

**DETERMINANTS OF LOCAL CURRENCY GOVERNMENT BOND MARKET
DEVELOPMENT IN KENYA**

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Requirements for the Master of Business Administration Degree of
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DECLARATION AND RECOMMENDATION

Declaration

This research proposal is my original work and has not been submitted for the award of a degree or any other qualification in any other university.

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.....Date21st August, 2024

Recommendation

This research proposal has been submitted with my approval as the university supervisor.

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DEDICATION

This thesis is dedicated to my lovely grand-parents and by extension the entire Odiga's and Oriewo's family and friends. This study success journey would not have been possible without their constant support, encouragement and most imperatively prayers.

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ABSTRACT

Driven by funding restrictions to finance budget deficits, developing economies have concentrated efforts to develop local currency bond market. Developed bond markets are associated with stronger macroeconomics fundamentals, stable financial systems with sounder and stronger institutional framework. In Kenya, the bond market is yet to significantly contribute to its main objective of financing budget deficit hence the government decision to introduced policies focused on building its medium-term to long-term debt securities to help finance vision 2030 objectives. Existing studies on the drivers of bond market development have focused on cross country analysis; sub-saharan Africa, East Africa, developing countries ignoring country specific characteristics. Others give divergent views on how factors affect the development of bond markets. This study to extend strand of literature on determinants of local currency bond market collected secondary data on: bond issuance and previously identified drivers. Annual time series data for the period 1998-2020 was analyzed using linear regression model. The independent variables were put into three groups namely: financial system architecture (corporate bond to GDP, banking sector size, stock market development); Macroeconomic (GDP current, GDP growth rate, GDP per capita, bank lending spread, exchange rate variability, inflation rate, fiscal balance) and governance (corruption index, state governance index, rule of law). The empirical results indicated that three factors; fiscal balance (R-squared =0.3649 p-value=0.0037), banking sector size (R-squared=0.1796, p-value =0.0556) and corruption index (R-squared=0.2533, p-value =0.0200) are all positively significant at 5% significance level this is in line with findings by Adelegan and Radzewicz-Bak (2009) found a positive and significant impact of those variables on government bond markets of Sub-Saharan countries. GDP growth rate was negatively significant at 10% level of confidence. The findings indicate: financial system architecture model insignificant (R= 0.43, p-value =0.1234), Macroeconomic model significant (R= 0.6751, p-value=0.033) and governance model insignificant (R= 0.44, p-value >0.05) whereas the combined model was generally significant at 5% level of significance, the overall R-Square statistic (R=0.83, p-value =0.0172) concluding that a multiplicity of factors appear to be relevant to bond market development in Kenya i.e financial sector, macroeconomic factors and governance .The study thus recommends that governments efforts should focused towards implementing policies that promote the development of financial markets, controlling its micro and macro-economic factors and creating strong administrative structure for a robust bond market.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABMDI	African Bond Market Development Index
AFDB	African Development Bank
AFMI	Africa Fixed Market Initiative
CBK	Central Bank of Kenya
CDSC	Central Depository & Settlement Corporation
CMA	Capital Market Authority
EME	Emerging Market Economy
GDP	Gross Domestic Product
IMF	International Monetary Fund
KES	Kenya Shillings
NSE	Nairobi Securities Exchange
T-BILLS	Treasury Bills
WB	World Bank

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The economic transformation of a country requires an efficient financial system that can affordably finance economic activities in the public and private sectors. For governments, a well-developed financial system, among other functions, is a source of debt used to finance the budget deficit and accelerate the pace of economic growth. The domestic financial system consists of private debt market that includes banks and other non-banking financial institutions (insurance companies, pension companies and mutual funds); and the public debt market which consist of bond markets. In the Kenya Vision 2030 blueprint, the government emphasizes the need to develop an efficient local capital market structure that enables collection of capital critically needed for sustainable development. This study focuses on the public debt markets and examines the evolution of the local currency Government bond market in Kenya as well as the factors that determine the growth of this market.

A treasury bond market is a financial market where the government - both national and regional- issues debt securities called treasury bonds to raise money from individual and institutional investors. This market is called the local or domestic currency bond market if the debt securities issued are denominated in domestic currency and foreign currency bond market if the issuances are denominated in foreign currency. Government bonds are issued in the primary market by the Central Bank acting as a fiscal agent of the government. Each bond issuance is identified by its characteristics such as maturity, coupon rate, yield, principal repayment terms, and bond provisions if applicable. These characteristics are pegged on the credit quality of the country and credit market condition with the aim of attracting interest from investors. Investors who buy the bonds in the primary market can sell the securities in the secondary markets under the exchange trading rules. In Kenya, such trading takes place at the Nairobi Security Exchange (Ngugi & Agoti 2009).

A decade ago, the treasury bond markets in emerging market economies (EMEs) including Africa were small and somewhat irrelevant and there was a huge doubt if the markets would ever develop (Burger *et al.*, 2015). As the global financial crisis persisted, and the previously easy access to concessional loans and grants from the development partners declined, many African countries found themselves compelled to turn to domestic capital markets. The first step was to undertake major financial sector reforms aimed at nurturing faster development of

the local capital markets. The agenda was to have deeper, liquid and stable financial systems that can facilitate access to local currency credit.

Pushing for the reforms were international financial institutions such as the International Monetary Funds (IMF), the World Bank (WB) and the African Development Bank (AfDB). The motive was to provide a toolkit designed to help developing country governments analyze the state of their local currency bond markets, and identify reforms priority areas (Essers *et al.*, 2014). The reforms renewed interest in African financial markets landscape paving the way for establishment of local currency government bond markets in many African countries (Essers *et al.*, 2016).

Bond market development

Levine (2005) describes financial development as the improvements in services provided by the financial systems. These functions include pooling of savings; allocation of capital to productive investments in the economy; monitoring of the investments; risk management; and exchange of goods and services.

For bond markets, the development involves an improvement in the depth, access and efficiency of the market (Svirydzenka, 2016; The World Bank, 2006). According to these two studies, market depth is measured as the outstanding bonds at the end of the year (bond market capitalization) as a percentage of the Gross Domestic Product (GDP). Access to the bond market is measured by the affordability (cost) of debt in the bond markets and the simplicity of the process of issuing a debt instrument in the bond market. The studies also measure efficiency of the bond market as the liquidity of the market which is reflected by the tightness of the bid-ask prices and market turnover ratio

1.1.1 Rationale for a Well-Developed Treasury Bond Market in Kenya

Kenya is one of the African countries that undertook major financial reforms initiated by the global financial institutions in the 1990s. Like in other countries, the aim of the reforms was to develop a functional local currency bond market to meet the long term financial needs of the government and private sector. A well-developed bond market has numerous economic benefits to the borrowers and lenders (investors). Additionally, well developed bond markets have numerous positive externalities that accrue from economic growth, financial inclusion and financial stability of a country (Burger *et al.*, 2015). Some of the direct benefits and positive externalities are briefly discussed below. First, the main motive behind the development of a local currency government bond market is to encourage government

borrowing in domestic currency. Kenya's treasury market has been useful in financing the budget deficit which has been growing steadily from 3.8% in 2009 (Central Bank 2010) to 6.7% in 2018 (Central Bank 2018). Recent statistics shows that concessionary grants from major development partners such as the World Bank and IMF to Sub-Saharan Africa (SSA) significantly declined from 103% of GDP in 1995-2000 to about 34% of GDP between years 2001-2008. Moreover, many African countries do not have access to world financial markets (Mu *et al.*, 2013). Therefore, a well-developed local currency bond market is critical in maintaining continuous flow of credit funds to the government in the wake of reduced funding by the multilateral agencies (Essers *et al.*, 2016).

Additionally, a local currency government bond market enables the government to avoid the original sin. In the absence of a vibrant domestic bond markets, governments are pushed to borrow from foreign capital markets and the debts are denominated in foreign currencies. This can cause serious currency mismatch and harm the economy specifically when the local currency depreciates in value. Well-developed local currency bond markets eliminates the original sin by allowing the government and local private institutions to access long term debts denominated in local currency (Burger *et al.*, 2015; Essers *et al.*, 2016; Essers & Cassimon, 2012).

Secondly, financial markets development has a positive relationship with economic growth and development. Long-run growth rate of GDP per capita and total factor productivity improves as a country's liquidity improves (Levine, 2005). Ibrahim and Alagidede (2018a) and Ibrahim and Alagidede (2018b) reveal that financial development supports economic growth in Africa although the effect is pegged on simultaneous growth of both the real and finance sectors. Batuo *et al.* (2018) assess the linkages between financial instability, financial liberalization, financial development and economic growth in Africa. They conclude that financial developments and financial liberalization have positive effects on financial instability and hence economic growth. Burger *et al.* (2015) observe that bond markets have positive externalities with respect to economic growth, financial inclusion and financial stability.

Third, developing a local currency government bond market helps in diversification of the structure of financial system and improves the financial sector stability. Laeven (2014) point out that the development of a domestic bond market reduces overreliance on the banking system which is more prone to external shocks. Moreover, bond markets have many different products, e.g. derivatives that can be used by financial institutions to manage risk and

strengthen financial stability. Mu *et al.* (2013) observe that development of domestic bond markets by Asian countries following the Asian financial crisis in 1997 helped the countries to easily withstand the 2000 - 2008 global financial crises. Burger *et al.* (2015) maintain that the growth of bond markets in emerging market economies has improved the financial stability in these economies making them be less reliant on foreign currency debts.

In Kenya, the banking industry is dominated by a few banks that are either subsidiaries of foreign banks or are foreign owned. This exemplifies a relatively risky situation in the financial sector because foreign banks are interconnected with their parent companies hence the country has high exposure to external shocks and financial crises experienced in the countries of origin of the foreign banks operating in the country. Moreover, Kenya witnessed the collapse of a number of banks between 2010 and 2020. Thus, it is important to have a well-developed bond market in the country to act as a spare tyre and ensure a steady flow of credit to the government and private sector in case of a crisis in the banking industry (Essers *et al.*, 2012).

Fourth, bond markets are effective in intermediating funds between surplus savers and the government (and private firms) and resolve capital flight. Essers *et al.* (2016), Ndikumana and Boyce (2011) observe that despite the critical need for capital, emerging markets are net exporters of capital due to lack of appropriate investment vehicles in the domestic capital markets. Collier *et al.* (2001) argue that lots of African wealth is stashed abroad. The continent can grow its domestic capital stock by two-thirds and GDP by 16% if it attracts back the flight component of wealth stashed abroad. In line with mobilization of savings, Kenya government introduced a mobile phone-based bond in 2017 to fulfill work that had been started in 2015 targeting the low-income retail investors. The bond known as M-Akiba seeks to enhance financial inclusion for economic development.

Lastly, a well-developed local currency government bond market in Kenya can be used by the central bank of Kenya to effectively conduct monetary policy operations, achieve low and stable inflation, and manage volatile exchange rates. For example, the central bank can purchase treasury bonds from commercial banks to increase the money supply in the economy. Essers *et al.* (2016) argue that bond markets help the government to fulfill the role of pricing benchmark and encourage sound macroeconomic and monetary policies as central bank use government securities in open market operation and furthering institutional quality. Furthermore, bond markets provide a variety of debt structures across many dimensions such as maturity, collateral and other options such as call provision embedded in the bond. This

diversity provides a greater flexibility than bank loans and reduces the cost of borrowing (Gilson & Warner, 1997).

1.1.2 Overview of the Treasury Bond Market in Kenya

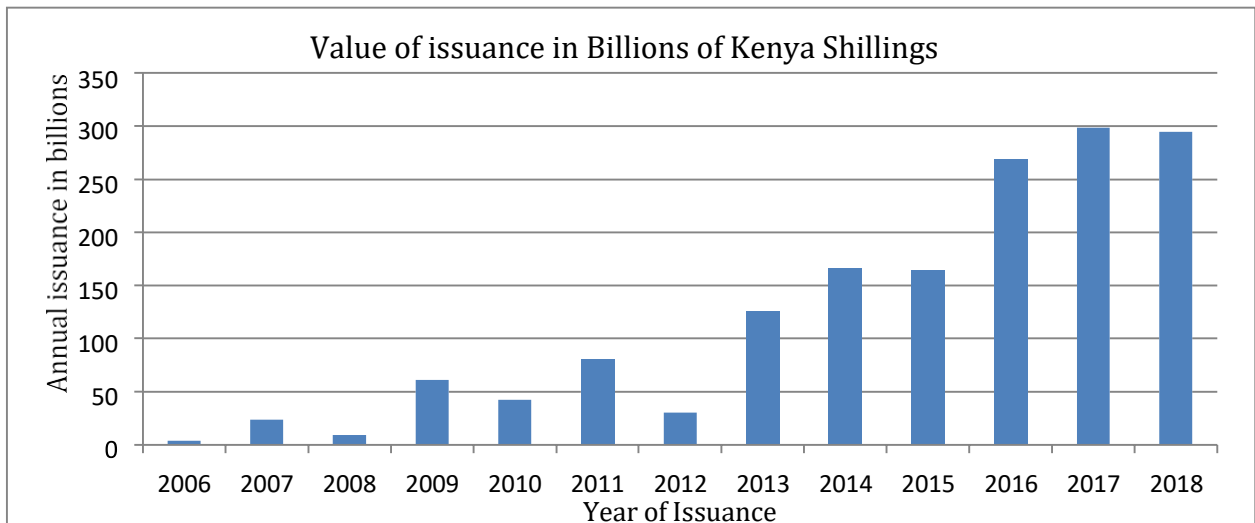
The Kenyan treasury bond market has grown tremendously over the last three decades to become the fifth largest bond market in Africa in terms of the value of outstanding bonds. The market was ranked seventh by the 2017 annual African Bond Market Development Index (ABMDI) conducted by Africa Fixed Market Initiative (AFMI) and sponsored by the Africa Development Bank. ABMDI reflects the developments of African local currency bond markets based on six metrics, i.e., economic conditions of the country, country governance, bond market infrastructure, issuing strategy and market access, domestic investor base, and active participation of the economic agents in the bond market. The current ranking demonstrates that the Kenyan bond market is doing well in nearly all these metrics compared to other African countries.

According to Ngugi and Agoti (2009), treasury bond market was first launched in Kenya in the 1980s to finance the government deficit but the market reported limited activity until it was re-launched in 2001. Following the re-launch, the bond market experienced steady growth and development through a dynamic process built on sound legal and regulatory framework, and favorable macroeconomic climate; thus, helping the government to attract huge amounts of funds to finance budget deficit. For instance, the enactment of Internal Loans Act, Cap 420 and the Public Finance Management Act of 2012 provided a clear framework for the minister of finance to borrow on behalf of the government by issuing treasury bonds which increases the supply of debt securities.

The market is the largest and most liquid government bond market in East Africa as of December 2020. The maturity structure of bonds in the market ranged from 2 to 30 years a demonstration of investors' confidence in the market. In the primary market, treasury bonds are issued by the central bank on behalf of the government. Investors with local bank accounts can buy the bonds directly from the central bank or through commercial banks, specifically those who do not have local bank accounts. Secondary trading of the bonds takes place at the Nairobi Securities Exchange where buyers and sellers transfer the bonds under the exchange trading rules. The market introduced an automated trading platform in 2009 and this has enhanced the ease of access and integrity of the trading process.

The following figures show some activity levels of the Treasury bond market in Kenya.

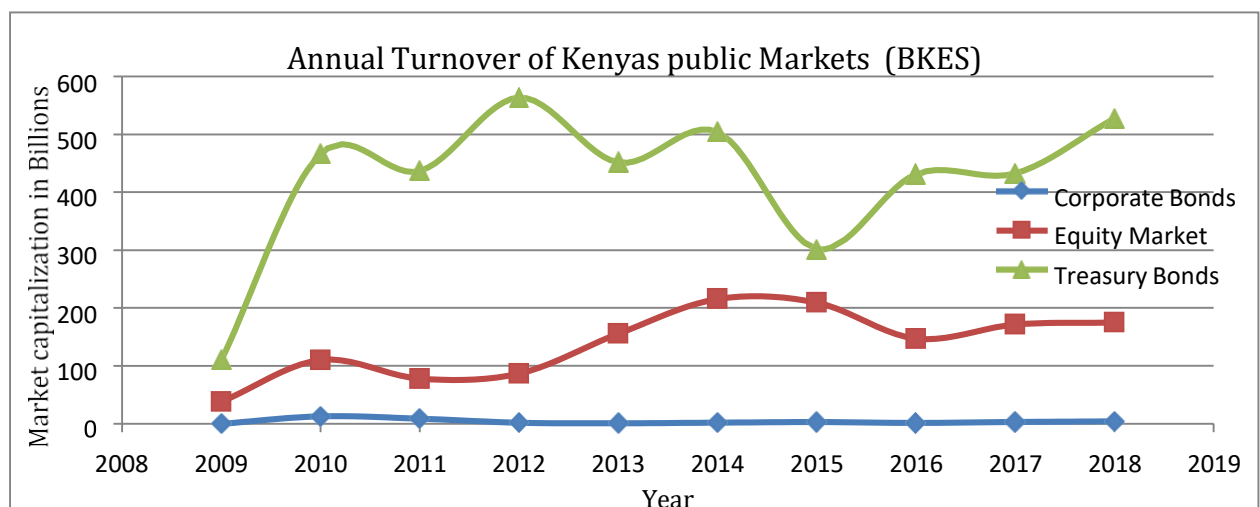
Figure 1 shows the value of annual issuance while Figure 2 compares the performance of the three public capital markets i.e. corporate bond market, equity market and Treasury bond market.



Bond issuance in billions

Figure 1: Value of government bonds issued from 2006 to 2018

Source: Central Bank of Kenya



Annual turnover

Figure 2: Public markets turnover in Billions of Kenya shillings from 2009 to 2018

Source: Capital Markets Authority of Kenya Quarterly Reports

Figure 1 shows that annual issuance increased from less than KES50 billion in 2006 to around KES300 billion in by the end of 2018, an over 10 times increase within 13 years. The figure shows a fairly steady growth in annual issuance with minor slumps except in a few years that experienced major drop in issuance. The first major drop in issuance was in 2008 when issuance dropped by more than 50%. This can be associated to the political instability in the

country in that year following the post-election violence that happened after December 2007 disputed general elections. A similar drop again occurred in 2012 when the issuance dropped by more than 50% (from KES80.72 to 30.29 billion). Coincidentally, 2012 was a run-up to another general election which was conducted in March 2013.

Figure 2 shows the trading pattern of the three publicly traded securities which reflects the investors' interest in the securities. Treasury bonds maintain the lead with a huge margin having a low of KES110.65 billion and a high of KES 563.82 billion in a year. However, it is also the most volatile security among the three publicly traded securities in terms of trading volume. The second most traded financial securities are equities. Unlike treasury bonds, equity securities trading volume is fairly smooth though the market also experiences some seasonal decline in trading volume. Corporate bonds have the lowest trading volume less than KES 12 billion between 2009 and 2018. Overall, Treasury bond market has performed well in Kenya compared to equity and corporate bond markets. However, the market remains shallow and illiquid and hence the need for further development.

1.2 Statement of the Problem

Existing studies on bond market development conducted cross country analysis to determine the drivers of bond market development. These studies have general conclusions which in some cases may not work for a specific country with their unique characteristics. Further time invariant variables have been used such as legal origin, land size and distance from the equator which may not apply when studying a specific country. This study is based on one country, Kenya, and intends to test the extent to which the factors that drive the development of bond markets as ascertained in the many cross-country studies, apply to an individual country. Therefore, the aforementioned time invariant factors were excluded while intermediating factors which are unique to individual countries, such as the effect of a general election and regulatory frameworks such as interest rate capping tested. Besides, there has been some inconsistency in literature on how some factors affect the development of bond markets such as exchange rate variability and capital account openness. The differences are either reported on the level of significance of the explanatory variables, or the nature of the relationship between one independent variable and the treasury bond market development. Other variables that have produced different results in previous studies include GDP at purchasing power parity, exports and fiscal balance. Cases of contradicting results between different sets of studies include: Mu et al. (2013), find that exchange rate variability and capital accounts openness have negative and significant effect on treasury market development while

Essers *et al.*(2016) find they have a positive relation. This study contributes towards the debate by testing some of the variables with conflicting results using a different study approach: the individual country study. Shedding light on the extent to which factors that determine the development of bond markets are applicable to Kenya, and the extent to which the moderating factors influence the development local currency government bond market in Kenya

1.3 Objectives of the Study

The overall objective of this study is to investigate the determinants of local currency Government bond market development in Kenya. The specific objectives are:

- i. To determine the effect of Financial System Architecture on the development of local currency government bond market in Kenya
- ii. To determine the effect of Macroeconomic Factors on the development of local currency government bond market in Kenya
- iii. To determine the effect of Governance on the development of local currency government bond market in Kenya
- iv. To determine the combined effect of Financial System architecture, Macroeconomic factors and Governance on the development of local currency government bond market in Kenya

1.4 Research Hypothesis

The study tests the following research hypothesis according to available data for the various determinants of local currency government bond market developments:

- i: A Country's Financial System Architecture has no significant effect on the development of its Local currency government bond market
- ii A Country's Macroeconomic Factor has no significant effect on the development of its Local currency government bond market
- iii A Country's Governance has no significant effect on the development of its Local currency government bond market
- iv There is no significant effect of the composite of selected Financial System factors, macroeconomic factors and Country's Governance on the development of its Local currency government bond market

1.5 Significance of the Study

This study is significant in many ways. First, to the best of our knowledge, it is the first study that carries out a single country study of the determinants of treasury bond markets development therefore useful to test and compare if findings from a single country study of the determinants of bond markets development can yield the same results as a similar but cross-country study. Secondly, the study tests the significance of new variables that are intuitively associated with the development of local currency government bond markets but have never been tested before. Examples include the level political events such as general election year. Thus, the study seeks to find built on existing knowledge on determinants of bond markets development.

1.6 Scope and Limitation of the Study

The study investigates the current status of the local currency bond market in Kenya after which it investigates the key determinants in the growth of the market using available data obtained in the period between years 1998-2020. To help identify those with strong relationship with the local currency bond market development. The study therefore provides an overview of the local currency bond market in Kenya, identify key determinants of market development and provide recommendation for policy reforms that help enhance development of local currency bond market in Kenya. The study partly relies on data from the World Bank database which may not have data for 2020 for some of the variables of interest.

1.7 Definition of Terms

- ✦ **Banking Sector** - an industry or a section of the economy devoted to the holding of financial assets for others and investing those financial assets as a leveraged way to create more wealth.
- ✦ **Local Currency Bond market development:** In this study, bond market development is measured by the improvement in depth which is the outstanding local currency bond at the end of each year as a percentage of the GDP.
- ✦ **Corruption:** Corruption is a form of dishonesty undertaken by a person or an organization which is entrusted in a position of authority, in order to acquire illicit benefits or abuse power for one's personal gain.
- ✦ **Corporate Bond Market Depth:** In this study, corporate bond market depth is measured by the depth which is the outstanding bond at the end of each year as a percentage of the GDP.
- ✦ **Country Credit Rating:** This is an independent assessment of the creditworthiness of a country in terms of the level of risk associated with investing in its debt market
- ✦ **Exchange Rates:** This is the rate at which one national currency is exchanged for another i.e the value of one country's currency in relation to another currency
- ✦ **Fiscal Balance:** This is a government income compared with its spending
- ✦ **GDP:** Gross Domestic Product this is the value of goods and services produced within a country
- ✦ **Interest rate:** This is the rate a bank or a lender charges to borrow its money
- ✦ **Legal & Institutional Framework:** These are a set of constitutional, legislative, regulatory and managerial rules that govern an establishment
- ✦ **Negative relationship:** Exists when the higher values of one variable tend to be associated with lower values of the other
- ✦ **Positive correlation:** Exists when one variable decreases as the other variable decreases, or one variable increases while the other increases.
- ✦ **Primary Market:** Market for the issuance of new bonds are issued by CBK on behalf of the government

- ✦ **Secondary Market:** Market where previous issued bonds are registered and traded at the NSE
- ✦ **Stock Market:** This is a public market that allows issuing, buying and selling of company shares
- ✦ **Treasury bond market:** Financial market where the government issues and trades debt instruments.
- ✦ **Treasury bonds:** Debt instruments issued by sovereign governments to borrow from the public
- ✦ **Treasury Bill:** Treasury bills are a secure, short-term investment, offering you returns after a relatively short commitment of funds

CHAPTER TWO

LITERATURE REVIEW

2.1 Development of the Treasury Bond Market in Kenya

Kenya's treasury bond market has made some remarkable strides since its inception in the 1980s. Market depth and liquidity have improved over time following a continuous implementation of sound fiscal policies by the government. Good legal and regulatory framework has ensured improved stakeholder participation and increased investment in market infrastructure resulting in faster payment and settlement system (World Bank and IMF, 2001). Data from the CBK's website shows that the aggregate Treasury bills and bonds increased from KES 170.80 billion in 2000 to KES 1,860 billion in 2016, translating to over 900% growth in 17 years (see Table 1). The ratio of Treasury bonds to treasury bills climbed up from 22% in 2000 to a high of 86% in 2011 surpassing the government's target of 70%: 30% for the period.

Due to the sustained growth, the market has become one of the top-performing bond markets in Africa, emerging fifth out of 54 bond markets in terms of size (market capitalization) in 2016. In 2017, it was ranked by African Bond Market Development Index (ABMDI) as the seventh-most developed bond market. The ABMDI is an initiative of the African Development Bank (AfDB) to assess progress in the development of bond markets in Africa. The top three bond markets, according to 2017 resurvey were South Africa, Botswana, and Egypt respectively. Kenya's 2017 ranking is a step better than the 2016 performance and one step towards position six held for two years in 2014 and 2015. Treasury bond issuance and trading take place in two different venues. Primary issuance takes place at the CBK while secondary trading is done at the Nairobi Securities Exchange (NSE).

2.1.1 The primary market

As a fiscal agent of the Republic of Kenya, the government has granted Central Bank of Kenya (CBK) the mandate to conduct issuance of treasury bonds in the primary market. However, the National Treasury continues to hold the overall responsibility for the size and structure of all government debts. The bonds are issued in monthly auctions following a schedule published by the bank to show the date of the auction date, announcement of results and settlement.

This information enables the investing public to be aware of all upcoming auctions and so that those interested can choose the right bonds to match their financial needs.

The process of applying for Treasury bond instruments require three things: investors (individuals and corporate investors) to hold an account with the Central Depository & Settlement Corporation (CDSC); possession of identification documents; local commercial bank account where interest and redemption payments are to be made upon meeting these requirements. Investors can access the upcoming auctions and identify the desired bond; fill the details in the application form obtained from the CBK website or any agent's office. Filled application forms are delivered to any of the CBK branches or head office. Investors can also buy Treasury bonds through commercial banks, licensed non-bank financial Institutions, stockbrokers, investment banks, and investment advisors, as nominees of these institutions.

The minimum amount of money to invest in treasury bonds is KES 50,000, and subsequent sales are also in multiples of KES 50,000 each. However, this minimum amount is higher (KES 100,000) for infrastructure bonds. On the other hand, the maximum amount for CDSC account and bond tenure is KES 20 million. There has been a concern raised by stakeholders that the minimum amount investable in government bonds and subsequent sales is high and therefore a barrier to the participation of many small-scale investors in both the primary and secondary bond markets. However, it is worthy to note that the current figures are as a result of a revision from KES 1 million done in 2009. The change was done to open the doors for more small-scale investors.

The first Kenya government Treasury Bond was issued in April 1997: (Ngugi & Agoti, 2009; Ngugi, Amanja & Maana, 2007). The one-year floating-rate bond worth KES 5 billion attracted only 50% of its value. The poor performance was associated with a lack of awareness of the bond placement. In September 1998, the government renewed its interest in the Treasury bond market by issuing two different bonds worth KES 5 billion each. The bonds had maturities of one and two years. Overall, the two bonds performed worse than the first issuance, raising only KES 2.8 billion (56%) and KES 500 million (10%) subscriptions respectively.

While the poor performance of the two bonds was attributed to a liquidity crisis that had hit the few small banks operating in the country at that time, the government realized the need to change strategy to curb the attendant failure of its bond issuance. This prompted a series of policies and programs to improve the market depth and liquidity. A law making it mandatory for insurance companies to invest at least 25% of their gross premiums in government debt securities was enacted. In 2001, a debt restructuring program was instituted with a mandate to

replace fragmented short-term treasuries with medium- and long-term bonds.

In 2002, the government adopted a multi-price bid auction system in favor of the rigid non-auction based system seen as a bottleneck to market liquidity. The new system allowed investors to submit bids with quotes of interest rate, making Treasury bond pricing more competitive and attractive to investors. The domestic debt restructuring program achieved its target of reversing the ratio of treasury bills to treasury bonds from 30: 70 to 70: 30 in 2009. Since then, the primary bond market has continued to record remarkable growth with regards to frequency, size, and maturity as well as growing the investor base and improving their participation. The table below shows the evolution of government securities issuance from 2000 to 2016

Table 1: Treasury Bonds and Treasury bills issuance in Kenya

Year	T Bills (BKES)	T Bonds (BKES)	Total (BKES)	% T Bonds
2000	134.00	36.80	170.80	22%
2001	116.00	44.50	160.50	28%
2002	87.00	106.00	193.00	55%
2003	78.70	161.00	239.70	67%
2004	62.90	188.00	250.90	75%
2005	71.90	193.00	264.90	73%
2006	94.50	218.00	312.50	70%
2007	94.40	272.00	366.40	74%
2008	76.20	315.00	391.20	81%
2009	119.00	360.00	479.00	75%
2010	133.00	513.00	646.00	79%
2011	107.00	633.00	740.00	86%
2012	161.00	686.00	847.00	81%
2013	268.00	733.00	1,001.00	73%
2014	299.00	903.00	1,202.00	75%
2015	390.00	1,070.00	1,460.00	73%
2016	620.00	1,240.00	1,860.00	67%

Source: Central Bank of Kenya website

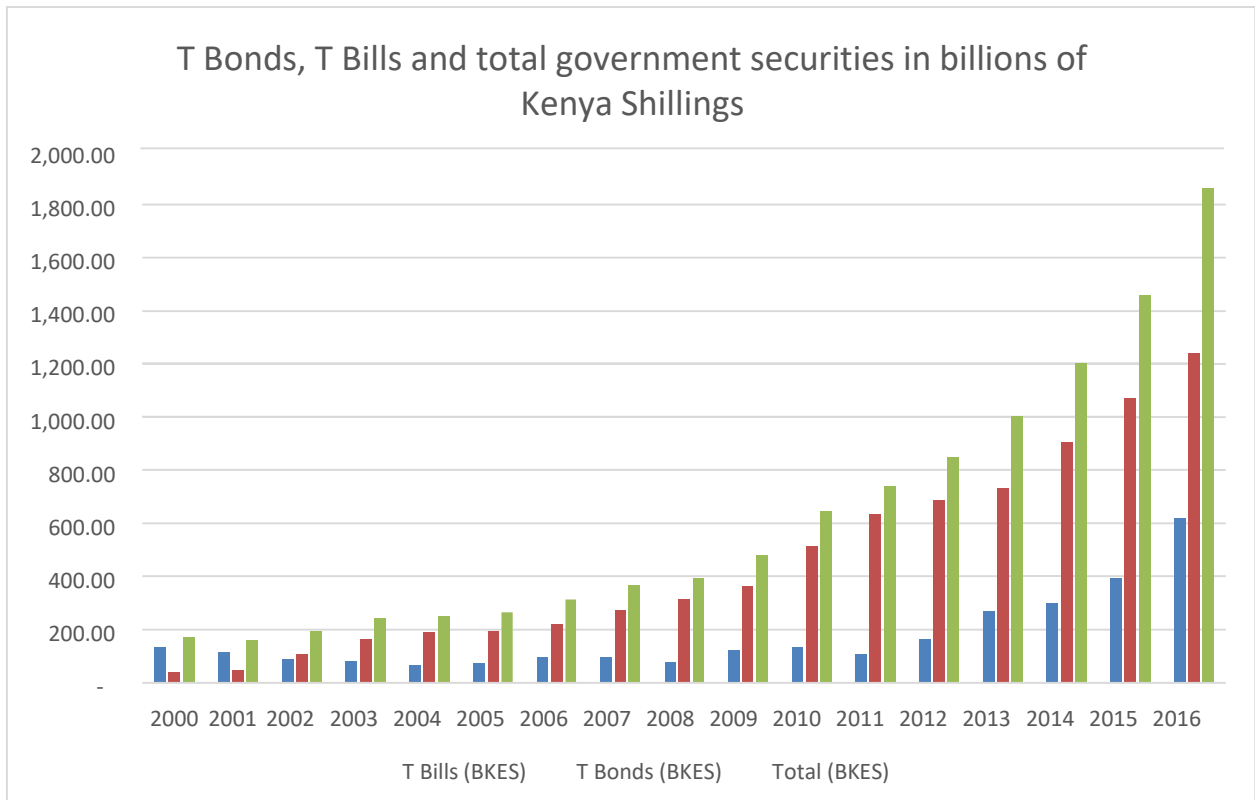


Figure 3: Treasury Bonds and Treasury bills issuance in Kenya from 2000 to 2016

Source: Authors using data from Central Bank of Kenya

The graph above shows that the issuance of government bond tradable securities has been in the increase since 2000. The market started with treasury bills dominating the market with the treasury bonds accounting for only 22%. By 2002, the treasury bonds started dominating the government securities market, and this trend has remained to date. The highest percentage of treasury bonds to treasury bills was 86% recorded in 2011.

The table below also shows the performance of Treasury bond market in terms of annual offers by the government, the amount raised, and the performance rate of each issuance

Table 2: Treasury bond issuance and subscriptions between 2001 and 2016

Year	Bond offer	Amount received	Amount accepted	Perfomance rate	Bid cover rati	Market Turover
2001	3.00	2.98	15.30	0.99	1.00	14.08
2002	7.31	6.74	21.61	0.92	2.97	33.63
2003	112.00	107.10	73.99	0.96	0.72	41.13
2004	143.50	67.08	53.33	0.47	0.77	34.11
2005	143.00	112.20	77.06	0.78	0.63	13.63
2006	157.20	132.60	88.77	0.84	0.66	54.16
2007	144.40	172.60	116.70	1.19	0.67	84.14
2008	123.00	95.51	66.24	0.78	0.66	63.21
2009	176.50	208.20	143.20	1.18	0.66	107.85
2010	219.60	290.30	181.10	1.32	0.63	466.07
2011	505.60	253.40	181.20	0.50	0.58	427.69
2012	271.10	342.40	169.50	1.26	0.48	522.89
2013	358.00	501.20	258.50	1.40	0.50	442.4
2014	547.80	364.40	204.60	0.67	0.55	467.4
2015	435.00	472.40	244.60	1.09	0.48	294.32
2016	136.00	94.32	55.69	0.69	0.59	399.9

Source: Central Bank of Kenya website

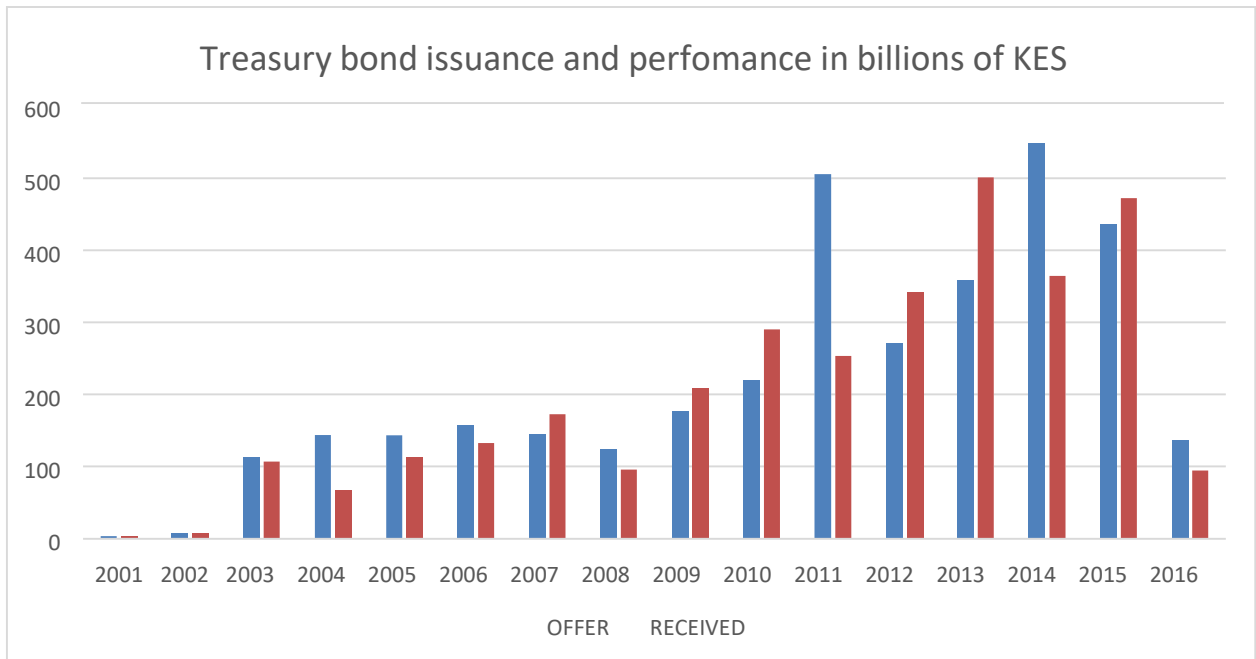
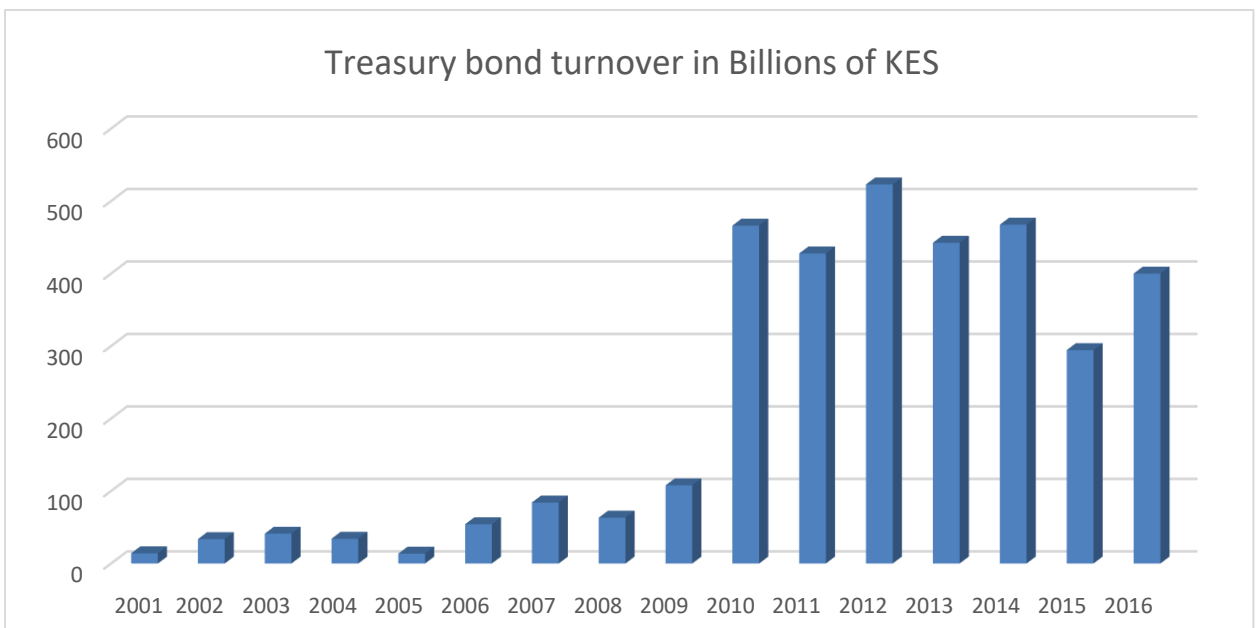


Figure 4: Treasury bond issuance and subscriptions between 2001 and 2016



Source: Authors using data from Central Bank of Kenya

Figure 5: Treasury Bond Turnover in billions between 2001 and 2016

The table and figure above show the steady performance of the Treasury bond market since 2001. The market maintained a performance rate of over 80% during the period except in 2004, 2005, 2011 and 2016. The best subscription performance was in 2013 when the government raised 40% above the target. The performance shows an increase in interest in the

market by investors, which shows an increase in liquidity. However, this performance seems to have experienced a shock in 2015 and 2016

2.1.2 The benchmark bond program

As mentioned earlier, the debt restructuring program was instituted to improve the market depth and liquidity. In furtherance of this motive, the government came up with a new program in 2007 known as benchmark bond program. The benchmark program was designed to identify and recommend benchmark bonds with appropriate size and frequency of issuance and longer maturity. Under this program, the two-year bond; five-year bond; ten-year bond; 15-year bond and 20-year bonds were earmarked as benchmark bonds for local currency government bonds. Additionally, the longest maturity was extended to 25 years in 2010 and 30 years in 2011. This marked the beginning of bond reopening program which is credited for reducing the number of short-term bonds scattered along the yield curve.

Thotho (2017) observes that the benchmark bond program resulted in the development of a firm and a reliable yield curve that supports the competitive pricing of bonds. The initiative boosted the confidence of the private sector in the market. This improved secondary trading at the bourse, resulting in a deeper and liquid secondary market. Thotho (2017) recommends more efforts to increase demand of bonds in the primary market and improve the frequency of trading in the secondary market as a way of dealing with bond yields volatility, should be encouraged.

2.1.3 Diversification products

Initially, the bond market operated with minimal bond option, mainly short term fixed-rate bonds. The benchmark bond program brought many bonds with different maturities. By 2011, there were eight different maturities to choose from (2, 5, 7, 10, 15, 20, 25, and 30 years), bringing flexibility in the market. As the maturities were extended, it became difficult for both government and investors to forecast risk and determine bond interest, prompting the introduction of floating rate bonds as an additional product in the market. Floating rates are suitable for extended maturities because it allows for adjustment of the coupon rates based on prevailing market condition not anticipated at the time of bond issuance.

Besides the floating rate bonds, the government issues zero-coupon bonds with similar characteristics to treasury bills - short term maturity and no interest payments. These bonds are issued at discounted prices and redeemed at face value. The difference between issue price and the redemption value act as a return to the investors. Another addition to the list of bond

products is the infrastructure bonds which was introduced in 2018 (C.M.A) to raise KES 18 Billion to finance long term infrastructure projects. These particular bonds are attracting more interest in the market because the returns are tax exempt.

Moreover, investors are allowed to choose from two different types of bids: competitive and noncompetitive bids. Those who choose competitive bids quote the interest rate they expect to receive. This kind of bid is popular with large scale and institutional investors. On the other hand, small scale retail investors submit non-competitive bids whereby interest rate on the bond is based on the average interest of all the competitive bids submitted. Still related to the auction process, The CBK in July 2002 abandoned the non-auction-based issuance system in favor of the multi-price bid auction system, allowing market forces to determine treasury bond prices in auctions.

The latest innovation in the treasury bond market in Kenya is the introduction of M-Akiba bond, a mobile phone-based treasury bond that targets low-income citizens to save and earn attractive interest rates on government securities. M-Akiba bonds seek to promote financial inclusion and economic development through savings and infrastructure development. Investing in M-Akiba is more straightforward than treasury bonds. Opening an M-Akiba account requires a national identity card and a mobile phone with a line registered for mobile money transfer services. The minimum investment amount per account is KES 3,000, and the subsequent amounts should be in multiples of KES. 500.

The first M-Akiba issued in June 2017 worth KES 1 billion with a green shoe option of KES 3.85 billion was largely undersubscribed. The total amount raised was less than 25% of the target value, a problem attributed to a lack of adequate awareness education. Moreover, the country was going through unfavorable business environment caused by political campaigns for general election that was due in less than two months. The government reopened M-Akiba bond in March 2019 with a target of KES 250 million, hoping that the prevailing political stability can guarantee better performance than the previous issuance. Overall, the government hopes that M-Akiba bond boost the savings culture in Kenya which currently stands at 11% of GDP compared to some east African countries such as Rwanda and Uganda which have a savings rate of 22% each.

2.1.4 Secondary market for Treasury Bonds in Kenya

After the initial issuance, government bonds are listed at the NSE where they trade in the secondary market. Until 2009, secondary trading of the government of Kenya securities could only take place at the Nairobi Securities Exchange. The Capital Markets Authority repealed the law, thus allowing both treasury bonds and bills to be traded in the OTC market. Following this significant development, treasury bonds were uploaded into the new automatic trading system in 2009, and on December 7, 2009, treasury started trading on the new platform.

To deepen the bond market, the NSE introduced a new system of trading Treasury Bonds in 2014. The system allows online trading of debt securities and transmission of executed trades reported by the exchanges automated trading system (ATS) via a secure interface to the CBK's clearing center in three intervals during the daily trading sessions. The system is more efficient, scalable, and flexible, and can support trading in bonds that have been issued in foreign currencies. The integration with Central Bank clearance center allows faster clearance and settlement of Treasury bonds. This helped to reduce the settlement cycle from T+3 to T+0 and enable intraday trading. This innovation has significantly improved the liquidity of the market and guarantees faster settlement in the trading of bonds.

The rapid growth in the Treasury Bond market could not have taken place without a broad investor base both in the primary and secondary markets. The investor base in the secondary market is dominated by institutional investors who control over 90% according to the CMA quarterly reports. Among the institutional investors, are pension funds, followed by insurance companies then commercial banks. Retail investors have also increased their participation in the market. High interest rates attract many foreign investors during periods of low interest in their home countries.

Foreigners participate in the treasury bond market without much restrictions. They can repatriate their profit as long as they have fulfilled their tax obligations with the tax authority. There is no tax on capital gains, however, withholding tax on interest income is charged at the rate of 15% on bonds with a maturity between two and nine years, and 10% on bonds with maturities of 10 years and above. There is no withholding tax on interest on infrastructure bonds. Currently, the government has double taxation agreements with Zambia, Norway, Denmark, Sweden, U.K, Germany, Canada, and India. Thus, foreign investors from these countries are exempted from double taxation on the same income when they repatriate their bond investment income to their home countries.

The figure below shows the secondary market turnover in billions of Kenya shillings between 2001 and 2016.

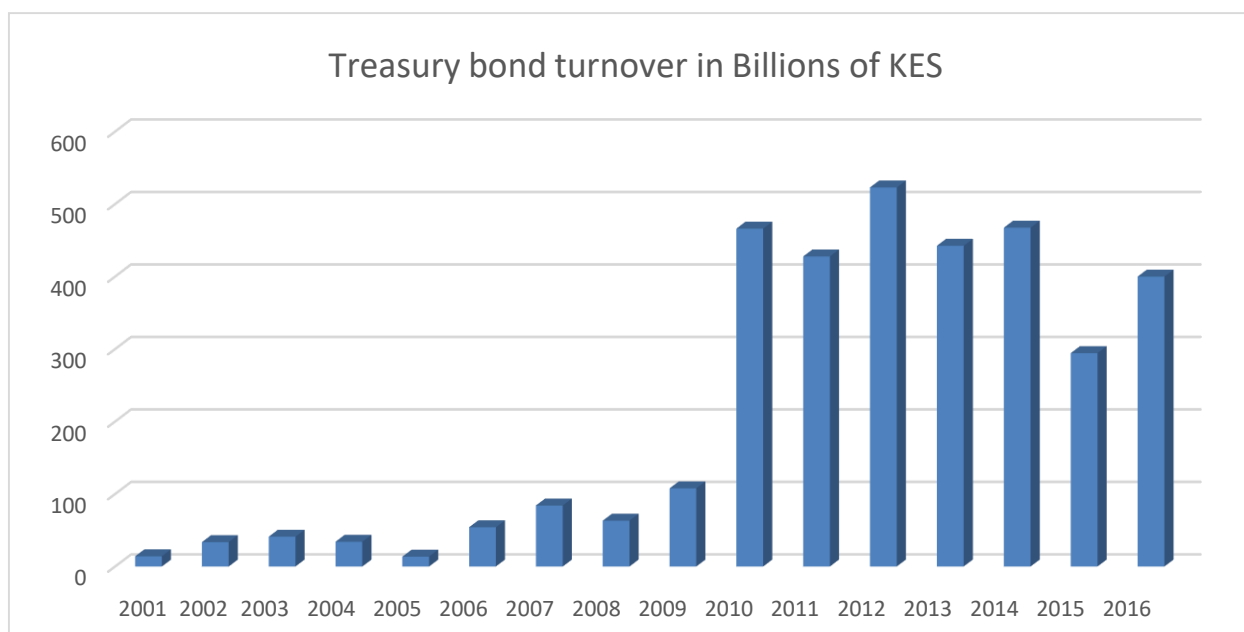


Figure 6: Treasury Bond market turnover
Source: By the authors with data from Central Bank of Kenya

The figure shows that secondary market liquidity was stagnated below KES 100 billion between 2001 and 2007, but this increased sharply between 2007 and 2012, hitting a high of over KES 500 billion. However, the performance started to decline in 2013 and has since been fluctuating.

2.2 Economic Growth and Bond Markets Development Nexus

According to the neoclassical school of economics, capital is a primary factor of production as well as a crucial driver of value and economic growth. Intuitively, a well-developed capital market, more specifically in terms of depth, facilitates economic growth by providing firms with capital needed to increase production. A sustained increase in productivity and expansion of firms can, in turn, lead to economic growth. Thus, there is undoubtedly a positive relationship between capital market development and economic growth. This hypothesis is supported by empirical evidence, which points out that well-functioning capital markets increase economic efficiency, investment, and growth in emerging economies.

Ibrahim and Alagidede (2018a) examine economic growth in a case where the growth in the finance and real sectors of the economy are disproportionate. The evidence from 29 sub-

Saharan African countries over the period years 1980 to 2014 shows that the positive effect of financial development on economic growth largely depends on the simultaneous growth of real and financial sectors of the economy. Ibrahim and Alagidede (2018b) observe that while financial development is positively and significantly associated with economic growth, below a certain level, finance becomes insensitive to growth while significantly influencing economic activity for countries above the thresholds. Thus, a higher level of financial development is a necessary condition in long-run growth.

Batuo et al. (2018) investigated the link between financial development, financial instability, financial liberalization, and economic growth in 41 African countries between 1985 and 2010. The result suggests that financial development and financial liberalization have positive effects on financial instability. The findings also reveal that economic growth reduces financial instability, and the magnitude of reduction is higher in the pre-liberalization period compared to the post-liberalization period. Diao and McMillan (2018) reveal that financial markets growth explains the patterns of growth across Africa.

Wong and Zhou (2011) study the relationship between financial markets development and economic growth in Hong Kong, China, Japan, the US and the UK in a bid to support the proposal that stock market development is a crucial driver of economic growth in developed and developing countries. The study concluded that stock markets development has a strong positive correlation with industrial production, which results in economic growth. Similarly, Hossain *et al.* (2017) study the relationship between financial sector development and economic growth in Bangladesh between 1988 and 2013, focusing on four variables: financial depth; financial access; financial efficiency; and financial stability. The results showed that financial sector development does not significantly cause per capita GDP growth. However, they observed that there is a two-way relationship between the selected variables: financial depth and stability; financial efficiency and accessibility and vice-versa.

Ngugi *et al.* (2006) study the effects of financial deepening on economic growth in Kenya. They observe that there is a significant positive relationship between economic growth and capital market development. More specifically, there was a highly significant positive relationship between bond markets and the banking sector development and economic growth.

Burger *et al.* (2015) concur with Mu, Phelps, and Stotsky (2013) and Levine (2005) that bond markets have a positive effect on economic growth, financial stability, and inclusion. They

observe that the Asian economy remained resilient during the recent global financial crisis due to the well-developed bond markets that minimized dependence on the bank and foreign-sourced financing. They argue that sizeable fiscal balance leads to massive domestic borrowing thus facilitating the growth of government bond markets in line with the findings of Abbas and Christensen (2010) and Adelegan and Radzewicz-Back (2009), but contradicts (Didier& Schmukler, 2014).

2.3 Drivers of Bond Markets Development: Empirical Evidence

From the literature reviewed, the study identifies the determinants of financial market development in general, and Treasury bond market development in particular, as discussed below. While some of these factors were found to influence the development of corporate bond markets, it has been established that the drivers of corporate bond markets development and treasury bonds markets development are primarily similar (Adelegan & Radzewicz-Back, 2009; Mu *et al.*, 2013). The variables identified were classified into three as below:

2.3.1 Financial System Architecture

The measures of financial system architectures includes: corporate bond market equity market and banking sector Countries that do not impose capital accounts control allow investors to invest and repatriate their earnings and investment conveniently. Capital account includes foreign investment and loans, banking, and other forms of capital. This can speed up growth in the treasury bond market development, especially in emerging economies like Kenya, where foreign investors come to look for high yields. Absence of sound market structure and institution investors, low domestic saving rate, lack of interest from International investor's results small highly homogeneous market contrary to heterogeneity required for market efficiency coupled by economic instability as a result of fiscal deficit deteriorating exchange rate weaken investors' confidence while increasing the risks associated with development of government securities (*Developing Government Bond Markets*, 2001). Muet *al.* (2013) and Claessens *et al.* (2007) in the study Government Bonds in Domestic and Foreign Currency: the Role of Institutional and Macroeconomic Factors, confirmed that capital account openness influences the development of government bond markets i.e economies with deeper domestic financial systems (in terms of bank deposits, stock market capitalization) have larger domestic currency bond markets and issue less foreign currency debt.

The banking sector development: Smaoui *et al.* (2017) in their study on The Determinants of Bond Market Development: Further Evidence from Emerging and Developed, observe that the relationship between the size of the banking system and bond market development is ambiguous. Banks and bond markets are competing for similar sources of debt finance. Intuitively, the successful development of one sector should be a source of the slow development of the other. On the other hand, bond markets need a well-developed banking system that facilitates capital accumulation, implying a positive relationship. Besides, banks are bond market dealers, and therefore, the success of banks may mean deep and liquid bond markets. Ozkan *et al.* (2010) explore the relationship between financial sector characteristics and the scale of public debts in emerging economies. They found that economies with more in-depth deposit market and competitive banking industry lower the cost of borrowing and facilitates the growth of government bond markets. They, however, argue that over-investment in government securities by banks is a source of fragility in the financial markets. Claessens *et al.* (2007) observed that an extensive banking system promotes the issuance of local currency bonds.

2.3.2 Macro Economic Factors

The measures of macroeconomic factors adopted include: GDP per capita, Interest rate volatility, fiscal balance, inflation and exchange rate GDP per capita also Gross domestic product (GDP) per capita is an economic metric that breaks down a country's economic output per person it is calculated by dividing GDP of a country by its population: While the relationship between financial markets development and the GDP as a measure of economic growth hasn't been conclusively established positively, the cause-effect relationship is still a subject of empirical debate. According to Adelegan and Radzewicz-Back (2009) in their paper, What Determinant Bond Market Development in Sub-Saharan Africa? and Adarov and Tchaidze (2011) in their paper Development of financial market in central Europe observed market difference cannot be explained fully by micro-economic factors, it is GDP per capita that affects debt markets. Bae (2012) notes that the degree of economic development measured by per capita income is the most critical variable in explaining cross-country variations in the three types of bond markets (corporate, financial and government bond markets). Further-more studies on Interest rates volatility and spread concluded that Interest rates have a direct effect on the supply and demand for treasury bonds since they reflect the cost of debt to the government and a return to investors. Sy (2010) in the study, Government Securities Markets in the West African Economic and Monetary Union reviews trends and

development of government bond markets in West African Economic Union, and they conclude that the factors that influence supply and demand in the bond markets are more relevant to investors than bond ratings and macroeconomic fundamentals. Adelegan and Radzewicz-Back (2009) investigate the determinants of bond markets development in 39 African countries between 1980 and 2010. They observe that the development of treasury bond markets in Africa is positively related to interest rate volatility and negatively related to high interest rate spread. These findings above were confirmed by Mu *et al.* (2013) when they assessed the drivers of government bond markets development in Africa. They found that Treasury Bond markets development is positively related to the interest rate volatility and negatively related to higher interest rate spread. This finding on the relationship between bond markets development and interest rates is not unique to the Africa continent only. Bae (2012) examines the causes of the cross-country difference in bond markets development in Asia and reveal that lower interest rates are suitable for the development of corporate bond markets. While bond issuers prefer lower rates, the low rates translate to low return to bondholders making bond markets less attractive to the buy –and–hold investors this reduced market liquidity. Governments finance revenue shortfall also known as Fiscal balance through domestic and foreign borrowing. A big-budget deficit translates to more borrowing, and if this is from the domestic public market, it increases the supply of treasury bills and bonds. Issuance of treasury bonds increases activity in the primary bond market leading to market development. Adelegan and Radzewicz-Back (2009) observes that fiscal balance, among other things, matters in the development of bond markets. Mu *et al.* (2013) reveal that the relationship between bond markets development and fiscal balance in Africa is negative. Bae (2012) concurs with other researchers that the fiscal balance significantly affects the outstanding government bonds. Smaoui *et al.* (2017) examines the development of bond markets in 22 emerging and developing countries and concludes that better fiscal balance is negatively related to the development of bond markets. Burger and Warnock (2006) urges for caution in domestic borrowing by the government. They observe that though government borrowing in the local currency bond market contributes to market development, the effect is limited to a certain threshold. They recommend a debt discipline to avoid the adverse effects of massive domestic borrowing in developing countries. This theory is supported by Mbate (2013). The researcher warns that heavy government domestic borrowing is harmful to the growth of private-sector bonds as it can affect private sector capital accumulation. This may affect the overall performance of financial markets, including the Treasury bond markets. The other variable of interest was Currency exchange rates. Fluctuations in the exchange rate

affect the value of capital, interest income, and gains earned by foreign investors when the income is to be repatriated back to the home country. An unstable exchange rate regime increases the exchange rate risk, discourages foreign investors, and slows the growth of bond markets. Kodongo and Ojah (2012) in their study *The dynamic relation between foreign exchange rates and international portfolio flows: Evidence from Africa's capital markets* found that the relationship between foreign currency exchange rates and international capital flows in Africa is both country-specific and time-varying. This means that most investors are keen to seek favorable exchange rate regimes hence hold their decision until the right time occurs. Laeven (2014), Mu *et al.* (2013) and Adelegan and Radzewicz-Back (2009) find that there is a negative relationship between exchange rate volatility and bond markets development. In line with this Inflation rate which involves the rising inflation is a threat to the future cash flows as it erodes the value of income, thus lowering the investment returns. It causes the interest on bonds to rise, which is an increase in the cost of government borrowing, and this reduces the supply of treasury bonds in the primary market. Thus, a better historical inflation performance promotes the development of both private and public bond markets as it reflects stability in the economy. Modigliani and Perotti (2000) observe that countries with low inflation levels have well-developed bond markets. Similarly, Abbas and Christensen (2010) find that market-based debts, i.e., bonds, significantly contribute to macroeconomic stability leading to low inflation.

2.3.3 Country Governance

The measures of governance adopted in the study included: rule of law, political stability and corruption. To begin with the Quality of Institution and enforcement which is a measure of the quality of institutions has an impact on the enforcement of laws that protects creditors' right. Besides, the institutions play a primary role in economic development as they promote capital accumulation and investment, and efficient allocation of resources in the economy Acemoglu *et al.* 2001 in their study on *The Colonial Origins of comparative development* noted that Europeans adopted different colonization policies in different colonies, with different associated institutions in determining their settlement decisions thus institutions formed a vital role in their settlement patterns in this case mortality rate; Easterly and Levine, 2003 in their study *Tropics, germs, and crops: how endowments influence economic development* a quest to answer the question Does economic development depend on geographic endowments like temperate instead of tropical location, the ecological conditions shaping diseases, or an environment good for grains or certain cash crop concluded that

institutions rather than tropics, germs, and crops directly affected the incomes of a country. Thus, the study post that the development of institutions of governance should spur the development of bond markets. Smaoui *et al.* (2017) in their study *The Determinants of Bond Market Development: Further Evidence from Emerging and Developed Countries* shows that financial and institutional concluded that a combination of structural, financial and institutional factors seem to exert a significant effect on bond markets factors exert a significant effect on bond markets suggesting the importance of institution in bond market development. Chami *et al.* (2010) suggest that efforts to develop financial markets should take into consideration the challenges facing various market agents and the incentives that make them willing to enter a transaction. Sy (2010) states that the WAEMU region has favorable laws that treat foreign investors like the residents; hence, over 50% of the market participants are nonresidents of WAEMU. This has contributed to increasing liquidity in the market. Claessens *et al.* (2007) investigate the role of institutional and macroeconomic factors on domestic and foreign currency bonds in emerging economies and find that institutional and macroeconomic factors affect the depth and currency composition of government bond markets.

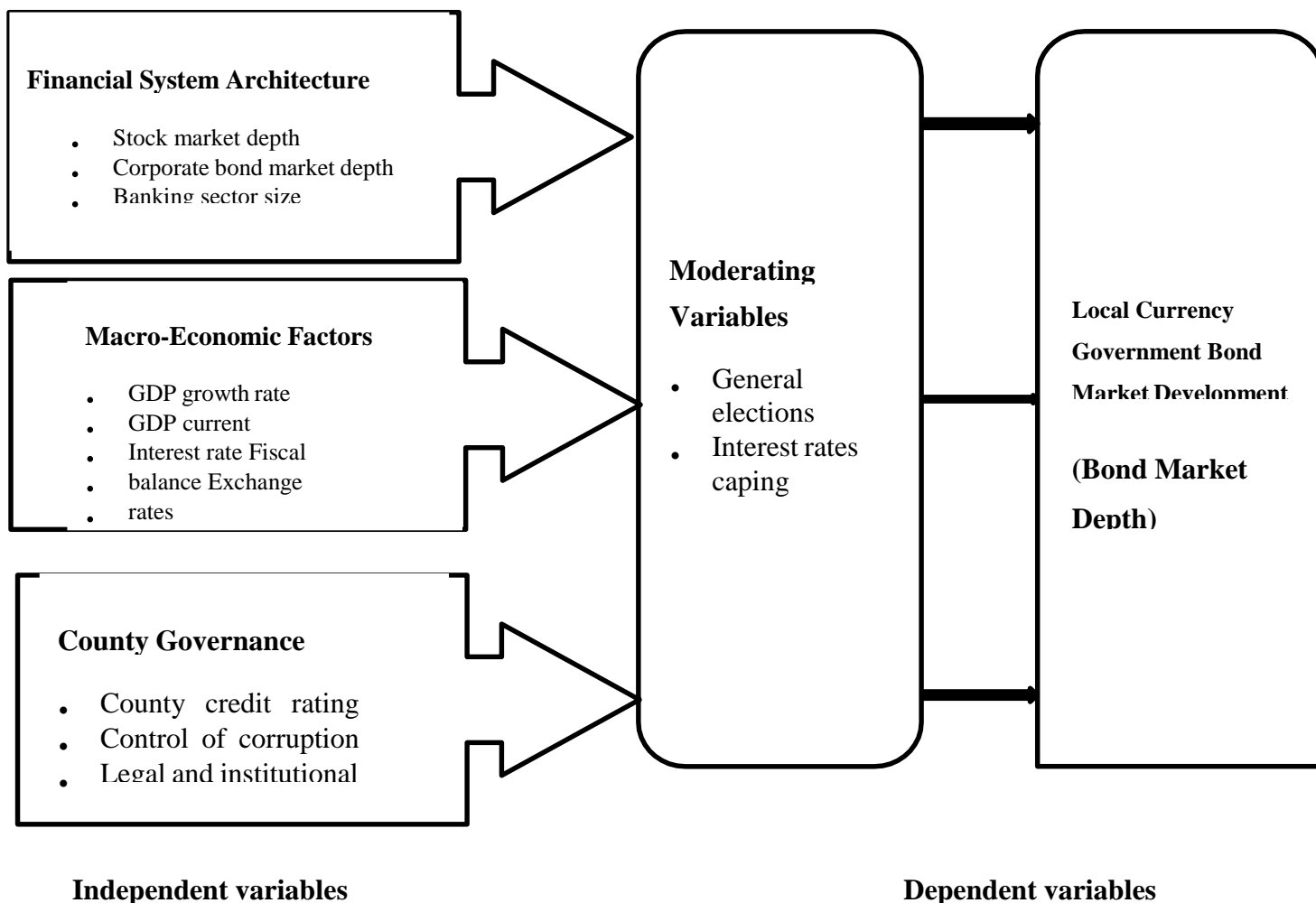


Figure 2.1 : Conceptual Framework

In this conceptual model, the development of local currency government bond market is measured by the change in market depth whereby the depth is measured as the outstanding local currency government bonds as a percentage of the GDP. From the literature review, the market development depends on financial system structure, macroeconomic factors and country governance. The financial system architecture includes the equity market, the corporate bond market and the banking sector. The macroeconomic factors include GDP per capita, GDP growth rate, interest rate, exchange rates and fiscal balance. And the country governance includes country credit rating and control of corruption and the strength of legal and institutional framework. Given the effect of general elections on economic performance of a country, and the effects of financial reforms such as the introduction and withdrawal of interest rate capping; this study hypothesizes that the two factors play an intermediating role in the development of local currency government bond markets in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter described the approaches deployed to achieve the hypothesized relationships in the study. It briefly explained the causal effect design used, the sample, the secondary data required, and the various data sources. It also gave a summary of all variables used and their measurement procedure. Finally, the chapter detailed the hypothesized relationships among the different variables, the various empirical models and statistical tools that were employed in the data analysis to test the hypotheses and draw conclusions.

3.2 Research Design

The aim of the study was to determine the causal relationship between various variables and local currency government bond market developments in Kenya. The data used was quantitative, and therefore the analytical technique was also quantitative. Thus, the study adopted an explanatory research design. Cares (2003) argue that quantitative approach is the best in identifying factors that influence an outcome, the utility of an intervention, or understanding the best predictors of outcomes which formed the foundation of the study. Creswell (2003) argue that the post-positivism position, sometimes called quantitative or empirical research, involves developing numeric measures of observations and studying the behavior of individuals.

3.3 The Sample Size

The population includes time series secondary data for annual bonds issued in the period 1998- 2020. The study partly relies on data from the World Bank database which informed the period selected

3.4 The sample

The sample consisted of all bonds outstanding and issued between 1998-2020. This is because data for the period mentioned was available. Hanke and Wichern (2006) recommend that the sample size for time series should be at least 50. For time series regression models, the sample size may be less Linden *et al.* (2003).

3.5 Operational and measurement of variables

The study relied on secondary data obtained from the World Bank's WDI database and DataStream databases for period 1998- 2020. The list of variables, data sources and the data measurements are as below.

Local currency government bond market development: This was the dependent variable measured using market depth, which was the outstanding treasury bond as a percentage of the GDP.

The independent variables in the study were picked in light of their theoretical relationship with bond markets development and empirical evidence from existing literature. However, since many previous studies had done cross country analysis, the current study focuses on one country, the study dropped all time invariant variables such as legal origin, country size. The explanatory variables and the a priori expectations are:

Stock Market Development: Stock markets compete with government bond markets as investment securities. Therefore, they are expected to affect the development of government bond markets. Thus, the study expected a negative relationship between stock market development and the treasury bond market development. The stock market development was measured as equity market capitalization as a percentage of the GDP.

Corporate bond market development: The study expects the effect of corporate bond market development to be similar to the effect of government bond market development. Like the stock market, corporate bonds offer investment security to investors and which are similar to treasury bonds and even have a higher return, which may make them more attractive than government bonds. The study, therefore, expect corporate bonds to impede Treasury bond markets development.

The corporate bond market development was measured as the market capitalization as a percentage of the GDP.

Banking Sector Size: Banks may affect government bond markets development in different ways i.e by mobilizing savings which, when accumulated, can be invested in government bonds. Banks also provide credit to both individuals and firms to increase production, which generates more income. Increased wealth may imply additional revenue that can be invested in government bond markets, hence increasing liquidity. Besides, banks are major institutional investors in government securities especial treasury bill and short-term treasury bonds. Thus, the study expects the banking sector size to affect treasury bond market development positively. Bank assets as a percentage of the GDP was used to measure the banking sector size.

Bank Credit to Private Sector: Another means by which banks influence the development of bond markets is by a credit to the private sector. An increase in credit to the private sector may be an indicator of growth in the private sector, which may increase private sector ability

to pay tax, thus increasing government revenue and reducing borrowing. Thus, the study expects an inverse relationship between treasury bond market growth and bank credit to the private sector.

Bank lending spread: Banks and non-bank financial institutions both offer financial solutions to debt seeking entities, and hence, the products are substitutes. Other factors being constant, the pricing of loan products by financial institution influences the choice of source of fund and directly impact on the development of bond markets. High bank lending spread makes loans by banks expensive and encourages more issuance of treasury bonds.

Exchange rate variability: Volatility in the exchange rate affects the net income at the time of repatriation of interest and the capital invested. Thus, investors may shy away from a country during periods of exchange rate volatility in a country. Thus, the study expects more significant bond market development when exchange rates are stable.

Inflation rates: Inflation erodes the value of future earnings and hence may discourage investment in securities with low returns like government securities (because they have less risk) or compel investors to demand a higher return which may discourage borrowing. Thus, the study expects a negative relationship between inflations and Treasury bond market development.

The fiscal balance: The difference between government revenues and expenditures is a driver of government debt, which in turn affects the level of borrowing in the Treasury bond market. Thus, the study expects a positive relationship between the dependent variable and the fiscal balance.

General election: The general elections can affect the development of Treasury bond markets especially if there is political violence. Many foreign investors also keep off during these periods due to uncertainty in policies that may come with change of regimes. The study used dummy variable 1 for election year and 0 for other years and expects a negative relationship.

Interest rate capping: Helped to determine the effect of interest rate capping on government bond markets. Given that when interest rates are capped, banks may switch from private sector lending to the government lending, it is expected that interest rate cap shows a positive relationship with local currency bond market growth.

State governance index: State governance helped us determine the effect of regulatory framework, legal origin, and institutional framework. The study measured governance using the World Bank's World Governance Indicators (WGI). It therefore expects a positive relationship between governance and the dependent variable.

Table 3: Operationalization and measurement of variables for period (1998-2020)

Variable	Measurement	Priori Sign	Source
Treasury bond market development.	Outstanding treasury bonds as % of GDP		WB Databank
Stock Market Development	Equity market capitalization as % of GDP	-	WB Databank
Corporate bond market development	Corp bond market capitalization as % of GDP	-	WB Databank
Banking Sector Size	Banking sector assets as a % of the GDP	-	WB/CBK
Bank Credit to Private Sector	Bank credit to private sector as a % of GDP	+	WB/CBK
GDP Growth Rate	Annual growth in GDP	+	WB
GDP Per Capita	GDP divided by the population	+	WB
Bank Lending Spread	Spread between bank lending and deposit rates	+	WB
Exchange Rate Variability	Standard deviation of the log of exchange rates	-	CBK
Inflation rates	Consumer price index	-	WB
Fiscal balance	Budget deficit as a % of GDP	-	WB
Corruption index	Transparency International Annual Survey	-	TI
State governance index	WB World Governance Indicators	+	WB Databank
General Election	Dummy Variables ¹ for year present and 0 for years not present	-	IEBC
Interest Rate Capping	Dummy Variables ¹ for year present and 0 for years not present	+	CBK

3.6 Empirical Approach

3.6.1 Assessing the development of local currency Treasury bond market in Kenya

The study conducted a descriptive analysis for the bond issuances, coupon rates, yields, outstanding bonds and bond auction results (subscriptions) to analyze the trends and explore the current status of the local currency Treasury bond market in Kenya.

3.6.2 Determinants of local currency government bond markets in Kenya

The study conducted an empirical analysis using time series linear regression. The empirical specification is aimed at establishing the relationship between institutional structures and the level of financial (bond) market development. From the existing literature reviewed, the local currency government bond market development is a function of:

Bond market dev = (*macroeconomic factors, financial structure, and governance*)Eq1

Bond market dev = (Stock market, Corporate bond, Banking Sector, Bank credit, GDP growth, GDP per capita, Bank lending spread, Exchange rate, Inflation rate, Fiscal balance, Corruption Index, Rule of law, Political stability)

Thus, the most general form of the empirical equation to determine the determinants of local currency government bond market development as:

$$y = \beta_0 + \beta X_t + \delta Z_t + \varepsilon \dots \dots \dots \text{Eq 2}$$

Where y is the local currency government bond market development, X_t is a list of explanatory variables; Z_t the moderating factors, β_0 the parameter estimates,

Where $TBMDev$ is Local currency government bond market development, $EMDev$ the Equity market development, $CBMDev$ is the corporate bond market development, BSS the bank sector size, $GDPPC$ the GDP per capita, $GDPR$ the GDP growth rate, BLS the bank lending spread, ERV the exchange rate volatility, CIP the consumer price index, FB the fiscal balance, $SIGI$ state governance index, IC is interest capping, EY is general election. CRI Is Corruption index, CCR Country Credit Rating

To determine the effect of Financial System Architecture on the development of local currency government bond market in Kenya

$$TBMDev_t = \beta_0 + \beta_1 EMDev_t + \beta_2 CBMDev_t + \beta_3 BSS_t + \delta_1 IC_t + \delta_2 EY_2 + \varepsilon \dots \dots \dots$$

To determine the effect of Macroeconomic Factor on the development of local currency government bond market in Kenya

$$TBMD_{evt} = \beta_0 + \beta_1 GDP_{PCt} + \beta_2 GDP_{Rt} + \beta_3 BLS_t + \beta_4 ERV_t + \beta_5 CIP_t + \beta_6 FB_t + \delta_1 IC_t + \delta_2 EY_2 + \varepsilon \dots\dots\dots$$

To determine the effect of Governance on the development of local currency government bondmarket in Kenya

$$TBMD_{evt} = \beta_0 + \beta_1 CRI_t + \beta_2 CCR_t + \beta_3 SGI_t + \delta_1 IC_t + \delta_2 EY_2 + \varepsilon \dots\dots\dots$$

To determine the combine effect of Financial System architecture, Macroeconomic factors and Governance on the development of local currency government bond market in Kenya

$$TBMD_{evt} = \beta_0 + \beta_1 EM_{Dev_t} + \beta_2 CBM_{Dev_t} + \beta_3 BSS_t + \beta_4 GDP_{PCt} + \beta_5 GDP_{Rt} + \beta_6 BLS_t + \beta_7 ERV_t + \beta_8 CIP_t + \beta_9 FB_t + \beta_{10} CRI_t + \beta_{11} CCR_t + \beta_{12} SGI_t + \delta_1 IC_t + \delta_2 EY_2 + \varepsilon \dots\dots\dots$$

3.7 Estimation techniques

The study employs OLS technique to estimate the parameters. To use the OLS, the study tests for the assumptions of classical linear regression models (CLRM) and conduct appropriate data transformation in case of the violation of the CLRMs. The study tests for autocorrelation using the Breusch-Godfrey Test. The study also tests for heteroscedasticity using White test and if found to be present, it used the generalized least square (GLS) or the White’s Heteroskedasticity consistent standard error estimates.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This section presents analysis and findings of the study as set out in the research methodology in line with research objective. The overall objective of the study was to investigate determinants of the development of Local currency government bond market in Kenya. First, the study sought to determine the effect of Financial System Architecture on the development of local currency government bond market; second, to establish the effect of Macroeconomic factors on the development of local currency government bond market: Third, to establish the effects of Governance on the development of local currency government bond market. And finally, to determine the joint effects of Financial System Architecture Macroeconomic factors and Governance on the development of local currency government bond market in Kenya. The study employed two variables measured as a binary variable interest rate capping and election year: 1 for presence and 0 for absence. Data in this section was analyzed and presented in tables. This chapter thus represents the profiles of descriptive statistics of study variables, correlation analysis, regression diagnostic tests inferential statistics discussion and summary of results

4.2. Descriptive Statistics

This section presents the descriptive analysis of each variable included in the regression models. The study used data from a period of twelve (12) years, from 1998-2020, capturing the determinants of development of bond issuance/ coupon rate yield/ outstanding bonds in Kenya available for the period. The analysis below was developed and presented in table to disclose the basic statistical measures such number of observation, minimum and maximum values, mean values, standard deviation. Descriptive statistics provides the overall picture of the research data. The section further used scatter charts to display the trends of the variables over time (1998-2020). This helps provide an overall picture of the data collect

Table 4: Summary Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Treasury Bond	22	3.575	5.186	-3.343	15.177
Corporate Bond	22	-.017	.179	-.315	.449
Banking sector size	22	.35	1.997	-3.715	5.129
Stock Market	22	.293	7.435	-11.518	17.178
Development					
Bank credit to private sector	22	.377	2.35	-3.487	6.201
GDP_ current	22	3.935	3.374	-1.198	10.166
GDP_ growth rate	22	3.974	2.176	-.273	8.058
GDP_ per capita	22	66.025	72.017	-53.341	190.465
Bank lending spread	22	-.276	1.146	-2.342	1.74
Inflation rates	22	8.598	4.936	1.961	26.24
G corruption index	22	.014	.082	-.135	.16
G state governance	22	.022	.085	-.109	.303
G state governance	22	-1.189	.131	-1.426	-.908
Fiscal balance	22	-.288	1.825	-3.657	4.314
General election	22	.182	.395	0	1
Interest rate capping	22	0	.309	-1	1
Exchange Rates	22	1.981	4.674	-4.782	10.259

From the table 4.1 above, the total observations per variable was 22 collected from world bank –WDI, CBK years 1998-2020. The statistics showed the average size of Local currency government bond as a percentage of GDP was 3.575 compared to corporate bond market and stock market which had 2.3 and .35 respectively. Azar et al, 2006, notes that the most important measure showing balance point and the exertion centre of distribution is the arithmetic mean. The market depth on the other hand had a max of 17.18 compared to Treasury bond’s 15.18 clearly demonstrates equity market issue is higher than that of local currency bond market compared to corporate and equity market. GDP_ current’s mean was similar to GDP_ growth rate mean at 3.9 GDP_ per capita had a mean of 66.03 and a standard deviation of 72.01 compared to GDP_ current GDP_ growth of 3.37 and 2.18 respectively. A large standard deviation indicates that the data points are far from the mean increasing its

riskiness in using it to make a decision. Bank lending spread has a –ve mean -0.276 which means on average interest rates charged is more than those received for monies deposited. Inflation had a positive mean of 8.598. Corruption index had a lower mean of .014 and also the lowest standard deviation among the selected variable.

Table 5: Summary statistics for local currency Treasury bond market in Kenya

Variable	Obs	Mean	Std. Dev.	Min	Max
Tb tenor	19	7.986	2.956	2.91	12.75
Tb amount issued	19	1.756e+08	1.569e+08	16863563	4.723e+08
Tb coupon	19	10.68	.901	8.223	11.665
Tb fixed rate	19	132.632	28.914	42	166
Tb floating rate	19	11.474	25.68	0	94
Tb zero coupon	19	.632	1.165	0	4
Tb short term	19	65.368	31.637	26	132
Tb medium term	19	45.789	15.647	4	68
Tb long term	19	33.579	28.076	0	86
Treasury cap	19	2.564e+10	2.417e+10	2.293e+09	7.638e+10

Local treasury bond market traded in the period had a mean of 8yrs with the short term bonds having a bigger mean compared to medium and long term. The risk showed a similar trend with short term loans having a standard deviation of 65.36 compare to the other. Bond coupon rate average was 10.68% with more uptake of the fixed rate compared to floating and zero coupon rates. The figure below show the trend analysis for local currency treasury bond

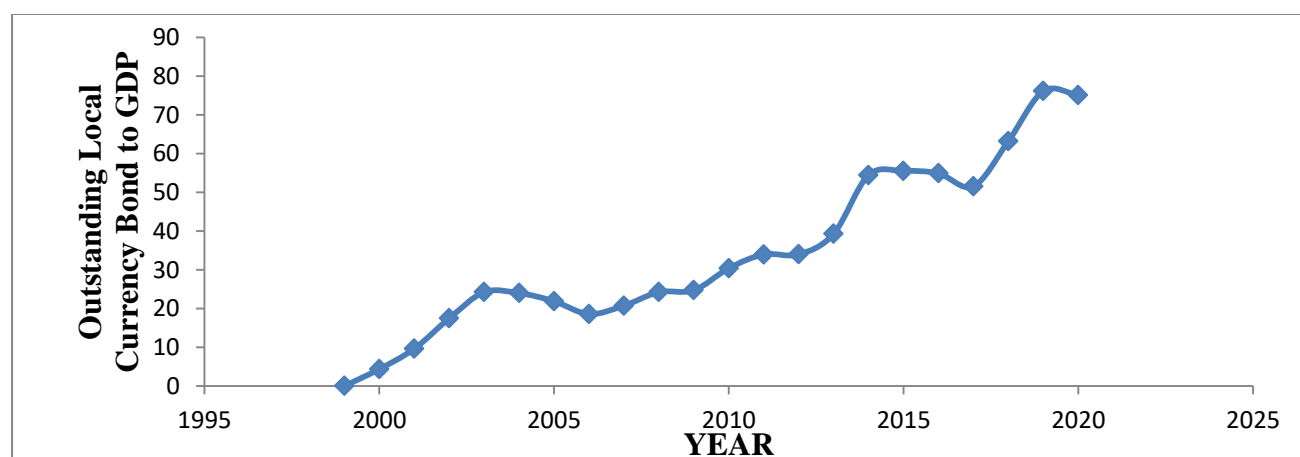


Figure 7: Trend Graph of Local currency bond market to Gross Domestic Product (GDP) Kenya

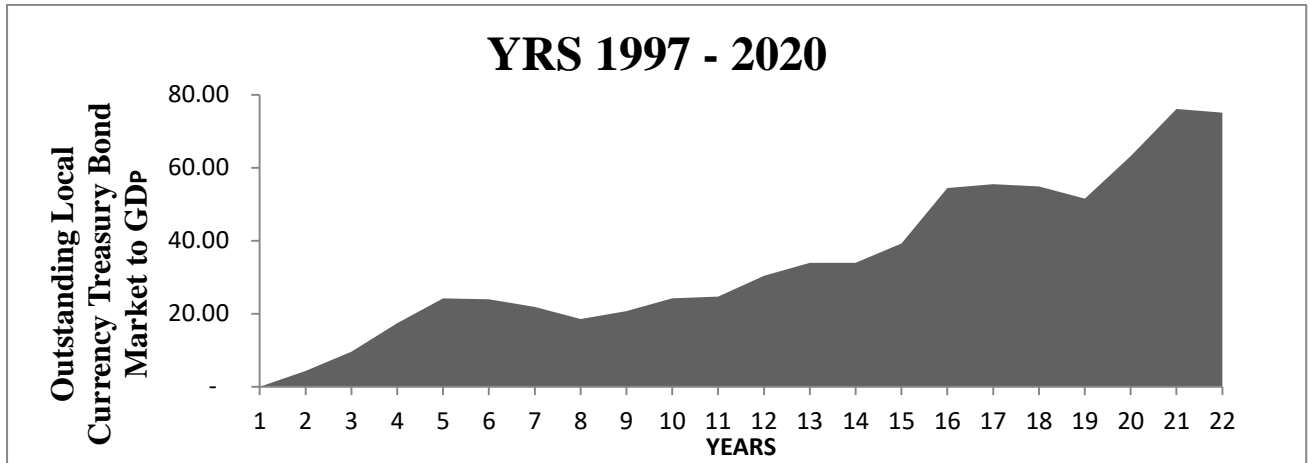


Figure 8: Trend Graph of Local currency bond market Kenya

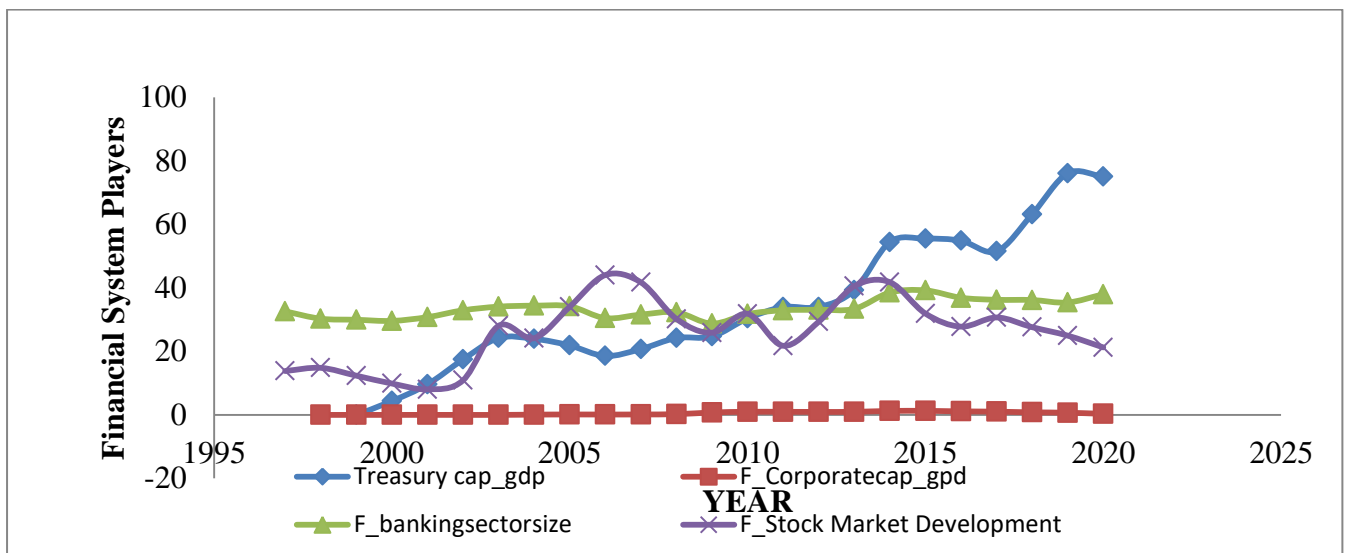


Figure 9: Trend Graph Financial market Kenya

4.3 Verification of the Assumption of Statistical Tests

The study carried out diagnostic tests, to confirm the fitness of the data to linear regression assumptions. Data pretest include: Multi-collinearity, Normality and linearity plus the stationarity of variables as discussed

4.3.1 Time Series Unit Root Test

This study applied Dick-fuller test to carry out a unit root test to determine whether a time series data variable was stationary or non-stationary (possesses a unit root). Unit root test results showed that Local currency Treasury bond, Stock market development, Corporate bond Bank credit to private sector, GDP current, GDP per capita Bank lending Spread, Corruption index, Rule of law Exchange rate, Interest capping and Fiscal balance were not

stationary but were all transformed to stationary after differencing and logarithms were applied. i.e ($p < 0.005$) thus failing to accept the null hypothesis which states that the time series contain unit roots. See appendix I

4.3.2 Heteroscedasticity Test

This study applied White test to test for heteroscedasticity, assuming that heteroscedasticity may be a linear function of all the independent variables, a function of their squared values and a function of their cross products. The white test results reveal insignificant results implying the study accepts the null hypothesis of constant variance in the variables and conclude the dataset doesn't contain a problem of heteroscedasticity. See appendix I

4.3.3 Multi-Collinearity Test

The study also tested for Multi-collinearity in the estimated model using pair-wise correlations. The correlation and covariance between selected variables were also formulated in order to get a better understanding of the sample. Hence correlation matrix was used to demonstrate the direction of the relationship and the significant of relationship between the variables.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	1.0														
Treasury_bond	00														
(2)	-	1.0													
Corporate_bond	0.0	00													
(3)	0.5	-	1.0												
DF_banks	97	0.0	00												
ecsize		16													
(4)	-	-	-	1.0											
StockMarket	0.1	0.0	0.0	00											
et~v	68	71	38												
(5)	0.5	-	0.8	-	1.0										
Bankcredi	25	0.0	43	0.2	00										
pr~c		14		24											
(6) gdp	0.0	0.1	-	0.2	-	1.0									
current	89	19	0.2	26	0.2	00									
			70		93										
(7)	-	0.3	0.0	0.3	-	0.3	1.0								
gdpgrowth	0.0	49	46	13	0.0	83	00								
rate	48				01										
(8)	-	0.1	-	0.3	-	0.9	0.3	1.0							
gdppercap	0.0	53	0.3	22	0.3	58	99	00							
ita	53		37		66										
(9)	0.1	-	-	-	0.0	-	-	-	1.0						
Banklends	40	0.3	0.1	0.0	82	0.1	0.2	0.1	00						
pr~d		63	50	94		72	25	42							
(10)	-	0.1	-	-	0.0	-	-	0.1	0.1	1.0					
Inflationra	0.3	04	0.1	0.3	59	0.0	0.2	07	38	00					
~s	42		96	28		14	74								
(11)	0.5	-	0.1	0.1	0.0	0.0	0.1	-	0.5	-	1.0				
G_corrupt	14	0.0	22	57	64	12	93	0.0	02	0.5	00				
ion~x		38						56		25					
(12)	0.2	-	0.0	0.3	-	-	0.0	-	0.0	-	0.3	1.0			
G_statego	12	0.2	75	39	0.1	0.1	81	0.2	39	0.3	55	00			
vern~t		73			16	85		43		94					
(13)	0.3	-	0.4	0.3	0.5	0.1	0.0	0.1	0.1	-	0.3	0.0	1.0		
G_statego	95	0.0	63	19	19	70	46	04	27	0.1	15	10	00		
ver~w		81								51					
(14)	0.6	-	-	-	0.0	0.2	0.1	0.1	0.3	-	0.5	0.1	0.0	1.0	
Fiscalbala	48	0.1	0.0	0.1	13	76	32	80	68	0.2	22	50	85	00	
~e		24	19	15						13					
(15)	0.0	0.0	-	-	0.2	-	-	-	0.2	0.0	-	-	0.0	-	1.0
Exchange	12	05	0.0	0.6	67	0.4	0.2	0.5	02	21	0.0	0.0	08	0.1	00
Rates			10	24		79	92	89			03	90		81	

Figure 10: Pair-Wise Correlation

4.5. Research Findings

Ordinary Least square (OLS) linear regression model was used to test the relationship between the following variables corporate bond_gdp, banking sector size, bank credit to private sector, Stock market development, GDP growth rate, GDP current, GDP per capita, bank lending spread, inflation, corruption index, political stability, rule of law in the study. The hypotheses were classified into the following:

4.5.1 Effect of Financial System Architecture, on the development of local currency government bond.

The coefficient estimates for the first objective are presented in Table 6:

Table 6: Parameter Estimates for Effect of Financial System Architecture on local currency government bond market.

VARIABLES	Local C. Treasury bond
Corporate Bond Market	7.519 (6.416)
Banking sector size	1.691*** (0.563)
Stock Market Development	-0.0220 (0.140)
Interest rate capping	0.815 (5.225)
General election	-2.301 (2.663)
Constant	3.820*** (1.196)
Observations	20
R-squared	0.431

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results from this model in the Table 4.3 above is not significant with the overall R-Square statistic (R= 0.43, p-value =0.1234) and F test statistic (F=2.12)

The findings indicated that banking sector size has a positive and significant effect on total bond market development at a significance level of 5% suggesting that a larger banking

sector is generally associated with larger bond market. This is in line with the finding of most studies on determinants of bond market such as: Smaoui *et al.* (2017) and Eichengreen and Luengnaruemitchai (2004). The other financial system architecture variables corporate bonds, Stock Market are not statistically significant

Simple regression with the variables ranked them as: (corporate bond R-squared=0.0321, p-value =0.4368), (bank sector R-squared=0.2609, p-value =0.0180),(bank credit to private sector R-squared=0.1796, p-value =0.0556), (Stock Market R-squared =0.0007 p-value=0.9098). Ranking banking sectors as with most effect on local currency treasury bond market development.

The estimated formulated equation by substituting the beta coefficients of the regression results in the following form:

$$TBMD_{vt} = 3.819623 - 2.301274EMD_{vt} + 7.518717CBMD_{vt} + 1.691422BSS_t - 2.301274EY_2 + 0.8153152IC$$

4.5.2 Effect of Macro Economic factors on the development of local currency government bond

The coefficient estimates for the second objective are presented in Table 7:

Table 7: Parameter Estimates for Effect of Macro Economic factors on the development of local currency government bond

VARIABLES	(1) Local C. Treasury bond
Fiscal balance	1.520** (0.572)
GDP current	2.086* (1.072)
GDP per capita	-0.104* (0.0521)
Inflation rates	-0.183 (0.197)
Bank lending spread	1.158 (0.846)

Interest rate capping	-11.25**
	(4.182)
General election	-0.182
	(2.392)
Constant	5.565*
	(2.672)
Observations	20
R-squared	0.675

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results presented in Table 4.4 above shows that the model was significant at 5% significance level with the overall R-Square statistic (R= 0.6751, p-value=0.033) and F test statistic (F=7.12). This also implies that 67.51% of the variations in Local Currency Bond market development were explained by Macro economic variables t included in the model

The results showed that inflation positively insignificant contrary to market expectation that inflation depresses factor for market development. Foreign exchange rate volatility was positively relation though insignificant to bond market development as previously concluded by Golstein (1998). Fiscal balance was positively significant at 5% in contrast to findings by Smaoui *et al.* (2017) which found negative relationship but this was in line with common conclusion that a large fiscal deficit helps domestic bond market development as governments issue treasury bills and bonds to finance deficit hence expanding liquidity and completing the yield curve of its bond market and interest capping were positive and negatively significant at 5% whereas GDP current positive and GDP per capita negatively significant at 10% this is in line with finding of Smaoui *et al.* (2017).

The result of the model remains significant when the two moderating variables are removed from the equation (R= 0.49, p-value =0.0515) however GDP current and GDP per capita ceases to be significant with p-value =0.248 and p-value =0.237 respectively. Introduction of moderators Interest capping confirms models significance with coefficients (R= 0.67, p-value =0.0261) reinstates the two variable significance GDP current p-value =0.075 GDP per capita p-value =0.02 maintaining the models significance and generation election on the other hand results in insignificance with coefficients (R= 0.55, p-value =0.3136). This result may be driven by high linear correlation between variables.

Simple regression with the variables ranked them as: (inflation R-squared=0.0929, p-value =0.1790), (bank lending spread R-squared=0.0041, p-value =0.7832),(GDP current R-squared=0.0225, p-value =0.5146), (GDP growth R-squared =0.0003 p-value=0.9359), (GDP per capita R-squared =0.0019 p-value=0.8525), (fiscal balance R-squared =0.3649 p-value=0.0037),(exchange rate R-squared =0.0011 p-value=0.8881). Ranking fiscal balance as the one with most effect on local currency treasury bond market development.

The above analysis results revealed that macro-economic (composite score) has a positive significant effect on development of Local currency bond market ($\beta= 7.959011$, $t = 2.04$, $p\text{-value} < 0.05$) as shown in table above.

The estimated formulated equation by substituting the beta coefficients of the regression results in the following form:

$$TBMD_{evt} = 5.565173 - 0.1036501GDPPC_t + 2.086325GDPR_t + 1.15808BLS + 1.519694FB_t - 11.25108IC_t - 0.1823086EY_2$$

4.5.3 Effect of Governance on the development of local currency government bond

The coefficient estimates for the third objective are presented in Table 8:

Table 8: Parameter Estimates for Effect of Governance on the development of local currency government bond

VARIABLES	(1) Local C.Treasury bond
Political Stability	-11.97 (12.31)
Corruption Index	38.32** (15.71)
Rule Of Law	12.65 (13.36)
Interest rate capping	-10.61* (5.450)
General election	-0.486 (2.596)
Constant	-11.23 (15.14)
Observations	20

 Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results presented in Table 4.5 above shows that the model is generally insignificant with the overall R-Square statistic (R= 0.44, p-value >0.05) and F test statistic (F=5,14). Implying that 43.61% of the variations in Local Currency Bond market was explained by Country Governance variables and the difference of 55.39% was explained by other variables not included in the model. The insignificance was implied by the t-statistic that had a p-value of more than 0.05.

The study finds that Corruption Index was positive significant at 5% with coefficients(R-squared=0.2533, p-value =0.0200),corruption index ranges from 0 to 6 where a higher score means a lower degree of corruption) this is in contrast to study by Smaoui *et al.* (2017) which reported a negative insignificant effect, Interest rate capping was negatively significant at 1% level of significance with coefficient ($\beta=-10.60858$, $t=-1.95.$, p-value =0.07) respectively

The result of the model remains insignificant when the two moderating variables are removed from the equation (R= 0.31, p-value =0.0879) corruption index remains significant this time at 10% level of significance. Introduction of moderators Interest capping confirms models insignificance with coefficients (R= 0.44, p-value =0.2689) corruption index become insignificant p-value =0.141, 0.932 and generation election also results in insignificance with coefficients (R= 0.38, p-value =0.4471)

Simple regression with the variables ranked them as: (political stability R-squared=0.0008, p-value =0.9028), (Rule of law R-squared=0.1702, p-value =0.0631),(corruption R-squared=0.2533, p-value =0.0200).Ranking corruption as with the most effect on local currency treasury bond market development.

The above analysis revealed that country governance (composite score) has a positive insignificant effect on development of Local currency bond market ($\beta= -11.23303$, $t = -0.74$, p-value >0.05). The estimated formulated equation by substituting the beta coefficients of the regression results in the following form:

4.5.4 Joint Effect of Financial System Architecture, Macro Economic factors and Governance on the development of local currency government bond

The coefficient estimates for the fourth objective are presented in Table 9:

Table 9: Parameter Estimates for Financial System Architecture, Macro Economic factors and Governance on the development of local currency government bond

VARIABLES	(1) Local C.Treasury bond
Corporate bond	-1.471 (5.092)
Stock Market Development	-0.0278 (0.105)
Bank credit to private sector	0.769** (0.334)
GDP growth rate	-0.750* (0.397)
Inflation rates	-0.415** (0.180)
Fiscal balance	1.636** (0.531)
Corruption index	15.75 (12.83)
Political stability	-15.65 (9.548)
Interest rate capping	-11.69** (4.389)
General election	-0.370 (2.072)
Constant	-7.938 (11.58)
Observations	20
R-squared	0.830

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results presented in Table 4.6 shows that the model is generally significant at 5% level of significance, the overall R-Square statistic (R=0.83, p-value <0.05) and F test statistic

(F=10,9) This also implies that 82.99% of the variations in Local Currency Bond market was explained by composite variables and the difference of 5.36% was explained by other variables not included in the model.

In the model; Bank Sector- bank credit to private sector and fiscal balance were positive significant whereas Inflation and Interest rate capping were negatively significant at 5% level of significance. On the other hand GDP-growth rate was negative significant at 10%

The research using results of collinearity showed the following variables as with the correlation Bank sector size, bank credit to private sector fiscal balance and corruption. The study regression of these variables showed the following results (R= 0.7079, p-value =0.0001) with coefficients; bank sector size ($\beta= 1.428508$, $t = 4.22$, p-value =0.001), fiscal balance ($\beta= 1.621916$, $t = 3.61$, p-value =0.002) and corruption ($\beta= 8.243192$, $t = 0.83$, p-value =0.417).

The above analysis' revealed that (composite model) has a positive significant effect on development of Local currency bond market ($\beta= -7.937546$, $t = -0.69$, p-value <0.05) as shown in table above. The estimated formulated equation by substituting the beta coefficients of the regression results in the following form:

Summary of Findings of Test of Hypotheses

The test of hypotheses started with identifying the best fit model that satisfied regression assumptions. The OLS model was selected to be the most appropriate to test the hypotheses. The model started with testing the effect of Financial System Architecture on development of local currency bond market. Second, the effect of Macro-economic variables on the development of Local currency bond market was tested. Third, the study tested the effect of country governance on the development of local currency bond market. Lastly, the joint effect of Financial System Architecture, Macro-economic and country governance on the development of local currency bond market was assessed. In the hypotheses I the results failed to reject the null hypotheses, Hypothesis II reject the null hypotheses and Hypothesis III the results failed to reject the null hypotheses while Hypothesis IV the result rejected the null hypothesis.

Our results suggest that a combination of structural, financial and institutional factors seem to exert a significant effect on bond markets. Indeed, economic size, trade openness, investment profile, GDP per capita, bureaucratic quality, and size and concentration of banking system are positively related to bond market

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study's main objective was to investigate on country factors that determine its local currency bond market development. In order to achieve this, objectives hypothesis were developed. The relationship of the variables was conceptualized and schematized into a conceptual framework. Data was collected and analyzed using descriptive statistics, correlation t-tests and regression models. The results of the study were compared to theoretical propositions and the previous empirical studies and discussed in their context. These results obtained either confirmed or refuted previous studies. This chapter presents a summary of the findings, the conclusions, implications and recommendations for future studies.

5.2 Summary of Findings

This study employed country specific variables which were classified into financial architecture, macroeconomic and governance as the independent variable. Election year and Interest capping characteristics were classified as the moderating variable. The sample consisted of secondary data collected for period of 10 years (1998 to 2020). Preliminary statistical tests were undertaken. This included: descriptive statistics such as mean, standard deviation and correlation analysis. The study performed diagnostic tests in order to establish whether data was fit for regression

5.2.1: Effect of Financial System Architecture on development of local currency government bond market

The findings of the first regression results revealed a positive insignificant relationship between financial system architecture and development of local currency government bond market. Corporate bond market was positively insignificant, implying that increase in uptake of this market leads to increase in the depth of local currency government bond market these two markets appear to be compliment rather than substitute confirming Laeven (2014) conclusion that Private bond (corporate bond) tend to be more developed in countries with deeper public bond.

The second measure, stock market development had a negative insignificant influence on local currency bond growth implying that investment of funds in the stock market decreases

supply of fund that can be invested in local currency government bond market. Moreover, the findings is supported by Muet *et al.*(2013) and Claessens *et al.*(2007) which observed that capital account openness influence the development of bond market.

Finally, the results of the analysis disclosed a positive significant relationship between Banking Sector (bank credit to private sector) and depth of local currency government bond market. This support of findings by Smaoui *et al.* (2017) who observed that the relationship between the size of the banking system and bond market development is ambiguous as they both compete for sources of debt finance and further confirmed by Essers *et al.* (2016) who in their POLS model suggested that the banking sector and government LCBM's are complements. This is however contrary to finding sub-saharan Africa aby Adelegan and Radzewicz-back. (2009) intuitively, the successful development of one sector should be a slow development of the other Thotho, (2014).

Further, the results of the regression analysis between financial system architecture (composite) and development of local currency government bond market as revealed a positive insignificant relationship. The results of this hypothesis test thus accept the propositions of financial system architecture irrelevance hypothesized. The moderating variable election year exhibited a negative insignificant relationship inline to expectation of reduce uptake of the market during political uncertainty. The second moderating variable interest capping also exhibited a positive insignificant relation in line with market expectation that presence of interest capping makes loan issue an unattractive product as interest charged is restricted forcing them to channel fund to bond market.

In conclusion, the first hypothesis (H01) therefore failed to accept the null hypothesis and concluded that there is a significant relationship between financial system architecture and development of local currency government bond market.

5.2.2: Effect of Macroeconomic factors on development of local currency government bond market

The second objective was to establish the relationship between Macroeconomic factors on development of local currency government bond market. The corresponding null hypothesis (H02) was that: A country's Macro economic factors have no significant effect on development of local currency Bond Market-Kenya. The results disclosed that the R-squared was 0.68 implying that 68% of the variations and changes in the local currency bond market were determined by macroeconomic factors (composite score).

The first measure of macroeconomic factors - GDP current disclosed insignificant positive link implying that the degree of economic development helps development in local currency government bond market. These findings are supported by Adelegan and Radzewicz-back. (2009) and Adarovand Tchaidze. (2001) they observed that GDP influence the development of bond market. The results of the models' other measure disclosed:

-Inflation rate; Results also showed an insignificant negative influence by inflation rate. The findings are supported by Adelegan and Radzewicz-back (2009) who observed that parameters estimate of volatility changes in exchange rate is negative and statistically significant and the finding that inflation exerts negative effect on bond capitalization, Essers *et al.* (2016). This further disputed the assumption that exchange rate variability increases bond capitalization by Thotho (2014).

-Fiscal Balance; results showed a significant positive influence by Fiscal balance to the development of local currency Treasury bond market in Kenya. These finding were in line with one by Adelegan and Radzewicz-back. (2009) in their studies in sub-saharan countries who stated that a big budget deficit translates to more borrowing and this is from the domestic public market, it increases the demand of treasury bills and bonds leading to development of the market. The result further confirms results by Thotho (2014) that Fiscal balance has a positive relationship with bond capitalization. Inclusion of exchange rate renders the composite model insignificant

-GDP per Capita displayed a negative insignificant effect on bond market development this is contrary to results reported by Thotho (2014) which reported GDP per capita as having a positive significant influence on the increasing bond capitalization, GDP current on the other hand had a positive insignificant influence on bond market development. This was further confirmed by Olabisi and Stein (2014) that GDP growth and GDP per capita do not appear well correlated to bond market development. There was high collinearity between GDP growth rate and GDP current thus we used GDP current.

In conclusion, the second hypothesis (H02) therefore failed to accept the null hypothesis and concluded that there is no significant relationship between macroeconomic factors and development of local currency government bond market.

5.2.3: Effect of Governing factors on development of local currency government bond market

The third objective was to investigate the effect of Governance on the development of local

currency treasury bond market in Kenya. The corresponding null hypothesis (H03) was that: A country's governance has no significant effect on development of local currency Bond Market in Kenya. From the regression model, the results revealed that governance composite scores had a positive insignificant influence on development of local currency bond market. The results implied that governance as measured by the composite scores of: control of corruption, credit rating and legal institutional had insignificant effect on the development of local currency bond market.

Further, look at the model results reveals the following: a significant positive relation between corruption index and local currency bond market development the higher the score indicates a lower degree of corruption thus confirms finding the lower the level of corruption the larger the domestic bond market, Adelegan & Radzewicz-Back (2009).

The results showed an insignificant negative relation between politics and development of local currency Treasury bond market

An insignificant positive relation between governance rule of law and development of local currency treasury bond market. This thus supports finding by Acemoglu *et al.* (2001) and Easterly and Levine. (2003); that institutions play a primary role in economic development as they promote capital accumulation and investment, and efficient allocation of resources. Further Smaoui *et al.* (2017) concluded that the development of institution of governance spurs the development of bond market also conclusion of positive correlation with institutional quality (Essers *et al.*, 2016).

The results of the model disclosed that the moderating variable election year had a positive insignificant effect whereas interest capping had a negative insignificant effect on the relationship between governance and the development of local currency Treasury bond market

In conclusion, the third hypothesis (H03) therefore failed to reject the null hypothesis and concluded that there is no significant relationship between governance and development of local currency government bond mark

5.2.4 Joint Effect of Financial System Architecture, Macroeconomic factors and Governance factors on development of local currency government bond market

The final objective was to determine the joint effect of Financial Architecture, Macro economic factors and governance on development of local currency Bond Market Kenya factors on development of local currency government bond market, Kenya. The

corresponding hypothesis stated that there was no significant joint effect of financial architecture, macroeconomic factors and governance on development of local currency Bond Market Kenya.

From the regression results, the joint effect of the variables was positive and highly significant in explaining the development of local currency bond market. The overall model therefore remained largely significant on every addition of the variables. This gave an indication the selected were key when explaining effect on local currency bond market development in Kenya.

The joint effect of financial architecture, macroeconomic factors and governance evaluated in hypothesis four indicated that 82.99% of the variation in local currency bond market development was explained in the model. Although the influence in joint effect is not a direct one, there was evidence that the three variables (financial architecture, macroeconomic factors and governance) in combination increased the explained variation in the development of local currency treasury bond market and this was evidence that they each had a contribution to financial performance. The significant joint effect of financial architecture, macro-economic factors and governance on the development of local currency treasury bond market was implied by a p-value of less than 5% significance level ($p\text{-value} < 0.05$) thus failing to accept the null hypothesis.

5.3 Conclusions

The study investigated on the determinant of development of local currency government bond in Kenya. Multiple linear time series regression using Ordinary Least Square (OLS) techniques in Stata were used to answer the question by examining and confirming presence of a relationship. The variables selected were classified into three each forming a hypothesis to be confirmed.

The first null hypothesis, H01 stated that A country's financial architecture has no significant effect on development of local currency government bond market. From the results, the study failed to reject the null hypothesis concluding that indeed it has no significant effect

The second objective based on the second null hypothesis, H02 stated that A country's macroeconomic factors has no significant effect on the development of its local currency government bond market. The study concluded that macroeconomic factors, had a positive significant role in the development of local currency government treasury bond market Kenya from the results, the study failed to accept the null hypothesis

The third objective stated by the third null hypothesis, H03 stated that A country's governance has no significant effect on the development of its local currency government bond market. The results of the tests revealed that governance had a positive insignificant effect on the development of local currency government bond market and therefore the study failed to reject the null hypothesis

The final objective as stated by the fourth null hypothesis, (H04) There is no significant effect of the composite of selected financial system factors, macroeconomic and country governance on the development of its local currency government bond market from the results, the study failed to accept the null hypothesis and a conclusion was drawn that financial system architecture, macroeconomic factors and governance have a significant joint effect on the development of local currency government bond market in Kenya. This confirms conclusions by Adelegan and Radzewicz-Back (2009) a confluence of many variables drives the level of development of the local government bond market development no single variable can be wholly responsible for the markets under development.

5.4 Policy Implications and Recommendations

5.4.1 Policy Implications

Developing countries around the world continue to grapple with lack of funds to finance development projects. Bond markets have the ability to contribute significantly to this gap and assist in development process. Growth of this market requires sound fiscal and monetary policy, effective legal and regulatory frameworks, a diversified investor base and favorable tax policies (Mbewa, Ngugi and Kithinji, 2007). This study result provides input basis to policy makers in terms of banking reforms, financing liberalization policy, political stability and corruption, to mention but a few. Government should therefore aim at ensuring proper structure not only administratively and market environment but in managing stable macroeconomic policies to enable smooth trading in the market thereby develop a deep and liquid local currency domestic debt market.

5.4.2 Policy Recommendations

The research results revealed a positive significant relationship between financial system architecture (banking sector size) and development of local currency government bond market. Policy makers are thus assured that sound legal and regulatory frameworks that ensure growth of the banking industry are an effective way of ensuring growth of the local currency government bond market

More over the results of macroeconomic factors indicated a positive significance relationship with the development of local currency bond market. This promotes good practices in management of the country's macroeconomic factors to help stimulate the market growth

The results on governance indicators on the development of the local currency Treasury bond market showed a positive insignificant effect on growth of the market. However, control of corruption had a negative significant effect. This implies control of corruption in a country's governance reinforces the development of bond market.

The additional contribution is that the integrated model not only enrich the existing academic framework of the determinants, (financial system factors, macroeconomic and country governance), but also offer a new way to further integrate of other important mediating factors into models. This helps establish how the various factors interact with each other.

In conclusion, developing countries need for additional finance has never been quenched and information provided by the research is paramount in informing decision makers on what areas to concentrate efforts to improve on in order for them to enjoy the perks that come with developing a local currency bond market and also provide data for comparability

5.5 Suggestions for Further Research

Further research is necessary to address some of the limitations of this study and to broaden the knowledge and corpus relating to bond market. The study used secondary data collected from World Bank database, obtaining some of the secondary data was a great challenge. This is because the information was often not conclusively as some years were missing this reducing the sample size. Therefore, longer time series data is recommended to improve representation of the various variables ensuring better identification of causal relationship.

Further research should also consider the tradeoff between developing domestic bond markets against expanding international bond market issuance by the government. This is because as noted earlier as country grows increasing need to finance the various development projects overseas bond issuance can provide cheaper alternatives as there are more complete markets and hedges available.

In this study, our moderating factor Interest capping and election year showed varied result both as moderators and independent variables, future research with longer periods studies may help explain the difference in results

Lastly, the study should be replicated with corporate bonds in the country. Such replication could further determine whether the findings of this study hold true for other types of bonds. This helps enhance understanding of the relationship between various country specific factors and bond market development and in-turn acceleration of the market development and allow comparability

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Appendix I : Data

TEST OF NORMALITY

Skewness/Kurtosis tests for Normality						
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2	
----- joint -----						
-----+-----						
Corporate _gdp	19	0.78	0.0171	5.51	0.0638	
Bank sec~e	22	0.9692	0.2009	1.81	0.4046	
Stock Ma~v	22	0.2547	0.9626	1.42	0.4909	
DF_bankcre~c	22	0.361	0.5724	1.26	0.5336	
DM_gdpcurr~t		0.5697	0.1028	3.36	0.1859	
DF_banklen~d	22	0.6658	0.4752	0.74	0.6909	
M_gdpgrowt~e	23	0.3566	0.9651	0.91	0.6337	
M_inflatio~s	23	0.0002	0.0009	17.85	0.0001	
G_stategov~s	23	0.6888	0.8915	0.18	0.9144	
Gdp current	22	0.5697	0.1028	3.36	0.1859	
Gdp percapita	22	0.7701	0.1202	2.8	0.246	
G_corruption	22	0.6732	0.1577	2.43	0.297	
DG_statego~w	22	0.0038	0.0041	12.67	0.0018	
DM_Fiscalb~e	22	0.5853	0.1773	2.36	0.3069	
DInterestr~g	22	1	0.0001	11.77	0.0028	
MO_general~n	22	0.0016	0.1864	9.58	0.0083	

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value		MacKinnon approximate p-value for Z(t)
D fuller Corporate gdp, lags(0)	Z(t)	-12.288	-3.750	-3.000	- 2.6 30	0.0000
D fuller Bank sec size, lags(0)	Z(t)	-4.571	-3.750	-3.000	- 2.6 30	0.0001
D fuller Stock Market Dev, lags(0)	Z(t)	-4.123	-3.750	-3.000	- 2.6 30	0.0009
D fuller Bank credit private sec, lags(0)	Z(t)	-3.978	-3.750	-3.000	- 2.6 30	0.0015
D fuller GDP current, lags(0)	Z(t)	-2.907	-3.750	-3.000	- 2.6 30	0.0445
D fuller GDP per capita, lags(0)	Z(t)	-3.223	-3.750	-3.000	- 2.6 30	0.0187
D fuller Bank lend spread, lags(0)	Z(t)	-4.352	-3.750	-3.000	- 2.6 30	0.0004
D fuller Corruption index, lags(0)	Z(t)	-5.741	-3.750	-3.000	- 2.6 30	0.0000
D fuller State govern index rule of law, lags(0)	Z(t)	-3.491	-3.750	-3.000	- 2.6 30	0.0082
D fuller Fiscal balance, lags(0)	Z(t)	-5.891	-3.750	-3.000	- 2.6 30	0.0000
D fuller Exchange Rates, lags(0)	Z(t)	-3.976	-3.750	-3.000	- 2.6 30	0.0015

D fuller Treasury _gdp, lags(0)	Z(t)	-3.588	-3.750	-3.000	- 2.6 30	0.0060
D fuller Interest rate capping, lags(0)	Z(t)	-3.008	-3.750	-3.000	- 2.6 30	0.0342
D fuller Inflation rates, lags(0)	Z(t)	-3.810	-3.750	-3.000	- 2.6 30	0.0028
D fuller GDP growth rate, lags(0)	Z(t)	-3.314	-3.750	-3.000	- 2.6 30	0.0143

TIME SERIES UNIT ROOT TESTS

Table

	VIF	1/VIF
G corruption index	2.282	.438
G state governance i~s	1.908	.524
Interest rate capping	1.878	.533
Inflation rates	1.703	.587
Fiscal balance	1.679	.596
Corporate BOND	1.555	.643
General election	1.409	.71
GDP growth rate	1.304	.767
Stock Market Dev~t	1.287	.777
Bank credit topr~r	1.257	.796
Mean VIF	1.626	.

Variable Inflation Factor (VIF)

estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of d_Treasurycap_gdp

chi2(1) = 2.71

Prob > chi2 = 0.1000

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)	1.0														
Treasury_bond	00														
(2)	-	1.0													
Corporate_bond	0.0	00													
(3)	0.5	-	1.0												
DF_banks	97	0.0	00												
ecsize		16													
(4)	-	-	-	1.0											
StockMarket	0.1	0.0	0.0	00											
et~v	68	71	38												
(5)	0.5	-	0.8	-	1.0										
Bankcredi	25	0.0	43	0.2	00										
pr~c		14		24											
(6) gdp	0.0	0.1	-	0.2	-	1.0									
current	89	19	0.2	26	0.2	00									
			70		93										
(7)	-	0.3	0.0	0.3	-	0.3	1.0								
gdpgrowth	0.0	49	46	13	0.0	83	00								
rate	48				01										
(8)	-	0.1	-	0.3	-	0.9	0.3	1.0							
gdppercap	0.0	53	0.3	22	0.3	58	99	00							
ita	53		37		66										
(9)	0.1	-	-	-	0.0	-	-	-	1.0						
Banklends	40	0.3	0.1	0.0	82	0.1	0.2	0.1	00						
pr~d		63	50	94		72	25	42							
(10)	-	0.1	-	-	0.0	-	-	0.1	0.1	1.0					
Inflationra	0.3	04	0.1	0.3	59	0.0	0.2	07	38	00					
~s	42		96	28		14	74								
(11)	0.5	-	0.1	0.1	0.0	0.0	0.1	-	0.5	-	1.0				
G_corrupt	14	0.0	22	57	64	12	93	0.0	02	0.5	00				
ion~x		38						56		25					
(12)	0.2	-	0.0	0.3	-	-	0.0	-	0.0	-	0.3	1.0			
G_statego	12	0.2	75	39	0.1	0.1	81	0.2	39	0.3	55	00			
vern~t		73			16	85		43		94					
(13)	0.3	-	0.4	0.3	0.5	0.1	0.0	0.1	0.1	-	0.3	0.0	1.0		
G_statego	95	0.0	63	19	19	70	46	04	27	0.1	15	10	00		
ver~w		81								51					
(14)	0.6	-	-	-	0.0	0.2	0.1	0.1	0.3	-	0.5	0.1	0.0	1.0	
Fiscalbala	48	0.1	0.0	0.1	13	76	32	80	68	0.2	22	50	85	00	
~e		24	19	15						13					
(15)	0.0	0.0	-	-	0.2	-	-	-	0.2	0.0	-	-	0.0	-	1.0
Exchange	12	05	0.0	0.6	67	0.4	0.2	0.5	02	21	0.0	0.0	08	0.1	00
Rates			10	24		79	92	89			03	90		81	

MATRIX OF CORRELATION

Appendix III: Results

Effect of Financial System Architecture, on the development of local currency government bond

```
. reg d_Treasurycap_gdp d_d_F_Corporatecap_gpd d_F_bankingsectorsize d_F_StockMar
> nygdpmktpcdBilli d_Interestratecapping MO_generalelection
```

Source	SS	df	MS	Number of obs	=	20
				F(6, 13)	=	2.11
Model	254.398209	6	42.3997014	Prob > F	=	0.1221
Residual	261.272528	13	20.0978868	R-squared	=	0.4933
				Adj R-squared	=	0.2595
Total	515.670737	19	27.1405651	Root MSE	=	4.4831

d_Treasurycap_gdp	Coef.	Std. Err.	t	P> t	[95
d_d_F_Corporatecap_gpd	5.869758	6.414672	0.92	0.377	-7.9
d_F_bankingsectorsize	1.863219	.5672925	3.28	0.006	.63
d_F_StockMarketDevelopment	-.0416326	.1379925	-0.30	0.768	-.33
d_M_gdpcurrentusnygdpmktpcdBilli	.4368295	.3444983	1.27	0.227	-.30
d_Interestratecapping	.6989988	5.116061	0.14	0.893	-10.
MO_generalelection	-2.409612	2.607983	-0.92	0.372	-8.0
_cons	1.892667	1.918299	0.99	0.342	-2.2

Effect of Macro Economic factors on the development of local currency government bond

```
37 . reg d_Treasurycap_gdp d_M_Fiscalbalance d_M_gdpcurrentusnygdpmktpcdBilli d_M_gdp
> _banklendingspread d_Interestratecapping MO_generalelection
```

Source	SS	df	MS	Number of obs	=	20
				F(7, 12)	=	3.56
Model	348.121327	7	49.7316181	Prob > F	=	0.0261
Residual	167.549411	12	13.9624509	R-squared	=	0.6751
				Adj R-squared	=	0.4856
Total	515.670737	19	27.1405651	Root MSE	=	3.7366

d_Treasurycap_gdp	Coef.	Std. Err.	t	P> t	[95
d_M_Fiscalbalance	1.519694	.5724427	2.65	0.021	.27
d_M_gdpcurrentusnygdpmktpcdBilli	2.086325	1.071961	1.95	0.075	-.24
d_M_gdppercapita	-.1036501	.0520633	-1.99	0.070	-.21
M_inflationrates	-.1834256	.1970148	-0.93	0.370	-.6
d_F_banklendingspread	1.15808	.8457061	1.37	0.196	-.68
d_Interestratecapping	-11.25108	4.182076	-2.69	0.020	-20.
MO_generalelection	-.1823086	2.392228	-0.08	0.941	-5.3
_cons	5.565173	2.67231	2.08	0.059	-.25

Effect of Governance on the development of local currency government bond

```
35 . reg d_Treasurycap_gdp G_stategovernanceindexpoliticals d_G_corruptionindex d_G_
> ratecapping MO_generalelection
```

Rectangular Snip

Source	SS	df	MS	Number of obs	=	20
				F(5, 14)	=	2.17
Model	224.875265	5	44.975053	Prob > F	=	0.1171
Residual	290.795472	14	20.7711051	R-squared	=	0.4361
				Adj R-squared	=	0.2347
Total	515.670737	19	27.1405651	Root MSE	=	4.5575

d_Treasurycap_gdp	Coef.	Std. Err.	t	P> t	[95

User: Macintosh

G_stategovernanceindexpoliticals	-11.9669	12.31401	-0.97	0.348	-38.1
d_G_corruptionindex	38.31584	15.71324	2.44	0.029	4.6
d_G_stategovernanceirule	12.65311	13.36146	0.95	0.360	-16.1
d_Interestrategy	-10.60858	5.450165	-1.95	0.072	-22.1
MO_generalelection	-.4858764	2.596125	-0.19	0.854	-6.0
_cons	-11.23303	15.13958	-0.74	0.470	-43

Effect of Financial System Architecture, Macro Economic factors and Governance on the development of local currency government bond

```
49 . reg d_Treasurycap_gdp d_d_F_Corporatecap_gpd M_inflationrates d_F_bankingsector:
> overnanceirule G_stategovernanceindexpoliticals d_M_Fiscalbalance d_ExchangeRate:
> capping MO_generalelection
```

Source	SS	df	MS	Number of obs	=	20
Model	429.11057	10	42.911057	F(10, 9)	=	4.46
Residual	86.5601667	9	9.6177963	Prob > F	=	0.0172
				R-squared	=	0.8321
				Adj R-squared	=	0.6456
Total	515.670737	19	27.1405651	Root MSE	=	3.1013

d_Treasurycap_gdp	Coef.	Std. Err.	t	P> t	[95
d_d_F_Corporatecap_gpd	-.317052	6.256338	-0.05	0.961	-14.0
M_inflationrates	-.3220904	.1748324	-1.84	0.099	-.71
d_F_bankingsectorsize	1.033531	.5499665	1.88	0.093	-.21
M_gdpgrowthrate	-.580619	.4188516	-1.39	0.199	-1.5
d_G_stategovernanceirule	6.703783	12.19097	0.55	0.596	-20
G_stategovernanceindexpoliticals	-10.50013	9.803483	-1.07	0.312	-32.0
d_M_Fiscalbalance	1.976724	.530238	3.73	0.005	.77
d_ExchangeRates1UnitedStatesd	.0878591	.1843385	0.48	0.645	-.32
d_Interestratecapping	-7.809045	5.123589	-1.52	0.162	-19.0
MO_generalelection	-.1666973	2.325602	-0.07	0.944	-5.4
_cons	-3.545412	11.55343	-0.31	0.766	-29.0

Appendix IV: Publications



Determining the combined effect of financial system architecture, macroeconomic factors and governance on the development of local currency government bond market in Kenya

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Abstract

This study sought to examine the current state of the local currency government bond market in Kenya to determine the effects of financial system structure, macro-economic factors and the country's governance on its development. The study used secondary data from the World Bank's WDI and DataStream databases for the period 1998 to 2019. Descriptive statistics - applying trend analysis, measures of central tendency and dispersion and documents analysis were employed to conduct a stocktaking of Kenya's government bond market development since its inception, while multiple linear time series regression using Ordinary Least Square (OLS) technique was employed to examine the determinants of the government bond market development in Kenya. In the findings, the combined model, corporate bond, political stability and general election were largely positively significant. Bank credit to the private sector and fiscal balance were positively significant, whereas inflation and interest capping were negatively significant at a 5 per cent confidence level. GDP_growth rate was significant at 10 per cent. The study thus recommends that the government's efforts should focus towards building the financial markets, controlling its micro and macro-economic factors and building a strong administrative structure in its quest to achieve its Vision 2030 objectives of financial independence. It is this structure that will encourage bond market growth and liquidity that will, in future, enable them to achieve financial independence.

Key terms: Bond issuance, debt, financial system structure, local currency, mutual funds.