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Effect of Interest Rates on Bond Value at Nairobi Securities Exchange

(A Case of State Gilt-Edged Bonds in Kenya)

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Abstract: **The study of the effect and the nexus between the nominal value of gilt-edge treasury bonds and interest rates is a fundamental one since debt has become a vital source of financing operations of a business. Consequently, the main objective of this research was to establish the effect of interest rates on value of gilt-edge Treasury bonds at Nairobi Securities Exchange (NSE). The general null hypothesis, H_0 tested was that interest rates do not affect the value of gilt-edge Treasury bonds at the NSE. The specific objectives of the study were: To assess the effect of Central Bank Rate (C.B.R.) on value of gilt-edge Treasury bonds at NSE, to analyse the effect of Inter-bank rate (I.B.R.) on value of gilt-edge Treasury bonds at NSE and to establish the relationship between the Repurchase rate of interest (REPO rates) on value of gilt-edge at NSE. Quasi experimental research was undertaken with time series data of nominal value of treasury gilt-edged bonds being regressed against the three regressors (interest rates) using regression statistics. From the summary output, all the three rates affected the nominal value of treasury gilt-edged bonds (i.e. there was an overall effect of all the three rates under study on the value of gilt-edged treasury bonds) nevertheless, the CBR was more significant even though the combined effect (multiple R) was a weak positive one leading to the rejection of the null hypothesis. Further, the CBR affected the nominal value of treasury gilt-edged bonds negatively (bidirectional relationship) whereas, the IBR and the Repo rate had a unidirectional (positive relationship).**

Keywords: **Gilt-edge treasury bonds, CBR, IBR and Repo rates of interest.**

1. INTRODUCTION

1.1 Background of the Study:

The three principal means employed in the funding of economic enterprises are equity instruments, bonds, and bank lending. Over the years, much attention has been focused on the optimal ratio of debt to equity, especially since Modigliani and Miller (1958), with no let-up in sight and relatively modest progress in reaching the answer. In contrast, the "optimal" or best balance between bond financing and (longer-term) bank financing has scarcely been addressed. This is somewhat surprising because heavy average reliance on one or the other can have far-reaching effects, especially on systemic risk, since the banking system is heavily leveraged and subject to regulatory imperfections.

The only country with a well-functioning corporate bond market at this time is the United States Rajan and Zingales (1996), as a percentage of GDP, bond market financing in other countries is a small fraction of the U.S. number, Pomerleano (2009). McGee (2007), noted that company financing from bonds for nonfinancial corporations in Italy, for example, represented only 2% compared to about 50% in the U.S. In contrast, bank lending as a percentage of GDP in 1995 was three times the U.S. number in Japan and twice as large in Malaysia and Thailand. *Barth et al., (2001)*, postulates that a well-developed bond market is associated with a substantial degree of disintermediation as well as a

well-functioning market in derivatives in which interest rate and currency risks, for example, are readily hedged. To qualify as well-developed, a corporate bond market must also be free from government interference with the lending process, a condition which in recent years has been lacking in many East Asian nations.

A study by *Mu et al., (2013),* shows that bond markets in many African countries are at a nascent stage of development with market capitalization of both the government bond market and corporate bond market being much lower as compared to those of other emerging and advanced countries. The study further shows that government bond market capitalization as a percentage of GDP was 14.8 per cent in 2010 which is far less as compared to the Asian, Latin. The disparity between Africa and other regions is wide when it comes to the corporate bond market. In 2010 corporate bonds capitalization as a percentage of GDP was 1.8 which is far less as compared to those of other countries in other regions. Also, it is important to note that where the market is thriving, it is mostly the government bond market. Rajan and Zingales (1996), suggest that an environment where only government bonds are available places a limit to the availability of bonds of a wide range of maturities thus affecting investor participation since availability of bonds with a wide range of maturities enhances the establishment of effective derivative markets which enables participants in the economy to hedge their risks effectively and thus promote deeper markets. Despite the fact that bond markets are mostly under-developed globally, it is imperative that the bonds are valued objectively. It is on this premise that this paper sought to determine the effect of interest rates on the value of state gilt-edged bonds in a quest to ascertain not only the effect but also the nexus of the relationship between interest rates and state gilt-edge bonds.

1.2 Statement of the problem:

Bonds markets in many African countries are at a nascent stage of development with market capitalization of both the government bond market and corporate bond market being much lower as compared to those of other emerging and advanced countries (Mu et al., 2013), Successful development of bonds market requires a developed money market, favourable macroeconomic policies, appropriate trading system, significant market participation, and sound legal and regulatory framework (Medhat, 2008). Further, it requires a conclusive comprehension of the factors that affect the nominal value of debt financing as bonds.

In Kenya, there exists little documented literature that has established the nexus between the interest rates and value of bonds. Most of the studies have examined more on interest rate spread and financial markets. (Ngugi & Ndung'u, 2001). (Kimani & Olweny, 2014) looked at the effect of Capital Adequacy, Asset Quality, Earnings per Share and Returns on Assets on bond value. (Ngugi, 2009) analysed the micro-structure characteristics of the bond market including volatility. The researchers did not delve into the relationship aspect and the effect aspect and the magnitude of the effect aspect. Consequently, this study sought to fill this gap by establishing not only the effect of interest rates on value of treasury gilt-edge bonds but also the nature and the magnitude of the nexus.

1.3 Hypothesis of the study:

The study tested the following hypotheses:

The general hypothesis: H_0 Interest rates do not affect the value of gilt-edge Treasury bonds at the NSE

1. H_{o1}→The CBR do not affect the value gilt-edge Treasury bonds at the NSE

2. H_{o2}→The IBR do not affect the value of gilt-edge Treasury bonds at the NSE

3. H_{o3}→There is no relationship between the repo rates and value of gilt-edge Treasury bonds at the NSE

2. LITERATURE REVIEW

2.1 Theoretical Review:

2.1.1 The Pure Expectations Theory:

Shiller and McCulloch (1987), attribute this theory of term structure to Fisher (1896). The theory states that long term rates reflect the expectations of future short term interest rates, which implies that the return on long term bond is the same as the expected return on a series of short term bonds during the same period. In this case market should be efficient in the sense that no time arbitrage is available and therefore the bond pricing becomes an easy task. This theory is the most popular and the most empirically tested. However, not all authors show the support of this theory by data. Although Meiselmann (1962), found it quite reliable, Grant (1964), Buse (1967), Malliel and Kane (1969), Jorion and Mishkin

(1991) and others found little evidence of this theory. The theory is however simple and can be used for constructing more complicated models. This may be the reason why it is tested again and again. The result is that the Pure Expectations hypothesis almost never holds for short-run changes of long term rates, but it is pretty often true for changes in short term rates for a long-run Campbell and Shiller (1991). The theory is also sometimes the only one to be used for emerging capital markets due to undeveloped financial instruments and absence of strict market segments Drobyshevsky, (1999).

2.1.2 The Segmentation Theory:

The Market Segmentation Theory introduced by Culbertson (1957), assumes that investors have strict maturity preferences. In this case pension funds with long term liabilities would invest in similar bonds while banks would operate in a shorter horizon. This implies existence of "separated" market segments each having interest rate determined by its own supply-demand interaction. The yield curves under this hypothesis are not even expected to be continuous over different maturity periods. Modigliani and Sutch (1966), extended the Market Segmentation theory in the way that investor may deviate from their maturity preferences if compensated by higher yield. Basically, this means the mixing of Market Segmentation and Liquidity Premium Hypotheses. While testing main theories for the UK market Taylor (1992), rejects all of them except of Preferred Habitat.

2.1.3 The Liquidity Premium Theory:

Liquidity Premium Theory developed by Hicks (1946), allows the long term interest rate deviate from the expected short term one. In this case the additional assumption on investors' preferences is made. The return on short term bonds is assumed to be more or less certain while the return on long term bonds (despite the name "risk-free") is not. In the long period some shocks can appear but long term bonds are not liquid enough to react to the shock immediately and this would lower the actual gain from holding the bond. Therefore investors would like to get additional interest called the liquidity premium for this uncertainty and long term interest rates deviate are higher than expected short term ones. The idea of Liquidity Premium Hypothesis is quite natural and indeed supported by data.

2.2 Conceptual Framework:

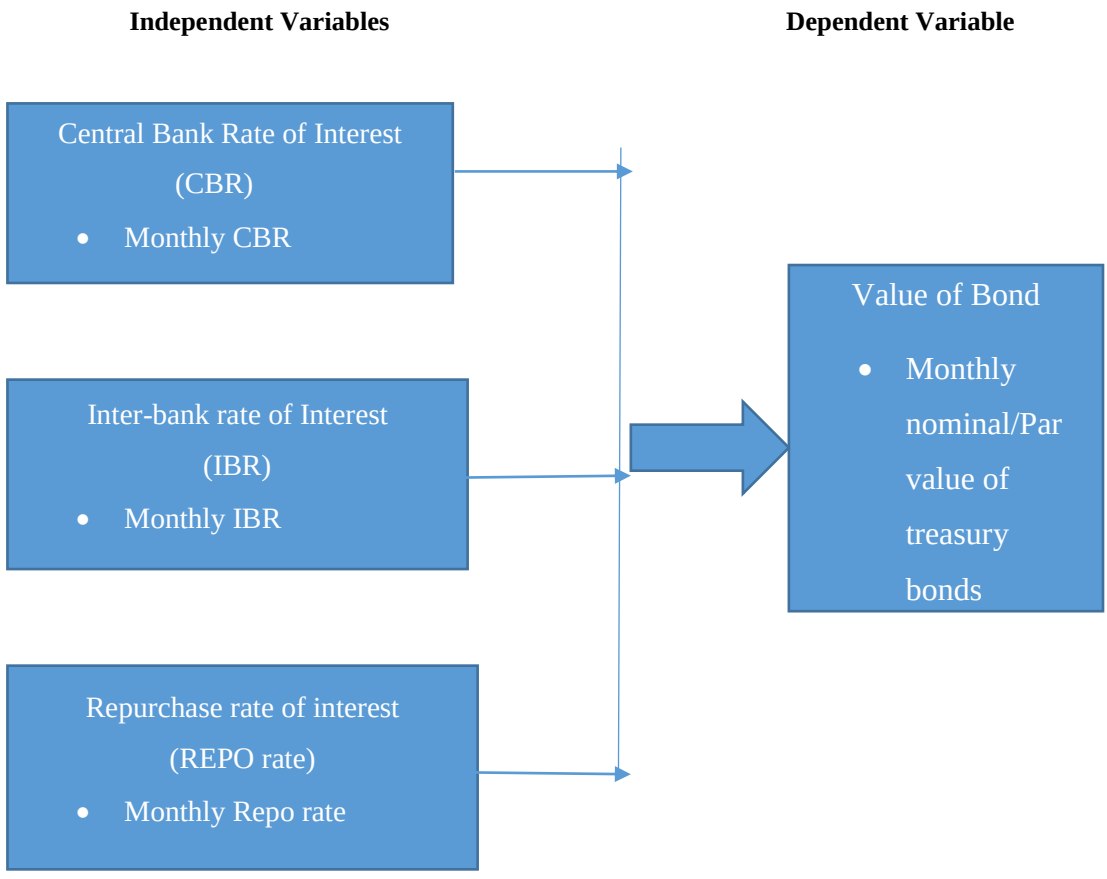

Figure 2.1 Conceptual Framework

2.3 Empirical Literature:

2.3.1 Central Bank Rate and the Bond Value:

Central banks do not set long term interest rates. According to study by Jordan and Jordan, (1997), every bond comes with a price that fluctuates in response to market conditions and key interest rates established by central banks. Market forces of demand and supply determine equilibrium pricing of long-term bonds and set long term interest rates. Short term interest rates are administered by the nation's central banks worldwide. Vayanos and Villa, (1992) argued in their study that if the rates rise above a bond's interest rate (coupon), its market value will be lower.

Conversely, a bond will be worth more if rates fall below its coupon rate. However, bonds usually trade in narrower price ranges than shares, another reason they can possess protective qualities in difficult times. For instance, in the United States, the Federal Reserve Board's Open Market Committee (FOMC) is responsible for setting the federal funds rate to promote economic growth while maintaining price stability as part of its dual mandate. If the bond market believes that the FOMC has set the fed funds rate too low, expectations of future inflation increase, which means long-term interest rates increase relative to short-term interest rates causing the yield curve to steepen. If the market believes that the FOMC has set the fed funds rate too high, the opposite happens and long-term interest rates decrease relative to short-term interest rates and this causes the yield curve flatten Vayanos and Villa, (1992).

2.3.2 Inter-Bank Rate and the Bond Value:

Vayanos and Villa, (1992) defines interbank rate of interest as the rate of interest charged on short-term loans made between banks. They reported that banks borrow and lend money in the interbank market in order to manage liquidity and meet the requirements placed on them. The interest rate charged depends on factors such as the availability of money in the market, on prevailing rates and on the specific terms of the contract, such as term length. It is a requirements, that banks hold an adequate amount of liquid assets such as cash, and to manage potential withdrawals from clients. If a bank is not able meet these liquidity requirements, it will be forced to borrow money in the interbank market to cover the shortfall. On the other hand, some banks, have excess liquid assets above and beyond the liquidity requirements. These banks will lend money in the interbank market, receiving interest on the assets. Vladimir (2011), published a wide range of interbank rates, including the LIBOR, which is set on a daily basis on the average rates on loans made within the London interbank market.

Inter-bank interest rates are key in all economies, typically playing two important roles: indicating the state of macroeconomic and liquidity conditions: and providing a building block for the pricing of financial assets. Inter-bank interest rates and bond yields are market determined. (Arora, 2008). The relationship between inter-bank rate and debt capital has been studied in different countries and mixed results have been found. Three monthly data series for each country were used. A three month inter-bank interest rate or their equivalents and secondary market yields of ten year bonds were used. The data on interbank rates and sovereign bond yields came from the (OECD) Organisation for Economic Co-operation and Development countries. Granger tests have been carried out to uncover causality directions between interbank and public debt markets for each country.

2.3.3 Repurchase Rate of Interest (Repo rate) and the Bond Value:

A repurchase agreement is a sale of securities with an agreement to repurchase the same security on a later date, typically at a higher price. A repo is thus synonymous to a collateralized loan. As with a collateralized loan, the lender of funds has possession of the borrower's securities over the term of the loan and can sell if the borrower defaults on its obligation. A general repo is one in which the lender of funds is willing to accept any of a variety of securities as collateral. The lender is primarily concerned with earning interest rate on its money. Interest rates on general collateral repos are usually quite close to rates on overnight lending by the Central Bank reflecting the essential character of general collateral repo as a devise for borrowing and lending money *Hrung et al*., (2010).

A special collateral repo, in contrast, is one which the lender of funds designate a particular security as the only acceptable collateral and is consequently, a device for borrowing and lending securities. Keane (1996). An important feature of repos is the 'haircut' imposed by the lender of funds. This is the difference between the market value of the pledged collateral and the amount of funds lent. A haircut of 5% for example shows that a dealer can borrow $95 for each $ in pledged collateral. A haircut farther protects the lender of funds against the risk of borrower default.

Hrung et al., (2010), presented evidence that Term Security Lending facility (TSLF) where securities are borrowed narrowed spreads. The underlying premise for the analysis is that an increase (decrease) in the amount of collateral available to the private market should decrease (increase) its marginal value because of the down ward sloping demand,

resulting in higher (lower) repo rate. They farther found that the observed narrowing emanated from an increase in treasury repo rates as opposed to a decrease in repo rates on less liquid collateral.

3. RESEARCH METHODOLOGY

3.1 Research design:

A quasi experimental and causal research design was used in the study. Causal research entails collecting data to determine whether there is an effect of one variable on the other and the relationship that exists between two or more quantitative variables and the magnitude of the relationship between two variables, (Kothari, 2008). The design was intended to answer three fundamental questions: the effect of interest rate on the nominal value of treasury gilt-edged bonds, the relationship between the dependent variable and the independent variable, and the magnitude of the relationship.

3.2 Research population:

The target population if this study consisted of all the fixed gilt-edged bonds issued by the Kenyan government and listed at the Nairobi Securities Exchange. The research focused on three types of interest rates; the central bank rate, the inter-bank rate and the REPO rate and how these rates affected the value of these Government bonds and subsequently the strength of the relationship between the rates and the performance of the bonds from 2008 to 2014.

3.3 Multivariate Regression Model:

The nominal values of state gilt-edged bonds were obtained from secondary sources and regressed against three regressors as per appendix 1 and subsequently analysed using multivariate regression Model:

Bond value = f (CBK rate + Inter-bank rate + Repo rate)

$$\mathbf{Y = \beta 0 + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \mu}$$

Y= β0 + β1 C.B.K. rate + **β2** Inter-bank rate + **β3** Repo rate + **μ**

Where: β0 Constant.
μ Stochastic variable or disturbance term.
X1 C.B.K. rate.
X2 Inter-bank rate
X3 Repo rate.

And β1, β2, and β3 are the coefficients of CBR, IBR and Repo rates respectively.

4. FINDINGS AND DISCUSSIONS

Figure 4.1 Analysis of Variance SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.362481
R Square	0.131393
Adjusted R Square	0.09882
Standard Error	4.893281
Observations	84

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	289.76	96.58667	4.033824	0.01003
Residual	80	1915.5356	23.94419		
Total	83	2205.2956			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	19.08187	2.0036122	9.523735	8.24E-15	15.0945565	23.06919	15.0946	23.0692
X Variable 1	-0.80315	0.3666196	-2.1907	0.031384	-1.5327512	-0.07356	-1.5328	-0.0736
X Variable 2	0.123792	0.2836311	0.436456	0.663682	-0.4406515	0.688236	-0.4407	0.68824
X Variable 3	0.411312	0.313452	1.312201	0.193205	-0.2124773	1.035101	-0.2125	1.0351

Regression Statistics:

From the regression model **Y = β0 + β1X1 + β2X2 +β3X3 + μ i.e. (Y= 19.0818 – 0.80315 X1 + 0.123792 X2 + 0.411312 X3 + μ)** the CBR, (X Variable 1) affected the nominal value of treasury gilt edge bonds albeit negatively i.e. (negative effect/bidirectional effect). Therefore, a decrease in CBR by **- 0.80315** led to a corresponding increase in the nominal values of gilt-edge bonds by 1 unit. This results are in agreement with those of Skinner and Zettelmeyer (1995), and Jordan & Jordan (1997).

On the other hand the IBR, (X Variable 2), and the Repo rate,(X Variable 3) also affected the nominal value of treasury gilt edge bonds albeit positively i.e. (positive/unidirectional effect). Consequently, an increase in IBR by **+ 0.123792** and an increase in Repo rate by + **0.411312** led to a corresponding increase in the nominal values of gilt-edge bonds by 1 unit. This results are in-tandem which the results of Cook and Hahn (1989), who documented the average positive co-movement in the U.S. bond markets in the 1970's. Similar unidirectional shifts in the yield curve were later documented for a variety of other countries as *Battellino et al*., (1997), for Australia; *Buttiglione et al.*, (1997), for Italy; and *Lindberg et al.*, (1997), for Sweden.

Since our independent variables (regresses) are three, the degrees of freedom (DF) are 3. The sum of squares due to regression (SS) is 289.76 while the sum of squares due to error (residual error) is 1915.53 leading to a total of 2205.29. This is because our model (**Y = β0 + β1X1 + β2X2 +β3X3 + μ**) is not 100%. This subsequently leads to 96.5866 i.e. (289.76/3) as mean of squares due to regression (MS) and 23.9441 i.e. (1915.5356/80) as the mean of squares due to residual error of the model.

To test the overall significance of our model i.e. the effect of the CBR, IBR and the Repo rate overally on the nominal value of the gilt-edge treasury bonds, the **F test** was used. Consequently, the calculated F figure ($\mathbf{F_{calculated}}$) is compared with the F tabulated from the statistical table ($\mathbf{F_{\text{tabulated from the statistical table}}}$).

If the $\mathbf{F_{calculated}}$ is greater than the $\mathbf{F_{\text{tabulated from the statistical table,}}}$ (F calc.> F tab.), the null hypothesis is rejected. From the results in figure 4.1, the $\mathbf{F_{calculated}}$ was 4.033824 **i.e.** (96.58667/23.9441) **and the** $\mathbf{F_{\text{tabulated from the statistical table}}}$ is 0.01003. This clearly shows that the overall hypothesis in chapter one (interest rates do not affect the value of gilt-edge Treasury bond) was rejected. This results show that overally all the three different interest rates have an effect on the value of treasury gilt-edge bonds. i.e. The Analysis of Variance (ANOVA) is significant.

To test for individual or the specific effect of each independent variable i.e. CBR, IBR and Repo T-Values or the P-Values in figure 4.1 above were analysed. To determine the level of individual significance the confidence level was also analysed.

The confidence level for the model analysis was **95%**, meaning that the margin of error allowable was **5%** i.e. (100-95%) which is equivalent to **0.05.** Therefore the model alpha which is the margin of error allowed was 0.05 i.e. (α=0.05). If the P value is less than the alpha i.e. (**P value < α**) then the individual independent variable has significant effect on the nominal value of the treasury gilt-edge security. This means that the null hypothesis is rejected.

From our results in figure 4.1 the P values are as follows:

X variable 1 (CBR)	P value is 0.0313	less than 0.05
X variable 2 (IBR)	P value is 0.6636	greater than 0.05
X variable 3 (Repo rate)	P value is 0.1932	greater than 0.05

Since the P value in CBR (0.031384) was less than the alpha 0.05 (**P value < α**) or 0.03 < 0.05 we rejected the null hypothesis and accepted the alternative hypothesis and concluded that CBR affected the nominal value of treasury gilt-edge bonds from 2008 to 2014.

Since the P value of IBR (0.6636) was greater than the alpha 0.05. We failed to reject the null hypothesis and rejected the alternative hypothesis and concluded that IBR did not affect the nominal value of treasury gilt-edge bonds from 2008 to 2014.

Since the P value of Repo rate (0.1932) was greater than the alpha 0.05. We failed to reject the null hypothesis and instead rejected the alternative hypothesis and concluded that the Repo rate did not affect the nominal value of treasury gilt-edge bonds from 2008 to 2014. Thus, from the above analysis, it is glaring that the CBR is the only independent variable that significantly affect the nominal value of treasury gilt-edge bonds.

If the T value is less than the alpha i.e. (**T value < α**) then the individual independent variable has significant effect on the nominal value of the treasury gilt-edge security. This means that the null hypothesis is rejected. From our results in figure 4.1 the T statistics values are as follows:

X variable 1 (CBR)	T value is -2.1907	less than 0.05
X variable 2 (IBR)	T value is 0.43645	greater than 0.05
X variable 3 (Repo rate)	T value is 1.31220	greater than 0.05

Since the T value in CBR (-2.1907) was less than the alpha 0.05 (**P value < α**) or 0.03 < 0.05 we rejected the null hypothesis and accepted the alternative hypothesis and concluded that CBR affected the nominal value of treasury gilt-edge bonds from 2008 to 2014.

Since the T value of IBR (0.436456) was greater than the alpha 0.05. We failed to reject the null hypothesis and rejected the alternative hypothesis and concluded that IBR did not affect the nominal value of treasury gilt-edge bonds from 2008 to 2014.

Since the T value of Repo rate (1.31220) was greater than the alpha 0.05. We failed to reject the null hypothesis and instead rejected the alternative hypothesis and concluded that the Repo rate did not affect the nominal value of treasury gilt-edge bonds from 2008 to 2014. From the above analysis, it is glaring that the CBR is the only independent variable that significantly affect the nominal value of treasury gilt-edge bonds. This results, corroborates the P analysis results.

Correlation of coefficient Analysis:

From the analysis in figure 4.1 the correlation between the interest rates and the nominal value of gilt-edge bonds was positive (unidirectional). Since the multiple R is 0.362481, the causality is a weak positive one. This results are in-tandem which the results of Cook and Hahn (1989), who documented the average positive co-movement in the U.S. bond markets in the 1970's. Similar unidirectional shifts in the yield curve were later documented for a variety of other countries as *Battellino et al*., (1997), for Australia; *Buttiglione et al.,* (1997), for Italy; and *Lindberg et al.,* (1997), for Sweden. Consequently, the null hypothesis was rejected and the alternative hypothesis accepted. i.e. interest rates affect the nominal value of treasury gilt-edge securities albeit the causal relationship is a weak positive one during the entire period of seven years.

Coefficient of Determination Analysis (R^2):

The coefficient of determination (R^2) calculates the proportion of values of Y (Nominal Value of Bonds) predicted or explained by values of X (the independent variables: CBR (XI), IBR (X2) and Repo rate (X3)). From figure 4.1 (summary output) the coefficient of determination (R Square) is 0.131393 translating to 13%. This means that 13% of changes in the values of the independent variables: CBR (XI), IBR (X2) and Repo rate (X3) were able to determine or predict the values of Y (Nominal Value of Bonds)

The weak coefficient of determination (R^2) could be attributed to other factors which affect the nominal value of bonds such as the discounting rate which is the measure of returns an investor would have if the bondholder invested in another security. Ideally the discount rate should equal the coupon rate though since the interest rate paid to the bond-holder fluctuates over time with an indexed coupon rate.

5. SUMMARY AND CONCLUSION

From the regression statistic interest rates (CBR, IBR and Repo rate) all affected the nominal value of treasury gilt-edge bonds. The CBR affected the nominal value of treasury gilt-edge bonds negatively relative to the IBR and the Repo rate which affected the nominal value of treasury gilt-edge bonds positively as per the regression model. However, the specific significance test (T-test and P values test) proved that only the CBR significantly affected the nominal value of treasury gilt-edge bonds from 2008 to 2014.

There was a weak positive coefficient of correlation (Multiple R) of 0.362481 between the CBR, IBR and the Repo rate and the nominal value of the treasury gilt-edge bonds. The R-Square; (coefficient of determination) was also found to be to be weak at 13 % proving that other factors outside the model affected the nominal values of treasury gilt-edge securities.

6. RECOMMENDATIONS

The Central Bank of Kenya can consider the research findings in its quest of formulating and implementing monetary policy directed to fostering the liquidity, solvency and proper functioning of a stable market-based financial system.

It can also use the research findings to formulate and implement such policies that best promote the establishment, regulation and supervision of efficient and effective payment, clearing and settlement system.

The Nairobi Securities Exchange can consider using the research findings in their bid to facilitate equity financing and also in facilitating the mobilization for investment in productive enterprises as an alternative in putting savings in bank deposits, real estate investment or outright consumption.

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APPENDIX - 1

Appendix 1: Nominal Value of Gilt-Edge Securities (Y) & Interest Rates (%)

Years/months	Y (billions)	CBR (XI)	IBR (X2)	REPO (X2)
January	8	8.75	6.7	1
February	8	8.75	6.7	1
March	8	8.75	6.7	1
April	8	8.75	6.7	4.6
May	8	8.75	6.7	1
June	8	9	6.7	3.3
July	8	9	6.7	2.5
August	8	9	6.7	1
September	8	9	6.7	0.4
October	18	9	4.3	0.3
November	5	9	4.2	0.4
December	6	8.5	4	0.1
January	18.5	8.5	4	1
February	10	8.5	3.6	0.1
March	10	8.25	3.9	0.3
April	13	8.25	3.4	0.1
May	13	8	4.1	1
June	12	8	2	0.2
July	12	7.75	1.9	0.6
August	11	7.75	2.3	1.5
September	12	7.75	2.3	0.3
October	12	7.75	1.7	0.6
November	18.5	7	2.1	1
December	13	7	2	1.3
January	12	7	2.3	0.7
February	14.5	6.75	1.6	0.6
March	14.5	6.75	1.6	0.4
April	12	6.75	1.6	1.1
May	12	6.75	1.4	1.4
June	7.5	6.75	0.7	0.9
July	15	6	0.9	1
August	31.6	6	1	1
September	13	6.75	0.8	1
October	15	6.75	0.6	1
November	6	6	0.5	0.1
December	16	6	0.8	0.1
January	16	5.75	0.8	0.1
February	18	5.75	0.7	1
March	18	6	0.8	0.2
April	18	6	2.4	0.2
May	18	6.25	3.7	2.7
June	18	6.25	4.4	0.7
July	13	6.25	5.7	0.8
August	10	6.25	7.2	0.8
September	10	7	5.4	0.1
October	20	11	9.5	3
November	15	16.5	21	1

December	10	18	13.9	1.8
January	10	18	13	6.8
February	10	18	13.5	1.4
March	10	18	17	1
April	5	18	10.2	4.1
May	3	18	12.1	8.3
June	5	18	11.8	7.6
July	10	16.5	9.7	9.2
August	10	13	6.1	6.3
September	15	11	4.4	5.5
October	12	9.5	6.7	5.6
November	12	9.5	4.9	5.7
December	15	9.5	3.3	3.4
January	15	9.5	4.1	4.3
February	15	9.5	6.5	5.4
March	20	9.5	5.4	5.1
April	25	9.5	4.9	4.5
May	10	8.5	4.4	4
June	20	8.5	4.7	3.9
July	15	8.5	5.6	3.6
August	20	8.5	5.9	1
September	20	8.5	5.2	1.3
October	20	8.5	7.1	1
November	10	8.5	7.5	1
December	15	8.5	5.1	1.1
January	10	8.5	7.3	1
February	10	8.5	6.2	1
March	15	8.5	4.3	1.6
April	15	8.5	4.9	4.1
May	15	8.5	5.2	4
June	30	8.5	4.3	1.7
July	10	8.5	5.6	1
August	15	8.5	8.2	1
September	15	8.5	5	3.8
October	15	8.5	4.2	4.8
November	15	8.5	4.2	3.1
December	20	8.5	4.4	3.9