

# Interrelationship Between Size, Growth and Profitability of Non Financial Firms in Nigeria

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## Abstract

This paper provides empirical evidence on the relationship between firm size, growth and the profitability of quoted non financial firms in Nigeria. Panel data framework was fitted to the secondary data obtained from one hundred and fifteen (115) companies that have ever been listed on the Nigerian Stock Exchange for the period 1998-2012. This study employs secondary data available in the annual reports of listed companies in Nigeria and the facts books published by the Nigeria Stock Exchange (NSE). The generalized method of moment results suggests that increase in profitability is the engine room of all encompassing growth. Transitively, profit has positive effect on growth while growth has positive effect on size.

**Keywords:** size, growth, profit, generalized method of moment

## 1 Introduction

Relationship between growth and profit has been controversial overtime from both empirical and theoretical views. Firm administrators are confronted with the right decision as to which policy measure is best for an establishment at a particular time to achieve profit maximization as the essence of every establishment. The Theory of Financing Constraint in concord with Classical Recardian Hypothesis maintain that the companies which generate profit and then retain it use that profit to avail good growth opportunities while the companies having no or low profits cannot avail good investment opportunities, so they do not grow rapidly (Jang and Park, 2011). Classical Recardian Hypothesis therefore concludes that Growth is enhanced by high profits and that profit is impeded by the increase in growth. On the other hand, the hypothesis of Growth Maximization states that the managers choose the growth maximization as an objective of the firm and not the profit. So the competitive relationship exists between firm profit and firm growth (Marris, 1964; Mueller, 1972). So also, Kaldor-Verdoorn Law states that the productivity of a firm can be increased by enhancing the firm growth and when productivity is increased, the sale also increases thus increasing the profit of the organization (Kaldor, 1966).

The scale of any enterprise to certain extent affects its profitability. Large scale productive firm profits from economies of scale as large production reduces average cost of the product through its ability to accommodate modern techniques and technology. Large firms also have more competitive power when compared to small firms in fields requiring competition, it argued that they have a bigger market share and opportunity to profit more, (Jonsson, 2007). In addition to this, it is also assume to have better access to funds among other benefits of large scale production and so is able to seize the opportunity to work in the fields which require high capital since they have larger resources, and thus provides them the opportunity to work in more profitable fields (Bayyurt, 2007). As a result of these opportunities, the size of a firm is expected to have a positive effect on its profitability, whereas, the case is not always the same as there are a lot of impediments to large scale production.

Some studies have examined the relationship between these variables, some discovered the relationship to be positive (Hardwick, 1997; Fiegenbaum and Karnani, 1991; Ravenscraft and Scherer, 1987; Papadogonas (2005); Punnose, 2008; Lee, 2009; Vijayakumar and Tamizhselvan, 2010) while some studies found negative relationship (Shepherd, 1972; Ammar et al. 2003 Goddard et al., 2005)

Defining these concepts pose serious problem to the researchers, as a result several variables were sometimes interchangeably used, the size of a firm is the amount and variety of production capacity and ability a firm possesses or the amount and variety of services a firm can provide concurrently to its customers while its growth is an increase in the sales of company, expansion of business through acquisition or merger, growth of the profits, product development, and diversification and also an increase in the number of employees of the firm. Profitability is the ability of a firm to amass a financial gain and widen the gap between capital outlay and total amount earned from the production. Therefore, previous studies have measured size through total assets, total sales, and employment or through total profits while profitability were measured through return on assets (ROA), return on equity (ROE) and return on sales (ROS).

The inconsistencies resulting from different theoretical positions and mixed empirical reactions observed in the relationship between firm growth, size and profitability impose challenges on researchers to

consider the reason behind this inconclusiveness. Some have maintained that it is industrial specific while some relied on administrative competency and efficiency (Glancey, 1998) and Andretch et al., (2004). This study is therefore, designed to establish the relationship between them in non financial firms in Nigeria as the financial firm decision are mostly regulated by a constituted authority.

The major objectives of the research are:

- a) To empirically test the relationship between firm size and profitability.
- b) To empirically test the relationship between firm growth and profitability.
- c) To empirically test the relationship between firm size and the growth.

This study shall is divided into five sections, apart from this section which introduces the study, section two reviews the literature on the previous studies in this direction. Section three discusses the sources of data, definition and methodology while section four discusses the result. Chapter five concludes the study and makes necessary recommendation.

## 2. Literature Review

### Relationship between Size and Profitability of the Firm

Studies abound on the relationship between firm size and profitability; the results of these findings are beyond the scope of this study. However, this study shall examine the recent studies base on the fact that the results are of almost the same conclusions with the earlier studies. The majority of these studies have used total assets, total sales or number of employees as firm size indicators, in spite of this, their results are controversial.

Studies on the relationship between size and profitability of firms in Nigeria are sparse, apart from Uwuigbe et.al (2016) that discovered no relationship between size and profitability of some corporate firm, there seems to be consensus on the available studies that the relationships between them are positive and significant, among these studies are;

Ofuan and Izien (2016) investigated the relationship between company age, company size and profitability against the background of the learning by doing and structural inertia hypotheses. A sample of 30 firms was scientifically selected from 202 listed on the Nigerian Stock Exchange Market as at December 2014 for the period between 2006 and 2012, the study finds a significant positive relationship between firm age, firm size and profitability.

Babalola (2013) studied the effect of firm size on the profitability of manufacturing companies listed in the Nigerian Stock Exchange by using a panel data set over the period 2000-2009. Profitability was measured by using Return on Assets, while both total assets and total sales were used as the proxies of firm size. According to the results of the study, firm size, both in terms of total assets and in terms of total sales, has a positive impact on the profitability of manufacturing companies in Nigeria.

Abiodun (2013) tested the effect of the size of the company on its profitability for the manufacturing companies listed in the Nigerian Stock Exchange during the period between the year 2000 to 2009 and he found a significant positive relationship between size measures and profitability.

There are a lot of other countries studies that share the same conclusions along with these studies, among these are (Robert et.al 2015; Abolfazl and Hossain 2015; Atif and Qaisar 2015; Sriharan 2015; Doğan 2013; Maja and Josipa 2012; Shubita and Alsawalhah 2012; Akbas and Karaduman 2012; Saliha and Abdessatar 2011; Stierwald 2009; Lee 2009; Serrasqueiro and Nunes 2008; Jonsson, 2007; Özgülbaş et al. 2006; and Majumdar, 1997) among others)

Notwithstanding, there are few studies (not on Nigeria) that discovered negative relationship between size and profitability (Amaton and Burson, 2007; Becker-Blease et al. 2010; and Schneider (1991).

However there are studies that arrived at mixed result, for instance Velnampy and Nimalathan (2010) studied the relationship between firm size and profitability of all the branches of Bank of Ceylon and Commercial Bank in Sri Lanka over the period of 10 years from 1997 to 2006. They observed that there was a positive relationship between firm size and profitability in Commercial Bank, but there was no relationship between firm size and profitability in Bank of Ceylon. So also, Khatap et al. (2011) have studied the relation between performances and corporate governances of 20 firms which have been listed in Karachi Stock Exchange. The results of the study using the data of the period between the years 2005-2009 have showed a positive relation between total assets and ROA, but a negative and statistically not significant relation has been found between ROE and total assets. While, Banchuenvijit (2012) studied factors affecting performances of the firms operating in Vietnam, he found a positive relation between total sales and profitability of the firms but on the contrary a negative relation has been found between profitability and total assets. Additionally, the author has found statistically not significant results between number of employees and profitability.

Uwuigbe et.al (2016) examined the influence of corporate attributes on business success on 30 selected companies on a data collected from Nigeria Stock Exchange (NSE) for the period of 2007 to 2011; he discovered that there is no relationship between return on asset which is a measure of profitability and the size of corporate firms in Nigeria.

### **Relationship between the Profitability and Growth**

Chandler and Baucus (1996) submit that the high growth does not always mean that company is performing well and so also the low growth does not mean that the company is performing poorly. Greiner (1972) posited that there can be positive or negative relationship between the profitability and growth depending on the management behavior. He reported that when managers motivate employees, they perform better and then companies grow and earn profitability.

Literatures on the relationship between growth and profitability can best be described as inconclusive, as there are a lot of empirical evidences to establish and justify a relationship between them, there also exists a lot that the debunked any relationship between them. This study will only reference some of the recent studies as there are a lot on either side of the coins dated back to a century.

Nawaf and Salem (2015) investigated the impact of financial leverage, Company's Growth, noncurrent/ total assets ratio, and firm's Size as independent variables on profitability in proxy of Return On Assets ratio (ROA) as dependent variable. A sample of 25 Jordanian Industrial companies listed on Amman Stock Exchange (ASE) for a period of 10 years (from 1995-2005) was selected. The results of the research show that there was a significant effect of the Financial Leverage and Growth on profitability of industrial companies.

ÇOBAN (2014) investigated the interaction between firm growth and profitability using panel data on 137 Turkish listed manufacturing firms over the period 1997-2012. Using system-GMM (Blundell and Bond, 1998) growth and profit regressions are estimated. According to results there is a statistically significant positive relation between current profits and current growth. The impact of current profits on current growth is much stronger than the impact of current growth on current profits in the case of Turkish manufacturing firms and that the link between current profits and lagged profits is much stronger than the link between current growth and current profits.

Kouser et.al (2012) investigated the inter-relationship between firm size, growth, and profitability of non-financial companies listed at Karachi stock exchange using sample of 70 (seventy) non-financial companies listed at Karachi Stock Exchange of Pakistan between 2001-2010, selected on the basis of their market capitalization. Panel data techniques were employed using 700 observations of each of the variables of study; size (log natural of total assets), growth (sustainable growth rate for firm) and profitability (return on assets). The study concluded that the profitability has strong positive relationship with the growth of the firm; however size has less significant and negative impact on the profitability.

Gopinath (2012) investigated the dual relationship between growth and profitability in REITs using GMM-system estimator to test a dynamic panel data model of firm growth that incorporates different influencers of growth in REITs. Using data on 148 US equity REITs that had its IPO during the period 1993-2005, the result found a small positive influence of profit rates on subsequent growth and a positive and significant influence of growth on profits.

Delmar et.al (2012) tested the evolutionary theory using a unique panel of knowledge-intensive new firms in Sweden. The results found a strong support for the notion that profitability enhances both survival and growth, and growth helps profitability but has a negative effect on survival.

Akihiko and Dongun (2011) investigated interaction between firm growth and profitability using panel data on 1633 Japanese manufacturing firm for 1987- 2007, the results confirmed that firm face a tradeoff between growth and profitability and that the link between prior growth and current profit is much stronger than prior profit on current growth. The study confirmed that current profit is a pre requisite for future growth while excessive current growth is detrimental to future profit. However, in some sectors, such as automobile industry and chemical industry, high profit and high growth can be achieved at the same time without damaging profitability.

Jang and Park (2011) worked to find out relationship between firm profitability and growth. They argued that increasing profit also increases growth, but the profitability is impeded by an increase in growth.

Serrasqueiro Z (2009) used dynamic panel estimators to test empirically the relationship between the growth of Portuguese companies and their profitability. The empirical evidence obtained indicates that growth in Portuguese companies means increased profitability. Growth in Portuguese companies is a catalyzing factor of profitability,

Fitzsimmons, et. al. (2005) Using a regression equation with lagged profit and growth variables to examine growth and profitability in small and medium sized Australian firms, it found no evidence of a consistent relationship between growth and profitability. The results also found that a higher proportion of firms pursuing the profitability pathway were much more likely to achieve high growth and profitability in following years. A much lower proportion of firms pursuing the growth pathway were likely to achieve above average performance in profitability in future years.

Bottazzi et al. (2001) used productivity as a measure of profit rate and argued that profit is not related to growth. According to Markman and Gartner (2002) there is no relationship between growth and profitability. Roper (1999) and Gschwandtner (2005) found no relationship between these two terms.

### Relationship between Size and Growth of the Firm

The earlier studies on the relationship between firm size and the growth circled around the validity of the Law of Proportionate Effect (LPE) by Gibrat (1931). The law submits that size and growth of a firm are not dependent on each other and that past growth does not depict future growth of the firm. When the size and growth are independent and unrelated then firm growth increases or decreases arbitrarily and there is unlimited variance of firm size.

Many researches were conducted to check LPE in the past while, some earlier studies (Hart and Paris, 1956; Simon and Bonini, 1958; Hymer and Pashigian, 1962; Heshmati 2001 ) validated the law. The law was rebuffed by other researches (Singh and Whittington, 1975; Chesher, 1979; Kumar, 1985; Evans, 1987; Hall, 1987; Contini and Revelli, 1989; Wanger, 1992; Dune and Hughes, 1994; Reid, 1995; Hart and Oulton, 1996; Harhoff et al., 1998; Audsetsch et al., 1999; Wilson and Morris, 2000; Rufin, 2007). Some studies that established a relationship between them are inconclusive about whether the relationship is positive or negative. While Mansfield (1962), Hall (1987), Mata (1994), Das (1995), Giardano, (2003) found a negative relationship between firm size and growth, Singh and Whittington (1975) found a positive relationship.

Some studies were skeptical about taking position on Gibrat posture; they attached condition to acceptability or otherwise of his position, among these are Evans (1987) and Hall (1987) which maintained that the acceptability of LPE is dependent on different classes of firm size. Also Glancey (1998) reported that the relationship between size and growth depends on managerial ability and objectives of the firm and Andretch et al., (2004) argued that size and growth relationship depends on the nature of industry. Park and Jang, (2011) maintained that small firm are more receptive to growth than large firms.

#### Hypotheses of the Study

For the study, the following hypotheses were formulated.

- H1<sub>0</sub>: The size and growth of the firm have no positive effect on its profitability.
- H2<sub>0</sub>: The size and profitability of the firm have no positive effect on its growth.
- H3<sub>0</sub>: The profitability and growth of the firm have no positive effect on its size.

### 3 Data and Methodology

The main purpose of this paper is to provide empirical evidence on the relationship between firm size, growth and the profitability of quoted non financial firms in Nigeria. Panel data framework was fitted to the secondary data obtained from sampled firms for the period 1998-2012 for one hundred and fifteen (115) companies that have ever been listed on the Nigerian Stock Exchange. Financial services and investment firms listed on the NSE were excluded because capital structure of firms in this Industry are well regulated by regulatory bodies such as the Central Bank of Nigeria (CBN), Nigerian Deposit Insurance Corporation(NDIC), National Insurance Commission(NICOM) and the nature of their asset and liabilities differs from non-financial firms. In effect, this study employs secondary data available in the annual reports of listed companies in Nigeria and the facts books published by the Nigeria Stock Exchange (NSE).

#### Measure of Variables

1. Total Leverage Ratio (TLR) = total debt/Total Debt and total equity.
2. Profitability (PROF) = Earnings before Interest and Tax/Total Assets.
3. Size (SIZE) = Natural logarithm of total assets.
4. Assets Tangibility (TANG) = Fixed tangible assets/total assets.
5. Growth opportunities (GRO) =Percentage change in the log of total assets.
6. RISK = Standard deviation of the earnings before interest and tax to total asset.
7. Return on equity (ROE) = net income/shareholders equity.
8. Age: year of existence of the firm
9. Return on Asset: net income/ total assets

$$PROF_{it} = a_0 + \beta_1 PROF_{it-1} + \beta_2 SIZE_{it} + \beta_3 GRO_{it} + \beta_4 Z_{it} + \varepsilon_{it} \dots\dots\dots (1)$$

$$GRO_{it} = a_0 + \beta_1 GRO_{it-1} + \beta_2 SIZE_{it} + \beta_3 PROF_{it} + \beta_4 Z_{it} + \varepsilon_{it} \dots\dots\dots (2)$$

$$SIZE_{it} = a_0 + \beta_1 SIZE_{it-1} + \beta_2 PROF_{it} + \beta_3 GRO_{it} + \beta_4 Z_{it} + \varepsilon_{it} \dots\dots\dots (3)$$

Where,  $Z_{it}$  is a vector of control variables (age, risk, asset tangibility, total leverage, return on asset, return on equity)  $\varepsilon_{it}$  is a stochastic error term.

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
PROFIT	0.03736	0	0.621347	-0.31373	0.09114	1710
SIZE	7.600404	8.0445	20.0598	-4.29292	5.461986	1710
GRO	0.155579	0	33.16512	-28.7904	2.122934	1710
TANG	0.192709	0	10.44	0	0.362354	1710
TLR	0.409391	0.13765	30.89289	-3.308	1.042328	1710
RISK	7.550253	0	2657.495	-166.856	83.35359	1710
ROA	0.11638	0.084349	13.81	-5.52	0.655403	1710
ROE	6.85903	0.253284	1558.6	-7.99	58.48911	1710
AGE	30.67408	32	89	0	19.16593	1710

The average age of sample firms is 30 years. The oldest firms have been existence for 89 years. The standard deviation of age of the sample firms is 19.16. The average growth opportunity of the sample firms is 0.15. The standard deviation of growth opportunities for the sample firms between 1998 and 2012 is 2.12. The firm with the smallest growth opportunities has growth opportunities of 28.79 and firm with the largest growth opportunities has 33.16 has growth opportunities. The average Asset tangibility of the sample firms is 0.192. The standard deviation is 0.36. The minimum is 0 and maximum is 10.44. The average size of sample firms is 7.60. The minimum size is 4.29 and maximum size is 20.06. The standard deviation of the size of sample firm is 5.46. Profitability has average of about 0.04; the minimum profitability is about 0.3 while the maximum is about 0.6, the standard deviation is about 0.09. The average return on equity of sample firms is 6.86. The standard deviation is 58.49. The range of return on equity for the sample firms is between 7.99 and 1558.6.

Correlation	PROFIT	SIZE	GRO	TANG	TLR	RISK	ROA	ROE	AGE
PROFIT	1.00								
SIZE	0.08***	1.00							
GRO	0.04*	0.06***	1.00						
TANG	0.12***	0.19***	0.05**	1.00					
TLR	0.00	-0.03	-0.02	-0.04*	1.00				
RISK	0.02	-0.04	-0.01	-0.01	0.01	1.00			
ROA	0.10***	0.00	0.00	-0.02	-0.04	0.02	1.00		
ROE	-0.03	0.08***	-0.01	0.05***	0.12***	-0.01	0.03	1.00	
AGE	0.11***	0.25***	0.02	0.11***	-0.01	-0.04*	0.02	0.06***	1.00

\*\*\* 1% level of significant, \*\* 5% level of significant, \*10% level of significant,

The null hypothesis of no correlations among the variables was tested, and the result indicates that there are positive and significant correlation between profit, size and growth of the companies. There exist 1 percent level of significance level of correlation between profit and size and between growth and size while profit and growth are correlated with 10 percent level of significance. In this instance, as profit of a firm increases, so also is the growth and size of that firm, though, this is not sufficient to establish a relationship between these variables, Moreover, the result shows some correlation between some control variables and these variables. For instance, there is a very high correlation between profit, tangibility, return on asset and age of the companies. Also there exist some correlations between the size, tangibility, age and return on equity. The correlation between the growth and tangibility is very high and there are also some notable correlations among the control variables.

#### 4 Estimation Techniques and Discussion of Results

In this study we employ dynamic estimators because it allows correct estimation of the relationship between the dependent variable in the previous and current periods. This is necessary, especially on the relationship between growth and profit, examining the effect of previous growth on current profit will be more reasonable than measuring present growth only on present profit. Also it enables us to examine the effect of previous profit on current profit, so also other variables. An endogenous problem occurred in these dynamic panel models that used



the past values of dependent variables, endogeneity problem occurs when the independent variable is correlated with the error term in a regression model. Application of OLS method on dynamic models will lead to spurious regression, specification test using Durbin Watson statistics test on OLS method with lagged dependent variable will be biased. The system GMM technique provides more efficient estimates than methods that only consider the level equation as identification conditions, as this method combines moment conditions for the model in first differences with moment conditions for the model in levels. This method coefficient are known to be consistent asymptotically normal and efficient in the class of estimators that do not use any extra information aside from that contained in the moment conditions.

The advantages of using dynamic estimators mentioned by Arellano and Bond (1991) among others are effective control of endogeneity; greater control of possible collinearity between the independent variables; control of the effects of possible omission of independent variables in explaining the dependent variable; and elimination of non-observable.

The standard errors that we report here are the standard Arellano-Bond 2-step estimator standard errors. Though, there is evidence in the literature that the standard errors for the two-step estimator may not be reliable, this necessitated some other test about the specification, most especially Sargan test of validity and Arellano-Bond test of autocorrelation. Arellano-Bond test of autocorrelation test the null hypothesis of no autocorrelation while Sargan test the null hypothesis that the over-identifying restrictions are valid

**Table 1**

**Model 1: Two-step Dynamic GMM Estimations**

**Dependent variable: profitability**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PROFIT(-1)	0.213318	0.009086	23.47896	0.0000
SIZE	-0.001507	0.000589	-2.558862	0.0106
GRO	0.000396	0.001228	0.322736	0.7469
AGE	-0.005751	0.000579	-9.935060	0.0000
RISK	-0.000282	0.000108	-2.601034	0.0094
ROA	-0.009925	0.004333	-2.290404	0.0221
ROE	0.007355	0.000619	11.88360	0.0000
TANG	-0.052379	0.007626	-6.868493	0.0000
TLR	0.014963	0.002113	7.081453	0.0000
AR(1)	0.3753	AR(2)	0.5278	
J-statistic	53.17246	Prob(J-statistic)	0.217453	

The effect of size of the firm on profits of the firm is negative and significant. This shows that increase in the size of the firm will lead to the decrease in profitability. An increase in the size of the firm by 1 percent will lead to a decrease in the growth of the firms by 0.002 percent at 1 percent level of significance. This result is unique as all the reviewed studies in Nigeria either found no relationship or a positive effect of size on profitability (Ofuan and Izien 2016; Uwuigbe et.al, 2016; Babalola, 2013; Abiodun, 2013). The relationship between growth and profitability is positive but not significant, this result negate the growth maximization hypothesis. The effect of lagged value of profit on profitability is positive and significant at 1 percent level of significance; with this an increase of 1 percent in profit in the previous year will lead to an increase of about 0.21 percent in the current year. The effects of age of the firm, the risk involved, return on asset and tangibility on profitability are all negative and significant at least 5 percent level of significance. The effect of return on equity and total leverage on profitability is positive and significant at the same level of significance. The test for autocorrelation of 0.52 in AR (2) and the p-value of 0.22 of Sargan J-statistics in this model presents no evidence of model misspecification and valid overidentifying restrictions respectively.

**Table 2**  
**Model 2: Two-step Dynamic GMM Estimations**  
**Dependent variable: Growth**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GRO(-1)	-0.041248	0.002943	-14.01483	0.0000
PROFIT	0.962113	0.016994	56.61525	0.0000
SIZE	-0.003871	0.003416	-1.133017	0.2574
RISK	-0.010480	0.000945	-11.09194	0.0000
ROA	-0.083182	0.018993	-4.379664	0.0000
ROE	-0.018362	0.002169	-8.466765	0.0000
TANG	-0.276860	0.022233	-12.45291	0.0000
TLR	-0.467691	0.027121	-17.24481	0.0000
AGE	0.066233	0.001925	34.41145	0.0000
AR(1)	NA	AR(2)	0.9999	
J-statistic	71.13162	Prob(J-statistic)	0.473286	

The effect of profit on growth is positive and significant at 1 percent level of significance. This shows that increase in the profit will lead to an increase in profitability. About 1 percent increase in the level of profitability leads to about 0.96% increase in the level of growth of the firms. This result confirms the theory of financing constraint in tandem with classical recardian hypothesis. The effect of size on growth of the firms not significant, this confirms the Gibrat (1931) law that submits that size and growth of a firm are not dependent on each other. The negative sign corroborates Das (1995), Jang and Park (2011) which found negative relationship between size and growth. This shows that increase in the size will lead to the decrease in growth but this effect is not well pronounced. The effect of lagged value of growth on growth of the firm is negative and significant at 1 percent level of significance; with this an increase of 1 percent in growth in the previous year will lead to a decrease of about 0.04 percent in the current year. This however, negates Gibrat law which submitted that that past growth does not depict future growth of the firm. The effects of return on equity, the risk involved, return on asset, tangibility and total leverage on growth of the firm are all negative and significant at 1 percent level of significance. The effect of age of the firm on growth is positive and significant at the same level. The test for autocorrelation of 0.99 in AR (2) and the p-value of 0.47 of Sargan J-statistics in this model presents no evidence of model misspecification and valid overidentifying restrictions.

**Table 3**  
**Model 3: Two-step Dynamic GMM Estimations**  
**Dependent variable: size of the Firm**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZE(-1)	0.523478	0.004135	126.5864	0.0000
PROFIT	-17.78300	0.146807	-121.1322	0.0000
GRO	0.279830	0.005659	49.44873	0.0000
AGE	-0.054345	0.001825	-29.78071	0.0000
RISK	-0.001227	0.000152	-8.090318	0.0000
ROA	-0.038434	0.020622	-1.863745	0.0626
ROE	-0.010776	0.001432	-7.527269	0.0000
TANG	-0.885423	0.059129	-14.97441	0.0000
TLR	-0.090215	0.019974	-4.516642	0.0000
AR(1)	0.0000	AR(2)	0.7790	
J-statistic	92.20816	Prob(J-statistic)	0.206728	

The effect of profit on size is negative and significant at 1 percent level of significance. This shows that an increase in the profit will lead to a decrease in size of the firms. About 1 percent increase in the level of profitability leads to about 17% decrease in the size of the firms. The converse is also true. So also, the effect of growth on size is positive and significant at 1 percent level of significance. This shows that an increase in the growth of the firm will lead to an increase in size of the firms. About 1 percent increase in the growth of the firm leads to about 0.27% increase in the size of the firms. The converse is also true. The effect of lagged value of size on size of the firm is positive and significant at 1 percent level of significance; with this, an increase of 1 percent in size of the firm in the previous year will lead to an increase of about 0.52 percent in the current year. The effects of age of the firms, return on equity, the risk involved, return on asset, tangibility and total leverage on growth of the firm are all negative and significant at 1 percent level of significance. The test for

autocorrelation of 0.78 in AR (2) and the p-value of 0.21 of Sargan J-statistics in this model presents no evidence of model misspecification and valid overidentifying restrictions.

## 5 Conclusion and Recommendation

Profit and size has significant and negative effect on one and other. This relationship is direct, the implication of this is that policy aimed at increasing the profitability should not be directed at increasing the size of existing firm as the policy will have adverse effect on the profitability. Also the policy directed at increasing the growth of the firm though will not impede profitability but will have no effect on it

Any policy aimed at increasing the growth of the firm should be channeled through increasing profitability. Since the relationship between growth and profit is positive, profit has very significant and positive effect on growth but growth has no significant effect on profit. This result concur with the Theory of Financing Constraint and Classical Recardian Hypothesis, in which case companies generate profit and then retain it and use the profit to avail good growth opportunities. Growth in other way round did not deter profitability as submitted by the Classical Recardian Hypothesis but its effect is not significant on profitability. Also any policy directed at increasing the size of the firms will have no positive effect on the growth of the firm. Since the relationship between size and growth is opposite, and effect of size on growth is negative and insignificant.

The study therefore, concludes that raising more equities and leverage through both short term and long term debt will increase capital base of the companies, thus transitively; profit maximization, growths and increases in the size of the firms will be achieved. Therefore, the policy recommendation is that profitability should be rigorously pursued to achieve all encompassing growth.

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