DETERMINANTS OF FINANCIAL LEVERAGE IN THE SUGAR-MANUFACTURING FIRMS IN WESTERN KENYA

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ABSTRACT

The objective of this study is to examine the determinants of financial leverage of sugar industry in western. Analysis of financial leverage was done on all the sugar- producing firms currently in operation in western Kenya. This is because of the small number of firms in the sugar industry in Kenya. For empirical investigation, Panel regression analysis was employed for period covering 2003 to 2011 to find the relationship between financial leverage and the dependent variables; tangibility of assets, age, taxation, growth rate and profitability of the sugar-manufacturing firms. Result for panel regression indicated that Growth rate, profitability and age are statistically positively insignificant determinants of financial leverage. It is also observed that taxation is statistically negatively insignificant determinants of financial leverage. This indicates that there is a no significant impact of growth rate, profitability, age and taxation on the financial leverage of the firms. Tangibility is statistically negatively significant determinants of financial leverage. This indicates that there is no significant impact of tangibility on the financial leverage of the firms.   Beta coefficients associated with all the variables are statistically significant at 5% level. These variables explain around 93.6 % of variation in financial leverage. The remaining variables incorporated in the model explain only 6.4% of the variation. These facts conclude that

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tangibility play a major role in determination of the financial leverage in the sugar- producing firms, while growth rate, profitability, age and taxation do a dismal role.

Keywords: Financial leverage, determinants of capital structure, debt, tradeoff theory, pecking order theory, correlation and regression.

JEL Classification: E44 G21 G32 L26

Introduction

Capital is the major part of all kinds of business activities, which are decided by the size and nature of the business concern. Capital may be raised with the help of various sources. Capital structure or financial leverage refers to the mix of different sources of long-term sources such as equity shares, preference shares, debentures, long-term loans and retained earnings.

Financial decision is one of the integral and important parts of financial management in any kind of business concern. A sound financial decision must consider the board coverage of the financial mix (Capital Structure), total amount of capital (capitalization) and cost of capital. Capital structure is one of the significant things for the management, since it influences the debt equity mix of the business concern, which affects the shareholder's return and risk. Hence, deciding the debt-equity mix plays a major role in the part of the value of the company and market value of the shares. The debt equity mix of the company can be examined with the help of leverage. Leverage activities with financing activities are called financial leverage. Financial leverage represents the relationship between the company's earnings before interest and taxes (EBIT) or operating profit and the earning available to equity shareholders. 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". In this study, determinants of financial leverage of sugar firms in western Kenya are examined with reference to Capital structure theories. So, the objective of this paper is to test the effect of different explanatory variables of financial leverage.

1.0 Theoretical Framework

1.1 Review of financial leverage Theories

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. There are different theories explaining the relationship between capital structure, cost of capital and value of the firm.

Durand (1952) propounded the net income approach of capital structure. According to the approach, Capital Structure decision is irrelevant to the valuation of the firm. The market value of the firm is not at all affected by the capital structure changes. According to this approach, the change in capital structure will not lead to any change in the total value of the firm and market price of shares as well as the overall cost of capital.

Solomon (1963) developed the intermediate approach or the traditional theory of capital structure to the capital structure. According to the traditional approach, mix of debt and equity capital can increase the value of the firm by reducing overall cost of capital up to certain level of debt. Traditional approach states that the overall cost of capital decreases only within the responsible limit of financial leverage and when reaching the minimum level, it starts increasing with financial leverage.

Modigliani and Miller (1958) approach states that the financing decision of a firm does not affect the market value of a firm in a perfect capital market. In other words MM approach maintains that the average cost of capital does not change with change in the debt weighted equity mix or capital structures of the firm.

Jensen and Meckling (1976) developed the capital structure theory based on the agency costs. Firm incurs two types of agency costs-cost associated with the outside equity holders and cost associated with the presence of debt in capital structure. Total agency cost first decreases and after certain level of outside equity capital in capital structure, it increases. The total agency cost becomes minimal at certain level of outside equity capital. Thus, this theory pleads the concept of optimal capital structure.

Ross (1977) developed capital structure theories based on the asymmetric information in, which states that the choice of firm's capital structure signals to outside investors the information of insiders.

Myers and Majluf (1984), contends that capital structure is designed to mitigate the inefficiency in the investment decision caused by the information asymmetry. Myers elaborated and brought out the Pecking order theory in 1984. According to this theory, management strongly favors internal generation as a source of new funds even to the exclusion of external sources except for occasional unavoidable bulge in the need for funds.

1.2 Determinants of financial leverage

This section presents how the micro-factors affect the financial leverage of a firm with reference to the relevant capital structure theories stated earlier.

1.2.1 Growth Rate

The agency cost theory and pecking order theory explain the contradictory relation between the growth rate and financial leverage of the firms. Agency cost theory suggests growth rate is negatively related with long-term debt level (Jensen and Meckling 1976). This theoretical result is backed up by the empirical studies carried out by Kim and Sorensen (1986), and Titman and Wessels (1988) but Kester study rejected this relation (1986). Pecking order theory shows the positive relation between the growth rate and debt level of enterprises.

1.2.2 Profitability

Pecking order theory suggests that this relation is negative. Since, firm prefers internal financing and follows the sticky dividend policy. If the internal funds are not enough to finance financial requirements of the firm, it prefers debt financing to equity financing (Myers 1984). Thus, the higher profitability of the enterprise implies the internal financing of investment and less reliance on debt financing. In a trade-off theory framework, there exist a positive relationship between leverage and profitability. The higher profitability of firms implies higher debt capacity and less risky to the debt holders. Agency-based models also give us conflicting predictions.

1.2.3 Age of the firm

Age of the firm is a standard measure of reputation in capital structure models. As a firm continues longer in business, it establishes itself as an ongoing business and therefore increases its capacity to take on more debt; hence age is positively related to debt. Green, Murinde and Suppakitjarak (2002) also found that age has a negative influence on the probability of incurring debt in the initial capital equation, and no impact in the additional capital equation.

1.2.4 Taxation

According to Modigliani and Miller (1958), there exists a negative relationship between non debt tax shield and leverage. Gardner and Trcinka (1992) find a positive relationship between non-debt tax shield while Shenoy and Koch (1996) find a negative relation.

1.2.5 Tangibility

The trade off theory predicts a positive relationship between measures of leverage and the proportion of tangible assets. According to Scott (1977), a firm can increase the value of equity by issuing collateralized debt when the current creditors do not have such guarantee. According to agency cost theory models, Jensen and Mekling(1976); Williamson(1988); and Harris and Raviv(1991) there is a positive relationship between measures of leverage and the proportion of tangible assets. From a pecking order theory perspective, firms with few tangible assets are more sensitive to informational asymmetries. These firms will thus issue debt rather than equity when they need external financing (Harris and Raviv, 1991), leading to an expected negative relation between the importance of intangible assets and leverage.

1.3 Objectives of the study

The general objective of study was to empirically examine the link between a number of potential financial leverage determinants and debt level for the sugar firms in western Kenya. The specific objectives of the study were;

1. To determine how growth affect the financial leverage of the sugar firms.
2. To investigate how profitability affect the financial leverage of the sugar firms.
3. To examine how age of sugar firms affect their financial leverage.
4. To find out how taxation affect the financial leverage of the sugar firms.
5. To establish how tangibility affect the financial leverage of the sugar firms.

1.4 Research Hypotheses

The study was testing the following hypotheses on relation between the defined variables and financial leverage of sugar firms:

H_{O1}: There is no significant relation between growth and financial leverage of sugar firms.

H_{O2}: There is no significant relation between profitability and financial leverage of sugar firms.

H_{O3}: There is no significant relation between age and financial leverage of sugar firms.

H_{O4}: There is no significant relation between taxation and financial leverage of sugar firms.

H_{O5}: There is no significant relation between tangibility and financial leverage of sugar firms.

2.0 Methodology

The study was based on primary data collected from the individual sugar firms collected from the key informants or managers from the sugar manufacturing firms. The Secondary data were sourced from annual reports and accounts of sugar-producing firms in western Kenya during the period 2004–2011. A census study was conducted where all the sugar- producing firms currently in operation in western Kenya were considered. This is because of the small number of firms in the sugar industry in Kenya. They included Chemelil Sugar Company, Mumias Sugar Company, Nzoia Sugar Company, South Nyanza Sugar Company, Muhoroni Sugar Company, West Kenya Sugar Company and Kibos Sugar Company.

2.1 Model of Study

The study used the panel regression analysis to measure the determinants of Financial Leverage of the firms in the sugar industry. The study used pooled regression type of panel data analysis. Therefore the equation for the model will be:

$$FL = \beta_0 + \beta_1 (GR) + \beta_2 (PROF) + \beta_3 (AGE) + \beta_4 (TAX) + \beta_5 (TANG) + \varepsilon \ldots\ldots\ldots (2)$$

Where,

FL = Financial Leverage

GR = Growth rate

PROF = Profitability

AGE = Age

TAX= Taxation

TANG= Tangibility

ε = stochastic/error term

3.0 Results and Discussion

3.1 Descriptive statistics of the determinants and leverage

A critical examination of descriptive statistics for dependent and independent variables reveals the following observations; first, based on the measure of financial leverage, the reported mean ratio is 0.5973. This shows that the total debts on average amounts to about 60% of the total assets value of the sugar firms. The variation of financial leverage is very small, with a minimum of 0.23 and a maximum of 0.78 and a standard deviation of 0.14222.

From the table, it is observed that the mean of growth rate 0.1613. This shows that there was about 16% change in sales of the sugar firms. From the data the minimum and maximum change

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in sales were -0.69 and 0.99 respectively and a standard deviation of 0.32877. The measure of profitability, reported mean ratio of 0.0300. This shows that earning after interest and tax amount to about 3% of the net sales of the sugar firms. From the data the minimum and maximum value of profitability were -0.41 and 0.58 respectively and a standard deviation of 0.13603.The measure of age of the firm, reported mean age of 32.1667years. This shows that the sugar firm has been in operation for a relatively longer time on average. From the data the minimum and maximum ages were 21 year and 44 years respectively and a standard deviation of 6.34918. The measure of taxation, reported mean ratio of 0.1075. This shows that the ratio of earnings after tax to earnings before tax of the sugar firms was 1.1075. From the data the minimum and maximum value of taxation were -0.066 and 0.76 respectively and a standard deviation of 0.21791. Finally, the measure of tangibility, reported a mean ratio of 0.4110. This shows that the ratio of fixed assets to total assets of the sugar firms was 41%. From the data the minimum and maximum value of tangibility were 0.22 and 0.72 respectively and a standard deviation of 0.14569.

Table 1: Descriptive Statistics of Leverage and Independent Variables

	N	Minimum	Maximum	Mean	Std. Deviation
FL	48	0.23	0.78	0.5973	0.14222
GR	48	-0.69	0.99	0.1613	0.32877
PROF	48	-0.41	0.58	0.0300	0.13603
AGE	48	21.00	44.00	32.1667	6.34918
TAX	48	-0.66	0.76	0.1075	0.21791
TANG	48	0.22	0.72	0.4110	0.14569
Valid N (listwise)	48				

Source: Survey data (2012)

3.2 Correlations results

Pearson's correlation coefficients were used to check the collinearity between the dependent and independent variables and their significance levels. Following are the results of correlation as shown in table 2 below. Financial leverage has significant and strong negative correlation with tangibility at 1% level. This correlation values indicate that, changes in tangibility negatively contribute towards changes in financial leverage level significantly. Financial leverage also has significant and weak negative correlation with taxation. The correlation is significant at 5%. This

correlation values indicate that, changes in taxation negatively contribute towards changes in financial leverage level significantly.

Table 2: Pair-wise correlation matrix of explanatory variables

	FL	GR	PROF	AGE	TAX	TANG
FL	1					
GR	0.148	1				
PROF	-0.239	0.447(**)	1			
AGE	-0.032	-0.395(**)	-0.435(**)	1		
TAX	-0.299(*)	0.066	0.372(**)	-0.257	1	
TANG	-0.969(**)	-0.134	0.264	0.068	0.279	1

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Source: Survey data (2012)

3.3 Regression Analysis and Discussion

Coefficient of determination – R^2 is the measure of proportion of the variance of dependent variables about its mean that is explained by the independents or predictor variables.

The specification of the five predictor variables in the model reveals that the ability to predict the leverage level. R Square value of 0.943, which is in the model, denotes that 94.3 % of observed variability in financial leverage can be explained by the differences in the independent variables. Remaining 6.7 % variance in the financial leverage is attributed to other variables. See table 12 above.

The F value is 139.225, that is significant at 0.05% (p = 0.000), which suggests that the indicators (independent variable) have significantly explained 97.1 % of the variation in the leverage level and also indicates the model is a good fit for the data.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.971(a)	0.943	0.936	0.03589

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a)   Predictors: (Constant), Growth, Profitability, Age, Taxation, Tangibility

Table 4: Anova (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.897	5	0.179	139.225	.000(a)
	Residual	0.054	42	0.001		
	Total	0.951	47			

a) Predictors: (Constant), Growth, Profitability, Age, Taxation

b) Dependent Variable: Financial Leverage

Table 5: Determinants of financial leverage- Regression results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.948	0.035		27.407	0.000
	Growth	0.010	0.019	0.023	0.515	0.609
	Profitability	0.044	0.051	0.042	0.872	0.388
	Age	0.001	0.001	0.053	1.230	0.226
	Taxation	-0.020	0.027	-0.031	-0.742	0.462
	Tangibility	-0.949	0.040	-0.972	-23.600	0.000

a)   Dependent Variable: Financial Leverage

Source: Survey data (2012)

The first objective of the study was to determine the impact of the growth of sugar firms on the financial leverage of the firms. The relationship between the financial leverage and the growth rate is positive and insignificant. This suggests that, growth rate does not matter in determining the financial leverage. This finding accepts the null hypothesis which states that there is no significant impact of growth of sugar firms on the financial leverage of firms. The result confirms the agency cost theory and the empirical studies carried out by Kim and Sorensen (1986), and Titman and Wessels (1988). It also supports the simple version of pecking order that suggests that growing firms will resort first to the internally generated funds for fulfilling their

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financing needs. However, this does not support the extended version of pecking order theory that suggests that internally generated funds may not be sufficient for a growing firms and next option for such firm would be to use debt financing. The results also conflicts with shah A (2005), who stated that growing firms in Pakistan use more of equity and less debt to finance the new investment opportunities.

The second objective the study was to determine the impact of the profitability of sugar firms on the financial leverage of the firms. So far there are conflicting theoretical predictions on the effects of profitability on leverage. The relationship between the financial leverage and profitability is positive and insignificant. This finding accepts the null hypothesis which states that there is no significant impact of profitability of sugar firms on the financial leverage of firms. The relationship between the financial leverage and profitability are not inline with the pecking order theory of Myers and Majluf (1984) which state that profitable firms, which have access to retained profits, can use these for firm financing rather than accessing outside sources and also not consistent with the empirical studies such as the studies of Titman and Wessels (1988); Barton et al (1989); Kester (1986), Friend and Hasbrouck (1989), Friend and Lang (1988); van der wijst and thurik (1993) ,(Rajan and Zingales(1995),Wald (1999); Gonedes et al (1988); Chittenden et al (1996); Jordan et al (1998) ;Michaelas et al (1999); Mishra and McConaughy (1999); Shyam-sunder and Myers (1999); Booth et al. (2001) ; Cassar and Holmes (2003) ;Esperanca et al (2003) ; Shah A (2005); Abor (2008) and (Baral 1996) . It however supports the trade off theory even though the positive sign is negligibly weak due to statistical insignificance of the coefficient. The explanation for the obtained results is that current profits are not necessarily a good indicator of future profitability. This suggests that, profitability does not matter in determining the financial leverage.

The third objective the study was to determine the impact of the age of sugar firms on the financial leverage of the firms. The relationship between the financial leverage and the age of the sugar firms is positive and insignificant. This suggests that, age does not matter in determining the financial leverage. This finding accepts the null hypothesis which states that there is no significant impact of age of sugar firms on the financial leverage of firms. The result confirms earlier work of Esperança et al. (2003), Green, Murinde and Suppakitjarak (2002) also found that age has a negative influence on the probability of incurring debt in the initial capital equation, and no impact in the additional capital equation.

The fourth objective the study was to determine the impact of the taxation of sugar firms on the financial leverage of the firms. The relationship between the financial leverage and taxation is negative and insignificant. This suggests that, taxation does not matter in determining the financial leverage. This finding confirms the null hypothesis which states that there is no significant impact of taxation of sugar firms on the financial leverage of firms. The result confirms the earlier work of MacKie-Mason (1990), Shum (1996) and Graham (1999).

The fifth objective the study was to determine the impact of the tangibility of sugar firms on the financial leverage of the firms. The relationship between the financial leverage and tangibility is negative and significant. This suggests that, tangibility matters a lot in determination of the financial leverage. This finding rejects the null hypothesis which states that there is no significant impact of tangibility of sugar firms on the financial leverage of firms. The result confirms the pecking order theory framework which state that firms with less tangible assets are more subject to informational asymmetries, and are more likely to use debt - principally short term debt - when they need external financing. The results are also consistent with shah and Hijanzi (2005) who found a positive but insignificant relationship between financial leverage and tangibility for the non- financial listed Pakistan firms. The result is however inconsistent with the finding of Booth et al. (2001) which state that the more tangible the firm's assets, the greater its ability to issue secured debt. It is also inconsistent with several empirical studies, as Rajan and Zingales (1995), Friend and Lang (1988), and Titman and Wessels (1988) find.

4. Conclusions

Result for panel regression indicated that Growth rate, profitability and age are statistically positively insignificant determinants of financial leverage. It is also observed that taxation is statistically negatively insignificant determinants of financial leverage. This indicates that there is a no significant impact of growth rate, profitability, age and taxation on the financial leverage of the firms. Tangibility is statistically negatively significant determinants of financial leverage. This indicates that there is no significant impact of tangibility on the financial leverage of the firms. These facts conclude that tangibility play a major role in determination of the financial leverage in the sugar- producing firms, while growth rate, profitability, age and taxation do a dismal role.

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