



**INFLUENCE OF MACROECONOMIC
FACTORS ON FIRM CAPITAL DECISIONS:
THE CASE OF NONFINANCIAL FIRMS IN KENYA**

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Abstract:

Purpose: The study investigates the relationship between macroeconomic variables and capital structure decisions of nonfinancial firms listed at the Nairobi Securities Exchange, in Kenya. **Methodology:** The study uses an unbalanced secondary panel data consisting of 36 nonfinancial firms listed at the Nairobi Securities Exchange (NSE) for the period 2015 to 2019 as at December 31st 2019. The sample selection was guided by data availability. The sectors excluded consisted of firms in banking, insurance, equity investment and real estate, including investment trusts. These exclusions were motivated by regulatory differences and for the ease of comparability of findings. **Findings:** The relationship between macroeconomic variables capital structure decision was found to be positive. This means that macroeconomic variables are determinant of capital structure decisions which supports the notion of trade-off theory and Pecking order theory as they advocate that firms should use debt to finance their operations. **Implications:** The results of this study have two major policy implications. First, nonfinancial firms in Kenya could significantly improve their performance if there is

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established utilisation of debt. Second, whilst policies aimed at popularising external finance to firms could have significant positive impacts on capital structure, the benefits of such policies would be much better realised if harmonised with efficient capital market for firms to raise debt capital with favourable interest.

JEL: E02; E44; G10

Keywords: macroeconomic variables, capital structure, generalised least squared

1. Introduction

The influence of seminal paper by Modigliani and Miller (1958), the case of corporate capital structure has been of a major debate in the finance literature. It in fact provided a significant leverage in the development of the theoretical framework within which a range of capital structure theories have been established in the field of finance. Given the perfect capital market assumptions, they believed that capital structure does not have influence on the firm value, which make them believed that capital structure is irrelevance. The academic community, practitioners and policy makers have comes in defend of capital structure as an important tool in management decision making as has it impact on the shareholders wealth or expect return and markets risk encounter by the firms (Booth et al., 2001). The current study has been put forward to add to the existing corporate finance literature by investigating the impact of macroeconomic variables on the capital structure decision making for listed nonfinancial firms in Kenya between 2015 and 2019 respectively.

The capital structure puzzle has among the companies which has kept special interest among researchers in the field of corporate finance and theoretical framework. There still no conclusive or a masterpiece theory in the existing empirical literature. Every study here has different explanations in the variation firms financing choices and capital structure decisions for firms in different markets. The existing empirical research are mostly conducted in the advanced economies as far as their counterpart in the emerging economies are concerned for instance Kenya as economic hubs of East Africa, have yet to contributes in this field of academic and policy making.

In Kenya as emerging markets, some studies were conducted by investigating mostly firm specific factors as the determinants of capital structure but ignoring the impact of macroeconomic variables. These studies includes (Mburu, 2005; Musili, 2005; Onsumu, 2003; Ondiga 2003; Kinyua 2005; Matiba, 2005; Mirie, 2006). Furthermore, there are few researches in Kenya that has focus on macroeconomic event but neither of them considered the macroeconomic variables as a major determinants of capital structure. They include (Nyamute, 1998; Sifunjo, 1999; Waciira 1999; Gitobu, 2000). The conclusions of these researches evidently revealed that macroeconomic variables have substantial consequent on different corporate variables such as stock prices and corporate capital structure. In this case, the effect of macroeconomic variables on corporate capital

structure in developing countries as that of Kenya, it was indicated that no research of such kind has been conducted in light of macroeconomic variables as determinants of capital structure in Kenya. This study will be one in kind testing the effect of macroeconomic variables on the capital structure and will contribute to the existing literature in the field of corporate finance as well as seeking to fill the existing gaps in the literature. This study seeks to investigate the relationship between corporate capital structure and macroeconomic variables of nonfinancial firms listed at the Nairobi Securities Exchange.

2. Literature Review

The seminal work of Modigliani and Miller (1958) is the cornerstone of the corporate capital structure study and its link to the value of the firm. In regard to their strict assumptions of frictionless and perfect capital markets, the market value of the firm does not depend on its corporate capital structure decisions as well as the cost of capital is entirely dependent on its enterprise risks. In their seminal paper they argued that firm value has nothing to do with how the company finances its investment project. In this argument, they assumed that cost of debt, bankruptcy, taxes and transactions cost is the same due to perfect capital markets.

The trade-off theory by Kraus and Lizenberger (1973) believed that there is a trade-off between cost and benefit of debt then equity financing. Based on the argument by Modigliani and Miller (1963) these theories of capital structure were grounded on the notion aimed at capital structure which believed on the benefits and risks of financing with a combination of debt and equity. A company would use debt rather than equity. The firm's assets determine its financial distress cost, for example, if the company invests mostly in equipment, land and other tangible assets, it will have a smaller cost of financial distress than those firms that depend on the intangible assets alone. But for small firms, since they are less likely to have high profits, the tax advantage may not be the option to choose debt financing for the tax shield advantage (Miglo, 2014). So, we expect asset tangibility to be positively correlated to leverage for smaller and larger firms, while tax has a positive relationship with larger firms, whereas no correlation with those of medium enterprises.

The Pecking order theory of capital structure was pioneered by Myers and Majluf (1984), who advocated that firm capital structure is formulated based on the needs for the firms to finance its current investment projects. In this case the firm prioritises the mode of finance, which the first should first use internal generated funds, followed by equity and external fund is the last resort. This theory is suitable for both large and small firms. The small and medium enterprises are solid and significant adverse selection issues, which are explained by credit rationing, which carry high information costs (Sheikh & Wang, 2011). Hence, there is a negative correlation between leverage and profitability of large and small companies.

Jensen and Meckling (1976) developed the Agency theory of capital structure which that there is a conflict of interest among principal, debtholders and the agents. The problems created by conflict of interest among the parties are risk shifting, assets substitution and residual claim. In this case, there will be minimal problem with the company due to use of debt financing as the managers would work hard to maximise shareholders wealth. As a consequence of this, the less the conflict of interest problem, the lower the used of debt financing for small and medium enterprise have in their capital structure.

Sbeiti (2010) examined the influence of share market advancement on the corporate capital structure choice using three Gulf Cooperation Council (GCC) countries using a sample of 142 companies from Saudi Arabia, Kuwait and Oman from the period of 1998 to 2005. Even though the GCC countries are non-tax paying enterprises, the capital structure decisions are comparable between the advanced and emerging economies. The leverage of these countries tends to influence the financing decisions.

The study by Haron (2014) concentrated on the main contributing factors to the subject of inconclusiveness in the determinants of capital structure research using the sample companies from Singapore, Malaysia, and Thailand for the period 2002 to 2007. The use of static and dynamic trade-off model with the same leverage definition and different leverage definitions applying the same models arrive at different results. The divergence is more evident in different leverage definitions using the same models. As indicated in the study conducted by Graham and Harvey (2001) that there is an inverse relationship between interest rates and the level of financing. Their finding did not clarify the precise function of macroeconomic variables in the determination of capital structure.

The effect of macroeconomic variables on the firm capital structure examined by scholars. One of the most commonly used macroeconomic variables in capital structure studies is GDP growth rate [Dincergok and Yalciner (2011); Camara (2012)]. The results of their research indicated that there is strong negative and significant relation between corporate capital structure and GDP growth rate. Their outcomes are in favour of the pecking order assumptions that is internal financing are preferred over external financing because in periods of economic growth, firm profitability is expected to rise thus allowing companies to use internally generated earnings to fund future investment. Interest rate is another important macroeconomic variable that has been used in the literature many scholars as changes in the interest rate can changes of choice of capital structure. Leverage level of companies are expected to rise with increase in interest rates because there will be tax shield advantages to exploit, at the same time some firms may reduce their financial leverage with rise in interest rates in order to reduce bankruptcy costs.

Variations in exchange rates can significantly influence the earnings as well as the cost of foreign currency denominated debt. Changes in exchange rates affect domestic interest rates as well as earnings of firms particularly those that are directly involved in business with international markets. Kayo and Kimura (2011), Hewa Wellalage and Locke (2012) and Fauzi, Basyith, and Idris (2013) argued that devaluations leads to

decline in output due to lower aggregate demand which may result in widespread bankruptcies.

In conclude, largely most of the empirical studies in emerging economies have centred on GDP growth rates, taxes, and interest rates. However, we find very limited studies particularly in Kenya that have used debt and exchange rates as variables influencing firm financing choices. Hence this study will add to the already limited literature particularly in the context of debt, share market development and exchange rates and will provide important insights with respect to their effect on company financing choice.

3. Methodology

This study used secondary data collected from Central Bank of Kenya, World Bank and audited financial statements for sample of 36 nonfinancial firms listed at the Nairobi Securities Exchange from 2015 to 2019. In the process of data collections some firms were missing some data.

The macroeconomic variables used in this paper includes real interest rates (RIR), GDP growth rate (GDPR), exchange rate (EXG). The dependent variable capital structure decision (leverage) was measured as economic leverage (LEV). Real interest rates were measured as lending rates less inflation measured through GDP deflator Gajurel (2006). For measuring GDP growth rate and exchange rates annual GDP growth rate and average exchange rate was used and lastly, economic leverage was measured through return on equity divided by return on assets.

3.1 Estimated Model

The effect of macroeconomic variables on the corporate capital structure was measured using panel data regression analysis using nonfinancial firms listed at the NSE for the period of five years. The panel data present several advantages over other estimation techniques as it provides more informative data, variability, efficiency, degrees of freedom and less collinearity among explanatory variables. Furthermore, the use of panel data is more useful in detecting and measuring effects that cannot be observed in pure time series or pure cross section data (Collins, et al., 2012). The empirical model used to estimate the relationship between macroeconomic variables and corporate capital structure is presented bellow:

$$LEV = \alpha + \beta_1GDPR + \beta_2RIR + \beta_3EXCG + \varepsilon \quad (1)$$

In the existing literature there are two important panel data models that are used by scholars to conduct the analysis of the data of firms under investigation. These are random effects model and fixed effects model. The two models have some differences between them, for example random effects model hypothesises that the intercept of every company is drawn randomly from a much larger group with constant mean value, while

fixed effects model assumes that every company vary in term of their intercept. This model (Fixed effects model) is appropriate in a situation where the panel is balance as in the case of the current study. On the other hand. The random effects model would be useful in a situation where there is limited observation of number of firms in the sample frame (Gujarati, 2004). Hence, the suitable model for the current study will be the fixed effects model and the final choice was based on the Hausman test.

Hausman Test (1978) is the specification test assist in determining the model that will be suitable between the two models. The always examined appropriateness of the estimator in term of its consistency of the estimator that is already known to be appropriate. The findings of the Hausman Test support the appropriateness of the fixed effects model for the current paper.

Table 1: Hausman Test

Hausman Test - Correlated Random Effects			
Random effects-Test cross-section			
Summary of the Test	Chi-SQ. Statistic	Chi-SQ. d.f.	Prob.
Random cross-section	106.354	8	0.004

Due to the used of panel regression analysis, there have to be an aspect of issues like that of heteroscedasticity and multicollinearity that might be present among the variable of the study when running the regression model. The two tables below that is Table 2 and 3 contains the correlational matrix and variance inflation factor (VIF) respectively. The values in Table 3 did not exhibit any present of multicollinearity issue since they are all below 10 as suggested by Gujarati (2006). The major hypotheses of regression model is that the variances or error term must be the same for all observations in the study. The presence of heteroscedasticity is indicated by the variations of error term for all the observations in the study and can invalidate the tests of significance assumptions that the error term in the regression model are not correlated and constant. To solve the problem of heteroscedasticity we adopt the White Test and the model was estimated using Generalised Least Squares technique to make the balance panel as single for every company in the study.

Table 2: Correlational Matrix

Correlational Matrix				
	LEV	RIR	GDPR	EXCR
LEV	1			
RIR	-0.032	1		
GDPR	0.153	0.067	1	
EXCR	-0.164	0.377	-0.524	1

The next Table 3 contains the variance inflation factor (VIF).

Table 3: Variance Inflation Factors

Variables	VIF
GDPR	3.631
RIR	1.532
EXCR	4.213

Table 4 below contains the descriptive statistics results of the study variables. The leverage as a measure of capital structure decisions have a mean value of 0.658 and standard deviation of 0.896 respectively. The gross domestic product rate has a mean value of 5.320 with standard deviation of 2.465. The mean value of real interest rate is 0.279 whereas its standard deviation has a value of 5.310. The exchange rate has a mean value of 80.102 with standard deviation of 16.054. The variables of the study have skewness value within the normality range.

Table 4: Descriptive Statistics

	LEV	GDPR	RIR	EXCR
Mean	0.658	5.320	0.279	80.102
Median	0.432	4.600	0.899	81.017
Maximum	3.405	7.850	7.890	102580
Minimum	-1.890	1.690	-8.560	59.328
Std. Dev.	0.896	2.465	5.310	16.054
Skewness	1.078	0.076	-0.264	0.247
Kurtosis	6.501	1.651	1.780	1.524
Probability	0.003	0.001	0.005	0.002
Observation	180	180	180	180

4. Results of the study

The results of the study indicated that exchange rate and gross domestic product growth rate are positively and significantly related to the capital structure decision measure (leverage) while real interest rate is negatively and statistically significant with leverage. The used of debt finance have tax shield advantage to the firms. These results are consistence with the studies by [Sbeiti, (2010); Sheikh, & Wang, (2011); Kayo & Kimura, (2011)] which found the same results in their research.

The relationship between macroeconomic variables (GDP growth rate) and capital structure decisions (leverage) is positive meaning that companies leverage tends to rise as a result of economic growth. This growth in the economy enable company's leverage increase and decline during economic downturn (Camara, 2012). During economic growth, some companies, specially SMEs may have hard time to take advantage of this growth opportunity due to lack of sufficient internal generated, which will force them to go for external sources of financing.

Table 5: Relationship between Macroeconomic Variables and Capital Structure Decisions

Dependent Variable: LEV				
Method: Panel EGLS				
Sample: 2015 to 2019				
Periods included: 5				
Cross-sections included: 36				
Panel observations: 180				
White cross-section standard errors				
Variable	Coefficient	Std. Error	t-statistic	Prob.
Constant	0.856	0.273	0.931	0.005
GDP growth rate	0.032	0.006	3.180	0.001
RIR	-0.003	0.004	-0.893	0.041
EXCR	-0.005	0.001	-6.986	0.00
Effects Specification				
R-Squared	0.765	F-statistic		28.352
S.E of Regression	0.671	Prob(F-statistic)		0.00

The domestic economy is always affected by any variation in the exchange rate either positively or negatively. Companies that deal with international markets directly or indirectly are more expose to exchange rate risks. This is because the cost of foreign currency denominated debt increases with fall in the value of local currency, hence lead to increase in financial risk encountered by the local companies making it hard for them to borrow from international markets. The exchange rate affects the local interest rates. The domestic interest rate reduced with the improvement in the local economy. We find the weak relationship between interest rate and leverage due to nonsignificant. We expected positive relationship between interest rates and leverage, because increase in interest rate offer companies the opportunity to take advantage of tax saving from debt financing.

5. Conclusion and recommendations

The aimed of this study was to examine the influence of macroeconomic variables on the listed nonfinancial firms at the Nairobi Securities Exchange capital structure decisions. The results of the study indicated that indeed macroeconomic variables have relationship with firm capital structure decisions. The study found gross domestic product to have a positive relationship with firm leverage, this support the trade-off theory of capital structure as it support the notion of firm to used debt due to tax shield advantage from debt financing, whereas interest rate and exchange rate have negative relationship with company's leverage. The GDP rate and exchange rate significant relationship with capital structure decisions measure (Leverage). In the other hand, this paper will provide some policy implication to the practitioners and investors in Kenya. Firstly, the study has indicated that there is a positively relationship between macroeconomic environment and the capital structure decision making as GDP rate have positive connection with firm leverage. Secondly, the use of debt advocated by trade-off theory of capital structure offers firm tax shield advantage. The limitations of the study are that we only used

secondary data and some firms were having some data missing. This study recommends that nonfinancial firms listed at the Nairobi Securities Exchange should strive to attain a compromise between different funding sources such as equity, debt and securities that result into the highest return that maximise firm value and that of the shareholders wealth.

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