SRIWIJAYA INTERNATIONAL JOURNAL OF DYNAMIC ECONOMICS AND BUSINESS
http://ejournal.unsri.ac.id/index.php/sijdeb

Firm Life Cycle Stage and Dividend Payout of Listed Non-Financial Firms in Selected Sub-Saharan African Countries: A Sectoral Analysis

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Abstract: This study explored the sector-wise effect of firm life cycle stage on dividend payout of listed non-financial firms in three selected Sub-Saharan African countries that include; South Africa, Nigeria, and Kenya, utilizing the dynamic panel data regression technique - system generalized method of moments (system GMM) for the period 2007 to 2017. The outcomes of the empirical analysis revealed that the earned/contributed capital mix exerts a direct and significant effect on payout of dividend in seven out of the 10 subsectors analyzed while firm age exerts an inverse and significant effect on payout of dividend in six out of the 10 subsectors analyzed. The study recommended among others that stock market regulators in the selected Sub-Sahara Africa countries should consider the life cycle stage of the firms and the earned/contributed capital mix should be used in measuring the maturity of firms, thus payment of dividend by firms should be based on when its profitability and growth rate are expected to fall in future.

Keywords: Firm Life Cycle Stage, Dividend Payouts, Sectoral Analysis, Listed Non-Financial Firms, System Generalized Method of Moments

Introduction

Sustainable and regular return on investment in terms of payment of dividends is one of the basic parts in shareholders wealth maximization. Since companies give back to shareholders large sums of their incomes through dividend payments it becomes imperative for them to understand dividend payout policy. Dividend payment is not only the firm payout policy outcome; but, it reveals a strategy of investment combination, private information and financial decision (Miller & Rock, 1985). The dividend life cycle theory is one of the theories that explain the basic question of whether the firm should pay dividend to its stockholders or not. The major argument of the dividend life cycle theory is that optimal dividend policy is determined by the stage a firm has attained in its life cycle.

Optimality of dividend policy encompasses a trade-off between the benefits and costs linked with getting funds for fresh investments taking into account factors related to life-cycle. Dividend policies vary around the firm life cycle, and, unexpectedly, as a firm gets older/matures; its capacity to exploit lucrative investment prospects is surpassed by its cash generating capacity (DeAngelo et al., 2006). The life cycle of firm is reflected on its earned/contributed capital mix, i.e., proportion of retained earnings as to aggregate equity (or total asset). At the capital infusion (growth) stage the proportion of retained earnings to total equity (or total asset) of firms is low thus, such firms are unlikely to pay dividends while at maturity stage the firms proportion of retained earnings to total equity (or total asset) will be very high and such firms have sufficient cumulative earnings which make them generally self-financing, therefore able to pay dividends (DeAngelo et al., 2006).

Growth firms have low retained earnings to total equity ratio whereas mature/old firms have high retained earnings to total equity ratio and this is because the size of retained earnings get bigger owing to low growth prospects at maturity phase of the life cycle. The whole notion behind the life cycle theory shows a departure to the signaling theory. For example, signaling theory posits that firm pay dividends to signal high future growth while life cycle theory is based on the fact that firm pay dividends because they do not have any growth prospects (Bulan & Subramanian, 2009; DeAngelo et al., 2006; Faff, Kwok, Podolski & Wong, 2016).

A plethora of studies have explored the influence of firm life cycle stage on payout of dividend in developed countries of Western Europe as well as emerging Asian markets, but there is relatively few empirical studies based on data of sub-Saharan Africa countries, for instance, from our empirical review only Abdulkadir, (2015) has tested the dividend life cycle theory in Sub-Sahara Africa countries. This has been generally justified either by the dearth of sufficient data for analysis or by the fact that the majority of bourses in Sub-Saharan Africa countries are relatively still too shallow in terms of listed securities to permit for meaningful empirical analysis. Hence, little attention has been focus on Sub-Saharan Africa countries in terms of exploring the impact of firm life cycle stage on payout of dividend which leaves a gap in relation to knowledge concerning the impact of firm life cycle on dividend payout of firms in sub-Saharan Africa countries. Hence, this research attempts to fill this gap in knowledge.

In addition, to the best of researcher's knowledge based on the empirical literature, this is one of the few studies that employed a system generalized method of moments (System GMM) estimation technique for dynamic panel data models to analyse the impact of firm life cycle stage on pay-out of dividend of quoted non-financial firms in Sub-Saharan Africa countries. This study employed a System Generalized Method of Moments (System GMM) estimation technique for dynamic panel data models developed by Arellano and Bond (1991) and augmented by Arellano and Bover (1995) in order to deal with multiple endogenous regressors in a panel data setting and to solve the potential simultaneity and endogeneity problem of variables.

Added to this perceived gap, that warrants further empirical investigation is the fact that this paper considered sectorial levels of the firm in the investigation of the effects of firm life cycle stage on dividend payout. Surprisingly, few of the previous empirical studies have considered the industry or sector of operations of the firm in their analysis of the nexus between firm life cycle stage and dividend payout. The link is important since the link

between the different sectors varies considerably with regard to exposure to risk, sectorial divergence issues, financial and operational actions, altogether could affect payment of dividend (Akhtar, 2006). The relationship differs among subsectors; thus the basis for the disaggregating of the nexus between life cycle stage and payout of dividend into sectors of operations. It is imperative to know if the results vary across industries. Therefore, this study takes into account this vital variable (industry classification/ sector).

Literature Review

Dividend Payouts

Dividend payouts refer to the proportion of total profit paid out to ordinary shareholders as dividends. Hellstrom and Inagambaev (2012) define dividend payouts as the percentage of the company's earnings that is distributed to shareholders. Dividend payout is the amount of dividend that is paid to shareholders of a firm. Large dividend payouts in a period would reduce funds available for investment in subsequent periods and that would lead to the tendency of raising equity or debt in the next period to finance investment. On the other hand, large investment outlay would lead to a reduction in available funds to finance dividend payouts and increase the need for external debt financing during the next period to finance dividend payments (Fumey & Doku, 2013). In this study we measure the dividend payout ratio as total yearly dividend paid/net profit.

Firm Life Cycle

The concept of "life cycle" portrays various stages of growth, maturity and decline. Being initially used in a biological context, but has been refined and extended to several areas such as microeconomics, management and finance (Yan & Zhao, 2010). The general concept of a firm life cycle with growth stages is generally attributed to Mueller (1972). Since, resources of firm vary depending on the life cycle; therefore the life cycle may reflect the resources available to a firm. Applying the theory to dividend policy, it predicts that the dividend payout varies among different stages of a firm's life-cycle. At the beginning or early stage on the life cycle, firms investment opportunity exceeds the internally generated or earned funds, that is, retained earnings, therefore they either do not pay or pay less dividend. While, in the more mature stage of the life-cycle, firms' internal fund exceed its investment opportunities, and therefore firms pay more dividend to avoid the wasting of cash flow in non-maximizing value investments, that is, over investment (DeAngelo et al., 2006). Following DeAngelo et al. (2006), we use the earned/contributed capital mix, that is, ratio of retained earnings to total equity (RE/TE), where total equity (TE) is the sum of retained earnings (RE) and contributed equity to proxy the firm life cycle. Another proxy for firm life cycle utilized in this study is the firm age (firm's listing age).

Earned/Contributed Capital Mix

The Firm life cycle is reflected on its earned/contributed capital mix i.e., retained earnings as a proportion of total equity because it measures the extent to which the firm is either self-financing or reliant on external capital. It is a logical proxy for the life-cycle stage at which firms currently finds themselves. Firms with low retained earnings as a proportion of total equity and of total assets tend to be in the capital infusion (growth) stage and are less likely to pay dividends whereas firms with high retained earnings as a proportion of total

equity and of total assets tend to be more mature with ample cumulative profits that make them largely self-financing, hence good candidates to pay dividends. It is also a better measure of a firm's life-cycle stage (hence suitability to pay dividends) than its cash balances, because the source of the cash impacts the dividend decision. For example, high cash holdings can reflect the proceeds of a recent equity offering for a firm whose low retained earnings as a proportion of total equity and of total assets show it to be in the infusion instead of the distribution stage (DeAngelo et al., 2006).

Firm Age

Age is the length of time during which a being or thing has existed. Shumway, (2001) defined firm age as the number of years of listing of a company on the Stock Exchange of a particular country where it operates. Gitzmann (2008) and Pickering (2011) define firm age from the perspective of the company as a legal personality. As a legal person, a company is born through incorporation. Company's age has been severally argued in the empirical literature as one of the major determinants of corporate dividend policy. It is usually measured by the log of the number of years since the company was founded. In finance literature, the dividend life cycle theory is one of the theories that explain the basic question of whether the firm should pay dividend to its stockholders or not. In what follows, we briefly explain the dividend life cycle theory.

The dividend life cycle theory underpins the model used in this study. Mueller (1972) propounded the life cycle theory of firms, and DeAngelo et al., (2006); Bulan and Subramanian (2009) builds up a theory from this regarding payout of dividend and this theory suggest that a firm's dividend policy should be determined by the stage it occupy in its life cycle. "The theory posits that as firms traverse the different stages in their lives, they have a tendency to change the dividend policy subject to the financial requirements of each stage. Inferred in this theory is the fact that firms that are in their growth stages are less likely to pay more dividends as against firms that are at their maturity stages. Old/Mature firms therefore, because they do not have a lot of growth opportunities to finance, are anticipated to pay more dividends. Firms that are young should reinvest their profits to enable them grow and realize investment opportunities and reduce doubt". Firms should start paying dividend when its profitability and growth rate are expected to fall in the future. Thus, a firm should retain all earnings in rapid growth phase and payout 100 percent of earnings at maturity. The life-cycle stages are explained by the earned/contributed capital mix which proposes that firms with high earned capital are mature and more likely to pay out (high) dividends (Kerstine, 2013). The firm life-cycle theory predict that firms with high earned/contributed capital mix, which is measure as ratio of retained earnings to total equity and firms that have been in existence for a long time are mature firms and are more likely to payout dividends. The major argument of the dividend life cycle theory is that optimal dividend policy is determined by the stage a firm has attained in its life cycle.

Empirical Review

One of the earlier studies that test the dividend life cycle theory was conducted in U.S. by DeAngelo, DeAngelo and Stulz (2006). The researchers utilize the logit regression to estimate the model to find out if the likelihood of paying dividends is explained by the retain earnings/total equity. The researchers found that the retain earnings/total equity

(that is, earned/contributed capital mix) has a positive and meaningful impact on the firm likelihood to pay dividend which is in tandem with the prediction of the dividend life-cycle theory. After including dividend history, total equity, growth, balance of cash, previous and current year profitability and company size as control variables they still confirm that the dividend life cycle theory hold.

In a study conducted for selected advanced financial markets (Canada, Japan, France, Germany, U.S., and U.K) from 1989 - 2002 by Denis and Osobov (2008) to find out the cross-country evidence on the inclination to pay dividends. Findings from the Logit regression reveal that the likelihood of paying dividends is linked to growth prospects, company size and profitability. The result further reveals that profitability, company size, growth potentials and the earned/contributed equity mix has a significant effect on dividends. In the six selected nations, the likelihood of paying dividends exerts direct and meaningful effect on retained earnings/total equity. The percentage of dividend paying firms is low if retained earnings are negative and high when this fraction is high. Their result is in tandem with the dividend life-cycle theory's suggestion that free cash flow distribution is the major factor influencing payouts of dividend.

Von-Eije and Megginson (2008) studied 15 nations who become European Union member prior to 2004 to find out the link between payment of cash dividends and repurchases of shares. The period of study was from 1989 to 2005. They utilize regression analyses. The result shows that the percentage of dividends paying firms in Europe fall, whereas real total dividends paid went up and repurchases of shares increase. Their result further reveals that the frequency of financial reporting is linked with rise in payout. Also, the result further reveal that raising the proportion of the retained earnings to equity will not improve the probability of paying out cash, but firm age increases the likelihood of cash payments.

Ishikawa (2011) investigated firm payout policies in Japan from the standpoint of the dividend life-cycle theory for the period 1999 to 2007. The researcher adopted the logit regression to estimate the specified. The result indicates that growing companies in Japan choose to further increase as against mature companies, and that such increases in dividend for growing companies are preferred to mature companies in the market. These outcomes are not in tandem with the dividend life-cycle theory prediction. In a study conducted in Australian to clarify if the dividend payouts of firms follow the dividend life-cycle theory explanation using the period spanning 1992 – 2004 by Coulton and Ruddock (2011). The outcome of the panel OLS regression validates the dividend life cycle theory. Specifically, their result reveal that dividend paying firms have less growth options, very profitable, are larger and their retained earnings is higher than firms that do not pay dividend.

Thanatawee (2011) examined whether the prediction of the dividend life cycle theory hold for firms quoted in Thailand bourse and the period of study was from 2002 to 2008. The outcome of the study shows that bigger and more profitable companies that has maintain higher earnings to equity with free cash flows are likely to pay more dividends. Also, their result reveals that companies with higher growth prospects are likely to have lower ratio of dividend payment. The result was in line with the dividend life-cycle and free cash flow hypotheses. Afzaand and Mirza (2011) explored the "Maturity hypothesis" of dividend using companies quoted in Pakistan for the period 2002 - 2007 using OLS regression. The results show the non-linearity in the link between firm age and dividend payouts of companies. The result further reveals that on average companies increase their dividend

payouts but after the increase the firms begin to reduce dividend payments. The results agree with free cash flow and maturity hypothesis.

Ming-Hui, Mei-Chuke, Day-Yang and Yen-Sheng (2011) investigated whether the dividend life cycle hypothesis hold for non-financial firms quoted in Taiwanese bourse for the period 2005 - 2009. Firm life cycle was proxy by retained earnings to total equity ratio while profitability, growth opportunity and firm size were incorporated in the model as control variables. The result reveals that the link between retain earnings/total equity (that is, earned/contributed capital mix) and dividend payouts is positive and meaningful thereby validating the prediction of the dividend life cycle hypothesis for Taiwanese firms.

Hauser (2012) explored the impact of firm maturity (firm life cycle) on dividend policy in United States for the period spanning 1982 to 2010. The study uses the NASDAQ, AMEX and NYSE industrial companies. Firm life cycle was measure by company age, risk and earned capital ratio. Size, investment opportunities and profitability were incorporated in the model as control variables. The logit regession was used to analyse the data. The result reveals that maturity of firm directly and significantly influences the firm likelihood of paying dividend. El-Ansary and Gomaa (2012) examine if the prediction of the dividend life cycle theory hold for firms quoted in Egyptian bourse for the period 2005 to 2010 using panel regression to estimate the model. The result show that retained earnings to total equity and profitability has a direct and meaningful effect on dividend payouts and this means that the dividend life cycle theory prediction hold for Egyptian firms.

Hassani and Dizaji (2013) examined whether dividend life cycle theory hold for companies quoted on Tehran bourse and 2006 – 2011 constitute the period of study. Firm life cycle was measured with the ratio of retain earnings/total equity and retained earnings/assets ratio. The results of the study indicates that the ratio of retained earnings to assets has meaningful and direct impact on dividend payment; In growing firms the retained earnings to assets ratio is low; But this ratio is high in older/mature firms and these firms have high retained earnings which make them able to pay dividends. Kerstin (2013) compared the dividend policies of firms in Germany and Netherland with a view to establish whether they follow the prediction of the dividend life cycle theory and the time frame for the study is from 2006 to 2012. Firm life cycle was proxy by the ratio of retained earnings to total equity and retained earnings to total assets (RE/TE and RE/TA). The researchers also include rate of growth in sales, profitability and ratio of cash equivalents/total assets in the model as control variables. The result from the study reveals that in Germany RE/TE and RE/TA has a significant and direct effect on dividend payout. Also, all the control variables except ROA were statistically significant. However, for Dutch firms only TE/TA ratio was statistically significant. The result of the other variables (cash /total assets) is was wrongly sign and they fail the significant test.

Shen and Lu (2014) test the dividend life cycle theory of companies quoted in china bourse using panel data of 2011 to 2013. Logit panel regression was used to estimate the model. Using a comprehensive index – retained earnings to total assets, growth and profitability were used to judge the specific life cycle stage. The result confirms the prediction of the dividend life cycle theory. Yang (2014) explored the nexus between company's earned/contributed capital mix and dividend decision for the period 1993 to 2012 using companies quoted in NASDAQ, AMEX and NYSE. Decision to pay dividend was proxy by a dummy variable 1 if the company pays dividend and 0 if they don't pay dividend.

Ratio of retain earnings to total equity was used to measure the earned/contributed capital mix and the model was estimated using the logit regression. The result indicates that the ratio of retain earnings to total equity is directly linked to the probability that a firm pays dividends. This result is in tandem with the dividend firm life cycle theory prediction.

Wardhana, Tandelilin, Lantara, and Junarsin (2014) investigate the dividend life-cycle theory and inclination to pay dividends of non-financial firms listed in Indonesia bourse for the period 1995 utilizing three measures of life-cycle (retain earning/total equity, firm age and firm life cycle index). The results from the logit regression with random effect model constantly reveal that listed firms in Indonesian bourse follow dividend life-cycle theory. The results further reveal that companies' inclination to pay dividend in Indonesia bourse is diminishing over time. Javid (2014) investigated whether a relationship exists between firm life cycle stage and dividend payout for chemical companies quoted in Pakistan for the period 2006 - 2011. The ratio of retain earnings to total equity was used to proxy the life cycle stage of companies. Other variables which impact dividend payout such firm size, as growth rate, age, retained earnings, debt/equity ratio, return on earnings, managerial efficiency are also considered. Regression was used in estimating the specified model. The outcomes of the regression show that there is no meaningful link between life cycle stage of firms and dividend payout. Growth rate, debt/equity ratio and life cycle stage were negatively link with dividend payout whereas age, retained earnings, firm size and managerial, efficiency and return on equity has a direct relationship.

Kouser, Luqman, Yaseen and Azeem (2015) studied the effect of the 2008 financial crunch on dividend payout policy, utilizing the life cycle factors of non-financial companies quoted on the Pakistani bourse within the period 2001 - 2011 using panel regression. Firm life cycle was proxy by earned/contributed capital mix while size, investment opportunities and profitability are the control variables. The result reveals that the dividend payment decision of companies' is not determined only by the company's stage in the life cycle, but also on the company financial position. Behzad and Ali (2015) studied the influence of free cash flow and life cycle stage on dividend policy of companies quoted on Tehran bourse and the period of study was from 2007 to 2011. The outcome of the regression indicates that free cash flow and firm life cycle stage has a significant and direct nexus with payout of dividend. Abdulkadir (2015) studied the factors influencing of the choice "to pay" or "not to pay" dividend in the Nigerian bourse for the period 2003 to 2012 using the panel and multinomial logistic regression. Results show a decrease in the fraction of dividend payers and the volume of dividends paid in previous years. Also, profitability, retained earnings to total equity, foreign ownership, cash flow and past dividends were found to be the key factors influencing the choice "to pay" or "not to pay" dividend. However, the empirical result fails to provide any evidence in support of the prediction of the dividend life cycle theory.

Mileti (2015) investigated whether the dividend life cycle theory hold for companies listed on Croatian bourse for the period 2003 – 2011 using the panel data anlysis. Firm life cycle was measure as earned equity/ total common equity of company and earned equity/total assets. Investment opportunities were measure as: market/book value, company relative growth in sales, and relative growth of total asset while log of book value/total asset was used to proxy size of the company. Payout of dividend was proxy by dividend per share/earning per share. The Result shows that investment prospects significantly and directly impact dividends payout of firms, and retained earnings/total equity positively and

significantly impact dividend decisions which is in agreement to firm life cycle theory of dividends.

Rafique and Javaid (2017) explored the impact of catering incentives (measured by dividend premium) and life cycle theory (measure as earn contributed capital mix) on propensity to pay and decision to change dividend for non-financial firms quoted on Karachi bourse using a time frame of 1998 to 2009 and the logistic regression was employed in the analysis of data. The result reveals that company age, profitability, market/book value, growth prospects and cash holding were directly related to dividend increasing companies and inversely related to dividend decreasing companies. But leverage, taxation and catering incentives has direct influence on firms paying dividend and also for decreasing and dividend omitting companies. The results validate the catering theory while there was little evidence for dividend life cycle theory.

Amalia and Fredrik (2017) investigated whether the global financial crisis impacted the dividend payout and also examine whether the dividend life cycle theory holds for companies listed in Swedish bourse and the period of study covers 2004 to 2012. The firm life cycle theory was captured by retain Earnings/Total Equity (that is, earned/contributed capital mix). Investment prospects, company size and profitability were the control variables while dividend payout was proxy by a dummy variable: 0 when firm pay dividend for the year and 1 if they don't pay dividend for the year. The model estimation was carried out using logit regression. The outcome of the logit regression confirms the proposition of the dividend life cycle theory in Sweden. Also, the result reveals that global financial crisis adversely affected Swedish firms' dividend payout.

Methods

The causal research design was adopted in this study. The study concentrates on the entire listed non-financial firm in the three (3) selected sub-Saharan Africa Countries Bourses – (Nigeria Bourse, Johannesburg Bourse and Nairobi Bourse) as at 31st December 2017. The entire Four hundred and seventy-nine (479) non-financial firms in eleven (11) sub-sectors quoted on the three stock exchanges as at 31st December 2017 make up the population. Taro Yamani (1967) and the sample filtering technique were used to ascertain the sample size of this study. Taro Yamane sample selection formula is given as $n = \frac{N}{[1+(Ne^2)]}$. **n** is the sample size (sample size of the listed non-financial firms), **N** indicates the entire elements in the population (population of listed non-financial firms used), one (1) is a constant, **e** is the margin of error or error limit of which is 5% or 0.05 in this research. Thus, a minimum sample of 218 non-financial firms that represents 45.5% of all the quoted non-financial firms on the Nigerian, South African and Kenyan Stock Exchanges are selected from the population using Taro Yamane sample selection technique. However, the final sample size of two hundred and thirty-nine (239) was selected using the sample filtering technique based on availability of data and possession of the requisite information in the period under focus. The breakdown of the subsector of the two hundred and thirty-nine (239) non-financial firms is as follows: Conglomerates (8), Consumer Discretionary (52), Consumer Staples (37), Energy (11), Healthcare (11), ICT (17), Industrial (32), Materials (51) Real Estate (8), Telecom (9) and Utilities (3). However, Utilities sector was removed from the final analysis because the sample size for this subsector was not enough to carry out the system GMM analysis. Thus, analysis was done for ten (10) subsectors. To group

companies in different countries into industries, a standardized industry classification is often used. Hence, we utilized the Global Industry Classification Standard (GICS).

Model Specification

The model used is an adaptation of a model that has been widely used in earlier researches for example (DeAngelo et al., 2006; Afzaand & Mirza, 2011; Mileti, 2015). The model is stated in a functional form in equation 3.1 below:

Dividend Payout = f (Retained earnings to total equity, Firm Age, Profit, Firm Size) ….…………….…………………………………………………………………………… …...... (3.1)

The dynamic panel data model is stated in the econometric form in equation (3.2) as:

$$DIVPAY_{it} = {}_0 + {}_1 DIVPAY_{it-1} + {}_2 RE/TE_{it} + {}_3 FAGE_{it} + {}_4 PAT_{it} + {}_5 FSZE_i + SEC_{1it} \ldots SEC_{nit} + {}_t + {}_i +$$

${}_{it}$…………………..………………………………………………………...…………. (3.2)

Where;

$DIVPAY_{it}$ = Dividend payout of the firm i at period t

$DIVPAY_{it-1}$ = Lagged value of the dividend payout of firm i at period t

RE/TE_{it} = Retained earnings to total equity of firm i at period t.

$FAGE_{it}$ = Age of firm i at period t.

PAT_{it} = Profit after tax margin of firm i at period t.

$FSZE_{it}$ = Size of firm i at period t.

SEC_{1it} denotes sector 1

SEC_{nit} denotes sector n

${}_t$ = effect of time.

${}_i$ = specific fixed effects of the firm .

${}_{it}$ = the stochastic (error) term for firm i at period t.

${}_0 - {}_5$ are coefficients of the parameters to be estimated. The subscripts i and t refer to the specific firms and period of time (2007 - 2017) respectively. $DIVPAY_{it-1}$ is lagged dependent variable and its inclusion in the model is to address the possible endogeneity of the explanatory variable which comprised the possibility of variables being omitted, simultaneity and measurement error of variable in the context of dynamic panel data technique.

The *a priori* expectations of the study are of the form: ${}_1, {}_2, {}_3, {}_4,$ and ${}_5 > 0.$

From theory, it is expected that previous year dividend payout, retained earnings to total equity, firm age, profitability and size of company are anticipated to have direct nexus with payout of dividend.

Operationalization of Variables

The variables adopted are defined in Table 3.1 below and the previous researcher who utilizes the variable in their study is also indicated.

Table 1. **Operational Definitions of the Variables**

S/N	Variable	Variable Type	Measurement	Sources
1	Dividend Payout (DIVPAY)	Dependent Variable	Total yearly dividends paid divided by the Net profit of the company	Hommel (2011)

2	Earned/Contri buted Capital mix (RE/TE)	Independent Variable	Total retained earnings divided by total shareholder equity	DeAngelo, et. al.,(2006).
3	Firm Size (FAGE)	Independent Variable	Firm listing age	Von Eije & Megginson (2008)
4	Profitability (PAT)	Independent Variable/Controll ed variable	Profits after tax divided by sales	Agha, et al., (2017)
5	Firm Size (FSZE)	Independent Variable/Controll ed variable	The logarithm of total asset	Fodi & Walid (2010)

Source: Compilation of the Researcher's, 2018.

Methods of Data Analysis

This research used descriptive and inferential statistics techniques to perform data analysis. The descriptive statistics include descriptive and correlation analysis. In terms of the inferential statistic we employed the multivariate dynamic panel data regression technique.

Research Result

Descriptive Statistics

In Table 4.1, the descriptive statistics are reported. The Table contains overall averages across sectors as well as higher moment conditions that guarantee the evaluation of the appropriateness of the panel data analysis. The average payout of dividend is $28.47, which is relatively high over the period. There are however very large maximum and also very low minimum values, suggesting that some firms have had quite high payouts while others have had very low payouts over the period. These large discrepancies are shown in the extremely large coefficient of variation (CoV) value of 80. 81. Moreover, the skewness value of -12.2 indicates that most of the reported dividend payout values were higher than the mean value reported in Table 4.1. This implies that few extremely low values were recorded for some of the firms.

The annualized descriptive statistics for the data and variables in each of the sectors are reported in Table 4.1. The average dividend payout is highest for the telecommunications sector with mean value of $100.24 per share on annual basis. This value far exceeds each of the other sectors in the group. For instance, the next highest mean payout value is $71.53 for the Real Estate sector.

Table 2. **Descriptive statistics of variables for subsectors**

	Industrial		Material		ICT		Healthcare		Energy	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
DIVPAY	26.86	218.37	1.92	1.93	2.21	1.85	25.20	46.76	38.08	167.61
RE_TE	197.91	3618.99	-3.21	135.08	9.95	65.27	26.72	72.91	4.03	61.99

FAGE	25.83	17.14	26.41	22.61	15.52	9.42	22.09	12.20	24.15	11.56
PAT	4.55	11.24	-247.92	1713.06	2.40	31.49	2.00	22.96	-120.03	1214.60
SIZE	11.57	2.00	11.80	2.63	10.60	2.02	11.47	2.63	12.40	1.69

	Conglomerates		Real Estate		Telecommunications		Consumer dicr		Consumer staples	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
DIVPAY	41.87	64.68	71.93	126.11	100.24	741.87	35.33	108.37	6.29	5892.27
RE_TE	1.40	38.37	11.12	15.50	7.94	59.97	33.82	427.79	22.18	211.60
FAGE	29.88	10.98	14.15	6.99	11.21	8.16	22.94	19.00	31.67	19.32
PAT	1.27	20.75	64.77	80.13	4.92	8.71	6.17	18.23	2.56	97.69
SIZE	12.57	1.62	13.47	1.24	11.54	2.91	11.44	2.08	12.24	1.95

Source: Author's computations, 2018.

A major highlight in this outcome is that dividend payout among the subsectors over the period of the analysis appears to be higher for the services sector than for any of the other sectors. Indeed, the payout figure closest to the first two is $41.87 for the conglomerates sector. This indicates the dominance of the services sector in the selected sub-Saharan Africa (SSA) countries stock markets in terms of dividend payout. It should however be noted that the standard deviations of the dividend payout are particularly high (in relation to the respective mean values) for the two services sector variables. The standard deviation value of 741.87 for the telecommunications sector and 126.11 for the Real estate sector indicates high degrees of variations either over the period of the study or across the firms within each of the sectors. Although the dividend payout values are high, these sectors also exhibit the highest within-sector or time-based discrepancies.

The mean value of dividend payout is lowest for the Material sector at $1.92 over the period. The standard deviation of the mean value is also low for the payout among the firms, suggesting that the low value is highly characteristic of the firms in the sector and over time. Thus, along with the ICT sector (with mean payout value of $2.21), the material sector in the selected sub-Saharan Africa (SSA) stock exchanges appear to have the lowest dividend payout among the selected sub-sectors, however, the value is stable across firms and over time.

Average earned/contributed capital mix in the sample is highest in the industrial sector (as it is to be expected given the nature of activities in the sector). However, standard deviation value for this variable is very high for the industrial sector, indicating a high degree of variations among the firms in the sector. On the other hand, the earned/contributed capital mix value is negative for the Material sector at -3.21 percent. Moreover, companies in the consumer staples sector seem to be the oldest with average age of 31.67 years, while firms in the telecommunications sector are the youngest on average at 11.21 years. It therefore shows that younger firms appear to pay more dividend payout than older firms in the sample. Average profits are highest for the real estate sector but lowest for the material sector (which made losses on average over the sample period). Firms in the conglomerates sector are the largest on average with log of total asset at 12.57, while firms in the ICT

sector are the smallest on average. The low standard deviation values for each of the size mean indicators suggest that the mean values are generally similar across the firms in each sector.

Correlation Analysis

Table 4.2 reports the initial patterns of association between pairs of variables in the analysis using the correlation tests. In particular, we seek to establish the direction and strength of the relationships among the explanatory variables in the specified models.

Table 3. **Correlation Matrix**

	Divpay	**re_te**	**Fage**	**Pat**
re_te	-0.06			
	(1.00)			
Fage	0.019	-0.003		
	(0.33)	(0.87)		
Pat	0.000	0.002	0.032	
	(0.99)	0.94	0.11	
Size	-0.015	-0.034	0.201	0.038
	(0.45)	(0.09)	(0.00)	(0.05)

Note: * and ** denotes significance at 5% and 1% respectively.
Source: Author's computations, 2018.

From Table 4.2, it is seen that the earned/contributed capital mix has an insignificant relationship with each of the other variables in the analysis, suggesting that this variable does not move together with any of the other variables, including firm age. Firm age, on the other hand, has positive correlation with firm size which shows that older/mature firms are generally large. The correlation analysis also shows that profit has no significant correlation with the other independent variables whereas size of firm was significant and positively related to all the explanatory variables.

Panel Unit Root Analysis

In the GMM estimation procedure, data used are assumed to be time-invariant and to possess mean and variances that are constant over time. Thus, the first step in analyzing a panel data is to test the characteristics of the time series in the data, beginning with the test of stationarity. Given that panel data are utilized in the study, a panel unit root test is therefore adopted in confirming the features of time series of the data. Thus, the unit root tests should possess firm-specific characteristics, different from the pure time series analysis. This is done through the homogenous panel unit root tests [Levin, Lin & Chu (LLC)] and heterogeneous panel unit root tests [Im, Pesaran, and Shin (IPS) and Augmented Dickey-Fuller Fisher test]. Both tests' outcomes are shown in Table 4.3. Indeed, if the data possess mean and variances that are time-dependent then the panel is said to be non-stationary and would not likely generate estimates that are efficient or consistent. .

Table 4. **Panel Unit root test result**

Variables	Homogeneous Unit Root Process				Heterogeneous Unit Root Process			
	Level		1st Diff		Level		1st Diff	
	LLC	Breitung	LLC	Breitung	IPS	ADF-Fisher	IPS	ADF-Fisher
re_te	-13.8**	-1.13	-7.49**	-5.01**	-2.18**	51.1**	59.9**	97.9**
Pat	-0.99	-0.51	-7.95**	-4.18**	1.75	51.7	-3.27**	109.6**
Size	-8.11**	-1.02	-6.48**	-3.00**	-0.89	117.5	-2.96**	166.6**

Note: * and ** indicate significance at 5 and 1 percent respectively.
 Source: Author's computations

From Table 4.3 of unit root tests, the levels variables are all significant in relation to the test statistics at either the 1 percent levels based on the LLC, IPS and ADF-Fisher tests. Only the Breitung test reports non-significant test values for all the variables in levels. This shows that for all the variables, the null hypothesis of the stationarity should be accepted and cannot be rejected in levels, suggesting that the variables among the firms do not follow a defined pattern of movement over any given period. The variables are apparently not time dependent. However, the result also shows that for the first difference variables, all the test statistics are significant, thereby resulting to the rejection of the null hypothesis of no unit roots in the first differences. These results stoutly signify that most of the variables are stationary both in level and at first differences. The homogenous and heterogeneous panel unit root tests also support this finding since the variables are also stationary after the first difference; we then proceed to ascertain their long-run relationship. Note that the test for firm age is excluded since the variable is exclusively time-based.

Panel Cointegration Test

Since we have confirmed that the panel series in the analysis are characterized by unit roots, and are integrated of order I(I), there is a need to investigate if they are cointegrated. The result from the Pedroni's and Kao panel cointegration tests are display in Table 4.4.

Table 5. **Panel Cointegration Test Results**

Pedroni Test					Kao Test
Eqtn: a Governance mechanism					
Alternative hypothesis: common AR coefs. (within-dimension)					
	Statistic	Prob.	Weighted Statistic	Prob.	
Panel v	-10.77	1	-11.82	1	
Panel rho-	15.93	1	15.94	1	
Panel PP-	-21.01	0	-24.96	0	-4.684
Panel ADF-	0.11	0.54	-2.54	0.0056	Probability = 0.00
Alternative hypothesis: individual AR coefs. (between-dimension)					
Group rho-	21.68	1			
Group PP-	-41.89	0			
Group ADF-	-2.73	0.00			

Source: Author's computations, 2018.

Given that the study focuses on the long run, the test for the presence of a regular stochastic trend was carried out in this paper because the focused of the study is on long

and integrated processes. This involves the presence of a cointegrating relationship between dividend and firm life cycle variables. This test also helps to confirm the application of the GMM technique in the estimation. Table 4.4 reveals the test result for the Pedroni's and Kao panel cointegration on the series that is between the dependent variable and the independent variables for the specified model. The calculated figure of the statistics based on estimators that pool the autoregressive coefficient across different countries for the unit root tests on the estimated residuals is shown on the columns labeled within-dimension while the calculated figure of the statistics based on estimators that average individually computed coefficients for each country is shown on the section labeled between-dimension. In the test results, the null hypothesis is "there is no cointegration among the variables".

From the outcomes of the test, it is obvious that the tests based on Pedroni residual, all report values that are significant at the 1 percent level for both the grouped and ungrouped tests. All test processes, including rho, PP and ADF are significant for both the within and between tests (at the 1 percent level). Hence, we reject the null hypothesis of no cointegration for the combination of the variables, with each of the dependent variables.

Analysis of the GMM Estimates

The results of the estimated model that was specified in the previous section are presented and analyzed in this section. The goal is to demonstrate the appropriate aspects of the results estimated in terms of its overall importance, the relevance of the individual coefficients, as well as the usefulness of the equations for hypotheses testing. The estimated equations are based on the dynamic panel data (DPD) estimations using the system GMM. Hence, the estimations do not report the constants or the regular diagnostic test outcomes (such as the R-squared and its adjusted counterpart, or the F-values). Rather the focus is on the appropriateness of the selected instruments (based on the Hansen J-statistic), and the Arellano-Bond AR tests for autocorrelations of the differenced terms. While the J-statistic measures the appropriateness of the instruments used for the GMM estimation, the Arellano and Bond (AB) test is employed to ascertain the system of autocorrelation among the differenced error terms.

Effect of Firm Life Cycle on Dividend Payout

The results of the subsector-based estimates of the impact of firm life cycle variables on dividend payouts by the firms in Sub-Saharan Africa countries is presented in Tables 4.5a and continued in 4.5b. In the results, both the Hasen-J-statistic and A-B tests show impressive estimation outcomes, suggesting that the estimates are appropriate for the interpretations. In both Tables, the coefficient of the lagged dependent variable was only significant and positive for industrial, real estate and consumer staples sectors. These three sectors are the main sectors with positive $DIVPAY_{t-1}$ variable results; the outcome indicates that the industrial, real estate and consumers staples sectors are the most stable in terms of dividend payout in the long run. Though the coefficients of the lagged variable are low in the three cases (suggesting longer periods of long run adjustments) the results indicate that these sectors have capacity to maintain steady-state dividend payout over time in Nigeria, South Africa and Kenya.

With respect to the individual coefficients of the life cycle variables, the result shows that the coefficient of ratio of retained earnings to total equity (proxy for earned/contributed capital mix) is significant and positive for most of the sectors, except for ICT, conglomerates and telecommunications, where it failed the significance test at the 5 percent level. This result shows that on a sectoral basis, the proportion of earned to contributed capital in the firm was significantly and directly linked to payout of dividend. When earned capital is greater than contributed capital, dividend payouts tends to be higher for the firms.

Table 6. **Sector-based Firm Life Cycle and Dividend Payout Results**

Variable	Industrial	Material	ICT	Healthcare	Energy
DIVPAY$_{t-1}$	0.221**	-0.342**	-0.090*	-0.143	-0.129**
RE_TE	0.007*	0.004**	0.002*	-0.037	0.184*
FAGE	-0.061*	-0.122**	-0.048	-0.144	-2.858*
PAT	0.103**	0.001*	0.000	0.053	0.015
SIZE	0.285	0.162**	0.094	-3.276	5.013**
J	0.016	0.333	0.294	0.515	0.845
A-B AR(1)	-9.362**	-7.145**	-6.846**	-8.063**	-7.537**
A-B AR(2)	0.338	0.366	0.362	0.364	0.722
N	374	539	187	121	121

Note: * and ** connotes significance at 5 and 1 percent levels respectively
Source: Author's computations, 2018.

The results further reveals that the coefficient of firm age is negative for most of the sectors. It failed the significance test for ICT, healthcare and telecommunications sector and was negative in all the other sectors where it passed the test. Considering that the overall panel estimates also indicated negative impact of firm age, the result therefore shows that firm age has an unambiguous negative impact on dividend payout of firms in the selected Sub-Saharan Africa countries. Mature/Older firms tend to have lesser tendency to engage in higher dividend payout. The control variable in the results performed relatively well and indicates that for industrial, materials, consumer discretionary and consumer staples sectors profitability have direct and meaningful impact on payout of dividend while firm size have direct and meaningful impacts on payout of dividend for materials, energy, real estate, consumer discretionary and consumer staples sectors.

Table 7. **Sector-based Firm Life Cycle and Dividend Payout Results**

	Conglomerate	Real Estate	Telecoms	Consumer Discretionary	Consumer Staples
DIVPAY$_{t-1}$	-0.170**	0.335**	0.100	-0.103**	0.115**
RE_TE	0.151	0.091**	1.267	0.009**	0.002**

FAGE	2.447**	-0.130**	-12.735	-0.059**	-0.095**
PAT	0.026	-0.016**	5.066	0.050**	-0.003**
SIZE	-8.354*	3.249**	-65.048	0.122**	1.002**
J	0.544	0.497	0.125	0.355	0.419
A-B AR(1)	-10.19**	-10.18**	-9.827**	-9.002**	-8.663**
A-B AR(2)	-1.039	-1.332	1.003	0.928	-0.746
N	88	88	99	583	396

Note: * and ** connotes significance at 5 and 1 percent levels respectively
Source: Author's computation

Summary of Direction of Effects

Finally, in the analysis of the estimated equations, the study report the summary of the signs of the variables based on the sectoral analysis carried out in the study. In Table 4.6, the results of the summary of the sectoral dimensions of the nexus between corporate governance mechanisms and payout of dividend along with the firm life cycle and dividend payout nexus are presented.

Table 8. **Summary of Coefficients by Subsectors**

Sector	Firm Life Cycle Stage and Dividend Payout		
	Cap mix	**fage**	**FLC**
Industrial	+	-	+/-
Material	+	-	+/-
ICT	+	-	+/-
Healthcare	-	-	-
Energy	+	-	+/-
Conglomerates	+	+	+
Real Estate	+	-	+/-
Telecommunications	+	-	+/-
Consumer Discretionary	+	-	+/-
Consumer Staples	+	-	+/-
Average	+	-	+/-

Source: Author's computations, 2018

In Table 4.6, it can be seen that earned/contributed capital mix has positive impact in general while firm age has negative impacts. This implies that in using life cycle of a firm as an indicator of firm dividend payout, the focus must be on increasing earned portion of the capital mix in the firms.

Discussion of Findings

The earned/contributed capital mix (Retained earnings to total equity) exerts a direct and meaningful effect on dividend payout in seven out of the ten subsectors of listed non-financial firms in selected Sub-Saharan Africa countries. Therefore, we can conclude that the earned/contributed capital mix of the firms has direct and meaningful impact on dividend payout in majority of the sub-sectors. The findings support the life cycle theory of dividend. This finding is in line with that of De Angelo et al. (2006); Denis & Osobov (2008); Coulton & Ruddock (2011); Hauser (2012); Hassani & Dizaji (2013), Kerstin (2013), Miletic (2015) who reported a significant positive relationship between retained earnings as a proportion of total equity and dividend payout. The finding is however contrary to that of Von-Eije & Megginson (2008); Javid (2014) and Abdulkadir (2015) who found that retained earnings as a proportion of total equity has no significant effect on dividend payout.

Firm's age has an inverse and meaningful effect on payout of dividend in six out of the ten subsectors of listed non-financial firms in selected Sub Saharan Africa countries. The implication of this finding is that mature/long established firms with less growth and investment prospects are not likely to pay dividends; this result is contrary to the prediction of the firm life cycle theory of dividend. This finding is in tandem with that of Adamu, Ishak and Hassan (2017) who reported a significant and negative nexus between firm age and payout of dividend. The finding is however contrary to that of Al-Malkawi (2007); Von-Eije & Meggainson; Afza & Mirza (2011); Hauser (2012) and Javid (2014), who found that the age of the firm and the payout of dividend, are positively and significantly linked.

Lagged or previous year value of dividend payouts is found to have a direct and significant effect on current year dividend in eight out of the ten sectors that was analyzed. The implication of this is that previous year payment of dividend increase the likelihood of dividend payment for the current year. This finding is in support of Litner (1956) and De Angelo et al. (2006) results.

Finally with respect to the control variables, Profitability is found to exert significant and positive effect on dividend payout for industrial, materials, consumer discretionary and consumer staple sectors. The implication of this is that, a rise in profitability will result to a rise in dividend payment for these sectors. Therefore individual investor who desires high dividend should invest in these sectors. The significant and direct nexus found between profitability and payout of dividend is consistent with the results of Denis & Osobov (2005), Coulton & Ruddock (2011), Afza & Mirza (2011), who have documented a direct relationship between profitability and payout of dividend. Also, firm size is significant and exerts a positive influence on payout of dividend for materials, energy, real estate, consumer discretionary and consumer staples sectors. The implication of this is that larger companies pay higher dividend. This result is in consonance with that of Denis & Osobov (2008); Coulton & Ruddock (2011) who reported a significant and direct link between firm size and payout of payout. In contrast, the result is not in consonance Asamoah (2005) reported an inverse link between firm size and payout of dividend.

Conclusion

The life cycle theory of dividend predict that firms with high earned/contributed capital mix, which is measure as ratio of retained earnings to total equity and firms that have been in existence for a long time are mature firms and are more likely to payout dividends. The goal of this paper was to empirically test this theory using the sector-wise data of non-financial firms in three selected Sub-Saharan African countries that include; South Africa, Nigeria, and Kenya covering the period 2007 to 2018. The system GMM estimator proposed by Arellano and Bond was employed in the estimating the model. The outcomes of the analysis shows that the earned/contributed capital mix exerts a direct and meaningful effect on payout of dividend in seven out of the 10 subsectors analyzed while firm age exerts a meaningful (negative) effect on payout of dividend in six out of the 10 subsectors analyzed in the study. The study concludes that the firm life cycle stage influence payout of dividend of listed non-financial firms in the selected Sub-Saharan Africa countries. Thus, the implication stated in the dividend life cycle theory is confirmed in this study. One of the limitations of this study is the restrictions on the data set. By design of the study, financial firms are removed from the analysis. Therefore, the conclusions of this investigation are restricted to the non-financial firms in the study.

Recommendations

Based on the empirical findings, it is necessary to make policy recommendations. It is recommended that; Regulators in the selected Sub-Sahara Africa countries stock markets should consider the life cycle stage of the firms and the earned/contributed capital mix should be used in measuring the maturity of firms, thus payment of dividend by firms should be based on when its profitability and growth rate are expected to fall in future. Also, shareholders must consider other means of sustaining dividend for firms that are mature since mere age will not guarantee dividend payout. More work needs to be put in place by shareholders who seek more dividend, especially as the study has shown that firm age actually reduce dividend payout by the firms. One of the limitations of this study is the restrictions on the data set. By design of the study, financial firms are removed from the analysis. Therefore, the conclusions of this investigation are restricted to the non-financial firms in the study.

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