- Fisher Chi-Square		Order of Integration
	Statistics	Probability	Statistics	Probability	
FS	64.4847	0.0025	88.5299	0.0000	I (0)
AGE	0.23359	0.0037	0.00388	0.0000	I (0)
LIQ	44.8720	0.0075	65.6047	0.0018	I (0)
PROF	58.4353	0.0104	61.7082	0.0048	I (0)
SALES_GR	96.1727	0.0000	144.988	0.0000	I (0)

Source: Author’s Computation (2022)

E. Regression Analyses

The results of the regression analysis of the effects of firm size on the return on equity of quoted consumer goods manufacturing firms using pooled, fixed and random effect panel methods were as presented in Table 7. The Hausman (1978) test in Table 7 showed that the random effect model is more appropriate when compared with the fixed-effect model. The probability value as in Table 7 is greater than 0.05 implying that the null-hypothesis that fixed effect is the most appropriate model is to be rejected (Chi-sq. = 3.400658; Prob. = 0.6385) hence, it can be concluded that the random effect model is the more appropriate model and was adopted to analyse the effects of firm size on the return on equity of quoted consumer goods manufacturing firms.

As presented in Table 6, the included independent variables were seen to explain variations in returns on equity to the tune of 40% as shown in the adjusted R² of the random method. Besides this, the Durbin-Watson with the value of 2.1780 implies that there is a presence of negative serial correlation. However, the absence or presence of Durbin Watson will not have affected the result of the regression. Also, the f-statistics with its probability (f-stat = 1.0403; prob = 0.3942) show that all included variables jointly and significantly explain variations in share value at a 1% significance level.

Results in Table 6 showed that of the tested explanatory variables, only a factor impacting the returns on equity i.e., FS had a negative relationship with Returns on equity (ROE) as depicted by the sign of coefficient in regression analysis. This means the higher the Firm Size, the lower the Returns on equity holding all other variables constant. The rest of the variables like AGE, LIQ, PROF and SALES_GR reflect the positive relationship with ROE which means the higher the mentioned variables, the higher would be the returns on equity. Hence, it was concluded that a relationship does exist between the dependent and the explanatory variables.

In Table 6, FS has a negative insignificant effect on returns on equity of quoted consumer goods manufacturing firms in Nigeria. This shows that a one-unit increase in the firm size of quoted consumer goods manufacturing firms will lead to an 18% decrease in the returns on equity. This establishes an inverse relationship between the firm size and the returns on equity of quoted consumer goods manufacturing firms in Nigeria. It can be deduced from this result that as the average consumer goods manufacturing firm in Nigeria grows bigger, the lower the return on equity generated will be.

This result shows that AGE has a positive insignificant effect on returns on equity of quoted consumer goods

manufacturing firms in Nigeria. The result in Table 6 reveals that as quoted consumer goods manufacturing firms get older yearly, returns on equity will increase by 6%. This implies that there is a direct relationship between the age of quoted consumer goods manufacturing firms in Nigeria and the returns on equity. This result shows that the older quoted consumer goods manufacturing firms in Nigeria becomes, the better the return on equity that the firm will generate to its shareholders.

LIQ, as presented in Table 6, has a positive significant effect on returns on equity of quoted consumer goods manufacturing firms in Nigeria, the result shows that a unit increase in Liquidity will lead to a 1.12 or 112% increase in returns on equity. This shows that the higher the liquidity level of quoted consumer goods manufacturing firms in Nigeria, the higher the returns on equity. Liquidity is a measure of how a firm can finance its short-term obligations. The result shows that liquidity is directly related to returns on equity and is significant at a 5% level of significance. This result reveals that the higher the investment in the working capital, the higher the returns on equity. It can therefore be argued that an optimal level of liquidity is advantageous. The risk arises only when excess liquidity is maintained by the firms. This suggests that there will be a limited association between returns on equity and liquidity and firms should be wary of the opportunity cost of maintaining high leverage.

PROF has a positive significant impact on the returns on equity of quoted consumer goods manufacturing firms in Nigeria. The results in Table 5 shows that for a unit increase observed in the profitability of quoted consumer goods manufacturing firms in Nigeria, returns on equity will increase by 2.84. This reveals that there is a positive strong relationship between the profitability of quoted consumer goods manufacturing firms in Nigeria and the returns on equity generated by the firms. This reinforces that the returns on equity of firms tend to rise as their level of profitability increases.

In a business life cycle, any firm at its growing stage is known for higher profit than the peers in the industry as they produced large volumes which relatively reduced unit cost of production. This type of firm is characterized by huge investment in form property, plant and equipment as a result of profit potential. Firms in this category are considered to have mature enough and focus on long term wealth maximization for their investors. SALES_GR has a positive significant effect on returns on equity. The positive coefficient means that a unit increase in sales growth will lead to a 0.60 or 60% increase in the returns on equity of quoted

consumer goods manufacturing firms in Nigeria. This reinforces the fact that firms with improving sales growth tend to produce higher returns on equity as their primary focus is on long term wealth maximization. Profits generated are retained and reinvested in the business operations to

improve long term returns on equity. The result in Table 6 shows that there is a positive relationship between sales growth of quoted consumer goods manufacturing firms in Nigeria and the returns on equity.

Table 6 Results of the Effect of Firm Size on Return on Equity

CAR Variable	Fixed Effect Model	Random Effect Model	Pool OLS
C	-1.777835 (-0.821352) (0.4122)	-1.024106 (-0.556191) (0.5785)	-0.923873 (-0.523009) (0.6014)
FS	-0.353449 (-1.461786) (0.1450)	-0.181998 (-0.992231) (0.3219)	-0.165815 (-0.951056) (0.3424)
AGE	0.156239 (1.513541) (0.1313)	0.059647 (1.119293) (0.2640)	0.052522 (1.090907) (0.2762)
LIQ	1.776220 (1.789675) (0.0746)	1.116155 (1.352546) (0.1773)	0.982945 (1.242559) (0.2151)
PROF	2.940027 (1.135270) (0.2573)	2.835155 (1.274028) (0.2037)	2.826926 (1.317213) (0.1888)
SALES-GR	0.103012 (0.057447) (0.9542)	0.601327 (0.346913) (0.7289)	0.755249 (0.437314) (0.6622)
R ²	0.387225	0.420023	0.397529
Adjusted R ²	0.311447	0.400501	0.300110
F. Statistics	1.151065	1.040276	1.006293
Pro (F statistics)	0.293051	0.394156	0.414230
Dubin-Watson	2.309040	2.178080	2.141418

Source: Author’s Computation (2022)

Table 7 Hausman Test

Correlated Random Effects - Hausman Test
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.400658	5	0.6385

Source: Author’s Computation (2022)

V. CONCLUSIONS & RECOMMENDATIONS

A. Conclusion

Based on the findings of this research work, it can be concluded that firm size has a negative but insignificant effect on equity return, but tends to increases and turn positive when the confounding factors, such as when we controlled for the age of the firm, the profitability and sales growth. It can thus be concluded that firm size has a negative and insignificant effect on equity return quoted consumer goods manufacturing firms in Nigeria. It is against the claim that the size of the firm could be used as a predictor of equity return in the quoted manufacturing goods in Nigeria. Therefore, the result of this study supports the notion that large firms underperform the smaller even if the efficiency of Nigeria capital market is questionable.

B. Recommendation

As a result of the findings from this study and conclusions reached, it has been recommended that the management of quoted consumer goods manufacturing firms whose responsibility is to oversee the affairs of the company shouldrelatively consider growth in the firm size that is capable of exploiting the incremental advantages associated with equity return as supported by the economies of scale theory and adopt strategic techniques to improve the returns to equity holders.

REFERENCES

[1] GAbdulahi, M. M., Hassan, S. B., & Abu Bakar, N. A. (2016). Analysing the impact of External Debt on Capital Formation in Nigeria: Autoregressive Distributed Lag Approach. *Journal of Social Sciences*, 7(1), 173-183.
[2] Abubakar, A. (2020). Electroless Plating of Palladium Membranes on Porous Substrates for Hydrogen Separation and the Effects of Process

- Factors on Plating Rate and Efficiency. *Journal of Power and Energy Engineering*, 2(8), 1-19.
- [3] Akdal, S. (2011). How Do Firm Characteristics affect Capital Structure? Some UK Evidence. *Journal of Financial Economics*. doi:10.2139/ssrn.1775706
- [4] Fama, E. F. (1965). The Behaviour of Stock Market Prices. *Journal of Business*, 38(1), 34-105.
- [5] Hassan, S. U., & Bello, A. (2013). Firm Characteristics and Financial Reporting Quality of Listed Manufacturing Firms in Nigeria. *International Journal of Accounting, Banking and Management*, 1(3), 47-63.
- [6] La rocca, T., La rocca, M., & Cariola, A. (2009). Capital Structure Decisions During a Firm's Life Cycle. *Small Business Economics*, 37(1), 107-130.
- [7] Masimba E. Sonono, H. P. (2015). Prediction of Stock Price Movement Using Continuous Time Models. *Journal of Mathematical Finance*, 5(2), 64, 34-105.
- [8] Sindhuja, K. M. (2017). Factors Impending Women's Political Participation. *International Journal of Applied Research*, 3(4), 563.
- [9] Surajit, B., & Saxena, A. (2009). Does the Firm Size Matter: An Empirical Enquiry into the Performance of Indian Manufacturing Firms. 4(1), 1-15.