# ASSESSMENT OF LIFECYCLE THEORY ON THE PROPENSITY TO PAY DIVIDEND OF LISTED MANUFACTURING FIRMS IN NIGERIA

**[1]Aliyu Abubakar, [2]OZEMOYA, Amos Osikpemhi**

[1]Federal University, Gusau
[2]Ahmadu Bello University, Zaria

aliyunbuba@gmail.com +2348066434558, +2348058138404

## ABSTRACT

This study examines the effect of the lifecycle theory on the dividend policy of listed manufacturing firms in Nigeria for the period of five (5) years spanning from 2015 to 2019. The study used a sample of twenty-four listed firms and Logistic regression was employed in the analysis of the data. The results of the study reveals that lifecycle have a positive relationship on the propensity to pay dividend in Nigeria. Based on the findings, it is recommended that the management should consider the lifecycle of their firms when making dividend decision and financing decision.

**Keywords:** Lifecycle theory, Dividend Policy, Retained Earnings to Equity, Retain Earnings to Asset and Firm Size.

## 1. INTRODUCTION

Lifecycle of dividend is grasped as the magnitude to which a firm is self-financing or reliant on external capital. Deangelo proxy the lifecycle variable as earned and contributed capital mix. Deangelo, Deangelo and Stulz (2006), assessed life-cycle by evaluating firms with relatively high retained earnings in proportion to total equity or total asset, these firms are more likely to pay dividend. Firms with low retained earnings to total equity or total assets tend to be in their capital infusion stage where as firms with high retained earnings to total equity or retained earnings to total assets tend to be more mature with ample cumulative profits that make them largely self-financing hence good candidate to pay dividends. The definition looks at the life-cycle variable from financing perspective, this implies that, a firm life-cycle stage is determined by its earned or contributed capital mix. Similarly, Baker (2009), opined

that firm life cycle of dividends is based on the notion that as a firm matures, its ability to generate cash overtakes its ability to find profitable investment opportunities. Eventually, the optimal choice is for the firm to distribute its free cash flow to shareholders in the form of dividends. Miletic (2015), posits that young firms' face a relatively large investment opportunities set and there is no sufficient profit to be able to meet all its financing needs and as a result the firm will conserve cash by forgoing dividend payment to shareholders. Over time, after a period of growth, the firm reaches the maturity stage in its life cycle. At this point, the firm's investment opportunities set is diminished, its growth and profitability have flattened, systemic risk have declined, and the firm generates more cash internally eventually, the firm begins to distribute dividends to shareholders. The above definitions are in consonance as they all give a clear indication of a firm life cycle, for the purpose of this study, the life-cycle variable will be proxy as retained earnings to total equity because it gives a clear indication of the life cycle stage of a firm.

The complexities tied to dividend policy rendered it like a puzzle and such description dates back to the pioneering works of Lintner (1956), Miller and Modigliani (1958) and Gordon (1959). Black (1976), opined that "the harder we look at the dividend picture, the more it seems like a puzzle, with pieces that do not fit together".

Since the work of Black (1976), dividend policy has been a complex area in corporate finance and many academic publications came on board to tackle the challenge. Notable among these scholars of recent past are Aivazian, Booth and Cleary (2003), they emphasize that the dividend puzzle still has so many questions that are yet to be answered. Consequently, it can be said that dividend policy is one of the challenging subject that financial experts are still struggling to unravel.

Dividend policy remain one of the greatest enigmas of modern finance despite many years of investigation there is no consensus on the variables that actually influence on dividend policy. Notwithstanding the many years of studying, dividend policy remains challenging. To resolve the dividend puzzle, Chiang, Frankfurter, Kosedag and Wood (2006), opine that the cardinal interest of academic research must turn toward learning about the basis on which dividend policy is built upon. Hence it is paramount to carry out a study on the determinants of propensity to pay dividend.

Research on the propensity to pay dividend have been conducted by scholars such as Chen, Lin and Yong (2011), Tangjitprom(2013), Kim and Seo (2014), Alber and Alhabtour (2017) among others. However, little attention is paid to the subject in Nigeria. The need to undertake this study in Nigeria stems from the fact that there are

specific institutional factors and financial structures of every country therefore every country has different and unique factors that determine its dividend policy.

The main objective of this study is to assess lifecycle theory on the propensity to pay dividends of listed manufacturing firms in Nigeria. However, the specific objectives of this study is to determine the effect of retained earnings to total equity on propensity to pay dividend of listed manufacturing firms in Nigeria and to examine the effect of retained earnings to total asset on dividend policy of listed manufacturing firms in Nigeria.

This study assessed lifecycle theory on the propensity to pay dividend of listed manufacturing firms in Nigeria. The study covers the period of five years (2015 to 2019).

This study helps both investors and managers of corporation to understand the significant factors that influences dividend policy. The outcome of the study will provide investors with useful information to guide their investment decisions. Policy makers will benefit from the outcome of the study because it will` enable them to come up with informed policies and also it will provide a basis of measuring the implication of such policies. The finding of this study will contribute to knowledge, also it is an addition to existing body of literatures on lifecycle theory both in emerging and developed economies of the world.

## 2. LITERATURE REVIEW

Mueller (1972), propounded the life cycle theory of a firm. He built the works of Knight (1921) and Schumpeter (1939), and tracked down the inference of the life cycle theory of firm to the dividend policy. The underlying premise of this theory is that firms generally follow a life-cycle trajectory from origin to maturity that is associated with a shrinking investment opportunities set or declining growth rate, and decreasing cost of raising external capital. The optimal dividend policy is derived from a trade-off between the costs and benefits of raising capital for new investments. As the firm becomes more mature the optimal dividend increases. The empirical evidence generally supports the theory, in that dividend payment propensity is related to life-cycle characteristics stating clearly that dividend payers are mature firms, with a high ratio of earned to contribute capital, while young, high-growth firms do not pay dividends. (DeAngelo, DeAngelo & Stulz, 2006). Small and newly established firms will be constrained from paying dividend because of they retain profit for further expansion. As firms get to the maturity stage, it opportunities begin to decline and at this point, it begins to think of paying out dividend to its shareholders. The more matured a firm is, the higher its prospects of paying higher dividend. The highly profitable firm are at the matured stage and this will give them the ample opportunities to pay out dividend considering decline in their growth opportunities. Matured firms are more liquid compared

to newly established or small firms and this will give them edge when it comes to paying dividend. The life cycle variable is underpinned by the life-cycle theory.

Fama and French (2001), conduct a study on the dividend payment behavior of publicly traded U.S. firms. They investigated the patterns and determinants of pay-out policy covering the period of 1926– 1999. They divided their sampled population into two strata which are dividend paying firms and non-dividend paying firms. The results point of this study points to the fact that life cycle plays a major role in the decision to pay cash dividends. Specifically, result shows that firms with high retained earnings are sufficient to cover their capital investments. On the other hand, firms that have never paid dividends are small and not as profitable as dividend paying firms, these firms have many investment opportunities that require external financing because their capital spending is far greater than their earnings. Thus, dividend-paying firms have the characteristics of mature firms, while firms that have never paid dividends have the characteristics of young, fast-growing firms. In summary, the result shows a significant relationship between the overall patterns of dividend payment and life cycle.

DeAngelo, DeAngelo and Stulz (2006), conduct a study on the dividend policy and the earned/contributed capital mix: a test of the life-cycle theory. They attempt to explicitly test the life cycle theory of dividends by analysing the relationship between dividend payment propensity and the mix of earned and contributed capital. They measure the mix of earned and contributed capital by the ratio of retained earnings to total equity and of retained earnings to total assets of the firm. They restrict the population to non-financial and industrial firm, the study covered the period from 1972-2002. The logit regression was used as the tool of analysis. The result showed a positive relationship between the proportion of dividend-paying firms and life cycle.

Al-Malkawi (2007), examine the factors influencing corporate dividend decision of Jordanian firms. He examined the determinants of corporate dividend decisions of publicly listed companies in Jordan as a case study of an emerging market. The analysis is based on 15-year unbalanced panel data with 1137 firm-year observations covering the period 1989-2003. The study develops five research hypotheses and used the general-to-specific modelling approach to choose between the competing hypotheses. The study estimates the determinants for a given firm to pay dividends to its shareholders using probit technique. The study also brought to light that larger, profitable, and mature firms with few investment opportunities are much more likely to pay dividends.

Ishikawa (2011), conduct a study on the empirical analysis on the dividend life-cycle theory of firms in japan. The study aims to shed light on the characteristic of the dividend policy of Japanese firms by verifying the dividend life-cycle theory. The study covers the period from

2002 to 2005. The study made use of the logit regression. The result revealed that in Japan, growing firms choose further dividend increases compared to mature firms, and that such dividend increases by the growing firms are appreciated by the market more than those by the mature firms.

Hallberg and Helmrich (2012). Assess the propensity to pay dividends and did a test on the Life Cycle Theory. The data was gotten from firms listed on the Nasdaq-OMX Stockholm Stock Exchange. Unvariate and multivariate analysis was carried out. The study made use of LPM-regressions. The findings of the study is consistent with the life cycle theory. The findings are consistent with the life cycle theory.

Ihejirika and Prince (2012), examine the empirical analysis on the propensity to pay or not to pay dividends and also carried out a test of the life cycle theory in Nigeria. The study covers a period of nine (9) years that is from 2000-2008. They used maximum likelihood (ML) binary logit to undertake the analysis. The result shows a negative significant relationship between life cycle and the propensity to pay dividends.

Miletić (2015), examined the applicability of the firm life cycle theory of dividends on Croatian capital market. The purpose of this study is to investigate the influence of determinants of the life cycle theory of dividends on company dividend decision in the Croatian stock market.  The basic population from which the sample is taken are companies listed on Zagreb Stock Exchange from the year 2003-2011. Linear panel model with random effects and discriminant analysis is used to investigate the applicability of the firm life cycle theory of dividends. Linear panel model is used to identify the determinants of the firm life cycle theory of dividends that are statistically significant and can be applicable on Croatian companies. The result shows the consistency of the life cycle theory.

Moghanloo and Farzinfar (2015), conduct a study on life-cycle and free cash flow theory on companies listed in Tehran stock exchange. The population of this study consist of companies listed in Tehran Stock Exchange for a period of five (5) years that is from 2007-2011. This study made use of the ex-post facto research design. The most important reason for choosing this target population was because of the quality of the information together with the ease of access to financial information and other information required for the study. The study data was collected from Tehran Stock Exchange databases. The multi variable regression result shows that between the life cycle and free cash flow there is a direct relationship. Free cash flow is dependent on the life cycle.

## 3. METHODOLOGY

The study used secondary data extracted from the financial statements of twenty-four listed manufacturing firms in Nigeria for the period of five years (2015 to 2019).

Propensity to pay which is the dependent variable is a binary variable that takes the value 1 if a firm did pay dividends in a given year and 0 otherwise (Chen, Lin & Yong-cheol, 2011). The independent variable which is lifecycle has two proxies and is captured as the ratio of retained earnings to total equity and the ratio of retained earnings to total asset (DeAngelo, DeAngelo & Stulz, 2006). Firm size which is the control variable is measured as the natural logarithm of total assets (Ishaq, Amin & Khan, 2018).

The study made use of two models in order to capture the basic proxies for lifecycle theory (DeAngelo, DeAngelo & Stulz, 2006) and the model of this study is presented below which depicts the relationships between the lifecycle theory and the propensity to pay dividend.

The basic model derived for the study, is stated as:

$$PDIV_{it} = \alpha 0 + \alpha 1 LIFCYT1_{it} + \alpha 2 FSZ_{it} + \varepsilon_{it} \text{ ----------------------------------- (1)}$$

$$PDIV_{it} = \alpha 0 + \alpha 1 LIFCYT2_{it} + \alpha 2 FSZ_{it} + \varepsilon_{it} \text{ ----------------------------------- (2)}$$

**PDIV** = Propensity to pay dividends of firm ì in year t

**LIFCYT1** = Retained Earnings to Total Equity of firm ì in year t

**LIFCYT2** = Retained Earnings to Total Asset of firm ì in year t

**FSZ** = Firm Size of firm ì in year t

And $\alpha 0$ is the intercept, while $\alpha 1$, and $\alpha 2$ are the coefficients/estimators. $\varepsilon_{it}$ is the Residual or error term.

This study conducted the Hosmer and Lemeshow robustness test of the goodness of fit which was used to know if the logistic regression model is fit and well specified. This test is a fundamental test of logistic regression.

## 4. RESULTS AND DISCUSSIONS

This section presents the analysis of the results obtained from the data collected for the study. The section begins with the descriptive statistics of the data presented in Table 2 as follows;

**Table 4.1 Descriptive Statistics**

| Variables | Mean | SD | Min | Max | OBS |
|-----------|------|-----|-----|-----|-----|
| PDIV | 0.6917 | 0.4637 | 0 | 1 | 120 |
| LIFCYT1 | 0.4618 | 0.2018 | 0.1929 | 0.8463 | 120 |
| LIFCYT2 | 0.5710 | 0.2075 | 0.1019 | 0.7987 | 120 |
| FSZ | 16.3737 | 1.3055 | 13.8739 | 18.9856 | 120 |

**Source: STATA OUTPUT (Appendix)**

The table above presents the descriptive statistics of the data for the variables of the study. The data set indicated above contained a total of 120 observations. The independent variable (lifecycle) was measured against the dependent variable (propensity to pay dividend).

The dependent variable is a dichotomous variable which has a minimum and a maximum value of 0 and 1 respectively. The mean value of the propensity to pay dividend is 0.6917 and the standard deviation is 0.4637. The mean value of 0.6917 signifies that the average record of propensity to pay dividend across the firms during the periods of the study is 69%.

Life cycle measured as the ratio of retained earnings to total equity have an average value of 46% as indicated by the mean value of 0.4618, indicating that the average level of retained earnings to total equity across the sampled firms is approximately 46%. The standard deviation of Life cycle is 0.2018 indicates that there is no much dispersion from the mean value which can be interpreted that the firms have a similar ratio of retained earnings to total equity. The minimum and maximum ratio are 0.1929 and 0.8463 respectively.

The other measure of life cycle which is the ratio of retained earnings to total assets have a mean value of 0.5710, indicating that the average level of retained earnings to total assets across the sampled firms is approximately 57%. The standard deviation of 0.2075 suggests that there is a similar proportion of retained earnings to total assets among the sample firms. The minimum and maximum value are 1.6495 and 3.1089 respectively. The minimum value of -1.6495 pertain to Champion Breweries Plc in year 2014 that have a high negative retained earning value of approximately (-₦ 9.7 billion) when compared to the equity value of approximately ₦ 5.9 billion. The maximum value of 3.1089 pertain to Champion Breweries Plc in year 2011 that have a high negative retained earning value of approximately (-₦ 6.3 billion) which is 3.1

times greater than its equity value, when compared to the equity value of approximately (-₦ 2.0 billion).

Firm size which is a control variable is majorly considered to reflect in a firm asset have a mean value of 16.3737 this indicate the average level of total assets across the sampled firms. The standard deviation of firm size is 1.3055 suggesting that the total assets among the firms sampled is not widely disperse and with a maximum value of 18.9850 and minimum value of 13.8739.

## 4.2    Correlation Results

In this section, the correlation coefficients of the variables of the study are presented in Table 3 as follows;

**Table 4.2 Correlation Matrix (MODEL 1)**

| Variables | PDIV | LIFCYT1 | FSZ |
|---|---|---|---|
| PDIV | 1.0000 | | |
| LIFCYT1 | 0.2687 | 1.0000 | |
| FSZ | 0.2469 | -0.2338 | 1.0000 |

**Table 4.3 Correlation Matrix (MODEL 2)**

| Variables | PDIV | LIFCYT2 | FSZ |
|---|---|---|---|
| PDIV | 1.0000 | | |
| LIFCYT2 | 0.4161 | 1.0000 | |
| FSZ | 0.2469 | -0.1338 | 1.0000 |

**Source: STATA OUTPUT (Appendix)**

The result in table 4.2 show that the correlation coefficient of the variables. The correlation matrix table of model 1 shows a positive association between lifecycle (LIFCYT1) and propensity to pay dividend with a coefficient of 0.2687. This relationship suggests that lifecycle influences the propensity to pay dividends positively. Similarly, the results from the table indicate that, there is a positive

association between the control variable which is firm size (FSZ) and propensity to pay dividend (PDIV) from the correlation coefficient of 0.2469.

Moreso, table 4.3 reveals the correlation coefficient result of model 2 which shows a positive association between lifecycle (LIFCYT2) and propensity to pay dividend with a coefficient of 0.4161. This relationship suggests that lifecycle influences the propensity to pay dividends positively.

## 4.3    Regression Results

The results are presented in table 4.4 and 4.5 below.
**MODEL 1**

**Table 4.4 Regression result**

| Variables | Coefficient | Z | p-value |
|---|---|---|---|
| LIFCYT1 | 0.634 | 3.61 | 0.000 |
| FSZ | 0.692 | 3.43 | 0.001 |
| CONS | -10.971 | -3.33 | 0.001 |
| $R^2$ | 0.1565 | | 0.001 |

*Source:* Regression Result from Output STATA 13

**MODEL 2**

**Table 4.5 Regression result**

| Variables | Coefficient | Z | p-value |
|---|---|---|---|
| LIFCYT2 | 2.959 | 4.29 | 0.000 |
| FSZ | 0.685 | 3.47 | 0.001 |
| CONS | -8.091 | -2.67 | 0.008 |
| $R^2$ | 0.2442 | | 0.000 |

*Source:* Regression Result from Output STATA 13

As can be seen in table 4.4 above, the independent variables put together as denoted by $R^2$ and the probability value explained the dependent variable to the tune of 15.65% at 1% level of significance. Additionally, the regression result reveals that life cycle have a coefficient of 0.634 and a p-value of 0.000. The result implies that the first measure of life cycle as captured in model 1 has a positive and significant effect on the propensity to pay dividend of listed manufacturing firms in Nigeria. On this basis the null hypothesis of the study which states that Retained earnings to total equity have no significant effect on the propensity to pay dividend of listed manufacturing firms in Nigeria is rejected. This finding is in line with the life cycle theory also the result is in line with the findings of the previous study such as DeAngelo, DeAngelo and Stulz (2006), Miletić (2015) among others.

As can be seen in table 4.5 above, the independent variables put together as denoted by $R^2$ and the probability value explained the dependent variable to the tune of 24.42% at 1% level of significance. Moreover, the regression result reveals that life cycle has a coefficient of 2.959 and a p-value of 0.000. The result implies that the second measure of life cycle as captured in model 2 has a positive and significant effect on the propensity to pay dividend of listed manufacturing firms in Nigeria. On this basis the null hypothesis of the study which states that Retained earnings to total equity have no significant effect on the divided policy of listed manufacturing firms in Nigeria is rejected. This finding is in line with the life cycle theory also the result is in line with the findings of the previous study such as Fama and French (2001), DeAngelo, DeAngelo and Stulz (2006) among others.

The result from both models reveals that the lifecycle theory fits into the Nigerian context and therefore it can be applied and should be put into consideration when making decisions regarding dividend policy in Nigeria.

## 4.4 Goodness of Fit Robustness Test

The Hosmer and Lemeshow goodness of fit results indicates that the model is correctly specified. The test of the goodness of fit shows a chi square of 17.66 and a P-value of (0.1710), based on this it itindicates that the goodness of fit for the model is adequate.

## 5. CONCLUSION AND RECOMMENDATIONS

This study assessed lifecycle theory on the propensity to pay dividend of listed manufacturing firms in Nigeria. The study has made an immense contribution to literature by assessing lifecycle theory as it affects the propensity to pay dividend in Nigeria. The results validate that lifecycle theory is applicable in the Nigerian context. Two measures were used to test the lifecycle theory and both measures in each of their separate models statistically have a positive and significant on the Nigerian dividend policy. Based on the results obtain from the analysis of the study it is therefore concluded that the lifecycle theory

of dividend has an effect on the propensity to pay dividend policy in Nigeria. It is therefore recommended that the management should ensure that the lifecycle of their firms be considered when making financing decisions.

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