

**PUBLIC DEBT, CURRENT ACCOUNT DEFICIT, AND EXCHANGE RATE
DYNAMICS IN KENYA**

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**A RESEARCH PROJECT PRESENTED TO THE DEPARTMENT OF
ECONOMICS THEORY IN THE SCHOOL OF BUSINESS, ECONOMICS AND
TOURISM IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
AWARD OF DEGREE OF MASTER OF ECONOMICS (POLICY AND
MANAGEMENT)**

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DECLARATION

This study project is my original work and has not been offered for an award of degree or any other award at Kenyatta University or any other learning institution.

Signature:

Date:

Ndindi Nyoro

Reg. No.: K102/CTY/21005/2023

I confirm that this work as reported in this research project has been carried out by the candidate under my supervision

Supervisors

Signature:

Date:

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DEDICATION

The dedication of this project is to the people of our Country, Kenya, for the incredible chance to be of service. Very thankful to the people of Kiharu for the opportunity to serve as a Member of Parliament in the National Assembly. Serving as the Chairman of the Budget and Appropriations Committee necessitated joining the program to expand my knowledge of Economics and Public Policy for effective decision-making towards improving the Economy of our great Country, Kenya.

ACKNOWLEDGMENT

Would wish to acknowledge all those who have contributed to the field of Economics over time. At all levels of time up to the current age, many great minds have labored to find optimal interactions of variables to create a world that affords good standards of living for all.

Particularly, those who have employed the knowledge gained in shaping the economies of their countries to progress deserve recognition. The ability to recognize the resources of their countries and align them for optimal output should be emulated. The selfless leaders who have exhibited patriotism should serve as an example to many in developing countries who continue to perpetuate patronage, clientelism, and, in the process, distort incentives of hard work, ingenuity, and merit, which are key for economic progress and allocation of resources.

The lecturers from Kenyatta University have been very good at dispensing knowledge to us as we interacted, especially in class. No doubt they were and are well-equipped and eager to assist. Special appreciation to my supervisor, Dr Stephen Njaramba, for the depth of knowledge in the topic of study, availability, and guidance.

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ACRONYMS AND ABBREVIATIONS

ARDL	Autoregressive Distributed Lag
BEER	Behavioral Equilibrium Exchange Rate
CA	Current Account
CBK	Central Bank of Kenya
CPI	Consumer Price Index
GDP	Gross Domestic Product
IMF	International Monetary Fund
KNBS	Kenya National Bureau of Statistics
NEER	Nominal Effective Exchange Rate
PPP	Purchasing Power Parity
REER	Real Effective Exchange Rate
RER	Real Exchange Rate
SDR	Special Drawing Rights

OPERATIONAL DEFINITION OF TERMS

Nominal exchange rate (NER): Local currency unit per unit of United States Dollar, representing foreign currency as recorded in day-to-day foreign exchange market

The real exchange rate (RER): Represents the nominal exchange rate multiplied by the foreign price index and then divided by the domestic price index. The rate takes into account the purchasing power parity

Exchange Rate: This is considered to be the rate at which the United States Dollar is valued with respect to the Kenyan shilling

Exchange Rate Misalignment: The deviation between the actual exchange rate and the value determined by economic fundamentals.

Fiscal Deficit: It is considered to be the difference between the actual public expenditures minus the total revenue in a given fiscal year. The expenditures include the budgeted expenditures and unbudgeted expenditures.

Current Account Deficit: This is the variance between the exports and imports in a given year. This considers goods and services. The definition includes income remittances and repatriation, but excludes any capital flow or debt obligations

Behavioral Equilibrium Exchange Rate: Is the type of exchange rate that links real exchange rates to a set of economic fundamentals

Sovereign Debt:

Debt is issued by the National Government

ABSTRACT

Kenya's sovereign debt has increased throughout the years to reach a figure of above Kenya Shilling 10 trillion. As at the end of June 2023, the total public debt, excluding that which is guaranteed publicly and pending bills, stood at around Ksh. 5.39 trillion in debt externally owed and domestic debt of Ksh. 4.90 trillion. As a result, the country is facing a debt crisis and fiscal distress due to high debt service. The public debt service is consuming around 83 percent of the public revenues as per 2024/2025 Kenya fiscal budget. As the public debt is growing, the fiscal deficit has also been increasing and averages about 13 percent of GDP as of the 2023/2024 fiscal year. To sustain government operations, therefore, more borrowing will be likely. High fiscal deficit is creating the need for further borrowing and putting the country into a debt trap. The consequence is huge public debt, and more borrowing to refinance the existing debts. The problem is more pronounced on the external debts. This is because Kenya needs to earn more foreign currency to service the debt. This, however, is not happening as the exports continue to decrease as imports continue expanding. Consequently, the country faces a problem in its current account. The rate of exchange has also been observed as overvalued, creating a misalignment in the real exchange rate. This adversely affects trade and generates pressure and volatility in the exchange rate market, consequences that are undesirable for the stability and overall growth of the Economy. The situation leads to depreciation or loss of strength of the local currency. However, the monetary authority constantly intervenes to manage the exchange rate and prevent depreciation. This raises the question whether the observed misalignment in the real exchange rate is related to the growth in the public debt. The study, therefore, sought to get more information on the dynamic relationship between public debt with the current account deficit, and exchange rate misalignments in Kenya. It employed secondary time series data running from the year 1980, when the country started the journey to adopting the floating exchange rate, to the year 2023. The study made use of the Vector Auto Regressive Model to analyze the direction of causality and impact response. It is deduced from this study that the Budget Deficit is a strong determinant of Exchange Rate Misalignments, Current Account Deficit, and External Debt. Additionally, the three variables are dynamically interlinked, with bidirectional feedback loops. Current Account Deficit both influences and is influenced by Exchange Rate Misalignments and Budget Deficit, showing a complex macroeconomic adjustment mechanism. This means that persistent budget deficits fuel both external imbalances and public debt. Misalignments not only worsen the current account but are themselves affected by fiscal and external indicators. Rising external debt is influenced by fiscal and external sector pressures, necessitating coordinated macroeconomic management.

CHAPTER ONE

INTRODUCTION

1.1 Background

Public debt, otherwise known as Sovereign Debt, is all the sum owed to lenders by the government. It is either external, owed to external lenders, or domestic, raised within the country. Public Debt could also be defined as the sum of securities issued by the government accrued over a period of time (Lerner, 1948). The total of arrears from the budget resulting from the surplus of past expenditure over receipts makes up the debt. However, the government pays interest to its lenders, and consequently, debts grow by an amount larger than the accumulation of fiscal deficit. The government borrows when the revenues do not match the expenditures (Barro, 1974). The government, therefore, borrows to bridge and fill the budget gap. It also borrows to meet emergency needs and unexpected increases in its expenditure. Public borrowing is also carried out to improve market behavior and for economic stabilization. Public Debt could also be used to fast-track capital buildup and growth of the economy by way of prudently investing the borrowed funds. Public Debt, therefore, at a particular, is the algebraic aggregate of past borrowing plus the accrued interest

Deficit, which is budgeted to be borrowed, forms a significant part of the expenditure side of the budget in the Modern Economy. Public debt portfolio is a mix of financing resources, and could jeopardize the country's financial well-being if not prudently managed. It could also endanger the resource base of the country. (Ndieupa, 2018). Sustainability of government programs and policies could be undermined by unsustainable debt. The urgent

obligations to pay debt may push the country into increasing taxes or reducing the flexibility to lower taxes in areas that need to be spurred through expansionary policies. It may also lead to increased taxation, thereby distorting economic decisions. Investors may interpret high debt as a threat to the ability to sustain revenue; this may, in turn, signal tax increases in the future to avoid defaulting on debt service payments (Endognew, 2012). Additionally, the servicing of rising debt could threaten funding of critical social and infrastructural investments as the country allocates most of the realized revenue into servicing debts. Resources for areas' infrastructure, health and education could be decimated with dire consequences to the economy. Failure to rejuvenate economic growth through development spending could lead to low revenue collection, leading to a vicious cycle.

Excessive debt turns into a problematic issue when debt service and transfers harmfully affect economic stability. If the payments turn up to high levels of inflation or contractionary fiscal or monetary policies, this may result in an unfavorable environment for investments and doing business. If taxes have to be increased to bridge the gap, they can weaken what Keynes (2018) called “animal spirits” and lead to plummeting investments in sectors of production in the economy that have a higher risk profile (Blanchard & Fischer, 1989). The consequence of trade shortfall can push household debt higher and lead to unemployment. Debt is conservatively viewed as comprising the transfer of resources to the present from the future, but can also be seen as borrowing that involves a current transfer of resources from the creditor to the debtor, accompanied by a future transfer that finishes out the loan. Transfers may end up harming other economic sectors inadvertently (Barro, 1974).

Efforts to deal with problems of increasing public debt may include inflation management, higher taxes, reduction in wages, diminished financial access, capital controls, and depreciation of the currency. The measures may result to households, especially well-off ones, shifting wealth, investments and capital to overseas currency (capital flight), cutting back of the aggregate spending. Other ramifications could be delaying purchases in areas like the homes and real estate market and purchases of equipment, manufacturers moving operations abroad, farmers hoarding production or reducing development of land. Due to reduced purchasing power, workers will unionize and become more aggressive in canvassing for better terms (Gichuki 2013). In jurisdictions where nonlocals might be perceived as exposed, businesses owned by nonlocals are likely to be liquidated and moved to other destinations as a reaction to uncertainty created by debt repayments. Creditors may also raise lending costs and shorten maturities, and this is because people will be focusing more on the short term as they lose hope and confidence with the long term even when there is promise of higher returns (Aguiar, 2024)

Since the 1970s, emerging markets and developing economies have aggressively tapped into global debt markets, seeking to jump-start growth or make up for transitory shortfalls in output and tax revenue. Global public debt reached of US\$97 trillion in the year 2023.

Figure 1.1 demonstrates the public debt situation in the world.

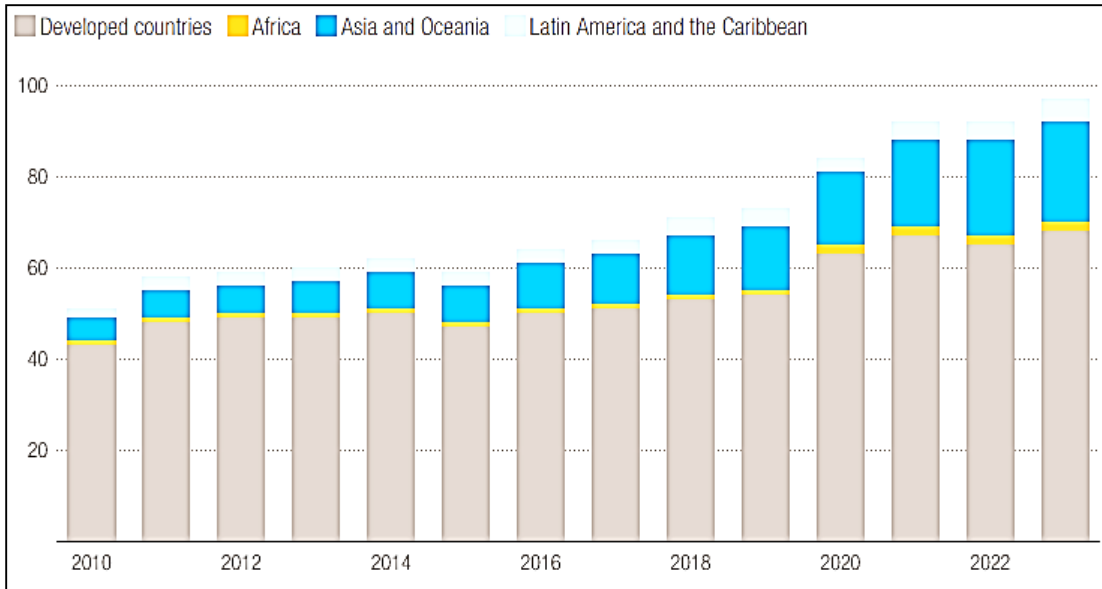


Figure 1.1: Global Public Debt in US\$ Trillion, region

Source: IMF World Economic Outlook, 2024

From Figure 1.1, developing countries have increased their public debt from 43 percent of the world debt in 2010 to 68 percent in 2023. Asian and Oceania countries have raised their public debt from 5 percent in 2010 to 22 percent of the total world public debt in 2023. For Caribbean and Latin America, the public debt has risen from 2 percent in 2010 to 5 percent in 2023. From 2010 to 2023, public debt has increased by a percentage point to 2 percent from 1 percent. Whereas in developing countries, public debt reached less than 33 percent compared to the total in 2010, the absolute debt has grown more than double compared to developed countries. There is significant variation in the burden to service the debt since the ability to pay is exacerbated by inequality and the form of currency, and the skewness of the financial architecture in the international market.

There is a growing and unsustainable cost facing the developing countries in servicing the foreign debt in foreign-denominated currency. Servicing of external sovereign debt in countries that are developing reached around 6.3% of revenues derived from exports at

approximately 365 billion US Dollars in 2022, equivalent to 6.3 percent. Many nations that are developing have substantial external debts that is rapidly surging. Declining exports has made payment and servicing of foreign debt even more constraining. This dynamic is exacerbated by high borrowing costs. Countries in the Global South pay interest rates that are 200 to 400 percentage points higher compared to those of the USA and 600 to 1200 percentage points higher compared to Germany (Aguiar, 2024).

1.1.1 Trends of Public Debts in Kenya

Public debt in Kenya has been ballooning, and together with it an expanding budget deficit and challenges in the trade balance that are being exacerbated by heightened increases in imports and diminishing exports. Public debt in Kenya has now posed a debt crisis and has resulted in fiscal distress. By the end of June 2023, the total government debt, including sovereign guaranteed loans, was at Ksh 5.39 trillion in external debt and Ksh 4.90 trillion in debt acquired in the domestic market. By the end of the year 2012, Kenya's public debt was at KSh 1.8 trillion. This, however, increased to an unprecedented figure of over Ksh 10 trillion by the end of 2023. In regard to the regimes, the administration up to 2003 was not able to borrow much, owing to the reluctance of lenders to lend to Kenya. In around 2003, government debt was approximately Ksh 600 billion. Up to the year 2013, the accumulation of public debt was slower compared to the growth of the economy, and public debt increased to Ksh 1.8 trillion, with borrowing only focused on development projects. During this period, ordinary revenue rose from Ksh 200 billion to over Ksh 800 billion. The period between the year 2013 to 2022 recorded the most dependence on borrowing, with expensive projects and commercial loans taking center stage in the public expenditure. The spillover effect of this borrowing dependence continues to date, with the country

spending an unprecedented amount of its public revenue on public debt servicing (Nkatha, 2022). Table 1.1 gives a trend of the national debt in Kenya and its composition from the year 2014 to the year 2023.

Table 1.1: Trends in Kenya Public Debt Ksh Billion

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total PPG debt stock	2,423	2,844	3,611	4,407	5,047	5,809	6,693	7,697	8,635	10,279
PPG debt as % of GDP	48	48.8	53.8	57.5	57.1	62	65.8	68.1	67.7	70.8
o/w External	22.6	24.4	26.8	30	29	32.3	34.6	35.4	33.7	38.2
o/w Internal	25.5	24.4	27.1	27.6	28	29.7	31.2	32.7	33.9	33.3
PV of Debt to GDP	48	48.8	53.8	55.4	57.6	59.9	55.7	58.8	63.1	64.4
Annual Debt Growth rate	14.3	10.2	9.7	9.3	10.3	18.3	15.2	15	12.1	19.1
Annual GDP Growth rate	5.4	5.7	5.9	4.9	6.3	5.1	-0.3	7.6	4.8	5.3

Sources of Data: Various Annual Public Debt Management Reports

Stock of Public and Public Guarantee (PPG) debt surged from Ksh. 2.4 trillion in 2014 to Ksh. 10.3 trillion in 2023. In terms of PPG debt as a proportion of GDP, it soared from 48 percent in 2014 to 70.8 percent in the year 2023. Of the 70.8 percent, 37.5 percent is external debt and 33.3 percent is domestic debt. As a Present Value (PV) of debt to GDP, the stock of debt increased from 48 percent in 2014 to 64.4 percent in 2023. The rate of growth in public debt is also noted to be higher than that of the economic growth rate (Nkatha, 2022).

Most governments fund budgetary spending extensions using borrowing and revenue-raising measures like taxation. The consequences of taxing more and financing through debt can be evaluated by examining the policy effects on the combined economic expansion, which is preceded by effects on demand (Aschauer, 1985). The essential view

is the impact of the budgetary approach on the development and the conflicting effects of debt and tax financing. Fiscal policy is most operative in raising gross output and demand under liquidity constraints or during declines. However, this effect differs under mediums of transmission, which in some cases confine the efficacy of fiscal policy. For example, the growth ramifications of fiscal expansion may depend on the extent to which public spending replaces private consumption (Blanchard & Fischer, 1989). Early studies on fiscal policy have found that sometimes, government spending may result in a reduction in households' and firms' consumption, and as such, the government spending may not be ideal to cover for the private shortfalls. Thus, government policy may not substitute private spending but may result in further recession, especially if the rise in public expenditure is expected to raise taxation.

Deficit financing's effect on the growth of an economy is noted to be mixed. Some economic theories, the overlapping generations and the infinite horizons, propose neutrality in output of some of the usual debt and tax financing. For example, financing through debt, even for development, signals that taxes may have to be increased in the future, and this therefore encourages households to save instead of expanding consumption with the hope to de-saving when the expectations of higher taxes are actualized. Capital accumulation may also result as public spending reducing equilibrium consumption and altering expected future interest rates (Romer, 2006).

When there are economic constraints, especially reduced liquidity or during crises like the recession, expansionary fiscal policy is employed in many instances, financed through borrowing. However, fiscal development may not yield the desired results in economic revival due to interest rate changes and expectations that lead to diminished capital

accumulation (Reinhart, Rogoff, and Savastano, 2003). It is not possible for a government to perpetually borrow to finance development without sharp adjustments to the economy at some point. While the government may be meeting the short-term goals, this can only be sustainable if the present value of future primary surpluses stream is equivalent to or greater than the current market value of debt (Reinhart, Rogoff, and Savastano, 2003). This view postulates that, sustainability of external debt is dependent on the capability of the sovereign to run a current account surplus enough to cover for the entire debt stock. Also, the primary budget surplus has to be guaranteed in the future, which is more than the present value of debt taken in.

High fiscal deficits and consequent debt repayments have accompanied the expansion in government debt in Kenya. The fiscal deficit averages about 6 percent of GDP. As of the 2023/2024 fiscal year, the public debt is consuming over 70% of the ordinary revenues. To sustain operation, the sovereign may borrow more. Table 1.2 demonstrates the fiscal budget trends for the fiscal period 2014 to 2023.

Table 1.2: Public Budget and Deficit in Billions 2013/14 - 2020/21

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Recurrent Expenditure	Budgeted	1,0434	1,411	1,584	1,734	2,107	1,948	2,399	2,018	2,627	2,553
	Actual	1,022	1,381	1,564	1,657	2,084	2,375	2,447	2,333	2,486	2,703
Development Expenditure	Budgeted	635	684	683	762	671	607	652	668	658	561
	Actual	511	572	483	626	492	570	809	554	540	494
Total Gov. Exp	Budgeted	1,679	2,096	2,267	2,496	2,778	2,555	3,051	2,887	3,286	3,367
	Actual	1,533	1,954	2,047	2,283	2,576	2,945	3,256	2,749	3,028	3,221
Ordinary Revenue	Budgeted	1,007	1,171	1,300	1,515	1,651	1,795	2,116	1,579	1,851	2,145
	Actual	974	1,113	1,236	1,404	1,522	1,699	1,894	1,562	1,918	2,041
Recurrent Balance	Budgeted	(37,)	(241)	(284)	(219)	(456)	(153)	(283)	(439)	(896)	(877)
	Actual	(48)	(268)	(328)	(253)	(561)	(676)	(553)	(771)	(1,094)	(896)
Budget Deficit	Budgeted	672	925	967	981	1,127	761	935	1,308	828	860
	Actual	559	840	811	879	1,054	1,246	1,362	1,187	966	889
Nominal GDP		4,745	5,403	6,284	7,023	8,166	8,892	9,740	11,304	12,698	14,274
Budget Deficit as a % of GDP		11.8	15.7	12.9	12.5	12.9	14.	14	10.5	8.7	6.5

Sources: Various Economic Surveys

The table shows that the budgeted recurrent expenditure increased from Ksh. 1.04 trillion in fiscal year 2013/2014 to Ksh. 2.4 trillion in 2019/2020. This is a huge 131 percent increment over the period and an average of 19 percent yearly growth. This is against a meager percentage growth in revenue. The consequence is that Kenya is borrowing to finance the government's recurrent budget, and more to refinance the existing debts. Development allocation is affected in the process. As a result, the capacity to finance the debts may be fading. Also, there have been shortfalls in projected revenues, leading to either underfunding of development projects or further deficit.

The personnel emolument continues to gobble up almost half of the public funds. This is higher than what is left of revenue after debt servicing. Consolidated Fund Service (CFS), where debt service is anchored, is now the largest budget line in Kenya. The implication of this is that borrowed funds are utilized in servicing personnel emoluments. Table 1.3 shows the percentage allocation of the budget to programs for the fiscal period 2013/2014 to 2023.

Table 1.3: Percentage allocation of public budget to programmes

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Recurrent	78.4	64.9	65	67.6	78	71.5	72.8	70.8	75.5	72
o/w Personnel Emolument	45.7	40	40.2	41	49.7	43.3	44.8	44.2	47.4	48
o/w O&M	32.7	25	24.8	26.5	28.2	28.2	28	26.6	28	27
Development	21.6	35	35	32.3	22	28.5	27.2	29.2	24.5	22

Source of Data: Various Economic Surveys

The high fiscal deficit in Kenya may be attributable to higher growth in recurrent expenditure volumes relative to total expenditure, creating the need for borrowing resources. Given the CFS, the need to expand the government budget to service the existing stock of debt is widening. This is together with the need to invest in capital to expand the economy. Therefore, the link between fiscal deficit and stock of public debt, including the direction of causality, may not be clear given the current situation. There is a need for further study on what leads to the other, and consequently, the effective policy to tame the runaway public debt.

1.1.2 Public Debt and Current Account Deficit

As the country is facing an expanded stock of public debt, the country is also facing a problem in its current account. The rise in public expenditures through borrowing may have boosted aggregate demand in the country without causing an increase in production that could satisfy the additional borrowing and more so the foreign demand for goods and services. This means that the rising public debt in the economy could have been utilized to fund additional consumption. Consequently, the escalation in aggregate demand may have resulted in expanded importations, thereby worsening the current account. In addition, the stock of public debt may have inadvertently encouraged speculative activities, resulting in spikes in prices in the property and stock markets. Any government that increases its spending through borrowing and hence increases aggregate demand without a commensurate rise in aggregate supply by the same amount creates a disproportion in the economy (Agenor & Montiel, 2008). This excess demand increases inflation, which reduces the purchasing power and competitiveness in the economy. The results may put pressure on currency depreciation. This requires further borrowing if the pressure from the public is a strong currency, resulting in a heavily managed local currency.

The country has continued to experience the problem of the Twin Deficit. Fiscal deficit and persistent deficit in the current account have created a reality twin deficit in Kenya. The increased aggregate demand emanating from the increased public expenditure has resulted in increased demand for foreign products and offerings, especially on the public sector side. This has then pushed the government to borrow in foreign currencies to manage financial subjugation, control of investment capital, and depreciation of currency. This has resulted in a current account deficit in the BoP as the exchange rate is misaligned. With the

current account deficit in the BoP, there is consistent pressure for the domestic currency to depreciate. The monetary authority has repeatedly reacted to this by drawing down the foreign exchange reserves or borrowing. This amounts to having foreign exchange reserves depleted eventually or resulting to further borrowing. Without the country's capacity to create foreign currency reserves through exports of goods and services and income remittances, it resorts to further borrowing in foreign currency and at an increased cost. This form of borrowing has created a vicious cycle of overreliance on loans, which then become more expensive as the risk rises.

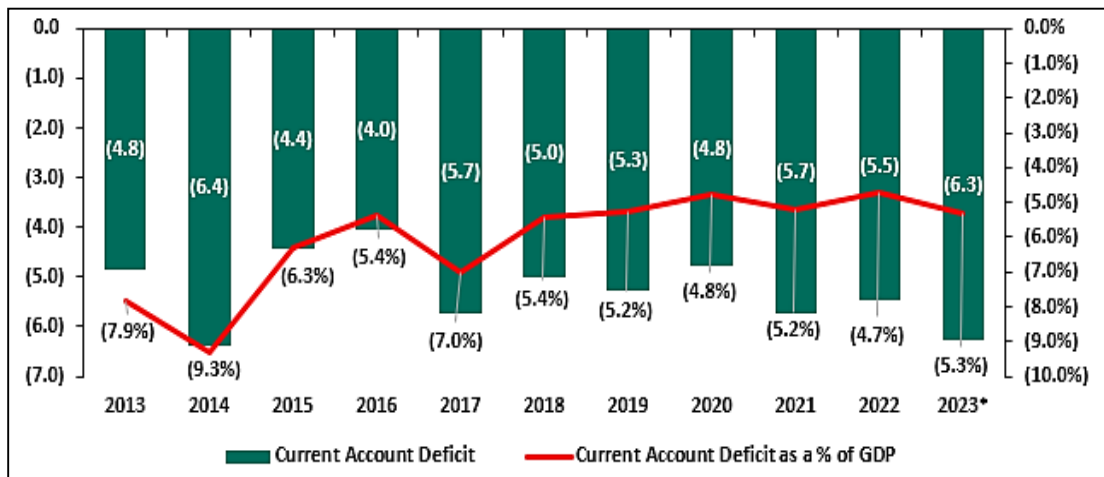


Figure 1.2 : Current Account balance in USD billion

Source: IMF Data

Figure 1.2 shows that the current account in Kenya has been in deficit, that have been expanding over the years, the gap was at USD 4.8 billion in 2013. The current account deficit widened to USD 6.3 billion in 2023. This amount translates to about Ksh. 131.2 billion in the year of 2023. The deficit creates a lot of pressure for the domestic currency to depreciate. However, the constant defence of the domestic currency by monetary authorities prevents this depreciation. Consequence is that the country needs to borrow further to manage the deficits and defend the currency. This complicates the linkage

between the deficits existing in the current account and fiscal budget, with the exchange rate experiencing misalignments.

1.1.3 Public Debt and Exchange Rate Misalignment

Public debt is normally justified when borrowing is procured in order to invest and to accumulate capital (Clark & MacDonald, 1998). This is done to enhance the county's position to produce more, generate more, and grow in the hope that they will create an enabling environment for raising more revenue to sustainably service the incurred public debt. However, borrowing tends to create exchange rate misalignment, which refers to a long-term divergence of the real exchange rate (either over-appreciation or over-depreciation) from its long-period trend in line with fundamentals in the economy. This misalignment can impede the performance of the economy and the need for further cumulative borrowing. In addition, misalignment may cause negative consequences on the stability of and growth of the economy when exchange rate volatility affects decision-making in trade and investments (Krugman, 1989).

Exchange rate misalignments may lead to resources being allocated in suboptimal trends within sectors of the economy. The depreciation of exchange rates in developing economies promotes exports, and it is expected that these economies should devalue their domestic currency with the aim of making prices of exported goods lower while also making the prices of imports more expensive. This could help in improving the current account and consequently the BoP (Clark & MacDonald, 1998). However, on the other side, most developing countries rely on imports of raw materials, intermediary goods, and capital to fuel production. A devalued currency, therefore, makes these goods more expensive, thereby making the final products uncompetitive. This also may lead to inflation

and consequently make locally produced goods more expensive in the domestic market. This school of thought is therefore that intervention from government should be to make the domestic currency appreciate comparatively to other currencies. Kenya's monetary authority has found itself in the center of this, with most cases resulting in the latter. Consequently, the exchange rate has been overvalued, as demonstrated in Figure 1.3

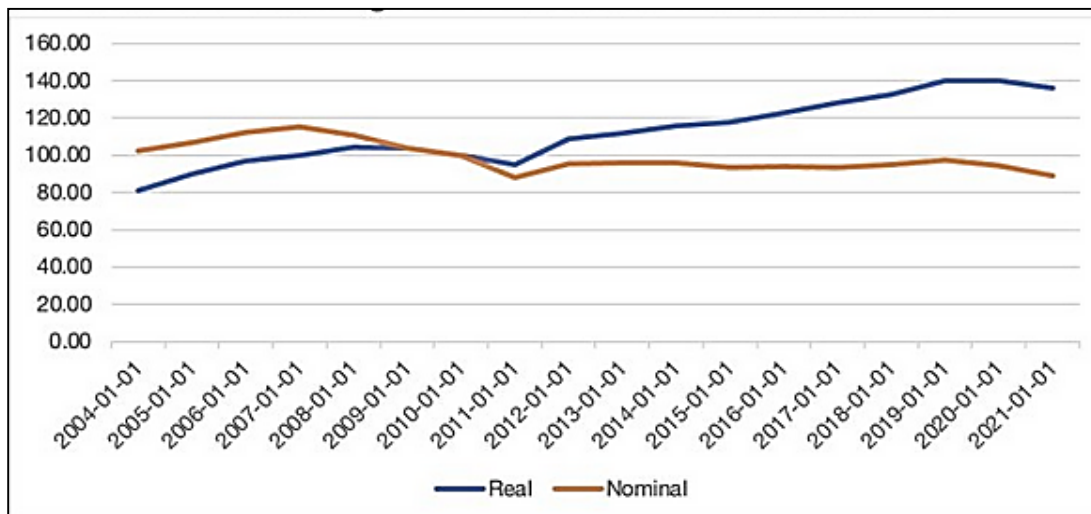


Figure 1.3: US dollars' value in relation to the Kenyan Shillings

Source: Federal Reserve Economic Data, 2022

Figure 1.4 shows the real exchange rate value of Kenyan shillings per United States dollar has appreciated with time. Concurrently, the real exchange rate value has appreciated constantly while the nominal exchange rate has been relatively steady. Before the financial year 2010/2011, the nominal exchange rate value was noted to have been higher than the real exchange rate value, indicating an undervaluation. It means that the amount at which the Kenyan shilling purchased a US dollar was more than its real value. However, afterwards, an overvaluation is noted, depicted by a real exchange rate higher than the nominal rate. This implies that the amount of Kenyan shillings that can purchase a unit of US dollar is less than it should be. Central Banks' first line of defense when the currency

shows depreciation tendencies, in a managed exchange rate regime, is to draw down the reserves and review the exchange rate within their control. These drawings down of reserves normally call for more borrowing if a country does not manage to have surpluses in the balance of payment (Clark & MacDonald, 1998). When this happens, more debt is required to pay the maturing debt as the defense of the exchange rate from depreciation continues.

Misalignment in the exchange rate distorts resource allocation between sectors in production. It also results in distorting repayment of debts, trade patterns and others (Krugman, 1989). Figure 1.4 demonstrates the interrelation between the changes in the Real Effective Exchange Rate (REER) and the Current Account Balance (CAB) in Kenya from 2010 to 2017

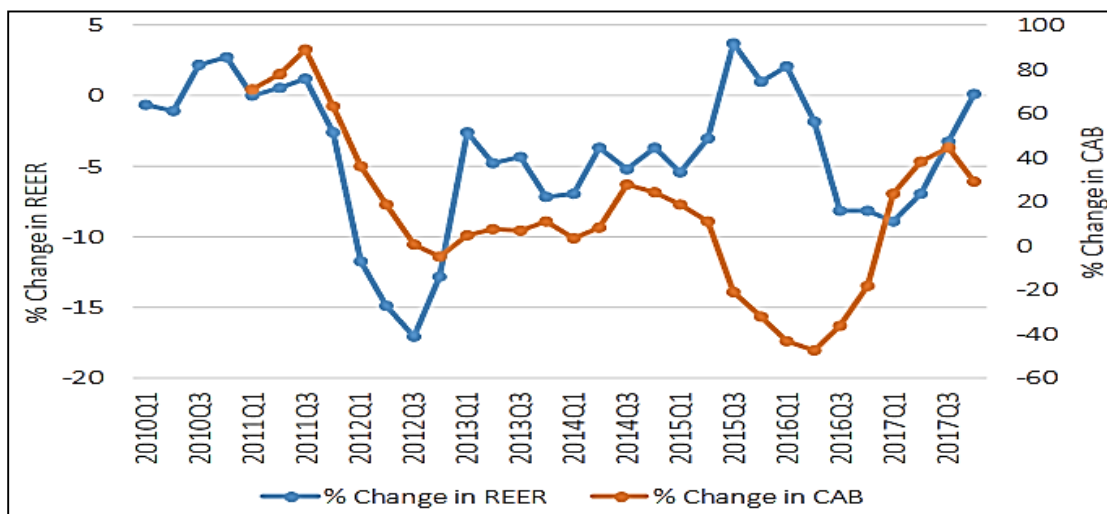


Figure 1.4: Percent Changes in CAB and REER

Source: Central Bank of Kenya, 2019

The figure confirms the continuous rise in current account deficit, especially after the year 2012. This is also the time when the rate of exchange is noted to be overvalued. With a decline in the real exchange rate, the current account deficit depicts an increase, as shown

in Figure 1.4. The consequence of overvaluation of the domestic currency is a depreciation in reserves for foreign exchange and other parameters, like a widening current account deficit, as shown in Figure 1.4. It eventually becomes impossible for monetary authorities to sustain the overvalued rate for an extended period (Clark & MacDonald, 1998). By decontrolling the foreign exchange rate or devaluing the domestic currency, goods produced in the local market become cheaper than those imported. This increases employment opportunities and general output (Krugman, 1989).

1.1.4 Exchange Rate Policy in Kenya

Up to 1975, Kenya employed the fixed exchange rate regime at given levels set by the monetary authorities. From 1975 to 1982, the domestic currency was pegged and attached to the special drawing rights (SDR), pegged to several currencies deemed to be more stable compared to the single currency. The pegging of the exchange rate to the SDR, however, did not reflect the pattern of trade then and was seen as inadequate. The regime of dual exchange rate started in the 1990s to correct the previous inadequacies. Under this regime of a crawling peg, the rates were adjusted on a daily basis against foreign currencies of considerable trading partners. Pressure from development partners and the donor community was piling up for Kenya to liberalize the exchange rate for the markets to determine the equilibrium rates. It was also among the conditions set by the same institutions for the country to access external financing. This culminated in the adoption of a floating exchange rate regime in 1993, at which point, it was left to be driven by the market, and since then, the Kenya Shilling is said to be on a free float, with the Monetary Authority supposed to only intervene to smooth the movement of the rate during erratic volatility. Since then, the shilling is said to be the exchange rate that is deemed as driven

by market determination. Nevertheless, the intervention by the Central Bank of Kenya to supposedly to smooth the movement is in many instances, seen as overbearing and encroaching on the management of the currency. These interventions have been more regular, causing misalignment in the exchange rate.

1.2 Statement of the Problem

Public debt in Kenya has been ballooning over the years and now poses a risk of a debt crisis and has resulted to fiscal distress in the country. By the end of June 2023, the public debt, excluding public guaranteed debt and pending bills, stood at Ksh 5.39 trillion in foreign debt and Ksh 4.90 trillion in domestic debt. The increase in public debt has resulted to high debt servicing and further rises in fiscal deficit. The fiscal deficit averaged about 5.3 percent of GDP as of 30th June 2024. As of the year ending on 30th June of 2024, the public debt is consuming around 83 percent of the public ordinary revenues. High fiscal deficit is attributable to higher growth in recurrent expenditure volumes relative to total expenditure, resulting from expanding consolidated fund services, creating the need for further borrowing. The recurrent expenditure increased from Ksh. 1.04 trillion in the fiscal year 2013/2014 to Ksh. 2.4 trillion in 2019/2020. This is about a 131 percent increment over the period and an average of 19 percent yearly growth. This is far above the revenue and economic growth. The consequence is huge public debt, and more borrowing to refinance the existing debts. The problem is more pronounced on the external debts. This is because Kenya needs to earn more foreign currency to service the debt. This, however, is not happening as the exports continue to decrease while imports continue expanding. Consequently, the country faces a problem in its current account. The expanding difference between imports and exports propagates the problem, and domestic assets are increasingly

becoming foreign-owned. The country's exchange rate has been observed to be overvalued. The situation compels the domestic currency to decrease in value. However, the monetary authority constantly intervenes to manage the exchange rate and prevent depreciation. The real exchange rate, consequently, is observed to have surpassed the nominal exchange rate, indicating an overvaluation. This is the same period observed to have had a rapid escalation of public debt.

Theories and some of the empirical works assume a causal relationship between fiscal deficit, exchange rate, and public debt (Alexander, 1952; Reinhart et al., 2012; Ogero, 2021). However, this is not the case, and the inquiry sought to delve to find the interaction between fiscal deficit and public debt accumulation, exchange rate misalignments, and current account deficit. The literature also ignores the fact that debt could be denominated in different currencies. They do not seek to consider the domestic and foreign debt with the view of establishing how exchange rate misalignment affects either (Del Monte & Pennacchio, 2020). This study analyzed the effect by separating debt that is foreign and domestically owed public debt. The study got more information on the dynamic relationship between public debt with the current account deficit, and exchange rate misalignments in Kenya.

1.3 Research questions

The research aims to answer below questions.

- i. How does the public debt relate to the current account deficit in Kenya?
- ii. How does the exchange rate misalignment relate to the public debt in Kenya?

1.4 Research objectives.

This research has both general and specific objectives.

1.4.1 General objective

To investigate the dynamic relationship between public debt with the current account deficit and exchange rate misalignment in Kenya.

1.4.2 Specific objectives

- i. To investigate the relationship between public debt and the current account deficit in Kenya.
- ii. To find out the relationship between exchange rate misalignment and the public debt in Kenya.

1.4.3 Significance of the study

Over the years, Kenya has continued to institute policies focused on bridging the ever-widening gap in the balance of payment that has been exacerbated by the trade imbalance between Kenya and the trading partners, with Kenya recording more import value than exports. At the same time, the debt portfolio in Kenya has grown in size and composition, with the country borrowing both in the domestic market and internationally to fund the various public expenditure. To manage the currency exchange rate, the country, through the CBK, has adopted a floating exchange rate regime but periodically intervenes by drawing down reserves. This has mainly been to support the strengthening of the local currency.

Stakeholders and policymakers, including the CBK, the National Treasury, the executive arm of government, as well as parliament, will benefit from the study's findings. It has

provided information on the relationship between public debt with current account deficit, and exchange rate misalignment, which is of benefit to the policy and decision-making organs on the interventions needed in the currency exchange rate market. Scholars could also benefit from this study to enrich their research.

1.5 Scope and limitations of this study

The study concentrated on the public debt accumulation in Kenya from 1984 to 2023. It also tracked the current account deficit within the same period while still investigating the exchange rate over time. The current account deficit is part of the wider BoP for the country within the same period. There was an effort to compare the public debt and current account deficit trends, especially based on prevailing exchange rates.

The scope of the study covered the Republic of Kenya. The major limitation was that in this kind of study, there was an overreliance on government data, which has a possibility of being subjective to project calculated results and therefore biased. The study relied on other secondary data from various global institutions, which would also have bias. It is also possible that some data, especially on public debt, could be understated or not accurate overall.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers theoretical and empirical literature on public debt, current account deficit, and the effect of exchange rate misalignment in both theoretical and practical scenarios.

2.2 Theoretical Literature Review

2.2.1 Debt Overhanging Theory

This theory, which was advanced by Reinhart et al. (2012), answers the question of why the accumulation of public debt in large amounts slows investments and consequently economic growth. The theory highlights how investments are affected by unsustainable levels of debt accumulation and increased cost in debt service costs, *ceteris paribus*. The phrase "debt overhang" was used by Reinhart et al. (2012) to define the dilapidation of an economy as a result of an exponential rise in national debt. They noted a link between unsustainable public debt, economic stagnation, and slow and stagnating growth. According to Mwai (2022), Debt overhung occurs when the debt service cost and burden are very large. An increase in debt service means the government will be seeking revenue-raising measures, which may include higher taxes. This affects investments since there is no motivation for private capital to be deployed now for future production that will be taxed more. The theory, therefore implies that debt can be at a level where it affects the economy negatively and negates the very purpose of national debt. This current study to test the stage of national debt in its management of the economy.

2.2.2 Dynamic Theory of Public Spending, Taxation, and Debt.

Advanced by Del Monte & Pennacchio (2020) the theory explains the use of government surpluses in the budget and deficits to avert drastic and sharp changes in the tax rate (Mbalu & Matanda, 2021). It predicts governments will have a budget deficit when there are high government expenses and surplus when the government expenditure is low. However, the composition of public spending may be distorted by corruption and thereby lead to a higher accumulation of debt as money meant for capital expenditure is embezzled or misappropriated. Corruption distorts economic incentives through the allocation of resources that is not optimal for the economy in general. Specifically, an increase in one standard deviation in corruption is seen to reduce capital spending to 18 percent from 29 percent. The major assumption in public debt acquisition is that governments should act as benevolent beings. This is far from reality in countries where laws, including government expenditure, are legally a function and prerogative of the legislature. Overall, the ability to raise revenue has a direct effect on borrowing and, consequently, the extent of sovereign debt. The effect is that public debt is acquired against the economic fundamentals, resulting in macroeconomic instability. This was the aim of the current study to test how the public debt and the macroeconomic fundamentals relate.

2.2.3 Absorption Theory to the Balance of Payment.

The theory, first developed by Alexander (1952), postulates that a country's trade balance only improves if what is produced within the country exceeds what can be consumed by the local market. This is cited to as domestic absorption. The theory, which is primary in the analysis of the balance of payment, seeks to advance that the excess production over consumption is what becomes available for exports. What cannot be absorbed domestically

is therefore exported and forms the surplus production of a country. Hence, a current account disparity can be observed as the variance between domestic production and domestic absorption. A current account deficit arises if what can be absorbed domestically is more than what can be produced, commonly arising from a fiscal deficit that is not even out by a surplus of private savings over investment. Simply put, a payments shortfall occurs if national net savings are inadequate to pay for entirely the entire surge in the government instruments sold to offset the gap. This then results in the twin deficit. The expression twin deficit is used to define the coexisting budget and trade arrears. However, twin deficit might not apply if the existing account does not change considerably, owing to a possible fall in private savings. In such a scenario, the behavior of private investors nearly counteracts government attempts to increase national savings. The theory supports the fact that an increase in demand from rising incomes would cause inflation or an increase in imports if it does not go hand in hand with improved production. The effect may be in the balance of payment when enhanced incomes lead to a rise in imports.

2.2.4 The Real Targets and the Nominal Anchor Theory of Exchange Rate

The theory by Swan (1963) observes whether the exchange rate trends come after fiscal and monetary policies and the setting of wage and private sector prices or lead them. The Real Targets approach, an orthodox policy, adopts that changes in the nominal exchange rate have lengthy real effects and that the rate of exchange ought to adapt to other policies. The nominal anchor approach adopts the exchange rate as an apparatus to use to manage inflation, towards limiting domestic policies and shaping private sector responses. The theory gives the consequences of the nominal anchor approach by considering the level such a method might explain why in many countries where the rate of exchange is (give or

take) fixed for an extended time, there seems to be a low inflation rate. Additionally, it assumes that the government can be relied upon to make practical use of the exchange rate and additional instruments—that is, it need not to be controlled. In addition, this approach assumes that the nominal exchange rate is a policy instrument dissimilar from local monetary and fiscal procedures. The belief that the exchange rate is a distinct policy instrument from domestic monetary policy suggests that a nominal exchange rate objective can be achieved by sanitized interference. It is hence expected that operative exchange measures or other procedures are used to guarantee that international capital mobility is by no means high for the country. This approach suggests that nominal devaluation causes actual effects. Local prices and wages are presumed to be imperfectly elastic downward.

Presenting a systematic analysis of issues related to the real targets approach, the switching and expenditure adjustment model shows how the nominal exchange rate moves in reaction to numerous real shocks or objectives, such as fiscal growth or trade liberalization. This then gives the sense of exchange rate overvaluation or misalignment. A Swan diagram given in Figure 2.1 assumes that the country is little in world markets so that any deviations in the terms of trade are estranged.

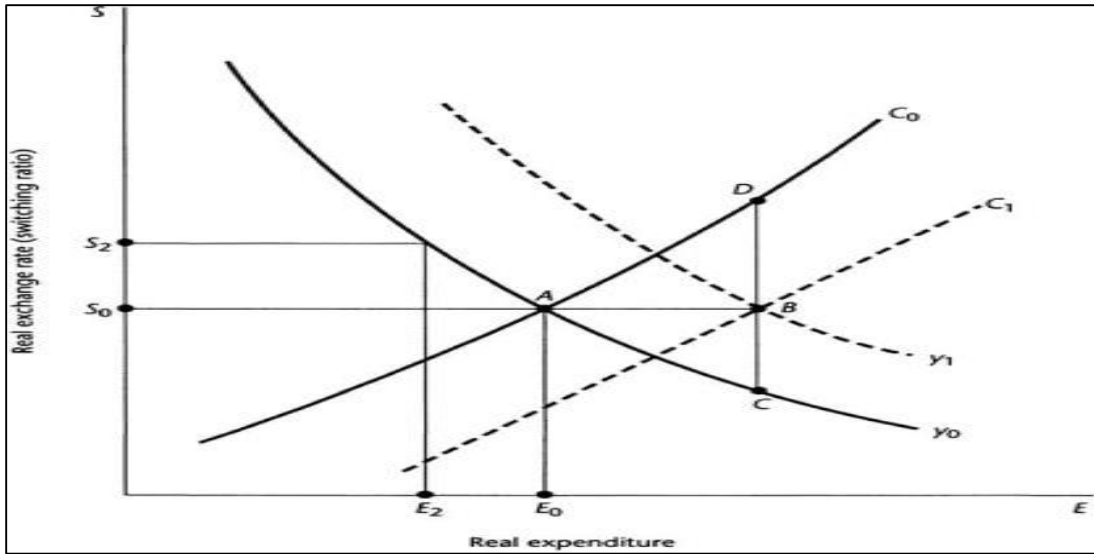


Figure 2.1: Switching and Misalignment Model

Source: Swan, 1963

The vertical axis (S) illustrates the relative price of traded to nontraded goods in terms of the local currency, permitting also for the effects of tariffs and quantitative boundaries that affect this comparative price ratio. The S represents switching, a movement upward being a real depreciation.

Looking at the three vital prices, that is, the prices of non-tradable goods, imports, and exports. First, there is a huge class of nontraded goods N, with price p_n . This category contains two subclasses: (1) pure non-tradables, which could potentially be priced on the basis of domestic demand and supply even as free trade existed, and (2) goods that could have been imported under free trade but, because of prohibitive quantitative import restrictions, are priced on the grounds of domestic demand and supply rather than in terms of the prices of competitive imports. The latter goods are the quantitative restriction-moved nontraded goods, importable that have been transformed into nontraded goods.

Second, there are importations M , whose local price is $e(1+t)p_m$, where p_m is the boundary price of imports in external currency terms, e is the nominal exchange rate well-defined as units of local currency per component of foreign currency (an increase being a depreciation), and t is the tariff rate, whether explicit or implicit (quantitative restrictions), whichever efficiently regulates price. If import restrictions are tightened or their range is extended within the broad category of M , t will increase. Lastly, there are exports X , where p_x is the foreign price of X , and ep_x is the domestic price.

Given that there are two types of traded goods, weights have to be linked to the two prices to get a mean price of traded goods. The weights are a and $1 - a$. This states' S , the relative price of traded to nontraded goods, taking into consideration trade limitations and permitting for the likelihood that the relations of trade (p_x / p_m) may change into equation 2.1

$$S = e[\alpha(1+t)p_m + (1-a)p_x] / p_n. \quad 2.1$$

When the weights remain unchanged, S can vary owing to variations in the conversation rate, alterations in protection, changes in one or two foreign prices, or shifts in domestic (nontraded) prices, which might occur due to a rise in the nominal wage level. If there is a nominal depreciation, meaning e increases, and with p_n , t , p_m , and p_x constant, S will rise. In this scenario, we can associate a change in S with a change in e , indicating a movement upward. in Figure 2.1 (positive switching) depicts a situation of actual depreciation or devaluation. An increase in p_n would lead to a decrease in S (negative switching). If p_n increases more than e (while keeping p_m , p_x , and t constant), it could be said that there has been a real appreciation. When p_m , p_x , and t remain unchanged, and only e and p_n fluctuate, it makes sense, according to traditional terminology, to apply the real exchange

rate concept, with positive switching occurring due to real depreciation (e rising more than p_n). However, an issue with this concept emerges when p_x , p_m , or t changes.

Expansionary fiscal policy is financed through borrowing, whether from domestic or foreign sources. Assuming protection (t) and world prices (p_x , p_m) remain unchanged, if the deficit is funded from domestic borrowing and there is existing excess unemployment capacity, the exchange rate must depreciate.

The further compelling scenario involves a deficit that is financed by foreign sources while the economy is initially operating at optimal level or full employment (internal balance). In this situation, the economy cannot sustain itself above Y_0 , even if it temporarily achieves that level; therefore, savings must decrease to guide the country back to C . This adjustment could occur through an increase in p_n , resulting in a real appreciation. To prevent a rise in domestic prices (temporary inflation), nominal appreciation is necessary. Naturally, the current account deteriorates. This adverse shift diminishes the profitability of export sectors (as well as any industries competing with imports). This results in the well-known Dutch Disease phenomenon. It arises from a government expenditure increase that is either funded by foreign sources or, at least for a time, drawn from reserves when the economy is initially in balance. Given this initial scenario, any inflow into the country, whether through loans or aid, would produce a similar outcome. Consequently, it follows that the increase in government spending may need to be linked with either a depreciation or an appreciation, depending on how much the production of domestically produced goods can be amplified and how the deficit can be covered through foreign loans or the use of reserves.

Imagine the state is currently at C, experiencing a current account deficit alongside internal balance. Reserves are depleting or obtaining loans from abroad is getting challenging. Assuming p_x , p_m , and t remain constant, if fiscal policy does not change, a devaluation could temporarily push the economy to point B (or even D), resulting in excess domestic demand. However, p_n would rise until S returned to point C. With the current fiscal policy in place, the appreciated exchange rate is accurate and not overvalued. To enhance the current account, a reversal of the fiscal expansion is necessary. If reversing the fiscal expansion is not an option, then devaluation would only lead to temporary inflation, making it unwise to recommend it without ensuring a corresponding fiscal contraction. Conversely, it would also be incorrect to suggest only fiscal contraction while keeping the exchange rate unchanged and p_n rigid downwards, as this would trigger a recession. This model demonstrates that the direction of causality and the real effect of public debt and misalignments cannot be known firsthand but should be approached empirically.

2.3 Empirical Literature Review.

2.3.1 Debt to GDP Ratio and Economic Growth.

Ogero (2021) looked at several developed and emerging economies for the period 1970-2007 and regressed per capita GDP growth counter to lagged values of the debt–GDP ratio. The study indicates an inverse correlation between debt borrowed initially and subsequent growth of the economy. The research findings indicated that a 10 in each hundred rise in the initial debt-to-GDP ratio results in a 0.2 percentage point reduction in real per capita GDP growth each year. Most advanced economies have a high debt-to-GDP ratio, but the terms of loans are more favourable. For example, Japan has a debt-to-GDP ratio of over 200 percent; however, most of it is domestically borrowed and owed to mutual funds. Also,

Japan is both a borrower and a lender, and therefore, net borrowing could be lower. The country is the highest external lender to the US government by value. The rates of borrowing are also quite low; the Japanese Short-term Treasury bills have at some point had a yield with negative interest rates. The US debt to GDP ratio is around 123 percent. The economy is, however, not struggling to service the debt due to the terms of borrowing and the strength of the economy. Most developing countries have lower debt-to-GDP ratios than developed countries, but the terms of debt seem to handicap the economies from growing. The emergence of bilateral loans and especially project finance bears conditions that are not favourable to nascent economies. There are also evident biases by the multilateral organizations in how they cost of borrowing by the developing countries compared to the developed countries. Credit rating agencies have not helped either.

2.3.2 Current Account Deficit.

Current account is part of what constitutes the balance of payment of a country. The current account is possible in an open economy where international trade is practiced. The account records trade values in both exports and imports, and it also measures how an economy is open. A high import plus export value as a share of GDP shows the economy is open to trading with other world economies. The reverse is also true.

The hypothesis on the stages of development is important in studying the balance of payment. Roldos (1996) countries that are developing face current account deficits because of capital requirements that are needed and mainly imported. They then move from lower and intermediate stages of development to advanced levels as the accumulated capital accelerates production. This happens as they start exporting capital goods and finished products to less developed countries.

2.3.3 Exchange Rate Misalignments and Public Debt.

The exchange rate is the value of local currency in terms of foreign currencies. It is important since when countries borrow externally to finance public expenditure or for other reasons, they usually are advanced loans denominated in other currencies, especially in the currency of the country they borrow from. However, most debts are dollar-denominated. In Kenya, the currency exchange rate is important since approximately 50 percent of the public debt is external and therefore denominated in currencies other than domestic.

Khor (1998), the Malaysian foreign debt spiked by 72 percent increase from RM 97.8 billion to slightly over 167 billion, from 1996 to the end of 1997, following the depreciation of the Malaysian Ringgit.

Cavallo et al. (2002) observe that the reason for rapid volatility in the exchange rate is the size of the foreign debt denominated in the foreign currency, sudden variations of capital flows, and a depreciating output of the economy. With an external debt of Ksh 5 Trillion, a devaluation of the local currency by 1% against the debt-denominated currencies on average increases public debt by Ksh 50 Billion. While an economy raises revenues in the domestic currency, external debt has to be serviced through the debt-denominated currencies and, therefore, is an important area of study and consideration.

2.3.4 Devaluation and Balance of Trade.

Based on a more recent study by the International Monetary Fund (IMF) in 2018, it was found that currency devaluation could lead to a rise in exports and a decline in imports, which could potentially improve the trade balances of developing countries. However, the study also noted that the benefits of devaluation are often short-lived and that there can be

negative consequences such as higher inflation and reduced long-run growth of the economy. Therefore, policymakers need to carefully consider the potential costs and benefits of devaluation before implementing it as a policy tool.

Freund (2005) widening of the current account deficit to over 5 percent of the GDP leads to a decline in output and further to the currency depreciating by 10 percent to 20 percent. There is therefore a need to sustain a level of current account balance that leads to sustainability.

Calderon et al (1999) current account deficit is made to deteriorate by real exchange rate depreciation, terms of trade variations, lower interest rates in the international market, among others. It has also been noticeable that countries with per capita GDP close to the industrial average have a lower current account deficit.

2.4 Overview of Literature

Debt overhang Theory, developed by Reinhart et al. (2012), postulates that the accumulation of public debt slows investments and economic growth. However, it does not show the causal relationship between fiscal deficit and public debt. The research delves into the relationship between fiscal deficit and public debt accumulation.

While the study by Del Monte & Pennacchio (2020) demonstrates how governments use budget surpluses and deficits to prevent drastic and sharp changes in the tax rate, the study does not explore how exchange rate misalignments affect public debt. It also does not seek to consider the domestic and foreign debt separately with the view of establishing how exchange rate misalignment affects either.

The absorption theory to balance of payment developed by Alexander (1952) holds that the BoP of a nation improves if production within the country is enhanced by more than what can be consumed by the domestic market. The theory emphasizes exports from excess production over consumption. The theory however does not explicitly show how the deficit in the balance of payment is related to the fiscal deficit. There was a need to relate the exchange rate levels and the twin deficit.

Ogero (2021) examined a number of advanced and developing economies from 1970 to 2007, analyzing the relationship between GDP per capita and proportion of debt to GDP. The findings indicated that a 10% rise in the initial debt–GDP ratio results in a reduction of 0.2% points in annual real per capita GDP growth each year. This study is important in establishing the direction of the link between accumulation of government debt and growth in the economy. This brought up the necessity for more study to establish the direction of relationship between fiscal deficit and public debt.

Rao et al. (1994) in their study suggest that external borrowing is required to cover the current account deficit. The theory relates the public debt and the current account. There exists a disconnect in understanding the evolving interaction between the fiscal deficit and public debt and what influences each one. Consequently, it was important to relate the fiscal deficit and the current account deficit to the exchange rate misalignment.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the methodology used to conduct the research. It looks at the research design, theoretical framework, model specification, variable definition, and operationalization, data types and sources, as well as data collection procedures and analysis.

3.2 Research Design

The study made use of a non-experimental research design and a longitudinal data set. The design was appropriate since it permits the analysis of duration and allows the measurement of variation in a variable from one period to another without the requirements of a controlled environment (Gujarati, 2003).

3.3 Theoretical Framework

Using the Purchasing Power Parity (PPP), the study considered the approach given by Qayyum, Khan, Khair-u-Zaman, and Saqib (2005). The approach considers the scenario of traded goods in that,

$$P_i = S_i P^*_i \quad 3.1$$

Where P_i is the price of a commodity i denoted in local currency, S_i is the nominal exchange rate stated in local currency per component of foreign currency. P^*_i is the price of good i articulated in foreign currency? The PPP perspective is based on the simplified assumption to having the same basket of commodities which have the same tastes across

countries. It helps in realizing price measures that are comparable to or Consumer Price Index (CPI). PPP assumes there are no price differences when comparing goods in different countries due to arbitrage; however, this assumption is sometimes negated due to the presence of high transaction costs. When aggregated over all goods, the law of one price yields the PPP equation given in 3.2

$$P_t = S_t P^*_t \quad 3.2$$

Where P_t is the price in the home state at time t , S_t is the nominal conversation rate and P^*_t is the price level in external currency in a given time.

Transportation costs, tariffs, and non-tariff barriers are assumed constant over time, represented by a constant term, β_0 in equation 3.3

$$P_t = \beta_0 (S_t P^*_t) \quad 3.3$$

After expressing equation 3.3 into a logarithmic function, equation 3.4 is attained, where lower-case letters represent logs

$$p_t = \beta_0 + s_t + p^*_t \quad 3.4$$

Equation 3.4 can be reorganized to give the nominal exchange rate (S_t) as the subject of the formula. This is expressed in Equation 3.5

$$s_t = -\beta_0 + p_t - p^*_t \quad 3.5$$

s_t , p_t and p^*_t are natural logarithms of the nominal exchange rate, domestic and foreign prices, respectively.

The current account (CA) measure is based on the elasticities approach using Krugman (1989) equation, gotten statistically from the dynamics of the current account balance. The

adjustments of the exchange rate based on the current account imbalance lead to an equilibrium in the exports and importations of commodities and offerings, as shown in equation 3.6

$$TB = P_t X(q_t, y_t^*) - S_t P_t^* M(q_t, y_t) \quad 3.6$$

Where TB is the current account balance, P_t and P_t^* are domestic and foreign price levels respectively, X and M are export and import volumes respectively, y_t and y_t^* are domestic and external earnings respectively and S_t is the nominal exchange rate, q_t is the real exchange rate as noted by equation 3.7

$$q_t = \frac{S_t P_t^*}{P_t} \quad 3.7$$

Dividing equation 3.6 through by P_t gives equation 3.8 which is the trade balance specified in terms of domestic output.

$$B = X(q_t, y_t^*) - q_t M(q_t, y_t) \quad 3.8$$

The elasticity of the rates of exchange regarding the export and import volumes leads to the adjustment mechanism that helps attain balance in the economy both internally and externally.

3.4 Model Specification

The foremost purpose of the research was to establish the active connection between public debt and current account deficit in Kenya. Borrowing from equation 3.8 and building on the variables identified through literature review, to the relationship between public debt and current account deficit, the overall form of the model took the form specified in Equation 3.9

$$\text{CAB} = f(\text{CI}, \text{OPENNESS}, \text{PBD}, \text{ERM}, \text{GROWTH}) \quad 3.9$$

Where CAB is the Current Account Balance, CI is net Capital Inflows, ERM is the exchange rate misalignment, OPENNESS is proxied by exports plus imports, PBD is Public Budget Deficit, and GROWTH is Economic Growth Rate. The study estimated equation 3.9 in VAR modelling technique. To avoid some of data data-related problems like stationarity and cointegration, which is based on augmented VAR modelling, VECM was used. VECM approach fits a standard VAR model on levels of the variables and consequently, makes allowance for the long-run statistics frequently overlooked in systems by first differencing (Clarke & Mirza, 2006).

To establish the dynamic association between the Public Budget and the Exchange Amount, equation 3.5 was used and expressed as in equation 3.10

$$\text{RER} = f(\text{TOT}, \text{CI}, \text{OPENNESS}, \text{PBD}, \text{GROWTH}) \quad 3.10$$

Where RER is the observed Real Exchange Rate, TOT is Terms of Trade, CI is net Capital Inflows, OPENNESS measures the severity of trade restrictions and capital controls, PBD is Public Budget Deficit, and GROWTH is Economic Growth Rate. Equally, equation 3.10 was estimated in Augmented VAR by use of VECM to assess the granger interconnection. Impulse response functions were applied to track out the time shocks on the dependent variables.

3.5 Definition and measurement of variables

Table 3.1 Definition and Measurement of Variables

Variables	Definition	Measurement
Current Account Balance (CAB)	This measures the country's net international transactions and economic activity for each year	Difference between exportations and importations as a proportion of GDP
Economic Growth Rate	It is the annual rate at which a country's real gross domestic product (GDP) increases between two years	Percentage two periods real GDP
Real Exchange Rate	The nominal exchange rate multiplied by the ratio of prices between the two nations	The proportion of the price level of goods and services in US in terms of the domestic prices
Exchange Rate Misalignment	This is the rate of exchange rate deviation from the actual rate	$ERM = \left(\frac{Actual\ Rate - Real\ rate}{Real\ Rate} \right) * 100$
Public Budget Deficit	Total amount of securities issued by the government at any given year	Ratio of deficit to GDP

3.6 Diagnostic Test

Several empirical diagnostic tests were engaged in the study. They include the stability test, unit root test, and cointegration test. To investigate or identify non-stationarity, the study made use of unit root tests to prevent spurious results. A series is stationary distributed when the mean and variance of a stochastic process stay constant throughout the period considered. Non-stationary series are those in which the mean and variance of the series

vary throughout a period. A stationary series will be utilized in this study because it will allow a behavior examination of the series at a certain moment in time and then extrapolate the results to other periods. The unit-root test will be carried out using the Augmented Dickey-Fuller unit-root method. When it is determined that variables are not stationary, differencing is employed until stationarity is achieved.

3.7 Data Type and Source

The research period was yearly in a row from 1994 to 2023, for all variables. Given the quantity of coefficients assessed, the quantity of data points assessed was acceptable to provide consistent estimates. The data was time series data, and the research relied on secondary data sources such as the Kenya National Bureau of Statistics, the National Treasury Annual Reports, the Central Bank of Kenya reports, the International Monetary Fund Yearbook, and the International Financial Statistics (IFS).

3.8 Data Analysis

The study aim was to examine the relationship amongst public debt and current account deficit, and also between public debt and exchange rate misalignments in Kenya. Both objectives were achieved through the use of Vector Auto Regressive (VAR) model analysis using equations 3.9 and 3.10. The study used OLS data estimation technique for estimation. To analyse the dynamic relationship, the study carried out a causality and impulse response test. This was accomplished by doing a modified form of the Granger causality test using VECM. The technique is effective notwithstanding of whether a series is integrated of order zero, integrated of order one, integrated of order two, non-cointegrated or cointegrated of any arbitrary order. The import of the VECM technique is that it evades the possible prejudice connected with unit root and cointegration tests (Rambaldi & Doran, 1996).

CHAPTER FOUR

EMPIRICAL FINDINGS

4.1 Introduction to the Results

This chapter shows the outcomes of the research and is segmented into sections consisting of summary statistics, results of diagnostic tests, and regression results of the estimation.

4.2 Summary Statistics

The summary figures in terms of the mean, median, maximum, minimum, and standard deviation of the variables used in the research study are shown in Table 4.1.

Table 4.1 Descriptive Statistics

	GDP Growth Rate	External Debt	Exchange Rate Misalignment	Total Debt	Current Account Deficit	Budget Deficit
Mean	3.819125	31.33796	18.29897	40.46263	10.01596	3.576752
Median	4.250500	29.78776	18.75948	38.01217	10.31025	3.087490
Maximum	8.058000	79.75348	59.19493	73.26204	18.93436	8.574517
Minimum	-1.080000	16.46726	-0.300000	21.27948	3.128211	0.000000
Std. Dev.	2.295805	12.70558	13.69286	13.50465	4.466447	2.843944
Skewness	-0.425841	1.454883	0.657456	0.804324	0.224551	0.274767
Kurtosis	2.412846	6.401900	3.141631	3.002815	1.979228	1.671924
Observations	40	40	40	40	40	40

Source: Author's Computations

Kenya's GDP Growth Rate over the period ranged between -1 to 8 percent and averaged 3.8 percent with a standard deviation of 2.3 out of a hundred. During this period, external debts averaged 31 percent of GDP from 1994 to 2023, with a record high of 79.8 percent and a minimum of 16.5 percent of GDP.

The current account deficit indicates that the country experienced trade deficits, which normally create instability in the exchange rate. The trend indicates a trade deficit with a mean and a mode of 10 percent of GDP. Kenya's exchange rate misalignment had a mean of 18.3 and a median of 18.8 percent, with a maximum of 59.2, a minimum of -0.3, and a standard deviation of 13.7.

The exchange rate misalignment shows an overvaluation of the Kenya currency, averaging 18 percent. This shows a nonconformity of the real exchange rate from its long-run balance level. On average, therefore, the exchange rate is often overvalued. Misalignment in Kenya could be associated with exchange rate interventions by the Central Bank of Kenya. Over this period, Kenya's exchange rate was misaligned with fluctuating degrees. This level of exchange rate misalignment is in consonance with Kiptui and Ndirangu (2015), who found that Kenya's exchange rate displayed both periods of overvaluation and undervaluation between 2000 and 2014. The study by Kiptui and Ndirangu (2015) shows that in most of the period, the exchange rate misalignment deviated within 10 percent of its equilibrium level.

Budget deficit ranged from 0 to 8.6 percent of GDP with a deviation of 2.8 from the mean, showing moderate variation and skewness of 0.27, indicating slightly positively skewed. The average budget deficit was 3.6 for the period 1994 and 2023. Kenya has run an average budget deficit of about 3.6 percent of GDP, indicating a moderate and persistent fiscal gap

over the years. The relatively low minimum suggests periods of fiscal balance, possibly during donor-supported fiscal consolidation efforts or windfalls. The maximum deficit of 8.57 percent reflects years of significant fiscal stress, often tied to election years, public infrastructure investments, or shocks like COVID-19 in the year 2020. The positive skewness means a few years had much higher-than-average deficits, pulling the distribution rightward. The deficit data shows moderate variability but is not extremely volatile over the long term.

External Debt as a percentage of GDP indicates a mean of 31.3 percent, a lowest of 16.47 percent, and an extreme of 79.75 percent. The standard deviation is 12.71, indicating high variations. Kenya's average external debt level, with a high standard deviation, signals significant fiscal deterioration in certain years. The strong positive skew indicates that external debt was exceptionally high, likely due to major external borrowing episodes (e.g., Eurobond issuance starting 2014, and post-COVID recovery loans). High kurtosis confirms the presence of extreme values, suggesting fiscal vulnerability to shocks and international borrowing fluctuations.

Kenya's total debt burden has averaged about 40 percent of GDP over the past 30 years. The trend is showing an increasing trend in recent years. The maximum value of over 73 percent of GDP indicates a sharp rise in public debt, mostly after 2013, due to infrastructure spending and the growing domestic debt market. Moderate skewness and normal kurtosis suggest that while the debt levels have risen, they are not driven by a few extreme years alone, but there is a gradual upward trend in debt accumulation. The wide standard deviation of 13.5 percent supports the idea that Kenya has undergone significant structural shifts in fiscal policy and debt strategy.

These descriptive statistics show numerous breaches that necessitate additional investigation, such as disaggregated government spending, i.e., recurrent and development, the definite input of trade deficit in real operative exchange rate volatility, the consequence of real effective exchange rate, and the actual situation of fiscal position in the face of mounting external debt and accelerated import. Section 4.3 outlines the diagnostic tests of the variables used.

4.3 Diagnostic Tests

4.3.1 Stationarity Tests

The foremost motive for determining stationarity or non-stationarity of data beforehand running regression analysis is to eradicate the risk of getting substantial regression results from unconnected data if a non-stationary data series is applied in regression analysis. Non-stationary variables in regression models may produce spurious results such that the *R*-square values and *t*-statistics no longer follow the normal distributions and can be wildly exaggerated. That is, if non-stationary time series are used in a regression model, the results may indicate a significant relationship where none exists. The study utilized time series data, and therefore, the need to establish the stationarity or non-stationarity of the data. The Kwiatkowski, Phillips, Schmidt, and Shin (KPSS) was used since it eliminates possible low power against stationary near unit root processes associated with ADF. KPSS, therefore complements the ADF test of stationarity. The results of the diagnostic tests are annexed in Table A2, and the results' summary in Table 4.2

Table 4.2: Stationarity Tests

Variable	Test	Conclusion
Total Debt	ADF	Stationary at 1st Difference
	KFSS	Stationary at 1st Difference
Current Account Deficit	ADF	Stationary at 1st Difference
	KFSS	Stationary at 1st Difference
GDP Growth Rate	ADF	Stationary at Levels
	KFSS	Stationary at Levels
Exchange Rate Misalignment	ADF	Stationary at 1st Difference
	KFSS	Stationary at 1st Difference
External Debt (% GDP)	ADF	Stationary at 1st Difference
	KFSS	Stationary at Levels
Budget Deficit (% GDP)	ADF	Stationary at 1st Difference
	KFSS	Stationary at Levels

The outcomes demonstrate that some variables were stationary at level while some were stationary at the first difference. Total debts, Current account Deficit, Exchange Rate Misalignment, and Budget Deficit were stationary at first difference, while GDP Growth Rate was stationary at level. From Table 4.2, the variables were integrated of order one $I(1)$ and integrated of order zero $I(0)$, and none was integrated of order two $I(2)$. This complements the use of Vector Error Correction Model (VECM) as the favoured modelling method because it does not need variables to be integrated of the similar order.

4.3.2 Cointegration Test Results

Based on Engel and Granger (1987), cointegration means that, although distinct time series can be nonstationary, a linear amalgamation of two or additional series can be stationary. That is, a long-run relationship exists among non-stationary time series. Cointegration tests effectively test the stationarity of the residuals such that two variables are said to be cointegrated if the residuals are stationary, and are not cointegrated if the residuals are nonstationary, and any regression connection amongst the two variables is said to be spurious. ARDL bounds test was seen as the most suitable technique to test for

cointegration variables were integrated of order zero $I(0)$ and integrated of order one $I(1)$. Pesaran *et al.* (2001), cointegration exists when the F statistic surpasses the higher bound. Nevertheless, when the F statistic is below the lower bound, then there is no cointegration. In the case where the F-statistics lie between the two limits, then the test is inconclusive. The bounds test results are abridged in Table A2, and the computed F-statistics were compared with the critical value bound at the optimal lags (k) according to Pesaran *et al.* (2001). It was recognised that cointegration existed in all the aims since the F-statistics exceeded the upper bound, representing a long-run connection among the variables.

Diagnostic tests were conducted to establish the suitability of the VECM models, whose estimation results are given in Table A2. The estimated R-squared was 96 percent. The estimated F statistics were 26 and a log-likelihood of 47.28, implying joint significance of all independent variables used in the models. A CUSUM test was conducted to determine the stability of the model parameters. The results are presented in Figure A3. The line for the cumulative sum is within the critical lines, and therefore, it was concluded that the parameters were stable.

4.4 Relationship Between Current Account Deficit and Public Debt

To examine the relationship between the deficit in current accounts and public debt in Kenya, the study employed the use of Vector Autoregressive (VAR) techniques. The results from VAR model capture the feedback from multiple macroeconomic variables. The results from the estimations are given in table A3 and a summary of the same are shown in table 4.3

Table 4.3: VAR Regression Results**A. Dependent variable: Current Account Deficit**

Variables	Coefficients	Degree of Freedom	Probability
Budget Deficit	8.165440	5	0.0474
External Debt	9.047317	5	0.1072
Exchange Rate Misalignments	26.48293	5	0.0001
All	62.19798	20	0.0000

B. Dependent variable: Exchange Rate Misalignments

Variables	Coefficients	Degree of Freedom	Probability
Current Account Deficit	42.81585	5	0.0000
Budget Deficit	11.14048	5	0.0487
External Debt	20.15457	5	0.0012
All	89.45841	20	0.0000

C. Dependent variable: External Debt

Variables	Coefficients	Degree of Freedom	Probability
Budget Deficit	66.37085	3	0.0000
Current Account Deficit	12.26772	3	0.0065
Exchange Rate Misalignments	9.171320	3	0.0271
All	83.45873	9	0.0000

The objective is to understand how the variables of concern influence each other dynamically over time, using chi-square statistics for Granger causality-style inference. The results show that the Budget Deficit significantly causes the Current Account Deficit. However, the effect of current account deficit on budget deficit is not statistically significant, suggesting one-way causality. This suggests that fiscal imbalances (i.e., budget deficits) have a significant positive influence on the current account deficit. This aligns with the twin deficit hypothesis, where a rising budget deficit tends to worsen the external account. However, External Debt has no substantial effect on Current Account Deficit.

From the Impulse Response Function (IRF) derived from a Vector Autoregressive (VAR) model, Figure 4.1 presents the response of Current Account Deficit to shocks based on Cholesky decomposition (1 S.D. shock ± 2 S.E. bands) from the Budget Deficit

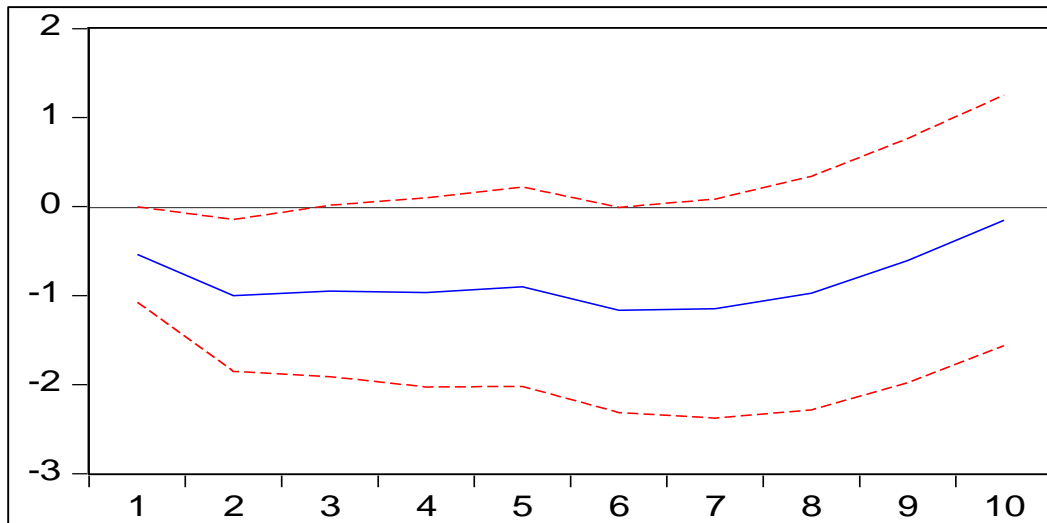


Figure 4.1: Responses of the Current Account Deficit on Fiscal Budget Deficit

The IRF tracks how a shock to the Budget Deficit affects the Current Account Deficit over time. The lines on the graph typically show. The estimated response of the dependent variable to a shock, while the dashed lines indicate confidence intervals (at 95%). If the blue line lies outside this range, the response is statistically significant. The impulse (shock) occurs at time 0. A shock on the budget deficit causes a rise in the current account deficit. The response rises sharply and consistently over time. The implication is that the rise in fiscal deficit causes a negative reaction to the current account, and the effect remains for about 10 years and then dissipates.

Though the coefficient of External Debt is positive, it is not statistically significant at the 5 percent level. This implies that external debt has no significant effect on the current account deficit. However, the current account deficit positively impacts external debt. This

is shown in Table 4.3 C. This also indicates a one-way causality. Figure 4.2 shows the impact response function of external debt in response to the current account deficit

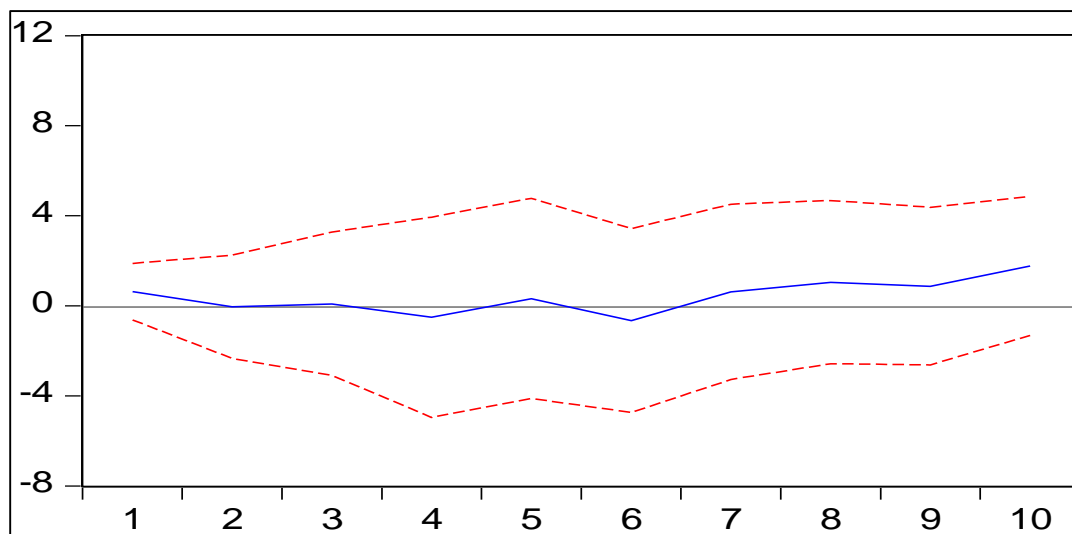


Figure 4.2: Impulse Responses of the External Debt on Current Account Deficit

The impulse response function (IRF) graph shows the response of external debt to a shock in the current account deficit (CAD). A shock in the current account deficit does not have an immediate significant impact on external debt. After 4 to 6 years, the response fluctuates but remains small, indicating no strong or clear impact. External debt rose slightly but is still not large. Later Periods (After 6 years), a gradual increase in response is observed. This suggests a delayed positive response of external debt to current account deficit shocks. A shock (increase) in the current account deficit -implying a greater need for external financing - tends to increase external debt levels over time, indicating an effect mainly from repayment effects. The upward trend in later periods implies that sustained or large current shocks could eventually drive up external debt. A persistent current account deficit leads to a build-up in external debt over time. While short-term imbalances might not immediately cause debt escalation, failure to address CAD structurally could pose long-term debt sustainability risks.

4.5 Relationship Between Public Budget Deficit and Exchange Rate Misalignment

From the VAR regression results given in Table 4.3, the budget deficit coefficient with respect to exchange rate misalignment is highly significant, as indicated in Table 4.3 B. This implies that public budget deficit positively impacts exchange rate misalignments. With a fiscal deficit increase, the exchange rate gets overvalued. However, exchange rate misalignments have no significant impact on the fiscal deficit. This indicates that there is no two-way causality. There exists a one-way causality. Whereas a fiscal deficit will lead to undervaluation, overvaluation may not lead to a decline in the fiscal deficit. Nevertheless, a surge in fiscal deficit leads to a hike in the exchange rate above its equilibrium. This means that a rise in fiscal deficit leads to domestic currency depreciation. Figure 4.3 gives a response of exchange rate misalignments to the budget deficit

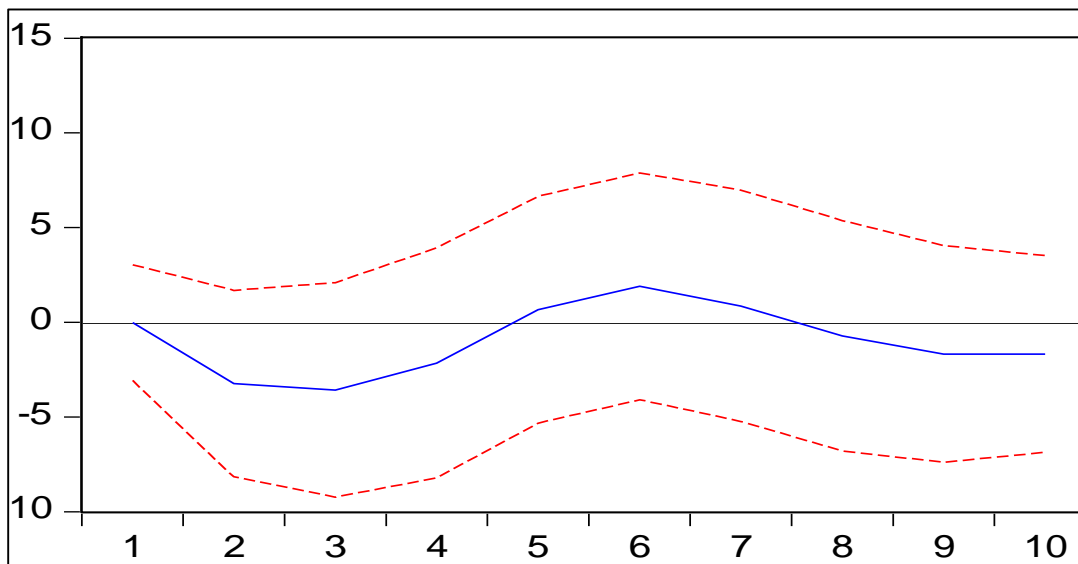


Figure 4.3: Responses of the Exchange Rate Misalignment to the Budget Deficit

The figure represents an IRF from a Vector Autoregressive (VAR) model, showing the response of Exchange Rate Misalignment (ERM) to a shock in the Budget Deficit in the

Kenyan context. The exchange rate misalignment initially falls after the budget deficit shock, showing a negative response. This may imply that a rising budget deficit causes the exchange rate to initially appreciate or become undervalued (negative misalignment), possibly due to short-term capital inflows or expectations. Over time, the budget deficit shock begins to widen the misalignment causing depreciation or overvaluation due to inflationary pressures. In the long-term, the reaction starts to decline gradually, indicating the misalignment dissipates slowly. The response converges towards zero, implying the shock is not permanent, consistent with the properties of a stationary VAR process.

Exchange Rate Misalignments are also caused by the current account deficit. This suggests that feedback from the current account imbalance causes exchange rate misalignment as a result of pressure on foreign exchange reserves or balance of payments instability. The Impulse Response Function (IRF) graph is illustrated on Figure 4.4, showing the impact of current account deficit shocks on the exchange rate misalignment.

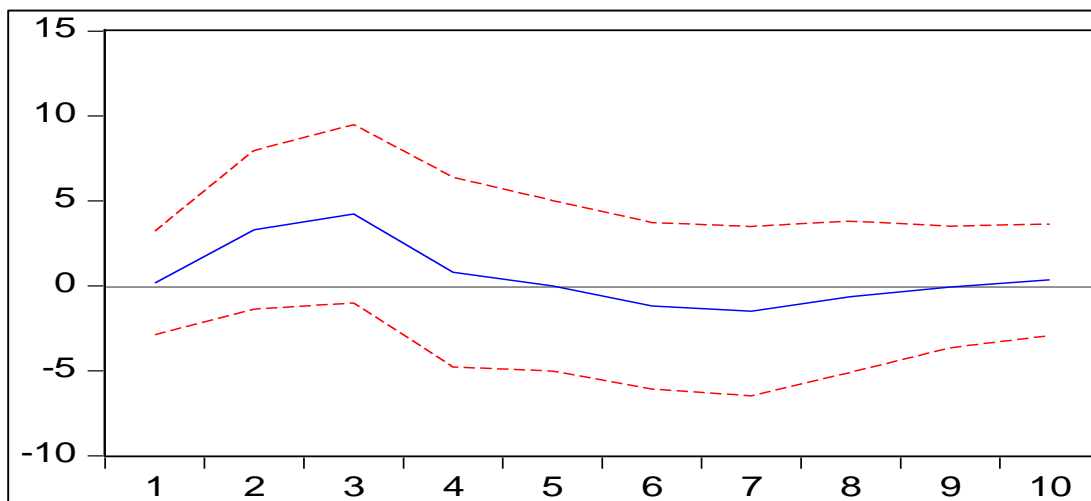


Figure 4.4: Responses of the Exchange Rate Misalignment to the Current Account Deficit

A shock increase in the current account deficit leads to a rise in exchange rate misalignment (divergence from equilibrium). In the short to mid-term (2 – 5 years), the exchange rate misalignment response remains positive, fluctuates slightly, but stays elevated. This means the current account deficit shock has a sustained effect, likely due to external imbalances pressuring the exchange rate system. The size of the impact starts to weaken, suggesting growing uncertainty around the effect. In the long term (After 6 years), the response gradually declines and approaches zero, indicating that the effect of the current account deficit shock dissipates over time. A shock to the current account deficit (i.e., worsening of CAD) causes the exchange rate to become more misaligned, depreciating beyond its equilibrium level or overshooting due to market pressures. This may occur because a larger CAD implies a higher demand for foreign currency to finance imports or debt. This puts downward pressure on the local currency, leading to misalignment from its long-run equilibrium value. Over time, market forces (e.g., capital inflows, policy adjustments, or improved trade balance) help in correcting the misalignment. This means that persistent or large current account deficits can lead to currency instability and exchange rate misalignments.

In addition to the budget deficit significantly impacting the exchange rate misalignments, it also positively impacts on current account deficit and foreign debt. The results imply that the Budget Deficit is a determinant of current account deficit and foreign debt. Government borrowing needs directly fuels debt accumulation. With the current account deficit coefficient being statistically significant in Table 4.3 A and B, it indicates that it impacts external debt and exchange rate misalignments. Misalignments may raise the cost of debt servicing or lead to capital flight, necessitating additional borrowing. The Impulse

Response Function (IRF) graph is illustrated in Figure 4.5, showing the impact of exchange rate misalignment shocks on the current account deficit over time.

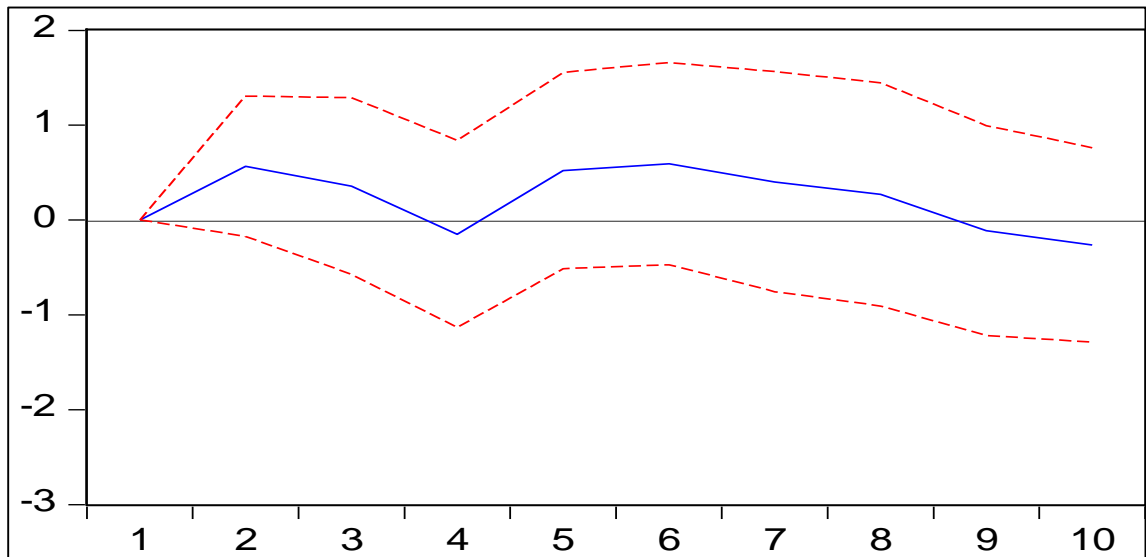


Figure 4.5: Responses of the Current Account Deficit on Exchange Rate Misalignment

With a shock in exchange rate misalignment, the intermediate period (2 years to 5 years) shows that the response peaks then begin to taper off gradually. The current account deficit still worsens, but is less strongly than immediately after the shock. Later Periods (6 years and beyond) suggest the impact fades out over time, and the long-run effect becomes negligible. The current account begins to stabilize or revert to baseline. A shock in exchange rate misalignment (e.g., overvaluation of the currency) initially worsens the current account deficit, possibly by making exports less competitive and encouraging imports due to the artificially stronger currency. However, this impact diminishes over time, possibly due to market adjustments. Exchange rate misalignments can destabilize the current account in the short run, increasing external vulnerabilities.

The three variables are dynamically interlinked, with bidirectional feedback loops. Current account deficit influences exchange rate misalignment and budget deficit, showing a complex macroeconomic adjustment mechanism. This means that persistent budget deficits fuel both external imbalances and public debt. Misalignments not only worsen the current account but are themselves affected by fiscal and external indicators. Rising external debt is influenced by fiscal and external sector pressures, necessitating coordinated macroeconomic management. The link between budget deficit and current account deficit supports the theory that domestic fiscal imbalances translate into external deficits.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND POLICY IMPLICATIONS

5.1 Introduction

In this chapter, the summary, conclusion, and suggested policies from the study results are presented. The study's suggested areas for additional exploration are also presented.

5.2 Summary

The research endeavoured to explore the dynamic relationship between the public debt deficit, exchange rate misalignments, and current account deficit in Kenya. The specific objectives of the were to investigate the relationship between Kenya's deficit in current accounts along with public debt; furthermore, to ascertain the link between public debt and exchange rate misalignment. To achieve the objectives VECM model was estimated. Based on the estimation results, the Budget Deficit is a strong determinant of Exchange Rate Misalignments, Current Account Deficit, and External Debt. In addition, the three variables are dynamically interlinked, with bidirectional feedback loops. Current Account Deficit both influences and is influenced by Exchange Rate Misalignments and Budget Deficit, showing a complex macroeconomic adjustment mechanism. This means that persistent budget deficits fuel both external imbalances and public debt. Misalignments not only worsen the current account but are themselves affected by fiscal and external indicators. Rising external debt is influenced by fiscal and external sector pressures, necessitating coordinated macroeconomic management. The link between budget deficit and Current Account Deficit supports the theory that domestic fiscal imbalances translate into external deficits.

5.3 Conclusions

The VECM analysis reveals statistically significant and economically relevant relationships between the budget deficit and the key variables in the macroeconomy. The variables include exchange rate misalignments, external debt, and the current account deficit. These relationships imply that persistent deficits have been financed through debt, increasing Kenya's public debt burden. The sharp rise in debt in recent years raises sustainability concerns, especially with high debt service costs and exchange rate risk. Budget Deficit results in Exchange Rate Misalignments, Current Account Deficit, and External Debt accumulation. Current Account Deficit also influences and is influenced by Exchange Rate Misalignments, showing a complex macroeconomic adjustment mechanism. In addition, the current account deficit impacts the GDP growth rate negatively. This means that persistent budget deficits fuel both external imbalances and public debt. Misalignments not only worsen the current account but are themselves affected by fiscal and external indicators. Rising external debt is influenced by fiscal pressures.

5.4 Policy Implications

The results emphasize the interconnectedness of fiscal, external, and monetary variables, underscoring the need for a cohesive macroeconomic strategy. Managing fiscal deficits, stabilizing the exchange rate, and reducing external borrowing risks will be crucial for improving Kenya's external balance and ensuring long-term economic stability.

Budget Deficit leads to Exchange Rate Misalignment. In Kenya, fiscal deficits often require external borrowing, which can lead to short-term exchange rate stability but long-term pressure on the shilling, especially if productivity and exports don't improve in parallel. There is a need for fiscal consolidation, better expenditure efficiency, and revenue

enhancement to reduce deficit dependency and maintain macroeconomic stability. Fiscal sustainability is at risk if budget deficits are not managed as they cause immediate spikes in exchange rate misalignments, current account deficit, and external debt. There is a need for long-term deficit control measures, such as improving revenue mobilization or cutting non-essential expenditures.

Budget deficits significantly drive both the current account deficit and external debt levels. The government should prioritize fiscal consolidation by improving domestic revenue mobilization and rationalizing public expenditures. Limit reliance on external borrowing to finance recurrent spending, especially subsidies and wage bills.

Exchange rate misalignments have a significant and strong influence on the current account deficit and external debt. Maintain a market-aligned, flexible exchange rate regime to allow for automatic adjustment of external shocks. Strengthen foreign exchange reserve buffers and monitor capital flows to manage volatility. Avoid artificially propping up of the currency, which could erode competitiveness and worsen trade deficits.

5.5 Areas for Further Research

This study used time series data, even though panel data would have been more insightful in the study on the fiscal deficit behaviour across the few countries Kenya trades with. Panel data would have captured the dynamics involved in the growth of debt across several years. Panel data was, however, not available at the time of this study. Further areas of study could focus on:

- i) Effect of supply-side constraints on Kenya's consumption.
- ii) Effect of other determinants of the exchange rate.

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APPENDICES

Table A1: Study Data

YE R	GDP	Debt (%GDP)	CAD (%GDP)	GDP Growth Rate	ER M	External Debt (%GDP)	Budget Deficit (%GDP)
1984	168.7	26.2	3.8	1.6	2.4	32.85	2.55
1985	191.4	23.3	4.0	4.1	0.5	35.58	3.05
1986	224.4	24.5	3.1	7.0	9.0	32.91	2.98
1987	249.5	24.0	5.1	5.8	10.0	38.28	2.27
1988	279.1	27.6	5.8	6.1	5.0	38.72	1.97
1989	321.1	24.4	7.6	4.6	6.0	39.62	2.39
1990	370.9	25.7	7.0	4.1	9.5	45.82	3.28
1991	421.3	28.7	5.2	1.3	15.0	49.67	6.56
1992	485.3	34.4	5.0	-1.1	-0.1	51.48	8.28
1993	607.8	52.5	4.5	-0.1	-0.3	79.75	8.57
1994	703.2	44.8	4.2	2.5	13.0	45.43	4.14
1995	818.0	33.8	7.1	4.3	21.0	49.99	0.23
1996	1031.7	25.9	4.9	4.5	29.0	36.34	0.49
1997	1153.8	21.3	6.1	0.4	18.0	35.12	0.91
1998	1245.4	38.5	6.7	3.0	8.0	33.92	0.00
1999	1307.7	38.4	7.0	2.2	5.0	23.86	0.00
2000	1386.8	43.1	9.2	0.3	2.8	29.23	0.00
2001	1468.9	41.3	11.5	4.0	4.0	26.16	0.53
2002	1498.6	42.0	8.4	0.5	5.5	24.67	1.29
2003	1624.4	43.8	8.9	2.9	8.5	25.25	0.73
2004	1804.4	40.8	11.4	4.6	4.8	24.38	0.00
2005	1987.7	37.4	11.7	5.7	24.3	20.56	0.19
2006	2139.1	37.1	13.7	5.9	39.6	19.06	0.43
2007	2471.1	34.2	13.9	6.9	59.2	16.47	0.95
2008	2840.3	34.3	15.0	0.2	33.2	18.19	1.95
2009	3275.6	36.0	13.5	3.3	37.0	17.98	3.12
2010	3597.6	36.7	14.9	8.1	23.8	16.68	3.67
2011	4162.5	35.7	18.9	5.1	11.8	16.47	3.64
2012	4767.2	37.6	18.0	4.6	28.6	17.24	5.29
2013	5311.3	39.8	17.2	3.8	29.8	17.37	5.25
2014	6003.8	41.3	18.0	5.0	31.8	19.50	5.75
2015	6884.3	45.8	14.5	5.0	20.1	23.46	6.68
2016	7594.1	50.4	11.3	4.2	21.6	24.16	7.47
2017	8483.4	53.9	13.4	3.8	24.6	27.69	7.40
2018	9340.3	56.4	12.3	5.7	31.8	29.16	6.94
2019	10237. 7	59.1	11.8	5.1	38.8	30.35	7.42

2020	10714. 1	68.0	9.3	-0.3	32.9	35.20	8.13
2021	12027. 7	68.2	11.4	7.6	25.7	34.71	7.20
2022	13368. 3	68.4	12.1	4.9	19.5	34.96	6.11
2023	15137. 2	73.3	13.0	5.6	21.0	35.30	5.25

Table A.2: Unit Root Tests Output

Null Hypothesis: D(BUDGET_DEFICIT__GDP_) has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag = 9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.648349	0.0095
Test critical values:		
1% level	-3.626784	
5% level	-2.945842	
10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(BUDGET_DEFICIT__GDP_) is stationary

Exogenous: Constant

Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

	LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.083259
Asymptotic critical values*:	
1% level	0.739000
5% level	0.463000
10% level	0.347000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Null Hypothesis: D(CAD__GDP_) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.700751	0.0000
Test critical values:		
1% level	-3.615588	
5% level	-2.941145	
10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(CAD__GDP_) is stationary

Exogenous: Constant

Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

	LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.091257
Asymptotic critical values*:	
1% level	0.739000
5% level	0.463000
10% level	0.347000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Null Hypothesis: D(DEBT ___ OF _GDP _) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.383523	0.0001
Test critical values: 1% level	-3.615588	
5% level	-2.941145	
10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(DEBT ___ OF _GDP _) is stationary
 Exogenous: Constant
 Bandwidth: 10 (Newey-West automatic) using Bartlett kernel

	LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.240370
Asymptotic critical values*: 1% level	0.739000
5% level	0.463000
10% level	0.347000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Null Hypothesis: D(EX_R __ MIS) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.917369	0.0000
Test critical values: 1% level	-3.615588	
5% level	-2.941145	
10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(EX_R __ MIS) is stationary
 Exogenous: Constant
 Bandwidth: 14 (Newey-West automatic) using Bartlett kernel

	LM-Stat.
--	----------

Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.193074
Asymptotic critical values*:	
1% level	0.739000
5% level	0.463000
10% level	0.347000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Null Hypothesis: D(EXT_DEBT__GDP_) has a unit root
 Exogenous: Constant
 Lag Length: 5 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.202512	0.2092
Test critical values:		
1% level	-3.646342	
5% level	-2.954021	
10% level	-2.615817	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: EXT_DEBT__GDP_ is stationary
 Exogenous: Constant
 Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

	LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.337296
Asymptotic critical values*:	
1% level	0.739000
5% level	0.463000
10% level	0.347000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Null Hypothesis: D(GDP_G__RATE) has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.891445	0.0000
Test critical values:		
1% level	-3.621023	
5% level	-2.943427	
10% level	-2.610263	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: GDP_G__RATE is stationary
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

	LM-Stat.
Kwiatkowski-Phillips-Schmidt-Shin test statistic	0.298958
Asymptotic critical values*:	
1% level	0.739000
5% level	0.463000
10% level	0.347000

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Table A.3: Vector Autoregression Estimates

Date: 03/23/25 Time: 12:00
Sample (adjusted): 1989 2023
Included observations: 35 after adjustments
Standard errors in () & t-statistics in []

	BUDGET_D EFICIT__G DP	CAD__GDP	EXT_DEBT __GDP	ERM
BUDGET_DEFICIT_ _GDP(-1)	1.555819 (0.21691) [7.17270]	-0.486127 (0.41957) [-1.15862]	6.593166 (0.95077) [6.93459]	-3.091996 (2.08097) [-1.48584]
BUDGET_DEFICIT_ _GDP(-2)	-0.888338 (0.30052) [-2.95598]	0.583547 (0.58131) [1.00384]	-0.947089 (1.31727) [-0.71898]	3.563014 (2.88316) [1.23580]
BUDGET_DEFICIT_ _GDP(-3)	-0.122326 (0.29438) [-0.41553]	-0.203953 (0.56944) [-0.35816]	-1.718464 (1.29036) [-1.33177]	-4.754301 (2.82426) [-1.68338]
CAD__GDP(-1)	0.155134 (0.12606) [1.23064]	0.254327 (0.24384) [1.04300]	0.743638 (0.55255) [1.34583]	1.877782 (1.20939) [1.55267]
CAD__GDP(-2)	-0.004372 (0.14049) [-0.03112]	-0.083962 (0.27175) [-0.30897]	-0.702492 (0.61579) [-1.14080]	0.383799 (1.34780) [0.28476]
CAD__GDP(-3)	-0.122653 (0.12997) [-0.94374]	0.168235 (0.25140) [0.66920]	-1.358518 (0.56967) [-2.38474]	-1.847275 (1.24686) [-1.48154]
EXT_DEBT__GDP(- 1)	-0.062091 (0.04319) [-1.43772]	-0.035832 (0.08354) [-0.42893]	-0.866282 (0.18930) [-4.57623]	0.366911 (0.41433) [0.88555]
EXT_DEBT__GDP(- 2)	0.033171 (0.03964) [0.83687]	5.13E-05 (0.07667) [0.00067]	0.365954 (0.17374) [2.10635]	0.239460 (0.38027) [0.62972]
EXT_DEBT__GDP(- 3)	0.084563 (0.04674) [1.80918]	-0.057943 (0.09041) [-0.64087]	0.804243 (0.20488) [3.92547]	0.499997 (0.44842) [1.11501]
ERM(-1)	-0.024241 (0.02050)	0.055166 (0.03964)	-0.188457 (0.08984)	0.582428 (0.19663)

ERM(-2)	[-1.18278] 0.028162 (0.02515) [1.11989]	[1.39149] -0.000794 (0.04864) [-0.01632]	[-2.09778] 0.034445 (0.11023) [0.31250]	[2.96207] 0.074998 (0.24126) [0.31086]
ERM(-3)	-0.030571 (0.02106) [-1.45132]	0.021091 (0.04074) [0.51764]	-0.098868 (0.09233) [-1.07082]	-0.242654 (0.20208) [-1.20076]
C	1.106978 (2.64121) [0.41912]	9.349029 (5.10899) [1.82992]	40.87531 (11.5771) [3.53071]	-24.05268 (25.3392) [-0.94923]
BUDGET_DEFICIT_ _GDP(-5)	0.365809 (0.14327) [2.55321]	-0.251001 (0.27714) [-0.90568]	0.580856 (0.62801) [0.92492]	1.437714 (1.37454) [1.04596]
CAD__GDP(-5)	-0.005283 (0.11625) [-0.04545]	0.007116 (0.22486) [0.03165]	-0.803513 (0.50954) [-1.57695]	2.934003 (1.11524) [2.63083]
EXT_DEBT__GDP(- 5)	-0.103117 (0.03909) [-2.63776]	-0.008698 (0.07562) [-0.11503]	-0.291718 (0.17135) [-1.70244]	-0.588776 (0.37505) [-1.56987]
ERM(-5)	0.003284 (0.02040) [0.16100]	0.088834 (0.03946) [2.25141]	-0.268908 (0.08941) [-3.00755]	-0.095855 (0.19570) [-0.48981]
GDP_G_RATE(-5)	0.267994 (0.09976) [2.68643]	-0.207190 (0.19297) [-1.07371]	0.938949 (0.43727) [2.14732]	-0.523620 (0.95706) [-0.54711]
R-squared	0.960235	0.922401	0.961692	0.820399
Adj. R-squared	0.920470	0.844803	0.923384	0.640799
Sum sq. resids	12.27625	45.93369	235.8632	1129.919
S.E. equation	0.849784	1.643771	3.724823	8.152657
F-statistic	24.14790	11.88683	25.10435	4.567907
Log likelihood	31.32843	-54.42024	-83.05117	-110.4675
Akaike AIC	2.818767	4.138299	5.774353	7.341001
Schwarz SC	3.618661	4.938193	6.574246	8.140895
Mean dependent	3.721401	10.82079	30.71954	20.14454
S.D. dependent	3.013314	4.172528	13.45697	13.60286
Determinant resid covariance (dof adj.)		753.3053		
Determinant resid covariance		41.92707		
Log likelihood		264.0302		
Akaike information criterion		19.20173		
Schwarz criterion		22.40130		

Table A4: VAR Granger Causality/Block Exogeneity Wald Tests

Date: 03/23/25 Time: 11:58

Sample: 1984 2023

Included observations: 35

Dependent variable: BUDGET_DEFICIT__GDP

Excluded	Chi-sq	df	Prob.
CAD__GDP	2.506440	3	0.4741
EXT_DEBT__GDP	4.218273	3	0.2388
ERM	3.563342	3	0.3126
All	11.00595	9	0.2753

Dependent variable: CAD__GDP

Excluded	Chi-sq	df	Prob.
BUDGET_DEFICIT__G			
DP	1.561540	3	0.6681
EXT_DEBT__GDP	1.350851	3	0.7171
ERM	4.137272	3	0.2470
All	12.11683	9	0.2068

Dependent variable: EXT_DEBT__GDP

Excluded	Chi-sq	df	Prob.
BUDGET_DEFICIT__G			
DP	66.37085	3	0.0000
CAD__GDP	12.26772	3	0.0065
ERM	9.171320	3	0.0271
All	83.45873	9	0.0000

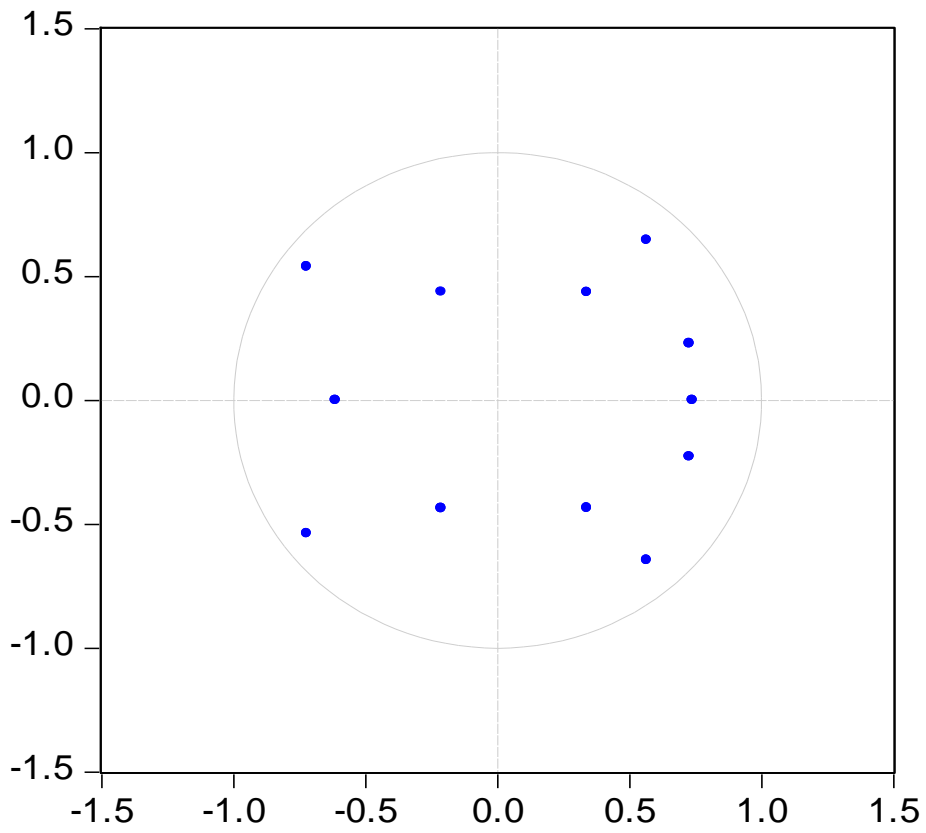
Dependent variable: ERM

Excluded	Chi-sq	df	Prob.
BUDGET_DEFICIT__G			
DP	4.001350	3	0.2613
CAD__GDP	4.952123	3	0.1753

EXT_DEBT__GDP	4.030837	3	0.2582
All	14.05662	9	0.1203

Figure A1: Inverse Roots for Stability Test

Inverse Roots of AR Characteristic Polynomial



Appendix I: Approval of Research Proposal



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke

Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 57530

Internal Memo

FROM: Executive Dean, Graduate School

DATE: 7th August 2025

TO: **Ndindi Nyoro**
C/o Department of Economic Theory

REF: K102/CTY/PT/21005/2023

SUBJECT: APPROVAL OF RESEARCH PROJECT PROPOSAL TITLE

This is to inform you that Graduate School Board, at its meeting of 21st May 2025 approved your Research Project Proposal for a Masters Degree Entitled, **“Public Debt, Current Account Deficit and Exchange Rate Dynamics Relationship In Kenya”**.

You may now proceed with your Data Collection, subject to clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking and Progress Report Forms per semester. The forms are available at the University's Website under Graduate School webpage downloads.

Also, please ensure that you publish article(s) from your project before submitting it to Graduate School for examination as per the Commission for University Education and Kenyatta University guidelines.

Thank you.

ESTHER GITONGU
FOR: EXECUTIVE DEAN, GRADUATE SCHOOL

C.c. Chairman, Department of Economic Theory

Supervisors:

Dr. Stephen Njaramba
Department of Economic Theory
Kenyatta University

EG/ks

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Appendix II: Research Authorization



KENYATTA UNIVERSITY
GRADUATE SCHOOL

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P.O. Box 43844, 00100
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Tel. 8710901 Ext. 57530

Our Ref: K102/CTY/PT/21005/2023

Date: 7th August 2025

Director General,
National Commission for Science, Technology and Innovation
P.O Box 30623- 00100,
NAIROBI

Dear Sir/Madam,

REF: RESEARCH AUTHORIZATION FOR NDINDI NYORO
REG. NO. K102/CTY/PT/21005/2023

I write to introduce **Ndindi Nyoro** who is a Postgraduate Student of this University. The student is registered for a Masters Degree programme in the **Department of Economic Theory**.

Nyoro intends to conduct research for a Masters Project proposal entitled "**Public Debt, Current Account Deficit and Exchange Rate Dynamics Relationship in Kenya**".

Any assistance given will be highly appreciated.

Yours faithfully,

PROF. MICHAEL M. GICHERU
EXECUTIVE DEAN, GRADUATE SCHOOL

EG/kes

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Kenyatta University is ISO 9001:2015 Certified



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