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DO FIRMS SMOOTH THEIR DIVIDEND OVER TIME? EVIDENCE FROM LISTED MANUFACTURING FIRMS IN NIGERIA

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Abstract

Finance scholars have long engaged in theorizing the tendency of firms to smooth dividend or not to smooth given the nature of the environment in which the companies operate. This study examines dividend changes of manufacturing firms in Nigeria. The study develops two hypotheses and applies generalized least square using Least Squares Dummy Variable (LSDV) model to analyze the relationship between the dependent variable, dividend changes and the two independent variables; current earnings and previous dividend of firms using secondary data extracted from Nigerian Stock Exchange (NSE) fact book over the period 2000 to 2009. The study estimated Ordinary Least Squares, fixed and random effect model and employs hausman test and wald test to determine the best-fitted estimates of the model. Lintner Speed of Adjustment Factor was used to determine the level of smoothing behaviour of the firms. The theoretical assertion was justified through fixed effect LSDV model. The findings of the study reveal that; current earnings and previous dividend have negative significant impact on dividend changes. Further, based on the Lintner framework, the study found evidence of regular but not stable dividend policies being pursued by manufacturing firms in Nigeria. The study recommends that manufacturing firms in Nigeria should continue to rely on level of profitability and previous dividend in deciding current period payment of dividend, in view of the significant impact of current earnings and previous dividend in determining dividend changes.

1.1 Introduction

Corporate dividend policy is one of the controversial issues in finance. It is also an issue of concern to the financial decision makers and the firm at large. Firms are faced with dilemma of sharing dividend to stockholders and retaining their earning with the view to ploughing it back into the business in order to foster further growth of the business. After a project is executed and profit is realized, the ordinary shareholders should be able to receive benefit in the form of dividend in lieu of the fund they contribute and the risk they borne. However, when dividend is paid to shareholders, the profit to be retained by a firm and the total amount of internal financing would be reduced. Therefore, the firm must strike a balance between paying dividend and retaining earnings.

Dividend policy of a firm is a behaviour that changes continuously in relation to environment and entity characteristics (Musa, 2009). It is the responsibility of financial managers to decide whether firms should distribute all its earnings or retain them or distribute a portion and plough back the balance. In order to maximize wealth of shareholders under uncertainty and that share price affect firm's value, firm must provide enough for dividend to satisfy investors (Lintner, 1956; Gordons, 1962). Therefore, a firm should adopt a policy, which strikes a balance between future growth and current dividends optimally thereby maximizing firm's objective.

Over past decades, some theoretical and empirical literatures have indicated the factors that determine dividend policy. They mostly attempted to develop a simple model of dividend determination for both the two major dividend policy factors; dividend level and dividend changes. Dividend level measures the proportion of the variation in dividend payments while dividend change focuses on the changes in the level of dividend payment (Musa, 2009; Abubakar, 2014). The change can be described as stable if it represents regular payments of dividend and gradual adjustment of dividend payment towards a target payout ratio without recourse to what is earned as profit in the current year, mostly termed as smoothing (Pandey, 2003). Early researches mostly adopted field investigation by studying the opinion of some corporate managers in getting insight on what influenced the dividend policy decision of their firms. Studies in the direction include Lintner (1956), Pruitt and Gitman (1991) and Mainoma (2001). Among the ones that followed survey approach some researcher such as Lintner (1956) further set up theoretical models and used statistical tests in order to provide reliable estimates that could explain the pattern of corporate dividend smoothing behaviour and policy. These studies found that managers have divergent view on the factors that explain dividend decision. Moreover, Lintner variables; current earnings and previous dividend have been found predominantly important over past decades.

Though, some researchers have emphasized on the explanatory power of factors such as country specific factors (Musa, 2005 & 2009); cash flows (Atieh and Hussain, 2008; Al-Najjar and Belghitar, 2012; Al-Atter, Al-Shattrat & Yusuf, 2015) and cross-sectional characteristics (Leary and Michaely, 2009,& 2011), in explaining dividend smoothing, current researches are still confirming the appropriateness of Lintner variables either using static models given specific nature of their economic policies (Sibanda, 2014), or employing more robust techniques and dynamic models that control both firm and temporal effect in their estimations (Pandey, 2003).

The main objective of the paper is to examine empirically whether firms in Nigeria follow stable or smooth dividend policies as mostly obtained in developed countries such as United State (US) (Lintner, 1956; Al-Najjar & Belghitar, 2012) and other developing countries (Pandey,2003; Al-Najjar, 2009; Sabinda, 2014). The study focuses on how manufacturing firms listed on the Nigerian Stock Exchange (NSE) decide their dividend payment pattern based on Lintner partial Adjustment Model covering the period of 2000 to 2009. The period was considered more appropriate in order to uncover the period after Global Financial Crises. The significance of this study is therefore manifold and can be seen in the following areas: first; Corporate managers could also be equipped with the possible ways of maintaining a stable dividend payment that could influence their existing and potential investor in making investment decision. Second, it will assist government in enacting laws on dividend payment in consideration of factors such as firm's profitability. Lastly, this study provokes further researches and adds to the pool of literature in the area under study

The remaining section of the paper is presented as follows: Section 2 covers the review of previous empirical models; Section 3 discusses the statement of methodology; Section 4 highlights the summary of findings and section 5 conclusion and recommendations.

2.1 Review of Empirical Literature

The first mathematical model identified in the literature is Lintner (1956) partial-adjustment model of dividend. Lintner conducted interviews of corporate managers of US firms and enquired about their dividend decisions. The conduct of this interview revealed the following findings; managers determine their dividend policies based on a long-run target payout ratio, the likelihood of paying and stabilizing dividend is highly present with matured firms with stable earnings than growing firms. This indicates that dividend changes are important to managers than dividend levels. Firms smooth their dividend to follow shift in the long-run sustainable earnings. He finally concluded that managers are reluctant to

cut dividends because they believe that shareholders prefer stable dividend and any cut in dividend may send bad signal about the future prospect of the firm. Therefore, Lintner model assumes that changes in dividend are gradually moving toward achieving target payout not immediately to changes in earnings
Subsequently, Brittain (1994) modified and tested the Lintner model by deflating the variables using total number of ordinary shares outstanding rather than using aggregate data in US. The empirical result revealed SOA of 0.23 and TPR of 0.66 and confirms the findings of Lintner at lower level of SOA. Observation has shown that most the researchers that tested linter model employed Lintner/Brittain model, notably, Adelegan (2003), Pandey (2003), Al-najjar (2009) and Al-Najjar & Belghitar (2012). Other such as Musa (2005 & 2009) further considers market value instead of book value of shares in order to account for historical cost bias. In the same vein, a comprehensive analysis of the performance of Lintner/Britten(1964) model was conducted by Fama & Babiak (1968), who empirically tested Lintner model and found that Lintner model performed credibly well in determining dividend changes. They suggested that the model could be further improved by introducing retained earnings from the previous years but by removing constant term. The result of their analysis confirmed the robustness of lintner model and revealed a SOA of 0.34 and TPR a 0.49. Another test for the validity of Lintner model on the strong link between earnings and dividend was conducted by Joannos & Filippas (1997) using Greek data. The study covered the period between 1972 to 1988 using data obtained from sample of 25 firms listed on the Antens Stock Exchange. He found that dividend payment behaviours are greatly influenced by current earnings and previous year's dividend. The findings corroborated the study of Patsouratis (1989) also in Greek, Oyejide (1976), Pogue (1974) and Brav, Graham, Harvey & Michaely (2005), Adesola & Okwong (2009), Al-Najjar (2009), Omar & Rizuan(2014) and Sabinda(2014).

Rather than testing the model based on Lintner's specifications and estimations, several other researchers used advanced methodology to capture the dynamic nature of dividend behaviour in specific term. More so, other factors covered include non-cash dividend (bonus and right issues), companies with negative earnings, and zero dividends. Pandey (2003) examined the corporate dividend policy and behaviour of 248 firms listed in Kuala Lumpur Stock Exchange (KLSE) covering the period of 1993 to 2000. Panel analysis for the test of stability of dividend policy of Malaysian firms was conducted using dynamic model that controlled for both temporal and fixed effect in the estimations. The study found that using Lintner model, dividend policies of Malaysian firms are regular but less stable. The result of the two-way fixed and time effect model revealed that both the current earnings and previous dividend have positive

significant relationship with dividend changes. It also revealed a SOA of 50% and above across sectors and low TPR of zero and 17% in Industrial goods and Consumer goods companies respectively. This signifies that there is a significant difference in dividend policies across individual firms over time. This study though tested the dynamic smoothing behaviour using more robust methodology; the study was conducted in India where there a tax policy on dividend and capital gains differs from of Nigeria.

Furthermore, in addition to using more robust technique other researchers extended by testing the smoothing behaviour in both negative and earnings firms. Notably, Zurigat & Gharaibeh (2011) investigated the smoothing behaviour of Jordanian firms using data obtained from sample of 38 listed non-financial firms in Amman Stock Exchange covering the period of 1998 to 2009. Zero dividend payment and less than six years dividend payment were excluded in the study. Fixed effect panel regression was estimated using Lintner model after segregating the data into positive and negative earnings firms in order to ascertain whether dividend adjustment below and above target is present in the two different conditions. The empirical results indicate that Jordanian firms have target dividend payout with low late of adjustment below 50% and it is asymmetrical adjustment process depending on whether they are above or below target with both positive and negative earnings. Though the study attempted to assess dividend smoothing in both positive and negative earning and captured firms specific effect that has not been considered by most researches, it fails to account for the inherent temporal effect in dividend payment, non-dividend paying firms and small period against the tradition of dividend payment studies without proper justification.

The Lintner model was developed in the US where dividends are taxed higher than capital gains, a system that motivates smoothing. This may cast doubt on its valid application on economies where their tax policies are different from that of US. For instance Nigeria where capital gain is equal to dividend tax and others like Oman where there is no tax on divided, firms are highly levered, high concentration of stock ownership and variability in cash dividend payment. Al-Yahyee, Pham & Walter (2011) examined whether Oman financial firms smooth their dividend and have target payout ratio using Lintner model. Panel Tobit regression model was estimated using 377 firm-year observations obtained from both dividend-paying and non dividend- paying firms covering the period of 16 years 1989 to 2004. They found a positive significant relationship between dividend per share and previous years dividend per share and earnings per share. The analysis returns a value of 0.94 and 0.56 for SOA and TPR respectively. The study contributed to the existing literature by accounting for censoring problem associated with zero dividends and used larger small which is good to the study of dividend smoothing behaviour. However, it can be improved upon by using a dynamic model given the specific nature of the variability in dividend payment in order to ascertain whether the censored model or

dynamic model gives a better smoothing estimate by means of SOA. Therefore, the findings confirmed that Lintner model is still valid for economies where there is no tax on dividend and suggests the need to investigate same in other economies like Nigeria where equal rates of taxes are charged for both the dividend and capital gains.

Some researches other have confirmed the findings of Lintner (1956) partial adjustment model in recent time without any modification. According to Omar & Rizuan(2014) Malaysian firms follow the same determinant of dividend smoothing and stability as suggested by Lintner. The empirical model was estimated using ordinary least squared model. The study covered the period of 15 years in examining 319 firms listed on Bursa Malaysia. Only companies with history of nine years cash dividend payment were used. The results revealed that firms in Malaysia were involved in smoothing activities. The study also provided evidence that the firms had target payout and they adjusted to their target ratios with SOA of 0.447 and TPR of 64%. Despite the fact that the study confirmed the validity of Lintner model in recent time, it suffers the following shortcoming; failure to measure dividend smoothing using changes in dividend per share as suggested by the large number of previous and current studies such as Lintner (1956), Musa (2009) and Sabinda (2014). It also ignored zero dividends and used static model without justification. Sabinda (2014) also tested the model and found that firms in South Africa smooth their dividend in line with Linter argument. He employed Ordinary Least squared model in analysing the relationship that exist between the dependent variable dividend changes and two independent variables; previous dividend and earnings per share. The data for the study was obtained from the McGregor BFA Library Database. 45 listed dividend-paying non-financial firms were used during the period of 17 years, 1995 to 2011. The result of the analysis revealed that the result support the dividend smoothing preposition that firms smooth their dividend by means of speed of adjustment coefficient. The study returns a value of 0.73an 0.41 for SOA and TPR respectively. The study also suffers limitation similar to Omar & Rizuan(2014), in that it has avoided the problem of short period and captured dividend smoothing as change in dividend per share.

In Nigeria, according to Adelegan (2003) and Musa (2009) the earliest attempt to study dividend behaviour was conducted during the Indigenization period by Uzoaga & Aloizeuwa (1974) who analyzed the dividend payment pattern of sample of 13 companies for the period of 1969 to 1972. They found that there is not enough evidence to prove the validity of traditional variables using Nigerian data and concluded that the best predicators for dividend behaviour are fear and resentment. The findings was later challenged by large number of studies such as Inanga (1978), Soyode (1975) who asserted that both the Lintner variables and

non-conventional factor such as excess cash obtained from issue of new capital and share pricing policy of the Capital Issue Commission are the major drivers of dividend payment pattern.

Later on, the first published study that tested the empirical validity of Lintner model using Nigerian data was conducted by Oyejide (1976), who tested the modified Lintner/Britten (1964) model using sample size of nineteen firms covering the period of 1984 to 1989. He found that Nigerian data strongly support Lintner model. Subsequently further modifications have been continued to take effect using Nigerian data with larger sample and period. Notably, Adelegan (2003) empirically examined the impact of growth prospect, leverage, and firm size on dividend behaviour of corporate firms in Nigeria. She analysed the determinants of dividend policy on a sample of 63 quoted firms in Nigeria over a wide period of 14 years from 1984 to 1997 based on Lintner- Brittain Model. The model was estimated using Ordinary Least Squared Method. The empirical result reveals that dividend behaviour of corporate firms in Nigeria depends partly on growth potentials, firm size and level of gearing of corporate firms and that conventional Lintner model does not perform quite creditably in explaining the dividend behaviour of corporate firms in Nigeria. Her findings corroborated with Oyejide (1976). In an effort to improve on the previous study, her study attempted to modify the model by introducing incremental cash flow components, firm characteristics and leverage variables. In addition firm specific effects were captured by categorizing the data based firm size, growth, and leverage levels of the selected firms. With the advent of more robust technique that could capture firm effect using aggregate data, Abubakar (2014) by studied the sample of listed manufacturing firms in Nigeria using fixed and temporal effect model which captures what was neglected by the previous researches. It is worthy of note that both Adelegan (2003) and Abubakar (2014) only considered dividend level. Earlier, Musa (2005) developed a parsimonious model based on the two dividend policy factors – dividend payment and dividend changes and assessed the effect of factors that are considered as sensitive and relevant to Nigerian economy in addition to the Lintner variables. Therefore they have all confirmed the strong link between earnings and dividend changes

From the foregoing, it can be deduced that, studies in Nigeria have revealed divergent results as to which model best explain dividend behaviour and dividend changes of Nigerian firms. To best of the researcher's knowledge no study in Nigeria examines dividend smoothing and focus on non financial firms sector. Though, Musa (2005 &2009) examined impact of current earnings, previous dividend, net current asset, cash flow and investment on dividend behaviour and changes, he only stopped at capturing the effect of level of growth, industry and

sized by means of dichotomous variable utilizing Parsimonious model developed by (Musa, 2005) without testing dividend smoothing since empirical evidence have shown that smoothing can be tested only using SOA. Hence, the need for a study to analyze Lintner variables effect on the dividend smoothing in manufacturing firms in Nigeria using more rigorous and advanced methodology and to develop on some of the limitations of other studies.

In line with the above the study conducts a comparative analysis of the earnings, and previous dividend model based on Lintner argument of SOA factor and target payout to test for the stability of the dividend policy of manufacturing firms in Nigeria using panel data regression and control for both the firm and temporal effects in the estimation in order to ensure robustness of the results. In view of the above the specific objective of the study are to examine the effect of current earnings and previous dividend on dividend smoothing of manufacturing firms in Nigeria. In line with objective, two null hypotheses have been formulated as follows:

Ho_1 *Earnings have no significant effect on dividend smoothing of manufacturing firms in Nigeria*
H_{o2} *Previous dividend has no significant effect on dividend smoothing of corporate firms in Nigeria*

3.1 Methodology
The study adopted causal design. The design was employed because the study is aimed at identifying inter dependence of one variable on another. The population of this study consists of the 92 manufacturing firms quoted on the Nigerian Stock Exchange (NSE) as at December 2011 classified into 14 sub-sectors. Stratified, random and multi-stage sampling was employed. For a firm to be selected, it must satisfy the following criteria:

i. Firms that engage in manufacturing even if they combine with other activities
ii. Firms with the financial and market information necessary for the study available in the summarized annual reports contained in the NSE fact books from 2000 to 2009, and annual report of companies for the study period. This information is: Profit after Tax (PAT), Dividend per Share (DPS), Earning per Share (EPS), Total number of ordinary shares outstanding at the end of each financial period The details of the sub sectors and the number of firms in each sector are presented in Table 3.1. and attached as appendix V

From the table 3.1, only 13 out of the 14 classifications which constitute 58 firms, have the required information needed for the research work. Using the

information contained in Table 3.1, the sample size of the study is 13 manufacturing firms derived from 58 firms that satisfied the study requirement and it is arrived at by using Cochran (1977) sample size formula, which is represented thus:

$n_o = [Z\alpha/_2.\sigma]^2/\varepsilon$

where: $Z\alpha/_2$ = the positive Z value that is at the boundary for the area of $Z\alpha/_2$ in the right tail of the standard normal curve;

σ = Standard deviation of the population;

ε= marginal standard error

n_o= computed sampled size

Step(I)- compute standard deviation (α):

Note: $\bar{x} = \Sigma x / N$

$= 58/13$

$= 4.46$

Table 3.1 NSE's Classification of Manufacturing Firms

S/N	**NSE classification**	**Firms with required information(x)**	$(\bar{x}-x)$	$(\bar{x}-x)^2$
1	Agriculture/AgroAllied	5	-0.54	0.296
2	Automobile and Tyre	1	3.46	11.9716
3	Breweries	5	-0.54	0.2916
4	Building Materials	4	0.46	0.2116
5	Chemical and Paints	6	-1.54	2.3716
6	Computer and Office Equipment	1	3.46	11.9716
7	Conglomerates	5	-0.54	2.3716
8	EngineeringTechnology	3	1.46	2.1316
9	Food, Beverages and Tobacco	8	3.54	12.5316
10	Footwear	Nil		
11	Health Care	6	-1.54	2.3716
12	Industrial and Domestic Products	7	-2.54	6.4516
13	Packaging	6	-1.54	2.3716
14	Textile	1	3.46	11.9716
	TOTAL	58		65.2208

Source: NSE Fact Book 2009 retrieved from http://www. Nigerianstockexchange.com

$\sigma = \sqrt{65.2208/58}$

$= \sqrt{1.1245}$

$\sigma = 1.0604$

Step II – Compute the marginal/standard error (ε):

$\varepsilon = \alpha / \sqrt{\Sigma x}$

$\varepsilon = 1.0604/\sqrt{58}$

$=1.0604/7.615 \quad = 0.1392$

Step iii – compute the critical value of the Z at 95% confidence level (i.e 1.96, which gives a table value of 0.4750 and apply the formula:

$$n = \frac{[0.4750 \times 1.0604]^2}{0.1392}$$

$= 13.0932 \qquad = 13$

Based on this computation, the sample size are thirteen (13) quoted manufacturing firms in Nigeria representing 23% of the population. The technique used in selecting the members of the sample is the combination of stratified , proportional and random sampling techniques where each member of the population in each stratum was given an equal chance of being selected into the sample. A stratified sampling method was adopted because it ensures that a heterogeneous population has its defined strata taken into account in the sample.

The sampled of the various firms selected are as following: Presco Plc, Guinnes Nigeria Plc, Ashaka Plc, Chemical and Allied Product Nigeria Plc, Berger Paints Nigeria Plc, Nigerian Bottling Company Plc, Flour Mills Nigeria Plc, UAC Nigeria Plc, Nigerian Wire and Cables PLC, Glaxo Smithkline Consumer Plc, Nigerian Enamelware Plc, Beta Glass company Plc, abd B.O.C Gases Nigeria Plc
The data used for the study was derived from the secondary source only including published and unpublished data from journal, Annual Reports and Account of Companies, Nigerian Stock Exchange Fact Book. This is because the estimation of the model adopted for the study requires the use of pooled cross-section/time series data in the form of market and financial information. For the purpose of analysis, pool data was extracted from the financial statements of each of the years covered by the study and the annual reports and account of the sampled quoted manufacturing firms covering the period under study as contained in the publication of the NSE fact book 2005, 2009 and 2011 editions. The data from this source was compiled and used as per the objectives of the research.

Given the objective of the study, the partial-adjustment model of Linter (1956) was employed for the study in order to test the presence of stability or otherwise of dividend among the firms under study. This assumes that if p*i* is the target payout for firm *i* and CE_{it} are ith frms earnings in period t, the Lintner model for DIV_{it} in the current year or the target dividend Payments are a proportion of the firms earning per share. Mathematically,

$$DIV_{it} = p_i CE_{it}$$

Where; DIV_{it} is the expected dividend payment for firm *i* in period *t*, p*i* is the target payout ratio; CE_{it} is the current earnings for firm *i* in period *t*

Knowing that $DIV_{it} = p_i CE_{it,}$ the model suggests that a dividend change is a function of the target payout less the previous period dividend payout multiplied by the speed of adjustment factor. Mathematically dividend changes can be represented as:

$$\Delta DIV_{it} = \tilde{\alpha}_0 + \tilde{\alpha}_1 CE_{it} + \tilde{\alpha}_2 DIV_{(t-1)} + \varepsilon_{it}$$

Where : ΔDIV_{it} is the Expected change in dividend payment , $\tilde{\alpha}_0$ is the intercept, $\tilde{\alpha}_1$ is equal to $\gamma_i p_i$ and γ_i is the speed of adjustment coefficient (i.e speed of movement of current dividend to target payout ratio and is $0 < \gamma_i < 1$), p_i *is* the target payout ratio and $\tilde{\alpha}_2$ is $(1- \gamma_i)$. *C*E is the current earning for firm *i* in period *t*, $DIV_{(t-1)}$ is the previous year's dividend and ε is the error term.

In line with previous studies, such as Lintner/Brittain(1956) and Pandey (2003) the study employed Earnings Per Share and Dividend per Share, that is by deflating the variables using total number of ordinary shares outstanding rather than using aggregate data. Mathematically the model will be structured as follows. The study employed both Ordinary Least Squares (OLS) model based on Linter argument of equal weight of observation and panel regression analysis using Generalized Least Squares (GLS) to take account of the information contained in the unequal variability of the dividend payment in order to determine the best model that explains dividend smoothing of the firm under study. The study further excluded constant term to account for firm effect, which is assumed as constant over time and specific to the individual entity in the fixed effects model. The method was considered more appealing because the interest of the study to measure effects that are undetectable by either pure time series or pure cross-sectional data.

$$\Delta DPS_{it} = \tilde{\alpha}_0 + \tilde{\alpha}_1 EPS_{it} + \tilde{\alpha}_2 DPS_{(t-1)} + \varepsilon_{it}$$

Where ΔDPS_{it} is the Expected change in dividend per share , $\tilde{\alpha}_0$ is the intercept, $\tilde{\alpha}_1$ is equal to $\gamma_i p_i$ and γ_i is the speed of adjustment coefficient (i.e speed of movement of current dividend to target payout ratio and is $0 < \gamma_i < 1$), p_i *is* the target payout ratio and $\tilde{\alpha}_2$ is $(1- \gamma_i)$. EPS is the current earnings per share for firm *i* in period *t*, $DPS_{(t-1)}$ is the previous year's dividend per share and ε is the error term.

However in order to allow for the entity intercept to vary over time among the firms, we employed Least Squares Dummy Variable Model (LSDV) and introduced dummy variable technique, in particular the differential intercept

dummy technique. To be able to introduce a dummy to each firm, the study drops the constant term so as to avoid falling into dummy-variable trap . Thus the model is presented as follows:

$$\Delta DPS_{it} = \beta_1 Dm_{1i} + \beta_1 Dm_{2i}.+.....+ \beta_{13} Dm_{13i} + \tilde{\alpha}_1 EPS_{it} + \tilde{\alpha}_2 DPS_{(t-1)it} + \varepsilon_{it}$$

Where: Dm_{1i} is equal to 1 for firm 1, 0 otherwise; Dm_{1i} is equal to 1 for firm 2, 0 otherwise and so on up to the firm 13, the last number of the selected firms

4.1 Results and Discussion

The study started by examining the empirical distribution of the variables. It first tested for Normality and then degree of relationship among variables.

4.1.1 Descriptive Statistics and Test for Normality

Table 4.1. below shows the descriptive statistics of the variables used for the study

Variables	DDPO	EPS	LagDPS
Mean	0.005814	1.469545	0.590828
Median	0.000000	0.715802	0.272727
Maximum	8.299996	9.373831	5.250002
Minimum	-12.7999	-1.26460	0.000000
Std. Dev.	1.493590	1.997052	0.975013
Skewness	-3.47412	1.902796	2.775657
Kurtosis	50.69751	6.630835	11.02638
Jarque-Berra	12487.90	148.7020	511.9146
Probability	0.000000	0.000000	0.000000
Sum	0.750000	189.5713	76.21679
Sum sq. Dev.	285.5438	510.4920	121.6834
Observations	129	129	129

The results in Table 4.1 reveal that the mean value of DDPO is 0.0058. This shows that average rate of changes in dividend per share is 0.58%. The average value of earning per share (EPS) and previous year dividend (lagDPS) are 1.470 and 0.590 respectively. This shows that the average rate of profitability measured by EPS is 147% and previous year dividend is 59% of the number of ordinary shares outstanding at the end of each accounting period respectively.

EPS has the highest standard deviation indicating its low contribution to the model. While DDP has higher standard deviation than LagDPS This signifies that lagDPS variable contributes most to the model. The result further shows the presence of skewness and leptokurtosis in the data. The observations are positively skewed except for DDP. However, the empirical estimates of the kurtosis of the observations show that they are characterized by leptokurtosis. This is evident because their kurtosis exceeds 3; the kurtosis of a normal distribution. The presence of kurtosis and skewness in the data indicates that observations are not normally distributed. The Jarque-Bera test is in accord with this finding because it also rejects the normal distribution even at 1%.

A pearson correlation analysis was then performed on all the variables to check for the degree of relationship among them. The result is presented in a correlation matrix in table 4.2. The full result is attached as appendix I

Table 4.2

Variables	DDPO	EPS	LagDPS,
DDPO	1.0000000		
EPS	-0.151015	1.000000	
LagDPS	-0.225308	0.783735	1.00000

Source : Econometric Eviws ouput

Table 4.2 shows that DDPS is negatively correlated with EPS and LagDPS. The results shows that EPS has a positive correlation with LagDPS.

Having determined the distribution and the degree of the relationship among the variables, the summary of OLS and GLS multiple regression model estimates are presented below. However, with regards to GLS, in order to determine the estimate that best fitted the model, Random Effects (REM) and Fixed Effect (FEM) models were estimated. Then the study employed Hausman test to decide which of them is more efficient. The full results are shown in Appendix II. The results reveal substantial differences between REM and FEM, there by casting doubt on the results of the pooled regression. In order to see if the REM is more appropriate or not, Hausman test was conducted.

Hausman test is the test used to decide between FEM and REM. The null hypothesis underlying this test is that the REM and FEM estimators do not differ substantially. If found otherwise, the null hypothesis would be rejected. Table 4.3 presents the summary of the result of Hausman test. The full result is presented in appendix III

Table 4.3.1 Correlated Random Effect Hauman test

Test summary	Chi-sq statistics	Chi-sq. d.f	Prob.
Cross section random	20.330080	2	0.000

Source: Econometric-Views result

Table 4.3 shows that the estimated chi-square value is significant. Based on the hypothesis that proposes there is no significant difference in the estimated coefficients of the two models was rejected. It seems however, that there is correlation between the error term and one or more regressors, which form, the basis for rejecting the null hypothesis and thus, REM is rejected in favour of FEM.

The full result of the multiple regression analysis using Fixed Effect Model for the dividend smoothing behaviour of manufacturing firms is presented in appendix II, is FEM result, which assumed that the entity's intercept do not vary over time, that is, time-invariant intercept, though they vary across firm. In order to allow the fixed effect intercept to vary or to account for the variability of the specific features of the firms, such as differences in managerial philosophy and style or the type of investors a firm is targeting and to make the result more valid, we introduced differential intercept dummy technique. Moreover, to avoid falling into dummy-variable trap or situation of perfect collinearity, we also dropped the common intercept or constant term in the model. According to Gujarati and Porter (2009), if a researcher wants to introduce a dummy variable for each firm, he has to drop the constant term, otherwise, he will fall into a dummy variable trap. The study further employed Wald Test to check whether the entities dummies are zeros, which signifies that OLS is the best estimate. The null hypothesis of this test is entities dummies are all zeros. Therefore, if found otherwise the hypothesis will be rejected. This result is presented in table 4.3.2 below and the full result is attached as appendix X, (Wald Test).

Table 4.3.2Wald Test

Test Summary	Chi-sq Value	Chi-sq. d.f	Prob.
Chi-sq statistics	28.08412	15	0.0210

Source: Econometric-Views result

Table 4.3 shows that the estimated chi-square value is significant. Based on the hypothesis that all entities dummies are zeros was rejected. It seems however,

that there is firm effect, which form, the basis for rejecting the null hypothesis and thus, OLS is rejected in favour of LSDV.

This result is presented in table 4.3.3 below and the full result is attached as appendix IX, (LSDV result).

Table 4.3.2 Summary of GLS Multiple Regression Result using Fixed Effect Least Squares Dummy Variable (LSDV) Model

$\Delta DPS_{it} = \beta_1 Dm_{1i} + \beta_2 Dm_{2i} + \beta_3 Dm_{3i} \ldots\ldots\ldots\ldots + \beta_{13} Dm_{13i} + \tilde{\alpha}_1 EPS_{it} + \tilde{\alpha}_2 Lag\ DPS_{it} + \varepsilon_{it}$

Variables	Coefficient	t-values	Prob.
EPS	-0.226930	-1.773866	0.0788
LagDIV	-1.353286	-4.560157	0.0000
R-Squared (R^2)		0.197646	
Adjusted R^2		0.099111	
F-Statistics		2.005853	
Prob (F- statistics)		0.023112	
Speed of Adjustment factor		235%	
Target Pay-out Ratio		9.66%	

The table 4.3.2 is the result of the regression equation that estimated the relationship that relates dividend changes to current earning (EPS), previous dividend (LagDPS), The estimated regression relationship for DDPS model is: DDPS = -0.227 EPS - 1.35 LagDIV + ε_{it}

The result indicates that the value of R-squared is 19%. This means that about 19% of the systematic variations in the selected firms' dividend changes are jointly explained by changes in the explanatory variables. F-statistics probability further supports the above explanation as it returns a value of 2.005853 which has been found to be significant at 5% level. This implies that the model is well fitted.

The result further provides the basis for rejecting the first hypothesis that linked dividend changes to current earnings. The coefficient and t-values of EPS are (-0.226930) and the probability is statistically significant at 10% level. This means that the proportion of current earnings over number of ordinary shares of manufacturing firms affect their dividend payment pattern. This finding is inconsistent with and Okpara (2010), which indicates that earnings are the most important variables in explaining dividend payment pattern of firms in Nigeria and not consistent with Adelegan (2003). This implies that as earning increases more of it will be retained in the firm for future growth.

On the second hypothesis, a significant negative relationship between the independent variable LagDiv and the dependent variable DDPS was found. The coefficient and t-values of LagDPS are (-1.353286) and the probability is statistically significant at 1% level Hence, the result provides basis for rejecting the hypothesis that linked dividend changes to LagDPS. Therefore,

dividendchanges is influenced by level of previous year dividend of manufacturing firms in Nigeria. The higher significant coefficients and associated t-statistics of LagDPS signify the greater importance of previous dividend in deciding the dividend. The significant relationship between previous dividends indicates that change in dividend from one year to another is as result of what was paid in the previous years. In other words, the selected manufacturing firms in Nigeria pay dividend because it is done in the previous year or do not followed smoothed dividend policy. The result is consistent with Pandey(2003)in the case of Consumer Goods Companies and contradicts him in the case of all sectors in India and Adelegan(2003) and contradict Musa (2009) and Okpara (2010) and Ramachandran and Pakkirisamy (2010) who found that that identified LagDiv has a negative impact on dividend policy.

The high value of speed of adjustment (SOA) of 2.35 or 235%, indicates that no adjustment cost exists and then a complete adjustment towards Target pay-out occurs, suggesting absence of dividend smoothing, which implies that the selected firms maintain high dividend payment even in the event of low earnings. Lintner hypothesized that firms set target payout ratio and move gradually towards the target. Based on the result of the TPR Manufacturing firms in Nigeria had TPR of 9.66%. This indicates that they also had a TPR and instantly moved toward it. The value of the TPR also shows that the firms on average paid 9.66% of their earnings as dividend. The result contradict several countries in emerging market such as Malaysia and Jordan in the studies, Al-Najjar (2009) and Sabinda (2014) and consistent with Pandey (2003) in the case of Consumer product in India.

5.1 Conclusions and Recommendations

Based on the findings of the study, the study concludes that current earnings and previous dividend affect the dividend changes of manufacturing firms in Nigeria. This is because the two proxies have significant impact on the dividend changes of the firms. The result further proves that the firms do not smooth dividend based on the argument of Lintner SOA factor.

Based on the findings of this study, the following recommendations is made; Manufacturing firms in Nigeria should continue to rely on level of profitability and previous dividend in deciding current period payment of dividend, in view of the significant impact of current earnings and previous dividend in determining dividend changes.

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APPENDIX I

Descriptive Statistics

	DDPS	EPS	LAGDPS
Mean	0.005814	1.469545	0.590828
Median	0.000000	0.715802	0.272727
Maximum	8.299996	9.373831	5.250002
Minimum	-12.79999	-1.264600	0.000000
Std. Dev.	1.493590	1.997052	0.975013
Skewness	-3.474124	1.902796	2.775657
Kurtosis	50.69751	6.630835	11.02638
Jarque-Bera	12487.90	148.7020	511.9146
Probability	0.000000	0.000000	0.000000
Sum	0.750000	189.5713	76.21679
Sum Sq. Dev.	285.5438	510.4920	121.6834
Observations	129	129	129

Correlation Matrix

	DDPS	EPS	LAGDPS
DDPS	1.000000	-0.151015	-0.225308
EPS	-0.151015	1.000000	0.783735
LAGDPS	-0.225308	0.783735	1.000000

Constant Coefficient

Dependent Variable: DDPS
Method: Panel Least Squares
Date: 04/17/16 Time: 12:15
Sample: 2000 2009
Periods included: 10
Cross-sections included: 13
Total panel (unbalanced) observations: 129

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.183903	0.160522	1.145660	0.2541
EPS	0.049567	0.104423	0.474669	0.6358
LAGDPS	-0.424709	0.213883	-1.985707	0.0492

R-squared	0.052458	Mean dependent var	0.005814
Adjusted R-squared	0.037418	S.D. dependent var	1.493590
S.E. of regression	1.465380	Akaike info criterion	3.625088
Sum squared resid	270.5648	Schwarz criterion	3.691595
Log likelihood	-230.8182	Hannan-Quinn criter.	3.652111
F-statistic	3.487812	Durbin-Watson stat	2.623002
Prob(F-statistic)	0.033551		

APPENDIX II

Fixed effect
Dependent Variable: DDPS
Method: Panel Least Squares
Date: 04/17/16 Time: 11:52
Sample: 2000 2009
Periods included: 10
Cross-sections included: 13
Total panel (unbalanced) observations: 129

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.138858	0.265731	4.285760	0.0000
EPS	-0.226930	0.127930	-1.773866	0.0788
LAGDPS	-1.353286	0.296763	-4.560157	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.197646	Mean dependent var	0.005814
Adjusted R-squared	0.099111	S.D. dependent var	1.493590
S.E. of regression	1.417643	Akaike info criterion	3.644813
Sum squared resid	229.1072	Schwarz criterion	3.977349
Log likelihood	-220.0904	Hannan-Quinn criter.	3.779929
F-statistic	2.005853	Durbin-Watson stat	2.751595
Prob(F-statistic)	0.023112		

Random effect
Dependent Variable: DDPS
Method: Panel EGLS (Cross-section random effects)
Date: 04/17/16 Time: 11:54
Sample: 2000 2009
Periods included: 10
Cross-sections included: 13
Total panel (unbalanced) observations: 129
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.183903	0.155293	1.184239	0.2385
EPS	0.049567	0.101021	0.490653	0.6245
LAGDPS	-0.424709	0.206915	-2.052573	0.0422

Effects Specification

	S.D.	Rho
Cross-ection random		

	0.000000	0.0000
Idiosyncratic random	1.417643	1.0000

Weighted Statistics

R-squared	0.052458	Mean dependent var	0.005814
Adjusted R-squared	0.037418	S.D. dependent var	1.493590
S.E. of regression	1.465380	Sum squared resid	270.5648
F-statistic	3.487812	Durbin-Watson stat	2.623002
Prob(F-statistic)	0.033551		

Unweighted Statistics

R-squared	0.052458	Mean dependent var	0.005814
Sum squared resid	270.5648	Durbin-Watson stat	2.623002

APPENDIX III

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	20.330080	2	0.0000

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
EPS	-0.226930	0.049567	0.006161	0.0004
LAGDPS	-1.353286	-0.424709	0.045254	0.0000

Cross-section random effects test equation:
Dependent Variable: DDPS
Method: Panel Least Squares
Date: 04/17/16 Time: 11:55
Sample: 2000 2009
Periods included: 10
Cross-sections included: 13
Total panel (unbalanced) observations: 129

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.138858	0.265731	4.285760	0.0000
EPS	-0.226930	0.127930	-1.773866	0.0788
LAGDPS	-1.353286	0.296763	-4.560157	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.197646	Mean dependent var	0.005814
Adjusted R-squared	0.099111	S.D. dependent var	1.493590
S.E. of regression	1.417643	Akaike info criterion	3.644813
Sum squared resid	229.1072	Schwarz criterion	3.977349
Log likelihood	-220.0904	Hannan-Quinn criter.	3.779929
F-statistic	2.005853	Durbin-Watson stat	2.751595

APPENDIX IX

Dependent Variable: DDPS
Method: Panel Least Squares
Date: 04/17/16 Time: 11:57
Sample: 2000 2009
Periods included: 10
Cross-sections included: 13
Total panel (unbalanced) observations: 129
DDPS=C(2)*EPS+C(3)*LAGDPS+C(5)*D1+C(6)*D2+C(7)*D3+C(8)*D4+C(9)
*D5+C(10)*D6+C(11)*D7+C(12)*D8+C(13)*D9+C(14)*D10+C(15)
*D11+C(16)*D12+C(17)*D13

	Coefficient	Std. Error	t-Statistic	Prob.
C(2)	-0.226930	0.127930	-1.773866	0.0788
C(3)	-1.353286	0.296763	-4.560157	0.0000
C(5)	0.812960	0.461646	1.761003	0.0809
C(6)	5.921950	1.291639	4.584835	0.0000
C(7)	1.137261	0.514118	2.212061	0.0290
C(8)	0.062768	0.448479	0.139957	0.8889
C(9)	0.104050	0.448411	0.232041	0.8169
C(10)	1.691525	0.567711	2.979550	0.0035
C(11)	1.643189	0.598522	2.745413	0.0070
C(12)	0.021016	0.450017	0.046701	0.9628
C(13)	1.342982	0.554595	2.421556	0.0170
C(14)	0.586174	0.465812	1.258391	0.2108
C(15)	0.597920	0.465295	1.285036	0.2014
C(16)	0.341624	0.452891	0.754318	0.4522
C(17)	0.592163	0.487571	1.214516	0.2271

R-squared	0.197646	Mean dependent var	0.005814
Adjusted R-squared	0.099111	S.D. dependent var	1.493590
S.E. of regression	1.417643	Akaike info criterion	3.644813
Sum squared resid	229.1072	Schwarz criterion	3.977349
Log likelihood	-220.0904	Hannan-Quinn criter.	3.779929
Durbin-Watson stat	2.751595		

APPENDIX X

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	1.872274	(15, 114)	0.0331
Chi-square	28.08412	15	0.0210

Null Hypothesis: C(2)=C(3)=C(5)=C(6)=C(7)=C(8)=C(9)=C(
10)=C(11)=C(12)=C(13)=C(14)=C(15)=C(16)=C(17)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	-0.226930	0.127930
C(3)	-1.353286	0.296763
C(5)	0.812960	0.461646
C(6)	5.921950	1.291639
C(7)	1.137261	0.514118
C(8)	0.062768	0.448479
C(9)	0.104050	0.448411
C(10)	1.691525	0.567711
C(11)	1.643189	0.598522
C(12)	0.021016	0.450017
C(13)	1.342982	0.554595
C(14)	0.586174	0.465812
C(15)	0.597920	0.465295
C(16)	0.341624	0.452891
C(17)	0.592163	0.487571

Restrictions are linear in coefficients.

TABLE 3.1 NSE's Classification of manufacturing firms

S/N	SUB SECTORS	NUMBER OF FIRMS	FIRMS ENGAGED IN MANUFACTURING	FIRMS WITH REQUIRED INFORMATION	NUMBER OF FIRMS SELECTED AS SAMPLE
1	Agriculture /Agro-Allied	8	7	5	1
2	Automobile and Tyre	3	3	1	
3	Breweries	7	7	5	1
4	Building Materials	8	8	4	1
5	Chemical and Paints	9	9	6	2
6	Computer and Office Equipment	6	4	1	
7	Conglomerates	8	7	5	1
8	Engineering Technology	3	3	3	1
9	Food, Beverages and Tobacco	16	16	8	2
10	Footwear	1	1	Nil	
11	Health Care	9	9	6	1
12	Industrial and Domestic Products	8	8	7	2
13	Packaging	9	9	6	1
14	Textile	1	1	1	
	TOTAL	96	92	58	13

Source: NSE Fact Book 2009 retrieved from http://www. Nigerianstockexchange.com.