LONG-TERM DEBT ANNUAL CHANGES AND SECURITY RETURNS OF COMPANIES LISTED IN THE NAIROBI SECURITIES EXCHANGE

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International Academic Journal of Economics and Finance (IAJEF) | ISSN 2518-2366

Received: 17th January 2024

Published: 24th January 2024

Full Length Research

Available Online at: https://iajournals.org/articles/iajef_v4_i1_161_178.pdf

Citation: Rosana, D. M., Muturi, W. M., Oluoch, O. (2024). Long-term debt annual changes and security returns of companies listed in the Nairobi Securities Exchange. *International Academic Journal of Economics and Finance, 4*(1), 161-178.

ABSTRACT

As Kenya experiences economic growth and navigates shifts in global financial markets, public companies face challenges and opportunities related to their financial structures. The research investigated how changes in the long-term debt proportion of the financial structure impact the security returns of public companies in Kenya, as listed at the Nairobi Securities Exchange (NSE). The study was guided by the research philosophy of positivism given that it relied on quantitative data and espoused the scientific approach to research. It adopted a causal or explanatory research design to check how firm stock market value was impacted upon by the volatility in the debt structure over time. A census study of the 67 public companies was employed out of which 49 met data requirements. The study involved the use of secondary data collected from the companies' financial statements for the period of eleven years from January 2012 to December 2022. The data collected was analyzed using descriptive and inferential statistics. Test the hypothesis that long term debt volatility is value irrelevant was tested at 95% confidence interval using the t-statistic and p-value. The study adopted panel data to carry out the research analysis. Panel regression analysis using the random effects model was undertaken after appropriate normality, model specification, homoscedasticity, linearity and autocorrelation diagnostic tests. The findings indicate that there is the volatility of the portion of long term debt in the capital structures of firms at the NSE has a positive pricing effect and correspond with positive returns for those firms. The study suggests that companies may responsibly leverage long-term debt to enhance financial structures and attract positive investor sentiment. The research recommends that financial analysts, policymakers, and corporate decision-makers in Kenya consider the implications of changes in long-term debt on security returns. Understanding this positive relationship can guide strategic financial decisions and inform the formulation of financial guidelines and policies conducive to sustainable corporate growth in Kenya. Further research is encouraged to explore specific industry sectors and risk factors associated with long-term debt for more targeted recommendations.

Keywords: Long Term Debts, Financial Structure, Public Companies.

INTRODUCTION

Financial structure is a mix of short-term debt, long-term debt, and equity that a business uses to finance its assets (Visinescu, 2009). Significant dependence on debt financing helps shareholders obtain a higher return on investment because they have a lower cost. Therefore, the financial structure of a company is how the company's assets are funded. The specifics on the left-hand side of the balance sheet list both the long-term and short-term capital sources (Ripamonti, 2019).

Capital structure theories have not been clear as to whether capital structure and the changes therein are value relevant or value irrelevant. The primary goal of the study is to investigate the dynamic relationship between changes in the financial structure's long-term debt proportion and security returns of Kenya's publicly traded enterprises. The entire health and sustainability of a company are significantly influenced by its financial structure. As a part of a company's financial structure, long-term debt is a major external source of funding and can have an impact on the risk profile and stability of the business. Decision-makers in the corporate world, investors, and legislators must all comprehend the effects of changes in the long-term debt ratio on security returns in Kenyan business.

Recent years have seen significant economic growth and development in Kenya, a growing economy in Africa. Public companies have a crucial role in propelling economic activities, and the financial sector is a major contributor to this expansion. Nonetheless, there is still a deficiency of knowledge regarding the dynamics of financial structure and how they affect security returns in Kenya. A survey of the body of literature indicates that while research has been done on financial structure and security returns in a variety of international contexts, little of it has been done with the Kenyan market in mind. The link between long-term debt and stock returns may exhibit unique patterns and dynamics due to Kenya's particular economic, regulatory, and institutional characteristics (Chen et al., 2014).

In recent years, the Kenyan economy has experienced both internal and external factors that may have influenced the financial decisions of public companies. Rapid economic growth, changes in interest rates, and shifts in global financial markets are some of the factors that could contribute to fluctuations in the long-term debt proportion of companies' financial structures (Rashid, 2016). Additionally, regulatory changes and economic policies implemented by the Kenyan government may have influenced the financing choices of public companies. Investigating the interplay between these factors and security returns provides valuable insights into the financial dynamics of the Kenyan corporate landscape (Rashid, 2016).

Statement of the Problem and Research Objective

Firm market returns are critical in evaluating the value of a company listed on a stock market. Poorly performing companies have low or negative returns. Good performing companies post positive and increasing returns. Despite the prime importance of firm market returns, the situation at the NSE has been such that there has been a lot of fluctuations in returns and it is not clear if oscillations in the debt proportions in the capital structures of the listed companies has any significant bearing on these fluctuations in returns. This lack of clarity is particularly concerning because it hampers a comprehensive understanding of the financial decision-making processes within these companies in as far as fluctuations in the debt proportion of the capital structure is concerned.

The lack of clarity emanates from confounding empirical and theoretical literature. The failure to proactively assess and adapt to changes in long-term debt proportions may adversely affect the security returns of these companies, thereby impacting the wealth of investors and the overall stability of the financial markets. The existing literature lacks a dedicated investigation into this

specific aspect, resulting in a significant knowledge gap that hinders stakeholders, including investors, policymakers, and corporate leaders, from making informed decisions about financial strategies, risk management, and capital allocation in the Kenyan business environment. This gap underscores the urgency and importance of conducting a thorough study to bridge these knowledge deficiencies and contribute valuable insights for enhancing the financial decision-making processes of public companies in Kenya.

In line with the foregoing problem, the objective of this study is to examine the effect of fluctuations in the long-term debt proportion of financial structure on equity security returns of public companies in Kenya. It is to examine if debt fluctuations within the financial structure of a firm is stock market priced information.

LITERATURE REVIEW

The study examines existing theoretical as well as empirical literature. Two theories are instrumental for this study. Firstly, is the pecking order theory. The Pecking Order Theory, proposed by Myers and Majluf in 1984, suggests that firms have a preferred hierarchy or "pecking order" when it comes to financing decisions. According to this theory, companies prefer internal financing, such as retained earnings, first. If internal funds are insufficient, they move to debt financing before considering equity issuance. The theory posits that external financing, especially issuing new equity, is seen as a signal of undervaluation, which can lead to adverse effects on stock prices.

In this context, the Pecking Order Theory provide a theoretical framework to analyze how changes in the long-term debt proportion affect the overall financial structure of public companies in Kenya. It helps to explore whether companies follow a certain order or preference in their financing choices, and how deviations from this pecking order may impact security returns. Additionally, the theory considers the information signaling aspect, which could be crucial when assessing how changes in long-term debt proportion influence investor perceptions and, consequently, security returns.

Secondly, is the market timing theory. This theory was developed by two economists Verrecchia and Scholes (1980). Their work, often referred to as the Market Timing Theory, was presented in the paper titled "Market Timing and the Corporation's Financing Decision," published in the Journal of Financial Economics in 1980. The Market Timing Theory posits that firms attempt to time the market by strategically choosing when to issue securities, particularly equity, based on their perceptions of market conditions and the valuation of their securities. This theory suggests that companies may alter their financial structure, including the long-term debt proportion, in response to changing market conditions, aiming to capitalize on perceived favorable times for issuing securities.

The Market Timing Theory may be useful in figuring out how Kenyan public firms respond to perceived hazards or opportunities in the market by varying the amount of their long-term debt. In light of current interest rates, market conditions, and the cost of debt, companies may decide to issue long-term debt or modify their current debt structures. For example, corporations may choose to issue long-term debt in order to benefit from lower borrowing costs during times of low interest

rates or good market circumstances. On the other hand, businesses may be more likely to rely on equity financing or lower their long-term debt exposure during times of economic uncertainty or high interest rates in order to minimize increased financing expenses.

Examining how changes in the long-term debt proportion correlate with market conditions and security returns in the Kenyan context provides a valuable insights into the strategic decision-making of public companies. The theory can help explain the dynamic nature of corporate financing decisions, shedding light on whether companies in Kenya engage in market timing behavior and how such strategic choices impact their security returns.

From an empirical perspective, a study on long-term debt determinations by the enterprises coded in the Nairobi securities exchange between 2000 and 2009 was carried out by Kamau (2010). The study showed that most enterprises used long-term debt to finance their businesses. The study found that long-term debt change was influenced by corporate size changes and corporate tax, which affected the company's borrowing decision and borrower status. Interest rate changes were also very significant over time, as they were the source of a threat of liquidation for the changes in long-term debt financing structure. Kamau (2010) also noted that managers considered stock and bonds market conditions before deciding upon a long-term debt financing structure; however, the organization should utilize the funds available effectively and efficiently.

Fluctuations in long term debt, which is commonly measured by rolling or moving standard deviation, has received a great deal of attention in the literature (Aharon & Yagil, 2019). Long-term debt is part of the financial structure. Financial structure is how a firm finances its assets through some combination of debt and equity that a firm deems appropriate to enhance its operations (Shikumo et al., 2020). Long-term debt involves strict contractual covenants between the firm and issuers of debt, usually associated with high agency and financial distress costs (Tailab, 2014).

Dalbor and Upneja (2002) evaluated the impact of previously theorized factors on the changes on long-term debt ratio of publicly traded restaurant firms. They reviewed the financial literature to identify variables linked to three capital structure theories, including debt costs, signaling effects, and tax effects. Their findings essentially confirmed Barclay and Smith's findings based on a wide range of industrial firms using the cross-sectional pooled regression model for publicly traded restaurant firms. Company size and the likelihood of failure were related to higher changes in long-term debt ratios. Companies with growth opportunities use less long-term debt and therefore do not experience more increased chances of changes in long-term debt. But the use of long-term debt and effective tax rates were not significantly linked with this.

Khaldoun (2014) conducted a study on factors influencing changes in long-term debt structure in industrial companies. For the period 2000 - 2010, substantial information was gathered from Amman Stock Exchange. A non-parametric regression analysis was used. The study included all the listed companies in Jordan selected on the Internet from Amman Stock Exchange. The results showed that profitability is adverse, whereas fixed assets and company age positively impacted changes in long-term debt. On the other hand, the company's growth and non-debt tax did not impact change in long-term debt.

The long-term bond price can be unanchored following the monetary policy rule by the expected fast rate development. As it is not likely that the bond's price will react to the expected discounted sum of future policy rates, the anticipated future interest rates' autonomy will decrease. Thus, in response to changes in the output gap and inflation, the central bank must move its current policy rate more aggressively to stabilize aggregate demand. The degree that the current monetary policy can respond to changing economic conditions is restricted to the potential instability of long-term bond prices. This contradicts significantly with the rational analysis of such policies' expectations, ensuring a balance of output and inflation dynamics (Khaldoun, 2014).

Seo, Kim and Sharma (2017) aim to find alternative explanations for the use of long-term debt in the US restaurant industry from a behavioral perspective. The three-fold purpose of the present study is to examine the impact of CEO overconfidence on the use of long-term debt; explore how CEO overconfidence moderates the relationship between growth opportunities and long-term debt; and analyze the moderating role of CEO overconfidence based on cash flow levels in the context of the restaurant industry. Using a sample of publicly traded US restaurant firms between 1992 and 2015, this study used generalized moments with variable instrumental technique to analyze the panel data. The findings of this study highlight the importance of considering behavioral traits of CEOs, such as overconfidence, to better understand the US restaurant firms' financing behaviors. This study found that overconfident CEOs tend to use more long-term debt when firms have more significant growth opportunities and low cash flow.

Upneja and Dalbor (2009) examine the choice of long-term debt in the U.S. casino industry using the three significant theories of capital structure: tradeoff, pecking order, and free cash flow. We use multiple regression models for the overall sample as well as for casinos and casino hotels. The results for all three sets of regressions are similar, with firm risk and firm size being positively related to long-term debt. However, when looking at different measures of growth opportunities, we find contradictory results. Some growth measures are positively related to long-term debt, while others are negatively related.

The foregoing theoretical and empirical literature review culminates in a conceptual framework that is depicted in figure 1.

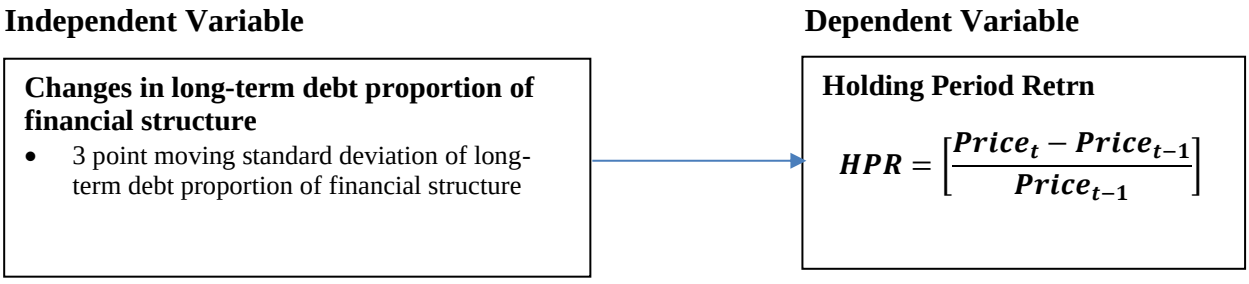

Figure 1: Conceptual Framework

RESEARCH METHODOLOGY

The study was guided by the Philosophy of Positivism given that it adopted the scientific approach and relied on panel data on debt structure volatility as well as holding period returns over a tne year study period. The study adopted a causal or explanatory research design. A census study of the 67 public companies was employed. 49 firms met the data requirements. The study involved the use of secondary data collected from the companies' financial statements for the period of eleven years from January 2012 to December 2022. The data collected was analyzed using descriptive and inferential statistics. The model specification of this study was to examine the effect of changes in long term debts on ordinary equity security returns of public limited firms in Kenya. The study adopted panel data to carry out the research analysis for eleven years from January 2012 to December 2022. This formed 539 firm-year observations.

The panel regression model adopted is as follows

$Y_{it} = \beta_0 + \beta_1 X_{1it} + \mathcal{E}_{it}$

Where: β_0 = The intercept of the model

β_1 = Parameter estimated

X_{1it} = Long term debt

i = Individual firm

t = period of study = 11 years in this case

$\mathcal{E}_{it}$ = Stochastic term

Long-term debts were seen as those liabilities the company does not have to pay for at least a year (Claywell, 2019). They include bonds, debentures, and term loans. Continuous time-series data was collected concerning long-term debts from firms listed in the Nairobi Securities Exchange. Before examining the Changes in long-term debts, the study read an annual ratio of long-term debts to total finance. This helped the researcher identify the portion of long-term debts to total finance that these companies relied on to finance their operations. This was followed by examining a 3-point moving standard deviation of long-term debt to examine the Changes in long-term debts. A panel regression was then be employed to test the effect of these debts on ordinary equity security returns. The study tested hypothesis formulated to establish the effect of changes in long term debts on equity security returns of public firms in Kenya using the P-Value approach at a 95% level of confidence. The decision rule encompassed a rejection of the null hypothesis if the calculated p-value is less than 0.05. If the calculated P-Value is greater than 0.05, the null hypothesis was affirmed.

RESEARCH FINDINGS AND DISCUSSIONS

Long term debt was viewed as the financial instruments which had their maturities exceeding a year. Long term debt metrics were collected from the non-current liabilities section of the balance sheet which included deferred income tax liability, retirement benefit obligations, long term bank loans and bonds. The study examined the changes in long term debt across firms listed in the Nairobi securities exchange according to their classification. This classification included telecommunication, Manufacturing and allied firms, Investment services, insurance firms, Energy and petroleum firms, construction and allied, agricultural firms, Automobiles & Accessories,

Banking and Commercial & Services industries. The descriptive statistics conducted are summarized in table 1

Table 1 Fluctuation in Long Term Debt Descriptive Statistics

Sectors	Mean	Median	Std. Dev.	C.V.	Skew	Ex. kurto	95% Perc.	IQ range
Agricultural	0.22	0.17	0.21	0.96	-0.25	0.40	0.59	0.30
Automobiles	0.18	0.12	0.15	0.82	0.59	-0.41	0.00	0.20
Banking	0.23	0.23	0.21	0.88	-0.02	-0.45	0.61	0.29
Commercial	0.24	0.23	0.22	0.90	0.02	-0.48	0.58	0.31
Construction	0.33	0.36	0.21	0.64	-0.01	-0.10	0.78	0.27
Energy	0.26	0.30	0.15	0.58	-0.03	-0.48	0.51	0.20
Insurance	0.21	0.21	0.20	0.96	-0.09	-0.43	0.54	0.28
Investment	0.27	0.28	0.20	0.72	-0.38	-0.12	0.57	0.28
Manufacturing	0.24	0.22	0.18	0.76	0.01	-0.23	0.53	0.24
Telecomm	0.32	0.37	0.22	0.70	-1.55	1.86	0.00	0.22

The descriptive statistics in table 1 presented a comprehensive overview of the changes in the long-term debt proportion of the financial structure across various sectors in Kenya. Each sector exhibited distinct characteristics that could potentially influence the equity security returns of public companies. In the agricultural sector, the mean long-term debt proportion was 0.22, with a relatively high standard deviation of 0.21, indicating notable volatility. Investors in this sector needed to exercise caution due to the wide dispersion of data points, suggesting that some companies experienced significant fluctuations in long-term debt. The positive skewness in the Automobiles & Accessories sector at 0.59 hinted at a rightward tail in the distribution, implying that certain companies in this sector witnessed larger increases in long-term debt compared to decreases, potentially impacting equity returns.

The Banking sector displayed a distribution with a slight leftward skew (skewness: -0.02), indicating that more companies experienced decreases in long-term debt. Moreover, the negative excess kurtosis (-0.45) suggested a distribution with lighter tails, contributing to the sector's stability. Commercial & Services, on the other hand, exhibited a high coefficient of variation (C.V.) of 0.90 and a wide interquartile range (IQ range) of 0.31, highlighting substantial variability. Investors needed to scrutinize the factors influencing financial structure changes in this sector, recognizing the potential diverse impact on equity returns.

Construction allied had a distribution close to normal, with a slightly negative skewness (-0.01) and low excess kurtosis (-0.10), indicating a more stable pattern in long-term debt changes. Energy & Petroleum showed a slightly negative skewness (-0.03), suggesting a tendency for more companies to experience decreases in long-term debt. Insurance, akin to the agricultural sector, displayed a high coefficient of variation (C.V.) of 0.96, underlining potential volatility in long-term debt changes. Investors were advised to exercise caution and conduct thorough risk assessments. The Investment sector, with a skewness of -0.38, indicated a leftward skew in the distribution, suggesting more companies experienced decreases in long-term debt. In Manufacturing, the distribution was close to normal (skewness: 0.01), implying a relatively balanced distribution of long-term debt changes and providing a more stable environment for equity returns.

In contrast, the Telecommunication sector raised concerns with highly negative skewness (-1.55) and positive excess kurtosis (1.86), indicating a distribution with a heavy left tail and heavier tails than a normal distribution. This suggested a potential for extreme changes in long-term debt proportions, demanding careful consideration by investors. In conclusion, the descriptive statistics served as valuable tools for investors to assess the risk and potential returns associated with equity investments in different sectors. Sectors with higher volatility, skewness, or kurtosis required more careful evaluation, while those with more stable patterns were deemed less risky for equity security returns. Understanding the factors influencing changes in long-term debt proportions proved crucial for making well-informed investment decisions in the dynamic financial landscape of Kenya.

EL-Ansary and Ahmed (2023) analyzes how cultural variations impact the relationship between long-term debt use and managerial overconfidence in Middle East and North African countries. The aim of the study was to examine if the utilization of long term debt moderated managerial overconfidence especially in commercial firms. Their study was in tandem with this study because commercial firms had greatest changes in long term debt. Managerial confidence was boosted by the link between long term debt and growth potential of firms with limited internal funding. Overreliance on long term debt was seen to moderate the agency conflict between shareholders and debt holders.

The study results also concur with Liu et al. (2018) who investigate whether government interference replaces laws and institutions in influencing businesses' decisions to finance their long-term debt on the Chinese capital market. Commercial and services industry was found to have a highest mean in changes in long term debt. This industry has an overreliance of long term debt because of its need for higher investment capital. Liu et al. (2018) found that long term debt ratios are actually related to government intervention. As the legal climate has improved, public non-state-owned businesses have more access to long-term bank finance in areas with low levels of government engagement. This is practically the case from the findings of this study which alludes confidence in the use of long term debt for non-state owned firms in Kenya.

Similar to this study also, Khaw (2019) studied the connection between long-term debt and internalization when agency costs of debt and business risk were present. The findings indicated that most corporations were more likely to sustain less long term debt than domestic corporations the findings also indicated that commercial and services sector registered a high change in long term debt as compared to other sectors in the Chinese economy. Yazdanfar & Öhman (2015) on the other hand sustained the fact changes in long term debt is always higher to firms to larger firms as compared to small and medium size firms.

With respect to correlation analysis, Pearson correlation varies from -1.00 to +1.00 with positive values indicating positive relations while negative values suggest negative relations among study variables (Newman, 2002). The findings were summarized in table 2 below

Table 2: Correlation between Long-term Debts and Security Returns

		Security Returns
Long Term Debt changes	Pearson Correlation	.711**
	Sig. (2-tailed)	.000
	N	539

The study obtained a positive significant association between the variables with a Pearson correlation of 0.711 and a significant value of .000. Long term debts are most preferable sources of debt financing among well-established corporate institution, mostly by virtue of their asset base and collateral is a requirement by many deposits taking financial institutions. Firms listed in the Nairobi securities exchange are well established firms. Changes in long-term debts can alter a firm's financial leverage. Increasing debt levels may enhance financial leverage, potentially magnifying returns for shareholders if the return on assets exceeds the cost of debt. Conversely, decreasing debt levels might reduce financial leverage, which could impact returns in the opposite direction. The study confirms the finding from Frank and Goyal (2003) who tested the pecking order theory of Financial structure and found that financing investments on long term debts and putting efficient management practices will always enhance financial returns.

With respect to panel regression analysis, **t**he effect of changes in long term debt on Equity Security Returns was undertaken using panel regression for the 49 firms over the 11 financial periods that provided 539 firm-year observations. Before undertaking the panel regression analysis, model diagnostic tests were conducted.

The study began with test on Bivariate Panel Autocorrelation for Long term debt changes. Independent of error terms in regression model is one of the most important assumptions commonly considered. Independency of error terms simply imply circumstances where error terms are not related with each other that is serial correlation does not exist (error terms are independent of each other). This assumption can be tested using the Durbin-Watson test. Durbin-Watson tests for serial correlations between error terms is a test which indicate whether the adjacent residuals are correlated. A value of two of Durbin Watson indicates that the residuals are uncorrelated, a value more than 2 indicates a negative correlation between adjacent residuals, whereas a value below two indicates a positive correlation. However, Durbin-Watson statistical values less than 1 or greater than 3 are definitely cause for concern. The findings from this study are indicated in table 3.

Table 3: Bivariate Panel Autocorrelation for Long-term Debt Changes

Model	D.W value for F.E (No moderator)	D.W value for F.E model With moderator	D.W value for R.E model No moderator	D.W value for R.E model with moderator
$Y=B_0+B_1*X1$	1.921088	1.936223	1.921088	1.957228

Predictor: *Changes in long-term debt proportion of financial structure*

A Durbin-Watson (DW) statistic of 1.921088 suggests a moderate level of positive autocorrelation in your data, as the DW value falls below the critical range of 1.5 to 2.5. Autocorrelation indicates the extent to which values in a time series are correlated with preceding ones, and a DW statistic below 2 signals the likelihood of positive serial correlation. In this context on the effect of long-term debt changes on equity security returns, this positive autocorrelation statistic could imply that the returns exhibit some degree of persistence or trend over time hence signifies that there was no problem of autocorrelation in the model.

This was followed by bivariate sectoral unit root test on the effect of changes in long term debts on equity security returns. This study conducted a unit root test to uncover fundamental characteristics within the panel data under examination. These characteristics pertain to the presence of stationarity or nonstationary features within the observed data. In essence, a time series without unit roots signifies data stationarity, indicating that variations within the data remain consistent. Conversely, the presence of unit roots in a time series suggests nonstationarity, signifying that data variations continuously change, and, as a result, stochastic trends within the data can be identified. For economic forecasting, it is crucial to determine the stationarity of time series data, as time series containing unit roots often follow a random walk pattern. The most commonly used methods for testing unit roots in time series data involve the application of Dickey-Fuller tests, primarily associated with AR(1) models introduced by Dickey and Fuller (1979). These tests have been extended to augmented Dickey-Fuller (ADF) tests by Said and Dickey (1984), which are primarily associated with ARMA (p, q) models.

In this study, Fisher-Type Unit Root Tests Based on Augmented Dickey-Fuller Tests which is associated with the first generation was conducted. The findings were as shown in table 4:

Table 4: Changes in Long-Term Debt Unit Root

	Based on augmented Dickey-Fuller tests			
	Ho: All panels contain unit roots		*Number of panels = 49*	
	Ha: At least one panel is stationary		*Number of periods = 11*	
	AR parameter: Panel-specific		*Asymptotic: T -> Infinity*	
	Panel means and Time trend Included			
	Drift term: Not included		*ADF regressions: 0 lags*	
Changes in long-term debt proportion			Statistic	p-value
	Inverse chi-squared (66)	P	560.6260	0.0000
	Inverse normal	Z	-17.4935	0.0000
	Inverse logit (64)	L*	-21.8667	0.0000
	Modified inv. chi-squared	Pm	33.0447	0.0000

For the Changes in long-term debt proportion of financial structure, all four types of Fisher-type unit root statistics (Inverse chi-squared, Inverse normal, Inverse logit, and Modified inv. chi-squared) yielded extremely low p-values (0.0000), providing strong evidence against the presence of unit roots, indicating stationarity across the panel.

On the other hand the study went ahead to perform Heteroscedasticity. Heteroscedasticity is a statistical term used to describe a situation in which the variance of errors or residuals in a regression model is not constant across all levels of the independent variable(s). In the context of statistical analysis, detecting and addressing heteroscedasticity was crucial, as it can lead to biased parameter estimates, incorrect standard errors, and, ultimately, unreliable model inferences. In this analysis, the Breusch-Pagan test was performed and its robust variant to assess the presence of heteroscedasticity in different regression models and the results were as shown in table 5.

Table 5: Long-term Debt Changes Test for Heteroscedasticity

Test		**Breusch-Pagan test**	**Breusch-Pagan test (Robust variant)**
Hypothesis		H_0: Heteroscedasticity not present	H_0: Heteroscedasticity not present
Regression for changes in the long-term debt	Model 1	Test statistic: LM = 3.20909 with p-value = P(Chi-square (1) > 3.20909) = 0.23134	Test statistic: LM = 6.97974 with p-value = P(Chi-square (5) > 6.97974) = 0.34212

The test statistics are compared to the chi-square distribution with degrees of freedom equal to the number of independent variables being tested. In the case of Model 1, which represents changes in the long-term debt proportion of the financial structure, the test statistic for the Breusch-Pagan test was 3.20909, with a p-value of 0.23134. Similarly, the robust variant of the test in Model 1 yields a test statistic of 6.97974 with a p-value of 0.34212. The p-values were important indicators of whether we can reject the null hypothesis of no heteroscedasticity. A small p-value (typically less than 0.05) suggests that we have evidence to reject the null hypothesis and conclude that heteroscedasticity is present in the model. Conversely, a large p-value indicates that we do not have enough evidence to reject the null hypothesis.

In order to determine whether a fixed-effect model or a random-effect model was the most appropriate model for this particular model, a Hausman Model Specification Test was conducted against long term debt changes and equity security returns. This was summarized in Table 6

Table 6: Hausman Model Specification Test between LTD Changes and ESR

Variable: Y4 and X1	**(b)**	**(B)**	**(b-B)**	**Sqrt (diag(V_b-V_B))**		
Ho: Random effect model is the most appropriate Model	Fixed Model	Random Model	Difference	S.E.	Chi2 value	P-value
	X1 .031232	.03179	-.000561	.00072	1.603	.0437
H1: Fixed effect model is the most appropriate Model	b = consistent under Ho and Ha; obtained from xtreg					
	B = inconsistent under Ha, efficient under Ho; obtained from xtreg					

The Hausman Model Specification Test is a statistical test used to determine whether a fixed-effects model or a random-effects model is the most appropriate model for a particular dataset. In this case, the null hypothesis (H_0) in the Hausman test was that the random-effects model was the most appropriate model for the data, while the alternative hypothesis (H_1) suggests that the fixed-effects model was more appropriate. For the variable changes in the long-term debt proportion of the financial structure, the results of the Hausman test indicate that the fixed-effects model had a coefficient of 0.031232, while the random-effects model had a coefficient of 0.03179. The difference between these coefficients (b - B) was approximately -0.000561. This difference is an estimate of the systematic difference in the coefficients between the two models.

The standard error (S.E.) of this difference is 0.00072, and the Chi-squared (Chi^2) statistic is calculated as (b - B)^2 / [diag(V_b - V_B)], where diag(V_b - V_B) represents the diagonal elements of the difference in variance-covariance matrices between the fixed and random-effects models. In this case, the Chi^2 value was 1.603. To determine whether the fixed-effects model was more appropriate, the p-value associated with the Chi-squared statistic was used. In this case, the p-value was 0.0437. This p-value represents the probability of observing a Chi-squared statistic as extreme as the one calculated (1.603) if the null hypothesis were true (i.e., if the random-effects

model were the most appropriate). A low p-value (typically below a significance level, e.g., 0.05) suggests that the null hypothesis should be rejected in favor of the alternative hypothesis.
According to the results, the p-value was 0.0437, which was less than the common significance level of 0.05. Therefore, the conclusion was that the fixed-effects model was more appropriate for the changes in the long-term debt proportion of the financial structure because the p-value was below the chosen significance level. This means that there was evidence to suggest that the fixed-effects model provides a better fit for the data in this case.

Having done the diagnostic tests, a bivariate regression analysis for Changes in the long-term debt proportion of the financial structure and the dependent variable equity security returns of public companies in Kenya was conducted and the results were shown in table 7

Table 7: Bivariate Panel Regression for LTD Changes & ESR

Fixed-effects (within) regression			**Number of obs**		=	**539**
Group variable: panels			Number of groups		=	49
R-sq:			Obs per group:			
within	=	0.2401		min	=	11
between	=	0.3039		avg	=	11.0
overall	=	0.2457		max	=	11
			F(1,489)		=	154.55
Corr(u_i, Xb) = 0.0349			Prob > F		=	0.000

	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
x1	.0312316	.0025123	12.43	0.000	.0262954	.0361678
cons	.4622997	.0044805	103.18	0.000	.4534963	.4711031
rho	.08854803	(fraction of variance due to u_i)				
F test that all u_i=0: F(48, 489) = 1.07				Prob > F = 0.3574		
Sum squared resid	5.154826		S.E. of regression		0.102672	
rho	−0.043718		Durbin-Watson		1.921088	

Fitted Model:

$$\boldsymbol{ESR = 0.0312316X_1 + 0.4622997}$$

Where ESR = Equity Security Returns
X_1 = Long Term Debt Structure

For Fixed Regression model the R-squared values recorded indicated that within-group variation explains approximately 24.01% of the variance in equity security returns of public companies in Kenya, while between-group variation accounts for 30.39%. The overall R-squared was 24.57%. The F-statistic recorded shows the overall significance of the model. For this model, F-statistic of 154.55 and a very low p-value (0.000) was recorded indicating that the model was statistically significant.

The coefficient for Changes in the long-term debt proportion of the financial structure was established to be 0.0312316 with a standard error of 0.0025123. This suggested that for each unit increase in Changes in the long-term debt proportion of the financial structure, equity security returns of public companies in Kenya was expected to increase by approximately 0.0312 units. The t-statistic recorded was 12.43, indicating that this coefficient was statistically significant at a very high level of confidence (p-value < 0.0001). The constant coefficient was 0.4622997 with a standard error of 0.0044805. This represents the intercept of the regression line. It's highly statistically significant with a t-statistic of 103.18 (p-value < 0.0001).

The Bivariate regression analysis conducted provides valuable insights into the relationship between long-term debt and equity security returns. The positive coefficient for the long-term debt variable (0.0312316) suggests that, on average, an increase in long-term debt is associated with a rise in equity security returns. This result aligns with the conventional understanding that debt can serve as a financial lever, amplifying returns to equity holders when the return on assets exceeds the cost of debt.

The statistical significance of the coefficient is supported by the low p-value (0.0001), indicating a high level of confidence that the observed relationship is not due to random chance. This strengthens the credibility of the finding that changes in long-term debt have a discernible impact on equity security returns within the studied organizations.

Furthermore, the F statistic of 154.55 with a p-value of 0.000 suggests that the overall model is statistically significant. In other words, the inclusion of long-term debt as an independent variable significantly improves the model's ability to explain the variance in equity security returns. This reinforces the importance of considering long-term debt as a relevant factor when analyzing and predicting security returns.

There are various reasons for the positive relationship observed in the changes in long-term debt and equity security returns. First, organizations who take on long-term debt can finance investments and projects that could yield larger volumes of returns than the debt's cost. Equity investors may receive larger returns as a result of this financial leverage if profitability rises. The efficient use of debt finance for strategic investments and business operations is one other tenable explanation for the positive relationship shown between long-term debts and equity security returns. Long-term debt is frequently used by businesses to finance asset purchases, research and development, investments, and expansion projects. The valuation of equity securities may be positively impacted, drawing investors and maybe increasing the returns on equity securities, if these investments result in higher profitability and cash flows.

Additionally, the use of long-term debts may signal confidence in future cash flows and the ability to service debt obligations. Investors may interpret a company's strategic use of debt as a positive signal, especially if the cost of debt is lower than the return on investment. This favorable perception can contribute to higher demand for the company's equity securities, leading to increased returns.

A number of studies who have conducted similar studies actually concurs with the study's findings. The findings reveal a statistically significant relationship between changes in long-term debt and equity security returns in public limited companies in Kenya and therefore supported by existing literature. Abor (2005) investigated the relationship between capital structure and profitability of listed firms on the Ghana Stock Exchange. The study found that capital structure has a significant effect on profitability. This finding suggests that changes in long-term debt, as a component of capital structure, has a positive impact on equity security returns. Similarly, Adeniyi et al. (2020) examined the relationship between capital structure and commercial banks' performance. The study recommended that commercial bank managers should consider long term debt as the least alternative for financing the capital structure, indicating that changes in long-term debt may have implications for equity security returns. Finally, Kipyego et al. (2022) explored the relationship between public debt and financial development in Kenya. Although the focus of the study was on financial development, it provides insights into the association between debt and financial outcomes. This suggests that changes in long-term debt has implications for the financial performance of companies in Kenya, including equity security returns.

Conclusion and Recommendations

In conclusion, the findings of this study reveal a significant positive correlation between changes in the long-term debt proportion of financial structure and security returns among public companies in Kenya. The panel regression analysis further supports this association with a positive coefficient for changes in long-term debt against security returns. This suggests that as public companies in Kenya increase their long-term debt, there is a corresponding positive impact on their security returns. The strong correlation and positive coefficient imply that investors may perceive higher levels of long-term debt as favorable, potentially signaling increased financial stability and growth prospects, thereby influencing security returns positively.

In light of these findings, it is recommended that financial analysts, policymakers, and corporate decision-makers in Kenya consider the implications of changes in long-term debt on security returns. Understanding the positive relationship identified in this study can help guide strategic financial decisions. Companies may explore opportunities to leverage long-term debt responsibly to enhance their financial structure and potentially attract positive investor sentiment. However, it is crucial for companies to carefully manage their debt levels to mitigate associated risks. Additionally, regulators and policymakers may find value in considering the observed relationship when formulating financial guidelines and policies to foster a conducive environment for sustainable corporate growth in Kenya. Further research and analysis on specific industry sectors and risk factors associated with long-term debt may provide deeper insights for more targeted recommendations.

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