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ANALYSIS OF RETAINED EARNINGS FINANCING ON FINANCIAL PERFORMANCE OF LISTED MANUFACTURING AND ALLIED FIRMS: A DYNAMIC PANEL APPROACH

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Abstract

The manufacturing sector is crucial for attaining a robust economy. However, in Kenya, the sector's contribution to the economy has stagnated at 10% of the gross domestic product (GDP).. Financing structure is imperative to optimize a company's profitability and hence improving its competitiveness. This study applied Dynamic Unbalanced Panel analysis techniques using Secondary data for 10-year period (2010 - 2019) with the study population comprising of 9 listed firms. Quantitative secondary data was collected from the firms' financial statements by use of a document analysis guide. Focus was on retained earnings financing moderated by economic growth rate and earnings volatility on performance which was proxied by Tobin's Q. Pecking order theory guided the study. Longitudinal research design was used as

it is appropriate when dealing with panel data. Pearson correlation was used to show the strength and direction of association among the study variables. Retention ratio (RR) had a moderate positive correlation (r = 0.3197) with Tobin Q and a strong positive correlation (r = 0.5997) Ln EVA respectively. The regression coefficient was also positive and significant. The study recommended that Retained earnings improve performance hence should be applied. Future studies can consider a static panel analysis.

Keywords: Retained earnings, Retention ratio, Tobin Q, Economic Value Added

INTRODUCTION

Retained earnings is the residual net income for the business after paying the shareholders their dividends. Normally, they are used for financing of working capital and fixed asset purchases (capital expenditure) or assigned for paying off debt obligations. Earnings of a business can be positive (profits) or negative in the case of losses. These revenue retentions could also be retained for reinvestment or debt repayments (Chasan, 2012). Some firms retain more of their profits so that they can reinvest them when they identify viable opportunities, they can invest in mostly for growth firms which have more opportunities as they are penetrating the market (Campbell, 2012). Despite of this, firms need to conduct proper feasibility studies and a cost benefit analysis to avoid misapplying these retained funds in non-viable investments which could result in value destruction Burgstahler & Dichev (1997).

Retained earnings can further be expressed in form of a ratio; termed as retention rate (Orwel, 2010). A conflict of interest often arises when determining the retention ratio since the managers want to retain more than what they distribute as dividends while the shareholders need a higher payout ratio since ploughing back raises uncertainty on ownership level and control over decisions. High retention also means a foregone dividend by the shareholders which subjects them to high opportunity cost (Chasan, 2012). If a company pays all of its retained earnings out as dividends or does not reinvest back into the business, earnings growth might suffer. Also, a company that is not using its retained earnings effectively have an increased likelihood of taking on additional debt or issuing new equity shares to finance growth.

The manufacturing sector is the foundation of innovation and technical change since most innovations are first introduced and commercialized in this sector, making it the core driver of technical change and economic development hence occupies an extraordinary position in the minds of policy-makers. (UNIDO, 2013). Further, manufacturing is the core drive of economic success of high – income countries in Europe and North America. Moreover, many countries in

East and South East Asia have been able to transform their economies from low to middle income status over the past 50 years thus improving their citizen's standards of living. A thriving manufacturing sector contributes to not only improved standards of living of the nationals of a country and infrastructural development, but directly and indirectly steers a nation toward the realization of SDG's, socio – economic and environmental well being through job creation, better working environment fostered by innovation and production and utilization of green and new technologies (Yong, 2020).

Past studies on the subject have found divergent results and thus led to divergent conclusions on the same. For instance, Omollo, Muturi & Wanjare (2018) noted that retention ratio has a significant and positive effect on ROA. Okeke & Okeke (2018) in the case of Nigerian Quoted firms who found that retained earnings had positive and significant effect on performance. However, the finding by Thuranira (2014) found that retained earnings had a very weak, negative insignificant relationship with performance. Pecking order Theory was adopted as it proposes that managers desire to raise finances internally for growing the company (Donaldson, 1961).

Various firms in Kenya have been faced with financial distress resulting either from huge debts, declined business operations, lack of cash flow to run operations and payment of their creditors on time (CMA statistical Bulletin, 2015). For instance, firms like Mumias Sugar Co (Annual report, 2013), Kenya Airways (Annual report, 2014) both disclosed their cash flow shortages to settle their debt obligations. A total of nine companies have previously been suspended from trading, these including Uchumi Supermarket suspended in 2006, A Baumann suspended in 2008, CMC and EAPC suspended in 2011, BOC and Carbacid suspended in 2005, City trust and Rea Vipingo in 2013 and Hutching Biemer suspended in 2014. Other companies were also delisted including Unilever Tea delisted 2008, Access Kenya 2013 and CMC Holding 2014. These companies were mainly suspended or delisted for various reasons with the major one being financial distress and disclosures (CMA Statistical Bulletin, 2019).

The decisions regarding financings structure is key to management since it has an effect on return and risk, which also impacts firm's value and market share. Therefore, the firm managers should make a critical analysis of the various financing options. Since the manufacturing sector is one of the Big 4 agenda of the government Mid – term Economic Plan, prudent financing options need to be sought if it really has to realize its potential. This therefore necessitated the current study for sustained growth of the Kenya's manufacturing sector and hence economic growth.

Objectives of the study

i. To establish the effect of retained earnings financing on financial performance of listed manufacturing and allied firms in Kenya.
ii. To determine the moderating role of economic growth rate and earnings volatility on the relationship between retained earnings financing and financial performance of listed manufacturing and allied firms in Kenya.

Study Hypotheses

H_{01}: Retained earnings financing has no significant effect on financial performance of listed manufacturing and allied firms in Kenya.

H_{02}: Economic growth rate and earnings volatility do not have a significant moderating effect on the relationship between retained earnings financing and financial performance of listed manufacturing and allied firms in Kenya.

Scope of Study

This work focused retained earnings financing and financial performance of manufacturing and allied firms listed on the NSE over 10 years from 2010 through to 2019. This period was picked for the time series because it's the period during which the Government of Kenya ushered in a new constitution and in the medium-term development plan, industrialization was given much focus and also the Big 4 Agenda was initiated during this period's dataset. The period also spans across two regime changes in government and hence the interest in this particular data set. Performance was proxied by Tobin's Q and EVA (Economic Value Added). The study was conducted in Kenya. The researchers used a longitudinal research design as it works with panel data.

LITERATURE REVIEW

Retained earnings and financial performance

Okeke & Okeke (2018) studied dividend policy and performance of selected quoted firms in Nigeria using Ex – post facto research design for the period 2010 - 2016. The study adopted dividend payout ratio (DPR), retained earnings (RE), and cash dividend (CD) as explanatory variables on performance and found that DPR and RE had positive and significant effect on performance while CD had negative and insignificant effect on performance. The design used suffers a weakness that a particular situation is or is not a case of reverse causation hence, a different research design was adopted by the current study to overcome this limitation as well as extend the time scope.

Yemi & Seriki (2018) investigated the retained earnings and firms' Market Value for Nigerian firms. A sample size of 75 non-financial firms which are listed on the Nigeria stock Market was used. Secondary data for the firms was collected through the period 2003 to 2014. The panel data was analyzed using the random and fixed effects model. The results indicated existence of a positive and significant relationship between retained earnings, dividend payout and earnings per share on Tobin Q while financial leverage had a positive but not significant relationship with Tobin Q. The current study considered the dynamic nature of performance by adopting a two-step system GMM to model the estimation.

Akani & Sweneme (2016) Study on Dividend Policy and the Profitability of Selected Quoted Manufacturing Firms in Nigeria used secondary data through the period 1981 – 2014 and multiple regression was used for analysis. Retention ratio has positive effect on return on investment and net profit margin and recommended that there should be a consistent dividend policy that will maximize shareholders wealth without mortgaging the profitability objectives of the firms. The current study introduced other performance measures to test if the findings would change given a different economic and operating environment.

Thuranira (2014) studied the effect of retained earnings on the returns of firms listed at the N.S.E. Descriptive research design was used and secondary data for 5 years from 2009 – 2013 was used. The study variables were retained earnings, net asset value per share, price to book value, dividend yield and stock returns. The regression results revealed existence of a very weak, negative insignificant relationship between retained earnings and stock returns and recommended firms should not retain huge amounts of earnings and organizations should adopt dividend policies that have a positive contribution to the shareholders. The recommendation should be in relation to the stage of growth of the firm. For growth firms, the opportunities for investment are there and finance theory suggests that the retained earnings for this firm could generate returns higher than the firms cost of capital unlike firms at maturity stage.

Omollo, Muturi & Wanjare (2018) examined the effect of equity Financing Options on financial performance of Non -Financial Firms Listed at the Nairobi Securities Exchange, Kenya. Panel econometric techniques were applied and a sample of 40 non-financial firms listed at the Nairobi Securities Exchange between 2009 and 2015. The study adopted the variables of Common stock, retained earnings and total equity as ratios of total assets on the financial performance proxied by ROA and ROE while firm size was used as the control variable. The results revealed that retention ratio has a statistically significant and positive effect on ROA and recommended that corporate finance managers should consider focus on more use of retained earnings and less common stock to boost performance. ROE was not significantly affected by

the retention ratio. The study however did not conduct panel data stationarity tests to ensure the regressions were not spurious.

Economic growth

Economic growth was used to manage and control for the macroeconomic performance which is linked to market conditions as an exogenous variable specified by Myers (2001) as anchored in the trade-off model of financing structure. This was measured by annual growth of real gross domestic product (GDP). Pecking order theory posits that leverage should decline when the economy is growing as firms can easily generate revenue from their normal operations and hence internal sources can provide sufficient funds.

According to (Saif – Alyousfi, Md – Rus, Taufil – Mohd, Taib & Shadar, 2020), GDP has no significant effect on financing options and therefore the choice is purely by considering the costs and benefits of either source. In the case of the Kenyan context, real GDP growth rate has been found to impact leverage positively (Ngugi, 2008). This shows that a strong economy can support operations which is a trajectory of investor confidence in a growing economy to stimulate demand hence the possibility upside profits. This was pursued further in this study to check if the relations hold in the manufacturing sector in the current time.

Earnings volatility

This represents the cost of financial distress. It shows the variability of income. Booth, Aivazian, Hunt, & Maksimovic, (2001) used the standard deviation of the ratio of earnings before tax to the TA to measure earnings volatility. Further, Standard deviation of earnings before interest and taxes has also been suggested as a good measure of volatility (De Miguel & Pinadado, 2001). This study therefore adopted the standard deviation of the EBIT deflated by total assets since it is an appropriate measure for observing firm's ability to meet fixed charges. The past five years standard deviation can be measured and also used as a proxy for earnings volatility (Koksal & Orman, 2015; Harris & Roark, 2019). When volatility is high, firms are fairly unable to raise debt or equity as lenders and investors are not willing to give their resources to a firm with a high risk of default or bankruptcy and this could make the financier forfeit the extended facility or incur more cost of recovery (Moradi & Paulet, 2019). This is because increase in earnings volatility subjects a firm to a high rate of unpredictability and therefore exposes the firm to the risk of inability to pay dividends, interest and debt repayment.

Theoretical Review

Pecking Order Theory

This theory gives the main challenge to trade off theory. It was initially proposed by Donaldson (1961) who advanced that managers desire to raise finances internally for growing the company. In the absence of the internal sources, the theory endorses conversion of assets then issueing debt and lastly through external equity as the last option. Stewart, Myers & Majluf (1984) later popularized the theory by affirming the notion of hierarchical financing choice by firms; first, use internal sources comprising of retained earnings and reserves, then go for debt and then consider preferred stock and issue common stock as the last option. If firms choose to acquire funds externally, they will carefully select the option that will subject the firm to minimal incremental cost of asymmetric information. External funds are expensive to raise since the external investors consider the moral hazard and failure risk of the normal firm (Akerlof, 1970).

Omollo, Muturi & Wanjare (2018) study on the effect of Equity Financing Options on Financial Performance is in support with this theory based on their finding that retention ratio has positive effect on ROA while common stock ratio has negative effect on ROA. The positive effect of retained earnings concur with the proposition that corporate managers should first consider retained earnings financing before any other source. The theory ranks common stock lastly as a financing option and this also concurs with the finding of negative effect of common stock on performance and agrees with the reasoning by Myers and Majluf model (1984) of external investors discounting share price of a firm and managers can avoid this by not raising finances through equity issuance. Further, Al – Najjar & Belghitar (2011) acknowledged that leverage and profitability influence retentions of cash considering Pecking Order Theory.

The theory however is subject to some shortcomings as it ignores the effect of taxes, costs of financial distress, costs of floating securities, agency costs or the bundle of investments within the reach of the organization basing on the real financing structure. The theory further fails to consider the lost opportunities for a firm when it accumulates huge retentions as well as the immunity a firm gains due to so much financial slack. Due to these shortcomings, the theory therefore complements the tradeoff theory and cannot replace it. This theory was relevant to this study as retained earnings form a significant part of financing and hence their impact on performance was studied in line with this theory.

Conceptual Framework

The conceptual framework reveals the relationship between financing structure and financial performance of manufacturing and allied firms listed on NSE. Financing structure was conceptualized in terms of retained earnings and financial performance was based on economic

performance proxies indicated by Tobin q and EVA. This was moderated by economic growth and earnings as was borrowed from the trade – off model of financing structure. The interplay between the study variables is portrayed in the figure 1 below.

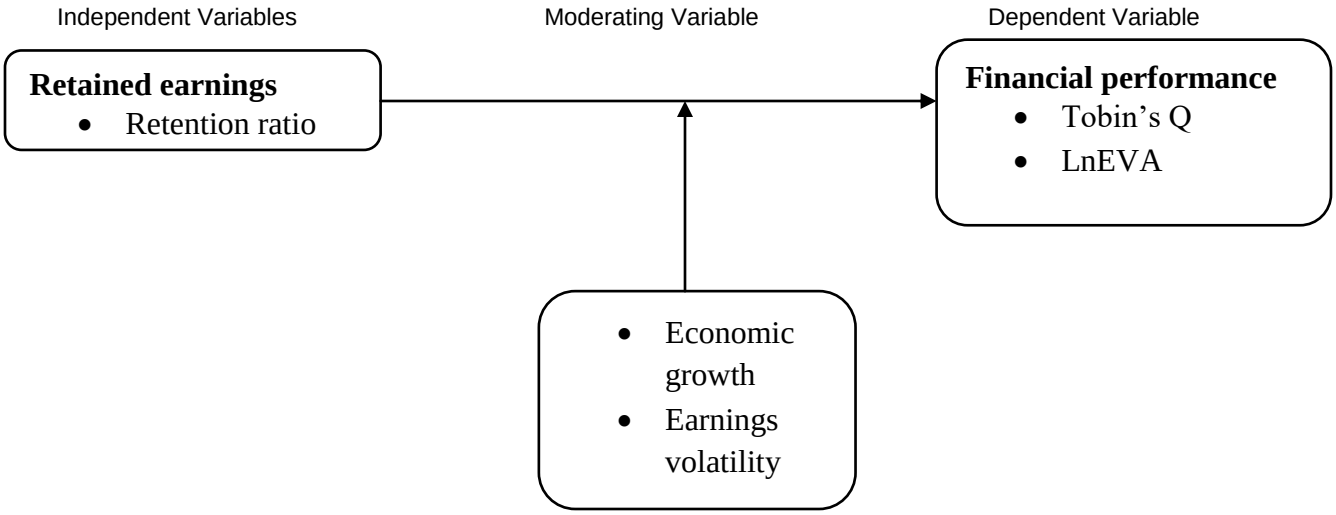

Figure 1 Conceptual framework

RESEARCH METHODOLOGY

Research Design

This study adopted a longitudinal research design approach which allows collection of data on the same unit at different points in time hence qualifying to utilize panel data that was collected for this study.

Panel data gives more informative data as it includes the time series and cross-sectional dimensions thus allowing the researcher to control for individual heterogeneity. It also allows the researcher to analyze change over time, study the dynamics of adjustment, provides less collinearity among the variables, more degrees of freedom and more efficiency because more information is available on the variables and subjects under study (Baltagi, 2008; Hsiao, 2003; Klevmarken 1989).

Study Area

The study was carried out in Kenya since the units of study were also domiciled in Kenya.

Target Population and Sample size

The target population for this study comprised the nine manufacturing and allied firms which were listed on the Nairobi Securities exchange (NSE) for the period 2010 to 2019. A

census of the 9 manufacturing and allied firms which were listed on the Nairobi Securities exchange (NSE) for the period 2010 to 2019 was carried out. This comprised a total of 86 observations due to missing data during the study period hence the Unbalanced Panel Analysis approach.

Data type and Source

The study used secondary data which was collected from the annual reports and audited financial statements of the firms. Secondary data is more appropriate as the performance proxies are a historical variable which has occurred. Financial statements of listed companies are certified by professional auditors and the published data is therefore expected to be reliable and accurate. Data on economic growth was collected from the Kenya National Bureau of Statistics (K.N.B.S) economic surveys.

Data Collection Procedures and Research Instruments

Document analysis guide was used to collect quantitative secondary data on financing structure variables and performance. The data was obtained from the annual reports and audited financial statements of the firms, NSE handbook, CMA and K.N.B.S.

Validity

Expert analysis and opinion given by the university supervisors certified the content validity while construct validity was assessed through average variance extracted (AVE).

Data analysis and Model selection

STATA Version 15 software was used for data analysis. Descriptive statistics such as mean, median, skewness, kurtosis and standard deviation were generated from the data. Inferential statistics were employed to test the study's hypotheses. Results were presented by the use of graphs and tables. Model Selection followed Arellano &Bond (1991) Panel data procedures. Panel data applies the one-way error component model of the pooled OLS given by;

$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$ ……3.1

Y_{it} represents financial performance (Tobin's Q and EVA) of the manufacturing and allied firm *i* at time *t*, with *i* = 1…N = 9 and *t* = 1…T = 10.

α denotes the constant term.

β denotes the slope of the explanatory variables.

X_{it} represents a vector of financing structure variables

ε_{it} is the error component which can be decomposed into two components as under;

$\varepsilon_{it} = \mu_i + \upsilon_{it}$ …….3.2

with $\mu_i \sim$ IID (0, $\delta^2\mu$) and $\upsilon_{it} \sim$ IID (0, $\delta^2\upsilon$) are independent of each other and among themselves. Where μi represents the fixed effects, which denotes the individual firm specific effects which are time invariant and are therefore not included in the regression. Furthermore, v_{it} is the idiosyncratic error term which denotes the remainder of the disturbance that varies with individuals and time and can be thought of as the usual disturbance in the regression. Panel data offers techniques to remove μ_i through the use of forward orthogonal deviations.

Dynamic models take account of lags of the dependent variables among the regressors while the static models do not (Baltagi, 2005). Application of OLS methods to estimate parameters in a dynamic model that includes a lagged dependent variable would thus produce biased coefficients (Flannery and Hankins, 2013). Performance is naturally dynamic since performance of the previous period normally affects the current period's performance hence the dynamic panel approach in analysis. The dynamic model is formulated by the equation 3.3

$y_{it} = \alpha + \delta y_{it-1} + \beta x_{it} + \mu_i + \upsilon_{it}$ ……...3.3

Given that y_{it} is the dependent variable, y_{it-1} is the lag 1 of the dependent variable, x_{it} is a group of explanatory variables.

The Generalized Method of Moments (GMM) technique as proposed by Arellano and Bond, (1991) is more efficient and accounts for normality, autocorrelation and heteroskedasticity (Lee, Liang, Lin & Yang, 2015). System GMM method has been documented as the best method in estimating parameters that have incorporated lagged dependent variables (Flannery & Hankins, 2013) as was suggested by Blundell and Bond (2000). This estimator also controls for unobserved heterogeneity and is more robust in improving efficiency gains and reducing finite sample bias (Blundell & Bond, 1998). It also addresses the unit root property problem and provides more accurate findings (Bond, 2002). System GMM also corrects for endogeneity problem by introducing more instruments to improve efficiency and transforming the instruments to make them uncorrelated with the fixed effects; μ_i and also minimizes data loss since it is more robust than difference GMM and works well in unbalanced panels. The two-step system GMM estimator was chosen for this study since the one step estimation is less efficient as it assumes homoscedastic errors. It was derived by estimating a system of two equations, one in levels using lagged first differences as instruments and the second in first difference and using lagged levels as instruments.

Data analysis was guided by the following empirical model;

$Y_{it} = \alpha_0 + \delta y_{it-1} + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_{it}$……3.4

i =1..., N; t =1..., T

With *i* denoting the firms and t denoting time; the *i* subscript therefore, denotes the cross-section dimension whereas *t* denotes the time-series dimension.

X_1= Retained earnings (RR)

X_2= Economic growth rate

X_3 = Earnings volatility

α_0, $\beta 1$, β_2 and β_3 are regression equation coefficients.

i = cross sections (unit that we observe)

t = time dimension

ε_{it} = error term.

Where, Y= Performance proxied by Tobin's Q and LnEVA.

The study also estimated the long run model for the study variables to assess the behavior of the relationship over time. The model was estimated using the method below;

$Long\ run\ model = \frac{\beta k}{1 - \Phi}$ Where;

β_k is the short run coefficient for the independent variable.

Φ is the short run coefficient for the lagged dependent variable

FINDINGS

Descriptive statistics

The mean of Tobin Q for the listed manufacturing and allied firms was 1.5481>1 with a median of 0.1200 implying that the sector was doing well in terms of improving its market value and hence, channeling more resources to the sector would be economically viable since the returns to be generated would outweigh the financing charges and expenses in generating the profit. The sector had a standard deviation of 1.5685 which is generally a low variance and hence, the sector is generally stable in terms of market value and therefore returns could be predicted with low volatility. The sector had a minimum value of 0.1200 and a maximum value of 5.8300 for Tobin Q for the entire study period through 2010 – 2019.

The mean of LnEVA was 16.5662 with a median of 16.5667 which is a trajectory that the sector generated adequate return than the cost of capital. On the other hand, the standard deviation is 1.8766 implying less variation in the sector's returns hence returns could be predicted with minimum deviation. However, the sector had a minimum Ln EVA of 0.0000 since some firms had a negative value of EVA. To generate logs for this, the researcher took the minimum value of EVA (highest negative), then ignored the negative sign and added 1 to it. The sum of this was then added to the original values of EVA across the entire series. The logic supporting this was that the relative difference and relative importance of the series will be

similar to the original series. This eliminated the negative values of EVA and hence, log of EVA was now generated for further analysis. The LnEVA had a maximum value of 18.9410 which shows promising prospects from the sector in terms of creating shareholder value. This supports the finding of a significant influence of EVA on stock returns (Sauro & Tafirei, 2016).

Retained earnings financing had a mean RR of 0.7910 meaning that firms retained a significant portion of retained profits for internal financing of operations. This is commendable as the retained earnings are handy to cushion the firms during periods of economic distress when losses are incurred as the retentions can be used to even out profits and ensure that the firms could pay dividends to shareholders even during losses. The retentions also help the firms to withstand adverse economic shocks and build resilience to be competitive in the region. The median of RR was 0.7389 and the variation was less as indicated standard deviation of 0.6317. The minimum value of RR was however 0.0000 that could be attributed to loss making by some firms during the study period and therefore no retentions. The maximum value was 3.8021. This is an indicator of possible growth opportunities for the firms and hence the need to retain more to finance the expansion. The sector is rapidly growing to achieve the Big 4 Agenda on manufacturing to revolutionize and grow the economy to an industrialized as per the vision 2030. This could be better achieved by ploughing back and re investing earnings since no cost is associated with this financing choice.

As for the moderating variables, EGR had a mean and median of 0.0584 and 0.0580. The minimum and maximum values of EGR are 0.0460 and 0.0840 respectively. This shows an economy which is on a positive growth trajectory and therefore promising a thriving environment for industry as a growing economy stimulates investment and consumption to meet future expected demand. This is supported by Bakari (2018) who found that investment caused economic growth in Algeria in the Short run. There is minimal variation as shown by standard deviation of 0.0097 indicating a relatively stable macroeconomic environment. The minimum value of EGR was 0.0460 with a maximum value of 0.0840.

EVOL had a standard deviation of 0.0761 showing a small variability in terms of earnings and therefore there is mean reversion in the long run hence the risk in earnings variability is less. This indicates the firms face a low risk of default and bankruptcy. The mean and median of EVOL was 0.0754 and 0.0487 respectively. As a measure of financial distress risk and cost, these are small values and hence indicating confidence in the firms financing ability. It was generally observed that EVOL was low for firms in the sector and therefore this is an indicator that they can raise financing from whichever source. A low EVOL gives lenders and investors confidence as they are willing to give their resources to a firm with a low risk of default or bankruptcy.

Table 1 Descriptive statistics

Variable	Mean	Std. Dev.	Median	Min	Max	Skewness	Kurtosis
RR	0.7910	0.6317	0.7389	0.0000	3.8021	0.8038	2.7758
EGR	0.0584	0.0097	0.0580	0.0460	0.0840	1.4269	2.1822
EVOL	0.0754	0.0761	0.0487	0.0203	0.5380	0.3099	3.6876
Tobin Q	1.5841	1.5685	1.0200	0.1200	5.8300	1.2871	0.3783
Ln EVA	16.5662	1.8766	16.5667	0.0000	18.9410	-1.2052	3.6585

The data was subjected to normality tests by examining the skewness and kurtosis of the distribution. The results indicate that the variables are normally distributed having the skewness values ranging between -3 to +3 which is within the acceptable range for normally distributed data. On the other hand, the kurtosis values ranged from -4 to +4. This implies that the study variables are normally distributed and therefore appropriate for further analysis.

Unit Root Tests

The panel data was subjected to unit root tests to establish stationarity conditions.

Im-Pesaran-Shin unit-root tests

The results in tables 2 and 3 Show the unit root test results for Tobin Q and ln EVA respectively based on the Im-Pesaran-Shin unit-root test. The test was applied due to its applicability in unbalanced panels. The header of the output summarizes the exact specification of the test and dataset. The IPS W-t-bar statistic is -11.2819 with a p – value of 0.0000 for Tobin Q while the W-t-bar is -0.7061 and p – value of 0.0198 which are significantly less than the 5% significant level and therefore the null of all panels contain unit roots is rejected in favor of the alternate hypothesis that some panels are stationary. This rejection of the null means that some series are mean reverting over time.

Table 2 Im-Pesaran-Shin unit-root test for Tobin Q

. xtunitrootips TobinQ, lags(1)
Im-Pesaran-Shin unit-root test for Tobin Q

Ho: All panels contain unit roots		Number of panels	= 9
Ha: Some panels are stationary		Avg. number of periods	= 9.56
AR parameter: Panel-specific		Asymptotics: T,N -> Infinity	
Panel means: Included		sequentially	
Time trend: Not included			
ADF regressions: 1 lag			
	Statistic	p-value	
W-t-bar	-11.2819	0.0000	

Table 3 Im-Pesaran-Shin unit-root test for Ln EVA

. xtunitrootipsLnEVA, lags(1)			
Im-Pesaran-Shin unit-root test for LnEVA			
Ho: All panels contain unit roots		Number of panels = 9	
Ha: Some panels are stationary		Avg. number of periods = 9.56	
AR parameter: Panel-specific		Asymptotics: T,N -> Infinity	
Panel means: Included		sequentially	
Time trend: Not included			
ADF regressions: 1 lag			
	Statistic	p-value	
W-t-bar	-0.7061	0.0198	

Fisher type unit root tests

The study also conducted the Fisher type unit root tests of Augmented Dickey Fuller (ADF) and Phillips – Perron (PP) unit root tests. Tables 4 and 5 display stationarity test results based on ADF for Tobin Q and Ln EVA respectively. Additionally, tables 6 and 7 show the unit root test results for Tobin Q and Ln EVA based on PP. These tests were chosen as they are robust in dealing with unbalanced panel data as was the case for this study. The findings strongly reject the null hypothesis and therefore the data is stationary and will not give spurious or misleading statistical evidence.

The Fisher - type tests consider the parameter P for the autoregressive equation to vary across panels and therefore are panel specific. Choi's (2001) simulation results suggest that inverse normal Z statistic offers the best trade-off between size and power, and recommends its use in applications. It was observed that the inverse logit $L*$ test concurs with the Z test. Z has a standard normal distribution and $L*$ has a t distribution with 5N+4 degrees of freedom under the null hypothesis. The low Z and $L*$ values cast doubt on the null hypothesis. The inverse chi-squared (X^2) P test is applicable when the number of panels is finite. This statistic has a chi-square distribution with 2N degrees of freedom and large values support the rejection of the null hypothesis. On the other hand, Choi (2001) proposes the use of modified inverse chi- squared Pm for large panels and therefore, the large value of Pm casts doubt on the null hypothesis. Choi's simulation results do not however give a specific value of N for which Pm should be preferred to P.

Table 4 Augmented Dickey – Fuller unit-root test for Tobin Q

. xtunitroot fisher TobinQ, dfuller trend lags(1)		
Fisher-type unit-root test for TobinQ		
Based on augmented Dickey-Fuller tests		
Ho: All panels contain unit roots	Number of panels = 9	
Ha: At least one panel is stationary	Avg. number of periods = 9.56	
AR parameter: Panel-specific	Asymptotics: T -> Infinity	

Panel means: Included
Time trend: Included
Drift term: Not included ADF regressions: 1 lag

		Statistic	p-value
Inverse chi-squared(18)	P	87.3387	0.0000
Inverse normal	Z	-2.9060	0.0018
Inverse logit t(49)	L*	-6.8575	0.0000
Modified inv. chi-squared	Pm	11.5564	0.0000

Table 5 Augmented Dickey – Fuller unit-root test for Ln EVA

. xtunitroot fisher LnEVA, dfuller trend lags(1)
Fisher-type unit-root test for LnEVA
Based on augmented Dickey-Fuller tests

Ho: All panels contain unit roots Number of panels = 9
Ha: At least one panel is stationary Avg. number of periods = 9.56
AR parameter: Panel-specific Asymptotics: T -> Infinity
Panel means: Included
Time trend: Included
Drift term: Not included ADF regressions: 1 lag

		Statistic	p-value
Inverse chi-squared (18)	P	31.1776	0.0275
Inverse normal	Z	-1.8986	0.0288
Inverse logit t (49)	L*	-2.0225	0.0243
Modified inv. chi-squared	Pm	2.1963	0.0140

Table 6 Phillips – Perron unit-root test for Ln EVA

. xtunitroot fisher TobinQ, pperron trend lags (1)
Fisher-type unit-root test for TobinQ
Based on Phillips-Perron tests

Ho: All panels contain unit roots Number of panels = 9
Ha: At least one panel is stationary Avg. number of periods = 9.56
AR parameter: Panel-specific Asymptotics: T -> Infinity
Panel means: Included
Time trend: Included
Newey-West lags: 1 lag

		Statistic	p-value
Inverse chi-squared (18)	P	46.5081	0.0003
Inverse normal	Z	-2.3527	0.0093
Inverse logit t (49)	L*	-3.2820	0.0010
Modified inv. chi-squared	Pm	4.7514	0.0000

Table 7 Phillips – Perron unit-root test for Ln EVA

. xtunitroot fisher LnEVA, pperron trend lags (1)
Fisher-type unit-root test for LnEVA
Based on Phillips-Perron tests

Ho: All panels contain unit roots Number of panels = 9
Ha: At least one panel is stationary Avg. number of periods = 9.56

AR parameter: Panel-specific		Asymptotics: T -> Infinity	
Panel means: Included			
Time trend: Included			
Newey-West lags: 1 lag			
		Statistic	p-value
Inverse chi-squared (18)	P	52.3147	0.0000
Inverse normal	Z	-3.0195	0.0013
Inverse logit t (49)	L*	-4.0639	0.0001
Modified inv. chi-squared	Pm	5.7191	0.0000

Collinearity Diagnostics

To check for correlations with linear combinations among the independent variables, Variance inflation factor (VIF) and tolerance tests were carried out on each of the variables used to generate the model. Table 8 represents the results with VIF values being less than 10 and tolerance greater than 0.1 suggesting that multicollinearity was not a problem in this study (Guajarati, 2007; Field, 2015).

Table 8 Collinearity diagnostics

Dependent variable: Tobin Q, Ln EVA		
Variable	Tolerance	VIF
RR	0.945	1.058
EGR	0.943	1.06
EVOL	0.713	1.402

Correlation Matrix

Table 9 shows the correlations between independent and dependent variables. Retained earnings financing component as proxied by retention ratio (RR) and a moderate positive correlation (r = 0.3197) with Ln EVA and a strong positive correlation (r = 0.5997) with Tobin Q respectively. This implies that the Manufacturing and Allied firms that focus on retained earnings financing results in improved financial and economic performance.

Table 9 Correlation matrix

pwcorr RR TobinQLnEVA,sig

	RR	TobinQ	LnEVA
RR	1.0000		
TobinQ	0.5997	1.0000	
	0.0053		
LnEVA	0.3197	0.4607	1.0000
	0.0027	0.0763	

Panel Cointegration test

Panel Cointegration test was performed. Table 10 and 11 show the Westerlund cointegration test results when the dependent variables are Tobin Q and Ln EVA respectively which were tested at the 5% significance level. This test has the null hypothesis; Ho: No cointegration. The p – values obtained of 0.4092 and 0.1044 respectively which are > 0.05 leads to failure to reject the null and we conclude that there is no cointegration among the variables and therefore no spurious regressions.

Table 10 Westerlund test for cointegration

Ho: No cointegration	Number of panels = 9	
Ha: All panels are cointegrated	Avg. number of periods = 9.5556	
Cointegrating vector: Panel specific		
Panel means: Included		
Time trend: Not included		
AR parameter: Same		
Cross-sectional means removed		
	Statistic	p-value
Variance ratio	0.2295	0.4092

Table 11 Westerlund test for cointegration

Ho: No cointegration	Number of panels = 9	
Ha: All panels are cointegrated	Avg. number of periods = 9.5556	
Cointegrating vector: Panel specific		
Panel means: Included		
Time trend: Not included		
AR parameter: Same		
Cross-sectional means removed		
	Statistic	p-value
Variance ratio	1.2566	0.1044

Model estimation and hypothesis testing

Tables 12 and 13 below show the results of the two-step system GMM dynamic panel regression models for Tobin Q and EVA respectively as measures of financial performance of Manufacturing and allied firms listed on NSE Kenya in the short run.

Model Reliability and Fitness

The dynamic two step system GMM was tested for reliability using the Wald chi^2 – statistic. Tables 12 and 13 show that the Wald statistic is significant at the 5% level. The Wald chi^2 p-value of 0.0000 < 0.05 leads to rejection of the null hypothesis of zero coefficients and we therefore conclude that all the explanatory variable coefficients are significantly different from

zero at the 5% significance level. The model also appears to fit well as the Sargan and Hansen test results for instrument validity are > 0.05 and hence we fail to reject the null that instruments are valid and therefore no evidence of over identifying restrictions. The models also don't suffer from second order serial correlation as shown in table 4.12 and 4.13 by Arellano-Bond AR (2).

The Dynamic nature of the model was captured by incorporating the lagged dependent variables up to lag 1 to avoid losing more degrees of freedom since the study used annual data. The lagged dependent variables of (Tobin Q L1 and LnEVA L1) measure the extent to which past year's performance contributes to the current year's performance of MAFs. The coefficients of the lagged dependent variables are 25.38% (significant at 5%) and 30.30% (significant at 5%) for Tobin Q L1 and LnEVA L1 respectively as shown in table 12 and 13. The significance of these lagged coefficients indicate existence of persistence in performance of MAFs and this therefore justified the use of a dynamic model.

Table 12 Dynamic panel-data estimation,
two-step system GMM: Tobin Q

Dynamic panel-data estimation, two-step system GMM					
Group variable: Firm_ID			Number of obs =	77	
Time variable : Year			Number of groups =	9	
Number of instruments = 9			Obs per group: min =	6	
Wald chi2(6) = 7821.93			avg =	8.56	
Prob> chi2 = 0.000			max =	9	
TobinQ| Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
TobinQ					
L1. | .2537811	.0625076	4.06	0.000	.2451604	.8624019
RR | .0719257	.0195451	3.68	0.000	-.2854979	.3993492
_cons | .5429004	.2513428	2.16	0.031	.0912827	1.918587
Arellano-Bond test for AR(1) in first differences: z = -1.72 Pr > z = 0.085					
Arellano-Bond test for AR(2) in first differences: z = -0.18 Pr > z = 0.861					
Sargan test of overid. restrictions: $chi^2(2)$ = 0.57 Prob> chi^2 = 0.750					
Hansen test of overid. restrictions: $chi^2(2)$ = 0.99 Prob> chi^2 = 0.609					

Table 13 Dynamic panel-data estimation,
two-step system GMM: LnEVA

Dynamic panel-data estimation, two-step system GMM			
Group variable: Firm_ID		Number of obs =	77
Time variable : Year		Number of groups =	9
Number of instruments = 9		Obs per group: min =	6
Wald chi2(6) = 33052.63		avg =	8.56
Prob> chi2 = 0.000		max =	9

LnEVA |	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
LnEVA |						
L1. |	.3027194	.1073473	2.82	0.005	.0636539	.5423842
RR |	.2175243	.1007056	2.16	0.031	.9167313	1.637603
_cons |	.6949332	.1946592	3.57	0.000	.4352974	4.845316
Arellano-Bond test for AR(1) in first differences: z = -2.16 Pr > z = 0.071						
Arellano-Bond test for AR(2) in first differences: z = 0.59 Pr > z = 0.558						
Sargan test of overid. restrictions: chi2(2) = 6.54 Prob> chi2 = 0.058						
Hansen test of overid. restrictions: chi2(2) = 1.39 Prob> chi2 = 0.498						

The models were therefore predicted to;

$$Tobin\ Q = 0.5429 + 0.2538TobinQit - 1 + 0.0719RR$$

$$LnEVA = 0.6949 + 0.3027LnEVAit - 1 + 0.2175RR$$

Hypothesis test

The objective of the study was to examine the effect of retained earnings financing on performance of listed manufacturing and allied firms in Kenya. The null hypothesis was therefore stated as follows;

H_{03}: Retained earnings have no significant effect on performance of listed manufacturing and allied firms in Kenya.

Retained earnings was operationalized and proxied by retention ratio (RR). Table 4.12 and 4.13 show a positive relationship between RR and both performance proxies. The regression coefficient for RR is 0.0719257 and 0.2175243 with Tobin Q and EVA respectively. The relative regression weight is higher for Tobin Q than for EVA (7.19% against 21.75%). The z – statistic of RR is significant and therefore the null hypothesis was rejected and the study concluded that RR has a positive and significant effect on Tobin Q and EVA.

The results concur with the finding of Okeke & Okeke (2018) in the case of Nigerian Quoted firms who found that retained earnings had positive and significant effect on performance. Further, the finding support Akani & Sweneme (2016) who studied Quoted Manufacturing Firms in Nigeria and found that retention ratio has positive effect on firm performance. The finding by Omollo, Muturi & Wanjare (2018) also support the study's finding. The findings however differ with Thuranira (2014) who found that retained earnings had a very weak, negative insignificant relationship with performance. The difference in finding could be due to different methodology and model adopted for analysis.

This implies that use of retained earnings improves firm performance and hence firm value. Firms which are experiencing a growth phase have opportunities to invest. They can do

so cheaply by resorting to retained earnings to achieve shareholder wealth maximization and avoid dilution of earnings. This finding supports the Pecking Order Theory that firm managers prefer internal financing.

Long run effect of Retained earnings financing on performance MAFs

Tables 14 and 15 display the long run effect retained earnings financing and performance. The long run coefficients for RR are 0.0963869 and 0.3139758 when the dependent variable is Tobin Q and LnEVA respectively. This implies that a percentage increase in retained earnings improves Tobin Q by 9.64% and EVA by 31.40% in the long run on average, *ceteris paribus*. For both, the coefficients are significant at the 5% significance level and hence the null hypothesis is rejected in the long run as was the case for the short run coefficients also. However, the effect size is greater in the long run compared to the short run coefficients.

Table 14 Long run model: Tobin Q

TobinQ |	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
___RR |	.0963869	.0240366	4.01	0.000	-.721544	.6512445

Table 15 Long run model: LnEVA

LnEVA |	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
RR |	.3139758	.1266031	2.48	0.013	-.215368	.1303902

White test for Heteroscedasticity

Table 16 shows the results of White test for heteroskedasticity. The White's test gave the same p-value to the Cameron & Trivedi heteroskedasticity test. Using a significance p-value of 0.05, the regression model does not violate the homoscedasticity assumption and therefore, the null hypothesis that the errors are homoscedastic was not rejected and hence heteroskedasticity was not a problem in this study. The same applies to the skewness and kurtosis assumptions whose p values are also well above the 0.05 significance level.

Table 16 White test for heteroscedasticity

. estat imtest, white
White's test for Ho: homoskedasticity
against Ha: unrestricted heteroskedasticity
$chi^2(20)$ = 18.24
Prob > chi^2 = 0.5719

Cameron & Trivedi's decomposition of IM-test			
Source |	chi^2	df	p
Heteroskedasticity |	18.24	20	0.5719
Skewness |	8.69	5	0.1220
Kurtosis |	1.60	1	0.2063
Total |	28.53	26	0.3331

Effect of the Moderating variables

The study used two moderating variables; economic growth rate and earnings volatility. Earnings volatility was used to measure risk and cost of financial distress while economic growth rate measured macroeconomic performance. The moderating variables were implied from the trade – off model. The two-step system GMM model was estimated and presented in table 17 and 18.

The EGR which show macroeconomic growth shows a positive and significant effect on both Tobin Q and LnEVA having regression weights of .1582140 and .2052327 respectively. This shows that economic growth rate has a significant positive influence on performance of the manufacturing sector in Kenya. The average economic growth was 0.0584 (5.84%) through the study period as measured by real GDP growth rate. This positive economic outlook created an appropriate environment for investment and consumption which enabled manufacturing to thrive. This further supports the finding by (Ngugi, 2008) that GDP growth rate has a positive impact on leverage which is a trajectory of investor confidence in a growing economy to stimulate demand hence the possibility upside profits.

EVOL which was used to measure risk and cost of financial distress showed a negative but not significant effect on Tobin Q while having a negative and significant effect on LnEVA. The EVOL had a standard deviation of 0.0761 showing a small variability in earnings which affects performance negatively. EVOL averaged 0.0754 through the study period for the MFAs and this exposes the firms to agency cost of borrowing which curtails their performance. This finding further affirms the finding of Fama & French (2002) who identified a direct relationship consistent with the agency cost of debt, resulting in risky firms borrowing more. This negative effect further supports the argument that earnings volatility has a positive and significant effect on leverage which in turn curtails performance (Saif-Alyousfi, Md-Rus, Taufil-Mohd, Taib, & Shadar, 2020). The moderator variables worsened the effect of RR on Tobin Q was worsened. On the other hand, the effect of moderator variables on LnEVA was improved in the case of RR.

Table 17 Dynamic panel-data estimation, two-step system GMM: Tobin Q with moderator variables

Group variable: Firm_ID				Number of obs =		77
Time variable : Year				Number of groups =		9
Number of instruments = 11				Obs per group: min =		6
Wald chi2(8) = 5676.33				avg =		8.56
Prob> chi2 = 0.000				max =		9
TobinQ	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
TobinQ						
L1.	.2173323	.0620950	3.50	0.001	.1832243	.8514403
RR	.0591928	.0210651	2.81	0.005	-.3942982	.5181643
EGR	.1582140	.0577423	2.74	0.006	.4616602	1.038149
EVOL	-.0605143	.0364544	-1.66	0.097	-3.874636	.5936071
_cons	.6179752	.3185429	1.94	0.052	-.6755146	1.619465
Arellano-Bond test for AR(1) in first differences: z = -0.43 Pr > z = 0.664						
Arellano-Bond test for AR(2) in first differences: z = 0.06 Pr > z = 0.951						
Sargan test of overid. restrictions: chi2(2) = 0.89 Prob> chi2 = 0.642						
Hansen test of overid. restrictions: chi2(2) = 1.12 Prob> chi2 = 0.571						

Table 18 Dynamic panel-data estimation, two-step system GMM: LnEVA with moderator variables

Group variable: Firm_ID				Number of obs =		77
Time variable : Year				Number of groups =		9
Number of instruments = 11				Obs per group: min =		6
Wald chi2(8) = 1135.32				avg =		8.56
Prob> chi2 = 0.000				max =		9
LnEVA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
LnEVA						
L1.	.2377314	.0729237	3.26	0.001	.7475293	4.127934
RR	.3068517	.0927044	3.31	0.001	-2.553184	.6804151
EGR	.2052327	.0430257	4.77	0.000	.3929039	2.38825
EVOL	-.1827439	.0048862	-3.74	0.000	-1.129942	4.65339
_cons	.6583926	.3275585	2.01	0.044	.3931527	3.653804
Arellano-Bond test for AR(1) in first differences: z = -1.53 Pr > z = 0.106						
Arellano-Bond test for AR(2) in first differences: z = -0.43 Pr > z = 0.581						
Sargan test of overid. restrictions: chi2(2) = 2.13 Prob> chi2 = 0.394						
Hansen test of overid. restrictions: chi2(2) = 0.46 Prob> chi2 = 0.796						

The moderated models were estimated as follows;

$Tobin\ Q = 0.6180 + 0.2173TobinQit - 1 + 0.0592RR + 0.1582EGR - 0.0605$

$LnEVA = 0.6583 + 0.2377LnEVAit - 1 + 0.3069RR + 0.2052EGR - 0.1827EVOL$

Long run effect of the moderating variables on performance of MAFs

Table 19 and 20 show the results of the long run coefficients of the moderating variables on Tobin Q and LnEVA respectively.

Table 19 Long run Model: Tobin Q with moderating variables

TobinQ	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
EGR	.2021471	.0437548	4.62	0.000	1.602135	3.715872
EVOL	-.0773180	.0525973	-1.47	0.142	-.822649	1.542374

Table 20 Long run Model: LnEVA with moderating variables

LnEVA	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
EGR	.2692394	.0658287	4.09	0.000	-.537174	2.131476
EVOL	-.2397369	.1192721	-2.01	0.009	-1.860992	1.168002

For the long run model, the hypothesis of economic growth rate and earnings volatility was tested as follows;

Long run moderating effect of EGR on Tobin Q and EVA (0.2021471 and 0.2692394 respectively).

A percentage increase in growth rate is associated with 20.21 % and 26.92% improvement in Tobin Q and EVA in the long run on average, *ceteris paribus*. These coefficients are significant at the 5% level and the Z –statistic < 1.96 (critical value). EGR therefore has a positive and significant moderating effect on performance of MAFs both in the short run and in the long run. However, it has a larger positive effect in the long run than in the short run. The coefficients are significant hence the null hypothesis is rejected.

Long run effect of EVOL on Tobin Q and EVA (- 0.0773180 and -0.2397369 respectively).

A percentage increase in EVOL is associated with 7.73% and 23.94 % decrease in Tobin Q and EVA in the long run on average, *ceteris paribus*. The coefficient with Tobin Q is however not significant at the 5% level and the Z –statistic < 1.96 (critical value), hence the null hypothesis was not rejected in the long run. The coefficient with LnEVA is however significant and hence the null hypothesis is rejected for the long run coefficient as was the case for the

short run coefficients. The study therefore concluded that EVOL has a negative and significant effect on LnEVA of MAFs both in the short run and in the long run.

CONCLUSION

The success of Kenya's manufacturing sector is essential to propel the country to realize one of the Big 4 agenda on industrialization. Renewed efforts to revive the sector through the Big 4 Agenda seeks to increase its contribution to GDP to 15% by 2022. This depends on the sector's ability to effectively determine the optimum and appropriate financing mix to generate viable returns to shareholders and stay afloat.

The results from the coefficients table indicated that the regression weight for retention ratio (RR) was positive and significant with both performance proxies. Retained earnings improves firm performance and hence firm value as they do not impose any cost to the firm. Firms which are experiencing a growth phase have opportunities to invest. They can do so cheaply by resorting to retained earnings to achieve shareholder wealth maximization and avoid dilution of earnings. This finding supports the tradeoff theory which was first suggested by Donaldson in 1961 who proposed that managers prefer internal financing for growth. Further, this finding affirms Stewart Myers & Majluf (1984) that firms must pursue an order of hierarchical financing beginning with the use internal financing. The study therefore concluded that retained earnings financing creates significant wealth and value for firms.

RECOMMENDATIONS

For practitioners

Based on the study findings and conclusions, the study therefore makes the following recommendations

i. The management of MAFs should consider applying retained earnings in financing since it does not cost anything as it does not require any payment of cash in the form of issue costs, interest costs among others.
ii. Since the dividend policy is determined by directors, they can take advantage of this practice and take advantage of retained earnings financing without involving shareholders and any outsiders hence minimizing decision time and dilution of ownership and company control.
iii. The National Treasury needs to formulate an incentive driven policy targeting the manufacturing sector due to its critical role in Economic development as can be seen from the industrialized economies.

For further studies

For purpose of future studies, this study can be varied to consider a balanced panel analysis to consider equal weighting of the study units. Other panel data econometric techniques could be applied to confirm if the effect changes as well as inclusion of other moderating variables.

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