International Journal of Economics, Commerce and Management
United Kingdom Vol. VI, Issue 5, May 2018
http://ijecm.co.uk/ ISSN 2348 0386

INFLUENCE OF MACROECONOMIC VARIABLES ON CORPORATE CAPITAL STRUCTURE: CASE OF AGRICULTURE SECTOR IN KENYA

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Abstract

This study explores to investigate the influence of Macroeconomic Variables on Corporate capital structure decision of Agricultural Sector for a sample of 7, which are listed at the Nairobi Securities Exchange in Kenya, over the period 2012-2016. In this research, we measure capital structure as dependence variable by total debt to total assets (TDTA) and macroeconomic variables measure with three independent variables: Interest rate (INT), GDP growth rate (GDP) and exchange rate (EXC rate). The investigation uses cross-sectional time series data collected from the Annual Reports of listed nonfinancial firms from the NSE website. The findings of the study indicate positive correlation between macroeconomic variables and the capital structure variable. This macroeconomic environment is an essential determining factor of corporate capital structure decision in Kenya. The finding also shows that exchange rate is significantly related to the debt ratio of Agricultural firms listed at the Nairobi Securities Exchange.

Keywords: Macroeconomics Variables, Corporate Capital structure, GDP

INTRODUCTION

Corporate Capital Structure decision-making process concerning the choice of financing pattern a have a substantial significance in corporate governance and consequently in its future successful performance. The influenced of capital structure and its adjustment on internal and external factors or so-called determinants of capital structure. In fact, the impact of endogenous factors and their management by a firm, at the same time managers have no control over the macroeconomic variables. However, both types of determinants have a significant influence on

the corporate capital structure. And the knowledge about the level, direction and power of their impact support companies to make effective decisions according to a capital structure for financial stability and sustainable growth.

The second section of the paper is the theoretical background about the macroeconomic variables indicators and provides a literature review of capital structure external determinants. The third part deals with research design as methodology and variable selection. The fourth part represents the empirical result of the research including correlation analysis between variables. And the last section summarizes and provides concluding remarks.

LITERATURE REVIEW

The theories of capital structure that explain the firm's preferences and behaviour according to financing choice of a firm. Among researchers, two main theories are applied namely as Pecking Order Theory and Trade-off Theory. Myers & Majluf (1984) established Pecking Order Theory of capital structure on the information asymmetry between firm's investors and its managers. Firms prefer internal financing to external financing, but in the case of necessity for external funding, the debt is preferable. This theory does not take optimal capital structure as a target but use the firm's preferences for utilizing internal instead of external sources as a starting point. The second one is the Trade-off theory that grew out of the debate of the Modigliani –Miller theorem (Modigliani & Miller, 1963). Modigliani and Miller added a corporate income tax to the original irrelevance that in turn created a benefit for debt. The trade-off theory assumes that firm trades off benefits and costs of debt and equity financing and finds an optimal capital structure taking into consideration taxes' advantages, bankruptcy costs and agency costs. These theories help to understand the nature of corporate capital structure and as well identify the potential internal and external factors.

Many studies try to shed light on the relation between capital structure and its determinants. Based on the literature review some key internal factors have the significant effect on the financing choice of a company: profitability (Bauer, 2004; Bastos, Nakamura, & Basso, 2009; Bokpin, 2009; Dincergok & Yalciner, 2011; Keshtkar, Valipour, &Javanmard, 2012). Asset tangibility (Korajczyk & Levy, 2003; Bastos, Nakamura, & Basso, 2009; Frank & Goyal, 2009; Nguyen & Wu, 2011), growth opportunities (Titman & Wessels, 1988; Ozkan, 2001; Bauer, 2004; Daskalakis & Psillaki, 2008; Kouki & Said, 2012), non-debt tax shields (Ozkan, 2001; Korajczyk & Levy, 2003; Bauer, 2004; Kouki & Said, 2012; Lim, 2012), firm size (; Korajczyk & Levy, 2003; Bauer, 2004; Hanousek & Shamshur, 2011; Nguyen & Wu, 2011; Lim, 2012). The relations between these variables and capital structure can be negative or positive depending on countries' specifics and debt structure. As a rule, authors identify capital structure

proxies as market and book debt ratios, and also based on time factor (short-term debt ratio and long-term debt ratio).

The researchers also try to investigate how macroeconomic conditions influence different corporate capital structures. For example, Bhamara, Fisher, and Kuehn (2011) argue that monetary policy affects corporate default through its impact on inflation and inflation expectations. Another study by Ameer (2012) shows the significant relations between the number of IPOs and the macroeconomic factors as nominal interest rate, industrial production, and initial IPO returns. Abaidoo and Kwenin (2013) try to investigate relations between macroeconomic conditions and corporate profit growth. They argue that expected inflation positively influences the firm performance and profitability. Moreover, recession expectation and variability in consumer sentiments do not affect the profit growth in the long-term perspective.

Many studies examined stock returns. For instance, Li, Iscan, and Xu (2011) argue that stock returns monetary policy shock influenced stock returns in USA and Canada. However, Durham (2003) uses discount rate as a variable of macroeconomic conditions and his evidence show weak and insignificant relations between stock returns and discount rates in 16 countries. Chang, Chen, and Leung (2011) use Federal fund rate as a proxy and findings show its effect on stock returns in the USA. Moreover, investigation of other variables by researchers like Pal & Mital (2011) indicates that gross domestic savings have an insignificant impact on stock returns in India. At the same time Sing, Mehta and Varsha (2011) argue that there is a significant relationship between the same variables in Taiwan, but there is not the considerable impact of the unemployment rate on the stock returns.

RESEARCH METHODOLOGY

This study sought to examine the influence of macroeconomic variables on the capital structure nonfinancial firms listed at the Nairobi Securities Exchange. The study adopted correlation survey design. The target population was 64 firms registered in Kenya and were actively trading between 2010-2014. The researcher only uses a sample of the agriculture sector, which comprises of 7 firms that forms part of the study sample size. For the purpose of this study, the researcher used secondary data obtained from the published annual reports spanning five years.

Data and Sample of the study

The sample used is of 7 non-financial firms from Agricultural sector covering the period 2010-2014. All the data are collected from the Annual Reports, the official document from the Nairobi

Securities Exchange. The corporate capital structure can be measured in different ways. One of the fundamental classifications of capital structure proxies is debt structure. Many studies are based not only on the total liabilities but divide them into short- and long-term liabilities (Michaelas, Chittenden & Poutziori, 1999; Hall, Hutchinson & Michaelas, 2000; Bhiard & Lucey, 2010; Hanousek & Shamshur, 2011; Keshtkar, 2012).

For our research we have chosen three capital structure measures: total leverage represented by total debt to total assets (TL), long-term debt ratio represented by long-term liabilities to total assets (LTD) and short-term debt ratio represented by short-term liabilities to total assets (STD), in order to take into consideration structure of debt. In our research as a first step we provide Pearson correlation analysis, in order to investigate the influence macroeconomic factors on capital structure. The macroeconomic factors are measured by real rate of interest, GDP growth rate and exchange rate, which are the main determinants of economic development and stability.

Variables Definitions

The independent variables used in the analysis are: dependent variable is capital structure measured by DERatio (Debt equity ratio) = Total Debt /Total equity, independent variable is macroeconomic variables that is measured by the RRIn (Real rate of interest) GDP (Gross Domestic Products growth rate), and EXCRate (Exchange rate).

The Model

We use a simple multiple regression analysis to test DE Ratio as the dependent variable against the above mentioned independent variables. The model used in our study is as follows:

$Y_{DERatio} = \alpha + \beta_1$ Real rate of interest $+\beta_2$ GDP growth rate $+ \beta_3$ Exchange rate $+ \varepsilon$

Hypotheses

Macroeconomic variables have a significance influence the corporate capital structure decision of nonfinancial firms listed at the Nairobi Securities Exchange.

EMPIRICAL RESULTS

The tables 1 present the correlation coefficients between the dependent variables and the independent ones.

Table 1: Correlation coefficients

	DE Ratio	*Real Rate of Interest*	*RGDP*	*E C Rate*
DE Ratio	1			
Real Rate of Interest	0.15	1		
RGDP	0.06	0.37	1	
EXCR	0.95	0.17	0.08	1

Table 1 above shows the correlation between the explanatory variables specifically with respect to DERatio. As we can notice DERatio is positively correlated with real rate of interest (15 percent), GDP growth rate (6 percent) and exchange rate (95 percent). Hence, it is demonstrated that DERatio is positively correlated with all the macroeconomic variables indicators.

Table 2: Summary Statistics

Variables	Obs	Mean Square	STD Error	STD-Dev	Kurtosis	Skewness	Min	Max	Sum	Conf.leve (95%)
DERatio	66	1.63	0.85	6.92	41.55	6.33	0.10	50.39	107.3	1.70
RRate of Int	66	0.07	0.005	0.040	-0.83	-0.26	-0.0	0.120	4.29	0.01
RGDP	66	0.44	0.02	0.187	1.006	-1.10	0.00	0.705	29.11	0.05
EXCRate	66	0.01	0.001	0.04	30.35	5.60	0.00	0.260	0.70	0.01

Table 2 provides the summary statistic on the dependent variable and the independent ones. It shows that the average total debt to total equity ratio (DERatio) for the sample as a whole is 1.63. It means that the firms of the sample are applying 163 % debt on the average in their corporate capital structure. From the above table, the average of real rate of interest (RRINT) is 0.07, GDP growth rate (GDP Rate) 0.44 and exchange rate (EXCR) is 0.01.

Employing panel data (cross pooled sectional data) analysis (Gujarati, 2004) and using Gretl (2012) statistical package we obtain the following results:

Table 3: Summary of estimated regression model

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.2513**	0.7431	0.3382	0.7364	-1.2341	1.7366
RRINT	-2.7075**	7.4920	-0.3614	0.7190	-17.6837	12.2687
RGDP	-0.0915**	1.5941	-0.0574	0.9544	-3.2780	3.0951
EXCR	151.0686**	6.4422	23.4497	0.0000	138.1908	163.9465

Note: ** Significant at 5% level

Table 3 displays the summary of estimated regression model which is given below:

Y_{it} = 0.2513 – 2.705 RRINT – 0.0915 GDP Rate +151.0686 EXC rate + ε

The results demonstrate that the estimated model of the study is well fitted because all variables are significant in determining the dependent variable (Debt Equity Ratio). Thus, real rate of interest, GDP growth rate and exchange rate are significant.

Table 4: Coefficient of determination (R2)

Multiple R	0.9492
R Square	0.9010
Adjusted R Square	0.8962
Standard Error	2.2290
Observations	66

The above Table 4 shows the coefficient of determination (R^2) which is recorded at 0.9010 and indicates that 90% of the total debt ratio can be explained by the variables chosen. The adjusted R-square results to be equal to 0.8962.

CONCLUSION

This study has aimed to contribute to the existing literature in various ways. Firstly, it is one of the few studies which enhance the understanding of factors affecting firm value of agricultural sector in Kenya over a large time frame of 5 years. Large gestation period and funding structure being key concerns of agricultural sectors in Kenya, make it imperative to understand unique factors which influence firm value. Majority of the studies are done in a combine perspective. Secondly, it is one of the first empirical tests to use macroeconomic variables to test its impact on capital structure of agricultural sector as it has not been tested in agricultural sector in Kenyan context.

Based on the findings of the study, we suggest few policy measures for Kenyan agricultural firms. With real rate of interest and GDP growth rate having a significant influence on agricultural firm capital structure, financial institutions should focus on offering funds which can ensure smooth functioning of operations of the sector. With a long gestation period, a better access to funds with friendly lending policy can enable improvement in operations. With negative relation with debt equity ratio, it could be that markets prefer agricultural firms to leverage debt for expansion, which could be due to unique attribute of the industry itself. However, at the same time, boost tourism as an external force can help improve the income in agricultural sector. Along with expansion in asset properties, a parallel expansion in revenue

generation is also needed. With leverage having a significant influence on firm value, the study highlights the importance of capital structure on firm value. It is of use for agricultural firms' owners to relook at their debt equity mix and fulfil multiple objectives of improving firm quality and firm liquidity by making better financial decisions. For listed firms, market performance is vital and improvement in firm quality by optimal capital mix which can ascertain value creation. The results also show growth in GDP and real rate of interest having a significant negative impact on capital structure except exchange rate with significant positive impact. The results from the study are supported by the existing TOT, POT and agency cost theories. With exchange rate having a significant positive relationship with corporate capital structure, it urges to ask "Does big means better?"

LIMITATIONS AND FURTHER RESEARCH

The study suffers from certain limitations. Firstly, it only analyses listed agricultural firms. With few number of agricultural listed firms only listed, the scope of the research could be expanded to understand the determinants of capital structure. Secondly, the explanatory power of the model can be improved by taking more relevant variables. However, our study was limited to the use of relevant variables based on the availability of data.

The study has laid the foundation to explore the role of asset structure in depth in determining firm value. Future work is needed to understand the role of asset ownership and firm expansion by developing new hypothesis for their influence on corporate capital structure. Moreover, a more detailed account of financials over a large time frame is needed to understand the dynamics of the agricultural sector in Kenya.

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Appendix A

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	2802.1447	934.0482	188.0044	0.0000
Residual	62	308.0301	4.9682		
Total	65	3110.1748			