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Dividend policy-performance nexus: PMG-ARDL approach

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Abstract

This paper examines the long run and short run link between dividend payout policy and corporate performance of quoted companies in Nigeria over the period 2001–2018. The study employs data of 80 listed companies collected from the audited financial statements of the companies and the publication of Central Bank of Nigeria. Using Pooled Mean Group-Autoregressive Distributed Lag approach, the result shows that dividend policy negatively and statistically influence performance in the short run, while in the long run the effect is positive and significant.

Keywords: Dividend policy, Corporate performance response, PMG-ARDL, Temporary and permanent shocks, Nigeria

Introduction

The debates on the links between dividend pay-out, value and performance of companies have been a subject of intense theoretical modelling and empirical considerations, which have fascinated the interest of financial thinkers and scholars over the years. It is often argued that firms seldom prefer a sustainable accumulation of funds to executing a constant dividend payment, partially because excessive payment of dividend is intuitively conceived as cash outflow which may potentially increase bankruptcy risk of firms, especially amidst a high level of economic uncertainties [12, 44]. This trend, however, if not regulated, is expected to aggravate agency problem as financial theory has suggested [3, 11, 22]. Henceforth, dividend payment is being employed by management to reduce agency conflict and acts as a catalyst to boosting corporate performance [5, 7]. It also dispels information disparity [9, 10].

Consequently, efforts have been made to examine the precise impact of dividend payout on corporate performance of firms, but the relationship between the two variables and their influence on one another remains contentious in the literatures [43]. Most of the work documented a significant positive association between dividend policy and corporate performance [26, 29, 30, 38, 46–47]. Some few others however reported an insignificant relationship [34, 40, 48], while one study also reported a negative association between dividend policy and the proxy of performance [52]. These empirical debates may be as a result of the different period in which the studies were carried out and most of these studies were done across countries among which the business environments differ considerably. Thus, studies have also only revealed that most researchers are skewed towards the influence of dividend policy on firms' performance; meanwhile, the proportionate responsiveness of corporate performance both in the long run and short run to any permanent and temporal shocks in dividend payout policy is a missing gap.

Moreover, the general observations from the literature survey reveal that a bulk of the study on dividend policy-firms' performance puzzle abound mostly in developed and barely in developing economies with very few facts exclusively from Nigeria. None of these studies has considered the long run link between dividend pay-out policy and firms' financial performance. The long run is the period where all the factors of production will be variable, i.e. no fixed variable. Therefore, all costs incurred will be variable. In the short run, there will be at least one fixed variable, so that total cost will be the addition of fixed cost and variable cost. This implies that the total cost in

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the short run is higher than in the long run. Hence, the objective of this article is to investigate the long run and short run impact of dividend payout policy on the financial performance of quoted companies in Nigeria from 2001 to 2018.

The paper contributes to empirical literature in diverse ways. First, it investigates the long run and short run link between dividend policy adopted by firms and its financial performance focussing exclusively on Nigeria. This is essential, given the characteristics of Nigerian stock markets, which is relatively small compared with developed markets and is frequently faced with inadequate regulatory framework. In addition, the global recession that commenced in year 2009 also impacted on the economy of Nigeria in general and the stock market in particular. During this recessionary period, the stock market slumped and stock value was reduced drastically. Despite the increase in productive activities today, many companies are still staggering from the effect of the recession. Non-payment of dividend has also been reported in the Nigerian Stock Exchange. Eighty-four (84) companies listed on NSE have not paid dividend in the last five years [39]. Hence, issues pertaining to corporate dividend are key in any organisation as any policy shock from corporate dividend decision usually have resultant effects on vital value drivers.

Secondly, the application of Pooled Mean Group-Autoregressive Distributed Lag (PMG-ARDL) bond testing approach is an innovation that identifies and prevents problems relating with estimating short time series data [1], it also has the ability to estimate the long run and short run parameters concurrently for the avoidance of the problems posed by non-stationarity time series data and the procedures are statistically a much more significant approach to decipher cointegration relationships in small samples by allowing different optimal lags of variables [13].

Literature review

Theoretical issues

The dynamics of dividend policy have always been one of the intriguing topics in corporate financial research. There exist no definite explanations, theoretical or empirical findings on how the behaviours of dividend policy affect corporate performance. This has therefore led to various conflicting hypotheses, theories and positions both globally and locally [2, 31]. Corporate dividend policy and analysis have been labelled as one of the top ten central subjects in corporate finance that has remained disconcerted [11]. The question of why corporations still pay dividends and the resultant impact on corporate performance and value still feature as a controversial issue in corporate finance [15].

The proponents of classical theory state that the single objective which corporations must pursue is the maximisation of the shareholders' wealth, and that the energy of management and directors of these corporations should be channelled towards achieving these goals [4]. Dividend relevance theory which is credited to the works of Williams [50], Graham and Dodd [20], Godon [19] and Walter [49] also asserted that corporate dividend payout policy not only serves as an indicator to stockholders and a beam light into the performance of the company also a glimpse into appraising the inevitability of a company's profitability, sustainability and going concern. Thus, high and constant dividend payment by firms is equivalent to the financial health of the company [5, 6, 25]. While conversely, dividend irrelevance theory has developed by Miller and Modigliani (1961) acquiesce that the value and performance of the firm are exclusively determined by the investment design and risk. Whereas the decision to either distribute earnings as dividends or to plough back earnings for business growth and expansion has nothing to do with the performance of the firms [18] p. 31.

To this end, scholars and financial thinkers have tried to examine the relative impact of the commensurate value appropriated to shareholders (i.e. dividends) on corporate performance [3] and also the dynamics of dividend analysis to corporate characteristics. However, the behaviours of dividend pay-out policy and the interaction between its determinants have remained complex to validate [41]. Therefore, several theories and hypotheses have been proposed to give a clear-cut insight into how dividend decisions are undertaken and its resultant effect on corporate performance [31]. However, all of these gave conflicting and mixed results.

Empirical literature

Several empirical studies have emerged elucidating the association between dividend policy and performance. Their major submission is that dividend payout correlates with corporate performance [26, 29, 44, 46, 47], (The 2017). In addition, Ahmed (2015) put forward that companies' level of financing policy and dividend policy significantly affect the performance of firms irrespective of whether or not the firms are faced with growth opportunities. The study of Priya and Nimalathasan [38] in Sri Lanka also revealed that dividend policy of selected Hotels and Restaurants impact all the performance ratios of the company (with the exception of return on investment and return on equity). A year later, Velnampy, et al. [48], however, found out that the determinants of dividend payment do not have any association with performance proxy. Kajola et al. [24] revealed a positive and significant relationship between dividend policy and performance of firms after using signalling theory and Bird-in-the-Hand hypothesis as bases.

Using Pakistani firms from 2010 to 2015, Khan et al [27] discovered a positive and significant relationship between the measures of performance and dividend policy. However, Elmi and Muturi [16] in their own work disclosed that profitability was an insignificant factor in determining the dividend policy of the firm. However, the authors also submitted that profitability may not affect the ability of the firm to pay dividend in the short run, but an elongated poor performance will eventually affect the firms' pay-out policy negatively. Simon-Oke and Ologunwa (2016) also showed that dividend policy remains a function of strong dynamic variables, such as ROI, EPS and DPS, thereby becoming a driving force of corporate performance. A year later, Kimunduu, et al. [28], also confirmed that the link between financial performance and dividend policy of listed firms on Nairobi Securities Exchange was significant.

Turakpe and Fiiwe (2017) examined three selected Nigerian companies: Nigerian Breweries plc., Zenith Bank Nigeria plc., and Guaranty Trust Bank plc., from 2011 to 2015. The authors found out that for Nigerian Breweries, performance measures positively correlate with dividend pay-out, while earnings per share showed an inverse correlation; Zenith bank plc., earnings per share and return on earnings positively affect dividend pay-out; Guaranty Trust Bank plc., profit after tax positively affected dividend pay-out and that earnings per share and return on earnings exerted a negative influence. These they argued are in tune with the tenets of dividend relevant hypothesis. It is remarkable that most of these studies have common problems of omitted variables, endogeneity and simultaneity which is traced out from the use of OLS, random effect, fixed effects, multivariate regression leading to increased one-sidedness. This study takes care of these biases.

The above empirical evidences also show that there is a growing literature on the relationship between dividend policy and corporate financial performance of companies both locally and internationally. Nevertheless, the long run and the short run impact of dividend policy on corporate performance is rarely explored in the extant financial literature. This accordingly forms one of the key objectives of this study, which is to test the long run and short run impact of dividend pay-out policy on performance of listed companies in Nigeria. Additionally, the use of Pooled Mean Group-Autoregressive Distributed Lags is an innovation that is relatively green in analysing dividend-performance nexus in the extant literatures. PMG-ARDL confines long run equilibrium to become homogeneous across firms, whereas permitting heterogeneity for short run associations [14, 51]. The short run link emphases on the firms' specific heterogeneity which might be triggered by diverse responses of stabilisation policies, external, permanent and temporal shocks, macroeconomic uncertainties, business and political risks. This therefore makes PMG-ARDL estimator to be superior [14]

Methods

Data and data source

Eighty quoted Nigerian companies were purposively selected in this research work for the period 2001 to 2018. The reason for the sampling selection is that the selected companies are in existence throughout the period of study and their data are readily available and accessible. The choice of time frame was informed by the fact that the Nigerian economy as at 2001, began to witness some growth due to various policies, reforms and legislations due to her recent restoration to democracy in 1999. Also, during these periods, there was a banking reform, the period also experienced economic meltdown. Thus, all these reforms, policy and the state of the economy subsequently had impact on business and operation environments.

Furthermore, it is believed that other variables could have great impact on the corporate performance. The omission of these variables could give a spurious result. In view of this, we introduced three control variables: market value (MKV); investment policy (InPPE) and gross domestic product (InGDP) so as to avoid simultaneous bias [1, 21] in our estimation process. Various studies have revealed that firms' financial performance is also affected by the companies' share price behaviour, GDP and the investment policy adopted by the companies.

This study utilized secondary data to investigate the nexus between dividend policy and financial performance of listed companies in Nigeria. Data on firm specific variables such as dividends, profitability, investment opportunity sets and market values were gotten from the annual reports and accounts of companies and the facts book published by the Nigerian Stock Exchange. Gross domestic products were sought from the statistical bulletin published by the central bank of Nigeria (CBN).

Model specification

In this study, the Pooled Mean Group-Autoregressive Distributed Lag (PMG-ARDL) model proposed by Pesaran et al. [36] for analysis was employed. It is connected with pooling and averaging of the coefficient over the cross-sectional units.

In order to examine the nexus between dividend policy and corporate performance, an ARDL relationship which takes the form below is specified:

$$
\begin{aligned}
\mathrm{COR}_{it} = & \propto_{10} + \sum_{\vartheta=1}^{n} \propto_{1\propto}\ \Delta\mathrm{COR}_{it-\vartheta} + \sum_{i=0}^{n} \propto_{2\propto}\ \Delta\mathrm{DPS}_{t-\vartheta} + \sum_{i=0}^{n} \propto_{3\propto}\ \Delta\mathrm{MKV}_{t-\vartheta} \\
& + \sum_{i=0}^{n} \alpha_{4\alpha}\,\Delta\mathrm{In(PPE)}_{t-\vartheta} + \sum_{i=0}^{n} \alpha_{5\alpha}\,\Delta\mathrm{In(GDP)}_{t-1} + \beta_{10}\mathrm{COR}_{t-i} + \beta_{11}\mathrm{DPS}_{t-i} \\
& + \beta_{12}\mathrm{MKV}_{t-i} + \beta_{13}\mathrm{In(PPE)}_{t-i} + \beta_{14}\mathrm{In(GDP)}_{t-i} + \in_{2it}
\end{aligned}
\tag{1}
$$

where e_{2it} is the error term and Δ represent the first difference operator, CORit is a proxy for corporate performance. DPS is dividend per share and is a proxy for dividend policy, MKV is the market values of the sampled companies and is proxied by Tobin's Q model, In(PPE) is the natural logarithm for firms' investments and In(GDP) is the natural logarithm for gross domestic products. Meanwhile, market values (MKV), firms' investments and GDP are control variables in this model. This model estimates $(n+1)^k$ number of regressions in order to obtain the optimal lag length for each variable. While n is the total number of lags that were used, k is the number of variables in the estimation. An appropriate lag selection based on criteria such as Akaike information criterion (AIC) and Schwarz Bayesian criterion (SBC). If there was evidence of co-integration among the variables, then the following long run model was estimated:

All coefficients of the short run equation are coefficient relating to the short run dynamics of the model's convergence to equilibrium and φ in Eq. (3) above represents the speed of adjustment.

To achieve the objective of this paper, the study adopted Autoregressive Distributed Lag (ARDL) approach in order to test the presence of co-integration relationship among the study variables.

This approach was considered in the extant literature as a superior econometric model, when compared with other single co-integration procedures like Engle and Granger [17], Johansen and Juselius [23, 42]. The first advantage of this model is that the endogeneity problems and inability for hypotheses testing on estimated coefficients in the long run usually associated with Engle-Granger [17] are eliminated. Secondly, both long run and short run parameters of the model in question

$$
\begin{aligned}
\Delta\mathrm{COR}_{it} = & \propto_{1} + \sum_{\vartheta=1}^{n} \emptyset_{i\propto}\Delta\mathrm{COR}_{it-\vartheta} + \sum_{i=0}^{n} \partial_{1\propto}\Delta\mathrm{DPS}_{it-\vartheta} + \sum_{i=0}^{n} \theta_{i\alpha}\,\Delta\mathrm{MKV}_{it-\vartheta} \\
& + \sum_{i=0}^{n} \pi_{1\alpha}\,\Delta\mathrm{In(PPE)}_{it-\vartheta} + \sum_{i=0}^{n} \tau_{1\alpha}\,\Delta\mathrm{In(GDP)}_{it-\vartheta} + \in_{it}
\end{aligned}
\tag{2}
$$

The ARDL specification of the short run dynamics can be derived by constructing an error correction model of the form:

$$
\begin{aligned}
\Delta\mathrm{COR}_{it} = & \propto_{2} + \sum_{\vartheta=1}^{n} \beta_{2\alpha}\,\Delta\mathrm{COR}_{it-\vartheta} + \sum_{i=0}^{n} \gamma_{2\alpha}\,\Delta\mathrm{DPS}_{it-\vartheta} + \sum_{i=0}^{n} \delta_{2\alpha}\,\Delta\mathrm{MKV}_{it-\vartheta} \\
& + \sum_{i=0}^{n} \omega_{2\alpha}\,\Delta\mathrm{In(PPE)}_{it-\vartheta} + \sum_{i=0}^{n} \sigma_{2\alpha}\,\Delta\mathrm{In(GDP)}_{it-\vartheta} + \varphi\mathrm{ECT}_{it-\vartheta} + \in_{it}
\end{aligned}
\tag{3}
$$

where $\mathrm{ECt}_{\mathrm{it}}$ is the error correction term and is defined as:

$$
\begin{aligned}
\mathrm{ECT}_{it} = & \ \Delta\mathrm{COR}_{it} - \propto_{1} - \sum_{\vartheta=1}^{n} \emptyset_{1\propto}\mathrm{COR}_{it-\vartheta} - \sum_{i=0}^{n} \partial_{1\propto}\Delta\mathrm{DPS}_{it-\vartheta} - \sum_{i=0}^{n} \theta_{1\alpha}\,\Delta\mathrm{MKV}_{it-\vartheta} \\
& - \sum_{i=0}^{n} \pi_{1\alpha}\,\Delta\mathrm{In(PPE)}_{it-\vartheta} - \sum_{i=0}^{n} \tau_{1\alpha}\,\Delta\mathrm{In(GDP)}_{it-\vartheta}
\end{aligned}
\tag{4}
$$

are estimated concurrently, and finally, the econometric methodology is purged of the burden of establishing the order of integration among the variables of interest and of pre-testing the unit roots [42].

Results and discussions

This analysis was carried out so as to analyze the effect of dividend pay-out policy of quoted Nigerian firms on their corporate performance in the study period. To this end, this study began the analysis with the descriptive analysis of the variables of interest so as to know the behaviour these data exhibited during the period of study.

Descriptive statistics of the variables of interest for sampled Eighty (80) quoted companies are shown on Table 1. It revealed a high level of consistency was displayed by the data series. The mean and the median values fall within minimum and maximum values. For instance, the mean value of DPS was 0.777881 and that of market value (proxied by TQ) was 1.240972. This showed that the fluctuations of these variables were relatively minimal over the study period.

The standard deviation which is a measure of degree of dispersion on the study variables from their mean was relatively low for all the variables of interest, indicating that the deviation of actual data from the mean values was very small. However, the standard deviation of performance was a bit high as the value stood at 10.61335, indicating that the dispersion of actual data from its mean value was relatively higher than when compared with other variables.

All of these variables were positively skewed, showing that they had a long right tail. Conversely, INGDP was negatively skewed showing a long right tail. Kurtosis statistics for most of the variables were more than 3, showing that the distribution series of the data were peaked relative to normal, while kurtosis statistics of INPPE and INGDP were 2.757412 and 2.287199, respectively, showing the extent of the data series relative to normal.

The correlation matrix on Table 2 examined likely range and the direction of connections among the variables of interest. Results revealed that the exogenous variables (i.e. MKV, INPPE, INGDP, and DPS) exhibited a relatively low association with the endogenous variables and also with each other. Caution should however, be exercised while interpreting results from correlation because simple bivariate correlation matrix on Table 2 only showed the extent of linear relationship between pairs of variables used in this study. Correlation between variables does not also connote causation. Hence, an inferential statistical tool still needed to be employed in order to decipher the cause and effect of these variables.

A unit root test was also performed for the variables of interest in the estimation process. This test was carried out so as to take into account the unpredictable systematic pattern associated with a time series data which if not taken into consideration, may cause a phoney regression analysis with stern undesirable implications on business and public policies.

Thus, two approaches of unit root test were presented on Table 3. Table results of the panel unit root test both with trend and without trend showed that DPS and INGDP were stationary at levels, while COR, MKV, and INPPE were stationary at first difference. Moreover, they were all significant at 1% level. Therefore, this study rejected the null hypothesis of unit root.

After confirming the mixt stationary in the unit root test, this study went further to scrutinize the co-integrating bond among the variables of interest using Pedroni panel co-integration test. Pedroni [37] appraises

Table 1 Descriptive statistics. *Source*: Author's Computation, 2020

	COR	MKV	INPPE	INGDP	DPS
Mean	8.179954	1.240972	15.94595	31.48572	0.777881
Median	5.560000	0.939585	15.74839	31.57137	0.090027
Maximum	99.16000	15.84266	23.36239	31.87638	12.11687
Minimum	-50.73000	-2.896138	7.083388	30.83831	0.000000
Std. Dev	10.61335	1.291479	2.785942	0.327057	1.153253
Skewness	1.937001	3.308632	0.331195	-0.650293	2.916353
Kurtosis	15.27709	24.42480	2.757412	2.287199	20.91823
Jarque–Bera	8348.893	25,329.06	25.06703	110.8053	17,887.33
Probability	0.000000	0.000000	0.000004	0.000000	0.000000
Sum	9889.564	1500.335	19,278.65	38,066.23	940.4583
Sum Sq. Dev	136,072.9	2014.845	9375.858	129.2153	1606.631
Observations	1369	1369	1369	1369	1369

COR corporate performance, *PPE* property plant and equipment, *GDP* gross domestic product, *DPS* dividend per share, *MKV* market value (Proxied by Tobin's Q)

Table 2 Correlation matrix of data series. *Source*: Author's Computation, 2020

	COR	MKV	INPPE	INGDP	DPS
COR	1.000000				
	–				
MKV	0.099090	1.000000			
	0.0006	–			
INPPE	− 0.145684	− 0.094330	1.000000		
	0.0000	0.0010	–		
INGDP	− 0.179635	0.239044	0.124664	1.000000	
	0.0000	0.0000	0.0000	–	
DPS	0.089477	0.067978	− 0.131544	0.064894	1.000000
	0.0018	0.0181	0.0000	0.0240	–

Table. 3 Unit root test. *Source*: Author's Computation, 2020

Variables	Levin et al		Im et al		
	With trend	Without trend	With trend	Without trend	Levels
COR	− 42.0707***	− 36.7297***	− 12.3747***	− 12.4458***	I (1)
DPS	− 14.0877***	− 11.8508***	− 4.01687***	− 4.72638***	I (0)
INGDP	− 11.4394***	− 30.6029***	− 4.7009***	− 14.8583***	I (0)
MKV	− 11.9868***	− 15.5734***	− 8.39353***	− 14.3758***	I (1)
INPPE	− 9.0769***	− 10.6927***	− 4.40224***	− 8.63076***	I (1)

***Indicates level of significance at 1%

Table 4 Pedroni cointegration test. *Source*: Author's Computation, 2020

	Statistic	Prob	Statistic	Prob
Panel v-Statistic	− 0.673622	0.7497	− 5.031768	0.4100
Panel rho-Statistic	1.162382	0.8775	2.591672	0.9952
Panel PP-Statistic	− 19.32115	0.0000***	− 14.80450	0.0000***
Panel ADF-Statistic	− 3.998408	0.0000***	− 4.987648	0.0000***
Between dimension				
Group rho-Statistic	5.980355	0.8771		
Group PP-Statistic	− 21.81564	0.0000***		
Group ADF-Statistic	− 1.992660	0.0231**		

***, **Indicates level of significance at 1% and 5%, respectively

Table 5 The short run and the long run pooled mean group (PMG)/ARDL results. *Source*: Author's Computation, 2020

Variable	Coefficient	SE	t-Statistics	Prob
C	21.10537	1.338246	15.77092	0.2820
Δ(DPS)	− 12.81007	1.189923	− 10.76547	0.0000***
Δ(MKV)	1.541583	0.888789	1.736232	0.0833***
Δ LOG(PPE)	− 1.553772	2.227827	− 0.697438	0.4858
Δ LOG(GDP)	− 2.237384	3.626942	0.616879	0.5375
ECM (− 1)	− 0.709112	0.046167	− 15.35972	0.0000***
DPS	0.516220	0.175035	2.94924	0.0033***
MKV	0.557965	0.191960	2.912135	0.0038***
LOG(PPE)	0.119188	0.119044	1.00121	0.3171
LOG(GDP)	0.832820	0.465861	1.78770	0.0742*

(PMG/ARDL: 1, 1, 1, 1,1). Dependent Variable: COR

*, ***Indicates level of significance at 10% and 1%, respectively

the characteristics of residual-based tests for the null of co-integration in the model in which both the long run quantities and the short run dynamics are tolerable to be diverse across discrete members of the panel. Pedroni test considers both pooled and group mean between dimension test with individual intercept in the test.

Table 4 revealed that the Pedroni panel co-integration results revealed that six (6) of eleven (11) of the Pedroni statistics significantly reject the null of co-integration.

The results of the short run and long run effects of dividend policy and corporate performance of quoted Nigerian companies are presented in Table 5 for the Pooled Mean Group (PMG) method. The optimal lag length of panel ARDL (1, 1, 1, 1, 1) was chosen for PMG estimation following the Akaike info criterion (AIC). The short run and the long run results were estimated in terms of the effect of the dependent variables which is corporate performance of quoted Nigerian companies and the independent variables which was the dividend policy of quoted companies in Nigeria (proxied by DPS), together with three (3) other control variables which were market value of quoted companies in Nigeria (proxied by Tobin's Q Model), natural logarithm of firms' investment (proxied by INPPE) and the natural logarithm of gross domestic products (also proxied by INGDP).

In the short run, the coefficient of dividend per share of 12.81007 was negative and statistically significant at 1% level of significance for the PMG estimates. This then suggested that in the short run, 1% increase in corporate dividend pay-out policy of selected quoted Nigerian companies would lead to 12.81% decrease in the performance of quoted Nigerian companies. Invariably, the short run impact of dividend pay-out policy of corporate performance of quoted Nigerian companies was negative and statistically significant, indicating that active dividend payout policy of firms in Nigeria reduces their performance in the short run, for PMG estimates. This finding is consistent with the claim of Zhoa [52] and in contrast with the findings of Batool and Javid [8], Aqel (2016), Kajola *et.al* [24] and Nuhu [32].

In the same vein, the firms' investment and gross domestic products (GDP) also exerted negative influence on the performance of quoted Nigerian companies in the short run. The implication of this is that as quoted Nigerian companies increase investments, their financial performance reduces in the short run, this may be as a result of the kind of huge amount committed to such investments which may be through internal or external sources. The amount committed to investment in companies may hit deep on the performance of the companies in the short run. Additionally, as the economic performance (proxied by GDP) is high, the performance of quoted companies also reduced in the short run. This may also be connected with the high commitment of companies towards investments which may subsequently reduce performance in the short run. However, Table 5 showed that the influence of both GDP and firms' investment on performance of quoted Nigerian companies in the short run is statistically insignificant at all conventional levels. The degree of market value of quoted Nigerian companies (proxied by Tobin's Q) had a positive and significant impact on corporate performance of quoted Nigerian companies at 5% level for PMG estimates. The coefficient of 1.5411583 implied that a 1% increase in the market value of quoted Nigerian companies significantly led to a proportionate increase in the performance of quoted companies in Nigeria by approximately 1.5%, at 1% level of significance for the PMG estimates.

The error correction term (ECT) specified the speed of adjustment from short run disequilibrium to long run equilibrium. Idealy, ECT parameter is anticipated to be significantly negative [33]. The ECT for the PMG estimate is negative and statistically significant at 1% level. The coefficient of the ECT or the speed of adjustment towards equilibrium for the PMG estimate is -0.709112 indicating that the deviation of variables from short run disequilibrium to the long run equilibrium is significantly adjusted and corrected by 0.71% annually for quoted Nigerian companies.

The next discussion is the long run results as also presented in Table 5. It can be inferred that in the long run, the dividend pay-out policy of quoted Nigerian companies had a positive and statistically significant impact on the corporate performance of quoted companies in Nigeria at 1% level for the PMG estimates. The coefficient value of dividend per share was 0.516220 showing that 1% increase in the dividend policy of quoted companies in Nigeria would lead to 0.516% increase in the performance of quoted Nigerian companies in the long run. These findings aligned with the findings of Kanwal and Hammed [26], Timothy and Peter [46], Mereketu and Ouma [30], Uwuigbe et al [47]. The results were also in the affirmative to the opinion of Oyinlola and Ajeigbe [35] that information conveyed by dividend pay-out of firm is used by investors and other stakeholders to evaluate the value significance and performance investment decision of that company.

With respect to other independent variables, market value also exerted statistically significant and positive influence on the performance of quoted companies in Nigeria. PMG results showed that a percentage increase in the market value of Nigerian firms will increase the firms' performance by 0.56% and significantly at 1% level, in the long run. This indicated that the continued increase in the market value of quoted companies in Nigeria will also continue to increase and enhance their performances in the long run, only that the effect of the continued increase will drop from 1.54% in the short run to 0.54% in the long run.

Moreover, the influence of the gross domestic products (GDP) on the performance of quoted Nigerian companies was also positive and statistically significant at 10% level in the long run. PMG estimates on Table 5 showed that a 1% increase in the economic growth of the country led to a proportionate increase in corporate performance of quoted Nigerian companies by 0.83% in the long run. The implication of this is that the firms' performance responded positively and significantly to the continued economic growth in the country in the long run.

Finally, PMG estimates in Table 5 also revealed that firms' investment exerted positive influence on the performance of firms in Nigeria. The PMG estimate coefficient of firms' investment was 0.119188. This indicated that 1% increase in the investment of quoted companies in Nigeria will lead to a proportionate increase in performance by 0.12% in the long run. This implies that firms' commitment to their investment opportunities influence the performance of quoted Nigerian companies in the long run as against its negative effect in the short run. However, this effect of firms' investment on the performance of Nigerian quoted companies is not statistically significant at all conventional levels.

Conclusions

In order to investigate the long-run and short-run effects of dividend policy on the corporate performance of quoted Nigerian companies, a Pooled Mean Group ARDL, technique was employed in this study. The result is that corporate dividend policy exerted a negative influence on the performance of quoted companies in Nigeria in the short run and also statistically significant at 1% level. These findings also support the work of Zhoa [52], but in contrast with the findings of Batool and Javid [8], Aqel (2016), Kajola et al [24] and Nuhu [32]. The PMG/ARDL results further revealed that corporate dividend policy of quoted Nigerian companies also exerted a significant 1% level but positive influence of the performance of these companies in the long run. This also is consistent with the work of Kanwal and Hammed [26], Timothy and Peter [46], Uwuigbe et.al [47], The (2017).

Therefore, the proportionate responsiveness of performance to changes in dividend policy both in the long run and short run and the response of the market value and investment opportunity sets of quoted companies in Nigeria to temporal and permanent shocks in dividend decisions of the quoted Nigerian companies have been extremely investigated in this research. The application of Pooled Mean Group-Autoregressive Distributed Lag (PMG/ARDL) model in addressing the research problems has been quite instinctive, robust and very appropriate.

The empirical results of this study threw more light on the long run and short run impact of dividend policy and performance of quoted Nigerian companies and also provided strong basis upon which business and financial policies can be formulated and evaluated. Moreover, the results from the econometric analysis also revealed that corporate dividend decisions and dynamics negatively affects performance of quoted Nigerian companies in the short run, while in the long run, the effects of dividend policy on performance of these companies are positive. Both effects are statistically significant at 1% level within the long run and the short run.

From the findings in this study, the following recommendations are made to ensure better dividend policy decisions and investment decisions and also enhance performance and value for the corporate organisations in Nigeria.

a. As dividend decreases performance in the short run, management of quoted companies in Nigeria should develop policies that will encourage accumulated dividend payments over time (that is, in the long run).
b. Management should also strengthen or put in place policies that will involve stock participations for other stakeholders (such as employees) as this will increase performance both in the short run and in the long run.
c. Government being the key player in the macroeconomic environments, should endeavour to regulate the macroeconomic indicators through polices, so as to stimulate the economic performance, as these also will create the conducive environment for quoted companies in Nigeria to operate and function efficiently and optimally.

Abbreviations
PMG-ARDL: Pooled mean group-autoregressive distributed lag; MKV: Market values; InPPE: Log value of property, plant and equipment; InGDP: Log value of gross domestic product; CBN: Central Bank of Nigeria; AIC: Akaike information criterion; SBC: Schwarz Bayesian criterion.

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Authors' contributions
"JA" is a joint author of this manuscript with "OO"; "JA" is responsible for writing the manuscript, analyzed the data and interpreted the results, while "OO" supervised the research from the inception to conclusion and also proofread the manuscript. Finally, both authors have read and approved the manuscript.

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Declarations

Competing interests
Not Applicable.

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