



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

International Journal of Current Research
Vol. 12, Issue, 12, pp.15162-15167, December, 2020

DOI: <https://doi.org/10.24941/ijcr.40327.12.2020>

INTERNATIONAL JOURNAL
OF CURRENT RESEARCH

RESEARCH ARTICLE

EFFECT OF FINANCIAL LEVERAGE ON FINANCIAL PERFORMANCE OF SUGAR FIRMS IN WESTERN KENYA

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ARTICLE INFO

Article History:

Received 30th September, 2020
Received in revised form
27th October, 2020
Accepted 25th November, 2020
Published online 30th December, 2020

Key Words:

Financial leverage; Financial performance; Return on Asset; Return on Equity; GDP & GAAP.

ABSTRACT

Kenya Sugar sub-sector accounts for 7.5% of the National GDP and 15% of the Agricultural GDP. These firms have been experiencing poor financial performance with an average after tax profit of -24% for the period 2010-2018. Some of these firms have faced frequent closures with a case of Miwani sugar firm being put under receivership back in the year 2000. However, a section of these firms have been thriving. The inconsistency in these sugar firm's financial performance points out to the contribution of financial leverage as presumed by the trade-off and the theories of ROA and ROE. The purpose of this study was to determine financial leverage and financial performance relationship in sugar firms in Western Kenya. The study was anchored on the trade-off theory and the theories of ROA and ROE. The study used correlation research design. The target population was 8 sugar firms found in Western Kenya that were in operation during the study period. The firms were pooled for 10 years resulting to 80 data points. The result shows that financial leverage is a significant negative predictor of financial performance with ($R^2 = .1290$, $p = .0001$) (coeff = $-.0765$) implying that 12.9% of the variance in financial performance of sugar firms in Western Kenya was explained by financial leverage. The negative coefficient revealed that for every one unit increase in financial leverage, there was an ensuing drop in financial performance of these firms by 0.0765, an implication that most of the Kenyan sugar firm had incorporated borrowed funds in their financial structure beyond the optimal levels. The study concludes that financial leverage had a statistically significant negative effect on financial performance. The study recommends that sugar firms should reduce their leverage levels to optimal levels to enhance their financial performance. The findings are deemed to be of use to academia as a basis for further research in finance.

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Citation: Robby Tabitha Akinyi, P. 2020. "Effect of financial leverage on financial performance of sugar firms in western kenya", *International Journal of Current Research*, 12, (12), 15162-15167.

INTRODUCTION

Financial Leverage is defined as the amount of borrowed funds in the capital structure of a firm. The financial leverage level of a firm is established using debt ratio and debt to equity ratio, whereby debt ratio shows the amount of assets financed by debt capital while debt to equity measures the amount of borrowed capital in relation to owners' capital. Kenyan sugar firms have varied capital structures with some having higher percentages of debt capital in relation to equity financing yielding different levels of financial performance. Some sugar firms record impressive financial performance while others grapple with their existence, recording negative financial performance with a few closing down. Financial performance is the degree to which a firm accomplishes its financial objectives over a given time period. It principally reflects business sector

outcomes and results that show overall financial health of the sector over a specific period of time. It indicates how well an entity is utilizing its resources to maximize the shareholders wealth and profitability, Farah, Farrukh and Faizan (2016). A firm's financial performance is reflected by the return on the shareholder's funds (ROE) and return on the assets used to generate these financial gains (ROA), Pandey (2004). A firm's ROA reflects a firm's basic earning power resulting from efficient asset utilization as well as effect of interest cost resulting from its use of debt, Brigham, (2010) The study therefore used ROA and ROE as indicators of financial performance among the sugar firms in Western Kenya. Karen and Sheiner, (2018) defines Gross Domestic Product (GDP) as the total monetary or market value of all the finished goods produced and services provided within a country during a year. GAAP refers to the generally accepted accounting principles.

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Objective of the study: To determine the effect of financial leverage on the financial performance of sugar firms in Western Kenya.

Hypothesis of the study

H₀, Financial leverage has no effect on the financial performance of sugar firms in Western Kenya.

THEORETICAL REVIEW

The trade-off theory by Modigliani and Miller (1958) states that a firm trades-off the benefits and costs of debt and equity financing and finds an optimal capital structure after accounting for market imperfections such as taxes, bankruptcy and agency costs. According to this theory, debt capital is associated with some financial benefits which helps improve the value of the firm and firms go for debt capital until they exploit all the benefits, a point referred to as the optimal capital structure, beyond which the firm would be faced with losses. Firms use debt financing together with owners' equity with the intention of earning more return on the fixed charge funds than their cost as well as improve a firm's performance by increasing its earnings per share (EPS), its return on equity (ROE), return on asset (ROA) and overall profit margin. This theory predicts a positive relationship between financial leverage and financial performance if debt is optimally used. The theory guided the study in determining the relationship between financial leverage and financial performance of sugar firms in Western Kenya by observing the behaviour of ROA and ROE, given different levels of financial leverage incorporated in the firms' capital structure. According to the theory of Return on asset (ROA) and Return on equity (ROE) by Brigham (2010), a firm's ROA reflects a firm's basic earning power resulting from efficient asset utilization as well as effect of interest cost resulting from its use of debt. High ROA results from high basic earning power, while the converse holds true. The theory of Return on equity (ROE) states that ROE above industry average is an indication of a company's greater use of debt. These theories guided the study in establishing how well these sugar firms utilize their assets as portrayed by the behavior of ROA and ROE of the firms given their varied capital structures.

EMPIRICAL LITERATURE REVIEW

Studies on the influence of financial leverage on financial performance have been performed by various researchers such as; Berger and Bonaccorsi (2006), Marko (2014), David and Olorunfemi (2010), Rehman (2013), Saidia *et al.* (2012) and Akhtar *et al.* (2012) applied multiple regression analysis technique, fixed effect, random effect and maximum likelihood estimation procedures and correlation analysis and obtained positive relationship between financial leverage and financial performance. Whereas, Mwangi *et al.* (2014), Maina and Kodongo (2013), Onalapo and Kajola (2010), Harwood and Cheruiyot (2015), Altaani (2013), Tian and Zeitun (2007) applied panel data models and feasible generalized least squares, regression analysis, simple linear regression analysis on a sample of 3 sugar firms out of a target population of 9 sugar firms based on retrogressive research design and Pearson's Product moment correlation and obtained negative relationship between financial leverage and financial performance. On the contrary, Ebeid (2009) and Abubakar (2015) applied multiple regression analysis and correlation analysis but found no relationship between financial leverage and financial performance.

However, Laurente (2002) applied found mixed results across the geographical location of the firms with positive in some locations and negative in others. Kale (2014), using random effect models found negative relationship between financial leverage and financial performance as reflected by ROA, but using Tobin's Q, positive relationship was obtained. Evidence from the empirical studies revealed a diversity of findings from different countries and industries whereby; In banking industry using annual information of commercial banks and applying parametric measures of profit efficiency as indicator to measure agency cost, using fuel industry applying regression analysis, using petroleum industry employing panel data analysis using fixed-effect estimation, random effect estimation and maximum likelihood estimation, and on secondary data from financial statements of the sampled listed firms which were selected using stratified random sampling technique applying multiple regression technique, using sugar firms while applying correlation analysis, results revealed positive relationship as reflected by ROA. Whereas, using listed manufacturing companies applying multiple regression analysis, on listed textile firms using regression and correlation analysis, on non-financial companies in different industry sectors and the results were negative as reflected by ROA & ROE. Research on 9 sugar firms using a sample of 3 firms selected using retrospective research strategy and analyzed using multiple linear regression models and Pearson's product moment correlation and findings were negative contradicting the previous results. The research done on sugar firms was retrospective hence prone to a lot of bias and the 3 firms used may not give the overall picture of leverage performance relationship in sugar firms. The mixed research results across different industries and geographical locations create the need to determine the influence of financial leverage on financial performance of sugar firms Kenya.

METHODOLOGY

The research used quantitative model in a correlational research design. This was done by examining how financial leverage and financial performance relate with each other guided by the objective of the study. The study was carried out in Western region of Kenya covering three major sugar belts; western sugar belt, Nyando sugar belt and South Nyanza sugar belt where the sugar companies of the study are situated. The study targeted 8 sugar firms of various sizes assessed for the period 2008-2017 yielding a panel of 80 data points. Saturation method was applied to sample the sugar firms for the study. Saturation sampling was also relevant in this study given the heterogeneity of the Kenyan sugar firms' study variables and the panel data purported to be used. The study used secondary panel data obtained from annual financial reports of the sugar firms from January 2008 to December 2018. The secondary panel data from the financial reports was used given that it is an audited statutory document which meets the GAAP requirements and produced annually by all the firms making it credible data to use. The experts opined that data items adequately and sufficiently represented the content for each construct. All the variables in the study were stationery with their respective $p < .05$ level of significance. The size of the correlation (r) and the statistical significance were examined. A statistical significance at the alpha ($p = 0.05$) level was sufficient for this analysis. The data was analyzed using panel regression model as indicated.

$$\begin{aligned}
 ROA_{it} &= \beta_0 + \beta_1 d_{it} + r_{it} + \epsilon_{it} \\
 ROA_{it} &= \beta_0 + \beta_1 d_{it} + r_{it} + \epsilon_{it} \\
 ROE_{it} &= \beta_0 + \beta_1 d_{it} + r_{it} + \epsilon_{it} \\
 ROE_{it} &= \beta_0 + \beta_1 d_{it} + r_{it} + \epsilon_{it}
 \end{aligned}$$

Where, i represented the number of sugar firms studied (8), t represented the time period (10yrs), it represented the data points of the study (80) β_0 and β_1 were constants, while ϵ_{it} represented the error term which accounted for the omitted variables which affect financial performance other than financial leverage, the non-linearity of the relationship between financial leverage and financial performance, measurement errors and other unpredicted effects of financial leverage on financial performance. The equations aided the study in determining the relationship between financial leverage and financial performance of sugar firms in Western Kenya.

FINDINGS AND DISCUSSION

To establish the relationship among the study variables the Pearson Product Moment Correlation coefficient was computed. The size of the correlation (r) and the statistical significance were examined. A statistical significance at the $\alpha = 0.05$ level was sufficient for this analysis. The results of the study show a mixed correlation between return on asset, return on equity and financial performance of the sugar firms in Western Kenya in the period of 2008-2017 as shown below.

From the above table, the relationship between financial leverage and financial performance of the sugar firms in Western Kenya was investigated using the Pearson's moment correlation analysis as shown in the table above. It revealed that financial leverage with debt to equity and debt ratios its proxies had a negative relationship with all the indicators of financial performance; debt ratio on financial performance ($r = -.274^*$, $p = 0.014$), debt to equity on financial performance ($r = -.366^{**}$, $p = .001$) and relationship between financial leverage and financial performance ($r = -.357^{**}$, $p = .001$). A parametric test, panel regression analysis, was conducted to estimate the level of influence, with scores on financial leverage as the independent variable and financial performance as the dependent variable.

The table reveals that 7.7% (R-square = 0.0766) of the variance in financial performance is accounted for by debt ratio. The model is statistically significant as represented by a significance, $F(1, 69) = 14.53$, $p = 0.0003$.

A linear regression model used for this analysis was of the form $Y = \beta_0 + \beta_1 DR_{it} + \epsilon_{it}$ where

-) Y is the dependent variable, in this case Firm performance
-) DR is the independent/ explanatory variable, in this case debt ratio.
-) ϵ_{it} is the unexplained variation (error term)

Hence, the model can be written as:

$$\text{Firm performance}_{it} = \beta_0 + \beta_1 DR_{it} + \epsilon_{it}$$

$$\text{Financial Performance}_{it} = .1541 - .2290$$

From the model, Debt ratio has negative coefficients (coeff. = - .229) with financial performance, implying that for every unit rise in debt ratio there would be ensuing decrease in financial performance by about .229 units. Equally, the results show that the fixed effect model was a good fit for the data and adequate to predict the relationship between debt ratio and financial performance, as indicated by $F(9, 69) = 2.49$, $p = .0160$. Therefore, it is concluded that debt ratio has statistically significant effect on the financial performance. Analysis of the effect of debt to equity as another indicator of financial leverage on financial performance was as below.

It is evident that the model is statistically significant as represented by a significance, $F(1, 69) = 19.35$, $p < 0.001$. A linear regression model used for this analysis was of the form $Y = \beta_0 + \beta_1 DE_{it} + \epsilon_{it}$ where

-) Y is the dependent variable, in this case Firm performance
-) DE is the independent/ explanatory variable, in this case debt equity.
-) ϵ_{it} is the unexplained variation (error term)

Hence, the model can be written as:

$$\text{Firm performance}_{it} = \beta_0 + \beta_1 DE_{it} + \epsilon_{it} = .0674 - .0532$$

The model shows that 13.6% (R-square = 0.1356) of the variance in financial performance is accounted by debt to equity. Debt to equity has negative coefficients (coeff. = - .0532) with financial performance, interpreted to mean that for every a unit rise in debt equity there would be resultant decrease in financial performance by about .053 units. Equally, the results show that the fixed effect model was a good fit for the data and adequate to predict the relationship between debt/equity ratio and financial performance, as indicated by $F(9, 69) = 2.39$, $p = .0205$. Therefore, it is concluded that debt/ equity has statistically significant effect on financial performance. To test the null hypothesis that financial leverage has no influence on financial performance of sugar firms in Western Kenya, the study used panel data regression analysis. Financial leverage was used as the mediator variable and financial performance as the dependent variable. Financial leverage was computed from debt ratio and debt to equity ratio, while financial performance was computed from its two indicators, return on asset and return on equity.

The model reveals that close that 13% (R-square = .1290) of the variance in financial performance is explained by financial leverage. However, financial leverage has negative effect on financial performance, as reflected by a negative coefficients (coef. = - .0765). This implies that for every unit increase in financial leverage there is reciprocal change on financial performance by .0765 units, as shown by the model. A linear regression model used for this analysis was of the form $Y = \beta_0 + \beta_1 FL_{it} + \epsilon_{it}$ where

-) Y is the dependent variable, in this case Financial performance
-) FL is the mediator variable, in this case Financial leverage
-) ϵ_{it} is the unexplained variation (error term)

Table 1. Correlations analysis results on effect of financial leverage on financial performance of sugar firms in Kenya

		Return on Asset	Return on Equity	Debt Ratio	Debt Equity	Firm Size	Financial Leverage
Return on Asset	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	80					
Return on Equity	Pearson Correlation	.943**	1				
	Sig. (2-tailed)	.000					
	N	80	80				
Debt Ratio	Pearson Correlation	-.173	-.304**	1			
	Sig. (2-tailed)	.125	.006				
	N	80	80	80			
Debt/ Equity	Pearson Correlation	-.198	-.417**	.860**	1		
	Sig. (2-tailed)	.078	.000	.000			
	N	80	80	80	80		
Firm Size	Pearson Correlation	.333**	.401**	-.348**	-.358**	1	
	Sig. (2-tailed)	.003	.000	.002	.001		
	N	79	79	79	79	79	
Financial Leverage	Pearson Correlation	-.198	-.405**	.904**	.995**	-.364**	1
	Sig. (2-tailed)	.079	.000	.000	.000	.001	
	N	80	80	80	80	79	80
Firm performance	Pearson Correlation	.968**	.996**	-.274*	-.366**	.388**	-.357**
	Sig. (2-tailed)	.000	.000	.014	.001	.000	.001
	N	80	80	80	80	79	80

Source: Field data, 2018

Table 2. Panel Analysis: Fixed Effect Regression Model of Debt Ratio on Financial Performance

.xtreg Performance Debt Ratio, fe						
Fixed – effects (within) regression						
Group variable : Year						
R – sq: within = 0.1740						
Between = 0.0247						
Overall = 0.0766						
Number of obs = 80						
Number of groups = 10						
Obs per group: min = 8						
avg = 8.0						
max = 8						
F (1, 69) = 14.53						
Prob> F = 0.0003						
Corr (u_i, Xb) = -0.3757						
Performance	Coef.	Std. Err.	T	P> t	[95% Conf.	Interval
Debt Ratio	-.2290682	.0600843	-3.81	0.000	-.348933	-.1092033
_cons	.1541525	.0620099	2.49	0.015	0.304462	.2778588
sigma_u	.09427394					
Sigma_e	.15670193					
Rho	.26575237 (fraction of variance due to u_i)					
F test that all u_i=0: F(9, 69) = 2.49 Prob> F = 0.0160						

Table 3. Panel Analysis: Fixed Effect Regression Model of Debt /Equity on Financial Performance

.xtreg Performance Debt/ Equity, fe						
Fixed – effects (within) regression						
Group variable : Year						
R – sq: within = 0.2190						
Between = 0.0029						
Overall = 0.1356						
Number of obs = 80						
Number of groups = 10						
Obs per group: min = 8						
avg = 8.0						
max = 8						
F (1, 69) = 19.35						
Prob> F = 0.0000						
Corr (u_i, xb) = -0.2566						
Performance	Coef.	Std. Err.	T	P> t	[95% Conf.	Interval
Debt/Equity	-.0531658	.0120856	-4.40	0.000	-.077276	-.0290557
_cons	.0674869	.0361198	1.87	0.066	-.0045701	.1395439
sigma_u	.08609885					
Sigma_e	.15237006					
Rho	.24202082 (fraction of variance due to u_i)					
F test that all u_i=0: F(9, 69) = 2.39 Prob> F = 0.0205						

Table 4. Panel Analysis: Random Effect Regression Model of Financial Leverage on Financial Performance

.xtreg Performance Leverage, re						
RANdom – effects GLS regression						
Group variable : Year						
R – sq: within = 0.2220						
Between = 0.0058						
Overall = 0.1290						
Number of obs = 80						
Number of groups = 10						
Obs per group: min = 8						
avg = 8.0						
max = 8						
Wald chi 2(1) = 15.72						
Prob> chi2 = 0.0001						
Corr (u_i, x) = -0 (assumed)						
Performance	Coef.	Std. Err.	T	P> t	[95% Conf.	Interval
Leverage	-.0765231	.019286	-3.97	0.000	-.1143476	-.0386985
_cons	.0660874	.0427936	1.54	0.123	-.0177865	.1499613
sigma_u	.05472598					
Sigma_e	.15207779					
Rho	.1146497 (fraction of variance due to u_i)					

Hence, the model can be written as:

$$\text{Firm performance}_{it} = \alpha_0 + \alpha_1 \text{FL}_{it} + \epsilon_{it} = .0661 - .0765$$

The model is statistically significant as indicated by Wald $\chi^2 = 15.72$ and $p=0.0001$, implying the model was a good fit for the data and adequate to predict the relationship between the two variables. Based on these results, there is evidence to reject the null hypothesis and conclude that financial leverage has statistically significant negative effect on the financial performance of sugar firms in Western Kenya. This supports the view that the Kenyan sugar firms are said to be debt laden and unable to meet their long term and short term financial obligations. The findings violate the trade-off theory by Pandey (2010) that postulates that a firm trades-off the benefits and costs associated with debt and equity financing and finds an optimal capital structure after accounting for market imperfections such as taxes and bankruptcy costs. According to this theory, debt capital is associated with some financial benefits which helps improve the value of the firm. Instead it confirms the view that debt is a double-edged sword which when misused can lead to insolvency of the firm, a scenario evident with most of these sugar firms in Western Kenya. The findings also contradict the theory of Return on equity (ROE) by Brigham (2010), which postulates that greater use of financial leverage is portrayed by a firm's ROE which will be seen to be higher than the industrial average. These findings are in tandem with those of Onalapo and Kajola (2010), who investigated effect of capital structure on financial performance of 30 non-financial firms listed in the Nigerian Stock Exchange for the period 2001-2007 and found a negative relationship between financial leverage and financial performance. It also supports the findings of Maina and Kodongo (2013) and of Mwangi *et al* (2014) who found similar results. The findings, though differ with those of Marko (2014) and Berger and Bonaccorsi (2006) who found positive relationship between financial leverage and financial performance using multiple regression model.

Summary of Research Findings

The study sought to determine the effect of financial leverage on financial performance of sugar firms in Western Kenya. Based on the random effect regression model, the study established a significant negative effect of financial leverage on sugar firms' financial performance (coeff. = $-.0765$; $p = .000$), with every one unit increase in financial leverage resulting into a decreased financial performance by $.0765$ units. Additionally, 13% (R-square = $.1290$) of the variance in financial performance is explained by financial leverage.

Conclusion and Recommendation

The study concluded that financial leverage, significantly negatively predicts ROA and ROE which were used as proxies of financial performance of these sugar firms of western Kenya implying application of debt capital beyond the optimal levels. This finding was in tandem with the trade-off theory which states that debt is a double edged sword with the ability to boost and depress a firm based on its application. The management of the Sugar firms in Western Kenya should apply debt capital within the optimal limits to enhance their financial performance as reflected by ROA and ROE.

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