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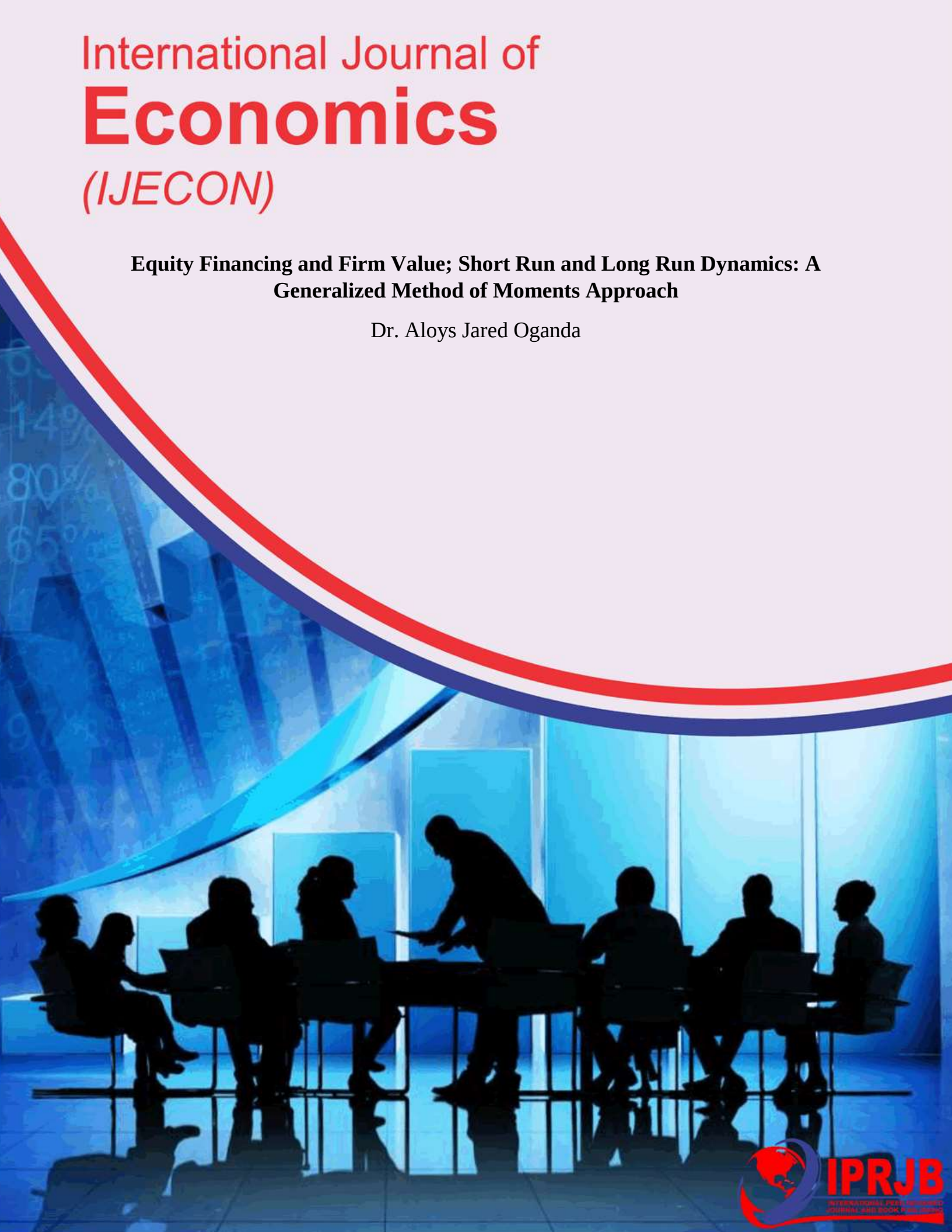

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Equity Financing and Firm Value; Short Run and Long Run Dynamics: A Generalized Method of Moments Approach

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Abstract

The Kenyan manufacturing sector's contribution to the economy has been declining. It has stagnated at 10% of the gross domestic product (GDP), contributing to an average of 10% from 1964-1973 and marginally increased to 13.6% from 1990-2007 and has been below 10% in recent years further dropping to 8.4% in 2017 and 7.1% in 2020 ultimately hitting its lowest in 2022 of 7.2%. The government has renewed its efforts to revive the sector to grow its contribution to GDP to 20% by 2030. Financing by equity is significant for listed firms. 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. A census of the firms was done and resulted to 86 observations. Focus was on equity financing moderated by economic growth and earnings volatility on firm value which was proxied by Tobin's Q and EVA. Pecking order guided the study. Longitudinal research design was used as it is appropriate when dealing with panel data. STATA version 15 was used for analysis. Model estimation followed a two Step System GMM testing the study hypotheses at 5 % significance level. Pearson correlation coefficient was used to show the strength and direction of association among the study variables. Equity financing had a negative correlation with Tobin Q ($r = -0.2682$). The regression weight being ($\beta = -0.1674526$; $p = 0.002 < 0.005$). On the other hand, Equity to assets ratio (EAR) was found to have positive correlation with Ln EVA ($r = 0.5218$). The regression coefficient was positive but not significant ($\beta = 0.2901601$; $p = 0.087 > 0.05$) and hence concluding that it improved firm value marginally. The study therefore concluded that equity financing structure directly determines value of the firm by eroding Tobin Q and hence equity financing need to be limited. Future studies can consider static panel analysis models and other panel data econometric techniques.

Purpose: The purpose of the study was to analyze the relationship between equity financing and the value of the firm.

Methodology: The study adopted a longitudinal research design. The target population comprised the nine manufacturing firms which were listed on the Nairobi Securities exchange (NSE) for the period 2010 to 2019. The study used secondary data from the published financial statements of the firms. A census of the 9 manufacturing firms was done and this comprised a total of 86 observations due to missing data during the study period hence the Unbalanced Panel Analysis approach. Model Selection followed Arellano &Bond (1991) Panel data procedures. A two-step system GMM was used. STATA Version 15 software was used for data analysis. Unit root tests were conducted using the Im–Pesaran–Shin and Fisher-type tests which allow for unbalanced panels.

Findings: It was found that equity financing as was proxied by equity to assets ratio (EAR) had a weak negative correlation with Tobin Q. The regression weight for EAR with Tobin Q was negative and significant. The null hypothesis was thus rejected. On the other hand, EAR was found to have a moderate positive correlation with Ln EVA The regression coefficient was positive but not significant hence, the null hypothesis was not rejected. This objective showed mixed results possibly due to the different performance proxies.

Unique Contribution to Theory, Practice and Policy: The finding supports the Myers & Majluf model (1984) which posits that outside investors rationally discount the firm's stock price when managers issue equity instead of riskless debt. To avoid this discount, managers should avoid equity whenever possible. It also supports the Pecking Order theory that equity financing should be used as the last option. To the practice, corporate finance managers need to minimize use of equity financing due to its negative effect on firm value. For policy, 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.

Keywords: *Equity Financing, Firm Value, Manufacturing firms*

INTRODUCTION

Financing structure is a crucial subject in corporate finance as it's vital in enhancing firm value and performance in the competitive and turbulent business environment. Financing structure refers to the combination of debt and equity employed by a firm to finance the acquisition of its productive assets to support operations for the company's prosperity (Vo, 2017; Baker & Martin, 2011; Brounen, Jong & Koedijk, 2006). This therefore encompasses short term debt, long term debt, preferred stock and common stock or equity, and retained earnings for financing operations and capital investments.

Literature in relation to financing structure has been growing since the initial work of Modigliani & Miller (1958). Despite of this, there is however no theory that has explained the optimal financing choice exhaustively even though financial economists have discussed it for decades. It is therefore a challenging task for managers to decide on the financing choice that can minimize the costs and risks of financing and hence yield better returns by increasing shareholder wealth and firm value.

Deterioration of firm value has adverse effects on both the firm and its stakeholders. A notable case whose effects spread throughout the world occurred on September 15, 2008, in the US when the Lehman Brothers filed for bankruptcy. The bankruptcy was due to a conglomerate of a multiplicity of factors made up of high leverage, adoption of risky investments in its portfolio which subjected the firm into serious liquidity and cashflow problems. To many, Lehman was seen to be "too big to fail" and therefore in the event of any cashflow challenge, the US government could bail it out if no buyer could be interested in purchasing it. However, the company went into bankruptcy and none of the options presented itself to save the company. Borrowing was at its highest with the Leverage ratio having enlarged to 31:1, meaning that a 3–4% decrease in its asset value could water down its capital. Lehman's clients were obligated to provide collateral which was in turn being used by Lehman for various purposes until it became a nightmare sorting out who owed what to whom. The result was that clients lost their confidence with the company, liquidity and cashflow strain set in as lenders declined to extend roll over funding and this ultimately forced it to bankruptcy (Hull, 2015).

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 wellbeing through job creation, better working environment fostered by innovation and production and utilization of green and new technologies (Yong, 2020). High growth economies have been persistently supported by manufacturing, industrialization and exports. The Four Asian Tiger countries of Singapore, South Korea, Taiwan and Hong Kong have achieved and consistently maintained high levels of economic growth since the 1960s making them join the league of the wealthiest nations in the world. South Korea and Taiwan are the hubs for global manufacturing and information technology while Singapore and Hong Kong are prominent global financial centers.

Reorientation of the Chinese economy from export to a consumer driven economy is instrumental in shaping the manufacturing sector in Kenya. Financing options relying on low cost of capital in Asian countries has enabled the manufacturing sector in those countries to access funding cheaply, thereby speeding the sector's development. This is a component of financing structure which if provided, could enhance productivity of the sector in Kenya and hence profitability (Were, 2016). Historically, Kenya's economy has benefited little from manufacturing as the sector's contribution to the gross domestic product (GDP) has been deteriorating. Between 1964-73, it accounted for 10% of GDP and improved to 13.6% from the year 1990 to 2007 but thereafter reduced to below 10%, reaching 8.4% in 2017 and further declining to 7.2% in 2022 (KAM, 2023). There is however a renewed effort by the government to revamp the sector. The government expects to achieve 20% contribution to GDP by the year 2030 from the manufacturing sector to realize the expected economic resilience and stability (KAM, 2022).

Equity financing comprises of both ordinary shares and preference shares. This variable could be measures as a ratio i.e. the equity ratio. This ratio uses the total equity and total assets from the statement of financial position to indicate how effectively assets have been financed without using debt. An equity ratio of 0.50 or under indicates that the firm is leveraged while a ratio of 0.50 and above indicates that the firm is conservative and cautious in applying debt. The conservative firm therefore use more equity than debt in their financing plan. The equity holders are compensated by way of dividends when the company makes profit and shares a portion of it with them. However, finance theory recommends that application of equity in financing is the most expensive option of raising capital. Therefore, organisations opt for equity financing if there is no other option or when the share is overvalued by the market where in such a case, the benefits of issuing the share outweighs the cost (Frijins, Rad &Tsai, 2006).

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 (CMA Statistical Bulletin, 2019).

Past studies on the subject have found divergent results and thus led to divergent conclusions on the same. For instance, studies have established a positive relation, others have come up with negative while others concluded that financing structure and firm performance has both positive and negative correlation while others showed no link between financing structure and firm performance. Buigut, Soi, Koskei & Kibet (2013) found that equity financing negatively affected performance, while a study by Musila (2015) found that equity financing, proxied by equity ratio influenced ROE positively. Total equity ratio positively and significantly affects ROA while ROE is not significantly affected by equity financing. This therefore created an empirical gap for the current study.

The decisions regarding financing structure are key to management since it has an effect on return and risk, which also impacts firm's value and market share. This is due to the fact that the mix has cost implications when it comes to sourcing of the funds for the business and hence its value. 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.

Research Problem

The success of the Kenyan Manufacturing sector is vital to propel the country to realize the Big 4 agenda. The agenda is the country's development blueprint comprising of four key pillars namely; food security, affordable housing, affordable healthcare and manufacturing. Manufacturing being key to propel the nation to be fully industrialized by the year 2030 as envisaged in vision 2030 agenda and hence spearhead development depends on its ability to identify appropriate financing structure that will enable it to generate viable returns to shareholders and stay afloat. Globally, the sector was found to be the main engine of fast growth. The sector's contribution to Kenya's GDP has been on a downward trajectory to an average of less than 10%. For instance, its contribution to GDP was at 10% in 2014, declined to 9.4% in 2015, 9.1% in 2016, 8.4% in 2017, 7.61% in 2020 and further declined to 7.2% in 2022 (KAM, 2022). This is an indication of deindustrialization hence, government in collaboration with its trading partners has entrenched the revival of the manufacturing sector to improve its contribution to GDP to 20% by 2030 so that the economy can realize stability and hence become resilient amidst shocks (KAM, 2022). Considering that most developed nations including the Asian tigers have achieved their current status majorly due to a thriving manufacturing sector, the role and financial health of the manufacturing sector is critical for any country to realize sound economic growth and prosperity. Empirical studies have not shown consistent results maybe because of the different economic conditions and different variable combination and measurement. Most of past studies have taken place in USA, Europe and Asian Tiger Nations that have different economic activities, opportunities and comparatively robust and large manufacturing sectors. The current study further sought to estimate both the short run and long run dynamics to test the behavior of the model in both situations.

Research Objectives

i. To determine the effect of equity financing on firm value.
ii. To assess the moderating effects of economic growth and earnings volatility on the relationship between equity financing and the value of the firm.

Research Hypotheses

H_{01}: There is no significant relationship between equity financing and the value of the firm.

H_{02}: Economic growth and earnings volatility do not have a significant moderating effect on the relationship between equity financing and the value of the firm.

LITERATURE REVIEW

Conceptual Literature

Equity Financing

This entails corporations raising finances through floating their shares to outsiders who own a part of the company by buying the shares offered (Floegel, 1990). Equity issuance can be done two ways; this can be through an initial public offer where a new company goes public by selling its

shares to the public for the first time. The other option is through a seasoned issue for established companies who sell their authorized but unissued shares to raise more funds (Abraham & Harrington 2011). The equity holders are compensated by way of dividends when the company makes profit and shares a portion of it with them. However, finance theory recommends that application of equity in financing is the most expensive option of raising capital. Therefore, organisations opt for equity financing if there is no other option or when the share is overvalued by the market where in such a case, the benefits of issuing the share outweighs the cost (Frijins, Rad &Tsai, 2006).

Equity financing comprises of both ordinary shares and preference shares. This variable could be measures as a ratio i.e. the equity ratio. This ratio uses the total equity and total assets from the statement of financial position to indicate how effectively assets have been financed without using debt. An equity ratio of 0.50 or under indicates that the firm is leveraged while a ratio of 0.50 and above indicates that the firm is conservative and cautious in applying debt. The conservative firm therefore use more equity than debt in their financing plan.

$$Equity\ ratio = \frac{Total\ equity}{Total\ assets}$$

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.

Past studies suggest that debt level of a firm cannot directly affect earnings volatility, because the optimal level of debt decreases the earnings volatility (Khemiri & Noubbigh, 2018). Another study suggests that earnings volatility has a positive and significant effect on leverage (Saif-Alyousfi, Md-Rus, Taufil-Mohd, Taib, & Shadar, 2020). Fama & French (2002) identify a direct relationship consistent with the agency cost of debt, resulting in risky firms borrowing more. These past findings and recommendations suggest that earning volatility being a significant endogenous variable in financing structure could influence the financing option chosen and ability to raise financing by either options hence influencing performance depending on the direction of the influence.

Firm Value Indicators

Tobin's Q (Q Ratio)

It was proposed by James Tobin (1918). It is a ratio of the market value of a firm's shares to the cost of replacing the physical assets of the firm. The ratio signifies growth opportunities available to a firm. It states that if q > 1, the firm could earn more profit by investing extra resources because at that level, profits generated would surpass the cost sacrificed on the assets. On the other hand, for q < 1, it means that a firm would lose if it invests in extra resources and therefore, it performs better by selling its assets instead of using them in production. The perfect condition is where q is tending toward or equal to 1 as this implies that the firm is in an equilibrium state. Tobin's Q as a performance proxy shows the level at which outside investors regard the company (Ramli, Latan & Solovida, 2019; Rajan & Zingales, 1995).

$$Tobin's\ Q = \frac{Total\ market\ value\ of\ the\ firm}{Total\ asset\ value\ of\ the\ firm}$$

Since the cost of replacing the total assets cannot be estimated with ease, a different version of determining the Q ratio follows;

$$Tobin's\ Q = \frac{Equity\ market\ value + Liabilities\ market\ value}{Equity\ book\ value + liabilities\ book\ value}$$

For calculation purposes, it is assumed that the book and market value of liabilities is similar and hence, the liabilities cancel out each other and disappear from the equation. Considering this assumption, the formula reduces to;

$$Tobin's\ Q = \frac{Equity\ market\ value}{Equity\ book\ value}$$

Economic Value Added (EVA)

EVA is also called economic profit. It is based on the notion that real profitability is realized when projects generate returns in excess of their financing cost and hence create additional wealth to the shareholders. This performance proxy and a measure of the firm's ability to create wealth since is superior by 50 % to other accounting-based measures (including EPS, ROE and ROA) and it better explains changes in the stockholders wealth (Stewart 1994).

Managers can use EVA to better assess the adequacy of earnings their firms generate. When generated returns are less than the financing cost, EVA is negative implying wealth destruction. The firm is therefore undervalued as its share price will be lower triggering capital flight which could depress the share price further. EVA explains the tradeoff between the income statement and statement of financial position involved in value creation. Jensen (1993), Professor Emeritus, Harvard Business School proposed a rule in relation to performance measures and held the view that if it is a ratio, then it is wrong. EVA, being an absolute value applies well to investors since they are normally interested in absolute gains and not ratios.

Finance managers applying EVA as an evaluation measure recognize that, capital applied need to be compensated as is the case of wages (Shil, 2009). Following this approach on capital employed, the managers have a changed view of the organization as they also become entrepreneurs and hence they become more concerned and responsible as regards the investment. Proponents of EVA opine that its adoption enables organizations to better assess the value a firm creates across time. It should therefore form the foundation of evaluating investments in relation to the financing choices and options available (Ray, 2012).

It is calculated as follows;

$$EVA = NOPAT - (WACC\ X\ Capital\ invested)$$

$EVA - Economic\ value\ added$

$NOPAT - Net\ operating\ profit\ after\ tax$

$WACC - Weighted\ average\ cost\ of\ capital$

$$WACC = Kd\ (1-t)\frac{D}{D+E} + Ke\ \frac{E}{E+D}$$

$$Capital\ Invested = Total\ Assets - Current\ liabilities$$

Empirical Literature

Equity Financing and Financial Performance

Javed, Younas & Imran (2014) examined the impact of capital Structure on performance of 63 non – financial firms listed on Karachi Stock Exchange in Pakistan. Secondary data for five years was used from 2007 – 2011. The study findings showed a mixed relationship between capital structure and performance of the Listed non – financial firms in Pakistan. The study found existence of a negative relationship between equity over assets ratio and value. Managers applying equity in financing tend to be conservative and less innovative in crafting ways that could enable the entity minimize cost. The study therefore concluded that capital structure impacted firm performance and recommended that managers should adopt necessary carefulness while taking decisions

regarding capital structure. The study however did not emphasize on either more debt or more equity was desirable. The current study therefore focused on the variables of financing structure and considerer moderating variables like earnings volatility and economic growth rate to find out if the effect still holds amidst the inclusion of these variables.

Ibrahim, Sabo, Kabiru & Abubakar (2020) studied on equity financing and firm value in Nigeria. The study used panel analysis technique for 12 listed industrial goods enterprises from 2006 to 2016. Tobin Q was used as a proxy for firm value and ex post facto research design was adopted. It was found that equity finance reduces the capacity of firm value in Nigeria and therefore the study recommended that firms should design appropriate management skills to come up with the efficient capital mix in financing their business. The negative relationship could be due to the investors discounting the share price of a firm issuing equity. The study however used a single proxy for firm performance and hence the current study sought to include an economic based performance proxy.

Nyamoma & Sporta (2020), studied the effect of financing decisions on shareholder value creation of manufacturing firms listed at NSE. The study adopted Panel Least Square (PLS) regression techniques utilizing secondary. The variables used were debt financing, equity financing, working capital financing and dividend financing on value creation. Equity financing had a positive and significant effect on EVA. The study recommended that management need to conduct continuous shareholder value creation analysis to improve firm value. The current study sought to include other financing structure variables, more performance proxies and adopt a dynamic model to capture the persistence of firm value across time.

Buigut, Soi, Koskei & Kibet (2013) conducted a study on the relationship between capital structure and share prices of Listed Energy firms listed. Causal research design was adopted applying multiple regression analysis. Panel data for the energy sector over the period 2006-2011 was used. The study established existence of a negative effect on share prices by equity. This implies that firms who issue more equity experience a depressed share price which could ultimately deplete the value of the company. The current study sought to assess the effect on Tobin Q and EVA adopting a dynamic panel data approach to capture the effect of the lagged dependent variables in the analysis.

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 Common stock ratio significantly and negatively affects ROA and recommended that corporate finance managers should use less common stock to boost performance. Overall, total equity ratio positively and significantly affects ROA. ROE was not significantly affected by the equity variables in the sample. The study however did not consider the preference stock component of equity and did not conduct panel data stationarity tests to ensure the regressions were not spurious.

Musila (2015) studied the relationship between equity financing and financial performance of the energy and petroleum companies listed at the NSE. The study comprised of 5 firms in the energy

and petroleum sector and used secondary data over 2005 to 2014 using a descriptive research design. The study found that equity financing, proxied by equity ratio influenced ROE positively. The study recommended that firms to use equity financing to increase asset base and growth as this translates to improved financial performance. To encourage firms to participate in equity issues, policies should be made more flexible. The current study focused on a different sector, applied more variables and different research design and panel analysis techniques.

Mwende, Muturi & Njeru (2019) examined the Effect of Equity Finance on Financial Performance of Small and Medium Enterprises in Kenya. The study used primary data collected using a questionnaire on 384 respondents and descriptive research design was used. The study found that equity financing has a positive statistically significant relationship with the performance of the SMEs and recommended that most of the SMEs had used personal savings to finance their businesses take long for it to raise adequate and therefore SMEs should be encouraged to take loans or trade credit. The study utilized a data collection tool which could be biased to measure the explanatory variables and performance. Performance is a historical variable which could more reliably be measured using secondary data from audited financial statements. The current study sought to follow this trajectory and focus on a different sector to corroborate the results as well as include more performance indicators and an extended period of study.

Banafa & Ngugi (2015) studied the determinants of capital structure on profitability of firms in manufacturing segment in Kenya. Descriptive survey design was used and the independent variables used were leverage, equity, assets tangibility and size of the firm while the dependent variables were return on assets (ROA) and return on investment (ROI). All the independent variables were found to influence performance in a positive manner. It is concluded from analysis that all variables have a positive relation with profitability of the manufacturing entities. Equity financing improved performance and therefore firms should prefer it in financing their operations and expansion. This finding however differs with the Pecking Order Theory which discourages equity by allowing it as a last resort and instead recommends internal equity financing. The current study sought to test the Pecking Order theory in the light of this finding.

Conceptual Framework

The conceptual framework reveals the interplay among study variables. Equity financing was conceptualized by equity to assets ratio. Firm value was proxied by Tobin q and LnEVA. This was moderated by economic growth and earnings volatility. The interplay between the study variables is portrayed in the figure 1.

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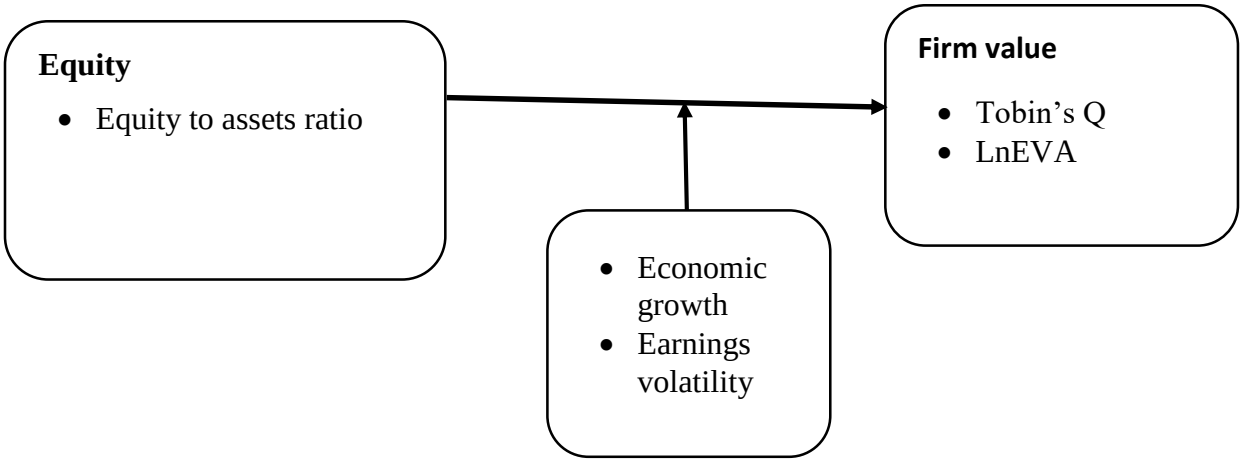

Figure 1: Conceptual Framework

(Source: Researcher, 2023)

METHODOLOGY

The study adopted a longitudinal research design. The target population comprised the nine manufacturing firms which were listed on the Nairobi Securities exchange (NSE) for the period 2010 to 2019. The study used secondary data from the published financial statements of the firms. A census of the 9 manufacturing firms was done and this comprised a total of 86 observations due to missing data during the study period hence the Unbalanced Panel Analysis approach. STATA Version 15 software was used for data analysis. Unit root tests were conducted using the Im–Pesaran–Shin and Fisher-type tests which allow for unbalanced panels.

Model Selection

Model Selection followed Arellano &Bond (1991) Panel data procedures. Panel data applies the one-way error component model of the pooled OLS given by;

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

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

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, ν_{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.

Panel data models follow the static or dynamic approaches depending on the nature of the dependent variable. Dynamic models take account of lags of the dependent variables among the regressors while the static models do not (Baltagi, 2005). The dynamic panel analysis techniques comprise the one-step and two-step system and difference GMM estimators. The FE and RE static models are biased in a dynamic model of panel data and pooled OLS is biased and inconsistent even if ε_{it} is not serially correlated (Baltagi, 2008). Moulton (1986) further stressed that inference based on OLS can be totally misleading even when there is no correlation between the individual effects and the regressors. Additionally, when there is endogeneity among the regressors, there is extensive bias in OLS and the RE estimators as both yield misleading inference (Baltagi, Bresson & Pirotte, 2003). 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

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

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. Lag selection is purely an empirical issue and there is no hard rule on it. Given annual data was used, the study could use a minimum of 1 lag to a maximum of 2 lags. The study chose lag 1 to avoid losing degrees of freedom.

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;

$$Y_{it} = \alpha_0 + \delta y_{it-1} + \beta_1 X_{1it} + \varepsilon_{it} \quad \text{.....3.4}$$

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

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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 = Equity to assets ratio (EAR)

α_0, and $\beta 1$ 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.

$$\text{Tobin } Q_{it} = \alpha_0 + \delta \text{TobinQ}_{it-1} + \beta_1 \text{EAR}_{it} + \varepsilon_{it} \text{……..3.4a}$$

$$\text{LnEVA}_{it} = \alpha_0 + \delta \text{LnEVA}_{it-1} + \beta_1 \text{EAR}_{it} + \varepsilon_{it} \text{… ……...3.4b}$$

Introducing the moderator variables of Economic Growth Rate (EGR) and Earnings Volatility (EVOL) and including this in the equations 3.1a and 3.1b led to the following sets of equations;

$$\text{Tobin } Q_{it} = \alpha_0 + \delta \text{TobinQ}_{it-1} + \beta_1 \text{EAR}_{it} + \beta_2 \text{EGR}_{it} + \beta_3 \text{EVOL}_{it} + \varepsilon_{it} \text{……...3.5a}$$

$$\text{LnEVA}_{it} = \alpha_0 + \delta \text{LnEVA}_{it-1} + \beta_3 \text{EAR}_{it} + \beta_2 \text{EGR}_{it} + \beta_3 \text{EVOL}_{it} + \varepsilon_{it} \text{ ……3.5b}$$

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

RESULTS AND DISCUSSIONS

Descriptive Results

The results of this analysis are shown in Table 1.

Table 1: Descriptive Statistics for the Study Variables

Variable	Obs	Mean	Std. Dev	Median	Min	Max
Tobin Q	86	1.5841	1.5685	1.0200	0.1200	5.8300
Ln EVA	86	16.5662	1.8766	16.5667	0.0000	18.9410
EAR	86	0.4895	0.2449	0.4747	0.0010	0.9030
EGR	86	0.0584	0.0097	0.0580	0.0460	0.0840
EVOL	86	0.0754	0.0761	0.0487	0.0203	0.5380

Source: Research Data (2023)

The mean of Tobin Q for the listed manufacturing 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).

The equity component had mean and median values of 0.4895 and 0.4747 respectively with a minimum of 0.0010 and a maximum of 0.9030 for EAR. The mean value of 0.4895 means that almost half of the assets of the listed Manufacturing firms are owned by them and their investors hence, the health of the firms in terms of financing is sound since leverage is not high. There is also less variation as indicated by standard deviation of 0.2449 and coefficient of variation of 0.5003 implying that equity financing is generally stable and shareholder wealth creation is predictable as severe potential dilution of ownership is not foreseeable. 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.

Normality Test

The data was subjected to normality tests by examining the skewness and kurtosis of the distribution. The results in Table 2 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.

Table 2: Normality Test

Variable	N	Skewness	Kurtosis
EAR	86	-0.2071	-0.8057
EGR	86	1.4269	2.1822
EVOL	86	0.3099	3.6876
Tobin Q	86	1.2871	0.3783
Ln EVA	86	-1.2052	3.6585

Source: Research Data (2023)

Panel Line Plots for the Study Units

The study generated panel line plots to show the behavior of the dependent variables across time for each firm. The line plots revealed that the dependent variables do not exhibit large variability in the long run and therefore, they exhibit mean reversion. This is depicted in figure 2.

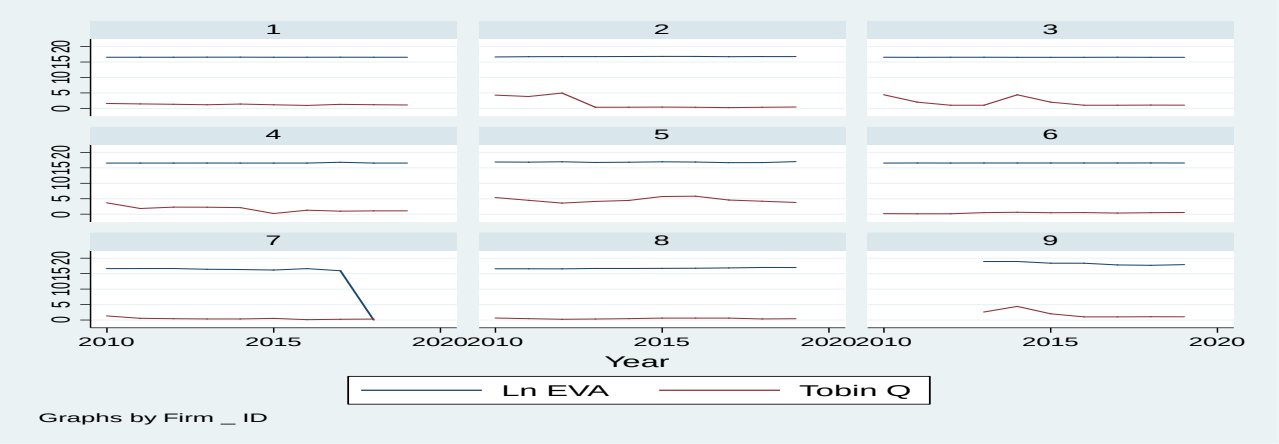

Figure 2: Panel Line Plots for the Study Units

Source: Research Data (2023)

Key: 1= BOC, 2= BAT, 3 = Eveready, 4 = Carbacid, 5 = EABL, 6 = Unga – Group,

7 = Mumias Sugar, 8 = Kenya Orchards, 9 = Flame Tree

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 3 and 4 Show the unit root test results for Tobin Q and ln EVA respectively based on the Im-Pesaran-Shin unit-root test. 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 3: Im-Pesaran-Shin Unit-Root Test for Tobin Q

. xtunitrootipsTobinQ, 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

Source: Research data (2023)

Table 4: 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

Source: Research Data (2023)

Fisher Type Unit Root Tests

Tables 5 and 6 display stationarity test results based on ADF for Tobin Q and Ln EVA respectively. Additionally, tables 7 and 8 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 the 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 5: 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

Source: Research Data (2023)

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Table 6: 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

Source: Research Data (2023)

Table 7: 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

Source: Research Data (2023)

Table 8: 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

Source: Research Data (2023)

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 9 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 9: Collinearity Diagnostics

Dependent variable: Tobin Q, Ln EVA

Variable	Tolerance	VIF
EAR	0.139	7.172
EGR	0.943	1.06
EVOL	0.713	1.402

Source: Research Data (2023)

Model Estimation and Hypothesis Testing

Tables 10 and 11 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 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 chi2 – statistic. Tables 10 and 11 show that the Wald statistic is significant at the 5% level. The Wald chi2 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 do not suffer from second order serial correlation as shown in table 10 and 11 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. This differencing of the once resulted in data loss of an observation for each unit under study and therefore the observations reduced from 86 to 77 observations. 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 10 and 11. 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 10: 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
EAR | -.1674526	.0534992	-3.13	0.000	-1.021289	.9483777
_ 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: chi2(2) = 0.57 Prob> chi2 = 0.750					
Hansen test of overid. restrictions: chi2(2) = 0.99 Prob> chi2 = 0.609					

Source: Research Data (2023)

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Table 11: 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
EAR |	.2901601	.1696843	1.71	0.087	-3.936401 7.516721
_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					

Source: Research Data (2023)

The models were therefore predicted to;

$$Tobin\ Q\text{it} - 1 = 0.5429 + 0.2538TobinQit - 1 - 0.1675EAR$$

$$LnEVA\text{it} - 1 = 0.6949 + 0.3027LnEVAit - 1 + 0.2901EAR$$

Hypotheses Tests

H_{01}: Equity financing has no significant effect on performance of listed manufacturing firms in Kenya.

Table 10 show that the regression weight for EAR was negative and significant when Tobin Q was the dependent variable. The null hypothesis was thus rejected in favor of the alternate hypothesis at p = 0.000 < 0.005 significance level. B= -0.1674526 indicating that a unit increase in equity financing curtails Tobin Q by 0.1675. This could be attributed to the effect of dilution of EPS as more shareholders are brought on board. This dilution of EPS could lead to a negative signaling effect to investors hence depressing the market value of the share. This depressed market value of equity could go lower than even the book value of equity hence a decrease in Tobin Q. This finding supports the Myers & Majluf model (1984) which posits that outside investors rationally discount the firm's stock price when managers issue equity instead of riskless debt. To avoid this discount, managers should avoid equity whenever possible.

This finding concurs with Javed, Younas& Imran (2014) in the case of non – financial firms listed on Karachi Stock Exchange in Pakistan. Who found existence of a negative relationship between Equity over assets ratio and financial performance. Further, Buigut, et al (2013) established that equity negatively affected share prices. These depressed share prices curtail Tobin Q further supporting the findings of the current study. The finding by Ibrahim et al (2020) in the case of

Nigerian firms that that equity finance reduces Tobin Q further support the finding of the current study. Despite different research design, time period and methodology, the findings agree and therefore MM financing structure irrelevance theory is challenged by the findings at least when Tobin Q is the proxy for performance. The findings however differ with that by Banafa & Ngugi (2015) who found that equity financing had a positive relation with performance and concluded that equity financing improves performance and therefore firms should prefer it in financing their operations and expansion. The difference in finding could be attributed to different methodology and study period.

Table 11 shows a positive but not significant relationship between EAR and EVA. The regression weight is 0.29 and $p = 0.087 > 0.05$ hence, the null hypothesis was not rejected. The regression estimate of implies that a unit increase in equity financing accelerates EVA by 0.29 units. Nyamoma &Sporta (2020) found that equity financing had a positive effect on EVA hence supporting the current study's finding. The increase in EVA by employing more equity could be due to the fact that equity financing does not subject a firm to additional financial burden other than dividend which is optional and companies have no obligation to redeem the shares issued.

Long Run Models

Table 12 and 13 show the results of the long run coefficients of financing structure variables on Tobin Q and LnEVA respectively.

Table 12: Long Run Model: Tobin Q

TobinQ |	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
EAR|	-.2244014	.0684151	-3.28	0.001	-4.472057	.9431064

Source: Research Data (2023)

Table 13: Long Run Model: Lneva

LnEVA |	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
EAR |	.4163104	.2325756	1.79	0.073	-.257314	.7293461

Source: Research Data (2023)

Long Run Effect of Equity Financing on Firm Value

The long run coefficients are -0.2244014 and 0.4163104 for Tobin Q and LnEVA respectively. This implies that a percentage increase in equity financing curtails Tobin Q by 22.44% and increases EVA by 41.63% in the long run on average, *ceteris paribus*. The coefficient with Tobin Q as the dependent variable is significant at the 5% significance level and hence, the null hypothesis is rejected as was the case with the short run coefficient. Therefore, it is concluded that EAR has a significant negative effect on Tobin Q both in short run and in the long run. However, the effect size is greater in the long run than it was in the short run. For LnEVA, EAR has a positive but not significant effect both in the long run and in the short run and therefore, the null hypothesis is not rejected for the long run coefficient. However, the effect size is larger in the long run (41.63%), compared with the short run (29.02%).

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 14 and 15

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 improved the effects of EAR on Tobin Q. On the other hand, the effect of moderator variables on LnEVA was worsened in the case of EAR.

Table 14: Dynamic Panel-Data Estimation, Two-Step System GMM: Tobin Q With Moderator Variables

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 = 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
EAR	.1524863	.0566864	2.69	0.007	-4.024435	3.239596
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						

Source: Research Data (2023)

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Table 15: Dynamic Panel-Data Estimation, Two-Step System GMM: Lneva with Moderator Variables

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 = 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
EAR |	.2621294	.1472640	1.78	0.075	1.890433	9.647844
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						

Source: Research data (2023)

The moderated models were estimated as follows;

$$Tobin\ Q = 0.6180 + 0.2173TobinQit - 1 + 0.1525EAR + 0.1582EGR - 0.0605EVOL$$

$$LnEVA = 0.6583 + 0.2377LnEVAit - 1 + 0.2621EAR + 0.2052EGR - 0.1827EVOL$$

Long Run Effect of the Moderating Variables on Performance of MAFs

Table 16 and 17 show the results of the long run coefficients of the moderating variables on Tobin Q and LnEVA respectively.

Table 16: 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

Source: Research Data (2023)

Table 17: 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

Source: Research Data (2023)

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.

White Test for Heteroskedasticity

For the moderated model, the White test for heteroskedasticity are presented in table 18. The White's test and the Cameron & Trivedi heteroskedasticity test have the same p value. Using a significance p-value of 0.05, the regression model does not violate the homoscedasticity assumption and therefore, White's general test of homoscedasticity 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 18: White Test for Heteroscedasticity

. estat imtest, white

White's test for Ho: homoscedasticity
against Ha: unrestricted heteroskedasticity
chi2(35) = 29.26
Prob > chi2 = 0.7411

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	29.26	35	0.7411
Skewness	9.57	7	0.2141
Kurtosis	1.61	1	0.2051
Total	40.44	43	0.5830

Source: Research data (2023)

CONCLUSIONS AND RECOMMENDATIONS

The study found existence of a negative and significant relationship between EAR and Tobin Q. This could be attributed to the effect of dilution of EPS as more shareholders are brought on board. This dilution of EPS could lead to a negative signaling effect to investors hence depressing the market value of the share. This depressed market value of equity could go lower than even the book value of equity hence a decrease in Tobin Q. On the other hand, the regression coefficient with LnEVA was positive but not significant. The increase in EVA by employing more equity could be due to the fact that equity financing does not subject a firm to additional financial burden other than dividend which is optional and companies have no obligation to redeem the shares issued. The study therefore concluded that equity financing destroys wealth and value of firms and in instances it creates any wealth, its effect is not significant.

The study recommends that the government and policymakers need to establish robust resource centers that can avail training and financial resources to investors and players in the sector to create capacity for investment and expansion. The national treasury through the budget needs to have a long-term focus and realign it with the country's long-term plan so that gradual financing to the sector is availed as well as support to the sectors that are key to providing inputsfor manufacturing and specifically the agro processing industries so that agriculture can also support manufacturing. 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.

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