INFLUENCE OF SYSTEMATIC RISK ON PUBLIC DEBT LEVELS IN KENYA

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DECLARATION

This Thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

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DEDICATION

I dedicate this study to my wife Cynthia Ayuma, daughters (Favour and Jolyne), my son Cyrus, brother Renson, my Mother Enesi Khamede and friends for their support during my academic journey.

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ABSTRACT

In the 21st century, many nations around the world are faced with a combination of fragile economic growth, high levels of national debt, and budget deficits. Although the majority of this debt increase may have been as a result of efforts to stimilate economic development after the effect of the economic recession, it is imperative to conduct a comprehensive econometric analysis to determine the underlying factors contributing to the increase in government debt. A growing concern is the comprehensive analysis of debt dynamics and debt overhang.Therefore, the purpose of this study was to determine the influence of systematic risk on public debt in Kenya from 2005 to 2023. Specifically, the study sought to; examine the influence of inflation risk on the public debt in Kenya; evaluate the influence of interest rate risk on the public debt in Kenya; determine the influence of currency risk on the public debt in Kenya; determine the influence of liquidity risk on the public debt in Kenya. The study employed quantitative approaches to empirical study the relation to independent variables and the dependent variable. A longitudinal and correlational design was used since it employed time series data to establish a relationship between the systematic risks and the national debts without manipulating the variables. The study used secondary data extracted from economic indicators and statistical abstracts from the respective ministries, Kenya National Bureau of Statistics (KNBS), CBK, IMF and the World Bank during the period under study. Data was analyzed and presented in figures and tables. The study findings provided policy framework for national debts in Kenya. The study finding of the study will be of great importance to the government in development of strategies and policies that will help in minimizing the systematic risks that increases the national debt hence proper management of the national debt. The ordinary least square regression R^2 value of 0.8001 and the adjusted R^2 of 0.743 confirms that the model has a strong impact.The findings for correlation analysis reveals significant relationships between public debt levels and systematic risk variables. Inflation risks (r= 12.6151, p= 0.0001), indicating that inflation rates are associated with high public debt levels. The interest rate risk is positively correlated with public debt levels (r= 0.09811, p= 0.05), implying that interest rate risk influences an increase in public debt levels. Currency risk is positively correlated with public debt levels (r= 9.714, p= 0.000), suggesting that currency instability influence high debt levels creating uncertainty that undermines Countries stability. Liquidity risk is positively correlated with public debt levels (r= 0.7387, p= 0.003), indicating that while liquidity risk influences public debt levels positively it will lead to cautious measures on accessing more debts. Therefore, the study concludes that stability of systematic risk characterized by lower inflation, interest rate risk, currency risk and liquidity risk is critical for influencing the public debt levels in Kenya. The study recommends that the government should implement both fiscal and monetary policies to control inflation tendencies. This would create an enabling environment for repayment of public debt in the Country. The regulators should ensure interest rates remain lower and stable to encourage investment of borrowed fund in the Country. There is a need for the government to manage currency risk prudently through hedging against risk through currency swaps and enhancing economic stability. The government should have a balanced budget that would not put the Country in liquidity challenges that may lead to overborrowing.

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ABBREVIATIONS AND ACRONYMS

GDP	Gross Domestic Product.
IMF	International Monetary Fund.
OLS	Ordinary Least Squares.
KSH	Kenya Shilling
USD	United States Dollar
PFM	Public Finance Management Act
HIPC	Heavily Indebted Poor Countries

OPERATIONAL DEFINITION OF TERMS

Balance of Payment It is an exhaustive account of a nation's economic exchanges with the global community over a certain timeframe, typically a year or a quarter. The Balance of Payments will be assessed by the current account balance.

Exchange rate It represents the worth of one currency relative to another currency. It denotes the quantity of one currency required to acquire a unit of another currency. The exchange rate will be assessed in either US dollars or Kenyan shillings.

Inflation rate It denotes the rate at which the overall price level of products and services escalates, resulting in a diminution of purchasing power over time. Inflation will be assessed using the consumer price index.

Inflation risk It is the probability of financial loss in real terms due to general rise in the prices.

Public Debt Commonly referred to as national debt, it represents the aggregate sum of money that a nation's government has borrowed and currently owes to its creditors. This debt accrues over time when a government expends more than it generates in revenue, usually via taxation.

Systematic risks This pertains to the risk intrinsic to the whole market or a specific market segment, evaluated by interest risk, inflation risk, and currency risk and liquidity risk.

Risk	This refers to an uncertain event with the consequences for and objective. It can also be defined as the probability of loss or unfavourable outcome associated with an action.
Interest rate	It is the price paid or a cost charged for the use of money for a given period of time and it is expressed in terms of a percentage of the total outstanding balance that is either fixed or variable.
Interest risk	It's a probability of financial lose as a result of unexpected fluctuation in the interest rate.
Currency risk	Its is the probability of a financial loss as a result of fluctuation in exchange rate between two currencies.
Liquidity risk	Is the ability of an institution to meet cash and collateral obligations at a reasonable cost when they fall due without incurring unacceptable loses.
Fiscal policy	It is the means by which the government adjusts its budget balance through spending and revenue (taxes) changes to influence broader economic conditions.
Monetary policy	It is actions taken by a central bank to regulate the money supply and demand in the economy to achieve macroeconomic objectives controlling inflation and high employment
Investment	It is acomitment of resources in to an asset that is expected to gain value over time.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In the 21st century, nations worldwide are confronting a crisis of escalating public debt. The fiscal paths in certain affluent economies have reached unsustainable levels. Numerous nations within the eurozone are contending with elevated borrowing, budgetary deficits, and sluggish growth (World Bank, 2022). The recent increase in debt may have been influenced by attempts to cushion economic development amid deflationary pressures following the crisis, nonetheless, a comprehensive econometric analysis is necessary to ascertain the factors contributing to the rise in government debt. There is an rising concern to serously examine debt dynamics and debt overhang. The dialogue on public debt levels and related economic growth has consequently gained significant attention from several researchers (Vighneswara, 2015).

Currently, escalating debt levels constitute a worldwide issue, no longer exclusive to underdeveloped nations. Developed economies within the European Monetary Union, such as Greece, Ireland, Italy, Portugal, and Spain are severely affected by the financial crisis and they have been contending with the issue of debt. The debt ratios of these countries are 177.2 percent, 121 percent, 135.2 percent, and 100.2 percent, respectively. France and Germany, the two major economies, had debt ratios of 95.6 percent and 76 percent, respectively. The average debt ratio of the European Monetary Union (EMU)

member states is 96 percent. The debt-to-GDP ratio of Kenya is 70.8 percent (World Bank Statistics, 2024).

The large debt incurs implications as interest rates will not remain near zero indefinitely. Countries with significant indebtedness have become increasingly susceptible to unforeseen market forces and face the possibility of resources being squandered rather than invested. The public debt of Eurozone countries has escalated between 2007 and 2022. The increase went up from 55% of GDP to 136% of GDP. Ludger 202 confirmed that the European Union and Eurozone experienced a debt to GDP increase from 30% to 35%, which resulted in government debt rising approximately from 95% to 100% of GDP by 2020.

The Italian market has faced a significant increase in the public debt, negatively impacting economic growth. The government debt to GDP ratio has declined in recent years due to strong real GDP growth and inflation. In 2020, the public debt reached a peak of 154.9% of GDP, in contrast to 2019, when the debt-to-GDP ratio was 134.2% (European Commission 2024). The Italian national debt remains elevated, particularly in contrast to Japan's national debt, which was 220% of GDP in 2019 (Daniel 2019). In 2021, the Italian National Debt amounted to €2,678.00 billion, reflecting a rise of around €105 billion compared to the end of 2020. The figure was estimated at 150.8% in 2021, almost 4% lower than at the end of 2020, however 17% higher than in 2019 and 2018. The surge in 2020 resulted from a concurrent rise in the absolute value of debt and the extensive spread of the COVID-19 epidemic (Mef 2021).

The Japanese national debt has been escalating since 1990, attaining 198.9% of the nation's GDP. Among European nations, Japan exhibited the biggest national debt,

followed by Italy in second place, with France and the United Kingdom thereafter. The elevated national debt positively impacts Japan's economic development, as by 2016, the Japanese government had amassed a national debt over 800 trillion Yen (about USD 8 trillion). In 2014, the general government national debt to GDP ratio was 230%, the highest among developed nations, raising concerns about the solvency of the Japanese government (Rasidah & Attia 2014; Tomomi & Onji 2017).

Concerns have been escalated regarding the increasing federal government debt; from 1980 to 1997, the debt surged from 26 percent of GDP to 50 percent of GDP due to war and depreciation (D.W. Elmendorf and N.G. Mankiw 1998). During the World Financial Crisis, the public debt for the US Federal Government icreased from 64 % of GDP in 2007 to 103% of GDP in 2012 due to increase in costs related with the aging population (Henry 2013). In 2021, the Federal government debt of the United States of America reached 28 trillion US dollars, attributed to a budget deficit and increased borrowing interest costs (Calvin 2021).

According to McBride, Berman, and Anshu (2023) the United State of America's Federal Government debt reached an extraordinary level of $33.17 trillion, prompting a concern among economists, investors, and lawmakers. This occurred due to a budget deficit resulting from increase expenditures related to the COVID-19 pandemic. The Government's debt reached 114% since World War II.

As at October 2024, the government debt for United States of America touched USD 35.68 trillion, identified as the highest level in history and reflecting an annual increase. Since the year 2021 the interest rate has been rising, significantly raising the proportion of government expenditures allocated to servicing the national debt (David 2024).

The government's debt for the South American countries which includes Latin America and the Caribbean, increased from USD 3 trillion in 2008 to USD 5.8 trillion, that is from 60% to 117% of the country's GDP. These countries were grouped as emerging and developing economies, characterized by high interest rate payments, high risks, and increased debt levels, all of which contribute to a significant hindrance to growth (Powell & Valecia 2023).

In the 20th century, Latin America countries was faced with a debt crisis that revealed the countries' underlying economic weaknesses, including a significance reliance on commodity exports, high inflation rates, interest rates, and a substantial foreign financing (The World Bank 2024). The Mexican Government's Municipal debt level has increased to 93.6% over the previous years, despite Mexican's longstanding history as a Consolidated Federal Republic and its issue of subsovereign debt. To resolve the nation's overall debt crisis, the Federal Government permitted financial discipline across its institutions to conserve the integrity of public finances at the Federal Government level (Camila and Smith 2019).

Umesh (2022) states that Sri Lanka commenced borrowing from international capital markets in 2007 by issuing International Sovereign Bonds (ISBs). She released her inaugural ISBS of USD 500 million, set to mature in five years. Since then, the ISBS has emerged as the primary source of foreign finance for the country, with the issuance of 13 ISBS totaling USD 16 billion. By the conclusion of 2021, 36% of Sri Lanka's entire outstanding foreign debt was attributed to ISBS. The commercial borrowing incurred substantial costs, with interest rates between 5.5% and 8.5% for repayment periods of 5

to 10 years, in contrast to concessionary loans that offer lower interest rates of 0.1% to 2% and extended payback periods.

For the first time in the history, on the 12 April 2022, Srilank announced apre-emptive sovereign default on all its foreign debt of about USD 50 billion. The sovereign default was resulted from long COVID 19 pandemic that lead to worst economich crisis in the country's post independency history (Guneshan and Dird 20242).

The rising Indian national debt combined with economic development and high fiscal deficit have become a serious concern of the nation. India has overtaken Brazil and Argentina and Srilanka as the most indebted nation in the Southern Asia. The national debt is majorly made up internal debt which is the result of fixed interest rates on the loan. The external debt is made up of a small portion of the Indian National debt(Debi, Sanhita, Sethi and Seba 2024).

Indian government increased borrowing by 64% during the year 2021, i.e. it has jumped from 12.8 Lakh Crove against the budget estimate of 7.9 lakh croves. The state of the goverment was in the doldrums financially due to COVD19 pandemicas its appetite was much more with widening revenue deficit under the demand for higher public spending during the same period (Sundaram 2021).

In the African context, public debt has also undergone a dramatic increase. Sub-Saharan Africa's public debt stood at 57% of GDP in 2020 compared to 38% in 2011 (World Bank Group, 2023). Several factors explain this surge. Loose monetary policies in advanced economies led to abundant capital flows into Sub-Saharan bonds and treasury bills offering positive real interest rates. Public debt in Africa has been rising steadily since the

early 2000s following debt relief initiatives such as the Heavily Indebted Poor Countries (HIPC) programme. The drivers of Africa's new public debt include increased infrastructure financing needs, changing composition of creditors, exogenous shocks, and loose fiscal policies (Were, 2018). Consequently, by 2017, 17 African countries were classified as being distressed or at high risk of debt distress (International Monetary Fund, 2018). The countries included Zambia, Congo, Mozambique, Zimbabwe, Burundi, Cameroon, Chad, Gambia, Guinea, Ghana, Kenya, South Sudan, and Togo (Abdullahi, AbuBakar & Hassan 2015).

The increasing public debt burden limits the government budgetary resources for development in Sub-Saharan Africa. According to the World Bank (2023), almost a third of countries in the Sub-Saharan Africa are faced with high risk of debt distress, while another third face moderate risk. With governments spending between 20% to 30% of revenues on interest payments, important areas such as health, education, and infrastructure will likely be underfunded (Were, 2021). Where public debt is mainly made up of foreign borrowing, the depreciations of exchange rate makes the debt servicing more expensive in local currency terms. This stresses the need for proper debt management strategies by the government.

As reported by Anyanza (2023), East African countries faces pressure to reavaluate and renegotiate the pricing of around USD $51 trillion in international debt denominated in the fragile US dollar, coinciding with the suspension of the official use of the international pricing benchmark Libor rate on June 30, 2023. As of March 2023, Tanzania's international debt amounted to USD 29.59 billion, with 68% (USD 20.12 billion) designated in US dollars, as reported in the Central Bank of Tanzania's April 2023

Economic Review. In Uganda, governmental debt has increased significantly from USD 12.5 billion to USD 20.97 billion over the past four years, resulting to an increased fiscal deficit and consequently increased interest costs associated with debt servicing (Obodho 2024). This situation reflects that of Kenya, where the foreign debt stock amounted to Ksh. 4.15 trillion (USD 30.4 billion) in February 2023, according to the national monthly debt bulletin.

Inflation is the overall rise in the prices of goods and services over time which depreciates the purchasing power of the local currency. An inncreased inflation decreases the real worth of debt over a given period of time which is advantageous to debtors, particularly governments, by reducing the actual cost of debt repayment (Obodho, 2024). Prolonged high inflation can negatively affect the investor confidence in a country's economic stability, potentially resulting in an increased borrowing rates and currency devaluation. The correlation between inflation risk and public debt levels outlines the importance of cohesive fiscal and monetary policy to attain sustainable economic growth and stability.

Exchange rates is the value of one currency expressed in terms of another currency. The exchange rate of the Kenyan Shilling (KES) against major currencies, such as the US dollar, is impacted by anumber of variables including market forces, interest rates, and trade balance (Onsongo, 2023). The increased public debt can undermine investor's trust in a nation's economic stability, perhaps resulting in currency depreciation if investors perceives risks of default or inflationary financing (Kirui, 2017). Variations in currency rates can influence the expense of servicing external debt expressed in foreign currencies. A depreciation of the home currency may exacerbate the expense of servicing such obligations.

1.1.1 Systematic Risk and Kenya Public Debt

According to Ambagwa, (2023) systematic risk parameters include the level of inflation risk, the currency risk, interest risk and liquidity risk. Firms are however encouraged to diversify portfolio so as to mitigate systematic risk. Muiruiri (2014) found that systematic risk in equity stocks in the Nairobi Securities Exchange heavily affected performance. Mwenda et al., (2021) indicated that systematic risk affect debt levels and performance of stock market in Kenya.

The Public Finance Management Act (PFM) of 2012 establishes a crucial framework for the sustainable management of public debt in Kenya. The framework advocates for significantly concessional overseas borrowing rather than domestic borrowing. In Kenya, there is a transition of domestic debt from treasury bills to government bonds to mitigate the crowding-out effects on private investment and the related dangers of inflationary pressures. Nonetheless, notwithstanding these policies, domestic debt as a percentage of total debt has been increasing (Kirui 2017). Notwithstanding the existing frameworks, the nation's public debt rose substantially from 2013 to 2020 due to the government's desire for infrastructural development (CBK 2022). During this era, the national debt accumulated to Ksh. 5.458 trillion. The external debt rose from Ksh. 843.6 billion to Ksh. 3.5 trillion, reflecting a 316% increase, whilst the domestic debt grew from Ksh. 1.1 billion to Ksh. 3.2 billion. The key infrastructural advancements during this period was the standard gauge railway and the Nairobi Expressway (Muiruri, 2021).

According to CBK (2023); the Kenyan public debt in June 2023 was Ksh. 10.189 trillion ($69.3 billion) compared the same time in 2022 the public debt stood at Ksh. 8.579 trillion ($58.4 billion). While the national treasury had projected that the public debt will be Ksh.

9.412 trillion ($64 billion) at the end of June 2023 (National Treasury and Economic planning 2022/2023). The country's debt remains sustainable with high risk of distress (Fedelino, Kaufman & Estervao 2021). According to Okoa Uchumi Campaign (2021) the continued increase in the public debt is not good for debt sustainability of the country.

Central Bank (2023) report stated that, nearly 40% of government revenue was allocated to debt servicing, which severely limits the funds available for development projects, social services, and other essential expenditures. This high debt servicing burden restricts fiscal space and hampers the government's ability to respond to economic crises or invest in growth-promoting activities. There are several factors that may be linked to the sky-rocketing public debt which include high interest rates, budget deficit, exchange rates, high inflation, imbalanced current account, high taxes; expanding government expenditure among other factors, hence the public debt continues to be a significant challenge to Kenya (Oammuruzzaman, 2022).

Several factors explain Kenya's ballooning public debt over the last decade. Large infrastructure projects, including railways, roads, energy, and ports, have been financed through sovereign bonds and loans from bilateral partners (Ngugi, 2019). The main factors explaining Kenya's ballooning public debt include infrastructure spending, revenue shortfalls resulting to liquidity risk forcing the government to borrow to finance the revenue shortfall and to solve the liquity risk, interest risk, and currency risk (Mbui & Wanjohi., 2018). According to Muiruri (2023), further, parliament approved a 2022/23 fiscal year budget allocating Ksh1.15 trillion for public debt repayment, representing about 33% of total government spending. The burgeoning public debt has fiscal implications as interest payments now consume close to 60% of ordinary government

revenues (The National Treasury, 2021). With Kenya already allocating between 30-40% of domestic revenues to debt financing, the continued accumulation of public debt will divert resources from development expenditures and social priorities (Ndung'u, 2014). Where additional borrowing is external, exchange rate fluctuations also pose rollover and refinancing challenges. Hence, restraining debt growth to ensure fiscal sustainability has become an urgent policy issue.

This raises concern for the country's debt sustainability over the increasing trends in public debt over the years. In the year 2021 IMF considered Kenya public debt a high risk of distress which led to down grading Kenya to a medium-term policy performer (Mageto, 2022). Given the effect of the stability of systematic risk variables, which are key determinants of debt accumulation in Kenya, it has been widely acknowledged that prudent and sustainable debt level is crucial.

1.2 Statement of the Problem

The liquidity risk, inflation risk, interest risk, currency risk have ballooned the debt levels in the country prompting exchequer challenges especially on equitable share disbursement in counties (National Treasury, 2021). There is poor debt servicing due to poor payment patterns hence even increasing debt interest rate. This has further worsened national debt levels in national governments with currency risk and inflations risk having been amajor concern. Monies disbursed in Kenya only enable recurrent expenditure and not development projects. Kenya budgeting has been a challenge since national government is heavily factoring systematic risks (GoK, 2024).

The fiscal deficit has been consistently high, often exceeding 7% of GDP. This persistent deficit necessitates ongoing borrowing, contributing further to the rising debt levels. According to Muiruri (2023), further, parliament approved a 2022/23 fiscal year budget allocating Ksh1.15 trillion for public debt repayment, representing about 33% of total government spending. The burgeoning public debt has fiscal implications as interest payments now consume close to 60% of ordinary government revenues (The National Treasury, 2021).

Furthermore, the Kenyan government has had budget deficit that prompt external debt to fill the gap. Public debt is a source of debate in the country. Mutwiri (2019) carried out a research on systematic risk and performance of the stock market in Kenya. This study was on stock market. Lemantile (2017) found that exchange rate had a positive significant effect on public debt in Kenya as Owaga (2021) found it insignificant.

Study carried out by Ulla et al., (2023) on the macro-economic factors and public debt using the case study of Pakistan with the aim of establishing the primary determinant of the public debt where they used vector error correlation model approach. The result were that inflation and investment plays a significant role in decreasing the public debt while the real interest rate and deficit budget are the key elements that contributes to skyrocketing of the national debt. Other variables were not considered in their study, this working bridged the gap by expanding the scope by discussing other factors that were left out. This included currency risks and liquidity risk.

1.3 Objective of the study

1.3.1 General objective of the study

To evaluate the influence of systematic risks on Public debt in Kenya

1.3.2 Specific objectives

i. To examine the influence of inflation risk on the public debt in Kenya

ii. To evaluate the inflence of interest risk on the public debt in Kenya

iii. To determine the influence of currency risk on the public debt in Kenya

iv. To determine the influence of liquidity risk on the public debt in Kenya

1.4 Hypotheses

H_{O1}: Inflation risk has no significant influence on the public debt in Kenya.

H_{O2}: Interest risk has no significant influence on the public debt in Kenya.

H_{O3}: Currency risk has no significant influence on the public debt in Kenya.

H_{O4}: Liquidity risk has no significant influence on the public debt in Kenya.

1.5 Significance of the study

This study will be significant to several stakeholders who includes but not limited to economists, academicians and scholars, players in the capital market and national government especially ministry for finance and economics planning. The scholars will use this study to add new knowledge on the existing literatures about the national debts and to expound on the theories.

The government planners will use the information to formulate policies to mitigate the public debt against the systematic risks and save the country from the skyrocketing national debt and its adverse effect to the economy. This information will also be used when planning for investment, the government will be able to determine the underlying systematic risks that influences the cost of acquiring the new capital as a result the capital

with lower cost will be selected and also to facilitate proper management of the national debt

This study will be used by researchers and institutions of higher learning for advancement of knowledge on the influence of systematic risk on the public debt widening the understating on the macroeconomic stability leading to theoretical development that can address complex and multifaceted challenges of national debt. Also this will lead to new research opportunities expanding on the research knowledge.

1.6 Scope of the Study

The main aim of this research was to examine the influence of systematic risks on the public debt level in Kenya. The content scope includes inflation risk, interest risk, and exchange risk and liquidity risks infuence on the public debt in Kenya. The period (18 years) covered is extensive and therefore more likely to provide accurate results. The timeframe spanning from 2005 to 2023 allows for the observation of trends and the impact of various systematic risks and global economic events on Kenya's national debt. Similarly, within the period under study, Kenya currency has experienced greater margin of depreciation which needs more research to develop better control policies, (World Bank 2022).

During this period, there has been several-major economic phenomena such as Constitutional referendum (2005), global Financial Crisis (2007-2009), post-Election Violence (2007-2008), Constitutional Referendum and Implementation (2010), Eurobond Issuances (2014, 2018, 2021), infrastructure Investments, droughts and Food Insecurity (2011, 2017, 2021-2022), debt Restructuring and IMF Programs (2018, 2020), COVID-

19 Pandemic (2020-2022), Fluctuations in global interest rates, particularly the rising rates post-2021, increase in the cost of servicing external debt. Coupled with a stronger US dollar, this made debt repayment more expensive for Kenya. This study incorporated these great economic occurrences using the thematic variables of interest. The study used time series from internationally recognized secondary sources.

1.7 Limitations of the study

The study examined the empirical literature regarding the connection between the study's independent variables and public debt for the purpose of the literature review. This was due to the lack of adequate current literature on the subject being studied. According to (Mugenda & Mugenda, 2003), if the field of study is uncharted territory or there is little research in it, the researcher should analyse any pertinent literature before developing a logical framework and a pertinent hypothesis. To prevent inconsistencies during data gathering, the study compared data from multiple pertinent sources. To conduct an annual time series, quarterly data were converted into yearly data.

The study relied on secondary data from numerous sources, Kenya National Bureau of Statistics (KNBS), World Bank development (UNCTAD), Kenya revenue Authority (KRA) and Internal Monetary Fund (IMF). This posed a challenge in identifying the correct data. To ensure that the data obtained were reliable, the researcher through triangulation method (the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena) was chosen internationally recognized sources, World Bank development and KNBS. The data obtained were compared to find if they agree. Some of the data were unaccessiple for example from

world bank and IMF and required upfront payment before accessing the data this made the study to be financially involving.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examined various works that address public debt and systematic risks in separate sections: Section 2.2 provides a conceptual review of the variables under consideration. An overview of relevant theories and their applicability to the study included in Section 2.3 and Section 2.4 reviews the empirical literature. Part 2.5 discussed the research gaps identified from previous literature and how they were filled in this study. Conceptual framework include the variables' diagrammatic model, indications, and relationships.

2.2 Theoretical Review

This section discussed theories relevant to the field under the study. The anchoring theory of the study were arbitrage pricing theory, classical economic theory of public debt supported by Keynesian theory of public debt.

2.2.1 Arbitrage Pricing Theory

This theory was brought forth by Stephen Ross (1976), the theory is a multi-factor asset pricing model that predicts an asset's expected return as a linear function of its sensitivity to various macroeconomic factors such as inflation, interest rates, and GDP growth. The arbrage pricing theory assumes that arbitrage opportunities can only be eliminated by rational investors (Elton, Gruber, Brown & Goetzmann 2014). The public debt is as a result of imbalances exalarated by inflationary tendencies leading to arbitrages and expected

utility (Owaga, 2021). The arbitrage pricing has several measures of systematic risks the inflation risk, interest risk, currency risk and liquidity risks that are fundermental on asset returns, this at last have an influence on public debt level. This multifacet elements are sources of risks that prompt public debt.

The arbitrage pricing theory is however limited to risk elements which in totality could not be the only contributors to public debt in the country (Kamau & Muthama, 2021). This however does not supersede the state that public debt level is influence by systematic risks (Mwega, 2022). The model enables assets with measurable systematic risks explained by macro economic elements capture essential attributes of public debt (Macia, 2023). This theory guides the interest rate component on public debt. It further comes out as the main theory based on Public debt levels in regards to inflation risk, currency risk, balance of payments and even debt mix. The theory acceptability are based on the fact that to clearly outlines pricing that comes with public debts and the systematic lements of inflation risk, interest risk, currency risk and liquidity risk that lead to the debt situations. It is therefore outlined as the main theoeretcal foundation for this eminent study.

2.2.2 Keynesian Theory of Public Debt

The Keynesian theory of public debt was established by John Maynard Keynes in 1930 through his economic concepts. This hypothesis posits that the public's expense in covering the supplementary taxes required to service the debt interest is counterbalanced by the increased interest income derived from public debt holdings (Phelps, E. 2022). Keynes championed the implementation of fiscal policy to regulate economic fluctuations. In times of recession, governments ought to augment expenditure and reduce taxes to

invigorate demand, even if this necessitates incurring budget deficits and escalating public debt.

Public debt serves as an instrument for economic stabilization and enhances aggregate demand when the private sector is either unable or unwilling to spend adequately (Krugman 2020). Countries with sovereign currencies can maintain high levels of public debt without being exposed to the related dangers, contingent upon their management of inflation (Mankiw 2019). Blanchard and Leigh (2013) discovered that fiscal multipliers exceeded expectations during the 2008 financial crisis, affirming the necessity for health fiscal action.

This theory is relavant to this study because it expounds on the macroeconomic factors and public debt levels broadly. Through this theory, the study will contribute to developing strong institutional frameworks to manage public debt and fiscal policies that can improve debt sustainability. Ostry et al. (2010) highlighted the role of fiscal responsibility laws and independent fiscal institutions in maintaining sustainable public finances.

However, this theory has been critised becaused it advocates for extensive government spending financed by debts which eventually results to inflation. Faultfinders warn that the inflationary pressure may erodes purchasing power and can results to hyperinflation in extreme cases. Faultfinders also argue that persistent government borrowing can lead to unmanageable public debt levels. increased public debt level can drive out private investers, consequently lowering economic growth in the long term. Reinhart & Rogoff (2010) suggested that debt levels above 90% of GDP could substantially affect economic growth. This study overcame these shortfalls by including other macroeconomic factors

and investigating their direct correction to the public debt. The study also provide real life recommendation to advise the government on borrowing and spending limits.

2.2.3 Crowding out theory

The crowding out effect idea, formulated by Frank Knight, posits that a minor increase in interest rates can lead to a substantial decline in investment and economic growth. A reduction in accessible resources for financing investment possibilities and macroeconomic activities inside a nation, as noted by Claessens (1996), leads to a decline in investments. It considers how individuals strategize their consumption choices over their lifetimes. Borrowing enhances present consumption by shifting the tax obligation to subsequent generations. Borrowing elevates current consumption by transferring the tax obligation to subsequent generations. Ngugi (2012) Some economists affirmed that the crowding out effect is very minimal or potentially nonexistent. Ricardo (1820), via the Ricardian equivalence theory, assumed that the government's ways of financing public expenditure through borrowing or increasing taxation will yield similar results. Likewise, Keynes (1936) satisfied that government borrowing did not displace private consumption. Crowding out occurs when increased interest rates attain a level where only the government can sustain debt repayments. This impact reduces the savings available for investment, perplexing survival for individuals and firms in that market (Carlson & Spenser, 1975). Governments borrows to invigorate demand for goods and services, during this period, consumers are often cautious due to the potential risk of market exclusion and the likelihood of future tax increases.

The criticism is that the crowding out effects hypothesis assumes that public debt consumes a significant share of national savings set for investment, as demand increases

but supply remains constant. The crowding out theory assumes that accelerated government expenditures, particularly when funded by borrowing, may result in elevated interest rates. This consequently, displaces private investment by increasing borrowing costs for firms and consumers. This assumptions are influential in classical and neoclassical economics, has seen much criticism, especially from Keynesian and post-Keynesian economists.

2.2.4 Debt Overhang Theory

The debt overhang theory was founded by Myers in 1977. The United Nations organization states that excessive debt may impair a company's investment by reducing its incentives and proposes short-term debt as attainable remedy to debt overhang. When the debt burden becomes so significant that a government cannot take additional debt, this leads to underinvestment, affecting enterprises' ability to recover from losses. In a subsequent analysis, Krugman (1988) outline debt overhang due to the adverse correlation between international borrowing and investment. Furthermore, Reinhart and Rogoff (2012) mutually relates it to the economic failure resulting from the escalation of public debt. Debt overhang is a situation in which a firm possesses a significant debt from the previous, which prevents it from easily acquiring further debt to finance new investment projects, even when such debt would be a wise investment with a portential of facilitating debt repayment. Levy et al. (1998) agrees that servicing these debts depletes a significant portion of the nation's earnings. For instance, there exists a likelihood that African countries may face a situation where their liabilities exceeds their capacity for compensation due to over borrowing in recent years.

This theory is significant to this study, as it indicates that overborrowing may result in a debt overhang, making it difficult for the government to repay the loan upon its maturity. The assumption oth this theory is that high debt invariably affects investment. In actuality, entities with substantial debt may continue to seek lucrative investments, particularly if such investments are anticipated to generate returns beyond the cost of capital.

2.3 Conceptual Review

This section involved the review of past studies related to the independent variables, (inflation risk, interest risk, currency risk and liquidity risk), the dependent variable (Public debt). The study provided detailed overview of the previous insights on the indicators of each variable.

2.3.1 Public Debt

According to World Bank (2023) Survey, public debt refers to the total amount of money that a government owes to external creditors (foreign debt) or internal creditors (domestic debt). This debt arises from the government borrowing to cover deficits, finance public projects, and manage liquidity needs. Public debt is typically issued through government bonds, loans, service, or any financial instruments. Nyamongo (2021) studied the effect of selected macroeconomics variables on the public debt in Kenya. The study concentrated on the inflation, tax and aggregate investment as the macroeconomic variables that piloted the national debt.

Reinhart and Rogoff, (2010) argues that public debt can be beneficial, especially during economic downturns, by allowing governments to inject money into the economy, stimulate demand, and create jobs. While International Monetary Fund (IMF) (2023) report focused on the risks associated with high public debt, such as inflation, higher

interest rates, and the potential crowding-out of private investment. The report advocates for minimal government borrowing and balanced budgets to maintain economic stability.

The developed and developing nations have been faced with the challenge of ballooning public debt over the years which has been associated with high public deficit resulting to a further increase in public debt which has deteriorated the nation's fiscal position. (Mencinger *et al*., 2014) noted that the rise in government debt is due to expanding the national expenditure which has coupled up with the recent global financial and economic crisis which has led to further increase in the public debt (Were, 2021).

The growing public debt crisis in different nations around the globe has resulted to positive consequences in the economy, social and political life where insolvent states are unable to perform their function efficiently in the provision of public good and services (Were, 2021). This has also made it difficult for the countries to settle the debts when they fall due which have resulted into an inflation, devaluation of the national currency, banking crisis, loss of saving and increases poverty and decline confidence in the government and the nations credit rating (Al-qudah, 2020).

In the current study, public debt was measured by the public debt to GDP ratio as a key indicator to assess a country's fiscal health. This ratio will help to gauge the country's ability to pay back its debt by comparing what it owes to what it produces in economic value annually. Reinhart and Rogoff (2010) analyzed historical data across countries and found that when the debt-to-GDP ratio exceeds 90%, economic growth tends to slow down significantly. Their findings fueled arguments on the threshold levels of debt-to-GDP that might hinder economic performance.

World Bank (2023) outlines the varying effects of debt on various economies, noting that upcoming markets and developing economies face greater risks from high debt levels due to lower revenue bases and higher borrowing costs. Panizza (2019) studied the relationship between advanced economies' public debt and economic growth. According to the research, short-term debt can result in rollover risks and greater refinancing costs, while a larger percentage of foreign debt makes a company more vulnerable to shocks from above. Public debt will be measured by Public debt to gross domestic product. Systematic risks public debt examinable for this study include inflation risk, interest rate risk, currency risk and liquidity risks.

2.3.2 Inflation Risk

It is an escalation of the overall price level of goods and services in an economy over a specified timeframe. An increase in the overall price level correlates with an increase in gross domestic product. Inflation may engender uncertainty regarding the future profitability of investment ventures. This will result in an increase in investing techniques. A high inflation rate deters investment. Inflation can diminish a nation's worldwide competitiveness by increasing the cost of its exports, so affecting the balance of payments. Inflation can influence borrowing and lending decisions through its interaction with the tax system (Abbas & Christensen, 2017). To addres the impact of inflation, the organizations may need to allocate additional resources.

Inflation is a very important macroeconomic yardstick that shows the rate at which the overall price level of goods and services increases over a given period of time within the econmy, consequently depreciating the purchasing power of a currency. It may be as a

result of several factors, such as demand-pull inflation, cost-push inflation, imported inflation and built-in inflation (Mankiw, 2022).

Consumer Price Index (CPI) will be used in this study to evaluate the significant of inflation on public debt level in Kenya. Central banks which including the Federal Reserve in the United States, utilises CPI data to develop monetary policies more so regarding interest rates (Federal Reserve, 2023). Odhiambo (2022) interrogated the impact of the CPI on Kenya's public debt servicing expenditures. The investigation indicated that periodic of inreasee in CPI results to high interest rates, thereby increasing the cost of debt servicing. This limits the government's fiscal capacity, complicating the funding of development efforts and necessitating further borrowing. Consumer price index was used to assess the inflation.

2.3.3 Interest Risk

This refers to the amount charged by lenders to borrowers for the use of assets. The Central Bank of Kenya has adjusted interest rates to manage inflationary pressures and stabilize the economy (Central Bank of Kenya, 2023). According to a study by Waweru and Kamau (2021), interest rate changes in Kenya have a big effect on the amount of national debt. Elevated borrowing costs and a larger public debt were linked to periods of high interest rates. Research by Mwangi (2023), found that managing public debt is greatly influenced by the monetary policy of the Central Bank of Kenya, which sets interest rates. According to the study, monetary policy that is successful can stabilize interest rates, lower borrowing costs, and increase debt sustainability. The real lending rates provided by the central Bank of Kenya, was the major indicator to analyse the interest rate in Kenya. It reflects the true cost of borrowing and the real yield for lenders (Fischer, 2020).

Higher interest rates increases the cost of new borrowing, making it more expensive for the government to finance its activities. This can lead to higher public debt levels if borrowing needs persist (Blanchard, 2019). Interest rate increases the cost of servicing current debt. Increased debt servicing expenses may put a pressure on the government's finances, causing deficits leading to more borrowing (Bernanke, 2022). Interest risk was measured by Net operating income to total debt service.

2.3.4 Currency risk

Currency risk refers to the probability of a financial loss as a result of fluctuation in exchange rate between two currencies. The fluctuations in exchange rates can significantly influence the level of public debt, particularly when a substantial portion of the debt is denominated in foreign currencies. Exchange rates influence the relative costs of imports and exports, which in turn affects the trade balance. Kenyan exports may become more affordable and competitive outside if the KSH depreciates, which could enhance the country's trade balance and economic expansion. But it also raises the cost of imports, which fuels inflation (Dornbusch, 2021).

Exchange rate is a core element of macroeconomics factor since it measures the value of one currency in terms of another currency (Ehrmann & Frazscher 2024). US Dollar is a currency that is mostly used to measure the value of other currencies across the world (Hamilton, 2018) the same criteria is applicable to Kenya, when Kenya shilling depreciated against US Dollar in 2022, it costed the county a half a trillion shilling when the shilling depreciated by 9.3% i.e. from 107.85 by the end of 2021 to 117.83 by the end of 2022 which significantly increased the burden of external debt (Mburu, 2022). According to the National treasury, Kenyan shilling depreciated more in January 2024 by

hitting the highest level of Ksh. 160.50 to 1 USD. Based on the data provided by the central bank in regards to exchange rate by the end of May 2024 the Kenya shilling had appreciated against US Dollar and was by exchanged at Ksh. 130.22 to 1USD

KSH/USD will be adopted to indicate the exchange rate in Kenya. The local currency value of loan repayments rises when the KSH weakens compared to the USD, increasing the debt load (Krugman, 2022). On the other hand, appreciation of KSH can lower the cost of debt servicing in local currency. Efforts to diversify the currency composition of debt and engage in hedging practices have been prioritized to mitigate exchange rate risks (National Treasury of Kenya, 2023). Currency risk was measured in US dollars or Kenya shillings

2.3.5 Liquidity Risk

The current account balance is a crucial element that reflects the disparity between the values of a country's exports and imports of goods and services, in addition to net income from foreign sources and net current transfers. According Central Bank of Kenya adequate foreign exchange reserves can mitigate the impact of current account balance deficits by serving as a safeguard against excessive borrowing (CBK 2023)

Current account balances was used to imply the current accounts of country's balance of payment in this investigation. The current account records foreign transactions related to items, services, goods, income, and current transfers for a given country. The current account deficit signifies that a nation is importing more than it is exporting, hence requiring external financing to balance the deficit (Krugman & Obstfeld (022). This often results in more borrowing, hence accumulating the public debt level. Nonetheless,

reliance on foreign investment may result in unsustainable external debt (Blanchard, 2019). The Balance of Payments was assessed by the current account balance.

2.4 Empirical Literature Review

Review of previous studies related to the goals of the current study included in the under this section. This part draws attention to systematic risk generally influencing Kenya's national debts.

2.4.1 Inflation Risk and Public Debt

Ibrahim (2019) indicated that inflation is the prolonged rise in the cost of goods and services resulting from the devaluation of the national currency. An escalation in public debt precipitates elevated inflation rates in any nation. This implies that an increase in public debt presents the country with two alternatives: to elevate taxes or to issue additional currency to settle the loan. An increase in taxes will push firms to raise the pricing of products and services, resulting in inflation. The act of printing additional money to settle public debt would result in the devaluation of the national currency, causing elevated inflation, which in turn increases public expenditure on goods and services, so compelling the country to incur further borrowing and exacerbating national debt. This study does not outline the indicators of systemic risk, and its focus on inflation risk is not sufficient enough. This study was conducted exclusively in Kenya and it applies the use of time series data and causal methods.

Inflation impact public finance through multiple ways. It aims at expanding the tax base in nominal terms hence raising the nominal tax income, which might concurrently raise government expenditure, more so for budgetery items that are automatically adjusted for inflation. An increase in nominal GDP typically reduces the deficit and debt ratio. Over

time, policies may respond to inflation by discretionary fiscal measures and monetary measures tightening as a result of expanded government borrowing costs (Macia, 2023). Inflation is a key component of macroeconomic in many countries, including Kenya, since it affects the implementation of monetary policies and other macroeconomic factors like interest rates and currency rates (Alana, 2017). According to Onyango (2023) increased inflationary pressures will elevate the government of Kenya debt by Ksh. 15 billion in the next two years. In March 2024, the inflation rate, as indicated by the consumer price index, was 5.7%, which resulted to a rise in the prices of goods and services (Obodho 2024).

Mwega (2022) carried out a research to analyse the correlation between inflation and public debt serving costs in Kenya, emphasizing that episodes of increased inflation have resulted in higher interest rates, consiquently leading to high cost of debt repayment. This has limited the government's fiscal capacity, affecting its ability to invest in development programs. Davtyan (2016) studied the effect of inflation on per capita income in five BRICS emerging member nations from 1999 to 2011. The results indicated that inflation did not influence public debt levels in Brazil, India and South Africa. Nonetheless, the disparity in per capita income was significantly influenced by inflation in the other two countries, that is China and Russia. The currenty study will investigate the influence of inflation risk on public debt level in Kenya excluding Brazil, India, and South Africa.

According to study by Ndung'u (2023) which confirmed that inflationary pressures in Kenya has often associated with higher budget deficits. Government expenditure on goods and services increases as inflation erodes the currency's value, hence expanding the

fiscal deficit and increasing the public debt level. The study exclusively focused on inflationary pressures that may not indicate systematic risks and public debt level.

Kamau and Muthama (2021) afirmed that moderate inflation in Kenya exerts a double effect by depreciating the actual value of the existing public debt level while simultaneously increasing the cost of new borrowing because of increased interest rates. This establishes a refinment equilibrium for fiscal planners who must navigate the trade-off between these consequences. This study concentrated on the general borrowing instead of public debt level.

Kinuthia (2022) carried out a study to investigate whether the stock market liberalization promoted the efficiency of the domestic stock market and therefore promoting economic growth in Kenya. The researcher examined the association between the stock market performance and economic growth in Kenya. The stock market liberalization and performance were evaluated using two variables that is; turnover of stock market and the size of the stock market determined by stock market capitalization. The study employed quarterly time series data was obtained from secondary sources, covering a duration of 22 years from January 1991 to December 2012. The research employed econometric methodologies, specifically Vector Autoregressive (VAR) models and Granger Causality Tests, to investigate the links. The empirical findings indicated an unidirectional causal relationship from stock market development to economic growth, with evidence of an indirect transmission mechanism via the influence of stock market development on investment. The findings of the study indicated that the stock market liberalization significantly enhances economic growth in Kenya. The study identified a conceptual gap by examining whether stock market liberalization enhances the efficiency of the local

stock market and therefore promotes economic growth in Kenya, whereas the current research will concentrate on the influence of systematic risk i.e inflation risk on public debt levels in Kenya.

Cheluguet et al. (2023) examined the impact of inflation rate on the financial performance of banks in Kenya. The study assimilated liquidity preference theory, efficient market theory and contemporary portfolio theory. The study employed a descriptive research methodology to examine the correlation between the independent variables of exchange rates and inflation rates and the dependent variable of bank performance. Each independent variable in the research was further interrogated. It starts with the exchange rate and inflation rate respectively. The researcher employed five statements for each independent variable to evaluate its impact on the bank's performance. The study used secondary data to conduct trend analysis for each independent variable and derive a multiple regression equation with regression coefficients. The final section of the study includes a summary of the research findings. The summary detailed each independent variable and its effect on the dependent variable according to the results of the study. The study additionally interrogated the overall research findings and made recommendations to minimize the impact of the independent variables on the dependent variable. This study does not cover the overall debt problem in Kenya, but rather focuses on the banking sector, which is isolated.

Otieno et al. (2019) conducted a study on the impact of inflation rate on stock market returns in Kenya. This study analyzed the stochastic characteristics of inflation rates, stock market returns and their co-integrated residuals using monthly data from 1993 to 2015. Autoregressive Fractionally Integrated Moving Average (ARFIMA) models were used for

accurate maximum likelihood estimation to explore the integration orders of individual variables and co-integrated residuals. The findings of the ARFIMA model show that month-on-month inflation rates, year-on-year inflation rates and stock market returns exhibit non-integer orders of integration. This often contradicts the stationary/non-stationary results obtained from standard unit root testing and suggests that any perturbations in the variables are very persistent but eventually dissipate. The findings indicate that the co-integrated residuals have non-integer orders of integration, meaning that deviations from long-term equilibrium are magnified, contrary to the assumptions of the traditional co-integration framework. This analysis focuses on stock market returns rather than elements of public debt. The current state will bridge the gap be assessing the influence of systematic risk on the public debt level in Kenya.

Ifionu and Ibe (2015) conduct research to inquire the relationship between inflation and stock prices on the Nigerian Stock Exchange. The research used time series data of up to 12 years. The study examined the stationarity of the data using the Augmented Dickey-Fuller (ADF) test and concluded that all variables were correlated with order 1 (I(1)). The study used cointegration, Johansen's test and Granger causality to examine short-run and long-run correlations. The results show that there is no causal relationship between inflation and other independent factors examined in the study, while inflation was identified as a major factor in influencing stock values in Nigeria. The research, however, retained annual data and failed to reveal quarterly variations. Annual data has been used in the present investigation.

2.4.2 Currency Risk and Public Debt

The exchange rate is a primary determinant of a country's economic performance. It plays an important role in ensuring the dynamics of trade and capital flows of the country. Exchange rates significantly affect current account balances, government debt repayments and other macroeconomic elements such as inflation and interest rates (KIPPRA, 2021). The impact of a devalued currency on debt repayment can represent a significant amount of national debt denominated in foreign currencies.

The Committee on Fiscal Studies (2021) conducted research to address national debt sustainability challenges from a legal and institutional perspective, focusing on a Kenyan case study. The research used the case study technique to thoroughly examine specific cases of the nation's debt accumulation and management practices, focusing on Kenya as the main case study. The research focused specifically on legal, political and institutional challenges, excluding macroeconomic variables such as exchange rates that are currently influencing public debt due to significant volatility.

Owaga (2021) examined the factors that are forcing public debt in Kenya. The research used an econometric method using the Autoregressive Distributed Lag (ARDL) model to analyze the long-run and short-run correlations between a country's debt and individual macroeconomic variables. His studies focused on economic growth, balance of trade and budget deficit. Consequently, the present study addressed the knowledge vacuum by illustrating the exchange rate risk as a macroeconomic factor having a great influence on public debt levels in Kenya.

Gopinath et al. (2020) carried a significant study on global trade and the dollar. A structural vector autoregression (SVAR) model was employed to analyze the dynamic impacts of exchange rate variations on trade volumes and prices. The transmission of exchange rate fluctuations to import and export prices is partial. Prices in local currency do not completely respond to fluctuations in exchange rates. The extent of pass-through differs marketly among countries and sectors, with larger and more dominant enterprises exhibiting reduced pass-through rates. This study examined the relationship between the exchange rate and national debt in Kenya..

Lemantile (2017) did a study on the impact of currency rates on public debt within Kenyan mutual funds. The study aimed to ascertain the impact of foreign currency rates on the performance of mutual funds in Kenya, to explore the influence of exchange rates on mutual fund performance in Kenya, and to analyze the effect of inflation on mutual fund performance in Kenya. This study examines literature on macroeconomic and microeconomic factors influencing the performance of mutual funds in Kenya. This chapter specifically inquires about the impact of interest rates, exchange rates and inflation on mutual funds. The research objective was assessed using a descriptive survey design. This study focuses on the population of mutual funds registered in Kenya by the Capital Markets Authority (CMA). The study period was between 2011 to 2016. Secondary data of seven mutual funds was used in this research, which was chosen because of its high accessibility compared to original data. Secondary data was collected from annual reports of mutual funds. The results of the study showed a positive relationship between foreign exchange rate and mutual fund performance. The study shows that foreign exchange rates are inherently variable, and sudden fluctuations can cause beneficial or positive effects on

mutual funds. The study directed that fluctuations in foreign exchange rates may result to either good or negative performance in mutual funds. The emphasis on mutual funds diverges greatly from the broader economic frameworks that outlines the public debt capacities.

Mutwiri (2019) studied systemic risks and the performance of the stock market in Kenya. The purpose of this study was to examine the correlation between foreign exchange rates and stock market performance in Kenya. The research used positivist theory and applied a correlational research strategy. The analysis focused on all stocks listed on the Nairobi Securities Exchange. This study utilised the Nairobi Security Exchange 20 shared index fluctuations to examine the performance of the stock markets in Kenya. The study was bases on the efficient market hypothesis, capital asset pricing model, Keynesian theory, arbitrage pricing theory, and mixture distribution model as foundational theories and models. The research employed time series secondary data obtained from the Central Bank of Kenya, the Kenya National Bureau of Statistics, and the Nairobi Securities Exchange. The research utilised co-integration analysis to evaluate the correlations among the investigated variables. The study identified a considerable long-term positive correlation among interest rates, currency rates, inflation, GDP, and stock market performance in Kenya. The study identified a considerable positive correlation between the weighted average loan rate of commercial banks, trading volumes, and the performance of the NSE. The stock market as a centre of attention may not adequately handle the particulars of national debt level.

Nyandema and Carolyn (2016) sought to examine the impact of variable foreign exchange rates on the banking performance of firms listed on the Nairobi Stock Exchange.

For theperiod of 2006 to 2013, the research utilised a descriptive time series correlation research design to interrogate all commercial banks listed on the Nairobi Stock Exchange. At that time of the study, only ten (10) banks were listed on the Nairobi Stock Exchange. The data showed that the exchange rate greatly enhances bank financial performance in Kenya. The link demonistrates the impact of exchange rate fluctuations and volatility on improvement of bank profitability. This phenomenon can be attributed to the prevalence of local transactions for imports conducted in dollars hence, if the shilling continues to depreciate against the dollar, banks can capitalize on arbitrage opportunities. The report encouraged the government to implement more strategies to enhance the country's exports, since this would strengthen the performance of commercial banks in Kenya. The banking sector may not accurately represent the overall Kenyan economy regarding foreign exchange influence.

Nafiseh's (2020) evaluated the impact of exchange rate volatility on bank performance in Iran, employing return on investment and the loan-to-deposit ratio, the study revealed that exchange rate volatility had a significant positive influence on the loan-to-deposit balance. An rise in the exchange rate and prospective enhancement of foreign currency market gains will result in a scenario where a segment of banks resources is allocated to the foreign exchange market, therefore augmenting the loans to deposit ratio. The study additionally revealed that exchange rate volatility favorably influence the lending ratio relative to total bank deposits. It results in an expansion of the financial disparity and generates the credit risk for banks. Volatility in exchange rate uncertainty result in credit expansion and a reduction in deposits, resulting to financial imbalance.

2.4.3 Interest Risk and Public Debt

Interest is an indemnity provided by accounts receivable or payable for the utilization of funds over a designated duration, represented as a percentage of the principal amount borrowed (Faure, 2024). The interest rate may be clasified as high, low, or moderate. Yieke's (2023) study shows that rising interest rates in African countries have led to increased government debt, as many local currencies have depreciated against the US dollar in recent years. This depreciation has resulted from rising import costs, which in turn has increased the debt service costs associated with the US dollar.

The relationship between interest rates and national debt is essential to understanding the macroeconomic dynamics of a country like Kenya. The Central Bank Rate (CBR) established by the Central Bank of Kenya (CBK) influences borrowing costs for both the government and the private sector. A reduction in the CBR reduces the cost of servicing new debt, thus enabling the government to borrow more economically to fund security programmes, infrastructure projects, social programs and public expenditure including debt refinancing and debt repayment. Lower interest rates encourage private sector borrowing for corporate investment, potentially stimulating economic growth through increased consumption and investment. Conversely, an increase in central bank rates increases the cost of debt servicing, thereby constraining the budget for other priorities. An increase in borrowing costs inhibits investment and consumer spending, thereby hampering economic growth. The relationship between interest rates and public debt underscores the need for sound fiscal and monetary policies to promote economic stability and sustainable growth. In Kenya, proper management of interest rates in conjunction with

public debt levels is crucial to promote economic growth, attract investment and ensure fiscal sustainability.

Suyuan and Khurshid (2015) noted that interest rates functioned to stabilize the economy by influencing borrowing limits in domestic and international markets. Toroitich and Onyango (2017) assert that an increase in interest rates negatively affects the cost of servicing existing debt as well as incentives to seek new credit. The effect of higher interest rates in the domestic market is to increase borrowing from abroad, as the cost of loan servicing is lower than in the home market. Before the establishment and implementation of the interest rate policy in 2016, which had full parliamentary support, interest rates in Kenya comprised more than fifty percent of all loans and deposits. The Act has established a minimum interest rate ceiling for fixed time deposits at 4% above the reference rate and 70% of the reference rate on lending rates by banks and other financial institutions. The primary objective was to increase access to credit and increase returns on savings (Alper et al., 2019). Thugge (2024) suggests that inflationary expansion in industrialized nations is expected to continue at elevated levels for an extended period. To maintain the stability and competitiveness of the Kenyan shilling, the central bank/reference rate was held at 13%.

Tyson (2022) states that prior to the COVID 19 epidemic, Ghana had incurred a significant debt, including a $13.2 billion Eurobond, which constituted 17% of its GDP. Ghana issued a Eurobond that was oversubscribed fivefold due to increased interest from international investors, resulting in a 30% inflation rate which resulted to the depreciation of the local currency. The rating agencies Moody's and Fitch downgraded Ghana's Eurobond, so excluding Ghana from the international credit market. To fix the scenario,

the central bank raised interest rates over 8.5% from November 2021 to August 2022, leading to increased borrowing from the IMF.

Mboga (2015) interrogated the effects of interest rates on the financial performance of insurance companies in Kenya. The researcher also sought to determine the impact of several firm-specific (micro) and macroeconomic parameters on the financial performance of insurance companies, notably GDP, age, size, liquidity risk and inflation. The research used secondary data sources, which were analyzed and presented in the form of tables and figures to establish the relationship between interest rates and performance. A descriptive research design was employed on a population of 49 licensed insurance businesses during a six-year period from 2008 to 2013. The results indicated an R2 of 100%, suggesting that interest rates, GDP, age, size, liquidity risk and inflation are important determinants of returns on assets, which serves as a measure of financial performance for insurance businesses in Kenya. The study determined that based on the regression output, interest rates have a negative impact on the returns on assets of insurance companies in Kenya. Inflation, liquidity risk and GDP displayed positive coefficients with respect to return on assets, proving that an increase in any of these variables has a negative impact on the financial performance of insurance companies. The study determined that the age of enterprises positively impacts the financial performance of insurance companies in Kenya. The study revealed that a positive and statistically significant relationship exists between interest rates and the financial performance of insurance companies in Kenya. Therefore, the researcher recommended that insurers, especially life insurance companies, should either maintain well-aligned assets and

liabilities or set up collateral reserves to mitigate any interest rate or reinvestment rate risks, as a low-interest environment tends to drive spreads on earnings.

Kariuki (2023) evaluated the impact of interest rates on the performance of lending institutions in Africa. The study used a desk review methodology to analyze relevant empirical literature, aiming to identify key themes and identify knowledge gaps. The research established that interest rates on loans and advances significantly influenced performance with respect to profits before tax and extraordinary items (PBTEI) and return on equity (ROE). This is in line with research by Kibuthu (2015) who indicates that borrowers from lending institutions exhibit sensitivity to interest rates, increasing their borrowing power when interest rates are low and favorable, thereby helping banks increase their profits. Specific contributions to theory, policy and practice: The study recommends that, as most African banks continue to generate significant revenues from loans, the total cost of loans to borrowers should be communicated transparently on all relevant platforms. Diversifying into alternative non-interest revenue streams reduces banks' overdependence on interest income.

Odhiambo (2022) investigated the influence of real lending rates on loan servicing costs in Kenya. The analysis shows that rising real lending rates have increased debt servicing costs, hampering the government's fiscal capacity and requiring more borrowing.

2.4.4 Liquidity Risk and Public Debt

Vasava etc. (2018) investigated the impact of liquidity on the financial performance of sugar businesses in Kenya using a sample of five sugar companies from June 30, 2005, to 2016. The results show that the ratio of liquidity to current liabilities is inversely related

to firm performance, suggesting that a greater valuation of financial liability positively influences liquidity performance. The regression results indicate that the current liability coverage ratio adversely affects firm performance, suggesting that firms in the sugar industry in Kenya that operate with low or positive cash flows are highly leveraged, and lack liability and asset strategies that can enhance their financial performance. The results showed a positive relationship between company performance and liquidity. The study highlights that prudent valuation and strategic planning of fund liquidity management are techniques to enhance financial performance. The research focused on the sugar business.

Odalo and Achoki (2016) examined the relationship between liquidity and financial performance in agricultural firms listed on the Nairobi Securities Exchange in Kenya. The primary objective was to assess the impact of liquidity on the financial performance of agricultural firms listed on the NSE. Liquidity was examined by liquidity ratios, while financial performance was evaluated using the following metrics EPS, ROE and ROA. The study used a causal and descriptive research design employing a census approach with seven quoted agricultural firms as the sample population. The specific inferential statistics used were regression and correlation analyses. The results of the study indicated a favorable and statistically significant relationship between the financial performance and liquidity of quoted NSE agriculture companies, as measured by ROA and ROE. As a result, the study established that liquidity of the firm favorably affects profitability. Financial managers are encouraged to ensure that there is no mismatch between current liabilities and current assets (Odalo et al., 2016). The study focused on agricultural corporations rather than government credit.

Gwei et al. (2018) inquired into the impact of liquidity risk on the financial performance of deposit-taking savings and credit cooperatives in Kenya. The findings establish that liquidity risk negatively and significantly affects financial performance. Research suggests that managers can reduce liquidity risk by maintaining adequate cash reserves. The research focused on deposit-taking savings and credit cooperatives rather than public debt.

Irungu (2019) investigated the influence of liquidity on the financial performance of listed enterprises on the NSE and found a significant positive relationship between liquidity and financial performance of non-financial listed companies. Liquidity is an important part of the successful operation of a corporate enterprise. Liquidity not only ensures that the firm maintains good cash reserves, but also serves as a significant indicator of future investment viability.

Abdullahi et al. (2015) interrogated the impact of macroeconomic factors on the growth of external debt in Nigeria. The research focuses only on external debt, nevertheless, data from the Nigeria National Bureau of Statistics (2023) showed that the national debt included both international and domestic obligations. The study concluded that macroeconomic elements, such as interest rates, inflation rates, maximum savings, exchange rates, and budget deficit, greatly affected foreign debt. However, they did not have the same effect on domestic national debt, also they did not incorporate a moderating variable. Although they determined that macroeconomic factors directly contributed to the escalating of international debt, the finding cannot be fully trusted since one variable of public debt was omitted.

Despite the substantial economic challenges of public debt in Kenya, there has been limited studies that comprehensively evaluate the influence of macroeconomic factors such as interest rates, inflation, balance of payments and exchange rates on the increase of public debt beyond the established ceiling (Kirui 2017).

To ensure proper management of public debt and resolve the same challenge, it is more important to thoroughly evaluate the correlation between public debt and the systematic risk. This objective of the study is to determine the influence systematic risk i.e. inflation risk, interest risk, currency risk, and liquidity risk on public debt level in Kenya, through empirical analysis and theoretical exploration.

Abbas et al. (2021) examined the composition of public debt Kenya, emphasizing the associated risks and advantages of its existing debt structure. The researcher argues that a higher share of domestic debt may reduce exchange rate risk, although domestic interest rates may increase. Paniza et al. (2020) interrogate the trade-off between domestic and international debt in emerging nations, highlighting the importance of examining borrowing costs, rollover risk and currency risk.

According to Mbaye et al (2023) countries with a higher share of domestic debt have lower currency risk but higher interest rate risk, indicating the need for a well-diversified debt balance. A study by Abbas and Christensen (2010) asserts that a higher share of domestic debt relative to international debt can reduce the adverse effect of total debt on economic growth. Well-developed domestic debt markets provide a more reliable source of funding and reduce vulnerability to foreign shocks.

2.5 Summary of Research gaps

Cochrane (2021) analyzed the relationship between inflation and national debt. The research was founded on empirical and theoretical analysis. Research shows that moderate inflation can increase the real burden of debt, while hyperinflation can interfere with economic stability. Research shows that increased and fluctuating inflation rates can have a positive impact on debt sustainability, resulting in higher nominal interest rates and potentially unsustainable debt dynamics.

Research by Krishnamurthy and Wissing-Jørgensen (2012) showed a positive relationship between interest rates and government debt. The analysis shows that interest rates directly affect the public debt servicing cost. When interest rates rise, this results in higher borrowing costs, thus increasing debt servicing costs. This study focused only on interest rates, but the current study includes additional systematic risk such as inflation risk, exchange rate risk, currency risk and liquidity risk, which were ignored in previous research.

A devaluation of the local currency increases the foreign debt service obligation. Obstfeld et al. (2019) analyzed the correlation between the exchange rates between the US dollar (USD) and the Japanese yen (JPY) and Japan's terms of trade using secondary data from 2003 to 2018. The research examines the impact of exchange rate volatility on Japan's trade balance and overall economic performance. His research emphasized the risks associated with exchange rate volatility and their impact on debt levels. VAR model was used in this study, whereas causal and multiple regression models were used for analysis in the present study. The current study also examined economic conditions during and after the Covid-19 pandemic.

The current account balance indicates a country's trade balance, net income from foreign sources and net current transfers. Persistent current account deficits can increase public debt when nations borrow to fund their deficits. Research conducted by Chin and Prasad (2003) examined the factors affecting current account balances in both industrialized and developing countries. The concentration was on understanding medium-term determinants influencing current account balances with a comparative comparison of industrialized and developing countries. The research used panel data and panel regression model for analysis. Research has found that real exchange rate misalignments significantly influence current account balances. Overvalued exchange rates usually result in deficits, while undervalued rates facilitate surpluses. The present study was conducted in Kenya covering the period 2007 to 2023, during which significant economic events were thoroughly examined. This study used several methods and macroeconomic elements to clarify knowledge gaps. Integrating more current data reflects the latest economic trends and developments in Kenya.

Milesi-Ferretti (2018) examines the notion of international financial integration through an analysis of the foreign assets of nations. This research examines the evolution of countries' external positions (assets and liabilities) following the 2008–2009 Global Financial Crisis (GFC) and assesses the consequences for financial stability and economic performance. This research showed the relationship between current account deficit and increase in public debt level.

The structure of debt, whether domestic or international, short-term or long-term, can affect public debt dynamics. Abbas etc. (2010) examine the impact of domestic debt markets on economic growth using empirical investigations focused on low-income

countries and emerging markets. The research used a fixed-effects panel regression model to account for country-specific effects, heterogeneity and panel data. The structure of debt, whether domestic or international, short-term or long-term, can affect public debt dynamics. Abbas etc. (2010) examine the impact of domestic debt markets on economic growth using empirical investigations focused on low-income countries and emerging markets. The research used a fixed-effects panel regression model to account for country-specific effects, heterogeneity and panel data. The analysis revealed that moderate domestic debt levels are positively associated with economic growth in low-income countries and developing economies. The current study was conducted in Kenya, using secondary data and a causal research design.

Paniza (2019) studied public debt and economic growth in advanced economies. The results show that a large share of foreign debt increases vulnerability to external shocks, while short-term debt can increase rollover risks and refinancing costs. This study focuses on advanced economies with less consideration for emerging nations such as Kenya.

Table 2.1: Summary Table

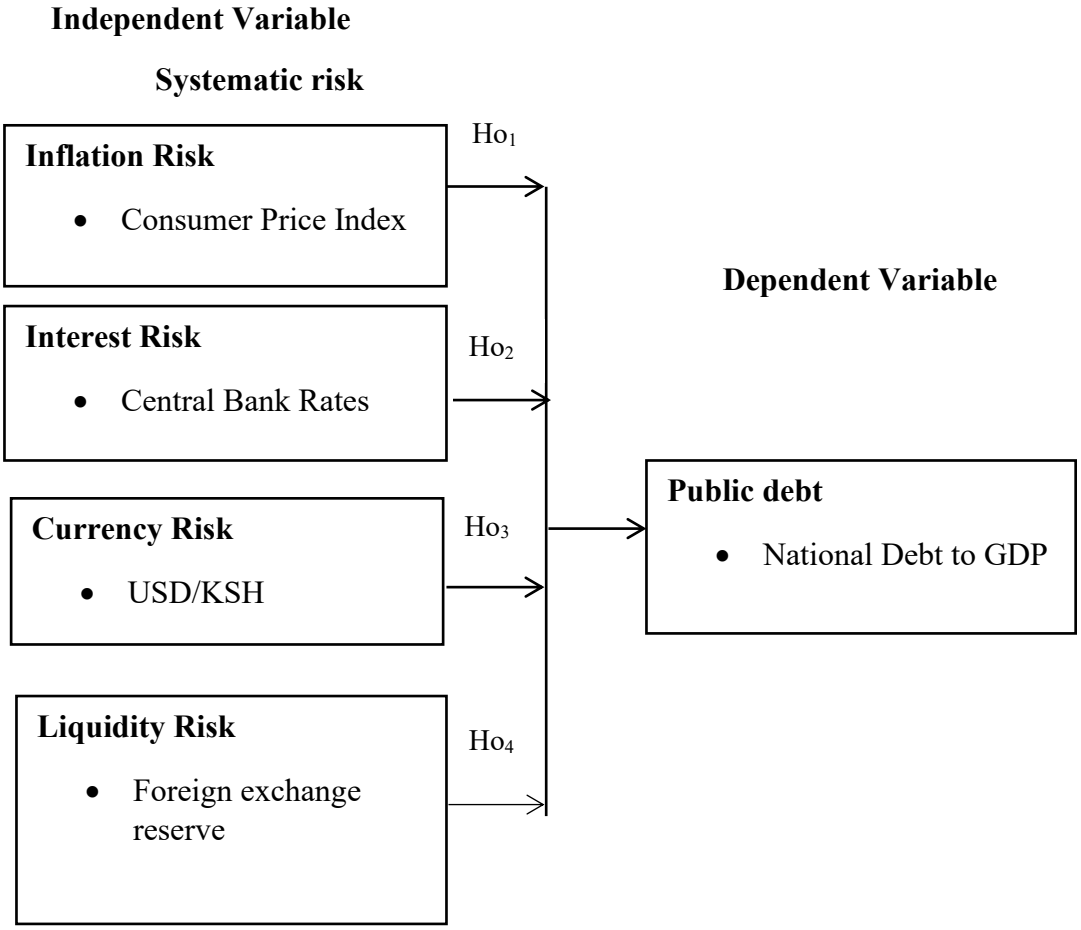
	Topic/Objectives	Methodology	Findings	Research Gaps	How this study will fill the gaps
Abraham, (2019).	The Impact of Macroeconomic Variables on Public Debt in Developing Economies: Evidence from Sub-Saharan Africa.	Panel Regression Analysis and generalized method moments (GMM)	Macroeconomic factors were found to be highly correlated with public debt in Sub-Saharan countries	The findings are specific to Sub-Saharan Africa and may not be directly applicable to other regions with different economic structures and challenge -Methodology gap	-This study was conducted specifically in Kenya. -Time series data and causal methodology was applied
Macia, (2023).	Macroeconomic Determinants of Public Debt: Insights from Emerging Economies.	Dynamic Panel Data Models	All macroeconomic determinants were found to have a high correlation with public debts	While the study covers a broad range of emerging economies, it does not delve into region-specific factors that might uniquely affect public debt dynamics	This study specifically focused in Kenya -Causal research method was applied

				- Although the study identifies significant correlations, it does not thoroughly establish causal relationships between the macroeconomic variables and public debt	
Committee on Fiscal Studies (2021).	"Macroeconomic Determinants of Public Debt in Kenya.	Autoregressive Distributed Lag (ARDL) Model and Error Correction Model (ECM) -Annual data 1995-2020	macroeconomic determinants were found to have a high correlation with public debts	The study primarily focuses on short- to medium-term impacts and does not extensively analyze long-term structural factors	The current study covered the post pandemic period -To fill methodology gap, this study used causal design.
Cochrane, (2021).	"The Fiscal Theory of the Price Level	fiscal theory of the price level (FTPL) to analyze the interplay	Cochrane finds that higher levels of public debt are associated with higher inflation rates,	-Methodology gaps -The study primarily focuses on advanced economies and provides	The current study based on other macroeconomic variables

		between fiscal policy and inflation. Impulse Response Functions (IRFs)	especially when fiscal policy is unsustainable.	limited empirical validation for developing economies, such as Kenya.	-A different research design, causal was adopted to cover the methodology gap.
Krishnamurthy, & Vissing-Jorgensen, (2012).	"The Aggregate Demand for Treasury Debt	Panel data analyses	The study finds that the demand for Treasury debt is significantly influenced by risk aversion and liquidity preference.	The study primarily focuses on domestic factors influencing the demand for U.S.	The current study was done in Kenya
Obstfeld, Shambaugh, & Taylor (2019).	"The Global Financial Cycle and External Adjustment"	-Panel data analyses -Fixed effect model	The study found that global financial cycles significantly affect countries' external balances	While the study includes a broad range of countries, the specific dynamics and challenges faced by developing economies like Kenya were not deeply explored	This study was done in Kenya. -Time series data was used -Causal research design.

2.6 Conceptual Framework

From the conceptual review, all systematic risk variables to be considered in this study was displayed. The independent variables are inflation risk, interest risk, currency risk and liquidity risk as well as explained by dependent variable.



Source: Lemantile (2017): Owaga (2021)

Figure 2.1 Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter contain the research methodology and research design to be applied in this study. It also features the study area, data collection, data types and analysis, and pre-estimation and post-estimation diagnostic tests.

3.2 Study Area

The study was undertaken in Kenya which lies between latitudes 4.5ºN and 4.5ºS and longitudes 34ºE and 42ºE. Conducting this study in Kenya was compelled by several factors. First, Kenya, like many developing countries, faces economic vulnerabilities that make it particularly sensitive to changes in inflation, interest rates, exchange rates, and current account, (IMF 2022). Second, Kenya has experienced rising levels of public debt in recent years, raising concerns about debt sustainability. Thirdly, high inflation can erode living standards and affect economic stability. Likewise, the Kenyan economy is influenced by domestic and international interest rates. Exchange rate movements affect Kenya's trade balance, foreign debt and overall economic stability. Determining the effects of exchange rates on public debt can help manage foreign debt exposure and currency risks.

3.3 Research Design

According to Cooper and Schindler, (2011), research design is every step a researcher makes during the time of research, from the beginning to the end. Using time longitudinal

and correlational design, the study established a relationship between the independent and dependent variables without modifying the variables. This explained the relationship existing within the study variable. Data was converted into years and numerical codes that represent the measurement of the research variables to undertake quantitative analysis (Creswell, 2003).

3.4 Data, Data Types, and Collection Methods

The research employed secondary data obtained from global economic indicators, as well as reports from the Kenya National Bureau of Statistics, Central Bank of Kenya, International Monetary fund (IMF) and the World Bank. This study used the secondary data due to its availability, cost effectiveness and accessibility. Moreover, secondary data anables the researcher to articulates the foundational assumptions and beliefs pertaining to the data. The data was gathered for all variables of interest in this examination. The analysis covered the years 2005 to 2023, a time frame marked by significant borrowing and significant volatility in macroeconomic parameters in Kenya.

3.5 Data Analysis and Presentation

After collection of data, analysis was conducted using STATA software version 15. Both descriptive and inferential statistics were used in the data analysis process. Descriptive statistics furnish the mean, standard deviation, minimum, maximum, skewness, and kurtosis values. The hypotheses of the study were rigorously examined through the application of inferential statistics. A correlational analysis was conducted to ascertain the direction and intensity of the relationship between the independent variables which includes exchange rate risk, inflation risk, interest rate risk, and currency risk and the dependent variable, which is public debt level. Moreover, a multivariate analysis was

conducted to illustrate the impact of systematic risk on the dependent variable. Data was presented through the utilization of tables and figures..

3.5.1 Economic Model Specifications

Data was analyzed in two steps.

The researcher carried out a multiple regression to test the hypothesized relationship between the dependent variable (public debt), and the independent variables (Inflation risk, Interest risk, currency risk and liquidity risk).

The following model was used;

$$Y_t = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 X_{4it} + \mu_{it}$$

Where; Y_t= public debt at time t.

β_0=constants.

β_1.....β_3=the slope representing the degree with which public debt changes as the independent variable changes by one unit.

X1= Inflation risk

X2=Interest rate risk

X3=Currency risk

X4= liquidity risk

μ= error term

The determination of coefficient (R^2) was used to show the variation in Y_t (public debt over time) explained by the variation in Inflation risk, Interest risk, currency risk and liquidity risk over time.

3.6. Pre- Estimation Diagnostic tests

The researcher performed the following diagnostic tests; descriptive statistics, inferential statistics, unit root test, correlational analysis and co-integration test.

3.6.2. Unit Root Test

Time series data exhibit the issue of non-stationarity. The researcher conducted a unit root test to determine the stationarity of the dataset. The researcher employed the Augmented Ducker Fuller (ADF) test. In a time series sample, the presence of a unit root is presumed, and if the P-value is below 0.05, the unit root is considered absent. However, if the issue exists, differencing the data can rectify a unit root, if one is available.

3.6.3 Cointegration test

In this study, the Johansen cointegration test was used to determine if there is more than one integration relationship between the independent variables and the dependent variable. The test was used irrespective of if the series is I (0) or I (1).

3.7 Post-Estimation Diagnostic Tests

3.7.1 Normality Test

The normality test was employed to ascertain whether the data pertaining to both the independent variables and the dependent variable exhibit a normal distribution. This investigation employed the Jarque-Bera test to assess the normality of the data

distribution. Should the probability associated with the Jarque-Bera test exceed 0.05, one can conclude that the data follows a normal distribution.

3.7.2 Multicollinearity Test

Multicollinearity arises when two or more explanatory variables in multiple regression have a strong linear correlation. The research employed the Variance Inflation Factor (VIF) to assess multicollinearity. The VIF score should be less than 10 to indicate the absence of multicollinearity.

3.7.3 Heteroscedasticity Test

Heterogeneity arises when the population variance of the independent variable fluctuates in relation to the population variance of the dependent variable. This study used the Brusch-Godfrey test to evaluate the null hypothesis against the alternative hypothesis when evaluating the multiplicative function of one or more variables (heteroskedastic). A test statistic value with a probability greater than 0.05 signifies homoscedasticity in the data.

3.7.4 Autocorrelation test

Autocorrelation arises when the residuals from the regression exhibit a significant degree of correlation. This research employed the LM Breusch-Godfrey test to assess autocorrelation. Autocorrelation is absent if the chi-square values generated by the LM test exceed the critical chi-square values at the 0.05 significance level, or if the chi-square probability exceeds 0.05.

3.7.5 CUSUM test

The CUSUM (Cumulative Sum) plot provides a visual check for the stability of the parameters of the regression model over the sample period. It represents the cumulative sum of the residuals, if the CUSUM line stays within these bounds across observations, it indicates that the model is structurally stable. This suggests that no significant structural breaks may have occurred during the period of analysis, meaning that the relationships between the independent variables and the dependent variable remained consistent. If the CUSUM line crosses the boundaries, it indicates instability, which means that the model's coefficients shift at some point, possibly due to external shocks or unaccounted for factors. The fact that the line remains within the limits supports the reliability of the model's estimates and strengthens confidence in the validity of its predictions.

3.8 Ethical Considerations

Throughout the investigation, adherence to ethical standards and principles was maintained. The National Commission for Science, Technology and Innovation (NACOSTI) and the Department of Postgraduate Studies of Masinde Muliro University of Science and Technology granted permission to the researcher to carry out this study. Cited sources were acknowledged in the reference list as plagiarism compliance was achieved.

CHAPTER FOUR

RESULTS AND DISCUSION

4.1 Introduction

This section reports the findings of the study derived from a critical analysis of data. The analysis focuses on the examining of the relationship between inflation risk, interest risk, currency risk, liquidity risk on public debt in Kenya.

4.2 Descriptive Statistics

"Descriptive statistics were employed to summarize and organize data to make it easier for analysis and interpretation.

Table 4.1 Descriptive Statistics

Stats	Inflat~k	Intere~k	Curren~k	Liquid~k	Debt_t~p
Min	3.96	11.99	32.6808	9.41	32.02236
Max	26.24	19.64	39.84833	1221.04	67.09466
Mean	8.811053	14.33895	5.95732	75.76158	47.6414
Sd	5.094479	2.047508	18.58002	278.1131	11.42442
Cv	0.578192	0.142793	3.11886	3.670899	0.2398
Skewness	1.271076	1.032956	0.593465	1.97098	0.305332
Kurtosis	6.305431	3.402822	3.182043	6.86822	1.803315
Probability	0.331250	0.502389	0.193120	0.98231	0.709810

Source: Field data (2025)

Based on the descriptive statistics provided, the study titled "Influence of Systematic Risk on Public Debt Level in Kenya" reveals critical insights into how fluctuations in systematic risks influence public debt levels in Kenya. The average inflation risk stands at 8.811053, with a relatively moderate standard deviation (5.094479), suggesting that inflation in Kenya has remained fairly stable over time. However, a slight positive skew indicates periods of difficult economic times, potentially linked to inflation or economic conditions. This finding resonates with real-life experiences of inflation risk, but remains vulnerable to the broader context of systematic risks. The growing public debt crisis in different nations of the world has had positive consequences on the economy, social and political life, where insolvent states cannot perform their role efficiently in the provision of public goods and services (Were, 2021). It can be driven by several factors, including demand-driven inflation, cost-driven inflation, and embedded inflation (Mankiw, 2022).

The interest risk, with a mean of 14.33895 and wide variability (2.047508), shows that Kenya has experienced periods of both monetary easing and tightening. This dynamic makes it evident that such fluctuations significantly impact the debt capacity of countries. When interest rates are high, countries struggle to access affordable credit, which slows their growth and standard of living (Panizza, 2019). This is consistent with studies showing that high interest rates are a key barrier to public debt recovery in Kenya.

Currency risk had a relatively stable mean of 5.95732, with high standard deviation (18.58002), implying non consistency in the Kenyan currency on the market. However, the weak positive skewness (0.593465) suggests that while the currency is generally stable, there are episodes of sudden monetary reforms to create stability. This supports

research by Odhiambo (2022), who argue that the complexity and rigidity of the Kenyan currency hinder debt repayment.

Liquidity risk, averaging at 75.76158, shows a wide range and high positive skewness (1.97098), indicating that public debt has been increasing over time. This rising debt burden potentially leads to crowding out of private investment as government borrowing competes with liquidity state. Mankiw, (2022) warn that unchecked public debt limits the countries stability Kenya.

The public debt, had a mean of 47.6414, but displayed extreme variability as standard deviation was high (11.42442), suggesting periods high debt. High debts hurts the Country by eroding saving power. This observation is consistent to note that high debt is dangerous for Country. Skewness values of less than 2 and kurtosis values less than 7 as provided in data set informs that data was normal. Further probability $p > 0.05$ confirmed that data was normal.

4.3 Diagnostic Tests

4.3.1 Normality Test

Table 4.2 Jarque-Bera normality test

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj	chi2(2)	Prob>chi2
r	19	0.6412	0.8457		0.26	0.8803

Jarque-Bera normality test: .2268 Chi(2) .8928

The Jarque-Bera (JB) test results (Table 4.2) indicate that the data does not significantly deviate from normality, with overall probability value (0.8803) greater than 0.05. This

implies that the variables follow an approximately normal distribution, making them suitable for further econometric analysis, such as regression and cointegration tests. Given the observed trends, it is likely that systematic risk has had a substantial impact on the public debt in Kenya, but this relationship may have been influenced by , inflation risk, interest risk, currency risk and liquidity risk.

4.3.2 Autocorrelation/Serial correlation Test

Table 4.3: Breusch-Godfrey Serial Correlation LM Test

lags(p)	chi2	Df	Prob > chi2
1	3.083	1	0.0791

Source: Field data (2025)

Serial correlation in linear panel data models causes bias in standard errors and diminishes the efficiency of results. Therefore, it is essential for researchers to detect and identify serial correlation in the idiosyncratic error component of a panel data model.

Breusch-Godfrey Test Serial Correlation Lagrange Multiplier The test findings indicated the absence of first-order serial correlation. The investigation did not reject the null hypothesis because the p-value (0.0791) exceeded 0.05. Since the probability value exceeded 0.05, the residuals do not exhibit a correlation with time, rendering them appropriate for panel regression analysis..

4.3.3 Heteroscedasticity

Table 4.4: Heteroskedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity		
Ho: Constant variance		
Variables: fitted values of LnDebt_to_Gdp		
chi2(1)	=	0.73
Prob > chi2	=	0.3925

Source: Field data (2025)

Heteroscedasticity happens when the error term of variance, which is ideally taken to be common, fluctuates. This implies that the ordinary least square model will be infective since it will underestimate the variance of standard errors thus resulting in misleading results. Heteroscedasticity was tested using the Wald test in this research. Here, the null hypothesis was; H_0 = Homoscedasticity, and Heteroscedasticity otherwise. The findings are demonstrated in table 4.4.

If the value is greater than 0.05 then it is evident that homoscedasticity does not exist. Table 4.4. Heteroscedasticity test results indicate that the Breusch-Pagan result exceeded chosen threshold of significance (0.05), Chi-square = 0.73, p-values = 0.392>0.05. The study rejected the null hypothesis and indicated that there was no heteroskedasticity problem.

4.3.4 Multicollinearity

Table 4.5 Multicollinearity

Variable	VIF	1/VIF
LnInflatio~k	1.57	0.637377
LnCurrency~k	1.53	0.655158
LnLiquidit~k	1.44	0.693202
LnInterest~k	1.08	0.925535
Mean VIF	1.4	

Source: Field data (2025)

Variance Inflation Factor was employed to measure multicollinearity. Multicollinearity is considered to be present when the variance inflation factor surpasses a value of 10 while tolerance value be less than 1 (Laurens, 2018). If the average VIF score is less than 10, it indicates the absence of multicollinearity. There was no multicollinearity as VIF were less than 10 (inflation risk 1.57, currency risk 1.53, liquidity risk 1.44 and interest rate risk 1.08) and tolerance value less than 1 (inflation risk 0.637377, currency risk 0.655158, liquidity risk 0.693202 and interest rate risk 0.925535).

4.3.5 CUSUM test

The CUSUM or Cumulative Sum plot provides a visual check for the stability of the regression model's parameters over the sample period.

Table 4.6 CUSUM test

Sample: 2005 - 2023 Number of obs = 19

Ho: No structural break

Ho: No structural break					
Statistic	**Test Statistic**	**1% Critical Value**	**5% Critical Value**	**10% Critical Value**	
recursive	1.0742	1.143	0.9479	0.85	

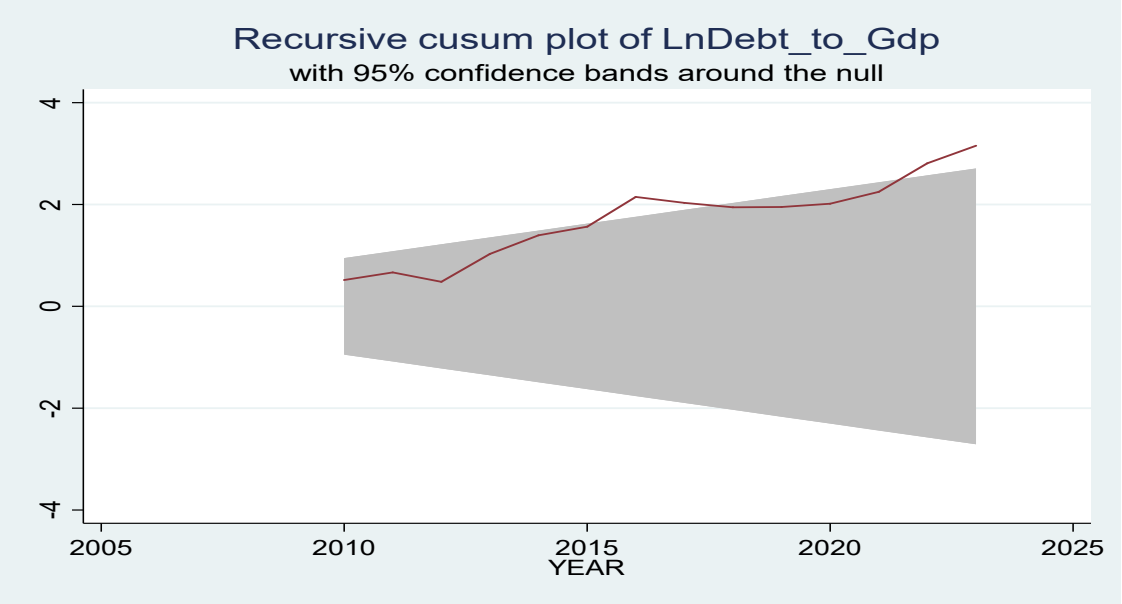


Figure 4.1 CUSUM test

Source: Field data (2025)

In table 4.6 below the line represents the cumulative sum of residuals at 5% significance boundaries. Throughout the observations, the CUSUM line remains within these boundaries, indicating that the model is structurally stable. This suggests that no significant structural breaks occurred during the period analysed, meaning the relationships between the independent variables and the dependent variable remained consistent. If the CUSUM line had crossed the boundaries, it would have signalled

instability, implying that the model's coefficients shifted at some point potentially due to an external shock or unaccounted-for factors. The fact that the line stays within limits supports the reliability of the model's estimates and strengthens confidence in its predictive validity."

4.3.6 Test for Unit Root

Table 4.7 Augmented Dickey-Fuller Test for Stationarity

Augmented Dickey-Fuller test statistics- At Levels						
Variable	**Test - Statistics**	**PV**	**1% critical value**	**5% critical value**	**10% critical value**	**Conclusion**
Inflation risk	-1.494	0.5367	-3.750	-3.00	-2.630	Unit root
Interest rate risk	-3.196	0.0202	-3.75	-3.00	-2.630	Stationary
Currency risk	-1.617	0.4741	-3.75	-3.00	-2.630	Unit root
Liquidity risk	-1.304	0.6273	-3.75	-3.00	-2.630	Unit root
Public debt	-0.097	0.9497	-3.750	-3.00	-2.630	Unit root

Source: Field data, (2025)

The results of the Augmented Dickey-Fuller (ADF) test at levels indicate a mixed order of integration among the variables, implying the need for careful consideration before estimating any time series model. The test reveals that inflation risk, currency risk, liquidity risk and public debt exhibit unit roots, suggesting they are non-stationary at level. Specifically, inflation risk P has a t-statistic of -1.494 with a p-value of 0.5367, while currency risk has a t-statistic of -1.617 and a marginal p-value of 0.4741, liquidity risk has

a t-statistic of -1.304 and p-value of 0.6273 as public debt has has a t-statistic of -0.097 and a marginal p-value of 0.9497 all failing to surpass the 5% critical threshold. This implies that their statistical properties such as mean and variance change over time, violating the assumption of stationarity (Rollinson *et al.,* 2021).

In contrast, the variables Interest rate risk is found to be stationary at level, as evidenced by their moderate positive t-statistics -3.196 and p-values of 0.0202, which are well below all critical values. This means these variable maintain constant statistical properties over time and are suitable for inclusion in level regressions without differencing (Lee, 2022). The implication of these findings is that a mix of stationary and non-stationary variables exists, warranting further testing such as cointegration analysis before determining the appropriate estimation techniques, such as Error Correction Models (ECM) (Bertelli, Vacca & Zoia, 2022).

Table 4.8 Augmented Dickey-Fuller Test Unit root at first difference

Augmented Dickey-Fuller test statistics- At 1st difference						
Variable	**Test - Statistics**	**PV**	**1% critical value**	**5% critical value**	**10% critical value**	**Conclusion**
Inflation risk	-4.00	0.0014	-3.75	-3.00	-2.630	Stationary
Currency risk	-4.288	0.0005	-3.750	-3.00	-2.630	Stationary
Liquidity risk	-3.593	0.0049	-3.75	-3.00	-2.630	Stationary
Public debt	-2.853	0.0411	-3.750	-3.00	-2.630	Stationary

Source: Field data, (2025)

The Augmented Dickey-Fuller (ADF) test results at first difference indicate that the previously non-stationary variables inflation risk, currency risk, liquidity risk and public debt have become stationary after differencing, confirming that they are integrated of order one, I(1).

The test yields a t-statistic of -4.00 and a p-value of 0.0014 for inflation risk, which is significantly lower than all critical values at the 1%, 5%, and 10% levels. This allows rejection of the null hypothesis of a unit root, indicating that inflation risk becomes stationary after first differencing. Similarly, currency risk has a t-statistic of -4.288 with a p-value of 0.0005, also falling well below the critical values, which confirms its stationarity at the first difference. Liquidity risk has a t-statistic of -3.593 with a p-value of 0.0049, also falling well below the critical values, which confirms its stationarity. Lastly, Public debt shows a t-statistic of -2.853 with a p-value of 0.0411, again confirming stationarity after differencing, as its test statistic surpasses all critical thresholds in absolute terms (Lee, 2022).

4.3.7 ARDL Bounds Cointegration Test

Because the variables show a mixed order of integration, the study used the F-Bounds test as suggested by Raihan & Tuspekova, (2022). This test was applied to determine the existence of a cointegration relationship between the variables. If the F statistic exceeds the critical value of 5% or is above the lower limit (I(0)) and the upper limit (I(1)), the null hypothesis of no cointegration is rejected, indicating a long-term equilibrium relationship between the series (Adom et al., 2018). In such a case, the vector error correction model (VECM) or the autoregressive distributed delay model (ARDL) are appropriate to estimate both short-term and long-term dynamics. However, if the F

statistic falls below the 5% critical values of I(0) and I(1), the null hypothesis is not rejected, implying that there is no cointegration between the variables.

Table 4.9 F- Bounds Cointegration Test

F-Bound test				
Test statistic	value	Sig if	1(0)	1(1)
F-statistics	0.91781		Asymptotic	
		10%	3.71	3.92
K		5%	3.78	3.97
		1%	4.62	5.61
Actual Sample Size	19		Finite Sample	N=19
		10%	2.91	3.45
		5%	3.51	5.87
		1%	4.81	5.93

Source: Field data (2025)

The results of the F-Bounds test indicate that there is no cointegration between the variables in the model. The calculated F statistic value of 0.91781 is significantly lower than the critical values of the lower bound (I(0)) and the upper bound (I(1)) at all conventional significance levels 10%, 5% and 1% for a finite sample size of 19 observations. For example, at the 5% level, the critical values of the lower and upper bound are 3.51 and 5.87, respectively, but the F-statistic does not reach this threshold. According to Adom *et al.* (2018), when the F-statistic falls below the lower bound, the null hypothesis of no cointegration is not rejected, implying that no long-term equilibrium relationship exists among the variables. Therefore, models like the ARDL or VECM that assume cointegration may not be appropriate in this context.

4.4 Inferential Statistics

Inferential statistics involves analysing the dataset to make predictions in future. Corelation and regression results were used to draw conclusions from observed data set.

4.4.1 Correlation Analysis

Table 4.10 Correlation Analysis

	National Debt	Inflation Risk	Interest Rate Risk	Currency Risk	Liquidity Risk
National Debt	1				
Inflation Risk	0.5863	1			
	0.0106				
Interest Rate Risk	0.6244	0.5992	1		
	0.0056	0			
Currency risk	0.6043	0.184	0.2225	1	
	0.0079	0.4508	0.36		
Liquidity Risk	0.4945	0.1898	0.2098	0.4929	1
	0.037	0.4364	0.3887	0.032	

Source: Field data, (2025)

The correlation analysis reveals significant relationships between Public debt levels and systematic risk variables. Notably, there is a strong positive correlation between inflation rate and public debt levels ($r = 0.5863$, $p= 0.0106$), indicating that increases in inflation rates are associated with high public debt levels. This findings further implies that inflation makes public debts to go upwards making the Country at risk. Ibrahim (2019) revealed that inflation is the long-term increase in prices of goods and services due to the devaluation of the country's currency.

Similarly, the interest rate risk is positively correlated with public debt levels ($r = 0.6244$, $p = 0.0056$), implying that interest rate risk is accompanied by an increase in public debt levels. This could be due to interest rate fluactiations that may lead to unstable collection

of profits reducing ability to repay public debt. Mwangi (2023), found that managing public debt is greatly influenced by the monetary policy of the Central Bank of Kenya, which sets interest rates. Waweru and Kamau (2021) established that interest rate changes in Kenya have a big effect on the amount of national debt.

Conversely, Currency risk is positively correlated with public debt levels ($r = 0.6043$, $p = 0.0079$), suggesting that currency instability may lead to high debt levels creating uncertainty that undermines Countries stability. Currency risk also raises the cost of imports, which fuels inflation ((Dornbusch, 2021). These findings are in line with Mburu, (2022) who found that currency risk significantly increased the burden of external debt the country

Liquidity risk is positively correlated with public debt levels ($r = 0.4945$, $p = 0.037$), indicating that while liquidity risk may affect public debt levels positively it may lead to cautious measures on accessing more debts (Ehrmann & Frazscher 2024). According to Krugman & Obstfeld (2022), a liquidity deficit indicates that a nation is buying more than it is exporting, necessitating the need for outside funding.

4.5 Regression analysis

Regression analysis is a statistical method used to explore the connection between a dependent variable and one or more independent variables. It is essential for determining how variations in the explanatory variables affect the response variable, making it a key approach in data analysis.

Table 4.11 Ordinary Least Square Regression Analysis

Source	SS	df	MS	Number of obs	=	19
				F(4, 14)	=	14.01
Model	0.828468	4	0.207117	Prob > F	=	0.0001
Residual	0.207019	14	0.014787	R-squared	=	0.8001
				Adj R-squared	=	0.743
Total	1.035487	18	0.057527	Root MSE	=	0.1216

LnDebt_to_Gdp	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
LnInflatio~k	12.6151	3.12894	4.03	0.001	19.326	5.9042
LnInterest~k	0.09811	0.029879	3.28	0.005	0.16219	0.03403
LnCurrency~k	9.714	1.280	7.59	0.000	7.205	2.224
LnLiquidit~k	0.7387	0.20593	3.59	0.003	0.2976	1.1799
_cons	26.73039	5.34139	5	0	15.27425	38.18654

Source: Field data (2025)

The ordinary least square regression analysis investigated the impact of key systematic risk variables; inflation risk, interest rate risk, currency risk and liquidity risk on public debt levels. The R^2 value of 0.8001 thus 80.01% confirms that systematic risk affects public debt to a great magnitude. The adjusted R^2 of 0.743 further confirms that the model has a strong impact. Similarly Mutwiri (2019) found a significant long run positive relationship between interest rate, exchange rate, inflation, gross domestic product and performance of the stock market in Kenya. Even though the Public debt has had a significant economic impact to Kenya, upsurge of the debt beyond the ceiling are as a result of inflation, interest rates, balance of payment, and exchange rates (Kirui 2017).

The study derived regression model is

$$Y_t = \beta_0 + \beta_1 X1_t + \beta_2 X2_t + \beta_3 X3_t + \beta_4 X_{4t} + \mu_t$$

Public debt levels=$26.73039+12.6151X_{1t}+0.09811X_{2t}+9.714X_{3t}+0.7387X_{4t}$

Where

X_1= Inflation risk

X_2=Interest rate risk

X_3=Currency risk

X_4= liquidity risk

4.5.1 Inflation Risk and Public Debt Levels

The inflation risk having p value was at 0.0001 and t value of 4.03 confirms that inflation risk has statistical significant effect. The coefficient 12.6151 provides that the relationship is significant and positive, this affirms that a increase in inflation may lead to fluctuations in public debt. Mwega (2022) examined the relationship between inflation and debt servicing costs in Kenya, highlighting that periods of high inflation have led to increased interest rates, significantly raising the cost of debt servicing. According to Ndung'u (2023), Kenya's inflationary pressures have frequently been accompanied by greater budget deficits. On the other hand Kamau and Muthama (2021) found that inflation in Kenya has a dual effect as it reduces the real value of existing debt but increases the cost of new borrowing.

4.5.2 Interest Rate Risk and Public Debt Levels

Regarding interest rate risk the p value 0.005 and t value of 3.28 indicates the variable has a statistical significant effect on public debt levels. The positive coefficient 0.09811 implies that interst rate risk affects public debt repayment and an increase in interest rate

leads to increase in public debt. Lemantile (2017) study concluded that foreign exchange rate are never constant and the sudden changes as experienced, may have a positive or a positive effect on mutual funds. The study by Nafiseh (2020) found that interest rate volatility affects public debt. According to Toroitich and Onyango (2017), high interest rate affects positively the cost of servicing the existing debt while offering incentives to take new credit.

4.5.3 Currency Risk and Public Debt Levels

The study found that for currency risk the p value at 0.000 and t value of 7.59 indicates that currency risk has a significant effect on public debt levels. The study reports positive coefficient 9.714 hence currency risks has positive significant effect, this means it weakens efforts on public debt management and therefore increase in value of KES leads to increases and decreases in public debt. This results are in agreement with Yieke (2023) who noted that there has been a rise of public debts due increasing currency risks in the African Countries since most of the local currencies across the continent has lost ground against US Dollar in the recent years as a result of increase in the imports which are very expensive, and the cost of debt services have been sky-rocketing due to the currency being gauged with US Dollar.

4.5.4 Liquidity Risk and Public Debt Levels

Lastly liquidity risk had p value 0.003 ad t value 3.59 implies liquidity risk has a significant effect on public debt levels. The positive coefficient 0.7387 indicates the risk levels and therefore liquidity risk escalates the challenge of public debt and hence increase in liquidity leads to increase and decrease in public debt. Abbas and Christensen (2010)

study found that a higher share of domestic debt relative to external debt can lead to liquidity risks

4.5 Hypotheses Results

Table 4.12 Hypotheses Findings

Hypothesis	P<0.05	Decision
Ho_1: Inflation risk has no significant influence on the public debt in Kenya.	.000	Rejected
HO_2: Interest risk has no significant influence on the public debt in Kenya.	.000	Rejected
HO_3: Currency risk has no significant influence on the public debt in Kenya.	.000	Rejected
HO_4: Liquidity risk has no significant influence on the public debt in Kenya	.000	Rejected

Source: Research Data (2025)

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The findings from chapter four are summarized in this chapter. Numerous inferences are made, and suggestions are given in line with the findings.

5.2 Summary of the findings

The study obtaine findings on effect of systematic risks on public debt in Kenya. This is aligned to inflation risk, interest risk, currency risk and liquidity risk in comparison to public debt levels.

5.2.1 Effect of Inflation Risk on the Public Debt in Kenya

The mean inflation risk was at 8.811053, with relatively moderate standard deviation 5.094479, suggesting that inflation in Kenya has been fairly stable over time. This finding resonates with the real-life experiences of inflation risk but remains vulnerable to the broader systematic risks context. The correlation analysis reveals significant relationships between public debt levels and systematic risk variables ($r = 12.6151$, $p= 0.001$), indicating that inflation rates are associated with high public debt levels. This findings further implies that inflation makes public debts to go upwards placing the Country at risk.

5.2.2 Effect of Interest Risk on the Public Debt in Kenya

Interest risk had a mean of 14.33895 and wide standard deviation at 2.047508 showing that Kenya has experienced periods of both monetary easing and tightening. These dynamics, becomes evident that such fluctuations significantly impact countries

borrowing capacity. Similarly, the interest rate risk is positively correlated with public debt levels (r = 0.09811, p = 0.005), implying that interest rate risk is accompanied by an increase in public debt levels. This could be due to interest rate fluactiations that may lead to unstable collection of profits reducing ability to repay public debt.

5.2.3 Effects of Currency Risk on the Public Debt in Kenya

Currency risk had a relatively stable mean of 5.95732, with high standard deviation 18.58002, implying non consistency in the Kenyan currency on the market. However, the weak positive skewness 0.593465 suggests that while currency is generally stable, there are episodes of sudden currency reforms to generate stability. Currency risk is positively correlated with public debt levels (r = 9.714, p = 0.000), suggesting that currency instability may lead to high debt levels creating uncertainty that undermines Countries stability.

5.2.4 Effects of Liquidity Risk on the Public Debt in Kenya

Liquidity risk mean value of 75.76158, shows a wide range and high positive skewness 1.97098, indicating that public debt has been increasing over time. This rising debt burden potentially leads to crowding out of private investment as government borrowing competes with liquidity state. Liquidity risk is positively correlated with public debt levels (r = 0.7387, p = 0.003), indicating that while liquidity risk may affect public debt levels positively it may lead to cautious measures on accessing more debts.

5.3 Conclusion

The study examined the influence of inflation risk, interest risk, currency risk, liquidity risk on public debt levels in Kenya. Correlation and regression results revealed that

inflation risk, interest rate risk, currency risk, liquidity risk had a positive statistical significant effect on public debt levels in Kenya, suggesting that persistent increase in price of commodities, fluctuating interest rates, unstable currency and unstable liquidity state affects management of public debt levels. Furthermore the systematic risks by exhibiting a positive and significant effect on public debt levels, implying that excessive government borrowing may crowd out investment and reduce business confidence hence reducing funds meant to settle public debt. Importantly, high inflation, decrease in interest rate, weakened currency and low liquidity levels weakens public debt. Therefore, the study concludes that stability of systematic risk characterized by manageable inflation, interest rate risk, currency risk and liquidity risk is critical for promoting the public debt levels in Kenya.

5.4 Recommendation

Based on the study findings, several recommendations aligned with the objectives are proposed to enhance public debt levels in Kenya.

First the study recommends that the government should implement both fiscal and monetary policies to control inflation tendencies. This would creat an enabling environment for repayment of public debt in the Country.

Secondly, The regulators should ensure interest rates remain favorable and stable to encourage investment of borrowed fund in the Country. Financial institutions should also ensure that interest rate has a less impact on the firm and borrowers as it will improve ability to manage debts.

Thirdly, there is a need for the government to manage currency prudently through hedging against risk through currency swaps and enhancing economic stability. Stability of currency will help in telling the state of the economy and ability to manage public debt.

The government should have a abalanced or a surplus budget that would not place the Country in liquidity challenges that may lead to overborrowing. This will lead reduction in debt burden that calls for increase in public debt.

5.5 Suggestions for Further Research

Future studies could explore the influence of systematic risk constructs across different sectors such as Commercial banks, microfinance institutions and SACCOs to determine if sector-specific dynamics gives different outcomes. Researchers may also consider using quarterly data that may reflect temporal variations. Additionally, future research should apply moderating factors such as gross domestic product which may further explain the relationship between systematic risks and public debt levels. Finally, other systematic risks construsts such as market risk, political risk and recession risks should be subject for for future studies.

For the purpose of public debt management practises, I sugest that future researchers to consider carrying out a research on “The Influence of Systematic Risk on Public Debt Management in Kenya”

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APPENDICES

Appendix I: Secondary Data Template

Variable	**Measure**												
		2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
National debt	National Debt												
	GDP												
Inflation risk	Consumer Price Index												
Interest rate risk	Central Bank Rates												
Currency risk	USD/KSH												
Liquidity risk	Foreign exchange reserve												

Appendix II: DPS Letter

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Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

18th June, 2025

Lijodi Helkiah
MBA/G/01-70317/2022
P.O. Box 190-50100,
KAKAMEGA.

Dear Mr. Helkiah

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your masters proposal entitled ***"Influence of Systematic Risk on Public Debt Levels in Kenya"*** and appointed the following as supervisors:

1. ***Dr. Muli Maingi*** - ***MMUST***
2. ***Prof. Willis Otuya*** - ***MMUST***

You are required to submit through your supervisor(s) progress reports every three months to the Director Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Business and Economics Graduate Studies Committee and Chairman, Accounting and Finance Department. Kindly adhere to research ethics consideration in conducting research.

It is the policy and regulations of the University that you observe a deadline of **two years** from the date of registration to complete your Master's thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours Sincerely,

Prof. Kennedy Bota,PhD
Ag. DEPUTY DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES

Appendix III: NACOSTI

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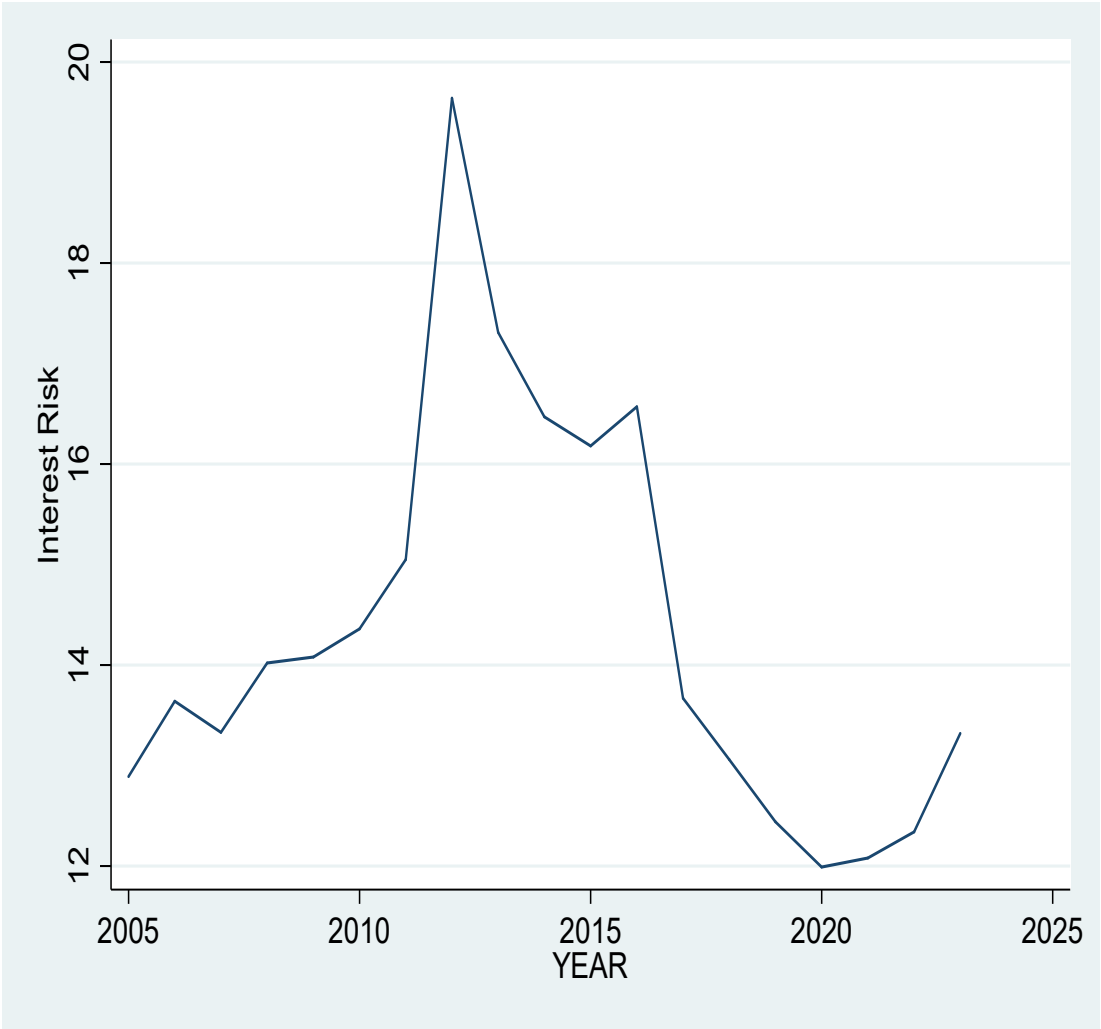
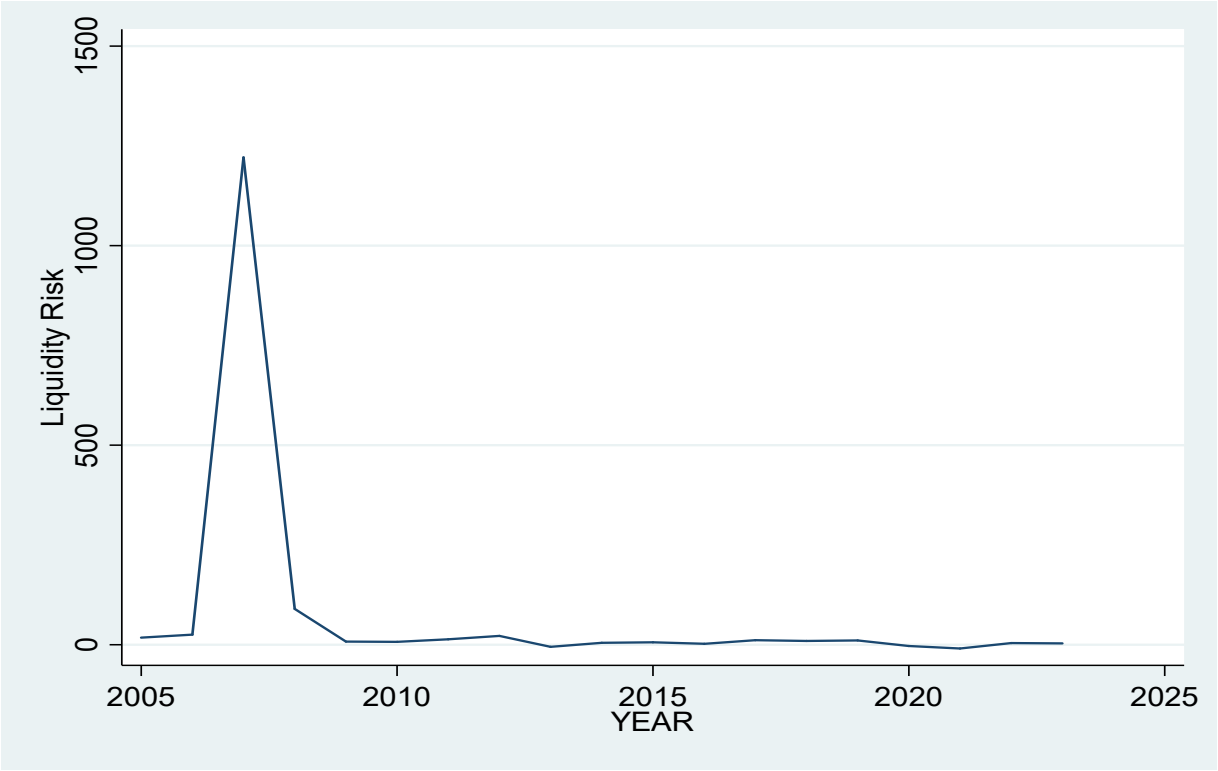
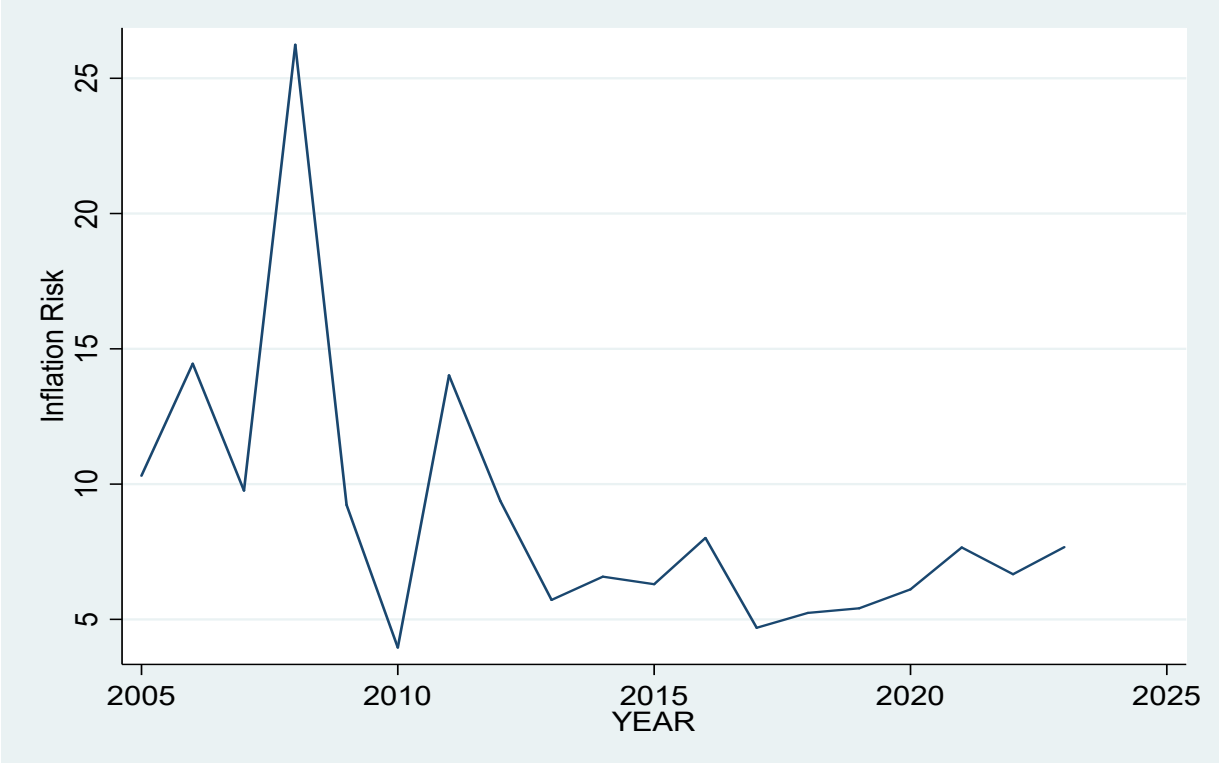
Appendix IV: Mean Distributions




Liquidity Risk
0
500
1000
1500
2005
2010
2015
2020
2025
YEAR


Inflation Risk
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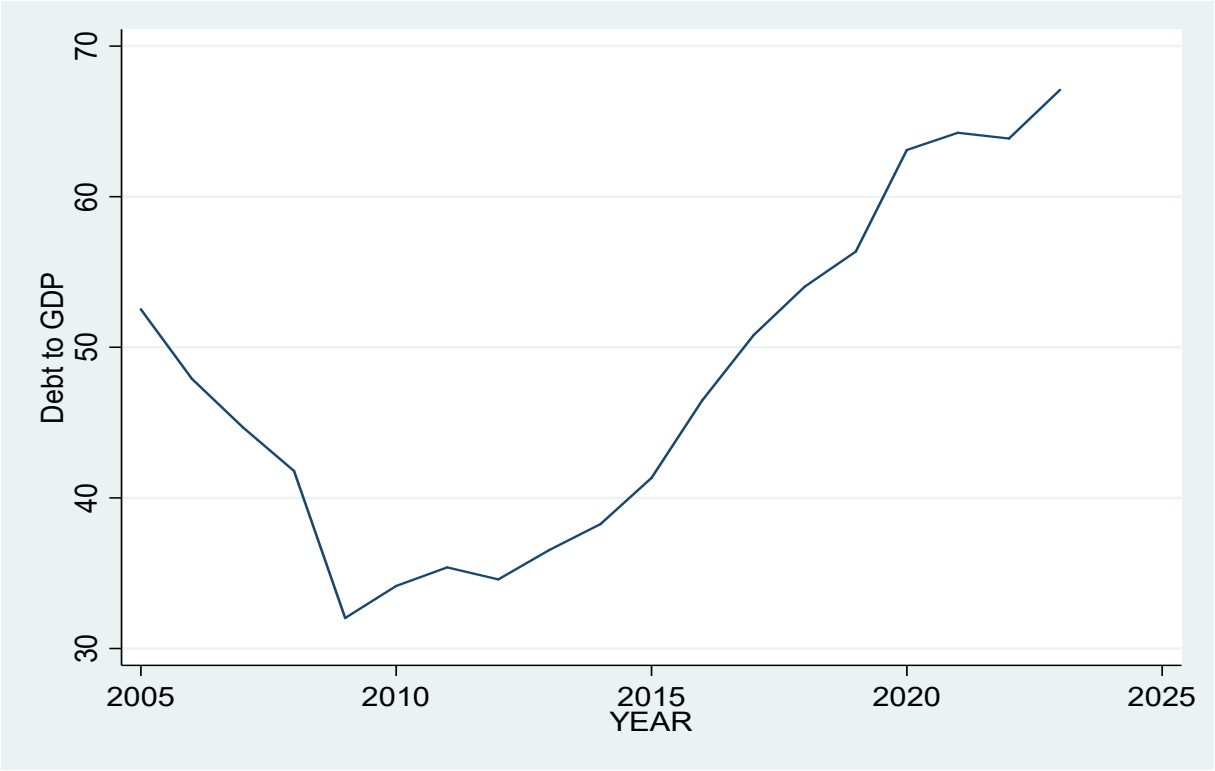
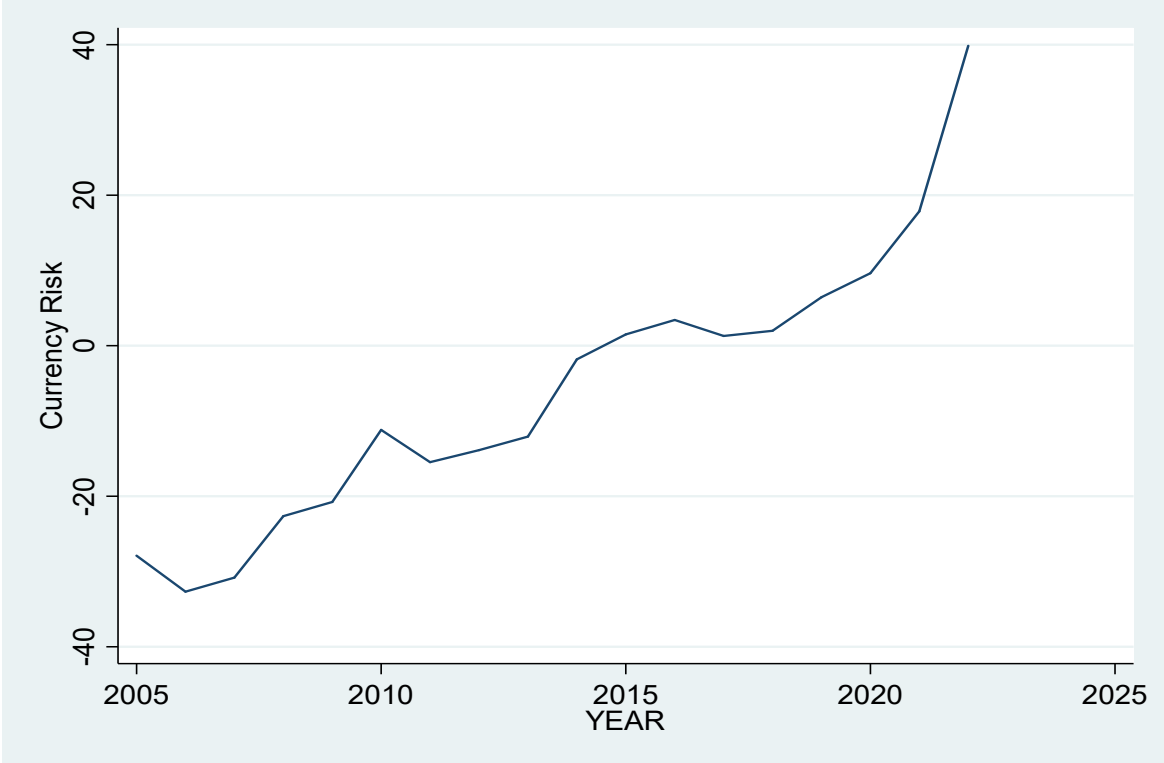
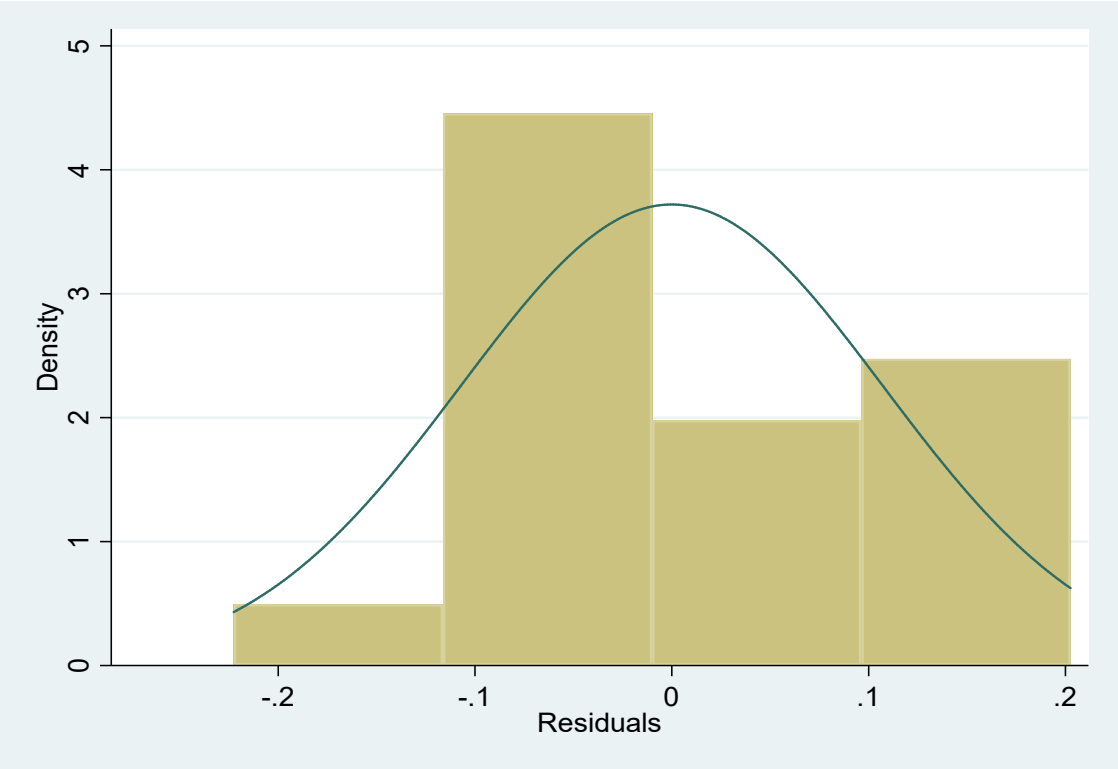
10
15
20
25
2005
2010
2015
2020
2025
YEAR


Debt to GDP
70
60
50
40
30
2005
2010
2015
2020
2025
YEAR


Currency Risk
40
20
0
-20
-40
2005
2010
2015
2020
2025
YEAR

Appendix VI: Residual Normality Plot



Appendix V: RAW DATA

YEAR	Norminal GDP prices(million)	Average domestic Debt (million)	Average external Debt(million)	Average Total Debt(million)	Foreign exchange reserves(millions)	Foreign exchange reserves annual % change	Average annual exchange rate	Annual Exchange rate % change	Interest Risk	Liquidity Risk	Inflation Risk	Debt to GDP	Currency Risk
2005	1,415,823	319,137.84	424,481.03	743,618.87	35,890.90	17.85	75.55	(27.90)	12.89	17.85	10.31	52.52	(27.90)
2006	1,622,565	360,020.66	417,287.02	777,307.68	42,298.56	25.31	72.10	(32.68)	13.64	25.31	14.45	47.91	(32.68)
2007	1,833,511	405,982.75	413,230.94	819,213.69	53,005.59	1,221.04	67.32	(30.81)	13.33	1221.04	9.76	44.68	(30.81)
2008	2,107,589	441,332.20	439,309.46	880,641.66	700,226.03	89.74	69.19	(22.65)	14.02	89.74	26.24	41.78	(22.65)
2009	3,275,642	521,680.23	527,257.78	1,048,938.01	71,821.52	7.89	77.35	(20.77)	14.08	7.89	9.23	32.02	(20.77)
2010	3,597,630	665,819.80	562,877.31	1,228,697.11	77,484.90	7.25	79.23	(11.19)	14.36	7.25	3.96	34.15	(11.19)
2011	4,162,514	706,529.19	706,450.00	1,472,979.50	83,101.24	13.62	88.81	(15.47)	15.05	13.62	14.02	35.39	(15.47)
2012	4,767,191	897,806.84	751,040.05	1,648,846.89	94,415.97	22.09	84.53	(13.88)	19.64	22.09	9.38	34.59	(13.88)
2013	5,311,322	1,082,703.86	858,027.00	1,940,731.80	115,275.41	(5.34)	86.12	(12.08)	17.31	-5.34	5.72	36.54	(12.08)
2014	6,003,835	1,258,255.64	1,038,546.60	2,296,802.24	109,115.29	4.80	87.92	(1.82)	16.47	4.8	6.58	38.26	(1.82)
2015	6,884,317	1,420,777.07	1,424,326.74	2,845,103.81	114,347.20	6.07	98.18	1.50	16.18	6.07	6.3	41.33	1.50
2016	7,594,064	1,769,175.30	1,762,898.82	3,532,074.12	121,296.30	2.38	101.50	3.41	16.57	2.38	8.01	46.51	3.41
2017	8,483,396	2,078,979.82	2,231,568.22	4,310,548.04	124,183.80	11.34	103.41	1.30	13.67	11.34	4.69	50.81	1.30
2018	9,340,307	2,457,860.88	2,588,497.65	5,046,358.53	138,271.50	9.60	101.30	1.99	13.06	9.6	5.24	54.03	1.99
2019	10,237,727	2,802,042.76	2,967,798.31	5,769,841.07	151,548.20	10.92	101.99	6.45	12.44	10.92	5.41	56.36	6.45
2020	10,715,070	3,260,652.77	3,500,933.29	6,761,586.07	168,091.40	(3.18)	106.45	9.64	11.99	-3.18	6.11	63.10	9.64
2021	12,027,662	3,770,437.80	3,957,110.27	7,727,548.07	162,744.70	(9.41)	109.64	17.87	12.08	-9.41	7.66	64.25	17.87
2022	13,489,642	4,297,854.90	4,317,555.98	8,615,410.88	147,425.50	4.14	117.87	39.85	12.34	4.14	6.67	63.87	39.85
2023	15,108,806	4,764,278.15	5,372,923.60	10,137,201.75	153,523.50	3.36	139.85	45.11	13.32	3.36	7.67	67.09	45.11
2024					158,861.90		145.11						