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Testing the Lintner's Dividend Model in an Emerging Market: A Dynamic Panel Fixed Effects Analysis of Listed Deposit Money Banks, Food and Beverages Companies in Nigeria

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Abstract: Motivated by the conflicting results found by previous studies, this study empirically tests the Lintner's dividend model and investigating the factors that determine a firm's payout policy in Nigeria using the dynamic fixed effects method. The study is based on unbalanced panel data obtained at yearly frequency from 18 listed deposit money banks and food and beverages firms in Nigeria, covering from 2013 and 2019. The results show that firm size, profitability and future earnings prospect are the key determinants of dividend per share, while future earnings prospect is the only factor affecting the optimal payout ratio. Contrary to Lintner's argument, there is evidence that past dividends and current dividends are not significantly related. Also, corporate governance has no significant impact on dividend policy. The implications of these results are discussed in the paper.

Keywords: Dividend policy, payout ratio, dividend per share, dynamic fixed effects method.

INTRODUCTION

In corporate finance, dividend policy is among the highly debated topics both in theoretical and empirical literature. A firm's dividend policy relates to the corporate decision regarding what proportion of profit after tax should be distributed to the shareholders and what proportion should be retained as a source of funding future projects. However, the main issue of concern is related to what constitutes an optimal payment ratio and how this optimal level is determined as well as its impact on the market value of shares of the firm (Lawal & Onobruke, 2020).

Given the argument by Lintner (1956) that dividend policy is important, especially for firms operating in the developing countries, there is need allow their current dividend to depend on past dividends and current profits. This seems to contract the position of Miller and Modigliani (1961) that the dividend policy of a firm does

not matter and hence, what constitutes an optimal payout ratio as well as the determinants of such optimum payment level should not be the main focus of corporate financial managers. They, however, advise corporate managers to rather pay attention to their investment choices as they determine the future profitability of the firm in line with the shareholders' wealth maximization objective. Although, this theoretical explanation of dividend policy is popular and well celebrated, it is anchored on the assumption that the capital markets are efficient in information management and without frictions, which scholars have described as unrealistic

policy in corporate financial decisions have emerged from the literature. These theories, which include the agency cost theory (Jensen & Meckling, 1976) and information content (signaling) theory (Bhattacharya, 1979), contend that dividend announcements are particularly important as they help to reduce the agency costs and asymmetric information problems between corporate managers and outside shareholders.

Empirically, dividend policy and its determinants have been well investigated. However, as observed by many scholars such as Ben Naceur, Goaied and Belanes (2006), Uwalomwa, Olamide and Francis (2015)), despite the ample empirical literature, the main issue of concern: namely, what determines the optimal dividend policy of a firm, has not been fully resolved as previous studies found conflicting evidence. Besides, it has also been observed that more research on dividend policy is still needed in the developing countries as much of the existing studies focus on developed countries (Jaara, Alashhab & Jaara, 2018).

This study therefore contributes to the ongoing debate by investigating the determinants of dividend policy in Nigeria using the dynamic fixed effects method. Specifically, we examine the effects of past dividend, profitability, future earnings prospect, corporate governance and firm size on both dividend per share and payout ratio of listed deposit money banks and food and beverages companies over the period from 2013 to 2019. The study makes a significant contribution to the literature as it appears to be the first empirical study in Nigeria that investigates the determinants of optimal dividend payout focusing on both deposit money banks and food and beverages companies. Hence, the empirical results would serve as a good reference point for future studies.

The remainder of this paper is organized as follows: Section 2 contains the theoretical framework and review of existing studies in Nigeria and other developing countries. Section

3 discusses the methodology employed for empirical analysis. Section 4 contains the empirical analysis. Section 5 concludes the study.

LITERATURE REVIEW

Recent Studies in Developing and Emerging Markets

Ben Naceur, Goaied and Belanes (2006) employ the Lintner's model to investigate the determinants of dividend policy in Tunisia using several estimation techniques (pooled OLS, fixed effects, random effects and panel GMM) within the panel data framework. Their empirical analysis is based on data collected from a sample of 48 listed firms in the Tunisian stock exchange spanning from 1996 to 2002. They find that the dynamic GMM method produces less biased results compared to the other three panel data methods, although both the Chow and Hausman tests confirm that the fixed effects method performs much better than both the pooled and random effects methods. They find that while corporate managers mostly rely on both current profitability and past dividends to determine firms' dividend payments, there is tendency for dividends to respond more to current profitability than previous dividend decisions. Growth is also found to be a significant factor for dividend policy. However, both ownership structure and leverage have no significant effects on dividend policy.

Mehta (2012) considers the factors that affect the dividend policy of firms in UAE using the classical multiple regression analysis. The study focuses on firms listed in the Abu Dhabi stock exchange from 2005 to 2009. The results obtained from the empirical analysis show that profitability (return on equity), risk (price-earnings ratio) and size (natural logarithm of total assets) are the most significant factors affecting dividend policy.

Agyemang Badu (2013) investigates the firm-specific factors that determine the dividend policy of financial institutions in Ghana within the panel data framework using both the fixed effects and random effects regression approaches. The study is based on a sample of 9 banks and 2 insurance companies that are listed on the Ghana stock exchange between 2005 and 2009. Both the fixed effects and random effects results show that liquidity and age are the significant determinants of dividend payout ratio of the sampled financial firms. However, the effects of profitability, growth and collateral capacity on payout ratio are not significant.

Kaźmierska-Jóźwiak (2015) employs the panel data framework to examine the factors affecting cash dividend payments in quoted firms in Poland. However, the study focuses only on firm-specific factors such as liquidity, leverage, profitability, size and future earnings prospect. Using data collected from listed non-financial companies from 2000 to 2012, the study finds that the random effects panel estimation approach outperforms the fixed effects method in estimating the determinants of dividend policy of the selected firms. The study also shows that profitability and leverage have significant negative effects on a firm's dividend policy, while the effects of liquidity, size and future earnings prospects are not significant.

Gusni (2017) employs the static panel regression analysis to study the determinants of dividend policy of a firm focusing on financial firms in Indonesia. The factors examined are profitability, ownership structure, corporate governance, systematic risk, leverage and size. The sample comprises 17 purposively selected firms listed on the Indonesia stock market from 2009 to 2015. The study finds that profitability, institutional ownership and leverage all have negative effects on dividend policy, while the impacts of board of directors, size and systematic risk is statistically insignificant.

Jaara, Alashhab and Jaara (2018) employ the three conventional panel data models: namely, fixed effects, random effects and pooled regression models, to examine the factors that influence a firm's dividend policy focusing on non-financial firms in Jordan. Their panel data consist of 100 firms that are observed over the period from 2005 to 2016. The results show that the dividend policy of the selected firms is significantly determined by both previous year dividend and financial gearing, while the effects of profitability size and risk are not statistically significant. However, these results are based on the fixed effects approach, which outperforms the other two methods based on Hausman test.

Dewasiri, Koralalage, Azeez, Jayarathne, Kuruppuarachchi and Weerasinghe (2019) examine the factors that affect the dividend policy of firms in Sri-Lanka. They employ the Logistic modeling framework, which has a binary dependent variable, while their sample includes 1337 firm-year panel observations from 191 firms that are traded in the Colombo Stock Exchange. Based on the fixed effects estimation approach, they find that a firm's propensity to pay dividend is significantly determined by factors such as past dividend, profitability, investment opportunities, free cash flow, corporate governance, firm size and industry factors.

Franc-Dbrowska and Mądra-Sawicka (2020) investigate the factors affecting a firm's dividend payout decisions focusing on emerging European countries. The factors examined are profitability (net income, return on assets and price-earnings ratio), size, leverage, liquidity, free cash flow and growth. Dividend payout decision is measured by a dummy variable with a value of 1 if the firm pays dividend to its shareholders and zero otherwise. The sample includes 799 firm-year observations from listed companies in 15 countries from 2003 to 2016. Based on the random effects panel probit model, they find that previous

financial condition of a company affects its dividend payout decision. Further, they find that free cash flow, growth, liquidity, profitability and firm size are the key factors that influence the dividend payout decision of the selected companies.

RECENT STUDIES IN NIGERIA

Okpara (2010) investigates the effect of asymmetric information on dividend policy of quoted firms in Nigeria using market-level data. The empirical analysis of this study, which is based on vector error correction model and Granger causality test, shows that dividend policy of firms is governed by signaling theory. In

other words, symmetric information affects the dividend policy of quoted firms in Nigeria. This finding holds controlling for liquidity, turnover, profitability and past dividends.

Ranti (2013) employs the panel OLS multiple regression technique to examine the determinants of dividend policy in Nigeria focusing on listed firms in the Nigerian stock exchange. Their sample includes 50 firms and extends from 2006 to 2011. The results show that profitability, firm size, board independence and financial leverage all are significant determinants of dividend policy of listed firms in Nigeria. However, apart from financial leverage, all other factors have a positive impact on dividend payout ratio.

Uwalomwa, Olamide and Francis (2015) employ the OLS multiple regression within the panel data framework to investigate the effect of corporate governance on dividend policy of listed firms in Nigeria. Using a sample of 50 firms selected based on their consistency in dividend payment between 2006 to 2011, they find that corporate governance has a significant impact on dividend policy. Specifically, their findings show that dividend payout ratio is positively related to board size, CEO duality, ownership structure and board independence.

Morakinyo, David, Adeleke and Omojola (2018) investigate the factors that shape the dividend policy of deposit money banks in Nigeria using the conventional panel data method. While the study covers the period from 2006 to 2015, its empirical analysis is based on data collected from all the 15 deposit money banks that are listed on the Nigerian stock exchange. They find that dividend policy of deposit money banks is significantly affected by firm size and political factors. Other factors such as profitability, board size, board independence, financial leverage, and financial crisis all have no significant effect on dividend per share.

Abdullahi, Adebayo and Aliyu (2020) examine the determinants of dividend payments of deposit money banks (DMBs) in Nigeria from 2013 to 2019 using the panel data regression techniques. Their empirical analysis is based on a sample of 9 listed DMBs on the Nigerian stock exchange that are selected based on data availability. In terms of model specification and selection, they find that fixed effects framework is the most consistent with the bank- level data compared with both the pooled regression and random effects methods. They also find that earnings per share, return on assets and risk (price-earnings ratio) are the significant factors for dividend policy, while the effects of firm size, growth, price to book value ratio and return on equity are not significant.

Lawal and Onobruke (2020) consider the factors that play a significant role in determining the dividend payout of publicly traded deposit money banks (DMBs) in Nigeria using the panel data modeling framework. Their sample includes 12 listed DMBs with data extending from 2006 to 2017. Based on the Hausman specification test, they find evidence that the relationship between dividend payout and its determinants is consistent with the fixed effects theory. Hence, firm-specific factors such as management approach and philosophy

play a major role in dividend payout decision of the selected banks. They also find that while previous reserve has a significant effect on dividend payment, the impact of leverage is not significant.

Alaeto (2020), in attempt to address the dividend policy issue, examines the factors that shape the dividend payouts of non-financial firms in Nigeria using the pooled OLS regression technique. The empirical analysis of the study is based on panel data collected from 74 non- listed financial firms across different industries from 2013 to 2017. They find that dividend payout is positively related to profitability, liquidity and growth, while it is negatively related to size, tangibility, and debt ratio.

RESEARCH METHODOLOGY DATA AND VARIABLES

To examine the determinants of dividend policy in Nigeria, we use 126 date-year unbalanced panel observations collected from 18 listed firms (9 deposit money banks and 9 food and beverages companies) for the period from 2013 to 2019. Data were collected from two sources: namely, www.cashcrat.com and the financial reports of the individual firms. All analysis is done in EViews 11.

The deposit money banks included in our sample are ACCESS, FCMB, FIDELITY, FBN, GTB, SITBC, STERLING, UBA and ZENITH, while the selected food and beverages are CADBURY, DANGOTE SUGAR, GUINESS, FLOUR MILL, NESTLE, NB, UNILEVER, and PZ. These firms are selected based on data availability as well as their consistency in paying dividends over time.

Table 1: Variables and their expected signs

Variable	Proxy	Definition Expected	Sign
Dependent Variable			
Dividend Policy	Dividend Per share (DPS) Dividend Payout Ratio (PYO)	Total dividend divided/Total number of shares outstanding Dividend per share/Earnings per share	
Explanatory Variables			
Profitability	Return on Assets (ROA)	Profit after tax divided by total tax	+
Earnings Prospect	Price to Earnings Ratio (PER)	Profit for the year divided by total number of shares outstanding	+
Board Structure	Board Size (BSIZE)	Total number of executive and non-executive directors	+/-
Firm Size	Log of Total Assets (LASSETS)	Natural Logarithm of Total Assets	+

Table 2 shows the descriptive statistics for the performance of the variables

SERIES	BANKING				FOOD & BEVERAGES				POOLED	
DPS	0.83	0.88	1.07	2.88	5.36	12.76	3.61	16.39	3.09	9.29
DY	32.39	16.93	-	2.3	64.22	55.32	-	15.9	48.18	43.63
O	2.09	1.28	0.06	3.09	8.52	7.14	2.45	4	5.30	6.04
RO	5.11	2.50	0.88	2.83	25.28	25.23	0.66	2.89	15.11	20.46
A	12.87	2.90	0.73	2.47	10.22	2.45	0.24	12.0	11.54	2.99
PE	27704	174336	0.11	2.31	15134	125912	0.39	2	14608	1801105
R	26	4	0.66		6.	.1	0.99	2.24	87	
BSI								2.83		
ZE										
TA										
(₦million)										

Empirical Strategy

Consistent with Lintner's model, we specify our econometric models as follows.

For representing the number companies in our panel sample, representing the number of periods. Our models allow dividend payment decisions to depend on previous dividend payment decisions, profitability, future earnings prospect, corporate governance and firm size. We control for the unobserved firm-specific effects such as quality of management by incorporating the heterogeneity parameter, in our specifications.

Since, the sampled firms are of different sizes and operate in two different industries: namely, banking and food and beverages industries, we treat as fixed effects that correlate with the factors that affect the dividend

policy of the individual firms. Hence, we employ the fixed effects method to estimate the above models. However, we employ the Likelihood Ratio test to validate this modeling assumption.

Empirical Analysis Determinants Of Dividend Policy

Table 3 presents the estimated fixed effects results (full sample) for the determinants of dividend payout policy for deposit money banks and food and beverages companies. The Adjusted R-square shows that the dividend per share model has a much better fit than the dividend payout ratio model, although, as indicated by the F-statistic, both models are highly significant. The Likelihood ratio test (p-value = 0.0000) is highly significant for both DPS and PYO models, hence validating our modeling assumption that our panel data contain fixed effects that correlate with factors that affect the dividend policy of the individual firms. Thus, our results indicate evidence that firm-specific factors (such as management culture, management quality etc.) that are not directly observed are significant determinants of dividend policy across listed deposit money banks and food and beverages companies in Nigeria.

Table 3: Regression Results (Full Sample): ( ) contains p-values

Explanatory Variables	Coefficients	
	DPS	PYO
CONSTANT	-17.789	-0.9526
	(0.0000)	(0.7846)
	0.0848	-0.0504
	(0.3560)	(0.6335)
	0.9273	-0.0373
	(0.0000)	(0.8309)
	0.4408	0.5011
	(0.0167)	(0.0057)
	0.7336	0.8319
	(0.1963)	(0.1431)
	1.0383	0.1346
	(0.0000)	(0.5688)
-	0.9073	0.6420
	0.8808	0.5370
-	34.281	6.1148
- (DW)	2.1140	1.8696
Likelihood Ratio Test	67.961	48.686
	(0.0000)	(0.0000)

Past Dividend And Dividend Policy

The Lintner's model shows that dividend payout decision of a firm depends on its past dividend behaviour, hence we expect the coefficients on lagged dividend per share and lagged payout ratio both to be positive and significant in their respective models. Unfortunately, as Table 3 shows, both coefficients are small, have mixed signs, and are estimated with high p-values, suggesting that they are not significant both statistically and in economic sense. The coefficients for DPS and PYO are respectively 0.0848 and -0.0504, showing that a 1% increase in dividend per share would, on average, lead to approximately 0.08% increase in dividend per share in the next period, while a 1% increase in dividend payout would, on average, lead to approximately 0.05% decrease in dividend payout ratio in the next period, holding other factors constant. Hence, our results, which are not consistent with Lintner's model, suggest that previous dividend decisions play no significant role in the process that leads to optimal dividend payout policy for listed deposit money banks and food and beverages firms in Nigeria. Our findings, therefore, disagree with most of the previous studies including Ben Naceur, Goaied and Belanes (2006), Dewasiri, *et al*., (2019), and Jaara, Alashhab and Jaara (2018).

Profitability And Dividend Policy

We examine the relationship between profitability and dividend policy in the context of Lintner's model, which argues that dividend payout policy of a firm depends on its current profitability level. Hence, we expect the coefficient on return on assets (ROA) to be positive and significant in our dividend payout models. However, our results are mixed, with ROA having a large, positive, and highly statistically significant coefficient in the dividend per share model -value = 0.0000), while its coefficient in the dividend payout model ---------- value = 0.8309) is small, negative, and not statistically significant.

These coefficients also make economic sense as they show that a 1% increase in ROA would, on average, increase dividend by share by approximately 0.92%, while it would lead to a marginal reduction in the payout ratio by less than 0.05%. This implies that for listed deposit money banks and food and beverages firms in Nigeria, although, current profitability is among the key determining factors for actual dividend payment, it plays no significant role in determining the optimal payout ratio. Hence, our results, which partly supports the Lintner's model, show that the effect of profitability on dividend policy depends on how the latter is measured. While these results tend to agree with Agyemang Badu (2013), Jaara, Alashhab and Jaara (2018) and Morakinyo, David, Adeleke and Omojola (2018), they are not consistent with Abdullahi, Adebayo and Aliyu (2020), Alaeto (2020), Ben Naceur, Goaied and Belanes (2006), Dewasiri, *et al*., (2019), Franc-Dbrowska and Mądra-Sawicka (2020) and Ranti (2013).

Future Earnings Prospect And Dividend Policy

We examine the relationship between future earnings prospect on dividend policy in terms of the extent of the effect of price-earnings ratio, which is also a measure of market risk, on both dividend per share and dividend payout ratio. Theoretically, a company with high future earnings prospect pays high dividend in response to shareholders' expectations (Franc-Dbrowska & Mądra-Sawicka, 2020; Mehta, 2012), hence we expect the coefficient on price-earnings ratio in the two dividend policy models to be positive and statistically significant.

Consistent with our expectation, our results show that price to earnings ratio has a positive and statistically significant effect on both dividend per share and dividend payout ratio. The coefficients on price to earnings ratio in the two dividend policy models are estimated at 0.4408 and 0.5011, showing that, *ceteris paribus*, a 1% increase in price-earnings ratio would, on average, increase dividend per share and dividend payout ratio by approximately 0.44% and 0.50% respectively. Hence, high P-E ratio is associated with high dividend payments. Therefore, our evidence suggests that future earnings prospect, which is closely related to market risk, is among the significant determinants of dividend policy of listed deposit money banks and food and beverages firms in Nigeria. This finding is consistent with Metha (2012), but disagrees with Abdullahi, Adebayo and Aliyu (2020), Kaźmierska-Jóźwiak (2015), Franc-Dbrowska and Mądra-Sawicka (2020), and Kaźmierska-Jóźwiak (2015).

Corporate Governance And Dividend Decision

We examine the relationship between corporate governance on dividend policy in terms of the extent of the effect of board size on both dividend per share and dividend payout ratio. According to Gusni (2017), board of directors play an important role in corporate strategy formulation and dividend decision is one of such roles. Hence, we expect the coefficient on board size in the two dividend policy models to be highly statistically significant.

Contrary to our expectation, our results show that corporate governance has no significant effect on dividend payment decisions. Although, the coefficients of 0.7336 (p-value = 0.1963) and 0.8319 (p-value = 0.1431) show that both dividend per share and dividend payment are positively related to board size, the p-values associated with these coefficients are, however, higher than the conventional significance levels. Hence, statistically, increase in board size does not significantly affect dividend payments. This finding, which is consistent with Gusni (2017) and Morakinyo, David, Adeleke and Omojola (2018), suggests that board of

directors play little role in increasing shareholders' wealth in deposit money banks and food and beverages companies in Nigeria. This finding proves that increase in board size does not reduce the agency costs arising from separation of ownership and control. Our results, however, disagree with Uwalomwa, Olamide and Francis (2015).

Firm Size And Dividend Decision

We examine the relationship between firm size on dividend policy in terms of the extent of the effect of firm size, measured by natural logarithm of total assets, on both dividend per share and dividend payout ratio. It is believed that large firms, through easy access of funds, have incentives to pay higher dividends than small firms (Gusni, 2017). Hence, we expect the coefficient on firm size in the two dividend policy models to be positive and highly significant.

Consistent with our expectation, our results show that firm size has a positive effect of corporate dividend policy. However, as indicated by p-values, while firm size has a highly significant effect on dividend per share, its effect on dividend payout ratio is not significant. The coefficients of 1.0383 (p-value = 0.0000) and 0.1346 (p-value = 0.5688) show that, *ceteris paribus*, a 1% increase in firm size would, on average, lead to approximately 1.04% increase in dividend per share, and approximately 0.14% increase in dividend payout ratio. This implies that although, larger firms pay more dividends to their shareholders than smaller firms, bank managers and their counterparts in the food and beverages industry do not rely on firm size to determine their optimal payout ratio. This finding agrees with Gusni (2017) who finds that firm size is not significantly associated with firms' payout ratio, but disagrees with Abdullahi, Adebayo and Aliyu (2020), Alaeto (2020) and Morakinyo, David, Adeleke and Omojola (2018) who find that firm size is negatively related to dividend policy.

Summary And Conclusion

This study investigates the factors that determine a firm's dividend policy in Nigeria using the dynamic fixed effects model. Consistent with previous studies, the study considers two proxies of dividend policy: namely dividend per share and dividend payout ratio, while factors such as past dividend, profitability, future earnings prospect, corporate governance and firm size are tested. Our sample comprises unbalanced panel data obtained from 18 listed deposit money banks and food and beverages firms in Nigeria. The study covers the period from 2013 to 2019, while the analysis is based on annual data, and is aided by EViews 11.

There is evidence that firm size, profitability and future earnings prospect are the key determinants of dividend per share, while future earnings prospect is the only factor affecting the optimal payout ratio. Also, contrary to Lintner's argument, there is evidence that past dividends and current dividends are not significantly related. Also, corporate governance has no significant impact on dividend policy. Finally, for listed deposit money banks and food and beverages firms, unobserved firm-specific factors such as management quality and philosophy play a significant role in the relationship between dividend policy and its determinants.

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