The Effect of Firm Size on Firms Profitability in Nigeria

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Abstract
Firms in a market economy vary widely in size, profitability, and survival. What are the factors determining these observed variables and how they operate has been active topic of research in industrial organization and more generally in developing country where Nigeria is one of them. Firm size has been considered as an important determinant of firm profitability. In this study, the effect of firm size on the profitability of manufacturing companies listed in the Nigerian Stock Exchange was analyzed 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.
Keywords: Firm Size, Profitability, Manufacturing Companies, Nigeria Stock Exchange.

Introduction

The size of a firm plays an important role in determining the kind of relationship the firm enjoys within and outside its operating environment. The larger a firm is, the greater the influence it has on its stakeholders. Again, the growing influences of conglomerates and multinational corporations in today's global economy (and in local economies where they operate) are indicative of what role size plays within the corporate environment. Refocusing the importance of size in corporate discourse, Bhayani, (2010) argue that an interesting aspect of economic growth is that much of it takes place through the growth in the size of existing organizations. They cite Rajan and Zingales (1995) whose study in the sample of 43 countries show that two-thirds of the growth in industries over the 1980s, comes from the growth in the size of existing establishments, while only one-third trickled in from the creation of new ones. As the popularity of corporate size phenomenon continues to rise within the external business environments, more attentions are being pushed to its real effects on the internal structures of corporations and the specific impact on the relationship between the firm and its key stakeholders. One of the most popular areas where the influence of firm size has been much queried is the area of practice of corporate finance. It would not be wrong to say that firms have been playing a central role in today's global and capitalist world economy and their performance is one of the most important issues for many firm stakeholders such as shareholders, creditors, employees, suppliers and governments (Bhayani, 2010; Madrid Guijarro et al., 2007). By this reason, analyzing the factors determining firm profitability or, to put it in another way, identification of the sources of variation in firm-level profitability has been regarded as an important research theme.

In this context, size has been considered as a fundamental variable in explaining firm profitability by the researchers and a number of studies investigate the effects of size on firm profitability (Serrasqueiro et al, 2008; Wu, 2006). Here, it should be stated that according to the conclusions of various studies the impacts of size on profitability can be negative or positive (Serrasqueiro et al, 2008). Forasmuch as some authors argue that larger firms have some advantages such as a greater possibility of taking advantage of scale of economies which can enable more efficient production (Hardwick, 1997; Fiegenbaum and Karnani, 1991), a greater bargaining power over both suppliers and distributors or clients, exploiting experience curve effects and setting prices above the competitive level (Fiegenbaum and Karnani, 1991). It is also argued that larger firms are more stable and mature and they can generate greater sales because of the greater production capacity that will enhanced capital cost savings with the economies of scale (Ravenscraft and Scherer, 1987). On the contrary, some authors claim that size may have no or negative impacts on profitability (Shepherd, 1972), especially if growth in size causes a diseconomies of scale (Goddard et al., 2005).

The main purpose of this paper is to provide empirical evidence on the relationship between firm size and profitability of quoted firms in Nigeria. Panel data framework was fitted to the secondary data obtained from sampled firms for the period 2000-2009. This study, considering the peculiar economic characteristics of most developing countries and using data from Nigerian-quoted companies, primarily aims at investigating the actual effects of firm size on the profitability of firms in a developing economy. In this context, this paper makes two

contributions to the literature on the relationship between size and profitability. First, it extends existing empirical investigation by studying companies operating in an emerging country, Nigeria. Secondly in this study, we use both total assets and total sales as the proxies of firm size.

Literature Review

The relationship between firm size and profitability occupy a substantial portion of economic literature. However, previous empirical investigations of the issue have yield conflicting results. Some studies have obtained a weak or negative relationship or none at all (Shepherd 1972; Ammar et al. 2003); others have reported a positive association (Punnose, 2008; Vijayakumar and Tamizhselvan, 2010). Still others have found a positive association that disappear or reverses itself among the firms with the largest assets. Besides the conflicting results on the relationship between firm size and profitability, almost all known existing studies have focused on the impact of the former on the latter neglecting the possibility of feedback. However, it is possible for profitability to affect fir size and vice versa. It is contended in the literature that the profit rates of the firms can persist over time and increasing levels of profits can help firm grow faster and at the same time the size of a firm plays an important role in determining the kind of relationship the firm enjoys within and outside its operating environment. The larger a firm is, the greater the influence it has on its stakeholders. Again, the growing influences of conglomerates and multinational corporations in today's global economy (and in local economies where they operate) are indicative of what role size plays within the corporate environment.

In another study, Serrasqueiro and Nunes (2008) investigated the relationship between firm size and performance of small and medium sized Portuguese companies for the period 1999 to 2003. Their results indicate that there is a positive and statistically significant relationship between size and profitability of SMEs. On the other hand, for the large Portuguese companies, they found a statistically insignificant relationship between size and profitability (Serrasqueiro et al, 2008). More recently, Lee (2009) analyzed the effects of size on profitability for over 7.000 US publicly-held firms during the period 1987-2006 and he found that firm size has positive impacts on profitability (Lee, 2009). After the above review, it is possible to say that the results of the empirical studies on the effects of size on profitability are far from being unequivocal. Yet, some studies find a positive impact, while others find negative or no relationship between firm size and profitability.

Data and Variables

This study employs panel data framework to allow for differences in the form of unobserved individual firms effect. Secondary data were sourced for this study. The data were sourced from the Annual Reports and Accounts of the random sample of 80 non-financial quoted firms listed on the Nigeria Stock Exchange (NSE) for the period 2000-2009. The panel data framework makes it possible to allow for differences in the form of unobservable individual country effects. Panel study has a number of advantages over time series or cross-sectional studies. These include its ability to control for individual heterogeneity as well as state and time invariant variables which are not possible with either time series and cross sectional study (Baltagi 2001). Further, it gives more informative data, more variability, less co-linearity among variables, more degree of freedom and efficiency.

Variables

As stated earlier, the main aim of the present study is to analyze the effects of firm size on profitability. In order to achieve this purpose; the dependent variable, profitability is measured by using Return on Assets (ROA). ROA is calculated as the net profit after tax divided by total assets and indicates the returns generated from the assets financed by the firm. In this sense, ROA represents the ability of firm's management to convert firm's assets into net profits and size constitutes the principal independent variable of the study. As mentioned earlier, there are some variables used to measures size of firm: In this study, two of these measures, namely, logarithm of total assets (SIZE_TA) and logarithm of total sales (SIZE_TS) are used as the proxies of size. The control variables include leverage (LEV), as ratio of total liabilities to total assets; inventory management (INV), as ratio of inventories to total assets and liquidity (LIQ), as ratio of current assets to current liabilities while Table below reports the descriptive statistics of these variables.

Table 1: Descriptive Statistics

Methodology

In order to test the relationship between dependent and independent variables, this panel data models was estimated:

Yit = a0 **+ ß1 X1it + ß2 X2it + ß3 X3it + ß4 X4it +ß5 X5it +** ε*it* ……. (1)

Where
Yit=ROA, X1=SIZE_TA, X2=SIZE_TS, X3=LIQ, X4=LEV, X5=INV; a0 = Constant;
ß = The Coefficient of the variable; i = firm; t= time period and ε = error term.
Panel data analysis is conducted to reveal the effect of firm size on profitability. On the other hand, the structure of unobservable heterogeneity is very crucial for determining the appropriate method of panel data estimation. If there is a correlation between the explanatory variables in the estimated model and the unobservable heterogeneity for each firm, fixed effects method is a sound choice to reach consistent estimation process. But if there is no correlation between them, random effects method, which is based on generalized least squares, is more efficient than fixed effects. Also, Hausman's specification test (1978) is used to decide the character of the effects: random or fixed (Baltagi, 2001; Wooldridge, 2002). Since the result of the Hausman test indicates that the difference in coefficients between fixed effects and random effects is systematic, fixed effects estimation is preferred.

Results

Correlation Matrix

Table 2 reports the correlation between the variables used in this study. It is clear that the correlations between ROA and other variables are statistically significant. According to the results, size both in terms of total assets and total sales and liquidity are positively correlated with ROA, while leverage and inventory are negatively correlated. It is also obvious that the correlations between all of the variables are significant except between size in terms of total sales and leverage.

Table 2: Correlation Matrix

Panel Data Results

Table 2 gives the coefficient estimates from the formerly stated panel data models. The results indicate that both in terms of total assets (SIZE_TA) and in terms of total sales (SIZE_TS) size is positively related to profitability of firms. According to this result, firm size has a positive impact on the profitability of Nigeria Manufacturing companies listed in the Nigerian Stock Exchange. This finding is in line with the results of the Serrasqueiro and Nunes (2008) and Lee (2009) and supports the argument that larger firms have a greater possibility of taking advantage of scale of economies by exploiting experience curve effects and setting prices above the competitive level (Hardwick, 1997; Fiegenbaum and Karnani, 1991), a greater bargaining power over both suppliers and distributors or clients (Fiegenbaum and Karnani, 1991) and they can be considered more stable and mature and can generate greater sales because of the greater production capacity that enhanced capital cost savings with the economies of scale (Ravenscraft and Scherer, 1987).

Table 3: Estimation Results

Conclusion

Given the fact that, firms' financial performance directly affects the stability of the countries' economic systems in today's capitalist world economy, the factors affecting firm profitability deserve special attention. It can be easily said that there are lots of factors that can have impact on the profitability of firms. Among these factors is firm size which has been considered as an important determinant of the profitability. In this study, the effect of firm size on the profitability of manufacturing companies listed in the Nigerian Stock Exchange analyzed by using a panel data set over the period 2000-2009. Profitability is measured by using ROA, while total assets and total sales are used as the proxies of firm size; liquidity, leverage and the ratio of inventories to total assets are considered as the control variables. According to the results, both in terms of total assets and in terms of total sales, firm size has a positive impact on the profitability of Nigerian manufacturing companies. When it comes to the control variables; a negative relationship with the ratio of total liabilities to total assets and profitability is found. That is high level of debt has a negative effect on profitability. This result may stem from the relatively high level of interest rates in Nigeria.

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Table 1: Descriptive Statistics

Variables	Observation	Mean	Std. Deviation	Minimum	Maximum
ROA	1001	0.0318	0.1418	-2.88	0.58
SIZE_TA	**1001**	19.2673	1.4472	15.87	23.42
SIZE_TS	**1001**	19.0748	1.8287	0.00	24.45
LEV	**1001**	0.4443	0.2561	0.01	2.94
INV	**1001**	0.1675	0.1239	0.00	0.73
LIQ	**1001**	2.6233	3.7354	0.13	79.25

Table 2: Correlation Matrix

	ROA	SIZE_TA	SIZE_TS	LEV	INV	LIQ
ROA	1					
SIZE_TA	0.235**	1				
SIZE_TS	0.212**	0.821**	1			
LEV	-0.557**	-0.065*	0.35	1		
INV	-0.110**	-0.283**	-0.116**	0.207**	1	
LIQ	0.171**	-0.110**	-0.219**	-0.450**	-0.114**	1

*Significant at the 0.01 level and ** Significant at the 0.05 level

Table 3: Estimation Results

Dependent Variable ⇨ / **Independent Variable** ⇩	**X1** SIZE_TA	**X2** SIZE_TS	**X3** LIQ	**X4** LEV	**X5** INV
Yit [ROA]	0.05629* (4.57)	0.0084** (2.28)	0.0004 (0.32)	-0.5521* (-20.06)	0.1463** (2.28)
Constant	-0.8289* (-3.39)	0.1233** (1.69)	0.197 (0.033)	0.521 (0.055)	0.147 (0.00266)
R^2	0.3505	0.3334	0.028	0.031	0.0228

Source: Data Analysis, 2011. [Values in brackets are standard errors] Significant at the 0.01 level, **Significant at the 0.05 level