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# Determinants of Investments Opportunities in Selected Manufacturing Companies in Nigeria

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**ABSTRACT**

**In corporate finance, the efficiency of both capital and financial market is linked with the investments behavior of investors. Investments opportunity in a firm is associated with the level of leverage, growth and the size of the firm and are of interest to market participants and researchers. This study is designed to examine how firm-level specific factors determine investments opportunities as there are absence of empirical literature in respect of the determinants of investments opportunities in Nigeria. This constitutes the gap that this study intends to fill, using some selected manufacturing companies. This study adopted correlation research design to examine the determinants of investments opportunities of selected listed manufacturing firms using panel regression technique of data analysis. The study found that leverage, and firm liquidity have significant positive impact on the investments opportunities in the selected manufacturing firms. On the other hand, the study concludes that firm growth has significant negative effects on the investments opportunities of the selected firms. The study concludes that leverage, liquidity and firm growth are significant determinants of investments opportunities in the selected manufacturing firms in Nigeria. The study recommends that the investors should consider firms with optimal leverage, higher liquidity position and revenue growth when making investments in the manufacturing companies in Nigeria. Managements of the listed manufacturing firms in Nigeria should try and achieve an optimal leverage position of their firms so as to enhance investments of the shareholders.**

**Keywords:** *Investment behaviour, Capital and Financial Markets, Investment Opportunity*

## INTRODUCTION

In corporate finance, the efficiency of both capital and financial market is linked with the investment's behavior of investors. Firm-level characteristics as well as macro-economic factors affect the investors' behavior, because returns on investments could be affected by those factors. Hence, corporate investments growth and opportunities is said to be determined by certain factors, which are of interest to market participants and researchers.

For instance, Filomena (2009) argued from economic theory point of view that, firm's investment depends on future growth opportunities, but might be dampened by inefficient financial markets. His analysis confirm that managers use the information contained in the price-earnings ratios to make investment decisions, while firms with higher growth opportunities accumulate more capital and that the stock market has a key role in channeling funds toward investment projects.

Moreover, Yuan and Kazuyuki (2011) analysis of firm investments from debt perspectives show that the rise in the total debt ratio had the effect of causing underinvestment among high-growth companies with investment opportunities. While investment-restraining effect of the total debt ratio, and liabilities had the effect of restraining overinvestment, which allowed a reduction in overall liabilities and/or unprofitable operations of companies.

Additionally, high-growth companies have promising investment opportunities, they are believed to be prone to underinvestment due to liabilities; on the other hand, as low-growth companies lack promising investment opportunities, their liabilities are believed to keep them from overinvestment. Therefore, investments opportunity in a firm is associated with the level of leverage, growth and the size of the firm.

However, extant literature in corporate finance recently focuses on the determinants of firm investments opportunities. Two proxy are usually used for investments opportunities; the Tobin Q and the Price earnings ratios. According to Srinivasan (2012), price earnings ratios expresses the relationship between the market price of company share and its earnings per share. It indicates the extent to which the earnings of each share are covered by its price. The ratio helps an investor to make an approximate estimation of the time required to recover his investment in a company's share. The price-earnings ratio has positive relationship with market price.

This study is designed to examine how firm-level specific factors determine investments opportunities as there are absence of empirical literature in respect of the determinants of investments opportunities in Nigeria. This constitutes the gap that this study intend to fill, using some selected manufacturing companies in Nigeria.

**Research Objectives**

The main objective of the study is to evaluate the determinants of investments opportunities of selected manufacturing companies in Nigeria. The specific objectives of the study are:

1. To examine the impact of firm leverage on the investments opportunities of selected manufacturing firms in Nigeria.
2. To determine the impact of returns on equity on the investments opportunities of selected manufacturing firms in Nigeria.
3. To investigate the impact of firm liquidity on the investments opportunities of selected manufacturing firms in Nigeria.
4. To evaluate the impact of firm growth on the investments opportunities of selected manufacturing firms in Nigeria.
5. To assess the impact of firm size on the investments opportunities of selected manufacturing firms in Nigeria.

## Research Hypotheses

To guide the study, the following research hypotheses are formulated in null form:

| | |
|---|---|
| H : 01 | Firm leverage has no significant effect on the investments opportunities of selected manufacturing firms in Nigeria. |
| $H_{02}$: | Returns on Equity has no significant effect on the investments opportunities of selected manufacturing firms in Nigeria. |
| $H_{03}$: | Firm Liquidity has no significant effect on the investments opportunities of selected manufacturing firms in Nigeria. |
| $H_{04}$: | Firm growth has no significant effect on the investments opportunities of selected manufacturing firms in Nigeria. |
| $H_{05}$: | Firm size has no significant effect on the investments opportunities of selected manufacturing firms in Nigeria. |

## Scope and Significance of the Study

This study is significant in providing empirical evidence on the determinants of investments opportunities in the selected Nigerian listed manufacturing companies. The study will add to the existing body of literature on the determinants of corporate investments in developing countries. The study will be useful to shareholders, investors, creditors, managers, students and researchers. Specifically, the findings from the research is important motivation for future research on the determinants of investments opportunities. Therefore, the study is restricted to all manufacturing companies classified by the NSE under the industrial goods sector, who are in operations during the period of ten years (2005 and 2014).

The rest of the chapter is as follows; section two covers the review of related literature, section three discusses the research methodology, section four presents the results and discussion of findings, while section five covers the conclusion and recommendations.

## LITERATURE REVIEW

According to Filomena (2009) a large body of the empirical research in corporate finance investigates the implications of shifts in growth opportunities for the level of investments. This literature relies on the idea that the location of the demand curve for firm's investment is determined by its investment opportunities, which are defined as the expected present value of future profits from additional capital expenditures. Therefore, all else being equal, an improvement in investment opportunities shifts the demand curve to the right, thereby increasing the desired level of capital stock (Hubbard, 1998). Since the value of growth opportunities is not directly observable, the corporate finance literature adopts different measures that attempt to approximate it.

Bond and Van Reenen, (2007) stated that Tobin's Q which is a price-based measure of investments opportunities is extensively used proxy in the corporate finance literature. And it is defined as the ratio of the maximized value of the firm in period t to the replacement cost value in period t of the capital stock that the firm inherits from the previous period and can be measured by the ratio of the market value of firm's securities to the sum of the replacement cost of property, plant and equipment and the replacement cost of inventory. These indicator proxies for corporate growth opportunity since the market value captures the market's anticipation of future growth opportunities within the firm (Bond and Van Reenen, 2007).

McConnell and Servaes (1995) use cross-sectional data to analyze U.S. listed companies in 1976, 1986 and 1988, and finds "two faces of debt," meaning that enterprise value was negatively correlated with the debt ratio of companies with high growth opportunities and positively correlated with the debt ratio of companies with few growth opportunities. Lang et al. (1996), based on an analysis of the relationship between the debt ratio and the rate of growth of companies, point out that for companies with fewer investment opportunities (i.e. companies with a low Tobin's Q), there is a negative correlation between the debt ratio and the investment. The estimation results from their studies do not find a negative correlation between the debt ratio and the growth rate for companies with abundant growth opportunities. In other words, for companies with excellent investment opportunities, increased liabilities do not necessarily hamper growth. Lang et al. interpret this analysis outcome as reflecting the disciplinary role of liabilities.

Aivazian et al. (2005) analyze the impact of liabilities on fixed investment using Canadian corporate-level data, and demonstrate that companies with fewer investment opportunities are more vulnerable to the impact of liabilities than companies with many investment opportunities. Further, according to Ahn et al. (2006), diversified companies tend to have higher debt ratios than focused counterparts and diversified companies make larger investments (net cost of capital/sales) than focused counterparts. They also point out that debt ratios influence management decisions on investment and that diversified companies can overcome the constraints of debt ratios through the distribution of liabilities by corporate managers.

In examining whether countries with higher growth opportunities are likely to experience faster aggregate output and investment growth, Bekaert et al. (2007) express growth opportunities by the weighted average of industry's priceearnings ratios, where the weights are the relative capitalizations of industries within a country. The intuition behind such a measure is that if countries have a high specialization in high price earnings industries, they should grow faster than the average. Bekaert et al. (2007) find that they do.

Filomena (2009) tests the relation between investments opportunities and financial factors using an unbalanced panel of 9,000 listed firms from 41 developed and developing markets, from 1990 to 2006. The empirical results confirm that managers use the information contained in the price-earnings ratios to make investment decisions. Moreover, stock market development and the specialization of the financial system towards arm's length instead of bank financing has a positive effect on firms' investment decisions. Taken together, these results suggest that firms with higher growth opportunities accumulate more capital and that the stock market has a key role in channelling funds toward investment projects.

## THEORETICAL FRAMEWORK

The theories of determinants of investments opportunities are situated in the capital structure theories based on the Modigliani-Miller Theorem. The theory upholds that the level of leverage does not affect corporate investment behaviors in a perfect market. That is, give simple assumptions, it is noted that there is no connection between fund procurement Investments) and the debt ratio. From the theory, regarding the negative effects of liabilities on corporate management, it is noted that liabilities can influence corporate behaviors through some ways (Filomena, 2009).

For instance, as increased liabilities raise bankruptcy risks, corporate managers who fret over the possibility of shareholders holding them accountable tend to move to curb borrowings and/or reduce investments, potentially raising the prospect of underinvestment. Moreover, as larger interest payment burdens resulting from higher debts reduce funds in hand, so debt has a negative impact on the investment activities of companies with promising investment opportunities. On the other hand, managers of companies with declining equity ratios have an incentive to make investments with a high expected rate of return even at the risk of sacrificing creditors. Therefore, as liabilities increase, creditors become increasingly reluctant to provide more funds, a development that can lead to underinvestment (Jensen and Meckling, 1976).

Jensen (1986) argues that whether liabilities restrain overinvestment depends largely on whether companies have growth opportunities. In short, Jensen points out that liabilities have (not only the negative effect of causing underinvestment by high-growth companies but also) the potentially positive effect of restraining overinvestment by low-growth companies. Moreover, by enlarging repayment obligations, not only curtail free cash flow but also raise the possibility of corporate bankruptcies, thus prompting corporate managers to reduce investments and sell off unprofitable business divisions.

In empirical studies, sample companies are classified based on whether or not they have investment opportunities in order to differentiate the positive effect of liabilities in restraining overinvestment from their negative effect of causing underinvestment. Previous studies have used Tobin's Q or PER to classify companies into those with and without investment opportunities. The low value of these indicators of investment opportunities suggests a lack of investment opportunities, often resulting in overinvestment. At companies with fewer investment opportunities, the negative effect of liabilities on investment activities is interpreted as having an investment restraining effect.

On the other hand, at companies with abundant investment opportunities, the negative effect of liabilities on investment activities is thought to lead to underinvestment. Lang et al. (1996), based on an analysis of the relationship between the debt ratio and the rate of growth of companies, point out that for companies with fewer investment opportunities (i.e. companies with a low Tobin's Q), there is a negative correlation between the debt ratio and the investment. The estimation results from their studies do not find a negative correlation between the debt ratio and the growth rate for companies with abundant growth opportunities. In other words, for companies with excellent investment opportunities, increased liabilities do not necessarily hamper growth.

## RESEARCH METHODOLOGY

This study adopted correlation research design to examine the determinants of investments opportunities of selected listed manufacturing firms in Nigeria. The design is chosen because of its effectiveness in the cause and effect analysis. The study used secondary data from the financial statements of the sampled companies for the period of 10 years (2005-2014).

The population of this study comprises of all the 17 manufacturing companies classified by the NSE under industrial goods sector. The firms must be in operation through the period of ten years (2005-2014), to form part of the sample. However, five firms were not selected due to difficulties

in accessing their data. Based on this, the population was reduced to 12 firms, and hence the sample size of the study.

The study employed panel regression technique of data analysis, tests like heteroskedasticity test and multucolinearity test are conducted, because they lead to spurious regression problem that can lead to statistical bias. This is also informed by the classical traditional regression assumptions which among others require that the variance of the error term has to be constant and the same for all observations (homoscedastic) and the explanatory variables are not perfectly correlated. Failure to ensure that may cause the usual standard error terms of the estimated parameters to be biased and inconsistent. Therefore, robustness tests help produce estimators that are BLUE (Best Linear Unbiased Estimators). The analysis was conducted using Statistics/Data Analysis Software (STATA 11.2).

## VARIABLES MEASUREMENT AND MODEL SPECIFICATION

The definitions and measurements of the variables used in this study are presented in Table 1 below;

**Table 1: Variables Measurements**

| Variables | Definition/Measurements |
|---|---|
| **Dependent Variable** | |
| Investments Opportunities | Defined as the price-earnings-ratio, and measured by the ratio of market price per share to EPS. |
| **Independent Variables** | |
| Liquidity | Is measured by the ratio of current assets to current liabilities (short-term debt) |
| Firm Size | Is measured by the natural logarithm of total assets |
| Leverage | Is measured by the proportion of long-term debt to total capital (long-term liabilities plus ordinary share capital) |
| Firm Growth | Defined as revenue growth (difference between revenue in year t and year t-1), scaled by total assets. |
| Returns on Equity | Is measured by the proportion of profit after tax to total shareholders' funds. |

## MODEL SPECIFICATION

To examine the determinants of investments opportunities in the quoted selected manufacturing firms in Nigeria, the following econometric model is estimated:

$$INVOP_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_2 ROE_{it} + \beta_3 LIQ_{it} + \beta_4 GRWT_{it} + \beta_5 FSIZ_{it} + \mu_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots i$$

| Where; | | |
|---|---|---|
| $INVOP_{it}$ | = | Investments opportunities in firm I in time t |
| $LEV_{it}$ | = | Leverage of firm I in time t |
| $ROE_{it}$ | = | Returns on equity of firm I in time t |
| LIQit | = | Liquidity of firm I in time t |
| $GRWT_{it}$ | = | Firm growth of firm I in time t |
| FSIZit | = | Size of firm I in time t |
| $\beta_0$ | = | the intercept/constant; |
| $\beta_1 - \beta_5$ | = | are the parameters; |
| $\mu_{it}$ | = | the residual/error term of bank I in year t |

## RESULTS AND DISCUSSIONS

In this section, the results obtained from the tests conducted on the data collected for the study are presented and discussed. The section also presented the test of the research hypotheses, it begins with the description of the data collected for the study and then the inferential statistics.

### Descriptive Statistics

The descriptive statistics of the data collected for the study is presented in Table 2;

**Table 2: Descriptive Statistics**

| Variables | Mean | SD | Min | Max | N |
|---|---|---|---|---|---|
| INVOP | 2.6049 | 1.2531 | -0.6539 | 7.0116 | 120 |
| LEV | 0.5074 | 0.1859 | 0.10 | 0.98 | 120 |
| ROE | 0.0953 | 0.8154 | -0.71 | 0.81 | 120 |
| LIQ | 1.4764 | 0.1208 | 0.0415 | 4.3969 | 120 |
| GRWT | 0.0706 | 0.1839 | -0.6711 | 0.5832 | 120 |
| FSIZ | 15.321 | 1.5422 | 12.90 | 19.538 | 120 |

Source: STATA Output (Appendix).

Table 2 shows that the measures of investments opportunities (INVOP), which is the price earnings ratio in the selected manufacturing firms in Nigeria has a minimum value of -0.6539 and 7.0116 as the maximum value. The average INVOP is 2.6049 with standard deviation of 1.2531, suggesting that the data deviate from the mean value from both sides by 1.2531. The table also indicates that the minimum and maximum values of the firm leverage (LEV) are 0.10 and 0.98 respectively, with the mean value of 0.5074 and standard deviation of 1.2531. The descriptive statistic implies that the average leverage (debt to total capital ratio) of the sample firms is high (50.74%), with the maximum of 98%. This implies most of the firms are highly geared.

The table shows an average returns on equity (ROE) of 0.0953 (9.53% of the total equity) of the sample manufacturing firms during the period, with standard deviation of 0.8154. This implies that the deviation from the mean is 81.54%, suggesting a high dispersion among the sampled firms. The minimum value of ROE during the period is -0.71 (-71% of the total equity) and 0.98 (98% of the total equity) as the maximum value.

The descriptive results in Table 2 shows that the minimum and maximum values of the firm liquidity (LIQ) are 0.0415 (0.04:1) and 4.3969 (4.39:1) respectively, with the mean value of 1.4764

(1.48:1) and standard deviation of 0.8154. The descriptive statistic implies that the average current ratio of the sample firm is satisfactory, but there are firms with poor liquidity position with current ratio of 0.04:1 which is far below the benchmark. Moreover, the analysis implies the presence of idle liquidity as the maximum current ratio of the sample firms is 4.39:1. The table also indicates that the minimum and maximum values of the firm growth (GRWT) are -0.6711 (67.11%) and 0.5832 (58.32%) respectively, with the mean value of 0.0706 (7.06%) and standard deviation of 0.1839. The analysis indicates that there are firms with decline growth in terms of revenue.

Lastly, the table shows an average firm size (FSIZ), which is the natural logarithm of total asset of 15.3208 of the sample firms in Nigeria, with standard deviation of 1.5422. This implies that the deviation from the mean is 1.5422, suggesting a slight dispersion among the sampled firms. The minimum value of firm size is 12.9004 and 19.538 as maximum value.

However, the analysis of the descriptive statistics results of the data collected for the study suggested that the data is widely dispersed as indicated by the standard deviations, which is an indication of non-normally distributed. The study employs the Shapiro Wilk Test for Normal Data. Under the Shapiro-WIlk (W) test for normal data, null hypothesis principle is used to check a variable that came from a normally distributed population. The null hypothesis of the test is that, the data is normally distributed. The test (in appendix) indicates that data from all the variables of the study are not normally distributed, except for firm leverage, because the P-values are not statistically significant at 1% level of significance, thus, the null hypothesis (that, the data is normally distributed) is rejected except LEV. This may have effects on the results, as most of the parametric tools of analysis including regression assumed that the data is normally distributed.

**Correlation Results**

The summary of the Pearson correlation Coefficients of the variables of the study are presented in Table 4 as follows;

**Table 3: Correlation Matrix**

| VAR | INVOP | LEV | ROE | LIQ | GRWT | FSIZ |
|---|---|---|---|---|---|---|
| INVOP | 1.0000 | | | | | |
| LEV | 0.4434 (0.0000) | 1.0000 | | | | |
| ROE | 0.0207 (0.8227) | -0.0286 (0.7565) | 1.0000 | | | |
| LIQ | 0.1769 (0.0532) | -0.2514 (0.0056) | -0.0431 (0.6400) | 1.0000 | | |
| GRWT | -0.0193 (0.8339) | 0.2092 (0.0219) | 0.3350 (0.0002) | 0.0290 (0.7531) | 1.0000 | |
| FSIZ | -0.0497 (0.5895) | -0.1236 (0.1785) | 0.1952 (0.0326) | -0.0186 (0.8406) | -0.0570 (0.5364) | 1.0000 |

Source: STATA Output (Appendix)

The correlation result in table 3 presents the results of the degree of associations between the determinants of investments opportunities of selected manufacturing firms in Nigeria. The table shows that there is a significant positive relationship between firm leverage (LEV) and investment opportunities, from the correlation coefficient of 0.4434, which is statistically significant at 1% level (p-value of 0.0000). This implies that leverage is significantly related with investment

opportunities in the quoted selected manufacturing companies in Nigeria. The result from the table also indicates that there is a positive association between returns on equity (ROE) and investments opportunities of the sample firms, from the correlation coefficient of 0.0207 which is not statistically significant at all levels of significance (p-value of 0.8227). This relationship implies that, high returns on shareholders' funds is directly related with investments opportunities, but is not statistically significant.

Moreover, table 3 shows a significant positive relationship between the firm liquidity (LIQ) and investments opportunities of the sample selected manufacturing firms in Nigeria, from the correlation coefficient of 0.1769, which is statistically significant at 10% level of significance (p-value of 0.0532). This implies that liquidity is significantly related with investments opportunities of the selected manufacturing firms.

The result from the table also shows that there is a negative correlation between firm growth (GRWT) and investments opportunities of the sample manufacturing firms, from the correlation coefficient of -0.0193 which is not statistically significant at all levels of significance (p-value of 0.8339). This relationship implies that, high revenue growth is indirectly related with investments opportunities. Table 3 shows a negative relationship between the firm size (FSIZ) and investments opportunities of the selected manufacturing firms in Nigeria, from the correlation coefficient of -0.0497, which is not statistically significant at all levels of significance (p-value of 0.5895). This implies that firm size is not significantly related with investments opportunities of selected manufacturing firms in Nigeria.

## Regression Results and Hypotheses Testing

In this section, the hypotheses formulated for the study are tested; the section begins with the discussion of the regression model as presented in table 4;

**Table 4: Regression Model Summary**

| Variables | Coefficients | Prob. |
|---|---|---|
| $R^2$ Within | 0.3249 | |
| $R^2$ Between | 0.2995 | |
| $R^2$ Overall | 0.3043 | |
| Wald Chi2 | 5166.38 | 0.0000 |
| Hettest: Chi2 | 6.41 | 0.0114 |
| Mean VIF | 1.15 | |
| Hausman Test | 9.35 | 0.0960 |
| Random Effect (LM) Test | 59.33 | 0.0000 |
| LEV | 3.2656 | 0.000 |
| ROE | 0.1705 | 0.831 |
| LIQ | 0.0444 | 0.000 |
| GRWT | -0.8612 | 0.087 |
| FSIZ | -0.0166 | 0.879 |
| CONSTANT | 1.1350 | 0.547 |

Source: STATA Output (Appendix).

The regression table indicates that the explanatory variables of the study (firm leverage, firm size, ROE, liquidity, and firm growth) explained 30.43% of the total variations in the investments opportunities of the listed selected manufacturing firms in Nigeria, from the coefficient of multiple determination (Overall R square of 0.3043). The table also shows that the model of the study is fit at 1% level of significance as indicated by the Wald Chi2 of 5166.38 with the P-value of 0.0000. The results from the table also indicates the presence of heteroscedasticity (that is, the variance of the error term is not constant), as shown by the Breuch Pagan/Cook-Weisberg test for heteroskedasticity (Hettest) Chi2 of 6.41 with p-value of 0.0114. The results on the other hand, show the absence of perfect multicollinearity among the independent variables, because the mean Variance Inflation Factor (VIF) is 1.15. This is far below the benchmark of 10, which is an indication of perfect multicollinearity.

Moreover, the table shows that the Hausman specification test and the Breusch and Pagan Lagrangian Multiplier Test for Random Effects indicated that Random effect regression model (Generalized Least Squares, GLS) is the most appropriate for the study. However, in view of the presence of heteroscedasticity, the study employed robust standard errors for corrections. Therefore, the hypotheses of the study are tested in the following section.

## HYPOTHESES TESTING

The results in table 4 shows that firm leverage (LEV) in the sample manufacturing firms in Nigeria has a significant statistical positive effect on the investments opportunities of the sample firms, from the coefficient of 3.2656, which is statistically significant at 1% level of significance (p-value of 0.000). This signifies that firm leverage of quoted manufacturing companies in Nigeria significantly influenced the investments during the period of the study. This implies a direct relationship between the leverage and investments opportunities; that is, when leverage increases, investments opportunities likely increases. The result is statistically significant at 1% significance level. Therefore, the study rejects the null hypothesis one ($H_{01}$), which states that firm leverage has no significant effect on investments opportunities of selected manufacturing firms in Nigeria. The study therefore, infers that the leverage of the firms significantly determined the investments opportunities in the selected manufacturing firms in Nigeria, during the period covered by the study.

Similarly, table 4 shows that returns on owners' funds (ROE) in the sample manufacturing firms in Nigeria has positive effect on the investments opportunities of the sample firms, from the coefficient of 0.1705, which is not statistically significant at all levels of significance (p-value of 0.831). This suggests that ROE of selected manufacturing companies in Nigeria did not significantly influenced the investments opportunities during the period of the study. The result is not statistically significant. Therefore, the study failed to reject the null hypothesis two ($H_{02}$), which states that returns on equity has no significant effect on investments opportunities of selected manufacturing firms in Nigeria. The study infers that returns on shareholders' funds of the sample firms did not significantly determined the investments opportunities, during the period of the study.

The table also show that firm liquidity (LIQ) of the selected manufacturing firms in Nigeria has a significant positive impact on the investments opportunities of the firms, from the coefficients of 0.0444, which is statistically significant at 1% level of significance (p-value of 0.000). This implies

that liquidity has significantly influenced the investments opportunities of selected manufacturing firms in Nigeria. Based on this, the study rejects the null hypothesis three ($H_{03}$), which states that firm liquidity has no significant effect on the investments opportunities of selected manufacturing firms in Nigeria. The study infers that liquidity position of a firm is a significant determinant of investments opportunities in the selected manufacturing firms in Nigeria, during the period covered by the study.

Similarly, the table show that firm growth (GRWT) in the sample firms has significant negative impact on investments opportunities of the selected manufacturing firms, from the coefficients of -0.8612 which is statistically significant at 10% level of significance (p-value of 0.087). The result suggests that firm growth in terms of revenue growth has an indirect relation with the investments opportunities of the firms, the result is statistically significant. Based on this, the study rejects the null hypothesis four ($H_{04}$), which states that firm growth has no significant effect on investments opportunities of selected manufacturing firms in Nigeria. The study therefore, infers that firm growth is not a significant determinant of investments opportunities of selected manufacturing firms in Nigeria, during the period covered by the study.

Lastly, the results in table 5 shows that firm size (FSIZ) in the sample manufacturing firms in Nigeria has negative effect on the investments opportunities of the sample firms, from the coefficient of -0.0166 which is not statistically significant at all levels of significance (p-value of 0.879). This signifies that size of firm in the sample manufacturing companies in Nigeria did not significantly influenced the investments opportunities during the period of the study. Therefore, the study failed to reject the null hypothesis five ($H_{05}$), which states that firm size has no significant effect on investments opportunities of selected manufacturing firms in Nigeria. The study therefore, infers that the size of the firms is not a significant determinants of investments in the listed selected manufacturing firms in Nigeria, during the period covered by the study.

## CONCLUSION AND RECOMMENDATIONS

Emanating from the analysis conducted on the data, together with the hypotheses testing, the study found that leverage, and firm liquidity have significant positive impact on the investments opportunities in the selected manufacturing firms in Nigeria. On the other hand, the study concludes that firm growth has significant negative effects on the investments opportunities of selected firms. The study concludes that leverage, liquidity and firm growth are significant determinants of investments opportunities in the selected manufacturing firms in Nigeria.

Based on the findings and conclusions from this research, the study recommends that the investors should consider firms with optimal leverage, higher liquidity position and revenue growth when making investments in the manufacturing companies in Nigeria. Managements of the listed manufacturing firms in Nigeria should try and achieve an optimal leverage position of their firms so as to enhance investments of the shareholders.

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## APPENDICES

```
. xtset id year, yearly
       panel variable:  id (strongly balanced)
        time variable:  year, 2005 to 2014
                delta:  1 year
```

```
. xtsum invop lev roe liq grwt fsiz
```

| Variable | | Mean | Std. Dev. | Min | Max | Observations | |
|---|---|---|---|---|---|---|---|
| invop | overall | 2.604988 | 1.253099 | -.6539265 | 7.011575 | N = | 120 |
| | between | | .8402877 | 1.109468 | 4.299325 | n = | 12 |
| | within | | .9579015 | .1764046 | 5.676787 | T = | 10 |
| lev | overall | .5074167 | .1859226 | .1 | .98 | N = | 120 |
| | between | | .0972704 | .374 | .731 | n = | 12 |
| | within | | .16069 | .1064167 | .9414167 | T = | 10 |
| roe | overall | .0953333 | .2186011 | -.71 | .81 | N = | 120 |
| | between | | .1534775 | -.173 | .345 | n = | 12 |
| | within | | .1612842 | -.5276667 | .5603333 | T = | 10 |
| liq | overall | 1.476364 | .8153519 | .0414838 | 4.396905 | N = | 120 |
| | between | | .4169507 | .5495521 | 2.105615 | n = | 12 |
| | within | | .7099993 | .0802614 | 3.767654 | T = | 10 |
| grwt | overall | .0701464 | .1832164 | -.671106 | .5831627 | N = | 120 |
| | between | | .0823789 | -.0337998 | .2170199 | n = | 12 |
| | within | | .1652126 | -.630979 | .6568558 | T = | 10 |
| fsiz | overall | 15.32079 | 1.542168 | 12.90042 | 19.5387 | N = | 120 |
| | between | | 1.498508 | 13.38476 | 17.93756 | n = | 12 |
| | within | | .5500773 | 11.50424 | 16.92193 | T = | 10 |

```
. swilk invop lev roe liq grwt fsiz
```

Shapiro-Wilk W test for normal data

| Variable | Obs | W | V | z | Prob>z |
|---|---|---|---|---|---|
| invop | 120 | 0.95807 | 4.035 | 3.125 | 0.00089 |
| lev | 120 | 0.99004 | 0.959 | -0.094 | 0.53747 |
| roe | 120 | 0.92062 | 7.639 | 4.555 | 0.00000 |
| liq | 120 | 0.11905 | 84.771 | 9.947 | 0.00000 |
| grwt | 120 | 0.95436 | 4.391 | 3.315 | 0.00046 |
| fsiz | 120 | 0.95958 | 3.889 | 3.043 | 0.00117 |

```
. pwcorr invop lev roe liq grwt fsiz, star (0.05) sig
```

| | invop | lev | roe | liq | grwt | fsiz |
|---|---|---|---|---|---|---|
| invop | 1.0000 | | | | | |
| lev | 0.4434* | 1.0000 | | | | |
| | 0.0000 | | | | | |
| roe | 0.0207 | -0.0286 | 1.0000 | | | |
| | 0.8227 | 0.7565 | | | | |
| liq | 0.1769 | -0.2514* | -0.0431 | 1.0000 | | |
| | 0.0532 | 0.0056 | 0.6400 | | | |
| grwt | -0.0193 | 0.2092* | 0.3350* | 0.0290 | 1.0000 | |
| | 0.8339 | 0.0219 | 0.0002 | 0.7531 | | |
| fsiz | -0.0497 | -0.1236 | 0.1952* | -0.0186 | -0.0570 | 1.0000 |
| | 0.5895 | 0.1785 | 0.0326 | 0.8406 | 0.5364 | |

```
. reg invop lev roe liq grwt fsiz
```

| Source | SS | df | MS | | |
|---|---|---|---|---|---|
| Model | 59.1238511 | 5 | 11.8247702 | Number of obs | = 120 |
| Residual | 127.73679 | 114 | 1.12049816 | F( 5, 114) | = 10.55 |
| | | | | Prob > F | = 0.0000 |
| Total | 186.860642 | 119 | 1.57025749 | R-squared | = 0.3164 |
| | | | | Adj R-squared | = 0.2864 |
| | | | | Root MSE | = 1.0585 |

| invop | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lev | 3.826838 | .5604238 | 6.83 | 0.000 | 2.716643 | 4.937034 |
| roe | .6160746 | .4556488 | 1.35 | 0.179 | -.2865622 | 1.518711 |
| liq | .0415598 | .0101612 | 4.09 | 0.000 | .0214306 | .0616889 |
| grwt | -1.275816 | .5847188 | -2.18 | 0.031 | -2.43414 | -.117493 |
| fsiz | -.0052753 | .0650892 | -0.08 | 0.935 | -.1341174 | .1235669 |
| _cons | .6676298 | 1.064247 | 0.63 | 0.532 | -1.440636 | 2.775896 |

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of invop

         chi2(1)      =     6.41
         Prob > chi2  =   0.0114
```

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
        grwt |      1.22    0.820430
         roe |      1.20    0.830535
         lev |      1.15    0.867295
         liq |      1.08    0.921795
        fsiz |      1.07    0.935945
-------------+----------------------
    Mean VIF |      1.15
```

```
. xtreg invop lev roe liq grwt fsiz, fe

Fixed-effects (within) regression               Number of obs      =       120
Group variable: id                              Number of groups   =        12

R-sq:  within  = 0.3273                         Obs per group: min =        10
       between = 0.2314                                        avg =      10.0
       overall = 0.2849                                        max =        10

                                                F(5,103)           =     10.02
corr(u_i, Xb)  = 0.0505                         Prob > F           =    0.0000

------------------------------------------------------------------------------
       invop |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         lev |    3.047702   .5330948     5.72   0.000     1.990434    4.10497
         roe |   -.0170949   .4681459    -0.04   0.971    -.9455518    .911362
         liq |    .0448737   .0086356     5.20   0.000      .027747    .0620004
        grwt |   -.7982237   .4919355    -1.62   0.108    -1.773862    .1774144
        fsiz |   -.0642489   .1490524    -0.43   0.667    -.3598592    .2313613
       _cons |    1.989877   2.376457     0.84   0.404    -2.723265    6.70302
-------------+----------------------------------------------------------------
     sigma_u |   .74046268
     sigma_e |   .84450091
         rho |   .43464084   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(11, 103) =     6.92                 Prob > F = 0.0000

. est store fixed
```

```
. xtreg invop lev roe liq grwt fsiz, re

Random-effects GLS regression                   Number of obs      =       120
Group variable: id                              Number of groups   =        12

R-sq:  within  = 0.3249                         Obs per group: min =        10
       between = 0.2995                                        avg =      10.0
       overall = 0.3043                                        max =        10

                                                Wald chi2(5)       =     53.22
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

| invop | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lev | 3.265632 | .5166802 | 6.32 | 0.000 | 2.252957 | 4.278307 |
| roe | .1704752 | .4463031 | 0.38 | 0.702 | -.7042628 | 1.045213 |
| liq | .0444177 | .0086649 | 5.13 | 0.000 | .0274348 | .0614006 |
| grwt | -.8612057 | .4933299 | -1.75 | 0.081 | -1.828115 | .1057031 |
| fsiz | -.0165644 | .0970776 | -0.17 | 0.865 | -.206833 | .1737042 |
| _cons | 1.135002 | 1.565314 | 0.73 | 0.468 | -1.932957 | 4.202961 |
| sigma_u | .54541197 | | | | | |
| sigma_e | .84450091 | | | | | |
| rho | .29433776 | (fraction of variance due to u_i) | | | | |

```
. est store random
```

```
. hausman fixed random
```

| | (b) fixed | (B) random | (b-B) Difference | sqrt(diag(V_b-V_B)) S.E. |
|---|---|---|---|---|
| lev | 3.047702 | 3.265632 | -.2179302 | .1312693 |
| roe | -.0170949 | .1704752 | -.1875701 | .1413297 |
| liq | .0448737 | .0444177 | .000456 | . |
| grwt | -.7982237 | -.8612057 | .0629821 | . |
| fsiz | -.0642489 | -.0165644 | -.0476845 | .1131042 |

```
                b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                        =    -1.32   chi2<0 ==> model fitted on these
                                     data fails to meet the asymptotic
                                     assumptions of the Hausman test;
                                     see suest for a generalized test
```

```
. xtreg invop lev roe liq grwt fsiz, re

Random-effects GLS regression                   Number of obs      =       120
Group variable: id                              Number of groups   =        12

R-sq:  within  = 0.3249                         Obs per group: min =        10
       between = 0.2995                                        avg =      10.0
       overall = 0.3043                                        max =        10

                                                Wald chi2(5)       =     53.22
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

| invop | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lev | 3.265632 | .5166802 | 6.32 | 0.000 | 2.252957 | 4.278307 |
| roe | .1704752 | .4463031 | 0.38 | 0.702 | -.7042628 | 1.045213 |
| liq | .0444177 | .0086649 | 5.13 | 0.000 | .0274348 | .0614006 |
| grwt | -.8612057 | .4933299 | -1.75 | 0.081 | -1.828115 | .1057031 |
| fsiz | -.0165644 | .0970776 | -0.17 | 0.865 | -.208833 | .1737042 |
| _cons | 1.135002 | 1.565314 | 0.73 | 0.468 | -1.932957 | 4.202961 |
| sigma_u | .54541197 | | | | | |
| sigma_e | .84450091 | | | | | |
| rho | .29433776 | (fraction of variance due to u_i) | | | | |

```
. est store random

. hausman fixed random
```

| | (b) fixed | (B) random | (b-B) Difference | sqrt(diag(V_b-V_B)) S.E. |
|---|---|---|---|---|
| lev | 3.047702 | 3.265632 | -.2179302 | .1312693 |
| roe | -.0170949 | .1704752 | -.1875701 | .1413297 |
| liq | .0448737 | .0444177 | .000456 | . |
| grwt | -.7982237 | -.8612057 | .0629821 | . |
| fsiz | -.0642489 | -.0165644 | -.0476845 | .1131042 |

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= -1.32 chi2<0 ⟹ model fitted on these data fails to meet the asymptotic assumptions of the Hausman test; see suest for a generalized test

```
. hausman fixed random, sigmamore
```

| | Coefficients (b) fixed | (B) random | (b-B) Difference | sqrt(diag(V_b-V_B)) S.E. |
|---|---|---|---|---|
| lev | 3.047702 | 3.265632 | -.2179302 | .1704099 |
| roe | -.0170949 | .1704752 | -.1875701 | .1705288 |
| liq | .0448737 | .0444177 | .000456 | .00161 |
| gmrt | -.7982237 | -.8612057 | .0629821 | .0931725 |
| fsiz | -.0642489 | -.0165644 | -.0476845 | .1171138 |

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 9.35
Prob>chi2 = 0.0960

Breusch and Pagan Lagrangian multiplier test for random effects

invop[id,t] = Xb + u[id] + e[id,t]

Estimated results:

| | Var | sd = sqrt(Var) |
|---|---|---|
| invop | 1.570257 | 1.253099 |
| e | .7131818 | .8445009 |
| u | .2974742 | .545412 |

Test: Var(u) = 0
chibar2(01) = 59.33
Prob > chibar2 = 0.0000

```
. xtreg invop lev roe liq gmrt fsiz, re robust
```

Random-effects GLS regression — Number of obs = 120
Group variable: id — Number of groups = 12

R-sq: within = 0.3249 — Obs per group: min = 10
between = 0.2995 — avg = 10.0
overall = 0.3043 — max = 10

Wald chi2(5) = 5166.38
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

(Std. Err. adjusted for 12 clusters in id)

| invop | Coef. | Robust Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| lev | 3.265632 | .6238493 | 5.23 | 0.000 | 2.04291 | 4.488354 |
| roe | .1704752 | .797194 | 0.21 | 0.831 | -1.391996 | 1.732947 |
| liq | .0444177 | .0031364 | 14.16 | 0.000 | .0382705 | .0505649 |
| gmrt | -.8612057 | .5038195 | -1.71 | 0.087 | -1.848674 | .1262623 |
| fsiz | -.0165644 | .1088931 | -0.15 | 0.879 | -.2299909 | .1968621 |
| _cons | 1.135002 | 1.883453 | 0.60 | 0.547 | -2.556499 | 4.826503 |
| sigma_u | .54541197 | | | | | |
| sigma_e | .84450081 | | | | | |
| rho | .29433776 | (fraction of variance due to u_i) | | | | |