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Full Length Research Paper

The dividend policy of firms quoted on the Nigerian stock exchange: An empirical analysis

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This paper utilizes the parsimonious multiple regression model developed by Musa (2005) to investigate the dividend policy of a cross-section of 53 firms quoted on the Nigerian Stock Exchange (NSE) during the period 1993 to 2002. The model employs five metric variables-previous dividend, current earnings, cash flow, investment and net current assets, and three non-metric variables- growth, firm size and industry classification, in order to explain as well as predict the dividend policy of quoted firms in Nigeria. The empirical results reveal that the five metric variables have significant aggregate impact on the dividend policy of the quoted firms. However, three of the variables- current earnings (E), previous dividend [DIVi (t-1)] and cash flow (CF), have been found to be robust in the model. Finally, the tests find that none of the three non-metric variables provides a statistically significant improvement to the base model.

Key words: Dividend policy, Nigerian stock exchange, survivorship bias.

INTRODUCTION

In recent time, foreign direct investment has received considerable attention by successive governments in Nigeria (Mohammed, 2006). The number of shares traded on the floor of the Nigerian Stock Exchange has also increased within this period as a result of the privatization programme vigorously pursued by the federal government and the intensified search for core investors in the privatised companies (Tanko, 1997 and Musa, 2001). Dividend policy no doubt influences the decision of both local and foreign investors (Musa, 2001). Studies on dividend policy are therefore of clear policy relevance, especially for a country that is interested in rapid and sustained economic growth.

Previous studies on dividend policy in Nigeria such as, Soyode (1975), Oyejide (1976), Izedonmi and Eriki (1996), Adelegan (2000), Inanga and Adelegan (2001) and Adelegan (2003), have focused attention on the test of Lintner's model as modified by earlier works of Brittain (1964), Fama and Babiak (1968) and the recent works of Simons (1994) and Charitou and Vafeas (1998). However, the previous studies have recognised the dynamic nature of the Nigerian economy and the factors that influence corporate dividend policy. As Frankfurter and Wood (1997) indicate, dividend pattern of a firm is a cultural phenomenon that changes continuously in relation to environment and time.

Rather than replicating the methodology of previous researches, this study utilizes a recent model developed by Musa (2005) which captures some factors that are considered sensitive and relevant to the Nigerian economy in recent time. This study therefore differs from the previous studies in five respects. First, it utilizes a model that has been recently developed to investigate the dividend policy of Nigerian firms. Second, some of the variables used in the study to the best of the author's knowledge are tested empirically for the first time in Nigeria. The two outstanding variables that satisfy this description are net current assets and investment. Third, the period covered by this research (1993 to 2002) is unique to this study and substantially encompasses the peak period of the privatisation program. Government divested its shareholdings in over sixty percent (60%) of the public enterprises slated for privatisation during this period. In addition, Nigerian government made concerted efforts to attract Foreign Direct Investment (FDI) into the country. Fourth, the operational definition of some variables such as dividend and cash flow are peculiar to this study. Fifth, rather than using a hold out sample situation,

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this study captures such variables as growth, firm size and industry classification as dummy variables in the research model.

The study employs five metric variables and three dummy variables in order to test the robustness of the model in explaining and predicting the dividend policy of the quoted firms in Nigeria.

The study addresses four research questions:

i) What is the separate and combined effect of current earnings, previous dividends, cash flow, investment and net current assets on the dividend policy of quoted firms in Nigeria?
ii) What is the sequential significance of the five variables in determining the dividend policy of quoted firms in Nigeria?
iii) To what extent can the five variables be utilized in explaining and predicting the dividend policy of quoted firms in Nigeria?
iv) What are the effects of growth, firm size and industry classification on the dividend policy of quoted firms in Nigeria?

Accordingly, seven null hypotheses have been formulated in relation to these questions. The first null hypothesis is that current earnings, previous dividend, cash flow, investment and net current assets do not have significant aggregate impact on the dividend policy of quoted firms in Nigeria. The second, third, fourth, fifth, and sixth null hypotheses are that there is no significant relationship between dividend policy of quoted firms and each of the five explanatory variables- current earnings, previous dividend, cash flow, investment and net current assets respectively. The seventh null hypothesis states that level of growth, firm size and industry classification do not have significant individual effect on the dividend policy of quoted firms in Nigeria.

The remainder of this paper has the following organization. Section 2 deals with the theoretical issues in relation to dividend policy. Section 3 discusses the methodology of the study. Section 4 presents the empirical results as well as analysis of the results. Section 5 provides the conclusions and recommendations of the study.

THEORETICAL CONSIDERATION AND LITERATURE REVIEW

Researchers on corporate dividend policy have over the years followed two divergent paths. Some researchers have followed a behavioural approach by surveying the opinion of corporate managers in order to gain insight into the factors they consider most important in determining their firms' dividend policy. Studies in this category include the works of Baker et al. (1985), Farrelly et al. (1986), Baker and Farrelly (1988), Pruitt and Gitman (1991), Baker and Powell (1999, 2001) and Mainoma (2001). These studies found that different managers at different times attach varying importance to the factors that influence a firm's dividend decision. However, certain factors such as level of current and past earnings and the pattern of variability of past dividends have emerged as consistently important over the years.

Some researchers on the other hand followed a normative approach and developed and empirically tested various mathematical models in order to explain the dividend policy of firms. Lintner (1956) was the first researcher to develop and test the partial-adjustment model of dividend. His model suggests that change in dividends is a function of the target dividend payout less the last period's dividend payout multiplied by the speed of an adjustment factor. This is expressed mathematically as ;

$$DIV_t = a + bpEPS_t + (1-b)DIV_{t-1} + et.$$

Where; DIV_t is next year's dividends, a is the intercept; b is the speed of adjustment of current dividends to the target (and lies between zero and one), p is the target payout ratio, EPS_t is earnings per share in the next year, DIV_{t-l} is the previous dividend, while e is the error term.

The target dividend payout is a fraction of the current period's earnings. Lintner found that the most important determinant of a company's divided policy was a major change in earnings "out of line" with existing dividend rates. He thus concludes that managers tend to smooth dividend in the short-run because they believe that shareholders generally prefer a steady stream of dividends.

Fama and Babiak (1968) confirmed the robustness of Lintner's model after examining several other models of dividend behaviour. Their results support Lintner's view that managers prefer a stable dividend policy and are reluctant to increase to increase dividend to a level that cannot be sustained.

Several other empirical works in both developed and emerging economies have tested the modified version of Lintner's model after refining and restating the model or after extending it. These include the works of Darling (1957), Brittain (1964) Pogue (1971) Rao and Sarma (1971), Oyejide (1976) Dhameja (1978), Hagerman and Huefner (1980) Bar-Yosef and Lev (1983), Nakamura and Nakamura (1985) Crum et al. (1988), Jose and Stevens (1989), Simons (1994), Benartzi et al. (1997), Charitou and Vafeas (1998) and Adelegan (2003). Some of the new variables grafted into the Lintners model by the various modified models include index of liquidity, measure of sales fluctuation, income variability, indebtedness (leverage) and cash flow.

Rather than confirming or modifying Lintner's model, Rozeff (1982) developed an alternative model of corporate dividend policy. Rozeff's five-variable model relates the level of dividend (divided payout ratio) to the percentage of stock held by insiders, average growth rate of revenues, and the natural logarithm of the number of common stockholders. Rozeff's model takes the following

form (coefficient signs show the hypothesised relationship)

$$PAY = \beta(sub0) - \beta(sub1)INS - \beta(sub2)GROW1 - \beta(sub3)GROW2 - \beta(sub4)BETA + \beta(sub5)STOCK + \varepsilon$$

Rozeff (1982: 249) found all the five variables to be significant in explaining dividend payment. Later studies by Demsey and Laber (1992) and Demsey et al. (1993) replicated and extended Rozeff's model by examining another seven-year period. These studies confirm the stability of Rozeff's original five-variable model. Casey and Anderson (1999) and Casey and Dickens (2000) also extended Rozeff's model in their Tax Reform Act (TRA) model. Their result was consistent with the previous findings of Demsey and Laber (1992) and Demsey et al. (1993).

In Nigeria, the earliest researches on dividend policy focused attention on the dividend behaviour of Nigerian companies since and during the period of indigenisation. The results of the studies were controversial and inconclusive. Uzoaga and Aloizieuwa (1974) investigated the pattern of dividend policy pursued by a sample of 13 companies within four years (1969-1972) which covers the indigenisation period. The study concludes that the change in the level of dividend paid by the companies could best be explained by fear and resentment rather than the conventional factors used in the Linter's model. This conclusion was challenged by later studies such as Inanga (1975, 1978) Soyode (1975), and Oyejide (1976). They criticized Uzoaga and Alozieuwa's study for its failure to empirically test the contribution of conventional factors to change in dividend of the affected companies. However, Inanga (1975) and Soyode (1975) also failed to empirically investigate the extent to which Lintner's model could be used to explain the dividend policy of the companies in Nigeria. The two studies rather advanced both conventional and non-conventional factors (such as excess liquidity resulting from the infusion of new capital and the unrealistic pricing policy of the Capital Issues Commission) as explanations for the change in the dividend behaviour of their sampled companies.

The work of Oyejide (1976) appears to be the first published study in Nigeria that tested empirically the Lintner's model as modified by Brittain (1966). The study covered a longer time period of eight years from 1968 to 1976 and an increased sample size of 19 companies in comparison with the four-year period and 13 companies used in previous studies. The study found strong support for the Lintner's model in Nigeria.

Several other Nigerian studies in recent time have confirmed the findings of Oyejide (1976). Izedonmi and Eriki (1996) tested the modified Lintner's morel using data from 1984 to 1989 while Adelegan (2003) re-evaluated the incremental information content of cash flow in the modified Lintner's model using data from 1984 to 1997. Their results are both consistent with the findings of Oyejide (1976).

Since dividend policy of firms is a cultural phenomenon that changes continuously according to environment and time (Frankfurter and Wood, 1997), dividend behavioural models must necessarily be continuously modified to capture those factors that are peculiar to a particular period and environment. Musa (2005) thus criticises both Lintner's and Rozeff's model with their modifications on the basis of the fact that the models are predicated on the assumption of constant response coefficient implying that investors react identically to the explanatory of all firms. As Collins and Kotheri (1989), Dechow (1994), Charitou and Vafeas (1998) and Adelegan (2003) indicate, the assumption of constant response coefficient is unrealistic. This is because the response coefficient has been found to be affected by firm-specific, industry-specific and economic factors which are dynamic in nature. In addition, although some of the factors captured by the models have emerged as consistently important, the models fell short of capturing some factors that are considered as current and sensitive in the context of the Nigeria economy. These limitations have been addressed by Musa's (2005) model which in the basis for this study.

METHODOLOGY

The following three sub-sections describe the methodology of this study.

Sample selection and data sources

The population of this study is public companies quoted on the first- and second-Tier Securities Market of the Nigeria Stock Exchange (NSE).

The sample selection is based on a number of criteria employed by previous studies on dividend policy such as Casey and Anderson (1999) and Casey and Dickens (2000), and Adelegan (2003). The criteria are:

a) Firms with positive earnings throughout the period of the study, (1993-2002).
b) Firms with record of dividend payment during the period of the study.
c) Firms with records of cash flows during the period of the study.
d) Firms with record of capital spending during the period of the study.
e) Firms with record of current assets and current liabilities during the period of the study.
f) Firms with the financial and market information necessary to estimate the various pooled cross-sectional time series models available in the summarized annual reports contained in the Nigerian Stock Exchange fact books for 1993 to 2002, annual report of companies and daily lists of the NSE for the study period. These pieces of information are: Profit after Tax (PAT), Dividend per Share (DPS), Non-Cash Changes (NCC), Capital Spending (CS), Net Current Assets (NCA) sales (Turnover), Total Assets (TA) and Market Price per Share (MPS).

The only reason for dropping the zero-dividend payout firms is that relative performance evaluation of the dividend model is meaningless for such firms (Kumar and Lee, 2001).

On the basis of the above filters, a total number of 53 firms have

been selected for this study. The sample firms cover eighteen(18) sectors according to the NSE's classification, namely: agriculture, automobile and Tyre, banking, breweries, building materials, chemical and paints, conglomerates, computer and office equipment, construction, emerging markets/second tier securities, food beverages and tobacco, healthcare, industrial/domestic products, insurance, packaging, petroleum (marketing), publishing and Textiles. The study utilises data mainly from the secondary source. This is because the estimation of the model in the study requires the use of pooled cross-section/time series data in the form of financial and market information. The sources of data for the study are therefore the Nigerian Stock Exchange fact books for 1993 to 2002, daily official lists of the NSE for the last day of trading in each of the years covered by the study, and the annual reports and accounts of the companies for all the years covered by the study.

Model specification

The study uses the model developed by Musa (2005) for the purpose of explaining and predicting the dividend payment of corporate firms in Nigeria. Musa's parsimonious multiple regression model has been developed using the confirmatory specification approach and has been structured using the Ordinary Least Squares (OLS) method. The model uses dividend change (CD), and five principal explanatory variables – Current Earnings (Eit). Preceding Year Dividend [DIV (t-l)], Cash Flow (CF), Investment (INV) and Net Current Assets (NCA) as explanatory variables. Three dummy variables – Growth (DI), Firm Size (D2) and Industry Classification (D3) have also been separately added to the base model. Thus, the model has four linear regression equations as given below:

$$CD = \beta 0 + \beta 1 E_{it} + \beta 2 DIVi_{(t-i)} + \beta 3 CF + \beta 4 INV + \beta 5 NCA + eit \quad (1)$$

$$CD = \beta 0 + \beta 1 E_{it} + \beta 2 DIVi_{(t-i)} + \beta 3 CF + \beta 4 INV + \beta 5 NCA + D1 + eit \quad (2)$$

$$CD = \beta 0 + \beta 1 E_{it} + \beta 2 DIVi_{(t-i)} + \beta 3 CF + \beta 4 INV + \beta 5 NCA + D2 + eit \quad (3)$$

$$CD = \beta 0 + \beta 1 E_{it} + \beta 2 DIVi_{(t-i)} + \beta 3 CF + \beta 4 INV + \beta 5 NCA + D3 + eit \quad (4)$$

Where; CD = Dividend change, β = Intercept term, Eit = current earnings, DIVi (t-1) = Preceding year dividend, CF = Cash flow, INV = Investment, NCA = Net current assets, D1 = Dummy 1, representing Growth, D2 = Dummy 2, representing firm size, D3 = Dummy 3, representing industry classification, eit = error term

The first two explanatory variables current earnings (Eit) and preceding year dividend DIVi (t-1) are the same variables captured by the Lintner (1956) model. The robustness of these variables in explaining both dividend changes and dividend payment has been proven by several empirical and survey researches such as Fama and Babiak (1968), Rao and Sarma (1971), Oyejide (1976), Hagerman and Huefner (1980), Jose and Stevens (1989) and Adelegan (2000). This justifies the inclusion of the two variables in the model of the study. In all the studies, the relationships between dividend policy and current earnings and previous year dividend were found to be significant. This study therefore expects the same relationship to hold.

Several studies suggest that cash flow and earnings convey different information. These studies include Gombola and Ketz (1983) and Bowen et al. (1986). Some authors have provided evidence supporting a strong link between cash flows and dividend payment. These include Bar-Yosef and Huffman (1986) and Bar-Yosef and Venezia (1991). Adelegan (2003) argues that cash flow is superior to earnings in explaining dividend policy for two reasons. First, managers may manipulate earnings to maximise their bonus awards to side step restrictive debt covenant violations (Healey, 1985). Secondly, cash flow is a more direct measure of liquidity and liquidity is expected to be a contributing factor in establishing dividend policy. Lawson and Stark (1981), Lee (1983) and Lawson and Moeller (1996) have argued that organisations should consider firms' liquidity in setting dividend policy since the payment of dividend involves cash flow. This is further justified by the argument in modern finance theory that an organisation's decision to reduce, increase or maintain dividend partly reflects its liquidity position (Pandey, 1999). Consequently, this study expects cash flow to be significantly related to dividend policy.

The model introduces investment as one of the explanatory variables. It is represented by the capital spending per share. The ratio represents the percentage of total cash flow required for investment needs. As the ratio increases, firms might reduce dividend payout and satisfy investment requirements using internally generated funds first. This is based on the pecking order theory (Myers, 1984) and the stakeholder theory (Rozeff, 1982), and the peculiarities of the Nigerian companies. Soyode (1975) and Oyejide (1976) documented that most Nigerian companies rely on retained earnings for financing their activities because of the illusion of costlessness usually associated with retained earnings. However, this conclusion is not based on any empirical evidence. Anecdotal evidence rather suggests that the behaviour of Nigerian companies is consistent with pecking order theory. Cornell and Shapiro (1987), Prezas (1988) and Ravid (1988) further suggest that a firm's dividend policy could be impacted by the interactions between investment and financing decisions. Lower dividend payment means that cash is retained for internal use, rather than for dividend payments, because firms prefer cheaper internal financing to external financing. The relationship between investment and dividend policy could be negative implying that an increase in investment opportunities will result in a decrease in dividend payment and vice-versa. This assumption is supported by the findings of Whited (1992) and Vogt (1994). La Porter et al. (2000) however, argues that the relationship between investment and dividend policy will depend on the quality of shareholder protection provided by the country where the firms operate. In countries with good shareholder protection, firms with better investment opportunities should have lower dividend payout ratios. On the other hand, in countries with poor shareholder protection, firms with better investment opportunities might payout more to maintain reputations since the option of going back to the capital market is always valuable.

The net current asset variable has been introduced as an explanatory variable that is peculiar to Nigeria and other developing economies with emerging capital equity markets. According to Ramcharran (2001) a special feature of countries with emerging capital markets is that governments play a major role in the dividend making decision process. Armed with the belief that creditors need protection from unscrupulous firms, governments have identified a number of ways they can ensure that the interests of creditors are not jeopardised. In Nigeria, Section 381 of the Companies and Allied Matters Act (1990) has clearly prohibited negativity of net current assets before or after the declaration and payment of dividend. Net current assets should therefore constitute an important variable in modelling the dividend policy of corporate firms in Nigeria. Accordingly, the study expects a significant relationship between dividend policy and net current assets.

The study relaxes the assumption of homogeneity of dividend policy across firms in order to incorporate three dummy variables into the model. The dummy variables are growth, firm size and industrial classification.

Different firms follow different dividend policies depending on their investment opportunities. Generally speaking, firms can be

classified into two groups on the basis of their growth prospects. These are mature firms (low growth firms) and growth firm (high growth firms). Mature (low growth) firms generally have few investment opportunities and are therefore expected to follow a high dividend payout policy. Conversely, growth (high growth) firms usually have ample investment opportunities. Hence they are expected to follow a low dividend payout policy (Pandey, 1999). La Porta et al. (2000) however, argue that shareholders' preference for dividend will depend on the quality of protection given to them by a country's legal system. Where shareholders are well protected, a low dividend payment would be accepted from high growth firms and a high dividend payment from low growth (mature) firms. In contrast, if shareholder protection is poor, such a relationship between payouts and growth would not be expected since shareholders may try to get what they can, however little, immediately. This study expects a positive relationship between dividend policy and growth for mature firms. Dummy 1 is therefore one for mature firms and zero for growth firms.

The model in this study also allows studying whether firm size influences its dividend decision. In this regard, firms are classified into large and small depending on their total assets in relation to the median assets for the cross section of firms. In line with Casey, and Anderson (1999) proposition, this study expects a positive relationship between dividend policy and firm size for large firms. This is because size is expected to have influence on growth and liquidity. Large firms are expected to have a low growth rate and large cash flows. Hence dividend payment would be high. Conversely, small firms are expected to have high growth rate and low cash flows. The dividend payment for these firms would therefore be low. Dummy 2 is thus one for large firms and zero for small firms.

Lastly, the model of the study allows studying whether industry classification affects a firm's dividend policy. To measure the industry effects, all the industries selected in the study constitute dummy variables so that each industry dummy variable assumes the value of one for itself and zero for other industries.

Estimation procedure

The Model in this study examines the relationship between dividend changes (CD) current earnings (Eit), preceding year dividend per share [DIVi (t-1)], cash flow (CF), investment (INV) and net current assets (NCA) as explanatory variables. The model further introduces three dummy variables - Growth (D1) firm size (D2) and industry classification (D3) separately into the model. The measurement of the variables is discussed below:

Dividend change (CD): Dividend yield lag measured by current year dividend yield less preceding year dividend yield.

Current earnings (Eit): Earnings per share measured by the profit after tax divided by the current market value of equity.

Preceding year dividend per share (DIVi (t-1)): Dividend lag (DL) measured by previous year cash dividend paid to common shareholders divided by the preceding year market value of equity.

Cash flow (CF): Cash flow per share, measured by profit after tax (PAT) plus non-cash charges (NCC) less preferred dividends (PD) divided by current market value of equity, where NCC includes depreciation and amortisation.

Investment (INV): Capital spending per share (CSP), measured by current year capital spending divided by current market value of equity.

Net current assets (NCA): Net current assets per share, measured by total current assets less total liabilities divided by the current market value of equity.

Growth (D1): Average growth in net sales (AGS), measured by the average of the aggregate current sales less previous sales divided by previous sales, that is:

$$\sum_{t-1}^{n} \frac{(CurrentSales - \Pr eviousSales)/\Pr eviousSales}{n}$$

A median growth in sales (MGS) is calculated after adding the average growth in sales (AGS) for the cross section of firms. The idea is that different firms might be at different stages of maturity and growth that determine their dividend policies. Firms with AGS higher than MGS are classified as growth (high growth) firms while firms with AGS lower than MGS are classified as low growth (mature) firms.

Size (D2): Total assets (TA), measured by the aggregate of fixed and current assets. A median asset is calculated for the cross-section of firms. A firm is classified as "large" if its total assets measure is larger than the median asset, for the cross-section of firms. A firm is classified as "small" if its total assets measure is below the median for the cross-section of firms.

Industry classification (D3): Industry classification based on the Nigerian Stock Exchange (NSE) classification. Each industry constitutes a variable (otherwise known as industry dummy variable).

A market value deflator is used in the regression model because it avoids historical cost bias that is inherent in other deflators such as book value of equity and total assets. Adelegan (2003) argues that there is a wide belief that dividend policy is driven by market performance. Christie (1994), Kothari (1992), Alford et al. (1993), Ali and Pope (1995) and Charitou and Vafeas (1998) lean support to the argument that a firm's dividend policy should be measured on the basis of its market value.

EMPIRICAL RESULTS

The results of this study are presented in three subsections. Sub-section one presents some basic statistics from the sample of firms used in the study. Sub-section two presents the regression results for the cross-section of firms. Sub-section three discusses the policy implications of the findings.

Descriptive statistics

Table 1 presents the descriptive statistics of the study. The table indicates that during the period of the study, the rate of dividend payment of the sampled firms increased by an average of about 0.65%, while earnings, previous dividend, cash flow, investment, and net current assets increased by an average of about 24.4, 6.7, 48.1, 34.5 and 47.1% respectively. This implies that increase in the rate of dividend payment is by far lower than increase in earnings and other variables. This provides evidence that firms smooth dividend payment in line with Lintner's findings. Net current assets variable has the highest standard deviation signifying its low contribution to the di-

Table 1. Sample Descriptive Statistics (1993 – 2002 data)

Variables*	Mean	Std Dev	Minimum	Maximum	Observations
E	0.2438	0.5455	0.0039	7.7804	512
DIVi (t-1)	0.0671	0.0912	0.0000	1.0000	507
CF	0.4812	0.6764	0.0052	7.9669	508
INV	0.3453	0.4684	0.0000	5.1633	508
NCA	0.4710	0.8745	-3.5050	8.8522	513
D1	0.5249	0.4999	0.0000	1.0000	522
D2	0.5323	0.4994	0.0000	1.0000	526
D3	0.0189	0.1364	0.0000	1.0000	527
CD	0.0065	0.2133	-2.6296	2.0000	500

Source: Econometric – views regression results.

Table 2. Correlation matrix for the sample observations.

Variable *	E	DIVi (t-1)	CF	INV	NCA	D1	D2	D3	CD
E	1.0000								
DIVi (t-1)	0.7174	1.0000							
CF	0.7935	0.5375	1.0000						
INV	0.5193	0.3092	0.7055	1.0000					
NCA	0.2670	0.3441	0.3218	0.0680	1.0000				
D1	0.1058	0.1000	0.1213	0.1150	-0.0202	1.0000			
D2	0.1083	0.0704	-0.0503	-0.0218	-0.1273	0.0930	1.0000		
D3	-0.0217	0.0047	-0.0283	0.0389	-0.1025	0.1365	0.1365	1.0000	
CD	0.3163	0.0716	0.3187	0.2077	0.1212	0.0010	0.0026	-0.0034	1.0000

Source: Econometric – views Regression Results. * For an explanation of the variables, see Table 1

vidend policy model, while previous dividend has the lowest standard deviation which indicates that it is the variable that contributes most significantly to the model.

Correlation matrix

Table 2 presents the correlation matrix for the sample observations. The table indicates that there is a positive relationship between dividend change (CD) and earnings, investment, previous dividend, cash flow and net current assets. The correlations between the independent variables are not highly significant. They range between 79% (Earnings and cash flow) to about 7% (Investment and net current assets).

Tolerance value and variance inflation factor

Notwithstanding the indication of non multicollinearity in the correlation matrix, two advanced measures of assessing multicollinearity were further employed. These are the tolerance value and the variance inflation factor (VIF). Table 3 presents a summary of the results.

The variance inflation factors are consistently smaller than ten indicating complete absence of multicollin earity (Neter et al. 1996; Cassey, et al. 1999). This shows the appropriateness of fitting the model of the study with the five independent variables. In addition, the tolerance values were consistently smaller than 0.7. This further substantiates the fact that there is complete absence of multicollinearity (Tabachnick and Fidell, 1996).

Regression results

The study hypothesises a significant relationship between the explanatory variables and dividend change (CD). The relationship is first predicted on the assumption of homogeneity across firms, signifying constant response coefficient. Empirical study have shown that the response coefficient is affected by firm size, growth level and industry classification. Hence the assumption of homogeneity is subsequently relaxed. The three factors are introduced into the base model as dummies independently. The study predicts that the five explanatory variables are better predictors of dividend change for mature (low growth) firms, and large firms. In addition, the study predicts that the ability of the five variables to explain dividend change of the selected firms will depend on the industry to which the firms belong. The regression results are presented in Table 4.

Table 3. Tolerance value and variance inflation factor (VIF)

Variable *	Tolerance	VIF
E	0.2500	4.0000
DIVi (t-1)	0.4633	2.1584
CF	0.2312	4.3253
INV	0.4718	2.1195
NCA	0.6031	1.2452

Source:. Econometric – views regression results. * For an explanation of the variables see Table 1.

In Table 4, regression equation 1 relates dividend changes to earnings (E), previous dividend [DIVi (t-1)], cash flow (CF), investment (INV) and net current assets (NCA). The estimated regression relationship for the dividend changes (CD) model is:

CD = -0.0108 + 0.1665 (E) -0.7879 DIVi (t-1) + 0.0466 (CF) -0.0101 (INV) + 0.0183 (NCA).

The results indicate a significant positive relationship between dividend changes and earnings as well as cash flow, and a significant negative relationship between dividend changes and previous dividend. Investment is found to be negatively related and net current assets positively related to dividend changes. However, the relationships for both of them are found to be statistically insignificant. The significant positive relationships between dividend changes and earnings as well as cash flow imply that an increase in current earnings and cash flow would lead to a positive change in dividend payment from one year to another. The significant negative relationship between dividend changes and previous dividend on the other hand implies that a positive change in previous dividend from one year to another will not lead to an increase in dividend payment. In other words, firms usually follow a smoothed residual dividend policy. They are reluctant to increase dividend payment unless they are sure that the increase can be maintained. Firms do this because they believe that shareholders prefer a steady stream of dividend to a fluctuating dividend.

These results are consistent with the results of previous studies (Lintner, 1956; Fama and Babiak, 1968; Brittain, 1964; Jose and Stevens, 1989; Benartzi et al., 1997; and Musa, 2005).

The results also provide evidence for the rejection of null hypothesis (2), (3) and (4) and the acceptance of null hypotheses (5) and (6). The hypotheses predicted a significant relationship between earnings (hypothesis 2), previous dividend (hypothesis 3), cash flow (hypothesis 4), investment (hypothesis 5) and net current assets (hypothesis 6). The t-values of earnings and previous dividend were found to be significant at 1% while the t-value of cash flow was found to be significant at 10%.

The results show the robustness of Lintner's variables (current earnings and previous dividend) in explaining the dividend policy of the sample of firms in Nigeria.

More importantly, the results provide strong evidence that the sample of firms in Nigeria make dividend decisions in line with Lintner's partial adjustment model. The model indicates that changes in dividends over time do not correspond exactly with changes in earnings in the immediate period. This is because firms tend to make periodic partial adjustment in the yearly payout ratio in the direction of a long-run target ratio, rather than making dramatic changes in cash dividend paid.

The results also confirm the findings of Adelegan (2003) which indicate a significant positive relationship between dividend changes and cash flow, despite the differences in the definition of dividend adopted by the two studies. While Adelegan (2003) defined dividend to include both cash and stock dividend, the present study defines dividend in terms of cash dividend paid to ordinary share- holders only. The results are however consistent with the findings of Musa (2005).

However, the results did not provide support for the use of investment in explaining or predicting dividend changes. The investment coefficient was found to be insignificant. The coefficient of net current assets was also found to be insignificant implying that they are not important variables for explaining changes in the dividend payment of the sample of firms in Nigeria.

The t- values in the regression model show that the variable with the greatest influence on dividend changes is earnings with a value of 5.1569, significant at 1% confidence level. This is closely followed by previous dividend (-5.4655), also significant at 1 percent confidence level. As already explained, the sequence of the explanatory variables in relation to dividend changes only proves the robustness of Lintner's model which uses current earnings and previous dividend as explanatory variables.

The model's adjusted coefficient of determination shows that only about 15.6% of the variations in dividend changes are explained by the combined influence of current earnings, previous dividend, cash flow, investment and net current assets. On the basis of the low adjusted R^2 value, the tendency is for one to conclude that the model is not well fitted in terms of the explanatory power. This conclusion is not tenable because it is not unusual for the adjusted R^2 values which result from regression equation dealing with differences in variables (rather than level of variables) to be generally low. The reason for this has been provided by Keran and Riordan

Table 4. Determinants of dividend change from cross-section ols regression results [a].

Variable [b]	ΣQ1	ΣQ2	ΣQ3	Agriculture ΣQ4bi	Automobiles ΣQ4bii	Banking Q4biii	Breweries ΣQ4biv	Building Materials ΣQ4bv	Chemicals ΣQ4bvi	Computers ΣQ4bvii	Conglomerates ΣQ4bviii
Intercept	-0.0108 (-0.8298)	-0.0057 (-0.3624)	-0.0084 (-0.4996)	-0.0108 (-0.8198)	-0.0111 (-0.8456	-0.0045 (-0.3296)	-0.0117 (-0.8797)	-0.0109 (-0.8167)	-0.0112 (-0.8539)	-0.0110 (-0.8442)	-0.0104 (-0.7764)
E	0.1665 (5.1569)***	0.1662 (5.1424)***	0.1681 (5.0873) ***	0.1664 (5.1465)***	0.1665 (5.1526)***	0.1763 (5.3704)***	0.1661 (5.1358)***	0.1665 (5.1353)***	0.1664 (5.1474)***	0.1664 (5.1472)***	0.1668 (5.1495)***
DIVi(t-1)	-0.7879 (-5.4655) ***	-0.7828 (-5.4178)***	-0.7883 (-5.4628)***	-0.7878 (-5.4588)***	-0.7882 (-5.4619)***	-0.7968 (-5.5313)***	-0.7873 (-5.4561)***	-0.7879 (-5.4462)***	-0.7876 (-5.4580)***	-0.7892 (-5.4683)***	-0.7887 (-5.4609)***
CF	0.0466 (1.7209)*	0.0474 (1.7459)*	0.0456 (1.6590)*	0.0467 (1.7206)*	0.0466 (1.7189)*	0.0420 (1.5454)	0.0469 (1.7289)*	0.0466 (1.7180)*	0.0467 (1.7240)*	0.0484 (1.7591)*	0.0465 (1.7148)*
INV	-0.0101 (-0.3681)	-0.0096 (-0.3491)	-0.0101 (-0.3687)	-0.0100 (-0.3652)	-0.0010 (-0.3607)	-0.0085 (-0.3095)	-0.0094 (-0.3430)	-0.0101 (-0.3669)	-0.0098 (-0.3568)	-0.0127 (-0.4506)	-0.0103 (-0.3742)
NCA	0.0183 (1.6270)	0.0178 (1.5818)	0.0180 (1.5976)	0.0182 (1.6082)	0.0183 (1.6313)	0.0199 (1.7704)*	0.0182 (1.6165)	0.0183 (1.6252)	0.0181 (1.6056)	0.0182 (1.6168)	0.0183 (1,6303)
D1		-0.0109 (-0.6060)									
D2			-0.0044 (-0.2363)								
D3				-0.0044 (-0.0694)	0.0122 (0.1833)	-0.0364 (-1.5838)	0.0160 (0.3445)	0.0003 (0.0046	0.0197 (0.2790)	0.0278 (0.3823)	-0.0044 (-0.1334)
R^2	0.1643	0.1649	0.1644	0.1643	0.1644	0.1686	0.1645	0.1643	0.1644	0.1646	0.1643
Adj R^2	0.1557	0.1546	0.1540	0.1540	0.1540	0.1583	0.1542	0.1539	0.1541	0.1542	0.1540
F-stat	19.07	15.93***	15.87***	15.86***	15.87***	16.36***	15.88***	15.86***	15.88***	15.89***	15.86***
Durbin-Watson	2.7881	2.7899	2.7882	2.7881	2.7896	2.7894	2.7882	2.7881	2.7883	2.7875	2.7879

(1976), Oyejide (1976) and Adelegan (2003). According to these studies, when a change rather than level data are used, the variance to be explained is omitted by trend, leaving only the cyclical and random components. This reduces the adjusted R^2 value. The probability of the F-statistic provides further support to the above explanation. The F-statistic (19.07) has been found to be significant at 1%. This implies that even with the low adjusted R^2 value, the model is well fitted.

The results in equation 2 through 4bi – bxviii indicate that none of the Dummy variables-growth, firm size and industry classification has significant impact on dividend changes.

Furthermore, the adjusted R^2 has remained within the range of 15.4 to 15.6%. This shows that the addition of the three dummy variables to the base model has not led to any improvement in the model. The F-statistic also remained consistently significant at 1%.

The results further show that the sampled firms in Nigeria do not consider investment as a significant factor in a decision to vary dividend payment from one year to another. Net current assets variable is also insignificant in determining the dividend policy of the sample of firms in Nigeria. This suggests that there is no statistical evidence to prove that the sample of firms in Nigeria complied with the provisions of section 381 of the Companies and Allied Matters Act

Table 4. Contd.

Variable [b]	Constructions ΣQ4bix	Emerging ΣQ4bx	Food/Bev and Tob ΣQ4bxi	Healthcare ΣQ4bxii	Industrial / Domestic ΣQ4bxiii	Insurance ΣQ4bxiv	Packaging ΣQ4bxv	Petroleum ΣQ4bxvi	Printing/Pub. ΣQ4bxvii	Textiles ΣQ4bxviii
Intercept	-0.0118 (-0.8961)	-0.0112 (-0.8412)	-0.0135 (-0.9913)	-0.0118 (-0.8867)	-0.0105 (-0.8016)	-0.0095 (-0.7093)	-0.0105 (-0.8021)	-0.0128 (-0.9565)	-0.0122 (-0.9210)	-0.0115 (-0.8727)
E	0.1666 (5.1570)***	0. 1664 (5.1458)***	0.1679 (5.1879)***	0.1655 (5.1047)***	0.1651 (4.9819)***	0.1655 (5.1125)***	0.1645 (5.0548)***	0.1672 (5.1721)***	0.1669 (5.1659)***	0.1669 (5.1634)***
DIVi(t-1)	-0.7924 (-5.4841)***	-0.7879 (-5.4597)***	-0.7971 (-5.5040)***	-0.7868 (-5.4517)***	-0.7871 (-5.4524)***	-0.7963 (-5.4850)***	-0.7892 (-5.4697)***	-0.7928 (-5.4891)***	-0.7936 (-5.4920)***	-0.7919 (-5.4803)***
CF	0.0481 (1.7648)*	0.0466 (1.7173)*	0.0451 (1.6571)*	0.0479 (1.7536)*	0.0482 (1.7076)*	0.0465 (1.7162)*	0.0488 (1.7781)*	0.0463 (1.7067)*	0.0467 (1.7216)*	0.0470 (1.7347)*
INV	-0.0122 (-0.4423)	-0.0098 (-0.3560)	-0.0072 (-0.2598)	-0.0102 (-0.3720)	-0.0104 (-0.3805)	-0.0077 (-0.2775)	-0.0010 (-0.3648)	-0.0092 (-0.3370)	-0.0091 (-0.3335)	-0.0109 (-0.3985)
NCA	0.0189 (1.6750)*	0.0183 (1.6294)	0.0192 (1.6962)	0.0179 (1.5893)	0.0180 (1.5861)	0.0194 (1.6945)*	0.0184 (1.6407)	0.0190 (1.6817)*	0.0184 (1.6349)	0.0188 (1.6644)
D1										
D2										
D3	0.0270 (0.5576)	0.0066 (0.1429)	0.0206 (0.7054)	0.0175 (0.3827)	-0.0078 (-0.1991)	-0.0142 (-0.5181)	-0.0251 (-0.5180)	0.0225 0.6618	0.0300 (0.6635)	0.0315 (0.0495)
R^2	0.1648	0.1643	0.1652	0.1646	0.1644	0.1648	0.1648	0.1651	0.1651	0.1647
Adj R^2	0.1545	0.1540	0.1548	0.1542	0.1540	0.1544	0.1544	0.1547	0.1547	0.1544
F-stat	15.92***	15.86***	15.96***	15.89***	15.87***	15.91***	15.91***	15.95	15.95***	15.91
Durbin-Watson	2.7870	2.7880	2.7883	2.7882	2.7884	2.7886	2.7884	2.7885	2.7882	2.7874

[a] t – values are in parenthesis. ***, **, and * indicate that values are sig. at 1, 5 and 10% respectively [b]ΣQ1 = Base model, ΣQ2= model with D1 (firm growth), ΣQ3 = model with D2 (firm size), ΣQbi – bxviii = model with D3 (industrial classification, bi = Agriculture, bii = Automobile and tyres, biii = Banking ,biv = Breweries, bv = Building Materials ,bvi = Chemicals and paints, bvii = Computers and office equipment ,bviii = Conglomerates, bix = Construction, bx = Emerging Markets/second-tier Securities, bxi = Food, Beverages and Tobacco, bxii = Healthcare, bxiii = Industrial/Domestic Products, bxiv = Insurance, bxv = Packaging, bxvi = Petroleum marketing, bxvii = Printing and publishing, bxviii = Textiles).

(CAMA) 1990 as amended. The series of negative net current asset values in the sample data further substantiates this fact. In the overall, the results have proved the robustness of the model in terms of its predictive and explanatory power. This implies that it is significantly useful in predicting and explaining the dividend policy of the sample of corporate firms in Nigeria.

Policy implications of the findings

Possible public implications exist regarding the use of the model developed in this study. First, the utility of the model in explaining and predicting the dividend behaviour of the sampled firms in Nigeria has been clearly established. Given the fact that shareholders in practice usually prefer firms with a stable and predictable dividend policy, the model in this study could be used to predict a firm's dividend stability or changes in dividend paymen

overtime. This could easily be done using information available in a firm's financial forecast with regards to its earnings, previous dividend, cash flow, investment and net current assets. The category of shareholders that usually favour regular cash dividend payments and who may wish to predict their cash inflow would also find the model of this study quite useful. This category includes small shareholders, retired and old persons and some institutional investors.

The results of this study have provided insight into the predictor variables that have important impact in explaining the variation in dividend changes of corporate firms in Nigeria. From the perspective of the Board of Directors (BODs) of corporate firms, these findings should assist in establishing a dividend policy that can be acceptable to the various stakeholders in the firms. The results of the study indicate that earnings variable is the most important variable that can be used to explain dividend changes. The relationship between the earnings variable and the dividend policy factor has remained consistently positive. The important features of this independent variable are that it is both short-run and long-run in its scope, and can be manipulated by corporate management. These features thus suggest that dividend policy can be established and manipulated to some extent by the board of directors of corporate firms to suit the interest of the various stakeholders. The results also indicate that cash flow is an important explanatory variable in the dividend–change model. The value of the coefficient in the model has remained consistently positive. Cash flow largely depends on earnings and other variables that are within the control of corporate management such as depreciation. In addition, the cash flow variable is short-run in its scope. These characteristics also suggest the possibility of establishing a dividend policy that can be manipulated, to some extent, and that the results of change in the dividend policy can be noted relatively early. This provides a basis for planning a firm's operating, investment and financing activities.

Previous dividend has also consistently appeared to be an important variable that can be used to explain the dividend behaviour of corporate firms in Nigeria. The relationship between previous dividend and dividend changes is however not consistent. There is a negative relationship between previous dividend and dividend change. The explanation for this is that changes in dividend payment over the years are negatively associated with previous dividend. Thus a positive change in previous dividend will not necessarily be accompanied by a positive change in dividend payment over a number of years. These results demonstrate the importance of smoothed residual dividend policy. Corporate management could maintain a stable dividend payment so that the equity portions of new capital expenditure are financed internally to the degree possible. At the same time, the management could maintained both the target dividend payout and target capital structure over time.

From the perspective of creditors who need protection against excessive dividend payments, the model in this study should assist in checking compliance with the insolvency rule which is contained in the Companies and Allied Matters Acts (CAMA) 1990. The rule provides that corporations should only pay dividend when there are adequate reasons to believe that the fair value of the corporation's net current assets will remain positive after the payment of dividend. The results of this study indicate that net current asset is not a significant factor in determining dividend changes. The implication of this result is that the study could not find evidence of compliance with the insolvency rule by the sampled firms in this study. In addition, the methodology introduced in this study can easily be adapted to assess dividend policy reaction to legislative Acts related to areas other than insolvency rule, such as tax reform and regulation or deregulation of certain industries. The results further suggest the possibility of formulating and enforcing standard on dividend payments by the accounting professional bodies. The standard is not only desirable but imperative given the latitude currently granted to directors of companies to make dividend decision. It will be easier for accounting professional bodies than the government, to assess compliance with the rules that have been enacted to limit the discretion of directors where such rules are complimented by accounting standards. This is because accountants are responsible for auditing the end of year financial statements of corporate firms.

The ability of a firm to establish dividend policy using the variables in this study will thus depend on whether the firm is a high growth or mature firm. The implication of this finding is that in enacting laws or formulating standard on dividend payment, consideration needs be given to firm-specific factors, especially a firm's level of growth.

Conclusions and Recommendations

This paper examines whether five explanatory variables-current earnings, previous dividend, cash flow, investment and net current assets have significant aggregate as well as separate impact on the dividend policy of firms quoted on the Nigerian Stock Exchange (SEC). The study also investigates the separate utility of firm size, growth and industry classification in a five- variable parsimonious dividend policy model developed by Musa (2005).

Using a sample of 53 quoted firms in the period 1993 to 2002, the study first provides both empirical and statistical evidence on the aggregate impact of the five variables on the dividend policy of firms.

Second, the study also provides evidence that earnings, previous dividend and cash flow all have significant positive impact on the dividend policy of the quoted

firms. These results confirm the robustness of the three variables in explaining and predicting corporate dividend policy and underscore the importance that firms place on maintaining the continuity of dividends in Nigeria. The results further corroborate the works of Oyejide (1976), Izedonmi and Eriki (1996) and Adelegan (2003).

Third, the paper does not provide statistical evidence of a relationship between investment and dividend policy of firms in Nigeria. However, this study represents a pioneering attempt at operationalising and empirically testing the investment variable in Nigeria.

Fourth, there is the absence of statistical evidence to support the existence of a relationship between net current assets (a proxy for insolvency rule) and the dividend policy of quoted firms. Nevertheless, this study represents a pioneering attempt at conceptualising and operationalising the insolvency rule as a predicator rather than a non metric variable in a dividend policy model. Previous studies have only succeeded in capturing legislative Acts that relate to dividend policy in the form of dummy variables

Fifth, the utility of growth level, firm size, and industry classification in the dividend policy model is not documented in the study.

This study adds to the body of literature on corporate dividend policy in Nigeria. The results of the study underscore the need for Board of Directors (BODs) to maintain a steady increase in earnings, cash flow and dividend payment.

A major limitation of this study is that the model used is based on the confirmatory specification approach. This approach has the tendency of omitting other important variables. Another limitation is that the study is made up of only "healthy" firms (that is, firms with consistent record of earnings and dividend payment). The study thus suffers from survivorship bias. Future research might fruitfully consider- (1) modelling the dividend policy of firms in Nigeria using the sequential search approach, and (2) examining the application of the model in this study on "unhealthy" firms (that is, firms with erratic record of earnings and dividend payment) or a mixture of "healthy" and "unhealthy" firms. Either of these two approaches will help confirm or disconfirm the utility of the model of this study in explaining and predicting the dividend policy of corporate firms in Nigeria.

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