THE IMPACT OF CAPITAL STRUCTURE ON THE PERFORMANCE OF SUGAR FIRMS: A CASE OF MUMIAS SUGAR

Kung'a Andrew Onyango*

ABSTRACT

Analysis of the impact of capital structure on the performance of sugar firms was done on Mumias Sugar Company limited. The study used panel regression model of panel data analysis The Pearson's correlations were used to establish the degree of relationship between the independent and dependent variables. Panel regression analysis was employed for period covering 2006 to 2011 to measure the impact of capital structure on the performance of Mumias sugar firm in western Kenya. The analysis was done to find statistical evidence to support or reject the three hypotheses. Result for panel regression indicated that Earnings per share (EPS) are positive but statistically insignificant. Dividend per share (DPS) is negative and statistically significant. This indicates that there is there is significant impact of capital structure on the Dividend per share (DPS) of sugar industry. While, Earnings before Interest and Tax (EBIT) is positive and significant. This indicates that there is there is significant impact of capital structure on the Earnings before Interest and Tax (EBIT) of sugar industry. Beta coefficients associated with all the variables are statistically significant at 5% level. These variables explain around 92.9 % of variation in Turnover as a measure of capital structure of the firms. The remaining variables incorporated in the model explain only 7.1% of the variation. These facts conclude that Dividend per share (DPS) and Earnings before Interest and Tax (EBIT) play a major role in on Turnover as a measure of capital structure of the firms , while (EPS) do a dismal role.

Keywords- ANOVA, correlation, regression, capital structure.

* School of Business and Economics, Maseno University, Maseno, Kenya

A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A.
International Journal of Management, IT and Engineering
http://www.ijmra.us

411

1.0 Introduction

The term capital structure refers to the relationship between the various long-term sources financing such as equity capital, preference share capital and debt capital. Deciding the suitable capital structure is the important decision of the financial management because it is closely related to the value of the firm.

Capital structure is the major part of the firm's financial decision which affects the value of the firm and it leads to change EBIT and market value of the shares. There is a relationship among the capital structure, cost of capital and value of the firm. The aim of effective capital structure is to maximize the value of the firm and to reduce the cost of capital.

Financial leverage is defined as "the ability of a firm to use fixed financial charges to magnify the effects of changes in EBIT on the earnings per share". It involves the use of funds obtained at a fixed cost in the hope of increasing the return to the shareholders. "The use of long-term fixed interest bearing debt and preference share capital along with share capital is called financial leverage or trading on equity". (Paramasivan .C. and subramanian ,2009)

Financial leverage may be favourable or unfavourable depends upon the use of fixed cost funds. Favourable financial leverage occurs when the company earns more on the assets purchased with the funds, than the fixed cost of their use. Hence, it is also called as positive financial leverage. Unfavourable financial leverage occurs when the company does not earn as much as the funds cost. Hence, it is also called as negative financial leverage.

1.2 Literature review

1.2.1 Capital structure theories

There are different theories of capital structure. David Durand propounded the net income approach of capital structure in 1952. This approach states that firm can increase its value or lower the cost of capital by using the debt capital. Net operating income approach is converse to this approach. This approach contends that the value of a firm and cost of the capital are independent to capital structure. Thus, the firm can not increase its value by judicial mixture of debt and equity capital. These are two extreme approaches to capital structure.

The theory of business finance in a modern sense starts with the Modigliani and Miller (1958) capital structure irrelevance proposition. Before Modigliani and Miller, there was no generally accepted theory of capital structure. They start by assuming that the firm has a particular set of

expected cash flows. When the firm chooses a certain proportion of debt and equity to finance its assets, all that it does is to divide up the cash flows among investors. Investors and firms are assumed to have equal access to financial markets, which allows for homemade leverage. The investor can create any leverage that was wanted but not offered, or the investor can get rid of any leverage that the firm took on but was not wanted. As a result the leverage of the firm has no effect on the market value of the firm. Their paper led subsequently to both clarity and controversy. As a matter of theory, capital structure irrelevance can be proved under a range of circumstances. There are two fundamentally different types of capital structure irrelevance propositions. The classic arbitrage-based irrelevance propositions provide settings in which arbitrage by investors keeps the value of the firm independent of its leverage. A second kind of capital structure irrelevance is associated with multiple equilibria and equity in the market. But the model does not specify how these aggregate quantities get divided up among the firms.

Solomon (1963) developed the intermediate approach to the capital structure. This traditional theory of capital structure pleads that value of the firm increases to a certain level of debt capital and after then it tends to remain constant with a moderate use of debt capital, and finally value of the firm decreases. Thus, this theory holds the concept of optimal capital structure.

Modigliani and Miller (1963) stated that it is optimal for a firm to be financed by debt in order to benefit from the tax deductibility of debt. The value of the firm can be increased by the use of debt since interest payments can be deducted from taxable corporate income. But increasing debt results in an increased probability of bankruptcy. Hence, the optimal capital structure represents a level of leverage that balances bankruptcy costs and benefits of debt finance.

Myers and Pogue (1974), developed three theories-the lenders chickens out first, the managers chickens out first, and the shareholders chickens out first-of debt capacity .The third theory-the shareholders chickens out first-pleads the optimal capital structure.

Jensen and Meckling (1976) stated that the use of debt in the capital structure of the firm leads to agency costs. Agency costs arise as a result of the relationships between shareholders and managers, and those between debt-holders and shareholders. The relationships can be characterized as principal-agent relationships.

Ross (1977), developed a capital structure theory based on the asymmetric information. The theory pleads that the choice of firm's capital structure signals to outside investors the

information of insiders, and the second set contends that capital structure is designed to mitigate the inefficiency in the investment decision caused by the information asymmetry.

Haugen and Senbet (1978) argue that bankruptcy costs must be trivial or nonexistent if one assumes that capital market prices are competitively determined by rational investors. Examples of indirect bankruptcy costs are the loss in profits incurred by the firm as a result of the unwillingness of stakeholders to do business with them.

DeAngelo and Masulis (1980) proposed the static trade-off theory, whereby the advantage conferred by debt in the form of a decreased tax bill was offset by an increase in business risk. They proposed a theoretical optimum level of debt for a firm, where the present value of tax savings due to further borrowing is just offset by increases in the present value of costs of distress.

Barnea et al. (1980) argue that the agency problems associated with information asymmetry, managerial (stockholder) risk incentives and forgone growth opportunities can be resolved by means of the maturity structure and call provision of the debt. For example, shortening the maturity structure of the debt and the ability to call the bond before the expiration date can help reduce the agency costs of underinvestment and risk shifting.

According to Myers (1984), a firm that follows the trade-off theory sets a target debt-to-value ratio and then gradually moves towards the target. The target is determined by balancing debt tax shields against costs of bankruptcy.

Myers and Majluf (1984) developed the pecking order theory based on the premise that 'inside' management are better informed of the true value of the firm than 'outside' investors. These information asymmetries result in varying costs of additional external finance, as potential investors perceive equity to be riskier than debt. They propose that firms seek to overcome problems of undervaluation arising from information asymmetries, preferring to finance investment projects with internal funds in the first instance. When internal equity is exhausted, firms use debt financing before resorting to external equity.

Myers (1984), A firm is said to follow a pecking order if it prefers internal to external financing and debt to equity if external financing is used.

Myers (2001) argue that as the supply of debt from all corporations expands, investors with higher and higher tax brackets have to be enticed to hold corporate debt and to receive more of their income in the form of interest rather than capital gains. Interest rates rise as more and more

debt is issued, so corporations face rising costs of debt relative to their costs of equity. The tax benefits arising from the issue of more corporate debt may be offset by a high tax on interest income.

1.2.2 Concepts of Risk and Leverage

Financial leverage can accelerate EPS under favourable economic conditions but depresses EPS when the goings is not good for the firm. The unfavourable effect of financial leverage on EPS is more severe with more debt in the capital structure when EBIT is negative. Similarly the firm's financial leverage can increase shareholders' return and as well could increase their risk.

According to Pandey (1999), the financial leverage employed by a company is intended to earn more on the fixed charges funds than their costs. The surplus (deficit) will increase (or decrease) the return on the owners equity, referred to as a double-edged sword, financial leverage provides the potentials of increasing the shareholders' wealth as well as creating the risks of loss to them.

Mandelkar et al (1984) observe that DOL and DFL combine to magnify a given percentage change in sales to a potentially much greater percentage in EBIT. Infact, operating and financial leverages together cause wide fluctuation in EPS for a given change in sales. If a company employs a high level of operating and financial leverage, even a small change in the level of sales, will have dramatic effect on EPS. A company with cyclical sales will have a fluctuating EPS, but the swings in EPS will be more pronounced if the company also uses a high amount of operating and financial leverage.

1.3 Objectives of the study

The general objective of study is to determine the impact of capital structure on the performance of Mumias sugar firm in western Kenya

The specific objectives of the study were;

1. To determine the relationship between capital structure and Earnings per share in the sugar industry.

2. To determine the relationship between capital structure and Dividend per share in the sugar industry.

3. To determine the relationship between capital structure and Earnings before Interest and Tax in the sugar industry.

1.4 Research Hypotheses

The study tested the following hypotheses on relation between capital structure and Earnings per share, Dividend per share and Earnings before Interest and Tax of the sugar industry.

H_{O1}: There is no significant impact of capital structure on the Earnings per share of sugar industry.

H_{O2}: There is no significant impact of capital structure on the Dividend per share of sugar industry.

H_{O3}: There is no significant impact of capital structure on the Earnings before Interest and Tax of sugar industry.

2.0 Materials and methods

The study was based on Secondary data sourced from annual reports and accounts of Mumias sugar the period 2006–2010, The Kenya sugar board investment guides and Kenya Sugar Industry Strategic Plan 2010-2014. Two different analytical techniques were employed in the study for the period 2006 to 2010; they included the descriptive statistics and inferential statistics (panel data econometric techniques. Descriptive statistics such as; Mean was used to evaluate some selected variables. Range and Standard deviation were used to determine the degree of variability of the estimates. The study used panel regression model of panel data analysis to measure the impact of capital structure on the performance of Mumias sugar firm in western Kenya. The Pearson's correlations were used to establish the degree of relationship between the independent and dependent variables.

2.1 Specification of the Model

The study used the panel regression analysis to measure the relationship between capital structure and Earnings per share, Dividend per share and Earnings before Interest and Tax in the sugar industry.

A general panel data regression is written as;

$$Y_{it} = \alpha + \beta X_{it} + e_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

With the subscript i denoting the cross-sectional dimension and t representing the time-series dimension. Y_{it}, represents the dependent variable in the model, which is the firm's debt ratios. X_{it} contains the set of explanatory variables in the estimation model, α is the constant, β represents the coefficients and e_{it} represent Error term. The study used pooled regression type of panel data analysis. Therefore the equation for the model will be:

WCME = $\beta_0 + \beta_1$ (EPS) $+ \beta_2$ (DPS) $+ \beta_3$ (EBIT) $+ \varepsilon$ ……………………………………. (2)

Where,

EPS = Earnings per share

DPS = Dividend per share

EBIT = Earnings before Interest and Tax

ε = stochastic/error term

2.2 Measures of capital structure

The capital structure is measured in terms of the turnover, which is a measure of capital structure of the Mumias sugar firm in western Kenya.

Earnings per share are calculated by dividing the profit after taxes by the total number of common shares.

i.e EPS = profit after taxes / total number of common shares.

Dividend per share is the earnings distributed to the common shareholders divided by the number of common shares outstanding

i.e Dividend per share = Earnings paid to shareholders / Number of common shares outstanding

 Earnings before Interest and Tax are the operating profit of a firm.

3.0 Results and Discussion

3.1 Descriptive statistics

The following table below present some of the descriptive statistics of the capital structure and the explanatory variables of Mumias sugar firms in western Kenya from 2006-2010.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Turnover	5	10.40	15.60	12.2800	1.95755
EPS	5	0.79	1.05	0.9560	0.10714
DPS	5	0.40	0.58	0.4560	0.08173
EBIT	5	1193.00	2220.00	1818.4000	431.32853
Valid N (listwise)	5				

Source: Survey data (2013)

A critical examination of descriptive statistics for dependent and independent variables reveals the following observations. The measure of capital structure reported mean of 12.28 billions. The

A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A.
International Journal of Management, IT and Engineering
http://www.ijmra.us

417

minimum and maximum values of the capital structure were 10.4 billions and 15.6 billions respectively and Standard Deviation was 1.95755 billions.

3.2 Correlations results

Pearson's correlations were used to establish the degree of relationship between the independent and dependent variables. The result presented in table 2 shows that there is weak negative insignificant correlation between DPS and Turnover. Furthermore correlation values of this independent variable having with Turnover, indicating that though changes in this predictor variable negatively contribute towards changes in Turnover but changes would not be significant. Further, Turnover has weak positive non significant relationship with EPS and EBIT at 0.362 and 0.332 respectively.

Table 2: Pair-wise correlation matrix of explanatory variables

	Turnover	EPS	DPS	EBIT
Turnover	1			
EPS	0.362	1		
DPS	-0.485	0.095	1	
EBIT	0.332	0.106	0.578	1

Source: Survey data (2013)

3.3 Regression results

The results of multiple regressions are shown in the following tables. R Square value of 0.929, which is in the model, denotes that 92.9 % of observed variability in Turnover can be explained or predicted by EPS, DPS and EBIT. Remaining 7.1% variance in the Turnover is attributed to other variables. See table 3 below.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.964	0.929	0.715	1.04426

a) Predictors: (Constant), Turnover , EPS , DPS , EBIT

Table 4: Anova (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.238	3	4.746	4.352	.336

A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories
Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A.

International Journal of Management, IT and Engineering
http://www.ijmra.us

418

	Residual	1.090	1	1.090		
	Total	15.328	4			

a) Predictors: (Constant), EPS, DPS, EBIT

b) Dependent Variable: Turnover

Table 14: Determinants of financial leverage- Regression results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.834	5.312		1.851	.315
	EPS	6.686	4.905	0.366	1.363	.403
	DPS	-24.760	7.833	-1.034	-3.161	.195
	EBIT	4.039	.001	0.890	2.719	.224

Dependent Variable: Turnover

Source: Survey data (2012)

3.4 Discussion of research findings

This study examined the relationship between Turnover as a measure of capital structure and EPS, DPS and EBIT in the sugar industry.

The first objective of the study was to determine the impact of EPS of sugar firms on the Turnover as a measure of capital structure of the firms. The relationship between the Turnover and EPS is positive and insignificant. This finding accepts the null hypothesis which states that there is no significant impact of capital structure on the Earnings per share (EPS) of sugar industry.

The second objective of the study was to determine the impact of DPS of sugar firms on the Turnover as a measure of capital structure of the firms. The relationship between the Turnover and DPS is negative and significant. This finding rejects the null hypothesis which states that there is no significant impact of capital structure on the Dividend per share (DPS) of sugar industry.

The third objective the study was to determine the impact of EBIT of sugar firms on the Turnover as a measure of capital structure of the firms. The relationship between the Turnover and EBIT of the sugar firms is positive and significant. This finding rejects the null hypothesis which states that there is no significant impact of capital structure on the Earnings before Interest and Tax (EBIT) of sugar industry.

3.5 Conclusions

Analysis of the impact of capital structure on the performance of sugar firms was done on Mumias Sugar Company limited. The study used panel regression model of panel data analysis The Pearson's correlations were used to establish the degree of relationship between the independent and dependent variables. Panel regression analysis was employed for period covering 2006 to 2011 to measure the impact of capital structure on the performance of Mumias sugar firm in western Kenya. The analysis was done to find statistical evidence to support or reject the three hypotheses. Result for panel regression indicated that Earnings per share (EPS) are positive but statistically insignificant. Dividend per share (DPS) is negative and statistically significant. This indicates that there is there is significant impact of capital structure on the Dividend per share (DPS) of sugar industry. While, Earnings before Interest and Tax (EBIT) is positive and significant. This indicates that there is there is significant impact of capital structure on the Earnings before Interest and Tax (EBIT) of sugar industry. Beta coefficients associated with all the variables are statistically significant at 5% level. These variables explain around 92.9 % of variation in Turnover as a measure of capital structure of the firms. The remaining variables incorporated in the model explain only 7.1% of the variation. These facts conclude that Dividend per share (DPS) and Earnings before Interest and Tax (EBIT) play a major role in on Turnover as a measure of capital structure of the firms , while (EPS) do a dismal role.

REFERENCE.

[1] Akintoye I.R. (2008). Sensitivity of Performance to Capital Structure. *European Journal of Social Sciences – Volume 7, Number 1 (2008)*

[2] Barnea, A., R.A. Haugen and L.W. Senbet. (1980). "A rationale for debt maturity and call provision in the agency theoretic framework". *The Journal of Finance*, 35(5): 1223–34.

[3] Chittenden, F., G. Hall and P. Hutchinson. (1996). "Small firm growth, access to capital markets and financial structure: Review of issues and an empirical investigation". *Small Business Economics*, 8: 59–67.

[4] Deangelo, H. & Masulis, R., 1980, 'Optimal Capital Structure Under Corporate and Personal Taxation.' *Journal of Financial Economics*. 8, 5-29.

[5] Haugen, R. and L. Senbet. (1978). "The insignificance of bankruptcy costs to the theory of optimal capital structure". *Journal of Finance*, 33(2): 383–93

[6] Jensen, Michael C. and William H. Meckling. (1976). Theory of the Firm: Managerial Behavior,Agency Costs and Ownership Structure. *Journal of Financial Economics* 3: 305-360.

[7] Kenya Sugar Board (1998-2007). Year Books of Sugar Statistics

[8] Mandelker, G and Rhee, S. (1984). The Impact of the Degrees of Operating and Financial Leverage an Systematic Risk of Common Stock. Journal of Financial and Quantitative Analysis. March, 45-50.

[9] Michaelas, N., F. Chittenden and P. Poutziouris. (1999). "Financial policy and capital structure choice in UK SMEs: Empirical evidence from company panel data". *Small Business Economics*, 12: 113–30.

[10] Modigliani, F. and M. Miller. (1963). "Corporate income taxes and the cost of capital: A correction". *American Economic Review*, 53: 443–53.

[11] Myers, S.C. (2001). "Capital structure". *Journal of Economic Perspectives,* 15(2): 81–102.

[12] Myers, S.C. and N.S. Majluf. (1984). "Corporate financing and investment decisions when firms have information that investors do not have". *Journal of Financial Economics*, 13: 187–221.

[13] Pandey, (1999). Financial Management: vikas, New Delhi