"Capital structure, firm value and managerial ownership: Evidence from East African countries"

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BUSINESS PERSPECTIVES

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CAPITAL STRUCTURE, FIRM VALUE AND MANAGERIAL OWNERSHIP: EVIDENCE FROM EAST AFRICAN COUNTRIES

Abstract

East African firms are experiencing economic growth and are attracting foreign investment in the form of equity capital and loans. However, there are concerns about whether the structure of the capital and managerial ownership of these firms can influence their growth. The study examined the relationship between capital structure and firm value in East African countries and how managerial ownership influences this relationship. Sixty-five (65) listed firms in East Africa were selected for the study. The study employed a GMM estimation technique. The evidence showed that leverage has a significantly negative impact on the value of firms in East Africa, suggesting that higher debt would result in a decrease of firm value. The implication of this result is that firms can increase their value by reducing their leverage level. Moreover, the study found that managerial ownership had an inverse and significant impact on the relationship between leverage and firm value. The conclusion is that leverage decreases the value of firms in East Africa. Another conclusion is that owner-managers can use debt capital more effectively to increase firm value than non-owner managers. The implication of this result is that firms managed by owners can borrow more for their operations because it would increase the value of the firms. This study is the first to examine how managerial ownership moderates the relationship between capital structure and the value of firms in East Africa, which has a unique political, social, cultural and economic environment.

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JEL Classification	G32, L25, O16

INTRODUCTION

The decisions about firms' finance and capital structure occupy an important place in firms' management. This is because firms' decisions regarding the use of different forms of financing lead to different capital structures, which may have different influences on the performance of a firm (Pandey & Sahu, 2019). This makes financing decisions one of the major issues in business management. Therefore, the choice of specific capital structure by firms may have different impacts on the performance of firms. However, there are different perspectives on the studies on capital structure, some of which affirm earlier theories such as Modigliani and Miller (1958). Other studies also focus on the agency costs and pecking order theories, which postulate that companies should balance their capital structure to generate an optimal structure that can improve their performance (Ibrahim & Zulkafli, 2018).

One major reason why capital structure is considered important is that it has several implications for corporate performance, which is why several studies have been done. Modigliani and Miller (1958) stressed that under ideal conditions and without bankruptcy costs, a firm's capital structure has no influence on its performance. Different studies such as those of Cheng et al. (2010) and Myers (2001) support

Modigliani and Miller's (1958) theory of the irrelevance of capital structure. These authors maintain that capital structure is irrelevant to a firm's performance. However, contemporary studies such as Goh et al. (2018), Nenu et al. (2018) and Wu (2019) demonstrated that capital structure is relevant and therefore influences the performance and value of firms. According to these authors, an inappropriate combination of finance can be challenging to managers and the prospects of firms. Whilst the argument on the relevance of capital structure is inconclusive, other studies such as Vu et al. (2018) and Elmagrhi et al. (2018) hold the view that an argument about the relevance of capital structure is meaningless if it is not done in conjunction with the ownership structure of firms.

There is an argument that the ownership structure of a firm would affect the extent to which capital structure would influence a firm's performance. In fact, Vu et al. (2018) and Elmagrhi et al. (2018) contend that firms managed by owners would have the best capital mix and would eventually reap their benefits. This suggests that the choice of a specific capital structure would have a minimal effect on firms' performance unless specific characteristics of management prevail. Therefore, Migliori et al. (2018) argue that firms managed by owners would make a better choice on capital structure than those managed by individuals who are not owners. The paradox is that Modigliani and Miller's (1958) theory, which is supported by Cheng et al. (2010), maintains that capital structure is irrelevant to the financial performance of firms. However, studies such as Maina and Ishmail (2014), Suardi and Noor (2015), Akomeah et al. (2018) and Nguyen (2019) contradict this position by demonstrating that capital structure influences the performance of a firm. San and Hang (2011), on the other hand, argue that the benefits of the appropriate capital are linked to a firm's management structure.

The foregoing discussion shows that the implication of firms' capital structure for their performance is important. Equally, the discussion shows that the ownership structure plays a key role in benefiting from an optimal capital structure. This issue has not been fully addressed in the literature. However, previous studies focused on developed countries and provided conflicting empirical results. Therefore, debates abound on whether such studies have universal relevance, especially since developing countries operate under distinct political, economic, legal, social and cultural environments. Particularly, studies on the link between capital structure and firms' performance and how managerial ownership moderates this relationship have received little attention in developing countries, especially in East Africa. These inconclusive anecdotal results and the gap in the literature require that this topic must be revisited to provide fresh evidence on the relationship between capital structure and the value of firms in East Africa, as well as how managerial ownership moderates this relationship. Therefore, this study examines the extent to which capital structure affects the value of firms in East Africa and how managerial ownership moderates this relationship. This study makes contribution to knowledge on the theoretical puzzle of the economic relevance of capital structure to a firm through an analysis of country-level data.

1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

1.1. Capital structure

The majority of firms fail as a result of challenges facing managers and owners on financing decisions. This is because, most firms and organizations fail or perform poorly because of diverse challenges managers or owners face regarding financing decisions (Migliori et al., 2018). This phenomenon gained considerable attention among financial economists after the formulation of Modigliani and Miller's (1958) capital structure irrelevance theory. Capital structure is defined as a mixture of different sources of finance of a company, represented by equity capital, preference shares, and debt. In addition, capital structure is the financing structure of the general operations and growth of a company, which involves a mixture of specific retained earnings, short-term debt, long-term debt, equity capital and preferred stock (Awais et al., 2016; Wu, 2019).

In other words, capital structure is the use of diverse sources of capital to finance the operations of a firm to achieve its strategic goals (Suardi & Noor, 2015). The choice of capital is, therefore, a critical financing decision, since it is directly linked to a firm's risk and return. This suggests that firms have the choice of using either equity or debt to finance their assets. However, Wu (2019) maintains that the best mix is the use of both debt and equity capital. Ibrahim and Zulkafli (2018) also maintain that several sources of finance are available to firms, but these sources can be organized into two, namely, internal and external finance sources. The external sources of financing consist of bond issuance and short- and long-term loans, whilst the internal sources of finance comprise equity stock, retained earnings, reserves, and preferred stock.

Many researchers such as Migliori et al. (2018) and Salam and Shourkashti (2019) maintain that there is an optimal capital structure, which involves the one that increases the wealth and value of shareholders whilst minimizing the cost of capital. However, Pinto and Quadras (2016) argue that it is difficult for managers of firms to decide an accurate and optimal capital structure, since it involves uncertainty and risks. Many studies have however used Modigliani and Miller's (1958) irrelevance theory to focus on finding an optimum capital structure. However, those studies were based on unrealistic assumptions, which is the use of Modigliani and Miller's (1958) irrelevance theory. Therefore, other theories offer a basis for researchers to conduct studies on the relevance or irrelevance of capital structure.

1.2. Theoretical framework

There are many capital structure theories, each of which facilitates the understanding of the debt-equity structure of firms. However, this study is conducted within the framework of agency cost theory. This theory states that the segregation of ownership and control in contemporary capitalism gives rise to the problem of agency (Jensen & Meckling, 1976; Maama et al., 2019). In addition, this phenomenon results in the asymmetry of information as managers would have more information than owners. This suggests that potentially, conflict exists between managers and owners of firms and further between

owners and debtors. This is because managers may pursue highly profitable and risky projects to attain their personal interests first (Masulis, 1983). In this instance, managers consider incentives and rewards associated with each source of capital before shareholders' interests, which is to maximize the value of firms.

Pandey and Sahu (2019) have a different viewpoint on the agency cost theory. According to the authors, as companies are supposed to pursue new investment opportunities, firms with high growth prospects would take more bonds and loans for this purpose, as opposed to firms with low growth opportunities. This would expose the companies to bankruptcy risk because the continuous increment of debt capital would increase the cost of debt, which may lead to a decrease in the performance of firms (Ibrahim & Zulkafli, 2018). Moreover, the agency cost theory can be associated with bankruptcy risk from another perspective (Soumadi, 2012). This perspective espouses that the management of firms regards bankruptcy as a high cost, it may therefore deter managers from acquiring more debt capital because of the fear of losing control of the firm and their personal benefits and reputations (Soumadi, 2012; Maama & Mkhize, 2020). In this context, debt would create an incentive for managers to work harder. In addition, the fear of losing control and reputation would motivate management to pursue the best investment opportunities, which would reduce the possibility of bankruptcy, reduce the cost of debt and increase firms' performance.

From the foregoing discussion, it is obvious that the capital structure would have an influence on the manager's attitude and performance because of the perceived agency cost associated with the use of resources. In this case, managers are expected to use the available resources effectively and efficiently to increase the value of a firm. This suggests that the motivation of managers to use the resources in the best possible manner would be more pronounced if the managers are also the owners of a firm. This implies that the problem of agency cost occurs because the separation of ownership and control would be reduced and eliminated if firms are managed by managers. Therefore, managers who are owners would act in the best interests of firms because the interests of the firms

would supersede their personal interests. Based on the weight of empirical evidence, the following agency-related hypotheses are formulated.

H_1:   *The capital structure of a firm has a positive relationship with its value.*

H_2:   *Managerial ownership moderates the link between capital structure and firm value.*

1.3. Empirical literature review

Studies that examined the relationships between managerial ownership, capital structure and the value of firms are sparse and fragmented. This is because the prior studies concentrated on the relationships between only two of the variables, leaving out the moderating relationships among them. One of such studies is that of Berger et al. (1997). The authors examined the relationship between managerial ownership and the value of firms and found a positive relationship between them. Conversely, in Australia, Brailsford et al. (2002) employed agency theory to investigate the impact of managerial ownership on firms' capital structure. The evidence showed a negative relationship between managerial ownership and firms' capital structure. In a related study conducted in Iran, Boroujeni et al. (2013) examined whether the ownership and capital structures of firms listed on the Tehran Stock Exchange influence their performance. The authors concluded that both firms' capital and ownership structures have positive relationships with their performance.

Moreover, Hsu (2013) investigated the influence of leverage on firms' performance and how ownership structure moderated this relationship. The author documented a positive relationship between leverage and the performance of firms. In addition, the authors concluded that the ownership structure moderates the link between firm value and capital structure. In a related study, Al-Thuneibat (2018) examined the relationships between capital structure, firm ownership structure and the performance of firms in Jordan. The author found positive relationships among these variables.

However, few of the studies in the East African countries documented a negative association be-

tween firms' capital structure and their performance. For instance, Maina and Ishmail (2014) investigated the impact of capital structure on the performance of firms listed on the Nairobi Stock Exchange (NSE). The evidence showed that the capital structure had a significantly negative relationship with the performance of firms. Similarly, Mwangi et al. (2014) provide evidence that firms' leverage has an inverse relationship with both return on equity and return on assets. A further study conducted by Kodongo et al. (2015) in Kenya showed that leverage has a significantly inverse link with the value of listed firms in Kenya.

Regarding the impact of managerial ownership on firm value, the following prior studies are apparent. First, Morck et al. (1998) used a piecewise regression model to examine the association between managerial ownership and firms' value of 371 fortune 500 firms. Generally, the authors found that managerial ownership positively relates to Tobin's Q. The same conclusion was derived by Miguel et al. (2004) when they examined the impact of managerial ownership on the value of firms in the United Kingdom. In a related study, Ruan et al. (2011) found that managerial shareholding is positively related to both capital structure and firms' performance in China. In addition, the authors reported that the direct influence of managerial ownership on firms' performance becomes insignificant when capital structure moderates such a relationship. These findings affirm the agency cost theory because managerial ownership may reduce agency cost and improve the profitability and value of firms.

In a recent study, Wu (2019) examined the impact of debt financing and ownership concentration on Chinese firms' performance. Using both fixed effect and dynamic regression models, the author found that debt financing was positively related to firms' performance. Moreover, Wu (2019) concluded that the ownership structure influences firm performance. Nenu et al. (2018) found a similar result and concluded that firms' leverage is positively related to their market value.

A contrary result was found in Ghana when Akomeah et al. (2018) applied a regression analysis on twenty (20) listed firms in Ghana and found that leverage had a negative relationship with the

firms' performance. Moreover, Nguyen (2019) found similar results in a study that investigated the association between leverage and the performance of food and beverage firms in Vietnam. Nguyen (2019) documented an inverse relationship between the capital structure and performance of the firms. Similarly, Salam and Shourkashti (2019) and Sathyamoorthi et al. (2019) provided evidence to show an inverse relationship between capital structure and the performance of firms in Malaysia and Botswana, respectively.

The prior studies discussed in the preceding chapters show that a relationship exists between managerial ownership, capital structure, and firm value. These studies concentrated on a single country, thus making generalization difficult. Moreover, empirical support for the moderating role of managerial ownership in explaining the association between firms' value and capital structure is quite limited. This leaves a gap in the literature that needed to be field, hence this study.

2. AIMS

The aim of the study is to investigate the relationship between capital structure and firm value in East African countries and how managerial ownership influences this relationship. The specific objectives of the research are as follows:

1. To examine the relationship between capital structure and firm value in East African countries.

2. To establish whether managerial ownership moderates the relationship between capital structure and firm value.

3. DATA AND METHODOLOGY

The population of the study comprised all firms listed on the following stock exchanges: Nairobi, Dar es Salaam, and Uganda stock exchanges. However, financial institutions were excluded because of the peculiarity of their capital structure. The data for the study covered ten years, from 2009 to 2018. The criteria for selecting the firms were based on the availability of data for at least

five (5) continuous years. In addition, firms that had been listed for less than 5 years were excluded. The size of the selected firms ranged from a minimum of USD 4.32 million to a maximum of USD 626.63 million. The study used secondary data sourced from Bloomberg, McGregor BFA and the annual reports of the firms. Both Bloomberg and McGregor BFA provided the financial data of the firms, whilst the managerial ownership variable was obtained from the annual reports of the firms. Annual reports were used because they are considered as credible documents that are audited by auditors and circulated to shareholders (Mensah et al., 2017; Maama & Appiah, 2019). Due to the unavailability of data for some firms, 65 firms were chosen for the study. The target firm-year observation was 650, however, missing data resulted in the use of 536 observations. The populations and number of firms selected from each stock exchange are provided in Table 1.

Table 1. Population and sample size

Country	Stock Exchange name	Number of firms	Number selected
Kenya	Nairobi Stock Exchange	65	35
Tanzania	Dar es Salaam Stock Exchange	25	18
Uganda	Uganda Stock Exchange	16	12
Total		106	65

3.1. Estimation technique and econometric model

The study employed a Generalized Method of Moments (GMM) estimation approach, based on a panel data analysis to estimate the parameters of the model. A multiple regression model was used to for the analyses. Following the examples of prior studies such as those of Maina and Ishmail (2014), Nenu et al. (2018) and Wu (2019), models 1 and 2 below were developed to examine the relationships among the variables.

$$TobinsQ_{it} = \beta_0 + \beta_1 TobinsQ_{it-1} + \beta_2 Lev_{it} + \\ + \beta_3 MO_{it} + \beta_4 Lev_{it} MO_{it} + \beta_5 Size_{it} + \\ + \beta_6 Age_{it} + \beta_7 GDP_{it} + \varepsilon_{it}. \quad (1)$$

The moderating role of managerial ownership in the relationship between capital structure and firm value is introduced in the model 2 below.

$$TobinsQ_{it} = \beta_0 + \beta_1 TobinsQ_{it-1} + \beta_2 Lev_{it} +$$
$$+ \beta_3 MO_{it} + \beta_4 Lev_{it} MO_{it} + \beta_5 Size_{it} + \qquad (2)$$
$$+ \beta_6 Age_{it} + \beta_7 GDP_{it} + \varepsilon_{it}.$$

The explanation of the variables is provided below.

$TobinsQ_{it}$: Tobin's Q of firms at time t. This is a dependent variable measured by the ratio of market value to book value of assets of firms (Nenu et al., 2018; Kodongo et al., 2018).

ROA_{it} : Return on assets at time t, which is a control variable measured by the percentage of profit before tax to total assets (Mwangi et at., 2014; Al-Thuneibat, 2018).

Lev_{it} : Leverage at time t. This is an independent variable measured by the ratio of long-term debt to equity capital (Ruan et al. 2011; Wu, 2019).

MO_{it} : Managerial ownership at time t. This is measured by the percentage of shares held by the directors and management of firms (Boroujeni et al., 2013; Al-Thuneibat, 2018).

$Lev_{it} MO_{it}$: This is the moderating variable, which measures the moderating role of managerial ownership in the link between leverage and firm value.

$Size_{it}$: Size of firms at time t. This a control variable measured by the natural logarithm of total assets (Maina & Ishmail, 2014; Wu, 2019; Maama, 2020).

Age_{it} : Age of the firms at time t, which is a control variable measured by the number of years the firms had been in existence (Akomeah et al., 2018; Nguyen, 2019).

GDP_{it} : Gross domestic product of the selected countries. This the country-specific variable $\beta_0, \beta_1, \ldots \beta_8$: Coefficients of the slope of the regression model, ε_{it} : is the random error term.

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics

Table 2 presents the descriptive statistics that shows that the mean Tobin's Q of the firms is 2.26 with a standard deviation of 1.84. In addition, minimum and maximum Tobin's Q of the firms are 0.47 and 7.63, respectively. The mean of more than 1.0 suggests that on average, the majority of listed firms in east Africa observed equity growth over the years. The results further show that the mean score of managerial ownership is 5.35, suggesting about 5.35% of the shares of the sampled firms are owned by management. In addition, the results show that the average leverage of the firms is 65.47%, with a maximum and minimum of 179.5% and 7.21%, respectively. Moreover, the average ROA of the firms is 2.81%. Also, the maximum and minimum ROA of the firms are 70.6% and –55.7%, respectively. The average positive mean of ROA suggests that on average, the firms were profitable. However, as the negative minimum value shows, some of the firms were also operating at a loss. Moreover, the results show that the average asset size of the firms is USD 65.47 million. In addition, the average age of the firms was 22 years, whilst the average GDP of the countries is USD 42.71 billion.

4.2. Multicollinearity test

The results of the multicollinearity tests are presented in Table 3. Specifically, Table 3 tests for the presence or otherwise of multicollinearity among the independent variables using both Pearson cor-

Table 2. Summary statistics and variable description

Variables	Observations	Mean	Std. dev.	Min	Max
Tobins' Q (ratio)	536	2.26	1.84	0.47	7.63
Lev (%)	536	65.47	14.76	7.21	99.5
MO	536	5.35	1.29	0.97	67.86
ROA (%)	536	2.81	2.52	−55.7	70.6
Size (USD millions)	536	89.46	34.86	4.32	626.63
Age (years)	536	22	17.85	6	68
GDP (USD billions)	536	42.71	24.83	18.17	87.91

Table 3. Correlation matrix and variance inflation factor

Variables	Tobin's Q	Lev	ROA	Size	Age	MO	GDP	VIF
Tobin's Q	1.000							2.172
Lev	0.495*	1.000						1.824
ROA	0.326**	−0.105**	1.000					4.869
Size	0.483***	0.396*	0.474**	1.000				1.027
Age	0.075*	0.057**	0.062	0.312**	1.000			2.192
MO	−0.262***	−0.322***	0.028	−0.547***	−0.096**	1.000		3.866
GDP	0.196	0.094	0.056	0.202*	0.007	0.015*	1.000	4.301

Note: *** = $p < 0.01$, ** = $p < 0.05$, and * = $p < 0.1$.

relation coefficient and variance inflation factor (VIF). The results show that the correlation coefficients among the variables are small, which suggests that there is no problem of multicollinearity among the independent variables. It can be ascertained from Table 3 that the highest coefficients are −0.547 and −0.495, which are the correlation between managerial ownership and size and leverage and Tobin's Q respectively. Another biggest correlation coefficient is the correlation between size and Tobin's Q ($r = 0.483$) and correlation between size and ROA ($r = 0.474$). Apart from these, the other correlation coefficients are less than 0.40. These correlation coefficients show that there is an absence of multicollinearity among the variables because York (2012) suggests that collinearity exists when the correlation coefficient is more than 0.80. The VIF results confirm that there is no problem of multicollinearity among the variables because the VIF results are significantly lower than Salmeron et al.'s (2018) threshold of 10.

4.3. Regression results

Table 4 presents the results of the link between the capital structure and the value (*Tobin's Q*) of listed firms in East Africa. The results were estimated using a GMM estimation technique. However, the study employed three other estimation techniques, comprising pooled OLS, fixed effect and random effect to check for the robustness and authenticity of the results of the GMM technique. The results show that the directions of the relationship of different techniques are identical, which suggests that the results are reliable. First, the results show that lagged Tobin's Q (TobinsQ$_{it-1}$) has a positive and significant link with Tobin's Q. This shows that the current value of firms is explained by their previous value.

Hypothesis 1 (H_1) predicted a positive association between leverage and firm value. Contrary to the expectation, the results presented in Table 4 show that the leverage of the firms has a negative (−0.1372) and significant ($p<0.000$) impact on *Tobin's Q*. The implication of this finding is that a large component of debt in a firm's capital decreases its value (*Tobin's Q*). This result suggests that an increase in a firms' leverage would lead to a decrease in the value of the firms. Surprisingly, this result contrast with the agency cost theory of capital structure, which expects a positive link between capital structure (leverage) and firms' value. Moreover, this result is inconsistent with the capital irrelevance theory of Modigliani and Miller, which maintains that capital structure has no impact on firms' value. The reason that might explain this inverse association between leverage and firms' value is the high-interest rate on debt in developing countries. This suggests that interest paid on debt might be too high, which will negatively affect the profitability of these firms. Additionally, the interest-bearing debt normally restricts the use of firms' assets, especially when the assets are used as collaterals. This might limit the extent to which these firms can use the assets in their operations to generate income. Moreover, the existence of debt might commit the firms to fixed interest and principal payments in the future, hence forcing managers to postpone available net present value projects. Eventually, these would negatively impact the value of firms. This result confirms the findings of the majority of similar studies conducted in developing countries. For instance, the result affirms the findings of earlier studies such as those of Kodongo et al. (2015), Akomeah et al. (2018), Nguyen (2019), Salam and Shourkashti (2019) and Sathyamoorthi et al. (2019), who found that capital structure (leverage) has an inverse relationship with firm value.

However, this result contradicts the findings of studies such as Boroujeni et al. (2013), Hsu (2013), Al-Thuneibat (2018) and Wu (2019), who documented a positive link between capital structure (leverage) and firm value.

In addition, the evidence shows that management ownership (*MO*) has a negative but insignificant (p>0.05) impact on firm value (*Tobin's Q*). This suggests that firms managed by owners would have a smaller value, as opposed to firms managed by individuals who are not owners of the firms. This result might be because owners might lack the requisite skills and experience to manage their firms. This result confirms the findings of Brailsford et al. (2002), whilst disagreeing with those of Boroujeni et al. (2013) and Berger et al. (1997).

Hypothesis 2 (*H₂*) predicted that managerial ownership influences the link between capital structure and firm value. Affirming the hypothesis, the results show that managerial ownership (Lev*MO) has a negative and significant (*p<0.5*) impact on the association between leverage and firms' value. This suggests that managerial ownership helps to better moderate the link between capital structure and firm value. This result implies that firms managed by owners can use debt financing to increase their values as opposed to firms not managed by owners. The moderating role played by the ownership structure can be explained by the fact that the owner-managers are able to work effectively to ensure that they obtain favourable loan terms to increase firm value. This is because the owner-managers are careful of losing control of their business, hence they would be meticulous with every loan condition which will contribute to the improvement in the value of firms. This indicates that the fear of losing control and reputation might motivate management to pursue the best source of finance which would reduce the possibility of bankruptcy, reduce the cost of debt and increase firms' performance.

Another possible explanation of this result is that firms managed by owners would make a better choice on capital structure than those managed by individuals who are not owners. This implies that the motivation of managers to use the resources in the best possible manner to improve the performance and value of a company would be more pronounced if the managers are also the owners of a firm. In this case, the problem of agency cost emanated, since separation of ownership and control would be reduced or eliminated if firms are managed by the managers. Therefore, managers who are owners would act in the best interests of firms because the interests of the firms would supersede their personal interests. This result concords with the views of Vu et al. (2018) and Elmagrhi et al. (2018) that firms managed by owners would have the best capital mix and would eventually reap its benefits. This result, therefore, confirms the findings of earlier studies such as Morck et al. (1988), Ruan et al. (2011) and Boroujeni et al. (2013) whose finding was that managerial ownership can enhance the relationship between leverage and firm value.

Furthermore, the result demonstrates that firms' ROA has a significantly ($p > 0.05$) positive relationship with the value of the firms. This result suggests that a firm with a higher ROA would have a higher value (*Tobin's Q*). The plausible explanation for this result is that firms with higher profit would be able to invest the profit in new investment opportunities that would increase their value. This result however contradicts with the findings of Mwangi et al. (2014). Table 4 indicates that the size of the firms has a positive and insignificant ($p > 0.05$) impact on *Tobin's Q*. The implication of this result is that a firm with a large asset size would have a higher value. The result further shows that the age of the firms has a positive and significant ($p < 0.05$) relationship with firm value (*Tobin's Q*), which suggests that older firms would have higher values, as opposed to new firms. The results further show a positive relationship between age and *Tobin's Q*, suggesting older firms have higher value growth.

Regarding the robustness of the model, the second-order correlations (AR2) and the Hansen test results show that the model is robust. For instance, the *p*-value of the AR2 is insignificant, which suggests that the model does not suffer from the problem of autocorrelation. This confirms the reliability and efficiency of the estimates. In addition, the *p*-value of the Hansen test result is significant, which indicates that there is no over-identification restriction on the models. This suggests that the number of instruments in the GMM has no negative effect on the estimators.

Table 4. Regression model results

Variables	Model 1	Model 2	Model 3	Model 4
	POLS	FE	RE	GMM
Constant	0.1105**	0.0195***	0.1291***	0.0162***
	(2.004)	(3.119)	(3.042)	(2.986)
Tobin's Q				0.0519***
				(3.052)
Lev	−0.0725**	−0.0927*	−0.1221*	−0.1372**
	(2.002)	(1.816)	(1.842)	(1.962)
MO	−0.0683	−0.0581	−0.1351	−0.0687
	(1.0567)	(1.262)	(1.424)	(1.3921)
Lev*MO	−0.0846***	−0.1153**	−0.1324***	−0.1632**
	(2.968)	(1.905)	(3.147)	(2.024)
ROA	0.1351**	0.0813**	0.1855*	0.0372*
	(1.877)	(1.913)	(1.849)	(1.851)
Size	0.0681	0.0986*	0.1143	0.1037
	(1.143)	(1.846)	(1.385)	(1.062)
Age	0.1047**	0.0786*	0.0902**	0.1527**
	(1.869)	(1.853)	(2.103)	(2.095)
GDP	0.0685	0.1451	0.1635	0.0896
	(1.411)	(1.249)	(1.603)	(1.182)
Observations	536	536	536	511
R-squared	0.822	0.715	0.694	
Prob > F/Wald Prob > chi2	0.0000	0.0000	0.0000	0.0000
AR2				0.397
Hansen stat				0.038

*Note: t-values in parentheses; *** = $p < 0.01$, ** = $p < 0.05$, and * = $p < 0.1$.*

CONCLUSION

The study employed a GMM estimation technique to examine the impact of capital structure on the value of listed firms in East Africa. In addition, the study investigated the extent to which managerial ownership moderates the relationship between capital structure and firm value. Data were collected from Dar es Salaam, Nairobi, and Ugandan stock exchanges. Tobin's Q was used as a measure of firm value, whilst leverage was used to proxy capital structure. The evidence showed that capital structure measured by firms' leverage has a significantly negative relationship with the value of firms in East Africa. This result suggests that higher leverage would lead to a decline in firm value. The implication of this result is that firms can increase their value by reducing their leverage level. Moreover, the study found that managerial ownership negatively and significantly moderates the relationship between capital structure and the value of the firms. This result implies that firms managed by owners can use debt capital effectively to increase their value. These results are inconsistent with both capital irrelevance theory and agency cost theory. The conclusion is that leverage de-

creases the value of firms in East Africa. Another conclusion is that owner-managers can use debt capital more effectively to increase firm value.

The implication of these results is that firms can increase their value by relying less on debt to finance their operations, since such firms would be considered to be less risky. Based on these results, it is recommended that the management of firms should moderate the extent to which they use debt capital in their businesses. In addition, the management of the firms must analyze the possible impact of debt on firm value before sourcing for them. Though, these results are insightful, however some limitations are acknowledged, which provides opportunities for further studies. First, the study measured firms' value by Tobins' Q. By doing so, it fails to consider how investors actually view and react to debt capital acquisition. This study therefore recommends that another investigation must look at how the market price of shares relate to capital structure. In addition, another study can look at the factors affecting these firms' capital structure decisions.

AUTHOR CONTRIBUTIONS

Conceptualization: Mishelle Doorasamy.
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Investigation: Mishelle Doorasamy.
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